

eRAN eRAN6.0

## **Mobility Management in Connected Mode Feature Parameter Description**

Issue 03

Date 2013-06-30



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## 1 About This Document

## 1.1 Scope

This document describes mobility management in connected mode, including the principles and engineering guidelines.

Any managed objects (MOs), parameters, alarms, or counters described below correspond to the software release delivered with this document. Any future updates will be described in the product documentation delivered with the latest software release.

This document applies only to LTE FDD. Any "L"or "LTE" in this document refers to LTE FDD, and "eNodeB" refers to LTE FDD eNodeB.

## 1.2 Intended Audience

This document is intended for personnel who:

- Need to understand mobility management in connected mode
- Work with Huawei LTE products

## 1.3 Change History

This section provides information about the changes in different document versions.

There are two types of changes, which are defined as follows:

- Feature change: refers to a change in the mobility management in connected mode feature of a specific product version.
- Editorial change: refers to a change in wording or the addition of information that was not described in the earlier version.

#### **Document Versions**

The document versions are as follows:

• 03 (2013-06-30)

- 02 (2013-05-31)
- 01 (2013-04-28)
- Draft A (2013-01-30)

## 03 (2013-06-30)

Compared with Issue 02 (2013-05-31) of eRAN6.0, Issue 03 (2013-08-30) of eRAN6.0 includes the following changes.

Change Type	Change Description	Parameter Change
Feature change	Added a reserved switch for inter-PLMN handovers. For details, see section 3.9 Inter-PLMN Handovers.	Added eNBRsvdPara.RsvdSwPara0.
Editorial Change	Revised the descriptions.	None

## 02 (2013-05-31)

Compared with 01 (2013-04-28) of eRAN6.0, Issue 02 (2013-05-31) of eRAN6.0 includes the following changes.

Change Type	Change Description	Parameter Change
Feature change	None	None
Editorial Change	Modified the observation procedure of the UL-Quality-based Inter-Frequency/RAT Handover. For details, see 9.6.6 Activation Observation and 9.8.6 Activation Observation.	None

## 01 (2013-04-28)

This is the first commercial release of eRAN6.0.

Compared with Draft A (2013-01-30) of eRAN6.0, Issue 01 (2013-04-28) of eRAN6.0 includes the following changes.

Change Type	Change Description	Parameter Change
Feature change	Removed contents about load-based intra- frequency handover.	None

Change Type	Change Description	ion Parameter Change	
Editorial Change	<ul> <li>Modified contents about SPID-based handovers back to the HPLMN. For details, see 3.8 SPID-based Handovers Back to the HPLMN.</li> </ul>	None	
	<ul> <li>Modified the organization of engineering guidelines. For details, see 9 Engineering Guidelines.</li> </ul>		
	<ul> <li>Added descriptions about engineering guidelines for E-UTRAN to UTRAN CS/ PS steering. For details, see 9.11 E- URTAN to UTRAN CS/PS Steering.</li> </ul>		

## Draft A (2013-01-30)

Compared with Issue 05 (2012-12-29) of eRAN3.0, Draft A (2013-01-30) of eRAN6.0 includes the following changes.

Change Type	Change Description	Parameter Change
Feature change	Added blind-handover priority configurations for LTE TDD and LTE FDD. For details, see 3.7 Blind Handovers.	Added the following parameters:  • CnOperatorHoCfg.FirstRatPri  • CnOperatorHoCfg.SecondRatPri
	Added descriptions on inter- frequency and inter-RAT blind redirection in the absence of neighboring cells. For details, see 3.4 Neighbor Relationship Management and 3.7 Blind Handovers.	Added the following parameters:  • EutranInterNFreq. ConnFreqPriority  • UTRANNFREQ. ConnFreqPriority  • GERANNFREQGROUP. ConnFreqPriority
	Added identification of equivalent public land mobile network (PLMN) information delivered from the evolved packet core (EPC). For details, see 3.9 Inter-PLMN Handovers.	None
	<ul> <li>Added inter-frequency redirection triggered by event A2. For details, see 5.1.1         Coverage-based Handover.     </li> <li>Added inter-RAT redirection triggered by event A2. For details, see 6.1.1 Coverage-based Handover.</li> </ul>	Added the following parameters:  • CellHoParaCfg.  BlindHoA1A2ThdRsrp  • CellHoParaCfg.  BlindHoA1A2ThdRsrq  Deleted the BlindHOA2ThdOffset parameter.

Change Type	Change Description	Parameter Change
	Added distinction between LTE time division duplex (TDD) and LTE frequency division duplex (FDD) handover measurements triggered by event A2. For details, see 5.1.1 Coverage-based Handover.	Added the following parameters:  • CnOperatorHoCfg. FddIfHoA2ThdRsrpOffset  • CnOperatorHoCfg. TddIfHoA2ThdRsrpOffset
	Added distinction between GSM/EDGE radio access network (GERAN) and universal terrestrial radio access network (UTRAN) handover measurements triggered by event A2. For details, see 6.1.1 Coverage-based Handover.	Added the following parameters:  • CnOperatorHoCfg.  UtranA2ThdRsrpOffset  • CnOperatorHoCfg.  GeranA2ThdRsrpOffset
Editorial Change	<ul> <li>Deleted LOFD-001021 PS         Inter-RAT Mobility between</li></ul>	Deleted related parameters.

## 2 Overview

Mobility management is performed to support the mobility of user equipment (UEs). It informs the network of the UEs' current locations, provides the network with UE identities, and maintains physical channels. In an evolved UTRAN (E-UTRAN), mobility management can be performed in connected mode or idle mode, depending on Radio Resource Control (RRC) states.

Mobility management in connected mode is a process in which the serving cell of a UE in connected mode is changed through handovers. Handovers can be classified by handover target as follows: intra-frequency, inter-frequency, and inter-RAT, as shown in **Figure 2-1**. "Handover" in this document is a generic term that includes the packet switched (PS) handover, single radio voice call continuity (SRVCC), cell change order with or without network assisted cell change (CCO/NACC), and redirection procedures.

Frequencypriority-based Load-based Intra-frequency PS HO Cover-based handover SRVCC **UL-qulity-based** Connected Inter-frequency mode handover CCO/NACC Mobility Service-based management Inter-RAT Redirection handover Distance-based SPID-based Cell selection/ handover back to Idle mode reselection HPLMN **CSFB** Intra-frequency handover Inter-frequency handover

Figure 2-1 Mobility management classifications

Inter-RAT handover

The following contents are not included in this documents:

- Cell selection and reselection. For details, see *Idle Mode Management Feature Parameter Description*.
- Circuit switched fallback (CSFB). For details, see *CS Fallback Feature Parameter Description*.
- SRVCC. For details, see SRVCC Feature Parameter Description.
- Load-based handover. For details, see MLB Feature Parameter Description.

The basic features included in this document are as follows:

- LBFD-00201801 Coverage Based Intra-frequency Handover
- LBFD-00201802 Coverage Based Inter-frequency Handover
- LBFD-00201804 Distance Based Inter-frequency Handover
- LBFD-00201805 Service Based Inter-frequency Handover

The optional features included in this document are as follows:

- LOFD-001019 PS Inter-RAT Mobility between E-UTRAN and UTRAN
- LOFD-001020 PS Inter-RAT Mobility between E-UTRAN and GERAN
- LOFD-001043 Service based inter-RAT handover to UTRAN
- LOFD-001046 Service based inter-RAT handover to GERAN
- LOFD-001072 Distance based Inter-RAT handover to UTRAN
- LOFD-001073 Distance based Inter-RAT handover to GERAN
- LOFD-001078 E-UTRAN to UTRAN CS/PS Steering

## 2.1 Introduction

## Handover Types By Handover Target

Handovers are classified by handover target into the following types: intra-frequency, inter-frequency, and inter-RAT.

#### Intra-frequency handover

An intra-frequency handover is performed between cells on the same frequency in the LTE system. A network may use one frequency in different geographical areas, and therefore the eNodeB needs to support handovers within one frequency in the system.

#### Inter-frequency handover

An inter-frequency handover is performed between cells on different frequencies in the LTE system. A network may use different frequencies, and therefore the eNodeB needs to support handovers between different frequencies within the system.

Handovers between LTE FDD cells and LTE TDD cells are inter-mode handovers and follow the common inter-frequency handover procedure.

#### Inter-RAT handover

An inter-RAT handover is performed from LTE to any of the following RATs:

- Global System for Mobile communications (GSM)
- Wideband Code Division Multiple Access (WCDMA)
- Time Division-Synchronous Code Division Multiple Access (TD-SCDMA)
- Code Division Multiple Access 2000 (CDMA2000)

Different areas may be covered by different systems, and therefore LTE supports handovers between different RATs to ensure uninterrupted service provision.

For details about handovers from LTE to CDMA2000, see *LTE-CDMA2000 PS Service Interworking Feature Parameter Description* and *LTE-CDMA2000 CS Service Interworking Feature Parameter Description*.

## Handover Types By Handover Cause

Handovers are classified by handover cause into the following types: coverage-based, load-based, service-based, distance-based, UL-quality-based, and frequency-priority-based.

#### Coverage-based handover

When a UE moves to the edge of a cell, the eNodeB initiates a coverage-based handover to ensure that the UE is connected to the best cell during its movement. Coverage-based handovers prevent call drops caused by deterioration of the signal quality in the cell.

#### Load-based handover

When a cell is heavily loaded or even congested, its neighboring cells might be lightly loaded. To optimize the utilization of system resources in such situations, load-based handovers are performed. The eNodeB initiates a load-based handover when a cell is heavily loaded.

#### Service-based handover

To better serve high-speed data services in an LTE system, the service steering function can steer UEs with voice services to other LTE frequencies or RATs. The eNodeB

recognizes the UEs with voice services and performs service-based handovers for them to implement service steering.

Distance-based handover

In a network with severe cross-cell coverage, UEs may experience call drops upon moving out of the coverage of the serving cell. To prevent such call drops, distance-based interfrequency or inter-RAT handovers are performed.

UL-quality-based handover

When the channel quality in the uplink is unsatisfactory, call drops may occur if handovers are not performed promptly. To solve this problem, UL-quality-based handovers can be performed to divert UEs to other LTE frequencies or RATs.

Frequency-priority-based handover

When cells on a low band and a high band have the same coverage, a frequency-priority-based inter-frequency handover can be performed to preferentially carry services in the high band while sparing the low band for continuous coverage.

## 2.2 Benefits

Mobility management in connected mode provides the following benefits:

- Ensures the continuity of radio network coverage and provides uninterrupted communication services for UEs.
- Provides means to transfer UEs and supports flexible networking to meet operators' service steering and load balancing requirements.

## 2.3 Architecture

**Figure 2-2** shows the network architecture for mobility management in connected mode. Standardized interfaces are used in the communication between eNodeBs, eNodeB and mobility management entity (MME), and eNodeB and UEs.

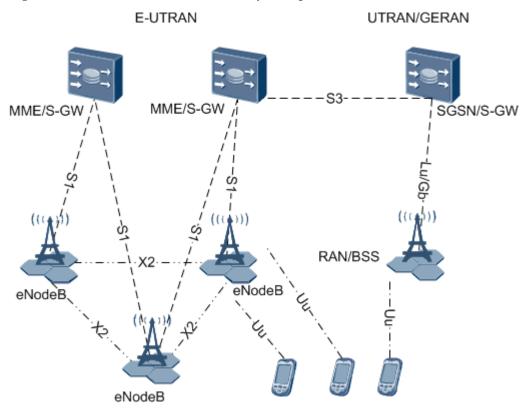


Figure 2-2 Network architecture for mobility management in connected mode

#### S1 interface

The eNodeB and MME/serving gateway (S-GW) communicate through the S1 interface. In an inter-eNodeB handover for which an X2 interface is unavailable between the source and target eNodeBs, or in an inter-RAT handover to UTRAN or GREAN, handover signaling is exchanged through the S1 interface. For details about the S1 interface, see 3GPP TS 36.413 V10.1.0 (2011-03). 3GPP is short for 3rd Generation Partnership Project.

#### • X2 interface

eNodeBs communicate with each other through the X2 interface. In an inter-eNodeB handover for which an X2 interface is available between the source and target eNodeBs, handover signaling is exchanged through the X2 interface. For details about the X2 interface, see 3GPP TS 36.423 V10.1.0 (2011-03).

#### • Uu interface

The eNodeB and UEs communicate through the Uu interface. The Uu interface is also called the radio interface. For details about the Uu interface, see 3GPP TS 36.331 V10.1.0 (2011-03).

# Technical Overview and Basic Concepts

This chapter provides an overview of handover procedures and describes basic handover-related concepts defined by 3GPP. For details about these concepts, see chapter 10 in 3GPP TS 36.300 V10.1.0 (2011-03).

UE handover entities UE capability UE measurement UE capability XXX Based trigger handling GAP pattern s it a blind Measurement control handover? handling MRO Handover decision Handover Candidate cell filter execution eNodeB handover entities

Figure 3-1 Handover phases

As shown in Figure 3-1, a handover process consists of three phases: handover measurement, handover decision, and handover execution.

#### Handover measurement

The eNodeB uses the RRC Connection Reconfiguration message to deliver the measurement configuration to the UE and waits for a measurement report from the UE.

A blind handover does not require handover measurement.

Handover decision

The eNodeB checks the measurement results reported by the UE and determines whether to initiate a handover.

Handover execution

The eNodeB controls the procedure of UE handover to the target cell based on the decision, to perform the handover.

Other factors that affect the handover procedure are as follows:

- The gap pattern determines the UE measurement duration and interval.
- The mobility robustness optimization (MRO) algorithm automatically optimizes handoverrelated parameters. For details about MRO, see *MRO Feature Parameter Description*.
- The mobility load balancing (MLB) feature determines whether load-based handovers can be triggered. For details about MLB, see *MLB Feature Parameter Description*.

## 3.1 Measurement for a Handover

After a UE establishes a radio bearer, the eNodeB delivers the measurement configuration to the UE in an RRC Connection Reconfiguration message. The measurement configuration consists of measurement objects, reporting configurations, and other parameters.

## 3.1.1 Measurement Objects

Measurement objects are the objects that UEs measure. Measurement object information includes the target system and target frequency for a UE to measure, as well as the measurement bandwidth, frequency-specific offset, and target cell.

#### **Target System**

The eNodeB delivers only information about the target systems that the UE is capable of measuring. The target systems vary as follows:

- For the measurement of the serving cell or an intra-frequency neighboring cell, the target system is E-UTRAN.
- For an inter-frequency measurement, the target system is E-UTRAN.
- For an inter-RAT measurement, the eNodeB determines the target system based on the UE measurement capability, as described in the following sections.

## **Target Frequency**

The eNodeB determines target frequencies based on a list of neighboring cells in the selected target system.

If the target system is UTRAN and CS/PS service steering is enabled, the eNodeB delivers only the frequency with the highest priority. For details about CS/PS service steering, see **6.2.3 Inter-RAT Measurement Priorities**.

The eNodeB determines the target frequencies based on a neighboring cell list that excludes the following cells:

- Blacklisted neighboring cells
- Neighboring cells that have a different PLMN from the serving cell if the inter-PLMN handover switch is turned off

For details about inter-PLMN handovers, see **3.9 Inter-PLMN Handovers**.

- Neighboring cells with a handover prohibition flag
- Neighboring cells in the areas indicated by the information element (IE) Handover Restriction List in the INITIAL CONTEXT SETUP REQUEST message sent from the MME

#### ■ NOTE

For emergency calls, the eNodeB does not filter the neighboring cell list.

If ANR is enabled, the eNodeB does not determine target frequencies based on the neighboring cell list. For details, see *ANR Management Feature Parameter Description*.

The number of inter-frequency and inter-RAT frequencies configured on an eNodeB should not exceed the number specified in 3GPP TS 36.133 (see section 8.1.2.1 in 3GPP TS 36.133 Release

10 issued in December, 2010). If the number of configured inter-frequency and inter-RAT frequencies exceeds the limit, certain frequencies cannot be measured by UEs.

If the number of configured target frequencies exceeds the protocol-specified limit, the eNodeB selects and delivers high-priority target frequencies based on settings of the

**EUTRANINTERNFREQ**. *ConnFreqPriority*, **UTRANNFREQ**. *ConnFreqPriority*, and **GERANNFREQGROUP**. *ConnFreqPriority* parameters. If the number of high-priority target frequencies still exceeds the limit, the eNodeB randomly selects and delivers some of the high-priority target frequencies.

If the number of GERAN frequencies to be delivered exceeds the protocol-specified limit, the eNodeB may not deliver GERAN frequencies that have low priorities. Therefore, if a large number of GERAN frequencies are to be delivered, add these frequencies to a GERAN frequency group with a high priority, that is, with a large value of

GERANNFREQGROUP. ConnFreqPriority before configuring them.

#### Measurement Bandwidth and Frequency-specific Offset

If the target system is E-UTRAN, information about a measurement object also includes:

#### Measurement bandwidth

The measurement bandwidth is the cell bandwidth of which the UE performs measurements. If the measurement bandwidth of the serving cell or intra-frequency neighboring cells is not specified (CELLRESEL.MeasBandWidthCfgInd is set to NOT\_CFG), the eNodeB includes the downlink (DL) bandwidth (specified by the CELL.DlBandWidth parameter) of the serving cell in the measurement configuration by default and delivers the information to the UE.

#### Frequency-specific offset

The frequency-specific offset is included in the measurement object information because it is set for each frequency. This offset adjusts the probability of triggering a handover to a specific frequency.

For details about parameters for E-UTRAN measurement configurations, see 4.2.1 Intra-Frequency Measurement Configuration and 5.2.1 Inter-Frequency Measurement Configuration.

## **Target Cell**

According to 3GPP specifications, if the target system is E-UTRAN or UTRAN, the measurement configuration can include information about the candidate target cells. For details, see sections "MeasObjectEUTRA" and "MeasObjectUTRA" in section 6.3.5 in 3GPP TS 36.331 V10.1.0 (2011-03).

If the target system is E-UTRAN, the eNodeB delivers information about a candidate target cell only if the cell individual offset (CIO) of the cell is not 0 dB.

If the target system is UTRAN, the eNodeB delivers information about a candidate target cell based on the UTRAN neighbor relationship configuration.

The number of target E-UTRAN or UTRAN cells that a UE can measure simultaneously cannot exceed the protocol-specified limit. For details, see **3.4 Neighbor Relationship**Management.

## 3.1.2 Reporting Configuration

## **Event-Triggered Reporting**

The concept of event-triggered reporting as specified in section 5.5 in 3GPP TS 36.331 V10.1.0 (2011-03) is used by the handover measurement and decision phases. Reporting configurations consist of the parameters related to specific events. Currently, the eNodeB supports mechanisms as responses to the following events:

- Event A1 indicates that the signal quality in the serving cell is higher than a specified threshold. When the information about the cells that meet the triggering condition is reported, the eNodeB stops inter-frequency or inter-RAT measurements. However, in frequency-priority-based inter-frequency handovers, event A1 is used to start interfrequency measurements.
- Event A2 indicates that the signal quality in the serving cell is lower than a specified threshold. When the information about the cells that meet the triggering condition is reported, the eNodeB starts inter-frequency or inter-RAT measurements. However, in frequency-priority-based inter-frequency handovers, event A2 is used to stop interfrequency measurements.
- Event A3 indicates that the signal quality in at least one intra-frequency or inter-frequency neighboring cell is higher than that in the serving cell. When the information about the cells that meet the triggering condition is reported, the source eNodeB sends an intra-frequency or inter-frequency handover request.
- Event A4 indicates that the signal quality is higher than a specified threshold in at least one
  inter-frequency neighboring cell. When the information about the cells that meet the
  triggering condition is reported, the source eNodeB sends an inter-frequency handover
  request.
- Event A5 indicates that the signal quality in the serving cell is lower than a threshold and that the signal quality in at least one inter-frequency neighboring cell is higher than another threshold. When the information about the cells that meet the triggering condition is reported, the source eNodeB sends an inter-frequency handover request.
- Event B1 indicates that the signal quality is higher than a specified threshold in at least one inter-RAT neighboring cell. When the information about the cells that meet the triggering condition is reported, the source eNodeB sends an inter-RAT handover request.
- Event B2 indicates that the signal quality in the serving cell is lower than a threshold and
  that the signal quality in at least one inter-RAT neighboring cell is higher than another
  threshold. When the information about the cells that meet the triggering condition is
  reported, the source eNodeB sends an inter-RAT handover request.

Each event may have different sets of the threshold and other event-associated parameters, with each set of the parameters mapped to a QoS Class Identifier (QCI).

The UE reports measurement results in event-triggered periodical mode, which is described in the next section.

## **Event-Triggered Periodical Reporting**

After an event is reported for the first time, the measurement results associated with the event are reported periodically. This reporting mode is called event-triggered periodical reporting. The UE sends the measurement results to the eNodeB in event-triggered periodical reporting mode. The periodical reporting is stopped when the leaving condition is met or after the UE receives a handover command.

Event-triggered periodical reporting has the following benefits:

- Reduces the impact of loss of measurement reports or failures in internal processing on handovers.
- Enables retries of access in case of admission rejection.
- Provides complete measurement results by updating cell information in periodical reports, since a single measurement report may not contain information about all neighboring cells that meet an event triggering condition and neighboring cells meeting the condition may change with UE movement.

## Hysteresis and Time-to-Trigger

Hysteresis and time-to-trigger are key parameters for the UE to decide whether to report an event. These parameters directly affect handover performance of the system. The two parameter types are set in the measurement configuration for the associated events.

To reduce the number of event reports generated because of radio signal fluctuation, the hysteresis to the signal quality is used in the entering and leaving conditions for each event. The hysteresis setting affects the triggering of the corresponding event. A larger value of the hysteresis results in a lower probability of event triggering, affecting the user experience. A smaller value of the hysteresis results in a higher probability of event triggering, but it also leads to a higher probability of incorrect handover decisions and ping-pong handovers.

When the entering condition of an event is met, the UE does not report the cell measurement result associated with the event to the eNodeB until the entering condition is met throughout a specified period, as defined by the time-to-trigger parameter. This prevents unnecessary handovers. Time-to-trigger is set for each event, significantly reducing the average number of handovers and the number of incorrect handovers.

## **Triggering Quantity and Reporting Quantity**

The quantities Reference Signal Received Power (RSRP) and Reference Signal Received Quality (RSRQ) are used to measure the E-UTRAN cell quality. Based on the RSRP, the RSRQ takes interference into consideration. The triggering quantities and reporting quantities for events are configurable. The options are RSRP, RSRQ, or both. Based on the triggering quantities specified by the eNodeB, the UE performs event evaluation. When the corresponding signal quality in cells meets the triggering condition for a specific event, the UE reports the information about the cells to the eNodeB.

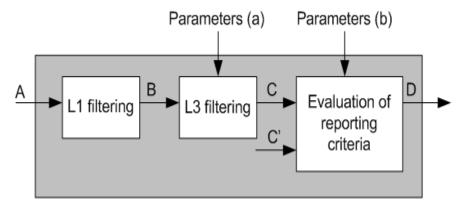
#### 3.1.3 Other Parameters

## **Filtering**

Before evaluating the reporting criteria and sending measurement reports, the UE performs layer 1 (L1) filtering and L3 filtering on the measurement results. The L1 filtering is performed by the UE at the physical layer to eliminate the impact of fast fading on the measurement results. No user configuration is required for the L1 filtering. The L3 filtering aims at eliminating the impact of shadow fading and certain fast fading. In this way, better measurement data is provided for the evaluation of the reporting criteria. Based on the triggering quantity, two L3 filtering coefficients are applicable: one for RSRP measurements and the other for RSRQ measurements.

The UE performs L1 filtering, L3 filtering, and evaluation of reporting criteria according to the model shown in Figure 3-2.

Figure 3-2 Measurement model



The measurement points shown in Figure 3-2 are described as follows:

- A is the measurement value at the physical layer.
- B is the measurement value obtained after L1 filtering. It will be provided for the higher layers.
- C is the measurement value obtained after L3 filtering.
- C' is other measurement values, such as the Signal to Interference plus Noise Ratio (SINR) and the Channel Quality Indicator (CQI). These values are measured in the same way as C, except that no L3 filtering is applied to them.
- D is measurement report information sent from the UE to the eNodeB.
- Parameters (a) include the filtering coefficient for L3 filtering, and parameters (b) include the reporting configuration.

According to section 5.5.3.2 in 3GPP TS 36.331 V10.1.0 (2011-03), before evaluating the reporting criteria and sending measurement reports, the UE performs L3 filtering on the measurement result by using the following formula:

$$F_n = (1 - a) \times F_{n-1} + a \times M_n$$

#### where

- $M_{\rm n}$  is the  $n_{\rm th}$  measurement value received from the physical layer. The interval at which measurement values are received at the physical layer is subject to UE implementation. The details are not provided in this document.
- $F_{n-1}$  is the  $(n-1)_{th}$  filtered measurement value.
- $F_n$  is the  $n_{th}$  filtered measurement value.
- $a = 1/2^{(k/4)}$ . It is a weighting factor for the current measurement quantity. In the formula, k is the L3 filtering coefficient. If k is set to 0 (that is, a = 1), L3 filtering is not applicable.

The L3 filtering coefficient k for different networks is specified by different parameters. The details are as follows:

 The L3 filtering coefficients for the E-UTRAN are specified by the HoMeasComm. Eutran Filter CoeffRSRP and HoMeasComm. Eutran Filter CoeffRSRQ parameters.

- The L3 filtering coefficients for the Universal Terrestrial Radio Access Network (UTRAN) are specified by the HoMeasComm. Utran Filter CoeffRSCP and HoMeasComm. Utran Filter CoeffECNO parameters.
- The L3 filtering coefficient for the GSM/EDGE Radio Access Network (GERAN) is specified by the **HoMeasComm**. *Geran FilterCoeff* parameter.

A larger value of the filtering coefficient indicates a greater smoothing effect and a higher antifading capability, but also a lower capability of tracing signal fluctuation.

#### Measurement Gap

A measurement gap is a time period during which the UE performs measurements on a neighboring frequency of the serving frequency. Measurement gaps are applicable to interfrequency and inter-RAT measurements. In most cases, each UE has only one receiver, and consequently each UE can receive the signals on only one frequency at a time. The eNodeB specifies the time period for a UE to perform inter-frequency or inter-RAT measurement by sending measurement gap configurations to the UE. If the **AutoGapSwitch** option is selected under the **ENodeBAlgoSwitch**. *HoModeSwitch* parameter, the eNodeB does not send measurement gap configurations to UEs that support autonomous gaps. For details about measurement gaps, see section 10.1.3 in 3GPP TS 36.300 Release 10 (2011-03).

After receiving a measurement gap configuration, the UE starts gap-assisted measurements accordingly. As shown in **Figure 3-3**,  $T_{period}$  denotes the repetition period for measurement gaps, and  $T_{GAP}$  denotes the gap width, within which the UE performs measurements.

When gap-assisted measurements for various handover types co-exist, the eNodeB records the measurements based on these handover types. Different gap-assisted measurements can share the same measurement gap configuration. A UE releases measurement gaps only after all gap-assisted measurements are completed.

Two measurement gap patterns are available: pattern 1 and pattern 2. In pattern 1,  $T_{GAP}$  is 6 ms and  $T_{period}$  is 40 ms. In pattern 2,  $T_{GAP}$  is 6 ms and  $T_{period}$  is 80 ms. The pattern to use is specified by the **HoMeasComm**. *GapPatternType* parameter.

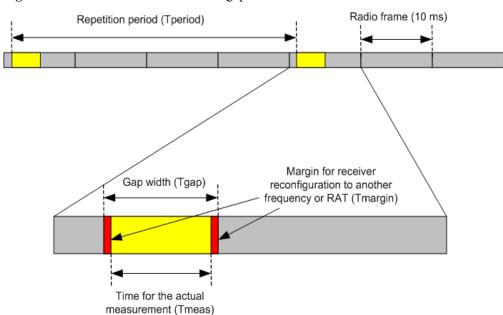


Figure 3-3 Structure of a measurement gap

#### Cell Individual Offset

Specific CIO values can be set for the serving cell and its neighboring cells. (*Ocs* and *Ocn* described in this document denote the CIO for the serving cell and the CIO for the neighboring cell respectively.) When the quality of signals fluctuates, the probability of triggering handovers to or from a specific cell can be adjusted by changing the CIO value. This reduces the risk of dropped calls. The CIO values are adjusted automatically by the MRO function.

According to section 6.3.5 in 3GPP TS 36.331 V10.1.0 (2011-03), CIO values are contained in the *IE Neighbour cell list* in the measurement configuration. The CIO value can adjust the boundary of the associated cell for a handover. A smaller CIO value for the serving cell results in a higher probability of handovers from the serving cell, and a larger CIO value for the target cell also results in a higher probability of handovers to the target cell.

## 3.1.4 Setting of Parameters Mapped to QCIs

The E-UTRAN, which offers all packet switched (PS) services, provides differentiated quality of service (QoS) configurations to achieve prioritization and different user experience. To this end, different types of services can be mapped to different QCIs. The parameters corresponding to each QCI can be set for different types of measurements and different events. Therefore, besides that the key requirements for mobility, coverage continuity, and the call drop rate are fulfilled, the following purposes can be achieved: timely handovers, better UE data transmission performance before the handover, decrease in UE power consumption for measurements, reduction in the number of handovers, and further decrease in the risk of ping-pong handovers. For detailed QCI-related information, see section 6.1.7 in 3GPP TS 23.203 V10.3.0 (3011-03).

If a coverage-based handover is required when there are multiple types of services running on a UE, the handover considers the service with the QCI that is mapped to the highest priority. For example, when a UE has three types of ongoing services, a handover is performed on condition that the target cell allows admission of the service with the highest priority. In this situation, the resources for the two types of services are released if the target cell rejects admission of the other two types of services.

If a load- or frequency-priority-based handover is required when there are multiple types of services running on a UE, the handover can be performed only when the target cell meets the requirements of all the services for the attributes mapped to the QCIs.

## 3.2 Decision on a Handover

In the handover decision phase, the eNodeB checks the measurement result reported by the UE or the blind-handover priorities. Based on the check, the eNodeB determines whether a handover needs to be initiated and, if so, to which cell the UE is to be handed over.

The eNodeB derives a list of candidate cells from the measurement report sent by the UE.

For a blind handover, the eNodeB derives a list of candidate cells based on the blind-handover priorities. For details, see **3.7 Blind Handovers**.

The eNodeB filters out the following cells from the neighboring cell list:

- Blacklisted neighboring cells
- Neighboring cells that have a different PLMN from the serving cell if the inter-PLMN handover switch is turned off

For details about inter-PLMN handovers, see 3.9 Inter-PLMN Handovers.

- Neighboring cells with a handover prohibition flag
- Neighboring cells in the areas indicated by the IE Handover Restriction List in the INITIAL CONTEXT SETUP REQUEST message sent from the MME

If among the candidate cells, the measurement result of an intra-eNodeB cell is the same as that of an inter-eNodeB cell, the eNodeB assigns the intra-eNodeB cell a priority, which will prevent signaling and data forwarding required in an inter-eNodeB handover.

The eNodeB then sends a handover request to the target cell at the top of the candidate cell list. If the handover request fails, the eNodeB sends the handover request to the next target cell. If the eNodeB has tried all cells indicated in the measurement report but failed to perform a handover, the eNodeB either of the following actions:

- Waits for the next measurement report if the UE measures the neighboring cells.
- Stops the handover procedure if it is a blind handover.

## 3.3 Execution of a Handover

In the handover execution phase, the UE and the eNodeB exchange signaling over the radio interface according to 3GPP TS 36.331 V10.1.0 (2011-03). During an inter-eNodeB handover, the source and target eNodeBs exchange signaling and data through X2/S1 adaptation. The LTE system uses hard handovers, that is, only one radio link is connected to a UE at a time. Therefore, to prevent user data loss at the eNodeB during the handover, data forwarding is performed to ensure eNodeB data integrity. Loss of data may cause a decrease in the data transfer ratio and an increase in the data transfer delay.

## 3.3.1 X2/S1 Adaptation for a Handover

Intra-frequency and inter-frequency handovers are both applicable in the architecture shown in **Figure 3-4**, that is, intra-eNodeB handover, intra-MME inter-eNodeB handover, and inter-MME inter-eNodeB handover.

MME/S-GW MME/S-GW

S1

S1

S1

S1

ENodeB 1

ENodeB 2

Figure 3-4 Example of the network architecture

In the case of an intra-MME inter-eNodeB handover (handover between eNodeB 1 and eNodeB 2 shown in **Figure 3-4**), the source eNodeB checks whether the X2 interface is available between the source and target eNodeBs or not and then automatically selects a path for the handover as follows:

- If the X2 interface is available, the handover request is sent over the X2 interface. Data forwarding is also performed over the X2 interface.
- If the X2 interface is unavailable, the handover request is sent over the S1 interface. Data forwarding is also performed over the S1 interface.

In the case of an inter-MME inter-eNodeB handover (handover between eNodeB 1 and eNodeB 3 shown in **Figure 3-4**), the handover request is sent over the S1 interface. In addition, the source eNodeB checks whether the X2 interface is available between the source and target eNodeBs or not and then automatically selects a path for data forwarding as follows:

- If the X2 interface is available, data forwarding is performed over the X2 interface.
- If the X2 interface is unavailable, data forwarding is performed over the S1 interface.

In the case of an inter-RAT handover to the UTRAN or GERAN, the eNodeB sends a handover request and forwards data over the S1 interface.

## 3.3.2 Data Forwarding

The data forwarding process is as follows: After the source eNodeB sends a handover command to the UE, the UE detaches the connection from the source eNodeB. The source eNodeB then

forwards the uplink (UL) data that is received out of order and the DL data to be transmitted, to the target eNodeB.

Data forwarding prevents a decrease in the data transfer ratio and an increase in the data transfer delay that are caused by user data loss during the handover.

Intra-eNodeB handovers do not require data forwarding. In the case of an inter-eNodeB handover, the source eNodeB selects a data forwarding path by using the X2/S1 adaptation mechanism.

In the case of an inter-RAT handover to the UTRAN or GERAN, the eNodeB forwards the data to the S-GW.

For details about data forwarding, see sections 10.1.2 and 10.2.2 in 3GPP TS 36.300 V10.1.0 (2011-03).

## 3.3.3 RRC Connection Re-Establishment After a Handover Failure

When a handover fails, the UE performs a cell selection procedure and then initiates a procedure of RRC connection re-establishment towards the selected cell. The eNodeB makes a decision based on whether the context of the UE is present. If the eNodeB accepts the re-establishment request, the UE accesses the selected cell, avoiding a dropped call caused by the handover failure. According to section 5.3.7 in 3GPP TS 36.331 V10.1.0 (2011-03), the context of the UE is present only at the prepared cell. The eNodeB to which the prepared cell belongs checks the context of the UE and then accepts the RRC connection re-establishment request of the UE. The requests of re-establishment towards other cells will be rejected.

#### M NOTE

A prepared cell can be one of the following cells: the source cell, a cell towards which handover preparation has been performed, and a cell under the same eNodeB as either of the preceding cell.

## 3.4 Neighbor Relationship Management

Neighbor relationships define the relationships that the serving cell has with its neighboring cells and they play a fundamental role in handovers. Neighbor relationship management determines whether to allow the following:

- Automatic removal of a neighbor relationship by ANR
- Handover of UEs from the serving cell to the neighboring cell
- Handover over an X2 interface

However, the flag indicating whether to allow handover over an X2 interface has not yet been introduced to Huawei eNodeBs. For details about how ANR manages neighbor relationships, see *ANR Management Feature Parameter Description*.

Neighbor relationships are planned in the network design stage. They are automatically adjusted by ANR, if configured. The ANR function reduces the risk of missing neighboring cells and solves the problems of inappropriate neighbor relationships caused by collisions of physical cell IDs or by physical positions. In this way, the call drop rate is reduced and the handover success rate is increased. For details, see 3GPP TS 32.511 V10.1.0 (2011-03).

There are three types of neighboring cells:

Intra-frequency neighboring cell
 An intra-frequency neighboring cell is a neighboring cell whose DL E-UTRA Absolute
 Radio Frequency Channel Number (EARFCN) is the same as the DL EARFCN of the

serving cell. A maximum of 64 intra-frequency neighboring cells can be configured for an E-UTRAN cell.

#### Inter-frequency neighboring cell

An inter-frequency neighboring cell is a neighboring cell whose DL EARFCN is different from the DL EARFCN of the serving cell. A maximum of 64 inter-frequency neighboring cells can be configured for an E-UTRAN cell. The neighboring cells can be located on a maximum of 8 neighboring E-UTRAN frequencies. FDD cells can be configured as inter-frequency neighboring cells of TDD cells. TDD cells can also be configured as inter-frequency neighboring cells of FDD cells. Huawei eNodeB supports interoperability between LTE FDD and LTE TDD.

#### Inter-RAT neighboring cell

Inter-RAT neighboring cells are neighboring UTRAN cells and neighboring GERAN cells. The maximum configurations of neighboring cells and frequencies for an E-UTRAN cell are as follows: 128 neighboring UTRAN cells and 16 neighboring UTRAN frequencies; 64 neighboring GERAN cells and 16 neighboring GERAN frequency groups.

#### NOTE

The number of neighboring E-UTRAN cells configured on an eNodeB should not exceed 32, which is specified in section 6.4 in 3GPP TS 36.331 V10.1.0 (2011-03). The same limitation applies to the neighboring UTRAN cells. If the number of neighboring E-UTRAN or UTRAN cells exceeds 32, certain neighbor relationships cannot be carried in measurement configuration messages.

If the target system is E-UTRAN or UTRAN, the eNodeB preferentially selects the cells for which the EUTRANINTRAFREQNCELL. *CellMeasPriority*,

**EUTRANINTERFREQNCELL**. *CellMeasPriority*, or **UTRANNCELL**. *CellMeasPriority* parameter is set to **HIGH\_PRIORITY**. You are advised to set the preceding parameters to **HIGH\_PRIORITY** for cells that provide optimum coverage and have a high probability of serving as the target cells. If the number of high-priority target cells exceeds the limit, the eNodeB randomly selects and delivers some of the high-priority target cells.

To reduce delay, the eNodeB may select a target cell for handover in the absence of the measurement information. This type of handover is called a blind handover. The candidate cells for a blind handover must be the neighboring cells with blind-handover priorities other than priority 0. For details about the parameters for blind-handover priorities, see **3.7 Blind Handovers**.

In the configuration of inter-frequency neighboring cells, the

**EutranInterFreqNCell**. *BlindHoPriority* parameter is also used to differentiate between interfrequency neighboring cells for frequency-priority-based handovers and those for handovers triggered by other causes. Values 17 to 32 of this parameter are dedicated to frequency-priority-based inter-frequency handovers. A frequency-priority-based inter-frequency handover can be triggered only if the target inter-frequency neighboring cell is configured with a blind-handover priority in the range of 17 to 32. Blind-handover priorities 0 to 16 apply to inter-frequency handovers triggered by causes other than frequency priorities.

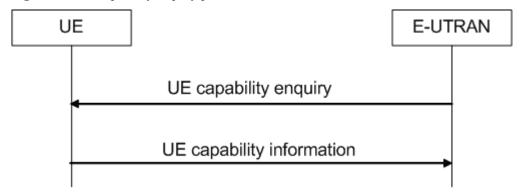
## 3.5 UE Capability

To choose a proper handover procedure for mobility management in connected mode, the eNodeB needs to acquire information about UE capabilities, such as the protocol version, systems, and supported frequencies, reception and transmission capabilities (for example, simplex/duplex or double receiver), and inter-RAT measurement and handover capabilities.

The MME may inform the eNodeB of UE capabilities. If the MME does not inform the eNodeB of UE capabilities, the eNodeB initiates UE capability transfer over the radio interface to a UE,

and the UE informs the eNodeB of the UE capabilities through the UECapabilityInformation IE. **Figure 3-5** shows the UE capability enquiry procedure. For details, see section 5.6.3 in 3GPP TS 36.331 V 10.1.0 (2011-03).

Figure 3-5 UE capability inquiry procedure



In the UE Capability Information message reported by the UE, the featureGroupIndicators IE indicates whether the UE is capable of frequency-specific or RAT-specific measurements and handovers. For details about this IE, see Annex B.1 in 3GPP TS 36.331 V 10.1.0 (2011-03).

## 3.6 Redirection

Redirection is a method of transferring UEs between cells and is a type of handover when "handover" is used as a generic term. When a handover cannot be performed in an emergency or due to equipment limitations, the eNodeB sends the UE an RRC Connection Release message, which contains information about a neighboring frequency in the LTE system or in another RAT system. Using this message, the eNodeB instructs the UE to initiate a random access procedure towards an inter-frequency or inter-RAT neighboring cell so that the UE can resume its services.

Compared with handovers, redirections do not include a procedure for initiating a handover request towards a neighboring cell and therefore have lower requirements for equipment capabilities and can be rapidly performed. The two methods differ in the way to transfer UEs.

## **Triggering Mechanism**

The eNodeB chooses to perform a redirection if a device in the network or the UE involved does not support inter-frequency or inter-RAT handovers. If both the network and UE support inter-frequency or inter-RAT handovers, handovers are recommended.

The UTRAN, GERAN, and CDMA2000 network are often mature, and may not support inter-RAT handovers from the E-UTRAN. In this situation, redirections instead of inter-RAT handovers can be performed on UEs. Therefore, network capabilities must be collected to determine whether to enable handovers or redirections for UE transfer. To enable handovers or redirections, turn on the corresponding switch under the **ENodeBAlgoSwitch**. *HoModeSwitch* parameter. If both handovers and redirections are enabled, the eNodeB preferentially uses handovers to transfer UEs.

During an inter-RAT handover, if the eNodeB determines that the UE does not support inter-RAT measurements or handovers based on the results of a UE capability inquiry procedure, the eNodeB sends an RRC Connection Release message to the UE to perform a redirection. This

message contains information about the target frequency for the redirection. For details about the UE capability inquiry procedure, see 3.5 UE Capability.

The eNodeB determines whether the UE is capable of inter-RAT measurements and handovers in an adaptive manner, without requiring user configuration.

If an SPID is configured for a UE in the EPC or the eNodeB is configured with dedicated frequency priorities, the eNodeB may deliver a dedicated priority in the idleModeMobilityControlInfo IE of the command for a redirection. For details about the principles and configuration of SPIDs, see *Flexible User Steering Feature Parameter Description*. For details about dedicated priority configuration for UEs in idle mode, see *Idle Mode Management Feature Parameter Description*.

In an inter-frequency handover, if the UE does not support inter-frequency or inter-RAT measurements, the eNodeB performs a blind handover or a blind redirection to transfer the UE to a neighboring cell. For details about blind handovers and blind redirections, see **3.7 Blind Handovers**.

#### Flash Redirection

The eNodeB supports flash redirections to UTRAN and GERAN. The flash redirection function is controlled by the **ENodeBAlgoSwitch**. *RedirectSwitch* parameter. If a switch under the **ENodeBAlgoSwitch**. *RedirectSwitch* parameter is turned on, the eNodeB includes the system information of the target cell in the redirection command. This enables the UE to access the target cell sooner because the UE does not need to read the system information.

Only UEs compliant with 3GPP Release 9 or later support fast redirections.

The maximum number of UTRAN or GERAN cells whose system information can be delivered by the eNodeB during a redirection procedure depends on the value of the InterRatHoComm. *CellInfoMaxUtranCellNum* or InterRatHoComm. *CellInfoMaxGeranCellNum* parameter (indicated as N in the following), respectively.

- In blind-handovers, the eNodeB sorts and filters blind-handover targets and then filters out the cells whose system information is not acquired. For details about blind handovers, see **3.7 Blind Handovers**. If the number of cells is greater than *N*, the eNodeB selects the first *N* cells. If the number of cells is less than *N*, the eNodeB selects all the available cells.
- If the UE has performed measurements and reported measurement results, the eNodeB sorts the candidate cells by measured signal strength in descending order based on the measurement report, and adds the cells on the redirection target frequencies. The eNodeB then filters out the cells whose system information is not acquired. For details about the filtering, see 3.2 Decision on a Handover. If the number of cells is greater than N, the eNodeB selects the first N cells. If the number of cells is less than N, the eNodeB selects all the available cells.

During a flash redirection procedure, the eNodeB uses the RAN information management (RIM) procedure to acquire system information of the target cell. To use RIM, ensure that the devices in the core network and target RAN also support the RIM procedure. For details about RIM, see *CS Fallback Feature Parameter Description*. Note that only UEs compliant with Release 9 and later releases support the flash redirection function.

## **Blind Redirection Without Neighboring Cells**

In coverage-based inter-frequency or inter-RAT handovers and CS fallback, blind redirection is triggered if no inter-frequency or inter-RAT neighboring cells are available. To enable this

Description

function, set related parameters. For details about how to set the parameters, see **3.7 Blind Handovers**. If no neighbor relationships are configured, handovers cannot be performed, including the handover, CCO, or redirection procedure.

#### ☐ NOTE

This function does not take effect when the eNodeB is configured with correct inter-frequency or inter-RAT neighbor relationships.

If neighbor relationships are missing on an eNodeB, features and functions related to neighbor relationships are affected. If an eNodeB cannot trigger the RIM procedure to obtain inter-RAT neighboring cell information, all related features and functions, such as flash redirection, cannot be triggered.

## 3.7 Blind Handovers

"Blind handover" is a generic term for handover, CCO, or redirection for which measurements are not performed. Unless otherwise specified, this definition applies to all subsequent chapters of this document.

Blind handovers exclude neighboring cell measurements and therefore reduce the amount of time required for signaling exchange over the radio interface. If eNodeBs decide to perform blind handovers, they directly enter the handover execution phase without delivering gap-assisted measurement or measurement configurations. Blind handovers are used for interfrequency and inter-RAT mobility. Inter-frequency or inter-RAT blind handovers require setting of blind-handover priorities for neighboring cells.

In most cases, blind handovers are not recommended, because the absence of neighboring cell measurements increases the risk of handover failure. However, blind handovers are appropriate in any of the following situations:

- The coverage area of the target cell of a blind handover includes the coverage area of the source cell, which ensures a successful handover.
- A UE does not support inter-frequency or inter-RAT measurements, in which case only blind handovers can be performed.
- Operators have strict delay requirements for features such as CSFB, and therefore gapassisted measurements must be skipped to save time. For CSFB, the eNodeB does not deliver a measurement configuration but forcibly performs a blind handover, if BlindHoSwitch under the ENodeBAlgoSwitch. HoModeSwitch parameter is turned on.

#### ■ NOTE

The **BlindHoSwitch** under the **ENodeBAlgoSwitch**. *HoModeSwitch* parameter applies only to CSFB.

Whether the eNodeB performs CSFB in the form of a blind handover may be subject to the UE location. For details about the procedure for CSFB in the form of a blind handover, see *CS Fallback Feature Parameter Description*.

 An emergency situation occurs. For example, a coverage-based inter-RAT blind handover might be triggered by event A2. For details, see 6.1.1 Coverage-based Handover.

In blind handovers, which exclude neighboring cell measurements, the eNodeB selects the target cell or target frequency based on the blind-handover priority configuration. **Figure 3-6** shows the selection procedure. The eNodeB selects the target system and frequency supported by the UE.

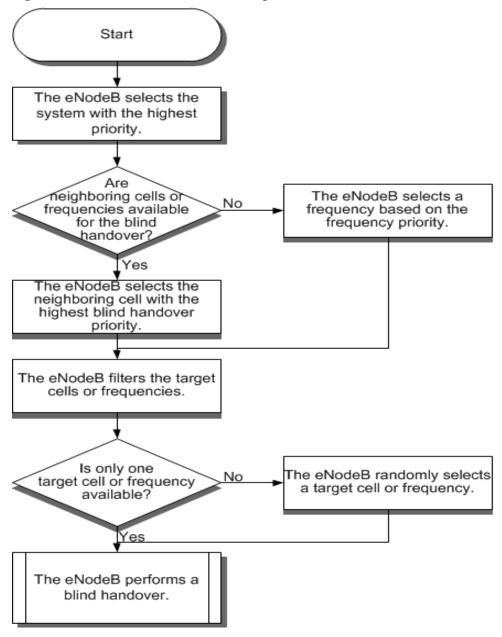


Figure 3-6 Selection of a blind-handover target

- 1. The eNodeB selects the system with the highest priority as the target system.
  - For a coverage-based handover or UL-quality-based handover, either an inter-frequency or inter-RAT blind handover can be triggered, and the priority of inter-frequency handover is higher than that of the inter-RAT handover. If no E-UTRAN cell can be selected as the target cell, the eNodeB selects an inter-RAT target cell.
  - For a coverage-based blind handover, E-UTRAN TDD and E-UTRAN FDD are considered as two independent systems, and the CnOperatorHoCfg. FirstRatPri and CnOperatorHoCfg. SecondRatPri parameters specify the priorities of E-UTRAN TDD and E-UTRAN FDD. If the CnOperatorHoCfg. FirstRatPri parameter is set to EUTRAN, E-UTRAN TDD and E-UTRAN FDD are not prioritized. If the CnOperatorHoCfg. SecondRatPri parameter is set to NULL, blind handovers are

- performed only to frequencies of the network specified the CnOperatorHoCfg. FirstRatPri parameter.
- If the eNodeB selects an inter-RAT system, it preferentially selects the system whose information has not been delivered in any measurement configurations.
- The CSFallBackBlindHoCfg.InterRatHighestPri,
   CSFallBackBlindHoCfg.InterRatSecondPri, and
   CSFallBackBlindHoCfg.InterRatLowestPri parameters specify the priorities of inter-RAT systems.
- 2. The eNodeB selects a neighboring cell or frequency for the blind handover. If the blind-handover priority of a cell is 0 or the EUTRANINTERNFREQ. ConnFreqPriority or GERANNFREQGROUP. ConnFreqPriority parameter is set to 0 for a frequency, the cell or frequency cannot be selected as the target cell or frequency. The priority of a cell can be the same as that of the frequency for a blind handover. The eNodeB by default assigns higher priorities to cells than frequencies in the event of blind handovers.
- 3. The eNodeB filters the blind-handover targets to prevent a blind handover to an inappropriate target.
  - Filtering of the target neighboring cells is the same as that in scenarios where the UE has performed measurements and reported measurement results. For details, see 3.2 Decision on a Handover.
  - When filtering target frequencies, the eNodeB filters out the frequencies whose PLMN
    is different from the PLMN of the serving cell. The eNodeB then identifies the PLMN
    information of the target frequencies based on the RAN sharing configuration of the
    neighboring frequencies and then filters these frequencies.
    - The EUTRANNFREQRANSHARE.*Mcc* and EUTRANNFREQRANSHARE.*Mnc* parameters together specify the PLMN ID of the operator that shares the neighboring E-UTRAN frequency.
    - The UTRANRANSHARE.*Mcc* and UTRANRANSHARE.*Mnc* parameters together specify the PLMN ID of the operator that shares the neighboring UTRAN frequency.
    - The **GERANRANSHARE**.*Mcc* and **GERANRANSHARE**.*Mnc* parameters together specify the PLMN ID of the operator that shares the neighboring GERAN frequency.
- 4. After filtering the blind-handover targets, the eNodeB performs the following operation:
- If neighboring cells for the blind handover are available, the eNodeB selects the neighboring cell with the highest blind-handover priority as the target cell.
- If multiple cells have the highest blind-handover priority, the eNodeB randomly selects one from them. If the blind handover needs to be performed in the form of a redirection, the eNodeB queries the frequency or frequency group on which the target cell operates and performs a redirection.
  - The **EutranInterFreqNCell**. *BlindHoPriority* parameter specifies the blind-handover priority of an E-UTRAN inter-frequency neighboring cell.
  - The **UTRANNCELL**. *BlindHoPriority* parameter specifies the blind-handover priority of a UTRAN neighboring cell.
  - The **GERANNCELL**. *BlindHoPriority* parameter specifies the blind-handover priority of a GERAN neighboring cell.
- If no neighboring cell for the blind handover is available, the eNodeB selects a frequency based on the EUTRANINTERNFREQ. ConnFreqPriority or GERANNFREQGROUP. ConnFreqPriority parameter setting and performs a redirection to the selected frequency.

- The EUTRANINTERNFREQ. ConnFreqPriority parameter specifies the frequency priority, based on which the eNodeB selects an E-UTRAN inter-frequency target frequency for blind redirection.
- The **UTRANNFREQ**. *ConnFreqPriority* parameter specifies the frequency priority, based on which the eNodeB selects a UTRAN target frequency for blind redirection.
- The GERANNFREQGROUP. ConnFreqPriority parameter specifies the frequency priority, based on which the eNodeB selects a GETRAN target frequency for blind redirection.

#### M NOTE

If RAN sharing is not configured for a neighboring frequency, the eNodeB cannot initiate a blind redirection to that frequency.

If inter-PLMN handover is enabled, the eNodeB considers the possibility of an inter-PLMN handover when it filters the PLMN IDs of the target frequencies. For details, see **3.9 Inter-PLMN Handovers**.

If the eNodeB cannot find a target cell for the blind handover or a target frequency for the blind redirection, the eNodeB does not perform the blind handover.

Huawei eNodeBs support the optional feature LOFD-001078 E-UTRAN to UTRAN CS/PS Steering. This feature can be used to steer CS/PS services in blind handovers to UTRAN.

If **UtranFreqLayerBlindSwitch** under the **FreqLayerSwtich** parameter is turned on, the eNodeB follows the procedure shown in **Figure 3-7** to select the target frequency.

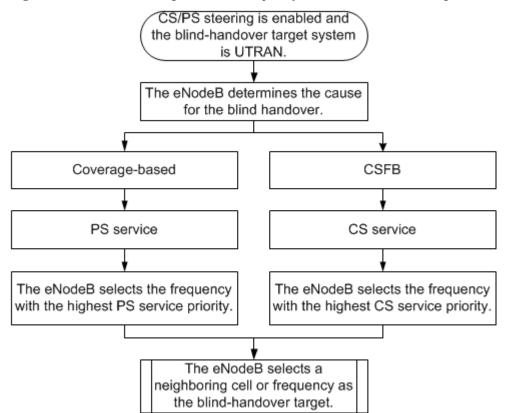


Figure 3-7 Selection of a target UTRAN frequency for CS/PS service steering

The eNodeB performs the following actions after it has selected UTRAN as the target system for the blind handover.

- 1. The eNodeB selects the target frequency based on the cause for the blind handover.
  - If a coverage-based inter-RAT blind handover to UTRAN is triggered for a UE that is performing PS services, the eNodeB preferentially selects the frequency with the highest PS service priority.
  - If an inter-RAT blind handover is triggered for CSFB to UTRAN, the eNodeB preferentially selects a frequency with the highest CS service priority.
- 2. The eNodeB sorts the target UTRAN frequencies by priority. A large priority value indicates a high priority. The value **Priority\_0** indicates that the corresponding frequency will not be selected as the target frequency.
  - The **UtranNFreq**.*PsPriority* parameter specifies the PS service priority of a neighboring UTRAN frequency.
  - The UtranNFreq. CsPriority parameter specifies the CS service priority of a neighboring UTRAN frequency.

#### 3.8 SPID-based Handovers Back to the HPLMN

Assume that operator B provides LTE coverage for the entire network while operator A provides LTE coverage for only a part of the network. Generally, when a UE subscribed to operator A moves out of its home PLMN (HPLMN), which is operator A's E-UTRAN, the roaming function enables the UE to access operator B's E-UTRAN. Now, a new function, subscriber profile ID-based (SPID-based) handover back to the HPLMN, is designed to hand the UE back to its HPLMN when the UE moves back to operator A's E-UTRAN.

SPID-based handover back to the HPLMN is a feature provided by the flexible user steering feature. For details about its principles, configuration, and prerequisites, see *Flexible User Steering Feature Parameter Description*. The following lists important information about such a handover:

- A UE can perform such a handover only if its HPLMN is a part of an E-UTRAN or UTRAN.
- After an SPID-based handover to the HPLMN is triggered, the eNodeB sorts the target frequencies according to the frequency priorities specified by the RATFREQPRIORITYGROUP. Priority parameter and selects the frequency with the highest priority.
- After such a handover is triggered, inter-frequency or inter-RAT measurements are started.
  The measurement configuration, handover decision, and handover execution processes are
  the same as those for an inter-frequency or inter-RAT handover. For details about the
  selection of handover-related parameters, see 5.2 Measurement Phase of an InterFrequency Handover and 6.2 Measurement Phase of an Inter-RAT Handover.
- After such inter-frequency or inter-RAT measurements are started, the eNodeB stops the measurement if the measurement is performed for a long time but no handover is triggered.
- Such a handover is also an inter-PLMN handover. For details about inter-PLMN handovers, see the next section.

# 3.9 Inter-PLMN Handovers

Generally, the PLMN of the target cell of a UE handover must be the same as the serving PLMN of the UE to ensure that the UE access request will not be rejected by the target network. As a result, before delivering a handover, CCO, or redirection command, the eNodeB checks the PLMN of the target cell. If the PLMN is the same as the serving PLMN of the UE, then it delivers the command.

If the target eNodeB of a handover works in RAN sharing with common carriers mode, the source eNodeB determines the PLMN of the UE after the UE accesses the target cell. The eNodeB sends the target cell the handover request that contains the PLMN of the target cell.

Currently, an operator may own multiple PLMNs, which it uses to provide coverage for different RATs. To enable UE handovers between PLMNs owned by the same operator, inter-PLMN handovers are introduced.

To allow inter-PLMN handovers, you need to turn on the switch **InterPlmnHoSwitch** (**InterPlmnHoSwitch**) under the **ENodeBAlgoSwitch**. *HoAlgoSwitch* parameter and configure source and target PLMN pairs for inter-PLMN handovers. To configure a source and target PLMN pair, you need to specify the source operator ID (**CNOPERATOR**. *CnOperatorId*), MCC of the target PLMN (**InterPlmnHoList**. *TarMcc*), MNC of the target PLMN (**InterPlmnHoList**. *TarMcc*). This source operator ID references a **CnOperator** MO, in which the MCC and MNC of the source PLMN are specified. When the conditions for a UE handover are met, the eNodeB will hand over the UE from the source PLMN to the target PLMN.

If InterPlmnHoSwitch under the ENodeBAlgoSwitch. HoAlgoSwitch parameter is turned on, RsvdSwPara0\_bit5 under the eNBRsvdPara. RsvdSwPara0 parameter is turned on, and the IE Handover Restriction List that the eNodeB receives from the MME includes information about the serving PLMN, the eNodeB considers "Equivalent PLMNs" equivalent to the serving PLMN. In this situation, inter-PLMN handovers can also be performed. For details about the IE Handover Restriction List, see section 9.2.1.22 in 3GPP TS 36.413 V10.1.0 (2011-03). Information about equivalent PLMNs is sent from the MME. To send the information, the MME must support delivering the IE Handover Restriction List.

# 3.10 E-UTRAN to UTRAN CS/PS Steering

On live networks, operators may have multiple UTRAN frequencies deployed and have plans to use different UTRAN frequencies for CS and PS services. Operators expect CS or PS services to be performed on specific UTRAN frequencies.

Huawei eNodeBs support E-UTRAN to UTRAN CS/PS Steering. When this feature is enabled, an eNodeB identifies services of UEs that fall back to UTRAN as CS services and services of UEs that perform coverage-based handovers to UTRAN as PS services. The eNodeB hands UEs with CS or PS services over to different UTRAN frequencies based on the CS or PS service priorities configured for the UTRAN frequencies.

This feature is enabled after LOFD-001078 E-UTRAN to UTRAN CS/PS Steering is activated.

E-UTRAN to UTRAN CS/PS Steering prevents further intra-RAT handovers in the UTRAN for service steering based on the frequency priorities configured on the UTRAN side. With E-UTRAN to UTRAN CS/PS Steering enabled, the eNodeB can adjust frequency priorities during the measurement phase of a measurement-based handover or during a blind handover. For details about priority adjustment, see the following references.

For Details About Priority Adjustment in		See	
Measurement-	For coverage reasons	6.2.3 Inter-RAT Measurement Priorities	
based handovers	For CSFB	CS Fallback Feature Parameter Description	
Blind handovers		3.7 Blind Handovers	

# 4 Intra-Frequency Handover

An intra-frequency handover consists of the following phases:

#### Measurement phase

The UE performs measurements according to the measurement configuration delivered from the eNodeB. When the signal quality in at least one intra-frequency neighboring cell meets the configured triggering condition of event A3, the UE sends the measurement result to the eNodeB.

#### Decision phase

The eNodeB generates a list of candidate cells and makes a handover decision based on the measurement result.

#### Execution phase

The handover from the serving cell to the target cell is executed.

Coverage- and load-based intra-frequency handovers use the same procedures. The major difference between them is the cause of the handover.

# 4.1 Cause of an Intra-Frequency Handover

Coverage-based intra-frequency handovers are addressed by the basic feature LBFD-00201801 Coverage Based Intra-frequency Handover. For details about the engineering guidelines for this feature, see **9.1 Coverage-based Intra-frequency Handover**.

When a UE establishes a radio bearer, the eNodeB sends the UE the intra-frequency measurement configuration, according to which the UE performs measurements. When the UE moves from the serving cell to an intra-frequency neighboring cell, the eNodeB initiates a coverage-based intra-frequency handover if the measurement results indicate that the signal quality in the neighboring cell is higher than that in the serving cell and the related threshold is reached. It is enabled or disabled by the switch IntraFreqCoverHoSwitch under the ENodeBAlgoSwitch. HoAlgoSwitch parameter.

# 4.2 Measurement Phase of an Intra-Frequency Handover

Coverage- and load-based intra-frequency handovers use the same measurement configuration except the CIO values.

The intra-frequency measurement results are the basis for the eNodeB to make an intra-frequency handover decision. After a UE establishes a radio bearer, the eNodeB delivers the measurement configuration to the UE in an RRC Connection Reconfiguration message. When the UE is in connected mode or a handover is complete, the eNodeB checks whether the measurement configuration for the UE needs to be updated.

- If the configuration needs to be updated, the eNodeB delivers the entirely or partially updated measurement configuration to the UE through an RRC Connection Reconfiguration message.
- If the configuration does not need to be updated, the eNodeB does not deliver updated measurement configuration. In this case, the UE uses the original measurement configuration.

Based on the measurement configuration, the UE measures all cells on the associated frequency within the measurement scope. If the measurement result meets the entering condition of event A3 for a period defined by time-to-trigger, the UE reports the measurement result to the eNodeB. After the reporting, if the measurement result meets the leaving condition of the event throughout the time-to-trigger, the UE stops reporting the measurement result to the eNodeB.

# 4.2.1 Intra-Frequency Measurement Configuration

In the measurement configuration for an intra-frequency handover, a measurement object is set for each frequency, and each measurement object can be linked to one or more reporting configurations. The measurement configuration includes the following basic information:

- Intra-frequency measurement object
   The information on a measurement object includes the frequency (CELL.DlEarfcn), measurement bandwidth (CellResel.MeasBandWidth), and frequency-specific offset (Cell.QoffsetFreq).
- Reporting configuration

The reporting configuration includes the following A3-related information:

- Offset for the event (IntraFreqHoGroup.IntraFreqHoA3Offset)
- Hysteresis (IntraFreqHoGroup.IntraFreqHoA3Hyst)
- Time-to-trigger (IntraFreqHoGroup.IntraFreqHoA3TimeToTrig)
- Triggering quantity (IntraRatHoComm.IntraFreqHoA3TrigQuan)
- Maximum number of cells to be reported (IntraRatHoComm.IntraRATHoMaxRprtCell)
- Interval between reports (IntraRatHoComm.IntraFreqHoRprtInterval)
- Number of periodical measurement reports to be sent after the event is triggered (IntraRatHoComm.IntraRATHoRprtAmount)
- Reporting quantity (IntraRatHoComm.IntraFreqHoA3RprtQuan)
- Measurement quantity configuration

The measurement quantity configuration defines the L3 filtering coefficients (HoMeasComm. Eutran Filter CoeffRSRP) and HoMeasComm. Eutran Filter CoeffRSRQ).

# 4.2.2 Event A3 Triggering

Intra-frequency handovers are triggered by event A3, which is reported in event-triggered periodical reporting mode.

The triggering of event A3 indicates that at least one neighboring cell is offset better than the serving cell. Section 5.5.4.4 in 3GPP TS 36.331 V10.1.0 (2011-03) defines the entering and leaving conditions of event A3 as follows:

- Entering condition: Mn + Ofn + Ocn Hys > Ms + Ofs + Ocs + Off
- Leaving condition: Mn + Ofn + Ocn + Hys < Ms + Ofs + Ocs + Off

The variables in the preceding formulas are described as follows:

- *Mn* is the measurement result of the neighboring cell.
- Of n is the frequency-specific offset for the frequency of the neighboring cell. It is specified by the CELL. Qoffset Freq parameter. This variable is contained in the associated measurement object IE in the measurement configuration.
- Ocn is the cell-specific offset (that is, CIO) for the neighboring cell. It is specified by the EUTRANINTRAFREQNCELL. CellIndividualOffset parameter. If the value of this parameter is not 0, the eNodeB delivers this parameter to the UE through the measurement configuration. If the value is 0, the eNodeB does not deliver this parameter. In this case, the UE uses the default value 0. To initiate a load-based intra-frequency handover, the eNodeB changes the CIO values of the neighboring cell and serving cell based on the cell load.
- *Ms* is the measurement result of the serving cell.
- Of s is the frequency-specific offset for the serving frequency. It is specified by the CELL. QoffsetFreq parameter. This variable is contained in the associated measurement object IE in the measurement configuration.
- *Ocs* is the cell-specific offset for the serving cell. It is specified by the Cell. *CellSpecificOffset* parameter. This parameter is contained in the associated measurement object IE in the delivered measurement configuration.

- Hys is the hysteresis for event A3. It is specified by the IntraFreqHoGroup.IntraFreqHoA3Hyst parameter and contained in the delivered measurement configuration.
- Off is the offset for event A3. It is specified by the IntraFreqHoGroup.IntraFreqHoA3Offset parameter. This A3-specific parameter adjusts the probability of triggering handovers. The sum of the value of this parameter and the measurement result is used in the evaluation of event reporting. This parameter is contained in the associated measurement object IE in the delivered measurement configuration. The value of this parameter can be either positive or negative. A positive value lowers the probability of triggering the event for handovers, and a negative value raises the probability.
- For *Mn* and *Ms* in the preceding formulas, the quantity is specified by the **IntraRatHoComm**.*IntraFreqHoA3TrigQuan* parameter. The options are RSRP and RSRQ. According to section 6.3.5 in 3GPP TS 36.331 V10.1.0 (2011-03), this parameter is contained in the reporting configuration of the measurement configuration.

For example: Both *Hys* and *Off* are set to 2 dB. Tests show that the signal quality in the source cell always drops rapidly and the signal quality in the target cell always rises quickly during handovers. In this situation, to facilitate handovers from the serving cell to the neighboring cell, the eNodeB sets *Ocs* to -1 dB and *Ocn* to 1 dB. In addition, *Ofs* and *Ofn* for intra-frequency handovers are the same and assume that they take the value of 0 dB. Therefore, in this situation, the entering condition of event A3 is as follows:

$$Mn + 0 + 1 - 2 > Ms + 0 - 1 + 2$$

This means that the entering condition is met provided that the measurement result of the neighboring cell is 2 dB greater than that of the serving cell.

**Figure 4-1** shows the event A3 triggering mechanism. If the entering condition of the event is met throughout the time specified by **IntraFreqHoGroup**. *IntraFreqHoA3TimeToTrig*, the UE reports event A3 and starts the event-triggered periodical reporting. Then, if the leaving condition of the event is met throughout the time specified by

**IntraFreqHoGroup**. *IntraFreqHoA3TimeToTrig*, the UE stops reporting event A3. This process involves the following parameters:

- IntraRatHoComm.IntraFreqHoA3RprtQuan: specifies the reporting quantity for intrafrequency handover event A3. This refers to the quantity to be included in the measurement reports.
- IntraRatHoComm.IntraFreqHoRprtInterval: specifies the interval between the reports that are triggered by event A3. This parameter controls the frequency of the periodical measurement reports sent by the UE. This reduces the signaling load on the radio interface.
- IntraRatHoComm. IntraRATHoMaxRprtCell: specifies the maximum number of cells to be included in the measurement report for an intra-RAT handover. In the case of event A3 for an intra-frequency handover within the E-UTRAN, this parameter specifies the maximum number of cells to be included in the measurement report of event A3 in order of the signal quality associated with the A3 triggering quantity in the cells.
- IntraRatHoComm.IntraRATHoRprtAmount: specifies the number of event-triggered periodical reports for an intra-RAT handover. The number of event-triggered periodical reports is set to restrict handover retries.

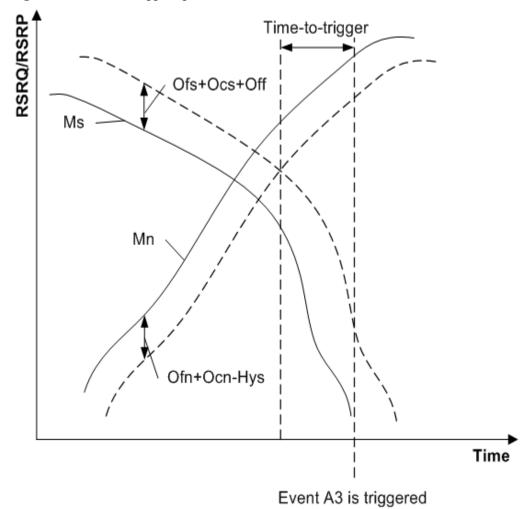


Figure 4-1 Event A3 triggering mechanism

# 4.3 Decision Phase of an Intra-Frequency Handover

The eNodeB decides whether to perform an intra-frequency handover for a UE. For details, see **3.2 Decision on a Handover**.

The eNodeB does not perform an intra-frequency handover in the form of a blind handover.

# 4.4 Execution Phase of an Intra-Frequency Handover

The intra-frequency handover execution is controlled by the eNodeB, and the path switching process is performed jointly by the UE and the eNodeB.

# 4.4.1 Execution Policy

After making an intra-frequency handover decision, the eNodeB initiates a handover towards the best cell among the candidate cells. By checking whether the X2 interface is available between the source and target eNodeBs and whether the two eNodeBs are connected to the same MME, the source eNodeB determines whether to initiate the handover over the X2 interface or over the S1 interface.

If the handover is successfully initiated, the source eNodeB performs DL data forwarding. After the forwarding is complete, the target eNodeB (in the case of the handover initiated over the X2 interface) or the MME (in the case of the handover initiated over the S1 interface) responds with a resource release message, to request the source eNodeB to release the associated resources. If the handover fails to be initiated, the UE performs a cell selection procedure and then initiates a procedure of RRC connection re-establishment towards the selected cell.

# 4.4.2 Retry and Penalty

In the execution phase of an intra-frequency handover, the eNodeB tries the next best cell among the candidate cells to initiate the handover if the admission to the target cell fails. If the handover still fails to be initiated after the eNodeB tries all the candidate cells, the eNodeB waits for the next set of event-triggered periodical reports and, if necessary, performs the next cycle of handover attempts. The eNodeB imposes a penalty on a cell where a non-resource-induced admission failure has occurred. In a handover attempt, the eNodeB does not send a handover request to such a cell. This increases the handover success rate and reduces the number of dropped calls caused by handover failures.

After the eNodeB receives, from a UE, a measurement report containing information about a cell on which penalty has been imposed for 10 times, the eNodeB can send a handover request to this cell again, which is called a retry. If a non-resource-induced admission failure occurs in this cell again, the eNodeB will send no more handover requests for the UE to this cell. The purpose is to prevent a sharp increase in the call drops caused by unexpected problems.

If a UE reestablishes its RRC connection to the source cell after a handover fails due to radio interface failure, the eNodeB performs handover attempts for this UE based on the new measurement report sent from the UE. If the target cell is the same as in a previous handover attempt, this is also a retry. If 10 consecutive handover retries in the same target cell all fail due to radio interface failures, the eNodeB will send no more handover requests for this UE to this target cell. The purpose is to prevent a sharp increase in the call drops caused by unexpected problems.

The retry and penalty mechanism for inter-frequency and inter-RAT handovers is the same as that for intra-frequency handovers.

#### ■ NOTE

- Based on the cause of failure, admission failure can be classified into two types: resource-induced and
  non-resource-induced. After a handover request is sent from the source cell to the target cell, the
  admission control of the target cell is performed. If the target cell responds with a resource preparation
  failure message, this admission failure is called resource-induced failure. If the target cell responds
  with other failure messages or does not return any message within a specified time, this admission
  failure is called non-resource-induced failure.
- The radio interface failure is the handover procedure failure caused by failure in transmitting signaling
  messages over the radio interface after the source eNodeB sends the handover command.

# 4.5 Signaling Procedure of a Typical Intra-Frequency Handover

# 4.5.1 Signaling Procedure of a Successful Handover

Intra-frequency handovers are applicable to intra-eNodeB handovers, intra-MME inter-eNodeB handovers, and inter-MME inter-eNodeB handovers. For either of the latter two handover types,

the signaling procedure varies depending on whether the X2 interface is available between the eNodeBs.

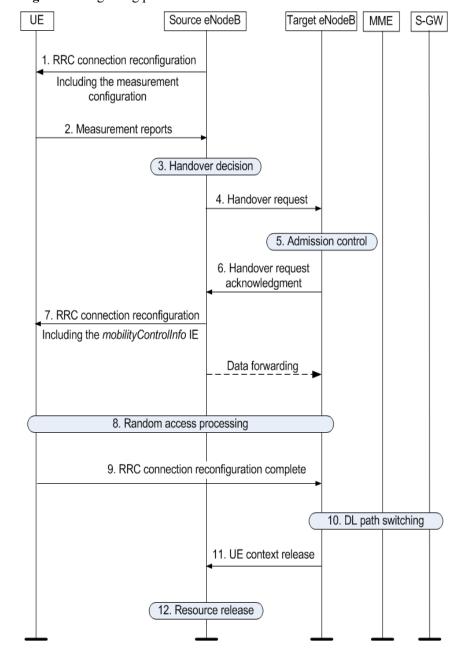


Figure 4-2 Signaling procedure of an intra-MME inter-eNodeB handover

The signaling procedure shown in Figure 4-2 is described as follows:

- When the UE establishes a radio bearer, the source eNodeB sends the UE an RRC
  Connection Reconfiguration message that contains the measurement configuration. The
  measurement configuration controls the measurements of the UE in connected mode.
- 2. The UE sends measurement reports to the source eNodeB based on the measurement results.
- 3. The source eNodeB makes a handover decision based on the measurement reports.

Description

- 4. After deciding that a handover is preferred, the source eNodeB sends a Handover Request message to the target eNodeB, to request the target eNodeB to prepare for the handover.
- 5. The target eNodeB makes admission decisions. If resources can be granted by the target eNodeB, the target eNodeB performs admission control depending on the QoS information about the Evolved Packet System (EPS) bearer.
- 6. The target eNodeB prepares L1/L2 resources for the handover and then sends a Handover Request Acknowledge message to the source eNodeB.
- 7. The source eNodeB sends the UE an RRC Connection Reconfiguration message that contains the MobilityControlInfo IE, indicating that the handover should start.

#### NOTE

Data forwarding starts when the source eNodeB sends the UE an RRC Connection Reconfiguration message that contains the MobilityControlInfo IE.

- 8. The UE performs a procedure of random access towards the target eNodeB, to achieve the UL synchronization of the UE with the target eNodeB.
- 9. After successfully accessing the target cell, the UE sends the target eNodeB an RRC Connection Reconfiguration Complete message, indicating that the handover procedure is complete. At this time, the target eNodeB can start sending data to the UE.
- 10. The DL data path switching is performed.
- 11. The target eNodeB sends the source eNodeB a UE Context Release message, to inform the source eNodeB of the success of the handover and to trigger the release of the resources at the source eNodeB.
- 12. After receiving the UE Context Release message, the source eNodeB releases the radio and control-plane resources associated with the UE context.

In the case of an intra-MME handover between eNodeBs where the X2 interface is unavailable, the signaling and the data forwarding between the two eNodeBs as shown in **Figure 4-2** are implemented over the S1 interface, which is an indirect route compared with the route over the X2 interface.

In the case of an inter-MME handover between eNodeBs where the X2 interface is available, the signaling between the two eNodeBs as shown in **Figure 4-2** is implemented through the S1 interface and Evolved Packet Core network (EPC), which is an indirect route compared with the route over the X2 interface. In addition, the data forwarding between them is implemented over the X2 interface.

In the case of an inter-MME handover between eNodeBs where the X2 interface is unavailable, the signaling and the data forwarding between the two eNodeBs as shown in **Figure 4-2** are implemented over the S1 interface and EPC, which is an indirect route compared with the route over the X2 interface.

#### 4.5.2 RRC Connection Re-Establishment After a Handover Failure

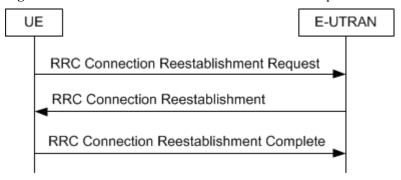
According to 3GPP TS 36.331, the UE performs a cell selection procedure and then initiates a procedure of RRC connection re-establishment towards the selected cell, after a handover failure. The RRC connection re-establishment may be successful only when the selected cell is one of the prepared cells.

The RRC connection re-establishment procedure is of two types: successful re-establishment and failed re-establishment.

A successful re-establishment procedure, according to **Figure 4-3**, consists of the following steps:

- 1. The UE sends an RRC Connection Reestablishment Request message to the eNodeB to which the prepared cell belongs, to request the re-establishment of the RRC connection.
- 2. The eNodeB responds with an RRC Connection Reestablishment message to indicate that it accepts the request.
- 3. The UE performs the RRC connection re-establishment and sends an RRC Connection Reestablishment Complete message.

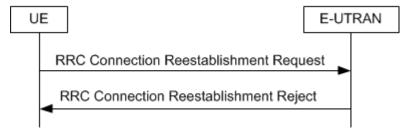
Figure 4-3 Successful RRC connection re-establishment procedure



If the RRC connection re-establishment fails, the UE enters the idle mode. A failed re-establishment procedure, according to **Figure 4-4**, consists of the following steps:

- 1. The UE sends an RRC Connection Reestablishment Request message to the eNodeB to which the prepared cell belongs, to request the re-establishment of the RRC connection.
- 2. The eNodeB responds with an RRC Connection Reestablishment Reject message to indicate that it rejects the request.

Figure 4-4 Failed RRC connection re-establishment procedure



# 5 Inter-Frequency Handover

An inter-frequency handover consists of the following phases:

- Measurement triggering/stopping phase
  - The measurement triggering/stopping phase varies according to the cause of the inter-frequency handover.
- Measurement phase
  - The eNodeB delivers the inter-frequency measurement configuration to the UE, and the UE performs inter-frequency measurements accordingly. When the signal quality in at least one inter-frequency neighboring cell meets the configured triggering condition of event A3, A4, or A5, the UE reports the measurement results.
- Decision phase
  - The eNodeB checks the measurement results and generates a list of candidate cells.
- Execution phase
  - The handover from the serving cell to the target cell is executed.

# 5.1 Measurement Triggering/Stopping Phase of an Inter-Frequency Handover

# 5.1.1 Coverage-based Handover

Coverage-based inter-frequency handovers are addressed by the basic feature LBFD-00201802 Coverage Based Inter-frequency Handover. For details about the engineering guidelines for this feature, see **9.2 Coverage-based Inter-frequency Handover**.

The eNodeB delivers the measurement configuration related to event A2 to a UE in connected mode to monitor the signal quality of the serving cell. The eNodeB may deliver measurement configurations for two types of events A2 to the UE: event A2 for inter-frequency measurement, and event A2 for blind handover. If the signal quality in the serving cell is lower than the specified threshold, the UE reports event A2 for inter-frequency measurement. After receiving the report, the eNodeB delivers an inter-frequency measurement configuration to instruct the UE to perform inter-frequency measurement. If the signal quality in the serving cell further deteriorates and the eNodeB does not perform a handover for the UE, the UE reports event A2 for blind handover. After receiving the report, the eNodeB considers that the serving cell can no longer provide services for the UE and performs a blind handover. The switch InterFreqCoverHoSwitch under the ENodeBAlgoSwitch.HoAlgoSwitch parameter specifies whether coverage-based inter-frequency handover is enabled.

#### Inter-Frequency Measurement Triggering by Event A2

In a coverage-based inter-frequency handover, event A2 triggers inter-frequency measurements. The triggering of event A2 indicates that the signal quality in the serving cell is lower than a specified threshold. When the triggering condition of event A2 is met, event A2 is reported to the eNodeB. After this, the eNodeB sends the inter-frequency measurement configuration to the UE. Section 5.5.4.3 in 3GPP TS 36.331 V10.1.0 (2011-03) defines the entering and leaving conditions of event A2 as follows:

- Entering condition: Ms + Hys < Thresh
- Leaving condition: *Ms Hys* > *Thresh*

The variables in the preceding formulas are described as follows:

- *Ms* is the measurement result of the serving cell.
- Hys is the hysteresis for event A2. It is specified by the InterFreqHoGroup.InterFreqHoA1A2Hyst parameter.
- Thresh is the threshold for event A2. It can be specified by either the InterFreqHoGroup. InterFreqHoA2ThdRSRP parameter or the InterFreqHoGroup. InterFreqHoA2ThdRSRQ parameter, depending on the setting of the IntraRatHoComm. InterFreqHoA1A2TrigQuan parameter (triggering quantity for interfrequency measurement events A1 and A2). The threshold parameters InterFreqHoGroup. InterFreqHoA2ThdRSRP and InterFreqHoGroup. InterFreqHoA2ThdRSRQ correspond to the triggering quantity settings RSRP and RSRQ, respectively.

**Figure 5-1** shows the event A2 triggering mechanism. For inter-frequency measurement event A2, the eNodeB specifies two sets of parameters, with respect to the RSRP and RSRQ quantities.

When IntraRatHoComm.InterFreqHoA1A2TrigQuan is set to BOTH, event A2 is reported and the eNodeB delivers the inter-frequency measurement configuration to the UE if the signal quality in the serving cell is lower than the threshold (either the value of

InterFreqHoGroup.InterFreqHoA2ThdRSRP or the value of

**InterFreqHoGroup**. *InterFreqHoA2ThdRSRQ*) minus the hysteresis throughout the time-to-trigger specified by the **InterFreqHoGroup**. *InterFreqHoA1A2TimeToTrig* parameter. When **IntraRatHoComm**. *InterFreqHoA1A2TrigQuan* is set to **RSRP** or **RSRQ**, event A2 is reported if the signal quality in the serving cell is lower than the related threshold minus the hysteresis throughout the time-to-trigger specified by the

InterFreqHoGroup.InterFreqHoA1A2TimeToTrig parameter.

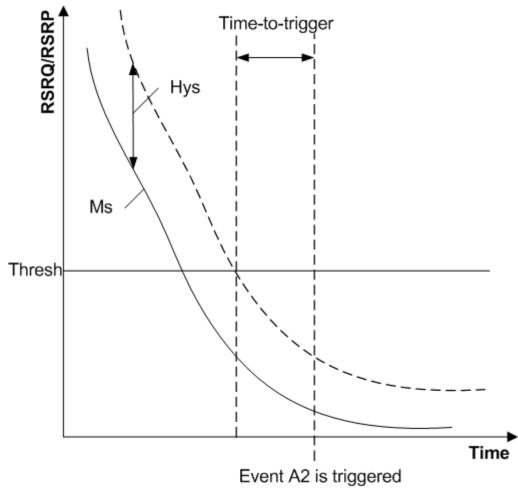


Figure 5-1 Event A2 triggering mechanism

After event A2 is reported, the eNodeB delivers the measurement configuration related to event A3, A4, or A5 to the UE. For details about the triggering of inter-frequency handovers, see **5.2.3 Inter-Frequency Handover Triggering**.

The eNodeB may not deliver the measurement configuration related to inter-frequency measurement event A2. For details, see **Blind-Handover Triggering by Event A2**.

#### Target-based Setting of Inter-Frequency Event A2

Event A2 specific to LTE FDD and LTE TDD frequencies can be configured on the eNodeB. This ensures that the eNodeB can preferentially perform a coverage-based handover to an LTE FDD or LTE TDD frequency.

#### The CnOperatorHoCfg.FddIfHoA2ThdRsrpOffset and

**CnOperatorHoCfg**. *TddIfHoA2ThdRsrpOffset* parameters specify the offsets of the RSRP thresholds for LTE FDD and LTE TDD inter-frequency measurement events A2 relative to the RSRP threshold for inter-frequency measurement event A2, respectively. If

CnOperatorHoCfg.FddIfHoA2ThdRsrpOffset or

CnOperatorHoCfg. TddIfHoA2ThdRsrpOffset is not set to 0, the RSRP threshold delivered by the eNodeB is the sum of the CnOperatorHoCfg. FddIfHoA2ThdRsrpOffset or CnOperatorHoCfg. TddIfHoA2ThdRsrpOffset parameter value and the RSRP threshold for inter-frequency measurement event A2.

#### The CnOperatorHoCfg.FddIfHoA2ThdRsrpOffset and

CnOperatorHoCfg. TddIfHoA2ThdRsrpOffset parameters can be set to different values, in which case the eNodeB delivers two RSRP thresholds for inter-frequency measurement event A2. When a UE reports LTE FDD inter-frequency measurement event A2, the eNodeB delivers a measurement configuration for LTE FDD inter-frequency measurement. When a UE reports LTE TDD inter-frequency measurement event A2, the eNodeB delivers a measurement configuration for LTE TDD inter-frequency measurement. If the parameters are set to the same value, the eNodeB delivers one RSRP threshold for inter-frequency measurement event A2. When a UE reports event A2, the eNodeB delivers measurement configurations for both LTE FDD and LTE TDD inter-frequency measurement.

#### $\square$ NOTE

- The CnOperatorHoCfg. FddIfHoA2ThdRsrpOffset and CnOperatorHoCfg. TddIfHoA2ThdRsrpOffset parameters do not affect the RSRQ thresholds for inter-frequency measurement event A2.
- If the calculated RSRP threshold for inter-frequency measurement event A2 is less than the protocol-specified minimum value, the protocol-specified minimum value is used. If the calculated RSRP threshold for inter-frequency measurement event A2 is greater than the protocol-specified maximum value, the protocol-specified maximum value is used.
- If CnOperatorHoCfg. FddIfHoA2ThdRsrpOffset or CnOperatorHoCfg. TddIfHoA2ThdRsrpOffset is set to -100, the calculated RSRP threshold is the protocol-specified minimum value. It is difficult for UEs to stay in connected mode if the protocol-specified minimum value is used. Therefore, if CnOperatorHoCfg. FddIfHoA2ThdRsrpOffset or CnOperatorHoCfg. TddIfHoA2ThdRsrpOffset is set to -100, LTE FDD or LTE TDD inter-frequency measurement is not performed.
- In RAN sharing with common carriers mode, the CnOperatorHoCfg. FddIfHoA2ThdRsrpOffset and CnOperatorHoCfg. TddIfHoA2ThdRsrpOffset parameters can be set to different values for operators, in which case the operators use different RSRP thresholds for inter-frequency measurement event A2.

#### **Inter-Frequency Measurement Stopping by Event A1**

In a coverage-based inter-frequency handover, event A1 may stop inter-frequency measurements. The triggering of this event indicates that the signal quality in the serving cell is higher than a specified threshold. When the triggering condition of event A1 is met, event A1 is reported to the eNodeB. After this, the eNodeB may instruct the UE to stop the inter-frequency measurements. Section 5.5.4.2 in 3GPP TS 36.331 V10.1.0 (2011-03) defines the entering and leaving conditions of event A1 as follows:

• Entering condition: *Ms* - *Hys* > *Thresh* 

• Leaving condition: Ms + Hys < Thresh

The variables in the preceding formulas are described as follows:

- Ms is the measurement result of the serving cell.
- *Hys* is the hysteresis for event A1. It is specified by the **InterFreqHoGroup**. *InterFreqHoA1A2Hyst* parameter.
- Thresh is the threshold for event A1. It can be specified by either the InterFreqHoGroup.InterFreqHoA1ThdRSRP parameter or the InterFreqHoGroup.InterFreqHoA1ThdRSRQ parameter, depending on the setting of the IntraRatHoComm.InterFreqHoA1A2TrigQuan parameter (triggering quantity for interfrequency measurement events A1 and A2). The threshold parameters InterFreqHoGroup.InterFreqHoA1ThdRSRP and InterFreqHoGroup.InterFreqHoA1ThdRSRQ correspond to the triggering quantity settings RSRP and RSRQ, respectively.

Figure 5-2 shows the event A1 triggering mechanism.

When IntraRatHoComm.InterFreqHoA1A2TrigQuan is set to RSRP or RSRQ, event A1 is reported if the RSRP or RSRQ in the serving cell remains higher than the RSRP or RSRQ threshold plus the hysteresis throughout the time-to-trigger period specified by the InterFreqHoGroup.InterFreqHoA1A2TimeToTrig parameter. If the eNodeB receives an event A1 report, it stops the coverage-based inter-frequency measurement.

When IntraRatHoComm.InterFreqHoA1A2TrigQuan is set to Both, event A1 is reported if the signal quality in the serving cell remains higher than the threshold (either the value of InterFreqHoGroup.InterFreqHoA1ThdRSRP) or the value of InterFreqHoGroup.InterFreqHoA1ThdRSRQ) plus the hysteresis throughout the time-to-trigger period. If neither of the RSRP and RSRQ measurement results in an event A1 report meets the leaving condition for event A1, the eNodeB stops the coverage-based inter-frequency measurement.

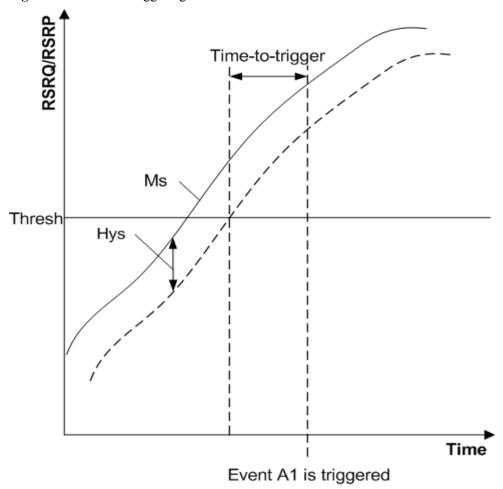


Figure 5-2 Event A1 triggering mechanism

The event A1 threshold must be higher than the event A2 threshold to ensure that event A1 can stop inter-frequency measurements in coverage-based inter-frequency handovers. If the

CnOperatorHoCfg.FddIfHoA2ThdRsrpOffset or

**CnOperatorHoCfg**. *TddIfHoA2ThdRsrpOffset* parameter is set, ensure that the event A1 threshold is higher than or equal to the sum of the

CnOperatorHoCfg.FddIfHoA2ThdRsrpOffset or

**CnOperatorHoCfg**. *TddIfHoA2ThdRsrpOffset* parameter value and the RSRP threshold for inter-frequency measurement event A2.

#### Blind-Handover Triggering by Event A2

In coverage-based inter-frequency or inter-RAT handovers, the eNodeB can deliver a measurement configuration related to event A2 for blind handovers if the signal quality of the serving cell deteriorates to a specified level but the UE has not yet been handed over. If the **EmcInterFreqBlindHoSwitch** option of the **ENodeBAlgoSwitch**. *HoAlgoSwitch* parameter is selected, the eNodeB selects an inter-frequency target cell when the UE sends a report of event A2 for a blind handover.

If the **EmcBlindHoA1Switch** option of the **ENodeBAlgoSwitch**. *HoAlgoSwitch* parameter is selected, the eNodeB records the reports of event A2 for blind handovers during handover preparation and handles them if the handover preparation fails. In addition, the eNodeB also delivers the measurement configuration related to event A1 used to stop a blind handover in case

Description

Event A2 for blind handover can trigger both inter-frequency and inter-RAT blind handovers. The event A2 thresholds and processing mechanisms are the same for inter-frequency and inter-RAT blind handovers.

The CellHoParaCfg.BlindHoA1A2ThdRsrp and CellHoParaCfg.BlindHoA1A2ThdRsrq parameters specify the RSRP threshold and RSRQ threshold, respectively, for events A1 and A2 that are used for coverage-based inter-frequency and inter-RAT blind handovers.

Other parameters related to events A1 and A2 are specified by parameters for inter-RAT blind handovers: the triggering quantity is specified by the

INTERRATHOCOMM. *InterRatHoA1A2TrigQuan* parameter, the hysteresis by INTERRATHOCOMMGROUP. *InterRatHoA1A2Hyst*, and the time-to-trigger by the INTERRATHOCOMMGROUP. *InterRatHoA1A2TimeToTrig* parameter.

The eNodeB delivers event A2 for blind handover but not event A2 for inter-frequency or inter-RAT measurement if both the following conditions are met:

- The UE does not support inter-frequency or inter-RAT measurement.
- The threshold of event A2 used for inter-frequency or inter-RAT measurement is lower than the threshold of event A2 for blind handover.

The blind handover is implemented only by performing a redirection procedure, because an event A2-triggered blind handover indicates an urgent situation where the serving cell cannot provide the required service quality. However, if VoIP services are running on the UE that reports event A2 for blind handover, the eNodeB does not perform an inter-frequency redirection for the UE.

#### 5.1.2 Load-based Handover

For details about the engineering guidelines for this feature, see *MLB Feature Parameter Description*.

The triggering and stopping of inter-frequency measurements for a load-based handover are determined by the MLB algorithm. When the load of the serving cell reaches the threshold for inter-frequency load balancing, the MLB algorithm selects a number of UEs based on the resource usage and then instructs the UEs to perform gap-assisted inter-frequency measurements for load-based handovers. The MLB algorithm also determines the cells on which the measurements need to be performed. The eNodeB delivers the measurement configuration to specific UEs based on the outputs from the MLB algorithm, that is, the information about the UEs and the target cells of measurements. For details about how to determine the UEs and cells, see *MLB Feature Parameter Description*.

After load-based inter-frequency measurements are triggered, the eNodeB does not process the outputs from the MLB algorithm if the eNodeB detects that measurement gaps have been set up and that there are measurement gaps for other types of handovers. Otherwise, the eNodeB sets up the measurement gaps for load-based handovers.

If a UE has performed gap-assisted measurements for a load-based inter-frequency handover for a long time but fails to trigger such a handover, the eNodeB will release the measurement gaps for load-based handovers to stop the load-based inter-frequency measurements.

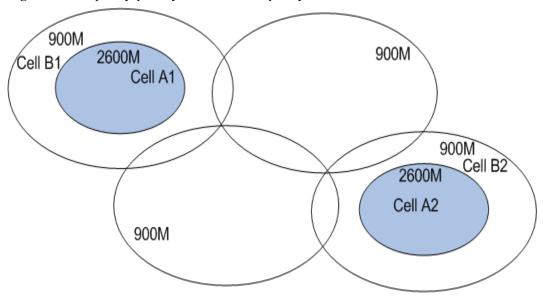
When the measurement gaps for load-based inter-frequency handovers are released, the gap-assisted measurements for other types of handovers are not affected. The measurement gap configuration stops only when all gap-assisted measurements are stopped.

# 5.1.3 Frequency-Priority-based Handover

For details about the engineering guidelines for this feature, see **9.3 Frequency-Priority-based Inter-Frequency Handover**.

Frequency-priority-based inter-frequency handovers (referred to as frequency-priority-based handovers in this section) are performed from a low band (for example, the 900 MHz band) to a high band (for example, the 2600 MHz band). These handovers are performed to preferentially carry services in the high band while sparing the low band for continuous coverage. **Figure 5-3** shows a frequency-priority-based inter-frequency handover.

Figure 5-3 Frequency-priority-based inter-frequency handover



Frequency-priority-based handover is enabled or disabled by the switch **FreqPriorIFHOSwitch** under the **CellAlgoSwitch**. *FreqPriorityHoSwitch* parameter.

The **EutranInterFreqNCell**. *BlindHoPriority* parameter must be set to a value within the range of 17 to 32 for neighboring cells that will be target cells of frequency-priority-based handovers. This parameter can be set to a value within the range of 0 to 16 for other types of handover.

Event A1 triggers measurements for frequency-priority-based handovers. The eNodeB delivers A1-related parameters to UEs only when the switch **FreqPriorIFHOSwitch** under the **CellAlgoSwitch**. *FreqPriorityHoSwitch* parameter is turned on.

The IntraRatHoComm. FreqPriInterFreqHoA1TrigQuan parameter specifies the event A1 triggering quantity for frequency-priority-based measurement, which can be either RSRP or RSRQ. If the triggering quantity is RSRP, the threshold for this event is specified by the InterFreqHoGroup. FreqPriInterFreqHoA1ThdRsrp parameter. If the triggering quantity is RSRQ, the threshold for this event is specified by the

 $InterFreqHoGroup. \emph{FreqPriInterFreqHoA1ThdRsrq} \ parameter.$ 

Other parameters related to event A1 for frequency-priority-based measurement are the same as those for coverage-based inter-frequency measurement.

Description

After receiving an event A1 report from a UE, the eNodeB proceeds as follows:

- If frequency-priority-based blind handover is enabled (that is, the switch FreqPriorIFBlindHOSwitch under the CellAlgoSwitch.FreqPriorityHoSwitch parameter is turned on), the eNodeB selects the neighboring cell with the highest blind-handover priority to perform a handover. However, if load balancing from that neighboring cell to the serving cell is in progress, the eNodeB selects the neighboring cell with the second highest priority. If the eNodeB traverses all the candidate cells but fails to find a cell that fulfills the criteria, the eNodeB will decide not to perform a handover.
- If frequency-priority-based blind handover is disabled, the eNodeB delivers the interfrequency measurement configuration to the UE. If the triggering condition of event A4 is fulfilled, the UE sends a frequency-priority-based event A4 report to the eNodeB. The target frequencies included in the measurement configuration are those of the neighboring cells whose blind-handover priorities range from 17 to 32. If the number of target frequencies to be measured exceeds the specified limit, the eNodeB sorts the frequencies according to the blind-handover priorities and selects the frequencies of the neighboring cells with high blind-handover priorities. The follow-up procedure is similar to the coverage-based handover procedure. For details, see 5.2.3 Inter-Frequency Handover Triggering. If the target cell has a priority from 17 to 32, the eNodeB decides to perform a handover to the target cell. Otherwise, the eNodeB decides not to perform a handover.

Before delivering the measurement configuration related to event A4 and the measurement gap configuration, the eNodeB checks whether the measurement gap has been activated for use in other types of handovers. If the measurement gap has been activated, the eNodeB delivers only the measurement configuration related to event A4. If not, the eNodeB delivers both.

In frequency-priority-based inter-frequency handovers, events A1 and A2 are used to start and stop inter-frequency measurements, respectively. The triggering quantities for events A1 and A2 are the same and delivered to the UE at the same time.

Event A2 in frequency-priority-based inter-frequency handovers uses the same set of parameters as event A2 in coverage-based inter-frequency handovers, except that their thresholds differ. The threshold for event A2 in frequency-priority-based inter-frequency handovers varies depending on its triggering quantity:

- If the triggering quantity is RSRP, this threshold is specified by the InterFreqHoGroup. FreqPriInterFreqHoA2ThdRsrp parameter.
- If the triggering quantity is RSRQ, this threshold is specified by the InterFreqHoGroup. FreqPriInterFreqHoA2ThdRsrq parameter.

If event A2 is reported after frequency-priority-based inter-frequency measurements have started, the eNodeB stops the measurements.

When the measurement gaps for frequency-priority-based inter-frequency handovers are released, the gap-assisted measurements for other types of handovers are not affected. The measurement gap configuration stops only when all gap-assisted measurements are stopped.

#### 5.1.4 Distance-based Handover

Distance-based inter-frequency handovers are addressed by the basic feature LBFD-00201804 Distance Based Inter-frequency Handover. For details about the engineering guidelines for this feature, see **9.4 Distance-based Inter-frequency Handover**.

In the early phase of LTE network construction, operators may use different frequency bands to cover different areas. Assume that the 1800 MHz band is used to cover the urban area and the 800 MHz band is used to cover the suburban area. If there are only a few buildings along the

border between the urban area and the suburban area, the RF signals from an urban cell on the 1800 MHz band may be able to travel a long distance (typically three times the distance between sites), causing cross-cell coverage to a suburban cell on the 800 MHz band. However, there are often restrictions on neighbor relationships, for example, the layer difference or distance between the serving cell and its neighboring cell cannot exceed a certain limit. Therefore, it is probable that the 1800 MHz cell does not have a neighbor relationship with the 800 MHz cell but they overlap in coverage. If this is true, call drops may occur. Distance-based inter-frequency handover applies in high- and low-band hybrid networks where cells on the low band cover a larger area than cells on the high band and severe cross-cell coverage occurs. In a distance-based inter-frequency handover, the deviation in the estimated distance between the UE and eNdoeB is about 100 to 150 meters.

Cell 1 has a neighboring relationship with cell 2.

Cell 1 does not have a neighboring relationship with cell 4.

Figure 5-4 Illustration for the motivation behind distance-based handovers

As shown in **Figure 5-4**, F1 and F2 indicate two frequencies: Cell 1 uses F1, and Cells 2, 3, and 4 all use F2. The gray area in the figure (Cell 1) is covered by F1, while the light yellow area (Cells 2, 3, and 4) is covered by F2. It is obvious that cell 1 exerts cross-cell coverage to the other three cells. Assume that the UE moves along the direction indicated by the arrow. As the UE moves, F1 provides sustained signal quality and therefore inter-frequency measurements are not triggered for the UE even when the UE has been in the coverage of F2 for a long time. Gradually, the UE enters the overlap coverage between Cell 1 and Cell 4. Considering the long distance between the two cells, it is unlikely that Cell 4 is configured as a neighboring cell of Cell 1. As a result, as soon as the UE leaves the coverage of Cell 1, it experiences a call drop. To prevent such a call drop and ensure service continuity, the UE should have been handed over to F2 earlier.

Distance-based handovers are controlled by the

**CellAlgoSwitch**. *DistBasedHoSwitch* parameter. To enable distance-based inter-frequency handovers, set the **DistBasedHO**. *DistBasedMeasObjType* parameter to **E-UTRAN**.

Distance-based inter-frequency handovers are triggered by the eNodeB based on the distance between the eNodeB and the UE. If the switch for distance-based handovers is turned on for a

Description

cell, the home eNodeB of the cell keeps monitoring the distance to each UE. Upon detecting that the distance to a UE exceeds the threshold specified by the

**DistBasedHO**. *DistBasedHOThd* parameter, the eNodeB decides that the UE has moved to a location far from the cell center. Then, it delivers the measurement configuration related to event A4 to the UE, instructing the UE to perform gap-assisted inter-frequency measurements. The triggering of event A4 in distance-based inter-frequency handovers is the same as that in coverage-based inter-frequency handovers. For details, see **5.2.3 Inter-Frequency Handover Triggering**.

To sum up, distance-based inter-frequency handovers ensure the prompt triggering of inter-frequency measurements, increasing the probability that UEs are promptly handed over to inter-frequency neighboring cells with better signal quality.

Before delivering the measurement configuration related to event A4 and the measurement gap configuration, the eNodeB checks whether the measurement gap has been activated for use in other types of handovers. If the measurement gap has been activated, the eNodeB delivers only the measurement configuration related to event A4. If not, the eNodeB delivers both.

While the measurements for a distance-based inter-frequency handover are being taken, if the eNodeB detects that the distance to the UE falls below the threshold, the measurements are immediately stopped.

When the measurement gaps for distance-based inter-frequency handovers are released, the gapassisted measurements for other types of handovers are not affected. The measurement gap configuration stops only when all gap-assisted measurements are stopped.

#### 5.1.5 Service-based Handover

Service-based inter-frequency handovers are addressed by the feature LBFD-00201805 Service Based Inter-frequency Handover. For details about the engineering guidelines for this feature, see 9.5 Service-based Inter-frequency Handover.

Service-based inter-frequency handovers are applicable to two neighboring E-UTRAN frequencies that cover the same area. Based on the QCIs of the services that are running on a UE, the eNodeB can divert the UE to an appropriate co-coverage E-UTRAN frequency by means of a service-based inter-frequency handover.

To implement service-based inter-frequency handovers, operators need to configure service-based inter-frequency handover policies. Each service-based inter-frequency handover policy has an ID (ServiceIfHoCfgGroup.ServiceIfHoCfgGroupId) and specifies the frequency (ServiceIfHoCfgGroup.DlEarfcn) that is preferentially used to carry the services of a specific operator (ServiceIfHoCfgGroup.CnOperatorId). Since the services of each operator are further classified by QCIs, each QCI can be associated with a service-based inter-frequency handover policy so that the frequency specified by the policy preferentially carries the services with this OCI.

Service-based inter-frequency handovers are controlled by the switch

ServiceBasedInterFreqHoSwitch under the ENodeBAlgoSwitch. HoAlgoSwitch parameter. If this switch is turned on, the eNodeB triggers a service-based inter-frequency handover for a UE based on the highest-priority QCI of the services running on the UE. If the highest-priority QCI is associated with a service-based inter-frequency handover policy with the ServiceIfHoCfgGroup. InterFreqHoState parameter set to PERMIT\_HO, and there is at least one neighboring cell working on the frequency, the eNodeB delivers the measurement configuration related to event A4 to the UE. The triggering of event A4 in service-based inter-frequency handovers is the same as that in coverage-based inter-frequency handovers. For details, see 5.2.3 Inter-Frequency Handover Triggering.

Description

Section 6.1.7 in 3GPP TS 23.203 V10.3.0 (2011-03) specifies QCIs for different services, as shown in **Table 5-1**.

 Table 5-1 Standardize QCIs for different services

QCI	Resource Type	Priority	Packet Delay Budget	Packet Error Loss Rate	Example Services
1	GBR	2	100 ms	10-2	Conversatio nal voice
2		4	150 ms	10-3	Conversatio nal video (live streaming)
3		3	50 ms	10-3	Real-time gaming
4		5	300 ms	10-6	Non- conversation al video (buffered streaming)
5	Non-GBR	1	100 ms	10-6	IP Multimedia Subsystem (IMS) signaling
6		6	300 ms	10-6	<ul> <li>Video (buffered streamin g)</li> <li>TCP-based (for example: www, e-mail, chat, FTP, P2P file sharing, progressi ve video)</li> </ul>

QCI	Resource Type	Priority	Packet Delay Budget	Packet Error Loss Rate	Example Services
7		7	100 ms	10-3	<ul> <li>Voice</li> <li>Video (live streamin g)</li> <li>Interactiv e gaming</li> </ul>
8 9		8 9	300 ms	10-6	<ul> <li>Video (buffered streamin g)</li> <li>TCP-based (for example: www, e-mail, chat, FTP, P2P file sharing, progressi ve video)</li> </ul>

Before delivering the measurement configuration related to event A4 and the measurement gap configuration, the eNodeB checks whether the measurement gap has been activated for use in other types of handovers. If the measurement gap has been activated, the eNodeB delivers only the measurement configuration related to event A4. If not, the eNodeB delivers both.

If a UE has performed gap-assisted measurements for a service-based inter-frequency handover for a long time but fails to trigger such a handover, the eNodeB releases the measurement gaps for service-based inter-frequency handovers to stop the measurements.

When the measurement gaps for service-based inter-frequency handovers are released, the gap-assisted measurements for other types of handovers are not affected. The measurement gap configuration stops only when all gap-assisted measurements are stopped.

# 5.1.6 UL-Quality-based Handover

UL-quality-based inter-frequency handovers are addressed by LBFD-00201802 Coverage Based Inter-frequency Handover. For details about the engineering guidelines for this feature, see **9.6 UL-Quality-based Inter-Frequency Handover**.

UL-quality-based inter-frequency handovers are triggered based on the UL signal quality. When the UL signal quality is unsatisfactory, call drops may occur if handovers are not performed in time. The eNodeB checks the uplink signal quality. If the eNodeB finds that the uplink signal

quality is poor, the eNodeB initiates an inter-frequency handover in a timely manner so that call drops can be prevented.

UL-quality-based inter-frequency handovers are controlled by the switch UlQualityInterFreqHoSwitch under the ENodeBAlgoSwitch. HoAlgoSwitch parameter. If this switch is turned on, once the eNodeB detects unsatisfactory UL quality, it delivers the measurement configuration related to event A4 to the UE. The triggering of event A4 in UL-quality-based inter-frequency handovers is the same as that in coverage-based inter-frequency handovers. For details, see 5.2.3 Inter-Frequency Handover Triggering.

Before delivering the measurement configuration related to event A4 and the measurement gap configuration, the eNodeB checks whether the measurement gap has been activated for use in other types of handovers. If the measurement gap has been activated, the eNodeB delivers only the measurement configuration related to event A4. If not, the eNodeB delivers both.

During gap-assisted measurements for a UL-quality-based inter-frequency handover, once the eNodeB finds the UL quality restored, the measurements are stopped.

When the measurement gaps for UL-quality-based inter-frequency handovers are released, the gap-assisted measurements for other types of handovers are not affected. The measurement gap configuration stops only when all gap-assisted measurements are stopped.

If the UL quality for the UE further deteriorates but the eNodeB does not receive an event A4 measurement report, the eNodeB considers that service drops may occur due to the poor UL quality. In this situation, the eNodeB performs a blind handover for the UE. In the blind handover, the eNodeB selects only a redirection procedure.

# 5.2 Measurement Phase of an Inter-Frequency Handover

When inter-frequency measurements are required, the eNodeB delivers to the UE a Measurement Configuration message containing the inter-frequency measurement configuration, instructing the UE to perform inter-frequency measurements. If the triggering condition of inter-frequency handover event A4 is met, event A4 is reported. Based on the reported inter-frequency measurement result, the eNodeB makes an inter-frequency handover decision.

The measurement phase of the inter-frequency handover consists of inter-frequency measurement configuration, setup of measurement gaps, and triggering of event A4.

# **5.2.1 Inter-Frequency Measurement Configuration**

In the measurement configuration for an inter-frequency handover, a measurement object is set for each frequency, and each measurement object can be linked to one or more reporting configurations. The measurement configuration includes the following basic information:

Inter-frequency measurement object

The information on a measurement object includes the frequency (EUTRANINTERNFREQ.DlEarfcn), measurement bandwidth (EUTRANINTERNFREQ.MeasBandWidth), and frequency-specific offset (EUTRANINTERNFREQ.OoffsetFreq).

Reporting configuration

The reporting configuration includes the following A4-related information:

Inter-frequency handover thresholds (For details, see 5.2.3 Inter-Frequency Handover Triggering.)

- Hysteresis (InterFreqHoGroup.InterFreqHoA4Hyst)
- Time-to-trigger (InterFreqHoGroup.InterFreqHoA4TimeToTrig)
- Triggering quantity (the same as the setting of IntraRatHoComm.InterFreqHoA1A2TrigQuan)
- Maximum number of cells to be reported (IntraRatHoComm.IntraRATHoMaxRprtCell)
- Interval between reports (IntraRatHoComm.InterFreqHoRprtInterval)
- Number of periodical measurement reports to be sent after the event is triggered (IntraRatHoComm.IntraRATHoRprtAmount)
- Reporting quantity (IntraRatHoComm.InterFreqHoA4RprtQuan)
- Measurement quantity configuration

The measurement quantity configuration defines the L3 filtering coefficients (HoMeasComm. Eutran Filter CoeffRSRP and HoMeasComm. Eutran Filter CoeffRSRQ).

Measurement gap configuration
 The measurement gap configuration defines the gap pattern (HoMeasComm. GapPattern Type).

# 5.2.2 Setup of Measurement Gaps

The gap-assisted mode is applied to inter-frequency measurements. After event A2 is reported, the eNodeB delivers the inter-frequency measurement configuration that contains the measurement gap configuration. From the measurement gap configuration, the UE can acquire the start time of the gaps, repetition period, and gap width. Based on this, the UE performs inter-frequency measurements within the gaps.

The gap pattern is specified by the **HoMeasComm**. *GAPPatternType* parameter, which indicates the repetition period and gap width. If the parameter is set to **GAP\_PATTERN\_TYPE\_1**, the repetition period is 40 ms and the gap width is 6 ms. If the parameter is set to **GAP\_PATTERN\_TYPE\_2**, the repetition period is 80 ms and the gap width is 6 ms.

The gap-assisted measurement may conflict with Discontinuous Reception (DRX), semi-persistent scheduling, or both. In the case of this conflict, the gap-assisted measurement takes precedence. This, however, affects data transmission quality. To solve this problem, the design of measurement gaps takes DRX and semi-persistent scheduling into consideration. The start time of the measurement gaps can be adjusted in a way that the conflicts with DRX, semi-persistent scheduling, or both are minimized whereas gap-assisted measurements are performed in a timely fashion.

# 5.2.3 Inter-Frequency Handover Triggering

Coverage-based inter-frequency handovers can be triggered by event A3, A4, or A5, while other types of inter-frequency handover can be triggered only by event A4. The type of event used to trigger coverage-based inter-frequency handovers to a neighboring E-UTRAN frequency is specified by the **EutranInterNFreq.** *InterFreqHoEventType* parameter.

Events A3, A4, and A5 all adopt event-triggered periodical reporting mode.

#### **Event A3 Triggering**

For details about how event A3 is triggered, see **4.2.2 Event A3 Triggering** about intrafrequency handovers.

Event A3 in inter-frequency handovers uses the same set of parameters with that in intra-frequency handovers, except the offset and frequency-specific offset. Specifically, the offset for this event A3 is specified by the **InterFreqHoGroup**. *InterFreqHoA3Offset* parameter and applies to all inter-frequency handovers triggered by this event A3, and the frequency-specific offset is specified by the **EutranInterNFreq**. *QoffsetFreq* parameter for each neighboring E-UTRAN frequency.

The measurement quantities for events A1 and A2 are both RSRP. The RSRP thresholds for triggering events A1 and A2 are specified by the

InterFreqHoGroup. A3InterFreqHoA1ThdRsrp and InterFreqHoGroup. A3InterFreqHoA2ThdRsrp parameters, respectively.

#### **Event A4 Triggering**

The triggering of event A4 indicates that the signal quality is higher than a specified threshold in at least one neighboring cell. Section 5.5.4.5 in 3GPP TS 36.331 V10.1.0 (2011-03) defines the entering and leaving conditions of event A4 as follows:

- Entering condition: Mn + Ofn + Ocn Hys > Thresh
- Leaving condition: Mn + Ofn + Ocn + Hys < Thresh

The variables in the preceding formulas are described as follows:

- *Mn* is the measurement result of the neighboring cell.
- Of n is the frequency-specific offset for the frequency of the neighboring cell. It is specified by the EutranInterNFreq. QoffsetFreq parameter, which is contained in the associated measurement object IE in the measurement configuration. This parameter adjusts the probability of triggering a handover to a specific frequency. For example, a cell on frequency A and a cell on frequency B are both candidate cells for a handover. Then, the offset for frequency A can be increased to raise the probability of selecting the cell on frequency A as the target cell. The value of a frequency-specific offset can be either positive or negative. A positive value raises the handover triggering probability, and a negative value lowers the probability.
- Ocn is the cell-specific offset for the neighboring cell. It is specified by the **EutranInterFreqNCell**. CellIndividualOffset parameter. If the value of this parameter is not 0, the eNodeB delivers this parameter to the UE through the measurement configuration. If the value is 0, the eNodeB does not deliver this parameter. In this case, the UE uses the default value 0.
- *Hys* is the hysteresis for event A4. It is specified by the **InterFreqHoGroup**. *InterFreqHoA4Hyst* parameter and contained in the delivered measurement configuration.
- The time-to-trigger for event A4 is specified by the **InterFreqHoGroup**. **InterFreqHoA4TimeToTrig** parameter. Event A4 is reported only when the signal quality of at least one neighboring meets the entering condition throughout the time-to-trigger.
- Thresh is the threshold for event A4. This threshold varies depending on the triggering quantity or reporting quantity. **Table 5-2** describes the triggering quantity, reporting quantity, and threshold for each type of inter-frequency handover.

Table 5-2 Parameter related to event A4

Inter- Frequenc y Handove r Type	Triggering Quantity		Reporting Quantity		Threshold
Coverage- based handovers	based quantity for event A2		Same as the triggering quantity, or both RSRP and RSRQ,	RSRP	InterFreqHoGrou p.InterFreqHoGro up. InterFreqHoA4Thd RSRP
			as specified by the IntraRatH oComm.Int erFreqHoA 4RprtQuan		InterFreqHoGrou p.InterFreqHoGro up. InterFreqHoA4Thd RSRQ
			parameter	Both	Both the RSRP- and RSRQ-based measurement results meet the corresponding conditions.
Distance- and UL- quality- based handovers , as well as SPID- based handovers to the HPLMN  RSRP, RSRQ, or both RSRP and RSRQ, as specified by the IntraRatHoCo mm.InterFreq HoA4TrigQuan parameter	or both RSRP and RSRQ, as specified by the	RSRP		RSRP	InterFreqHoGrou p.InterFreqHoGro up. InterFreqHoA4Thd RSRP
	RSRQ		RSRQ	InterFreqHoGrou p.InterFreqHoGro up. InterFreqHoA4Thd RSRQ	
	Both		Both	Both the RSRP- and RSRQ-based measurement results meet the corresponding conditions.	
Load-, frequency -priority-, and service- based handovers		RSRP		RSRP	InterFreqHoGrou p.InterFreqHoGro up. InterFreqLoadBase dHoA4ThdRSRP

Inter- Frequenc y Handove r Type	Triggering Qua	ntity	Reporting Q	Quantity	Threshold
		RSRQ		RSRQ	InterFreqHoGrou p.InterFreqHoGro up. InterFreqLoadBase dHoA4ThdRSRQ
		Both		Both	Both the RSRP- and RSRQ-based measurement results meet the corresponding conditions.

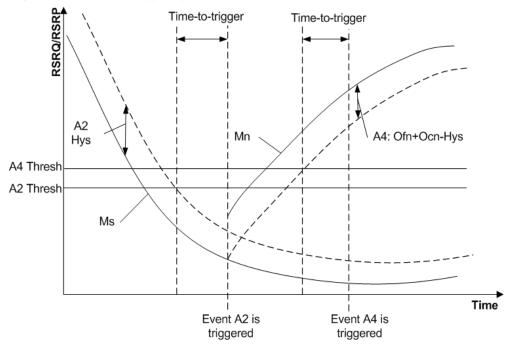
#### NOTE

If the IntraRatHoComm.InterFreqHoA4TrigQuan parameter is set to BOTH, both the RSRP- and RSRQ-based measurement configurations are delivered. If the

**IntraRatHoComm**. *InterFreqHoA4RprtQuan* parameter is set to **BOTH**, an inter-frequency handover can be triggered only when the RSRP- and RSRQ-based measurement results of at least one neighboring cell meet the conditions specified in the corresponding measurement configurations.

**Figure 5-5** shows the event A4 triggering mechanism. When the RSRP- or RSRQ-based measurement result meets the triggering condition of event A4, the UE reports the information about the cell where the event is triggered, to ensure that the inter-frequency handover is triggered in a timely fashion.

Figure 5-5 Event A4 triggering mechanism



According to section 5.5.4.3 in 3GPP TS 36.331 V10.1.0 (2011-03), the following A4-related parameters are provided in the reporting configuration of the measurement configuration:

- IntraRatHoComm.InterFreqHoA4RprtQuan: specifies the reporting quantity for interfrequency handover event A4. This refers to the quantity to be included in the measurement reports.
- IntraRatHoComm. *InterFreqHoRprtInterval*: specifies the interval between the reports that are triggered by event A4. This parameter controls the frequency of the periodical measurement reports sent by the UE. This reduces the signaling load on the radio interface.
- IntraRatHoComm. IntraRATHoMaxRprtCell: specifies the maximum number of cells to be included in the measurement report for an intra-RAT handover. In the case of event A4 for an inter-frequency handover within the E-UTRAN, this parameter specifies the maximum number of cells to be included in the measurement report of event A4. The limitation on the number of cells to be reported can save resources on the radio interface.
- IntraRatHoComm.IntraRATHoRprtAmount: specifies the number of event-triggered periodical reports for an intra-RAT handover. The number of event-triggered periodical reports is set to restrict handover retries.

#### **Event A5 Triggering**

The triggering of event A5 indicates that the signal quality in the serving cell is lower than a specified threshold and the signal quality in at least one neighboring cell is higher than another specified threshold. Section 5.5.4.6 in 3GPP TS 36.331 V10.1.0 (2011-03) defines the entering and leaving conditions of event A5 as follows:

- Entering condition:  $Ms + Hys < Thresh \ 1$  and  $Mn + Ofn + Ocn Hys > Thresh \ 2$
- Leaving condition: Ms Hys > Thresh 1 or Mn + Ofn + Ocn + Hys < Thresh 2

Event A5 uses the same set of parameters with event A4 except Thresh 1 and Thresh 2. Thresh 1 for event A5 is the same as the threshold for event A2 in coverage-based inter-frequency handovers, while Thresh 2 for event A5 is the same as the threshold for event A4 in coverage-based inter-frequency handovers. **Table 5-3** lists the parameters specifying the two thresholds.

Table 5-3 Parameter related to event A5

<b>Triggering Quantity</b>	Thresh 1	Thresh 2
RSRP	InterFreqHoGroup. InterFreqHoA2ThdRSRP	InterFreqHoGroup. InterFreqHoA4ThdRSRP
RSRQ	InterFreqHoGroup. InterFreqHoA2ThdRSRQ	InterFreqHoGroup. InterFreqHoA4ThdRSRQ

# 5.3 Decision Phase of an Inter-Frequency Handover

The eNodeB decides whether to perform an inter-frequency handover for a UE. For details, see **3.2 Decision on a Handover**.

After the eNodeB receives a measurement report from a UE that is performing services unsuitable for a handover, the eNodeB decides not to perform a service-based inter-frequency handover for the UE.

Description

# 5.4 Execution Phase of an Inter-Frequency Handover

The eNodeB selects either a handover procedure or a redirection procedure. The eNodeB selects the redirection procedure only for coverage-based and UL-quality-based inter-frequency handovers when the signal quality in the serving cell is so poor that no service can be provided for the UE.

The eNodeB supports independent MME configuration for TDD and FDD cells. This function, however, may affect handovers between TDD and FDD cells as the MME may not change during the handovers. Therefore, if this function is enabled, only the redirection procedure can be selected for coverage-based inter-frequency handovers between TDD and FDD cells. For details about how to enable and set independent MME configuration for TDD and FDD cells, see *S1-Flex Feature Parameter Description*.

The execution of an inter-frequency handover is similar to that of an intra-frequency handover. For details, see **4.3 Decision Phase of an Intra-Frequency Handover**.

# 5.5 Signaling Procedure of a Typical Inter-Frequency Handover

# 5.5.1 Signaling Procedure of a Successful Handover

The signaling procedure of a successful inter-frequency handover is the same as that of a successful intra-frequency handover procedure. For details, see **4.5.1 Signaling Procedure of a Successful Handover**.

#### 5.5.2 RRC Connection Re-Establishment After a Handover Failure

The RRC connection re-establishment procedure performed after an inter-frequency handover failure is the same as that performed after an intra-frequency handover failure. For details, see 4.5.2 RRC Connection Re-Establishment After a Handover Failure.

# 6 Inter-RAT Handover

An inter-RAT handover consists of the following phases:

- Measurement triggering/stopping phase
  - The measurement triggering/stopping phase varies according to the cause of the inter-RAT handover.
- Measurement phase
  - The eNodeB delivers the inter-RAT measurement configuration, and the UE performs inter-RAT measurements accordingly. When the signal quality in the serving cell or at least one inter-RAT neighboring cell meets the configured triggering condition of event B1 or B2, the UE reports the measurement results.
- Decision phase
  - The eNodeB checks the measurement results and generates a list of candidate cells.
- Execution phase
  - The handover from the serving cell to the target cell is executed.

The coverage-, load-, service-, UL-quality-, and distance-based inter-RAT handovers use the same procedure except for the measurement triggering/stopping phase.

# 6.1 Measurement Triggering/Stopping Phase of an Inter-RAT Handover

# 6.1.1 Coverage-based Handover

Coverage-based inter-RAT handovers are addressed by the following optional features:

- LOFD-001019 PS Inter-RAT Mobility between E-UTRAN and UTRAN
- LOFD-001020 PS Inter-RAT Mobility between E-UTRAN and GERAN

For details about engineering guidelines for coverage-based inter-RAT handovers, see 9.7 Coverage-based Inter-RAT Handover.

The eNodeB delivers the measurement configuration related to event A2 to a UE in connected mode to monitor the signal quality of the serving cell. The eNodeB may deliver measurement configurations for two types of events A2 to the UE: event A2 for inter-RAT measurement, and event A2 for blind handover. If the signal quality in the serving cell is lower than the specified threshold, the UE reports event A2 for inter-RAT measurement. After receiving the report, the eNodeB delivers an inter-RAT measurement configuration to instruct the UE to perform inter-RAT measurement. If the signal quality in the serving cell further deteriorates and the eNodeB does not perform a handover for the UE, the UE reports event A2 for blind handover. After receiving the report, the eNodeB considers that the serving cell can no longer provide services for the UE and performs a blind handover. The switches **UtranRedirectSwitch** and **GeranRedirectSwitch** under the **ENodeBAlgoSwitch**. **HoAlgoSwitch** parameter specify whether coverage-based handovers to GERAN and UTRAN cells are enabled, respectively.

### Triggering of Inter-RAT Measurements by Event A2

In a coverage-based inter-RAT handover, event A2 triggers inter-RAT measurements. The triggering of this event indicates that the signal quality in the serving cell is lower than a specified threshold. When the triggering condition of event A2 is met, event A2 is reported to the eNodeB. After this, the eNodeB sends the inter-RAT measurement configuration to the UE. Section 5.5.4.3 in 3GPP TS 36.331 V10.1.0 (2011-03) defines the entering and leaving conditions of event A2 as follows:

- Entering condition: Ms + Hys < Thresh
- Leaving condition: *Ms Hys* > *Thresh*

The variables in the preceding formulas are described as follows:

- *Ms* is the measurement result of the serving cell.
- Hys is the hysteresis for event A2. It is specified by the InterRatHoCommGroup.InterRatHoA1A2Hyst parameter.
- Thresh is the threshold for event A2. It can be specified by either the InterRatHoCommGroup. InterRatHoA2ThdRSRP parameter or the InterRatHoCommGroup. InterRatHoA2ThdRSRQ parameter, depending on the setting of the InterRatHoComm. InterRatHoA1A2TrigQuan parameter (triggering quantity for inter-RAT measurement events A1 and A2). The threshold parameters InterRatHoCommGroup. InterRatHoA2ThdRSRP and

**InterRatHoCommGroup**. *InterRatHoA2ThdRSRQ* correspond to the triggering quantity settings RSRP and RSRQ, respectively.

**Figure 6-1** shows the event A2 triggering mechanism. For inter-RAT measurement event A2, the eNodeB specifies two sets of parameters, with respect to the RSRP and RSRQ quantities. When **InterRatHoComm**. *InterRatHoA1A2TrigQuan* is set to **BOTH**, event A2 is reported and the eNodeB delivers the inter-RAT measurement configuration to the UE if the signal quality in the serving cell is lower than the threshold (either the value of

InterRatHoCommGroup.InterRatHoA2ThdRSRP or the value of

InterRatHoCommGroup.InterRatHoA2ThdRSRQ) minus the hysteresis throughout the time-to-trigger specified by theInterRatHoCommGroup.InterRatHoA1A2TimeToTrig parameter. When InterRatHoComm.InterRatHoA1A2TrigQuan is set to RSRP or RSRQ, event A2 is reported if the signal quality in the serving cell is lower than the related threshold minus the hysteresis throughout the time-to-trigger specified by the

InterRatHoCommGroup.InterRatHoA1A2TimeToTrig parameter.

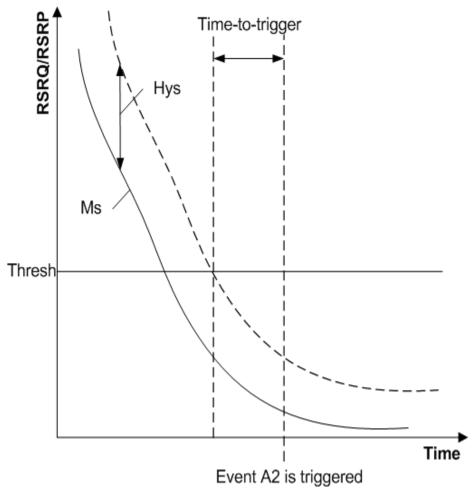


Figure 6-1 Event A2 triggering mechanism

After receiving an event A2 report that triggers inter-RAT measurements, the eNodeB delivers the measurement configuration related to event B1 to the UE. For details, see **6.2.4 Inter-RAT Handover Triggering**.

As in coverage-based inter-frequency handovers, the eNodeB may not deliver the measurement configuration related to inter-RAT measurement event A2. For details, see **Blind-Handover Triggering by Event A2**.

#### Target-based Setting of Inter-RAT Event A2

Event A2 specific to a target RAT can be configured on the eNodeB. This ensures that the eNodeB can preferentially perform a coverage-based handover to a UTRAN or GERAN cell.

#### The CnOperatorHoCfg. Utran A2ThdRsrpOffset and

**CnOperatorHoCfg**. *GeranA2ThdRsrpOffset* parameters specify the offsets of the RSRP thresholds for UTRAN and GERAN inter-RAT measurement events A2 relative to the RSRP threshold for inter-RAT measurement event A2, respectively. If

CnOperatorHoCfg. *UtranA2ThdRsrpOffset* or CnOperatorHoCfg. *GeranA2ThdRsrpOffset* is not set to **0**, the event A2 RSRP threshold delivered by the eNodeB is the sum of the CnOperatorHoCfg. *UtranA2ThdRsrpOffset* or CnOperatorHoCfg. *GeranA2ThdRsrpOffset* parameter value and the RSRP threshold for inter-RAT measurement event A2.

#### The CnOperatorHoCfg. Utran A2ThdRsrpOffset and

CnOperatorHoCfg. *GeranA2ThdRsrpOffset* parameters can be set to different values, in which case the eNodeB delivers two RSRP thresholds for inter-RAT measurement event A2. When a UE reports UTRAN inter-RAT measurement event A2, the eNodeB delivers a measurement configuration for UTRAN inter-RAT measurement. When a UE reports GERAN inter-RAT measurement event A2, the eNodeB delivers a measurement configuration for GERAN inter-RAT measurement. If the parameters are set to the same value, the eNodeB delivers one RSRP threshold for inter-RAT measurement event A2. When a UE reports event A2, the eNodeB delivers measurement configurations for both UTRAN and GERAN inter-RAT measurement.

#### M NOTE

- The CnOperatorHoCfg. *UtranA2ThdRsrpOffset* and CnOperatorHoCfg. *GeranA2ThdRsrpOffset* parameters do not affect the RSRQ thresholds for inter-RAT measurement event A2.
- If the calculated RSRP threshold for inter-RAT measurement event A2 is less than the protocol-specified minimum value, the protocol-specified minimum value is used. If the calculated RSRP threshold for inter-RAT measurement event A2 is greater than the protocol-specified maximum value, the protocol-specified maximum value is used.
- If CnOperatorHoCfg. UtranA2ThdRsrpOffset or CnOperatorHoCfg. GeranA2ThdRsrpOffset is set to -100, the calculated RSRP threshold is the protocol-specified minimum value. It is difficult for UEs to stay in connected mode if the protocol-specified minimum value is used. Therefore, if CnOperatorHoCfg. UtranA2ThdRsrpOffset or CnOperatorHoCfg. GeranA2ThdRsrpOffset is set to -100, UTRAN or GERAN inter-RAT measurement is not performed.
- In MOCN scenarios, the CnOperatorHoCfg. UtranA2ThdRsrpOffset and CnOperatorHoCfg. GeranA2ThdRsrpOffset parameters can be set to different values for operators, in which case the operators use different RSRP thresholds for inter-RAT measurement event A2.

### Stopping of Inter-RAT Measurements by Event A1

In a coverage-based inter-RAT handover, event A1 stops inter-RAT measurements. The triggering of event A1 indicates that the signal quality in the serving cell is higher than a specified threshold. Section 5.4.4.2 in 3GPP TS 36.331 V10.1.0 (2011-03) defines the entering and leaving conditions of event A1 as follows:

- Entering condition: *Ms Hys* > *Thresh*
- Leaving condition: Ms + Hys < Thresh

The variables in the preceding formulas are described as follows:

- Ms is the measurement result of the serving cell.
- Hys is the hysteresis for event A1. It is specified by the InterRatHoCommGroup.InterRatHoA1A2Hyst parameter.
- Thresh is the threshold for event A1. It can be specified by either the InterRatHoCommGroup.InterRatHoA1ThdRSRP parameter or the InterRatHoCommGroup.InterRatHoA1ThdRSRQ parameter, depending on the setting of the InterRatHoComm.InterRatHoA1A2TrigQuan parameter (triggering quantity for inter-RAT measurement events A1 and A2). The threshold parameters InterRatHoCommGroup.InterRatHoA1ThdRSRP and InterRatHoCommGroup.InterRatHoA1ThdRSRQ correspond to the triggering quantity settings RSRP and RSRQ, respectively.

Figure 6-2 shows the event A1 triggering mechanism.

When **InterRatHoComm**. *InterRatHoA1A2TrigQuan* is set to **RSRP** or **RSRQ**, event A1 is reported if the RSRP or RSRQ in the serving cell remains higher than the RSRP or RSRQ threshold plus the hysteresis throughout the time-to-trigger period specified by the **InterRatHoCommGroup**. *InterRatHoA1A2TimeToTrig* parameter. If the eNodeB receives an event A1 report, it stops the coverage-based inter-RAT measurement.

When InterRatHoComm.InterRatHoA1A2TrigQuan is set to Both, event A1 is reported if the signal quality in the serving cell remains higher than the threshold (either the value of InterRatHoCommGroup.InterRatHoA1ThdRSRP) or the value of InterRatHoCommGroup.InterRatHoA1ThdRSRQ) plus the hysteresis throughout the time-to-trigger period. If neither of the RSRP and RSRQ measurement results in an event A1 report meets the leaving condition for event A1, the eNodeB stops the coverage-based inter-RAT measurement.

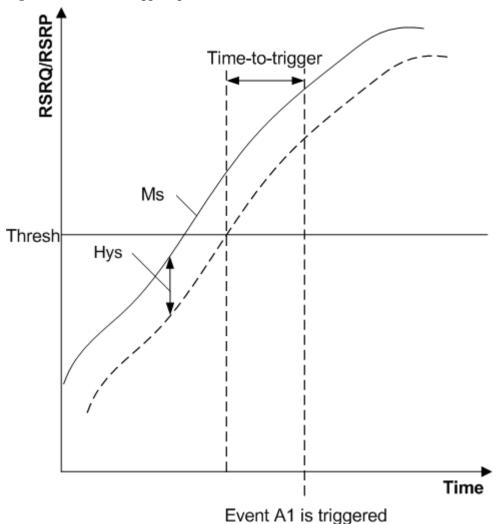


Figure 6-2 Event A1 triggering mechanism

The event A1 threshold must be higher than the event A2 threshold to ensure that event A1 can stop inter-RAT measurements in coverage-based inter-RAT handovers. If the CnOperatorHoCfg. UtranA2ThdRsrpOffset or CnOperatorHoCfg. GeranA2ThdRsrpOffset parameter is set, ensure that the event A1 threshold is higher than or equal to the sum of the CnOperatorHoCfg. UtranA2ThdRsrpOffset or CnOperatorHoCfg. GeranA2ThdRsrpOffset parameter value and the event A2 threshold.

#### Blind-Handover Triggering by Event A2

In coverage-based inter-RAT handovers, the eNodeB delivers a measurement configuration related to event A2 for blind handover if the signal quality of the serving cell deteriorates to a specified level and the UE has not been handed over. Coverage-based inter-RAT blind handovers have the same triggering mechanism as coverage-based inter-frequency blind handovers. For details, see **5.1.1 Coverage-based Handover**.

A coverage-based inter-RAT blind handover can be performed in the form of a blind redirection. If the target system is GERAN, it can also be performed in the form of a blind CCO. If VoIP services are running on the UE that reports event A2 for blind handovers, the eNodeB determines an inter-RAT handover policy based on the handover policy configuration and UE capability. For details, see **6.4.1 Inter-RAT Handover Policy Selection**.

#### 6.1.2 Load-based Handover

The mechanisms of triggering/stopping load-based inter-RAT measurements are the same as those of triggering/stopping load-based inter-frequency measurements. For details, see **6.1.2 Load-based Handover**.

#### 6.1.3 Service-based Handover

Service-based inter-RAT handovers are addressed by the following optional features:

- LOFD-001043 Service based inter-RAT handover to UTRAN
- LOFD-001046 Service based inter-RAT handover to GERAN

For details about engineering guidelines for service-based inter-RAT handovers, see **9.10 Service-based Inter-RAT Handover**.

In a service-based handover, the eNodeB hands over a UE to another system based on the type of the service running on the UE. For each operator (**ServiceIrHoCfgGroup**. *CnOperatorId*), a service-based inter-RAT handover policy

(ServiceIrHoCfgGroup.ServiceIrHoCfgGroupId) can be specified. The applicability of handover can be specified separately for services with different QCIs from QCI 1 to QCI 9. The applicability of handover is set through the ServiceIrHoCfgGroup.InterRatHoState parameter, whose values are MUST HO, NO HO, and PERMIT HO.

- If the ServiceIrHoCfgGroup. InterRatHoState parameter is set to MUST\_HO for a QCI, the eNodeB delivers the service-based handover measurement configuration to a UE when the UE initiates a service with that QCI. A UE that does not support inter-RAT measurements cannot initiate blind handovers or redirections even if the ServiceIrHoCfgGroup. InterRatHoState parameter is set to MUST\_HO.
- If the ServiceIrHoCfgGroup. InterRatHoState parameter is set to NO\_HO for a QCI, the eNodeB does not deliver the service-based handover measurement configuration to a UE on which a service with that QCI is running, even if the UE initiates a service for which ServiceIrHoCfgGroup. InterRatHoState is set to MUST\_HO.
- If the ServiceIrHoCfgGroup. InterRatHoState parameter is set to PERMIT\_HO for a QCI, the eNodeB does not deliver the service-based handover measurement configuration to a UE when the UE initiates a service with that QCI. When a service with that QCI is running on the UE, the eNodeB delivers the service-based handover measurement configuration to the UE if the UE initiates a service for which ServiceIrHoCfgGroup. InterRatHoState is set to MUST HO.

Assume that an operator plans to use bearers with a QCI of 1 to carry voice over IP (VoIP) services, bearers with a QCI of 5 to carry IMS signaling, and bearers with a QCI of 9 as default bearers. The operator also hopes that UEs performing only VoIP services are served by an inter-RAT system to ensure the service continuity while sparing E-UTRAN resources. The recommended values of the **ServiceIrHoCfgGroup**. *InterRatHoState* parameter are as follows:

- The value **MUST HO** is recommended for QCI 1.
- The value **NO HO** is recommended for QCI 2 to QCI 4, and QCI 6 to QCI 8.
- The value **PERMIT HO** is recommended for QCI 5 and QCI 9.

If a service-based inter-RAT handover is not initiated after the gap-assisted measurements are performed for a relatively long time, the eNodeB instructs the UE to stop the service-based inter-RAT measurements and release the measurement gaps.

Service-based handovers to UTRAN and GERAN can be enabled or disabled by the switches UtranServiceHoSwitch and GeranServiceHoSwitch under the ENodeBAlgoSwitch. *HoAlgoSwitch* parameter.

### 6.1.4 UL-Quality-based Handover

UL-quality-based inter-RAT handovers are addressed by the following optional features:

- LOFD-001019 PS Inter-RAT Mobility between E-UTRAN and UTRAN
- LOFD-001020 PS Inter-RAT Mobility between E-UTRAN and GERAN

For details about engineering guidelines for UL-quality-based inter-RAT handovers, see **9.8 UL-Quality-based Inter-RAT Handover**.

The mechanism of triggering/stopping of UL-quality-based inter-RAT measurements is the same as those of triggering/stopping UL-quality-based inter-frequency measurements. UL-quality-based inter-RAT handover is enabled or disabled by the switch

UlQualityInterRATHoSwitch under the ENodeBAlgoSwitch. HoAlgoSwitch parameter.

If this switch is turned on, once the eNodeB detects poor UL signal quality, it delivers to the UE the measurement gap configuration and the measurement configuration related to event B1. The UE performs inter-RAT measurements and reports the results to the eNodeB. The eNodeB then decides whether to perform an inter-RAT handover. For the parameters related to gap-assisted inter-RAT measurements and event B1, see 6.2.2 Setup of Measurement Gaps and 6.2.4 Inter-RAT Handover Triggering.

If the UL quality for the UE further deteriorates but the eNodeB does not receive an event B1 measurement report, the eNodeB considers that service drops may occur due to poor UL quality. In this situation, the eNodeB performs a blind handover for the UE. In the blind handover, the eNodeB selects only a CCO or redirection procedure.

#### 6.1.5 Distance-based Handover

Distance-based inter-RAT handovers are addressed by the following optional features:

- LOFD-001072 Distance based inter-RAT handover to UTRAN
- LOFD-001073 Distance based inter-RAT handover to GERAN

For details about engineering guidelines for distance-based inter-RAT handovers, see **9.9 Distance-based Inter-RAT Handover**.

The mechanism of triggering/stopping distance-based inter-RAT measurements is the same as those of triggering/stopping distance-based inter-frequency measurements. For details, see **6.1.5 Distance-based Handover**.

To enable distance-based inter-RAT handovers, set the **DistBasedHO**. *DistBasedMeasObjType* parameter to UTRAN or GERAN.

### 6.2 Measurement Phase of an Inter-RAT Handover

### 6.2.1 Inter-RAT Measurement Configuration

In the measurement configuration for inter-RAT handover, the information on measurement objects is set for each RAT; each measurement object can be linked to one or more reporting

configurations and each reporting configuration can also be linked to one or more measurement objects. The measurement configuration includes the following basic information:

- Inter-RAT measurement object
  - In the case of UTRAN, the information on a measurement object includes the DL frequency (UTRANNFREQ. Utran DlArfcn) and the frequency-specific offset (UTRANNFREQ.OffsetFreq).
  - In the case of GERAN, the information on a measurement object includes the group of neighboring GERAN carrier frequencies (GERANNFREQGROUP) and the frequency-specific offset for the group (GERANNFREQGROUP. Offset Freq).
- Reporting configuration

The reporting configuration includes the following information:

- Inter-RAT handover thresholds (For details, see **6.2.4 Inter-RAT Handover Triggering.**)
- Hysteresis (InterRatHoUtranGroup.InterRatHoUtranB1Hyst for handovers to UTRAN, and InterRatHoGeranGroup.InterRatHoGeranB1Hyst for handovers to GERAN)
- Time-to-trigger (InterRatHoUtranGroup.InterRatHoUtranB1TimeToTrig for handovers to UTRAN, and InterRatHoGeranGroup.InterRatHoGeranB1TimeToTrig for handovers for GERAN)
- Triggering quantity for handovers to UTRAN (InterRatHoComm.InterRatHoUtranB1MeasQuan)
- Maximum number of cells to be reported (InterRatHoComm.InterRATHoMaxRprtCell)
- Interval between reports (InterRatHoComm.InterRatHoUtranRprtInterval for handovers to URRAN, and InterRatHoComm.InterRatHoGeranRprtInterval for handovers to GERAN)
- Number of periodic measurement reports to be sent after an inter-RAT handover event is triggered (InterRatHoComm.InterRatHoRprtAmount)
- Measurement quantity configuration, including the RAT-specific measurement quantities and L3 filtering coefficients
  - The measurement quantity configuration for UTRAN FDD defines the measurement quantity (InterRatHoComm.InterRATHoUtranB1MeasQuan) and filtering coefficients (HoMeasComm. Utran Filter CoeffRSCP and HoMeasComm. Utran Filter Coeff ECN0).
  - The measurement quantity configuration for UTRAN TDD defines the measurement quantity (RSCP) and filtering coefficient (HoMeasComm. Utran Filter CoeffRSCP).
  - The measurement quantity configuration for GERAN defines the measurement quantity (RSSI) and filtering coefficient (HoMeasComm. Geran Filter Coeff).

#### MOTE

RSCP: received signal code power RSSI: received signal strength indicator

Measurement gap configuration

The measurement gap configuration defines the gap pattern (HoMeasComm. GapPattern Type).

### 6.2.2 Setup of Measurement Gaps

The setup of gaps for inter-RAT measurements is the same as that of gaps for inter-frequency measurements. For details, see **5.2.2 Setup of Measurement Gaps**.

#### 6.2.3 Inter-RAT Measurement Priorities

For a coverage-based inter-RAT handover to UTRAN, the eNodeB can control the UTRAN frequency measurement priority according to the operator's requirements. The UE preferentially measures a specified UTRAN frequency. UTRAN frequency measurement prioritization requires the optional feature LOFD-001078 E-UTRAN to UTRAN CS/PS Steering. The switch UtranFreqLayerMeasSwitch under the ENodeBAlgoSwitch. FreqLayerSwtich parameter specifies whether to enable UTRAN frequency measurement prioritization. The UtranNFreq. PsPriority parameter specifies the measurement priority of a UTRAN frequency. A large value indicates a high priority. If the UtranNFreq. PsPriority parameter is set to Priority 0 for a frequency, this frequency will not be measured.

If **UtranFreqLayerMeasSwitch** is turned on, the eNodeB delivers only the information about UTRAN frequencies with the highest priority to the UE for measurement.

If UTRAN frequency measurement prioritization is enabled, the setting of the **UtranNFreq**. *ConnFreqPriority* parameter does not apply. If the number of target UTRAN frequencies with the highest PS service priority exceeds the limit, the eNodeB randomly selects some of the frequencies for UE measurement.

When SRVCC is used, the frequency priority for measurement is determined in a different way from what is described in this chapter. For details, see *SRVCC Feature Parameter Description*.

For details about frequency measurement prioritization for CSFB, see *CS Fallback Feature Parameter Description*.

This type of priority-based handling applies only to inter-RAT measurements on the UTRAN.

# 6.2.4 Inter-RAT Handover Triggering

Coverage-based inter-RAT handovers can be triggered by event B1 or B2, while other types of inter-RAT handover can be triggered only by event B1. If event B2 is used to trigger non-coverage-based inter-RAT handovers, cell center users (CCUs) do not report event B2. The type of event used to trigger coverage-based inter-RAT handovers is specified by the **InterRatHoComm.** *InterRatHoEventType* parameter.

Before a coverage-based inter-RAT handover is triggered, the eNodeB checks whether the UE supports events B1 and B2. If the UE supports only event B2, event B2 is used to evaluate whether to trigger a coverage-based inter-RAT handover. If the UE supports both events, the **InterRatHoComm.** *InterRatHoEventType* parameter determines the event type for triggering a coverage-based inter-RAT handover.

Events B1 and B2 both adopt event-triggered periodical reporting mode.

#### **Event B1 Triggering**

The triggering of event B1 indicates that the signal quality is higher than a specified threshold in at least one neighboring cell. Section 5.5.4.7 in 3GPP TS 36.331 V10.1.0 (2011-03) defines the entering and leaving conditions of event B1 as follows:

- Entering condition: Mn + Ofn Hys > Thresh
- Leaving condition: Mn + Ofn + Hys < Thresh

The variables in the preceding formulas are described as follows:

- *Mn* is the measurement result of the neighboring cell.
- Of n is the frequency-specific offset for the frequency of the neighboring cell. It is specified by the **UtranNFreq**. Offset Freq parameter, which is contained in the associated measurement object IE in the measurement configuration.
- Hys is the hysteresis for event B1. The hysteresis values for inter-RAT handovers to UTRAN and GERAN (specified by the InterRatHoUtranGroup.InterRATHoUtranB1Hyst and
  - InterRatHoGeranGroup. InterRATHoGeranB1Hyst parameters, respectively) are included in the delivered measurement configuration.
- *Thresh* is the threshold for event B1. The values of *Thresh* are set on the basis of the measurement quantities for each RAT.

**Figure 6-3** shows the event B1 triggering mechanism. Triggering of event A2 is based on the E-UTRAN quantity (RSRP or RSRQ). Triggering of event B1 is based on the measurement quantities and thresholds listed in **Table 6-1**. The measurement quantity for UTRAN can be RSCP, Ec/No, or both as specified by the

InterRatHoComm.InterRATHoUtranB1MeasQuanparameter. When InterRatHoComm.InterRATHoUtranB1MeasQuan is set to UTRAN\_BOTH, the eNodeB delivers both RSCP and Ec/No measurement quantities to the UE.

#### M NOTE

Section 5.5.5 in 3GPP TS 36.331 V10.1.0 (2011-03) specifies that UEs can report RSCP and Ec/No quantities of the UTRAN at the same time. For UEs that are compliant with earlier releases, the eNodeB sends only the RSCP-related measurement configuration to the UEs even if the **InterRatHoComm**. *InterRatHoUtranB1MeasQuan* parameter is set to UTRAN BOTH.

When the quantity-based measurement result meets the triggering condition of event B1, the UE reports the information about the cell where the event is triggered to ensure that the inter-RAT handover is triggered in a timely fashion. The time-to-trigger for event B1 related to handovers to UTRAN and GERAN is specified by the

InterRatHoUtranGroup.InterRATHoUtranB1TimeToTrig and InterRatHoGeranGroup.InterRATHoGeranB1TimeToTrig parameters, respectively.

These parameters can be set to different values to differentiate the rates for reporting event B1 related to handovers to UTRAN and GERAN. The eNodeB sends a handover request to the inter-RAT neighboring cell for which event B1 is reported first. For example, if the value of the InterRatHoGeranGroup. InterRATHoGeranB1TimeToTrig parameter is greater than the value of the InterRatHoUtranGroup. InterRATHoUtranB1TimeToTrig parameter and a UE reports event B1 for a handover to UTRAN first, the eNodeB preferentially sends a handover request to a neighboring UTRAN cell.

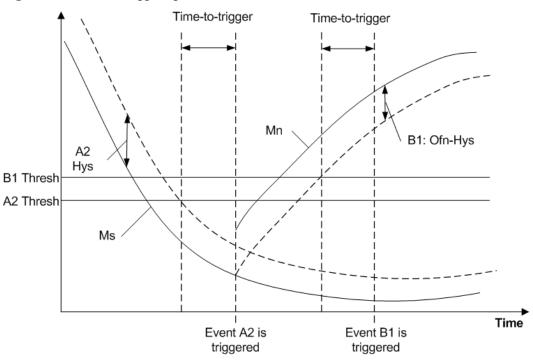


Figure 6-3 Event B1 triggering mechanism

Table 6-1 Thresholds considered in event B1 evaluation

System	Measurement Quantity	Handover Type	Threshold
UTRAN RSCP	RSCP	<ul> <li>Coverage-based</li> <li>UL-quality-based</li> <li>Distance-based</li> <li>SPID-based handovers to the HPLMN</li> </ul>	InterRatHoU- tranGroup. InterRATHoUtranB 1ThdRSCP
		<ul><li>Load-based</li><li>Service-based</li></ul>	InterRatHoU- tranGroup. LdSvBasedHoUtran B1ThdRSCP
Ec/No	<ul> <li>Coverage-based</li> <li>UL-quality-based</li> <li>Distance-based</li> <li>SPID-based handovers to the HPLMN</li> </ul>	InterRatHoU- tranGroup. InterRATHoUtranB 1ThdEcN0	

System	Measurement Quantity	Handover Type	Threshold
		<ul><li>Load-based</li><li>Service-based</li></ul>	InterRatHoU- tranGroup. LdSvBasedHoUtran B1ThdECN0
GERAN	GERAN RSSI	<ul><li>Coverage-based</li><li>UL-quality-based</li><li>Distance-based</li></ul>	InterRatHoGer- anGroup. InterRATHoGeran B1Thd
		<ul><li>Load-based</li><li>Service-based</li></ul>	InterRatHoGer- anGroup. LdSvBasedHoGera nB1Thd

According to section 5.5.4.7 in 3GPP TS 36.331 V10.1.0 (2011-03), the following B1-related parameters are provided in the reporting configuration of the measurement configuration:

- InterRatHoComm.InterRATHoUtranRprtInterval and InterRatHoComm.InterRATHoGeranRprtInterval: specify the interval between the reports that are triggered by event B1. This parameter controls the frequency of the periodical measurement reports sent by the UE. This reduces the signaling load on the radio interface.
- InterRatHoComm.InterRATHoMaxRprtCell: specifies the maximum number of cells to be included in the measurement report of event B1 for an inter-RAT handover. The limitation on the number of cells to be reported can save resources on the radio interface.
- InterRatHoComm.InterRATHoRprtAmount: specifies the number of periodical reports to be sent after event B1 is triggered. The number of event-triggered periodical reports is set to restrict handover retries.

#### **Event B2 Triggering**

The triggering of event B2 indicates that the signal quality in the serving cell is lower than a specified threshold and the signal quality in at least one neighboring cell is higher than another specified threshold. Section 5.5.4.8 in 3GPP TS 36.331 V10.1.0 (2011-03) defines the entering and leaving conditions of event B2 as follows:

- Entering condition: Ms + Hys < Thresh 1 and Mn + Ofn + Ocn Hys > Thresh 2
- Leaving condition: Ms Hys > Thresh 1 or Mn + Ofn + Ocn + Hys < Thresh 2

Event B2 uses the same set of parameters as event B1 except four parameters: the triggering quantity related to Thresh 1, the measurement quantity related to Thresh 2, Thresh 1, and Thresh 2. For details about the four parameters, see **Table 6-2** and **Table 6-3**.

Description

Table 6-2 Thresh 1 for event B2

Triggering Quantity		Thresh 1
Same as the triggering quantity for event A2	RSRP	InterRatHoCommGroup. InterRatHoA2ThdRSRP
	RSRQ	InterRatHoCommGroup. InterRatHoA2ThdRSRQ

Table 6-3 Thresh 2 for event B2

Measurement Quantity		Thresh 2
UTRAN	RSCP	InterRatHoUtranGroup. InterRATHoUtranB1ThdRSCP
	Ec/No	InterRatHoUtranGroup. InterRATHoUtranB1ThdEcN0
GERAN	RSSI	InterRatHoGeranGroup. InterRATHoGeranB1Thd

#### 6.3 Decision Phase of an Inter-RAT Handover

The eNodeB decides whether to perform an inter-RAT handover for a UE. For details, see **3.2 Decision on a Handover**. If the eNodeB receives measurement reports about different RATs, it processes the reports in a First In First Out (FIFO) manner.

In the decision phase of a service-based inter-RAT handover, the eNodeB decides not to perform a handover for a UE if the eNodeB detects that a service for which handover is not allowed is running on the UE.

In a coverage-based inter-RAT handover, if the UE reports that it does not support inter-RAT handovers, the eNodeB decides to perform a redirection to transfer the UE to an inter-RAT neighboring cell. Following are details:

- If the UE does not support inter-RAT measurements and handovers and if at least one neighboring cell of that RAT has been assigned a blind-handover priority, the eNodeB makes a blind-redirection decision based on the event A2 report. If the eNodeB decides to perform a blind redirection, it sends an RRC Connection Release message to the UE.
- If the UE supports measurements on an inter-RAT system but does not support handovers to that system, the eNodeB delivers corresponding inter-RAT measurement configurations to the UE. If the triggering condition of event B1 or B2 is met, the eNodeB sends the UE an RRC Connection Release message, instructing the UE to perform a redirection to an inter-RAT neighboring cell.

### 6.4 Execution Phase of an Inter-RAT Handover

### 6.4.1 Inter-RAT Handover Policy Selection

The following inter-RAT handover policies or modes are available:

- PS handover: It applies to PS services. In PS handover, services are handed over from the PS domain of the source system to the PS domain of the target system to ensure continuous service provision.
- SRVCC: It applies to voice services. In the case of SRVCC, the services are handed over from the LTE system to the circuit switched (CS) domain of the target system. For details about SRVCC, see SRVCC Feature Parameter Description.
- Cell Change Order with or without Network Assisted Cell Change (CCO/NACC): It is specific to the GSM cases. During the CCO/NACC, the UE is ordered to switch to the GERAN idle mode, and consequently it can try to access the GSM network. The procedure is simple but causes a long delay. In GSM, however, the CCO/NACC mode substitutes for PS handover. For the CCO with NACC, the eNodeB must acquire the system information from the target system and then send the information to the UE through a handover command, which accelerates the UE access to the target GSM cell. To use NACC, you need to enable CCO handover policies.
- Redirection: It is the simplest method to transfer UEs to an inter-RAT system. The 3GPP protocols stipulate that UEs that can work in another RAT also support redirections to the RAT. If neighbor relationships are not configured, the eNodeB can also perform redirections to transfer UEs. For details, see 3.6 Redirection.

Each handover policy is controlled by the corresponding switch under the **ENodeBAlgoSwitch**. *HoModeSwitch* parameter. Operators can enable handover policies based on their own system capabilities.

Each standardized or extended QCI can be configured with a specific inter-RAT handover policy. An inter-RAT handover policy is configured by using the **InterRatPolicyCfgGroup** MO, and the policy ID is specified by the

**InterRatPolicyCfgGroup.** *InterRatPolicyCfgGroupId* parameter. The configured policy can be assigned to a standardized or extended QCI by using the **STANDARDQCI** or **EXTENDEDQCI** MO.

#### M NOTE

Do not change the inter-RAT handover policy for each QCI unless necessary.

A bearer with a QCI of 1 carries VoIP services. Redirection for QCI 1 will affect user experience with VoIP services. If the target system does not support VoIP services, you are advised not to enable redirection for VoIP services.

The eNodeB determines the handover policy to use based on the following factors: enabled handover policies under the **ENodeBAlgoSwitch**. *HoModeSwitch* parameter, QCI of the radio bearer of the UE, UE capabilities, and target RAT. The eNodeB selects from the enabled handover policies in descending order: PS handover, SRVCC, CCO/NACC, and redirection. SRVCC can be triggered only if the UE is using VoIP services and supports SRVCC. **Figure 6-4** shows the flowchart for handover policy selection.

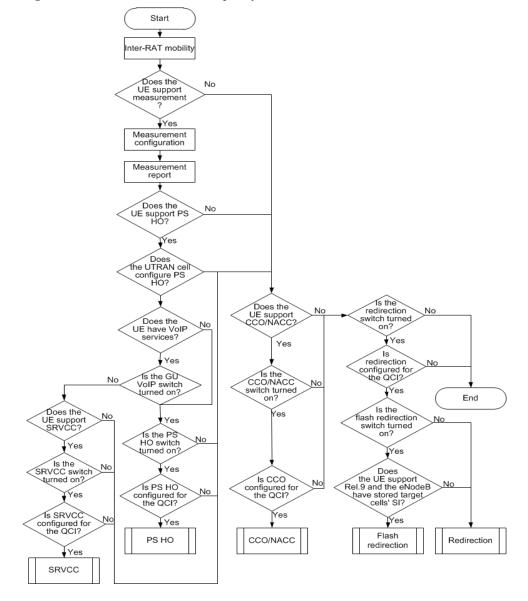


Figure 6-4 Flowchart for handover policy selection

The LTE system is incapable of carrying CS services. If an E-UTRAN UE needs to start a mobile-originated or mobile-terminated CS service, the UE will be moved to another RAT by means of CSFB. For details, see *CS Fallback Feature Parameter Description*.

### 6.4.2 Retry and Penalty

The retry and penalty mechanisms of an inter-RAT handover are the same as those of an intra-frequency handover. For details, see **4.4.2 Retry and Penalty** about intra-frequency handovers.

# 6.5 Signaling Procedure of a Typical Inter-RAT Handover

### 6.5.1 Signaling Procedure of a Successful Handover

Based on the QCI of the radio bearer of the UE and the type of the target cell, the eNodeB determines the handover policy, which can be PS handover, SRVCC, or CCO/NACC. The associated signaling procedures are described in the subsequent sections. For any type of inter-RAT handover, the eNodeB sends the handover request over the S1 interface to the MME, and then the MME sends it through the core network to the target RAN.

#### Signaling Procedure of a PS Handover to UTRAN or GERAN

**Figure 6-5** shows the signaling procedure of a PS handover to UTRAN or GERAN. The dashed lines in the figure indicate the procedures in the core network. For details, see section 5.5.2 in 3GPP TS 23.401 V10.3.0 (2011-03).

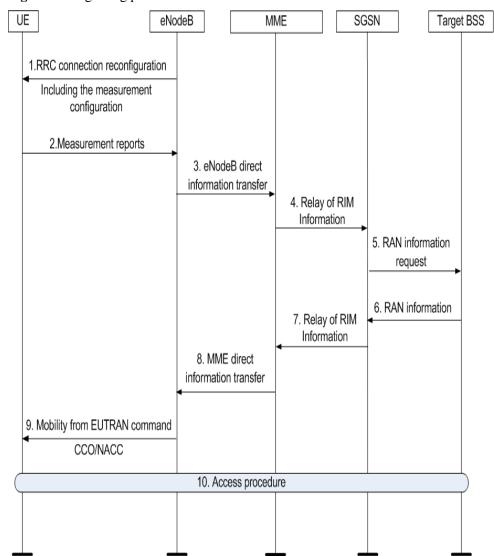


Figure 6-5 Signaling procedure of a PS handover to UTRAN or GERAN

#### Signaling Procedure of CCO/NACC to GERAN

**Figure 6-6** shows the signaling procedure of CCO/NACC to GERAN. In the case of CCO/NACC to GERAN, the eNodeB directly orders the UE to switch to the GERAN, instead of sending a handover request over the S1 interface. In the procedure shown in the figure, steps 3 to 8 are used to request the system information of the GERAN. They are applicable only to CCO with NACC. For details, see section 5.6 in 3GPP TS 23.401 V10.3.0 (2011-03).

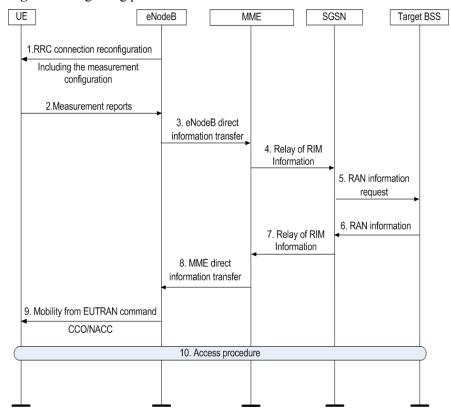


Figure 6-6 Signaling procedure of CCO/NACC to GERAN

#### 6.5.2 RRC Connection Re-Establishment After a Handover Failure

The RRC connection re-establishment procedure performed after an inter-RAT handover failure is the same as that performed after an intra-frequency handover failure. For details, see 4.5.2 RRC Connection Re-Establishment After a Handover Failure about intra-frequency handovers.

# **7** Related Features

# 7.1 Features Related to LBFD-00201801 Coverage Based Intra-frequency Handover

#### **Prerequisite Features**

None

#### **Mutually Exclusive Features**

None

#### **Impacted Features**

If LBFD-00201801 Coverage Based Intra-frequency Handover is not used, intra-frequency load balancing in LOFD-001032 Intra-LTE Load Balancing cannot be triggered.

# 7.2 Features Related to LBFD-00201802 Coverage Based Inter-frequency Handover

#### **Prerequisite Features**

None

### **Mutually Exclusive Features**

Coverage-based inter-frequency handovers support inter-frequency blind redirection in the absence of neighbor relationship configurations. To use inter-frequency blind redirection in the absence of neighbor relationship configurations, ensure that RAN sharing information about inter-frequency frequencies is configured.

." The parameters for RAN sharing and LOFD-001112 MOCN Flexible Priority Based Camping are mutually exclusive. Therefore, if inter-frequency blind redirection in the absence of neighbor

Description

relationship configurations is used, LOFD-001112 MOCN Flexible Priority Based Camping cannot be used.

#### **Impacted Features**

If LBFD-00201802 Coverage Based Inter-frequency Handover is used, you are advised not to use other inter-frequency handover features for multiple different frequencies. Otherwise, pingpong handovers between frequencies may occur due to differences in triggering conditions for different types of inter-frequency handovers.

If other inter-frequency handover features need to be used for multiple frequencies with LBFD-00201802 Coverage Based Inter-frequency Handover enabled, event A4 thresholds for those inter-frequency handover features must be properly set. The event A4 threshold for each type of inter-frequency handover must be higher than the event A2 threshold for coverage-based inter-frequency handover to ensure that a coverage-based inter-frequency measurement is not triggered immediately after a UE is handed over to the target frequency.

# 7.3 Features Related to LBFD-00201804 Distance Based Inter-frequency Handover

#### **Prerequisite Features**

None

#### **Mutually Exclusive Features**

None

#### **Impacted Features**

If LBFD-00201804 Distance Based Inter-frequency Handover is used, you are advised not to use other inter-frequency handover features for multiple different frequencies. Otherwise, pingpong handovers between frequencies may occur due to differences in triggering conditions for different types of inter-frequency handovers.

If other inter-frequency handover features need to be used for multiple frequencies with LBFD-00201804 Distance Based Inter-frequency Handover enabled, event A4 thresholds for those inter-frequency handover features must be properly set. The event A4 threshold for each type of inter-frequency handover must be higher than the event A2 threshold for coverage-based inter-frequency handover to ensure that a coverage-based inter-frequency measurement is not triggered immediately after a UE is handed over to the target frequency.

# 7.4 Features Related to LBFD-00201805 Service Based Interfrequency Handover

#### **Prerequisite Features**

#### **Mutually Exclusive Features**

VoIP services and the service-based inter-frequency handover feature are mutually exclusive. If an operator plans to use a frequency band in the LTE system to carry VoIP services, the service-based inter-frequency handover feature cannot be enabled for services with a QCI of 1 in this frequency band. If the service-based inter-frequency handover feature is enabled in this situation, VoIP services cannot be used.

#### **Impacted Features**

Good practice is to avoid enabling multiple inter-frequency handover types (excluding coverage-based inter-frequency handovers) on multiple E-UTRAN frequencies. If multiple inter-frequency handover types are enabled on multiple E-UTRAN frequencies, ping-pong handovers may occur due to the diverse triggering conditions of different inter-frequency handover types.

If coverage-based inter-frequency handovers are enabled on multiple E-UTRAN frequencies and another inter-frequency handover type is to be enabled on one frequency (for example, F1), ensure that the threshold for event A4 for this inter-frequency handover type is greater than the threshold for inter-frequency measurement event A2. To further elaborate on the two thresholds mentioned here, the threshold for event A4 is configured on the eNodeB providing F1, while the threshold for inter-frequency measurement event A2 is configured on the eNodeB providing a neighboring E-UTRAN frequency of F1.

# 7.5 Features Related to LOFD-001019 PS Inter-RAT Mobility between E-UTRAN and UTRAN

#### **Prerequisite Features**

None

#### **Mutually Exclusive Features**

Coverage-based inter-RAT handovers to UTRAN support inter-RAT blind redirection to UTRAN in the absence of the configuration of neighbor relationship with UTRAN. To use inter-RAT blind redirection to UTRAN in the absence of the configuration of neighbor relationship with UTRAN, ensure that RAN sharing information about the UTRAN frequencies is configured. For details, see **3.7 Blind Handovers**. The parameters for RAN sharing and LOFD-001112 MOCN Flexible Priority Based Camping are mutually exclusive. Therefore, if inter-RAT blind redirection to UTRAN in the absence of the configuration of neighbor relationship with UTRAN is used, LOFD-001112 MOCN Flexible Priority Based Camping cannot be used.

#### **Impacted Features**

If LOFD-001019 PS Inter-RAT Mobility between E-UTRAN and UTRAN is not used, all other features related to interactions between E-UTRAN and UTRAN will be affected.

# 7.6 Features Related to LOFD-001020 PS Inter-RAT Mobility between E-UTRAN and GERAN

#### **Prerequisite Features**

None

#### **Mutually Exclusive Features**

Coverage-based inter-RAT handovers to GERAN support inter-RAT blind redirection to GERAN in the absence of the configuration of neighbor relationship with GERAN. To use inter-RAT blind redirection to GERAN in the absence of the configuration of neighbor relationship with GERAN, ensure that RAN sharing information about the GERAN frequencies is configured. For details, see **3.7 Blind Handovers**. The parameters for RAN sharing and LOFD-001112 MOCN Flexible Priority Based Camping are mutually exclusive. Therefore, if inter-RAT blind redirection to GERAN in the absence of the configuration of neighbor relationship with GERAN is used, LOFD-001112 MOCN Flexible Priority Based Camping cannot be used.

#### **Impacted Features**

If LOFD-001020 PS Inter-RAT Mobility between E-UTRAN and GERAN is not used, all other features related to interactions between E-UTRAN and GERAN will be affected.

# 7.7 Features Related to LOFD-001043 Service based inter-RAT handover to UTRAN

#### **Prerequisite Features**

LOFD-001043 Service based inter-RAT handover to UTRAN requires LOFD-001019 PS Inter-RAT Mobility between E-UTRAN and UTRAN.

#### **Mutually Exclusive Features**

VoIP services and the service-based inter-RAT handover feature are mutually exclusive. If an operator plans to use the LTE system to carry VoIP services, the service-based inter-RAT handover feature cannot be enabled for services with a QCI of 1. If the service-based inter-RAT handover feature is enabled in this situation, VoIP services cannot be used.

#### **Impacted Features**

# 7.8 Features Related to LOFD-001046 Service based inter-RAT handover to GERAN

#### **Prerequisite Features**

LOFD-001046 Service based inter-RAT handover to GERAN requires LOFD-001020 PS Inter-RAT Mobility between E-UTRAN and GERAN.

#### **Mutually Exclusive Features**

VoIP services and the service-based inter-RAT handover feature are mutually exclusive. If an operator plans to use the LTE system to carry VoIP services, the service-based inter-RAT handover feature cannot be enabled for services with a QCI of 1. If the service-based inter-RAT handover feature is enabled in this situation, VoIP services cannot be used.

#### **Impacted Features**

None

# 7.9 Features Related to LOFD-001072 Distance based inter-RAT handover to UTRAN

#### **Prerequisite Features**

LOFD-001072 Distance based inter-RAT handover to UTRAN requires LOFD-001019 PS Inter-RAT Mobility between E-UTRAN and UTRAN.

#### **Mutually Exclusive Features**

None

#### **Impacted Features**

None

# 7.10 Features Related to LOFD-001073 Distance based inter-RAT handover to GERAN

#### **Prerequisite Features**

LOFD-001073 Distance based inter-RAT handover to GERAN requires LOFD-001020 PS Inter-RAT Mobility between E-UTRAN and GERAN.

#### **Mutually Exclusive Features**

#### **Impacted Features**

None

# 7.11 Features Related to LOFD-001078 E-UTRAN to UTRAN CS/PS Steering

#### **Prerequisite Features**

LOFD-001078 E-UTRAN to UTRAN CS/PS Steering requires LOFD-001019 PS Inter-RAT Mobility between E-UTRAN and UTRAN or LOFD-001033 CS Fallback to UTRAN.

#### **Mutually Exclusive Features**

None

#### **Impacted Features**

# 8 Network Impact

# 8.1 LBFD-00201801 Coverage Based Intra-frequency Handover

**System Capacity** 

No impact.

#### **Network Performance**

Coverage-based intra-frequency handovers reduce interference from intra-frequency neighboring cells on an intra-frequency network, decreasing the call drop rate.

# 8.2 LBFD-00201802 Coverage Based Inter-frequency Handover

**System Capacity** 

No impact.

#### **Network Performance**

With coverage-based inter-frequency handovers, the coverage in areas with weak LTE coverage or coverage holes can be supplemented by inter-frequency neighboring cells, decreasing the call drop rate.

# 8.3 LBFD-00201804 Distance Based Inter-frequency Handover

**System Capacity** 

No impact.

#### **Network Performance**

No impact.

# 8.4 LBFD-00201805 Service Based Inter-frequency Handover

**System Capacity** 

No impact.

**Network Performance** 

No impact.

# 8.5 LOFD-001019 PS Inter-RAT Mobility between E-UTRAN and UTRAN

**System Capacity** 

No impact.

#### **Network Performance**

With coverage-based inter-RAT handovers, the coverage in areas with weak LTE coverage or coverage holes can be supplemented by inter-RAT neighboring cells, decreasing the call drop rate.

# 8.6 LOFD-001020 PS Inter-RAT Mobility between E-UTRAN and GERAN

**System Capacity** 

No impact.

#### **Network Performance**

With coverage-based inter-RAT handovers, the coverage in areas with weak LTE coverage or coverage holes can be supplemented by inter-RAT neighboring cells, decreasing the call drop rate.

# 8.7 LOFD-001043 Service based inter-RAT handover to UTRAN

C	ystem	Can	acity
$\mathbf{c}$	Stem	Cap	acity

No impact.

#### **Network Performance**

No impact.

# 8.8 LOFD-001046 Service based inter-RAT handover to GERAN

**System Capacity** 

No impact.

**Network Performance** 

No impact.

# 8.9 LOFD-001072 Distance based inter-RAT handover to UTRAN

**System Capacity** 

No impact.

**Network Performance** 

No impact.

# 8.10 LOFD-001073 Distance based inter-RAT handover to GERAN

**System Capacity** 

No impact.

**Network Performance** 

No impact.

# 8.11 LOFD-001078 E-UTRAN to UTRAN CS/PS Steering

**System Capacity** 

No impact.

**Network Performance** 

No impact.

# 9 Engineering Guidelines

This chapter provides engineering guidelines for mobility management in connection mode.

## 9.1 Coverage-based Intra-frequency Handover

### 9.1.1 When to Use Coverage Based Intra-frequency Handover

Mobility management is fundamental to service continuity. Coverage-based intra-frequency handovers are used by default. You are advised to keep this type of handover enabled.

### 9.1.2 Required Information

Coverage-based intra-frequency handover is a basic feature and has no special requirements for the network and UE.

To ensure the performance of coverage-based intra-frequency handover, verify that the E-UTRAN provides effective and continuous coverage. If there are coverage holes in the E-UTRAN, coverage-based intra-frequency handover may not achieve satisfactory performance.

In addition, collect information about intra-frequency neighbor relationships to ensure the integrity of such relationships.

# 9.1.3 Data Preparation

This section describes the data that you need to collect for setting parameters. Required data is data that you must collect for all scenarios. Collect scenario-specific data when necessary for a specific feature deployment scenario.

There are three types of data sources:

- Network plan (negotiation required): parameter values planned by the operator and negotiated with the EPC or peer transmission equipment
- Network plan (negotiation not required): parameter values planned and set by the operator
- User-defined: parameter values set by users.

### **Required Data**

This section describes the data required for configuring neighbor relationships with intrafrequency E-UTRAN cells.

The following table describes the parameters that must be set in the **EutranExternalCell** managed object (MO) to configure an external E-UTRAN cell. This MO is required only if an intra-frequency neighboring cell is under a different eNodeB from the local cell.

Paramete	Paramet	Data	Setting Notes
r Name	er ID	Source	
Mobile country code	EutranE xternalC ell. <i>Mcc</i>	Network plan (negotiati on required)	This parameter specifies the mobile country code (MCC) of the home eNodeB of the external E-UTRAN cell. If this external cell works in RAN sharing mode, set this parameter to the MCC of the primary operator. This parameter references the corresponding parameter defined in the <b>CnOperator</b> MO on the peer eNodeB.

Paramete r Name	Paramet er ID	Data Source	Setting Notes
Mobile network code	EutranE xternalC ell.Mnc	Network plan (negotiati on required)	This parameter specifies the mobile network code (MNC) of the home eNodeB of the external E-UTRAN cell. If this external cell works in RAN sharing mode, set this parameter to the MNC of the primary operator. This parameter references the corresponding parameter defined in the <b>CnOperator</b> MO on the peer eNodeB.
eNodeB ID	EutranE xternalC ell. eNodeBI d	Network plan (negotiati on required)	This parameter specifies the ID of the home eNodeB of the external E-UTRAN cell. It uniquely identifies the eNodeB within the entire network.  This parameter references the corresponding parameter defined in the eNodeBFunction MO on the peer eNodeB.
Cell ID	EutranE xternalC ell. <i>CellId</i>	Network plan (negotiati on required)	This parameter specifies the ID of the external E-UTRAN cell. It uniquely identifies a cell within an eNodeB.  This parameter references the corresponding parameter defined in the Cell MO on the peer eNodeB.
Downlink EARFCN	EutranE xternalC ell. DIEarfc n	Network plan (negotiati on required)	This parameter specifies the DL EARFCN of the external E-UTRAN cell.
Physical cell ID	EutranE xternalC ell. PhyCellI d	Network plan (negotiati on required)	This parameter references the corresponding parameter defined in the <b>Cell</b> MO on the peer eNodeB.
Tracking area code	EutranE xternalC ell. <i>Tac</i>	Network plan (negotiati on required)	This parameter references the corresponding parameter defined in the <b>CnOperatorTa</b> MO on the peer eNodeB.

(Optional, required only if the home eNodeB of the external E-UTRAN cell works in eRAN sharing with common carrier mode) The following table describes the parameters that must be set in the **EutranExternalCellPlmn** MO to configure an additional PLMN ID (representing a secondary operator) for an external E-UTRAN cell.

Parameter Name	Parameter ID	Data Source	Setting Notes
Mobile country code	EutranExte rnalCellPlm n.Mcc	Network plan (negotiation required)	This parameter specifies the MCC of the primary operator.  This parameter references the corresponding parameter defined in the <b>CnOperator</b> MO on the peer eNodeB.
Mobile network code	EutranExte rnalCellPlm n.Mnc	Network plan (negotiation required)	This parameter specifies the MNC of the primary operator.  This parameter references the corresponding parameter defined in the <b>CnOperator</b> MO on the peer eNodeB.
eNodeB ID	EutranExte rnalCellPlm n.eNodeBId	Network plan (negotiation required)	This parameter specifies the ID of the home eNodeB of the external E-UTRAN cell. It uniquely identifies the eNodeB within the entire network.  This parameter references the corresponding parameter defined in the eNodeBFunction MO on the peer eNodeB.
Cell ID	EutranExte rnalCellPlm n.CellId	Network plan (negotiation required)	This parameter specifies the ID of the external E-UTRAN cell. It uniquely identifies a cell within an eNodeB.  This parameter references the corresponding parameter defined in the Cell MO on the peer eNodeB.
Share mobile country code	EutranExte rnalCellPlm n.ShareMcc	Network plan (negotiation required)	This parameter specifies the MCC of the secondary operator for the external E-UTRAN cell.  This parameter references the corresponding parameter defined in the <b>CnOperator</b> MO on the peer eNodeB.
Share mobile network code	EutranExte rnalCellPlm n.ShareMnc	Network plan (negotiation required)	This parameter specifies the MNC of the secondary operator for the external E-UTRAN cell.  This parameter references the corresponding parameter defined in the <b>CnOperator</b> MO on the peer eNodeB.

The following table describes the parameters that must be set in the **EutranIntraFreqNCell** MO to configure the neighbor relationship with an intra-frequency E-UTRAN cell.

Paramet er Name	Parameter ID	Data Source	Setting Notes
Local cell ID	EutranIntr aFreqNCell LocalCellId	Network plan (negotiation not required)	Ensure that this parameter has been set in a <b>Cell</b> MO.
Mobile country code	EutranIntr aFreqNCell .Mcc	Network plan (negotiation required)	This parameter specifies the MCC of the home eNodeB of the intra-frequency neighboring E-UTRAN cell. If this neighboring E-UTRAN cell works in RAN sharing mode, set this parameter to the MCC of the primary operator.  This parameter references the corresponding parameter defined in the CnOperator MO on the peer eNodeB.
Mobile network code	EutranIntr aFreqNCell .Mnc	Network plan (negotiation required)	This parameter specifies the MNC of the home eNodeB of the neighboring E-UTRAN cell. If this neighboring E-UTRAN cell works in RAN sharing mode, set this parameter to the MNC of the primary operator.  This parameter references the corresponding parameter defined in the CnOperator MO on the peer eNodeB.
eNodeB ID	EutranIntr aFreqNCell .eNodeBId	Network plan (negotiation required)	This parameter specifies the ID of the home eNodeB of the neighboring E-UTRAN cell. It uniquely identifies the eNodeB within the entire network.  This parameter references the corresponding parameter defined in the eNodeBFunction MO on the peer eNodeB.
Cell ID	EutranIntr aFreqNCell .CellId	Network plan (negotiation required)	This parameter specifies the ID of the neighboring E-UTRAN cell. It uniquely identifies a cell within an eNodeB.  This parameter references the corresponding parameter defined in the Cell MO on the peer eNodeB.

### Scenario-specific Data

The following table describes the parameter that must be set in the **ENodeBAlgoSwitch** MO to configure coverage-based intra-frequency handover.

Param eter Name	Parameter ID	Data Source	Setting Notes
Hando ver Algo switch	ENodeBAlgo Switch. HoAlgoSwitch	Network plan (negotiation not required)	To enable coverage-based intra-frequency handover, select the IntraFreqCoverHoSwitch (IntraFreqCoverHoSwitch) check box under this parameter.

By default, the intra-frequency handover parameter group Group0 is used for services with all QCIs. To apply different intra-frequency handover parameter groups to services based on the QCI, the corresponding parameter group ID must be changed.

The following table describes the parameter that must be set in the **CellStandardQci** MO to configure parameter groups for services with standard QCIs.

Parameter Name	Paramete r ID	Data Source	Setting Notes
Local cell ID	CellStand ardQci. LocalCellI d	Network plan (negotiati on not required)	Ensure that this parameter has been set in a <b>Cell</b> MO based on the network plan.
QoS Class Indication	CellStand ardQci. <i>Qci</i>	Network plan (negotiati on not required)	This parameter specifies the index of the standard QCI for which the parameter group is configured.
Intrafreq handover group ID	CellStand ardQci. IntraFreq HoGroupI d	Network plan (negotiati on not required)	This parameter specifies the index of the intra- frequency handover parameter group.

The following table describes the parameter that must be set in the **CellExtendedQci** MO to configure parameter groups for services with extended QCIs.

Parameter Name	Parameter ID	Data Source	Setting Notes
Extended QCI	CellExten dedQci. ExtendedQ ci	Network plan (negotiation not required)	Set this parameter to the index of the extended QCI for which the parameter group is configured.

Parameter Name	Parameter ID	Data Source	Setting Notes
Local cell ID	CellExten dedQci. LocalCellI	Network plan (negotiation not required)	Ensure that this parameter has been set in a <b>Cell</b> MO based on the network plan.
Intrafreq handover group ID	CellExten dedQci. IntraFreq HoGroupI d	Network plan (negotiation not required)	Set this parameter to the index of the corresponding parameter group.

For details about the index of the intra-frequency parameter group and the corresponding thresholds, see 9.1.7 Reconfiguration.

The following table describes the parameter that must be set in the **EutranInterFreqNCell** MO to configure measurement priorities for intra-frequency neighboring cells.

Parameter Name	Parameter ID	Data Source	Setting Notes
Cell Measure Priority	EutranInte rFreqNCell. CellMeasPri ority	Network plan (negotiation not required)	You are advised to set this parameter to HIGH_PRIORITY(High Priority) for neighboring cells with optimal network coverage and the maximum number of possible handovers, and to LOW_PRIORITY(Low Priority) for other neighboring cells.

## 9.1.4 Deployment Requirements

#### **Operating Environment**

Coverage-based intra-frequency handovers have no requirements for operating environment.

### **Transmission Networking**

Coverage-based intra-frequency handovers have no requirements for transmission networking.

#### License

Coverage-based intra-frequency handovers have no requirements for licenses.

#### 9.1.5 Activation

### Using the CME to Perform Batch Configuration for Newly Deployed eNodeBs

Enter the values of related parameters in a summary data file, which also contains other data for the new eNodeBs to be deployed. Then, import the summary data file into the Configuration Management Express (CME) for batch configuration. For detailed instructions, see section "Creating eNodeBs in Batches" in the initial configuration guide for the eNodeB.

The summary data file may be a scenario-specific file provided by the CME or a customized file, depending on the following conditions:

- Related managed objects (MOs) are contained in a scenario-specific summary data file. In this situation, set the parameters in the MOs, and then verify and save the file.
- Some related MOs are not contained in a scenario-specific summary data file. In this situation, customize a summary data file to include the MOs before you can set the parameters.

Related MOs and parameters in each scenario are listed as follows:

Table 9-1 Parameters related to coverage-based intra-frequency handovers

МО	Sheet in the Summary Data File	Parameter Group	Remarks
ENodeBAlg oSwitch	User-defined sheet ENodeBAlgoSwitc h is recommended.	Handover Algo switch	A list-type sheet is recommended.
EutranExter nalCell	User-defined sheet  EutranExternal- Cell is recommended.	Mobile country code, Mobile network code, eNodeB identity, Cell identity, Downlink EARFCN, Uplink EARFCN indicator, Uplink EARFCN, Physical cell identity, Tracking area code, Cell name	A list-type sheet is recommended.
EutranExter nalCellPlmn	User-defined sheet EutranExternal- CellPlmn is recommended.	Mobile country code, Mobile network code, eNodeB identity, Cell identity, Share mobile country code, Share mobile network code	A list-type sheet is recommended.
EutranIntra- FreqNCell	User-defined sheet  EutranIntra- FreqNCell is recommended.	Local cell identity, Mobile country code, Mobile network code, eNodeB identity, Cell identity, Cell individual offset (dB), Cell offset(dB), No handover indicator, No remove indicator, ANR flag/Local cell name, Neighbour cell name	A list-type sheet is recommended.

#### Using the CME to Perform Batch Configuration for Existing eNodeBs

Batch reconfiguration using the CME is the recommended method to activate a feature on existing eNodeBs. This method reconfigures all data, except neighbor relationships, for multiple eNodeBs in a single procedure. The procedure is as follows:

- **Step 1** Choose CME > Advanced > Customize Summary Data File (M2000 client mode), or choose Advanced > Customize Summary Data File (CME client mode), to customize a summary data file for batch reconfiguration.
  - M NOTE

For context-sensitive help on a current task in the client, press F1.

- Step 2 Choose CME > LTE Application > Export Data > Export Base Station Bulk Configuration Data (M2000 client mode), or choose Advanced > Base Station Bulk Configuration > Export Data (CME client mode), to export the eNodeB data stored on the CME into the customized summary data file.
- **Step 3** In the summary data file, set the parameters in the MOs listed in **Table 9-1** and close the file.
- **Step 4** Choose CME > LTE Application > Import Data > Import Base Station Bulk Configuration Data (M2000 client mode), or choose LTE Application > Import Data > Import Base Station Bulk Configuration Data (CME client mode), to import the summary data file into the CME.
- **Step 5** Choose CME > Planned Area > Export Incremental Scripts (M2000 client mode), or choose Area Management > Planned Area > Export Incremental Scripts (CME client mode), to export and activate the incremental scripts.

----End

#### Using the CME to Perform Single Configuration

On the CME, set the parameters listed in the "Data Preparation" section for a single eNodeB. The procedure is as follows:

- **Step 1** In the planned data area, click **Base Station** in the upper left corner of the configuration window.
- **Step 2** In area 1 shown in **Figure 9-1**, select the eNodeB to which the MOs belong.

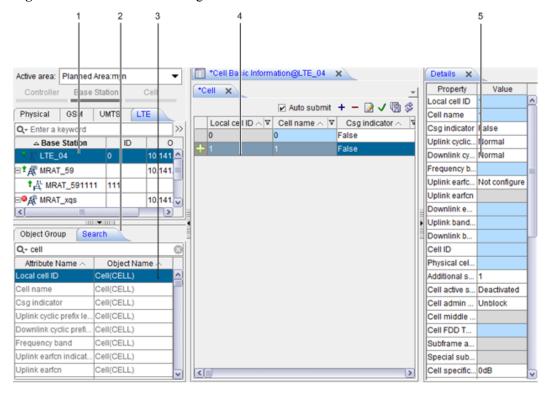


Figure 9-1 MO search and configuration window

#### **□** NOTE

- To view descriptions of the parameters in the MO, click in area 4 and press F1.
- Area 5 displays the details of a selected area-4 entry in vertical format. Click the "Details" button to show or hide this area.
- Step 3 On the Search tab page in area 2, enter an MO name, for example, CELL.
- **Step 4** In area 3, double-click the MO in the **Object Name** column. All parameters in this MO are displayed in area 4.
- **Step 5** Set the parameters in area 4 or 5.
- Step 6 Choose CME > Planned Area > Export Incremental Scripts (M2000 client mode), or choose Area Management > Planned Area > Export Incremental Scripts (CME client mode), to export and activate the incremental scripts.

----End

#### **Using MML Commands**

- Step 1 Run the MOD ENODEBALGOSWITCH command, and select the IntraFreqCoverHoSwitch option under the Handover Algo switch parameter.
- **Step 2** Run the following commands to add neighbor relationships with intra-frequency E-UTRAN cells:
  - 1. ADD EUTRANEXTERNALCELL
  - 2. ADD EUTRANEXTERNALCELLPLMN

#### 3. ADD EUTRANINTRAFREQNCELL

----End

Description

#### 9.1.6 Activation Observation

The observation procedure is as follows:

- **Step 1** Trace messages over the Uu interface on the M2000 client after UEs access the network. Check the measurement configuration of the serving cell in the RRC\_CONN\_RECFG message, including the cell frequency, bandwidth, cell ID, PCI, and event A3 reporting.
- **Step 2** Trace messages over the Uu interface while the UE is moving towards an intra-frequency neighboring cell. Check the target cell access information in the RRC\_CONN\_RECFG message. This message is a handover command.

----End

### 9.1.7 Reconfiguration

#### **Intra-Frequency Handover Parameters**

Intra-frequency handover parameters are contained in the **IntraFreqHoGroup** MO. The following table provides suggestions on how to reconfigure these parameters.

Paramet er Name	Parameter ID	Data Source	Setting Notes
Local cell ID	IntraFreqHoGro up. <i>LocalCellId</i>	Network plan (negotiation not required)	Ensure that this parameter has been set in a <b>Cell</b> MO based on the network plan.
Intrafreq handover group ID	IntraFreqHoGro up. IntraFreqHoGrou pId	Network plan (negotiation not required)	This parameter specifies the ID of the parameter group related to intra-frequency handovers.  If you want to set different intra-frequency handover parameters for services with a specific QCI, you must create a parameter group, and reference the parameter group ID to the corresponding QCI. For detailed configuration, see section "Scenariospecific Data".

Paramet er Name	Parameter ID	Data Source	Setting Notes
Intrafreq handover hysteresi s	IntraFreqHoGro up. IntraFreqHoA3H yst	Network plan (negotiation not required)	This parameter specifies the hysteresis for intra-frequency handover event A3.  A larger hysteresis value causes a lower probability of triggering event A3, affecting user experience. A smaller hysteresis value causes a higher probability of triggering event A3 but also a higher probability of incorrect handover decisions and ping-pong handovers.  It is recommended that the default value be used. You can suitably decrease the value in areas with slight signal fluctuation.
Intrafreq handover offset	IntraFreqHoGro up. IntraFreqHoA3Of fset	Network plan (negotiation not required)	This parameter specifies the offset for intra-frequency handover event A3.  A larger value causes a lower probability of triggering event A3. A smaller value causes a higher probability.  It is recommended that you adjust the parameter value based on the application scenario. Increase the parameter value if premature intra-frequency handovers occur. Decrease the parameter value if delayed intra-frequency handovers occur.
Intrafreq handover time to trigger	IntraFreqHoGro up. IntraFreqHoA3Ti meToTrig	Network plan (negotiation not required)	This parameter specifies the time-to-trigger for intra-frequency handover event A3.  The time-to-trigger setting can reduce the average number of handovers and the number of incorrect handovers and can also prevent unnecessary handovers. The average number of handovers has a negative correlation with the time-to-trigger. At the same time, an excessively large time-to-trigger value results in a high risk of call drops.  It is recommended that you adjust the parameter value with  IntraFreqHoGroup.IntraFreqHoA3Off set based on the application scenario.  Increase the parameter value if premature intra-frequency handovers occur.  Decrease the parameter value if delayed intra-frequency handovers occur.

#### Cell Individual Offset for Intra-Frequency Neighboring Cells

The following table provides the parameter that must be set in the **EutranIntraFreqNCell** MO to adjust cell individual offset for the intra-frequency neighboring cells.

Paramete	Paramete	Data	Setting Notes
r Name	r ID	Source	
Cell individual offset	EutranIn traFreqN Cell. CellIndivi dualOffse t	Network plan (negotiation not required)	This parameter affects the probability of reporting intra-frequency measurement events. A larger parameter value indicates a higher probability. If there are multiple target cells for the intra-frequency handover and related handover parameters need to be optimized, you can decrease this parameter value for a neighboring cell to reduce the possibility of the handover to the neighboring cell, or you can increase this parameter value for a neighboring cell to raise the possibility of the handover to the neighboring cell.

For detailed parameter configuration for intra-frequency neighboring cells, see the "Required Data" part in 9.1.3 Data Preparation.

### **Intra-RAT Intra-Frequency Handover Parameters**

Intra-RAT intra-frequency handover parameters are contained in the **IntraRatHoComm** MO. The following table provides suggestions on how to reconfigure these parameters.

Parameter Name	Parameter ID	Data Source	Setting Notes
Max report cell number	IntraRatHo Comm. IntraRatHo- MaxRprtCel l	Network plan (negotiation not required)	This parameter specifies the maximum number of cells to be included in each intrafrequency or inter-frequency measurement report after the corresponding event is triggered. Set this parameter to a larger value if the eNodeB requires more candidate cells to make a handover decision. An excessively large value, however, causes a waste of air interface resources.  It is recommended that the default value be used.

Parameter Name	Parameter ID	Data Source	Setting Notes
Measureme nt report amount	IntraRatHo Comm. IntraRatHo RprtAmount	Network plan (negotiation not required)	This parameter specifies the number of intra-frequency or inter-frequency periodical measurement reports to be sent after the corresponding event is triggered. Set this parameter to a larger value if the eNodeB requires more measurement reports to make a handover decision. An excessively large parameter value, however, causes a waste of air interface resources. It is recommended that the default value be used.
A3 measuremen t trig quantity	IntraRatHo Comm. IntraFreqH oA3TrigQua n	Network plan (negotiation not required)	This parameter specifies the triggering quantity for intra-frequency handover event A3. The parameter can be either RSRP or RSRQ. RSRQ-based measurement results reflect signal quality in real time, whereas RSRP-based measurement results are stable with little signal fluctuation. It is recommended that the default value be used.
A3 measuremen t report quantity	IntraRatHo Comm. IntraFreqH oA3RprtQu an	Network plan (negotiation not required)	This parameter specifies the reporting quantity to be included in the measurement reports after intra-frequency handover event A3 is triggered. The parameter can be either the same as the triggering quantity for this event A3 or both RSRP and RSRQ. That is, the measurement results of the serving cell and neighboring cells can be RSRP-based, RSRQ-based, or both in A3-related measurement reports.  It is recommended that the default value be used.
Intrafreq measuremen t report interval	IntraRatHo Comm. IntraFreqH oRprtInterv al	Network plan (negotiation not required)	This parameter specifies the interval between the reports that are triggered by intra-frequency handover event A3.  A smaller value causes more measurement reports and greater consumption of air interface resources, but a higher probability of triggering handover. An excessively large parameter value, however, causes a long delay in retries and a low handover success rate.  It is recommended that the default value be used.

#### 9.1.8 Deactivation

Description

#### Using the CME to Perform Batch Configuration

Batch reconfiguration using the CME is the recommended method to deactivate a feature on eNodeBs. This method reconfigures all data, except neighbor relationships, for multiple eNodeBs in a single procedure. The procedure for feature deactivation is similar to that for feature activation described in "Using the CME to Perform Batch Configuration for Existing eNodeBs". In the procedure, modify related parameters described below.

Table 9-2 Parameters related to coverage-based intra-frequency handovers

МО	Sheet in the Summary Data File	Parameter Group	Setting Notes
ENodeBAlgoSwitc	ENodeBAlgoSwitc	Handover Algo	Clear the IntraFreqCover-HoSwitch check box.
h	h	switch	

#### Using the CME to Perform Single Configuration

On the CME, set the parameters listed in each scenario for a single eNodeB. For detailed instructions, see **Using the CME to Perform Single Configuration** for feature activation.

## **Using MML Commands**

To deactivate coverage-based intra-frequency handover, disable its algorithm by running the MOD ENODEBALGOSWITCH command and clear the IntraFreqCoverHoSwitch option under the Handover Algo switch parameter.

# 9.1.9 Performance Monitoring

For details about how to monitor and evaluate load-based intra-frequency handovers, see *MLB Feature Parameter Description*.

Coverage-based intra-frequency handovers ensure service continuity when users move around. How well these handovers serve this purpose reflects their performance. After activating coverage-based intra-frequency handover, check the following key performance indicators (KPIs) to monitor and evaluate handover performance:

- KPIs indicating handover success rates, including the following:
  - Inter-eNB Intra-frequency Handover In Success Rate
  - Inter-eNB Intra-frequency Handover Out Success Rate
  - Intra-eNB Intra-frequency Handover In Success Rate
  - Intra-eNB Intra-frequency Handover Out Success Rate
- KPI indicating the call drop rate: Abnormal Release Rate

If the handover success rates have not noticeably fallen and the call drop rate has not noticeably risen after coverage-based intra-frequency handover was activated, this type of handover has been delivering good performance.

# 9.1.10 Parameter Optimization

#### Offset

The offset in event A3 for coverage-based intra-frequency handovers is specified by the **IntraFreqHoGroup**. *IntraFreqHoA3Offset* parameter. This parameter determines the A3-based handover threshold and the probability of reporting event A3. Tune this parameter if the handover threshold for the live network needs to be adjusted to achieve an optimal handover area size.

Note the following when tuning this parameter:

- A larger value for the **IntraFreqHoGroup**. *IntraFreqHoA3Offset* parameter may increase the probability of service drops. This is because a larger value makes it more difficult for event A3 to be reported and therefore for a handover to be triggered. As a result, a UE may not be promptly handed over to an intra-frequency neighboring cell even when the signal quality of the serving cell is not adequate to ensure service quality.
- A smaller value for the **IntraFreqHoGroup**. *IntraFreqHoA3Offset* parameter may also increase the probability of handover failure. This is because a smaller value of this parameter makes it easier for event A3 to be reported and therefore for a handover to be triggered. As a result, a UE may be handed over to an intra-frequency neighboring cell when the signal quality of this cell is not yet adequate to ensure service quality.

If many handover failures are caused due to handover delays, lower the handover threshold. If many ping-pong handovers occur, increase the handover threshold. The **IntraFreqHoGroup**. *IntraFreqHoA30ffset* parameter can be adjusted for an eNodeB or the entire network based on the network conditions.

# Hysteresis

The hysteresis in event A3 for coverage-based intra-frequency handovers is specified by the **IntraFreqHoGroup**. *IntraFreqHoA3Hyst* parameter. This parameter determines the strictness of the conditions for entering or leaving event A3. Tune this parameter to minimize the probability of frequently entering and leaving event A3.

- A larger value for the **IntraFreqHoGroup**. *IntraFreqHoA3Hyst* parameter makes it more difficult to meet the conditions for entering and leaving event A3. As a result, it is less probable for UEs to frequently enter and leave event A3.
- A smaller value for the **IntraFreqHoGroup**.*IntraFreqHoA3Hyst* parameter makes it easier to meet the conditions for entering and leaving event A3. As a result, it is more probable for UEs to frequently enter and leave event A3.

If UEs frequently enter and leave event A3, raise the value for the IntraFreqHoGroup.IntraFreqHoA3Hyst parameter. This parameter and the IntraFreqHoGroup.IntraFreqHoA3Offset parameter determine the handover threshold. The IntraFreqHoGroup.IntraFreqHoA3Hyst parameter reduces the probability of ping-pong handovers caused by measurement fluctuations. Generally, if the

**IntraFreqHoGroup**. *IntraFreqHoA3Offset* parameter is set to a larger value, adjust the **IntraFreqHoGroup**. *IntraFreqHoA3Hyst* parameter accordingly to reduce the probability of abnormal handovers. If uplink resources are limited, the number of times UEs report event A3 can be reduced to spare some radio resources. In this situation, the

**IntraFreqHoGroup**. *IntraFreqHoA3Hyst* parameter can be set to a smaller value so that UEs can more easily leave event A3.

#### CIO

Description

The CIO for an intra-frequency neighboring cell is included in event A3 measurement reports, and it is specified by the **EutranInterFreqNCell**. *CellIndividualOffset* parameter in the configuration data for this neighbor relationship. This cell-level parameter varies according to the serving cell and its neighboring cells. Each UE adds the CIO to the measurement results of the serving cell and neighboring cells. The UE considers this sum when making handover decisions. This measure is equivalent to relocating cell borders.

**EutranInterFreqNCell**. *CellIndividualOffset* also determines the handover threshold. Tune this parameter for handovers between a serving cell and its neighboring cells without affecting the handover thresholds for other cells.

- Adding the CIO to the measurement result of the serving cell raises the probability of handovers from the serving cell.
- Adding the CIO to the measurement result of a neighboring cell raises the probability of handovers to this cell.

If signal quality fluctuates, tune the **EutranInterFreqNCell**. *CellIndividualOffset* parameter as follows:

- To increase the probability of handovers from a serving cell, decrease the value of this parameter.
- To increase the probability of handovers to a neighboring cell, increase the value of this parameter.

This measure improves handover performance and reduces the risk of call drops.

## Time-to-Trigger

The **IntraFreqHoGroup**. *IntraFreqHoA3TimeToTrig* parameter specifies whether to allow UEs to promptly report measurement results. If measurement reporting is always delayed, decrease the value of this parameter to ensure prompt measurement reporting. If the RSRP fluctuates greatly and ping-pong handovers occur as a result, increase the value of this parameter to reduce the impact of signal fluctuations.

# 9.1.11 Troubleshooting

#### Fault description

An eNodeB may not initiate a handover procedure upon receipt of an event A3 measurement report.

## Fault handling

When this problem occurs, perform the following steps to determine whether it has occurred because the target cell has not been configured as a neighboring cell:

- **Step 1** Check the messages over the Uu interface and locate the PCI of the neighboring cell in the measurement report.
- Step 2 Run the LST EUTRANEXTERNALCELL command to list all external E-UTRAN cells of the eNodeB, run the LST CELL command to list all local cells of the eNodeB, and check these lists for the cell whose PCI equals the PCI found in the previous step.

- If this cell can be found, contact Huawei engineers.
- Step 3 Find out the CGI of the cell whose PCI equals the PCI found in Step 1 in the command output in Step 2.
- Step 4 Run the ADD EUTRANEXTERNALCELL and ADD EUTRANINTRAFREQNCELL command to add the CGI to EutranExternalCell and EutranIntraFreqNCell MOs, respectively.

----End

# 9.2 Coverage-based Inter-frequency Handover

# 9.2.1 When to Use Coverage-based Inter-frequency Handover

Mobility management is fundamental to service continuity. Coverage-based inter-frequency handovers are used by default. You are advised to keep this type of handover enabled.

If the live network does not require inter-frequency networking, you can disable coverage-based inter-frequency handover.

Event A3, A4, or A5 can trigger coverage-based inter-frequency handovers. Event A3 is recommended for handovers in the overlapping area of two cells, between cells with the same bandwidth, or between cells within the same band. Event A4 or A5 is recommended for triggering coverage-based inter-frequency handovers in other situations. If there are no special requirements for the serving cell signal quality, you can choose not to use event A5.

# 9.2.2 Required Information

If blind handovers or redirections are required to implement inter-frequency handovers, collect the information about the neighboring cells to which blind handovers or redirections will be allowed as well as their blind-handover priorities.

The information to be collected before deploying coverage-based inter-frequency handover includes the information to be collected before deploying coverage-based intra-frequency handover.

In addition to the information described in **9.1.2 Required Information**, collect the information about the coverage at the inter-frequency handover area. This information serves as a basis for setting the thresholds used to trigger events A1, A2, and A4.

The event A2 threshold for coverage-based inter-frequency handover and the event A2 threshold for coverage-based inter-RAT handover can be separately set. If users expect coverage-based inter-frequency handover to be triggered earlier than coverage-based inter-RAT handover, the event A2 threshold for coverage-based inter-frequency handover must be set to a value greater than the event A2 threshold for coverage-based inter-RAT handover.

# 9.2.3 Data Preparation

This section describes the data that you need to collect for setting parameters. Required data is data that you must collect for all scenarios. Collect scenario-specific data when necessary for a specific feature deployment scenario.

There are three types of data sources:

- Network plan (negotiation required): parameter values planned by the operator and negotiated with the EPC or peer transmission equipment
- Network plan (negotiation not required): parameter values planned and set by the operator
- User-defined: parameter values set by users.

#### Required Data

This section describes the data required for configuring neighbor relationships with interfrequency E-UTRAN cells.

The following table describes the parameters that must be set in the **EutranInterNFreq** MO to configure a neighboring E-UTRAN frequency.

Parameter Name	Parameter ID	Data Source	Setting Notes
Local cell ID	EutranInterNFreq.  LocalCellId	Network plan (negotiation not required)	Ensure that this parameter has been set in a <b>Cell</b> MO.
Downlink EARFCN	EutranInterNFreq.  DIEarfcn	Network plan (negotiation not required)	This parameter specifies the DL EARFCN of the cells on the neighboring E-UTRAN frequency.
			This parameter references the corresponding parameter defined in the <b>Cell</b> MO on the peer eNodeB.
Measureme nt bandwidth	EutranInterNFreq.  MeasBandWidth	Network plan (negotiation not required)	This parameter references the corresponding parameter defined in the <b>Cell</b> MO on the peer eNodeB.

(Optional, required only if an inter-frequency neighboring cell is under a different eNodeB from the local cell) Collect the parameters in the **EutranExternalCell** MO used to configure an external E-UTRAN cell. For details about the key parameters in this MO, see **9.1.3 Data Preparation**.

(Optional, required only if the home eNodeB of the external E-UTRAN cell works in eRAN sharing with common carrier mode and multiple operators share the same external E-UTRAN cell) Collect the parameters in the **EutranExternalCellPlmn** MO used to configure an additional PLMN ID for an external E-UTRAN cell. For details about the key parameters in this MO, see **9.1.3 Data Preparation**.

The following table describes the parameters that must be set in the **EutranInterFreqNCell** MO to configure the neighbor relationship with an inter-frequency E-UTRAN cell.

Parameter Name	Parameter ID	Data Source	Setting Notes
Local cell ID	EutranInter- FreqNCell. LocalCellId	Network plan (negotiatio n not required)	Ensure that this parameter has been set in a <b>Cell</b> MO.
Mobile country code	EutranInter- FreqNCell. <i>Mcc</i>	Network plan (negotiatio n required)	This parameter specifies the MCC of the home eNodeB of the inter-frequency neighboring E-UTRAN cell. If this neighboring E-UTRAN cell works in RAN sharing mode, set this parameter to the MCC of the primary operator.
			This parameter references the corresponding parameter defined in the <b>eNodeB</b> MO on the peer eNodeB.
Mobile network code	EutranInter- FreqNCell. <i>Mnc</i>	Network plan (negotiatio n required)	This parameter specifies the MNC of the home eNodeB of the neighboring E-UTRAN cell. If this neighboring E-UTRAN cell works in RAN sharing mode, set this parameter to the MNC of the primary operator.
			This parameter references the corresponding parameter defined in the <b>eNodeB</b> MO on the peer eNodeB.
eNodeB ID	EutranInter- FreqNCell. eNodeBId	Network plan (negotiatio n required)	This parameter specifies the ID of the home eNodeB of the neighboring E-UTRAN cell. It uniquely identifies the eNodeB within the entire network.
			This parameter references the corresponding parameter defined in the <b>eNodeB</b> MO on the peer eNodeB.
Cell ID	EutranInter- FreqNCell. CellId	Network plan (negotiatio n required)	This parameter specifies the ID of the neighboring E-UTRAN cell. It uniquely identifies a cell within an eNodeB.  This parameter references the corresponding
			parameter defined in the Cell MO on the peer eNodeB.

# Scenario-specific Data

The following table describes the parameter that must be set in the **ENodeBAlgoSwitch** MO to configure coverage-based inter-frequency handover.

Parameter Name	Parameter ID	Data Source	Setting Notes
Handover Algo switch	ENodeBAlgoSwitch h.HoAlgoSwitch	Network plan (negotiation not required)	To enable coverage-based inter- frequency handover, select the InterFreqCover- HoSwitch (InterFreqCover- HoSwitch) check box under this parameter.  To reduce the number of signaling messages over the air interface, clear the EmcBlindHoA1Switch (EmcBlindHoA1Sw itch) check box under this parameter.  To reduce the call drop rate, select the EmcInterFreq- BlindHoSwitch (EmcInterFreq- BlindHoSwitch) check box under this parameter.

By default, the inter-frequency handover parameter group Group0 is used for services with all QCIs. To apply different inter-frequency handover parameter groups to services based on the QCI, the corresponding parameter group ID must be changed.

The following table describes the parameters that must be set in the **CellStandardQci** MO to configure inter-frequency handover parameter groups for services with standard QCIs.

Parameter Name	Parameter ID	Data Source	Setting Notes
Local cell ID	CellStandard Qci. <i>LocalCellId</i>	Network plan (negotiation not required)	Ensure that this parameter has been set in a <b>Cell</b> MO based on the network plan.
QoS Class Indication	CellStandard Qci. <i>Qci</i>	Network plan (negotiation not required)	This parameter specifies the standard QCI for which the parameter group is configured.

Parameter Name	Parameter ID	Data Source	Setting Notes
Interfreq handover group ID	CellStandard Qci. InterFreqHo GroupId	Network plan (negotiation not required)	This parameter specifies the index of the inter-frequency handover parameter group.

The following table describes the parameters that must be set in the **CellExtendedQci** MO to configure inter-frequency handover parameter groups for services with extended QCIs.

Parameter Name	Parameter ID	Data Source	Setting Notes
Extended QCI	CellExtendedQci. ExtendedQci	Network plan (negotiation not required)	Set this parameter to the index of the extended QCI for which the parameter group is configured.
Local cell ID	CellExtendedQci. LocalCellId	Network plan (negotiation not required)	Ensure that this parameter has been set in a <b>Cell</b> MO based on the network plan.
Interfreq handover group ID	CellExtendedQci. InterFreqHoGrou pId	Network plan (negotiation not required)	Set this parameter to the index of the corresponding parameter group.

For details about the inter-frequency handover parameter group ID and corresponding thresholds, see **9.2.7 Reconfiguration**.

The following table describes the parameters that must be set in the **EutranInterFreqNCell** MO to configure blind handover priorities and measurement priorities for inter-frequency neighboring cells.

Parame ter Name	Parameter ID	Data Source	Setting Notes
Blind handove r Priority	EutranInte rFreqNCell BlindHoPri ority	Network plan (negotiation not required)	If this parameter value is set to 0, blind handovers and frequency-priority-based handovers cannot be performed. The values 1 to 16 indicate blind-handover priorities. Multiple neighboring cells can be configured with the same blind-handover priority. If multiple neighboring cells have the highest blind-handover priority, the eNodeB randomly selects one from them.
			The values 17 to 32 indicate the priorities for frequency-priority-based handovers. Set this parameter (with a value ranging from 1 to 16) only for those inter-frequency neighboring cells that have overlapped coverage with the serving cell. Set this parameter to a larger value for a neighboring cell that has wider overlapped coverage or a lower frequency.
			Set this parameter to 0 for all inter-frequency neighboring cells if no inter-frequency neighboring cells have overlapped coverage with the serving cell.
Cell Measure Priority	EutranInte rFreqNCell CellMeasPr iority	Network plan (negotiation not required)	You are advised to set this parameter to HIGH_PRIORITY(High Priority) for neighboring cells with optimal network coverage and the maximum number of possible handovers, and to LOW_PRIORITY(Low Priority) for other neighboring cells.

The following table describes the parameters that must be set in the **EutranInterNFreq** MO to configure the event for triggering a coverage-based inter-frequency handover and to configure the frequency priority used during the selection of a target frequency for blind redirection.

Parame ter Name	Parameter ID	Data Source	Setting Notes
Inter- Freq HO trigger Event Type	EutranInter NFreq. InterFreqHo EventType	Network plan (negotiation not required)	This parameter specifies the event for triggering a coverage-based inter-frequency handover. It can be set separately for each frequency.  If the serving frequency and neighboring E-UTRAN frequency are in the same frequency band, set this parameter to EventA3(EventA3). In other cases, set this parameter to EventA4 (EventA4). EventA5(EventA5) is not recommended.

Parame ter Name	Parameter ID	Data Source	Setting Notes
Connect frequenc y priority	EutranInter NFreq. ConnFreqPri ority	Network plan (negotiation not required)	Based on the frequency priority specified by this parameter, the eNodeB selects a target frequency for blind redirection or contains a frequency in a measurement configuration. A larger value indicates a higher priority. If this priority is set to 0 for a frequency, this frequency is not selected as the target frequency for a blind redirection. Multiple frequencies can be configured with the same priority. If multiple frequencies have the highest priority, the eNodeB randomly selects one from them.  You are advised to set this parameter for frequencies with continuous coverage. If there are multiple frequencies with continuous coverage, set this parameter to a larger value for a frequency in a lower frequency band. Set this parameter to 0 for a frequency with non-continuous coverage.

(Optional, required for only coverage-based inter-frequency handovers) The following table describes the parameters that must be set in the **CnOperatorHoCfg** MO to configure the RSRP threshold offset and priorities for TDD/FDD frequencies during the selection of the target cells for coverage-based inter-frequency handovers.

Paramet er Name	Parameter ID	Data Source	Setting Notes
CN	CnOperator	Network plan	This parameter specifies the ID of an operator and is defined in the <b>CnOperator</b> MO.  Set this parameter to the ID of the operator that needs to be configured with a priority.
Operator	HoCfg.	(negotiation	
ID	CnOperatorI	not required)	
First	CnOperator	Network plan	This parameter specifies the priorities of E-UTRAN TDD and E-UTRAN FDD. To prioritize E-UTRAN TDD or E-UTRAN FDD, set this parameter to EUTRAN_TDD or EUTRAN_FDD. To give E-UTRAN TDD and E-UTRAN FDD the same priority, set this parameter to EUTRAN.  Set this parameter based on the actual conditions.
RAT	HoCfg.	(negotiation	
Priority	FirstRatPri	not required)	

Paramet er Name	Parameter ID	Data Source	Setting Notes
Second RAT Priority	CnOperator HoCfg. SecondRatPr i	Network plan (negotiation not required)	This parameter specifies the priorities of E-UTRAN TDD and E-UTRAN FDD. To prioritize E-UTRAN TDD or E-UTRAN FDD, set this parameter to EUTRAN_TDD or EUTRAN_FDD. If FirstRatPri is set to EUTRAN, set SecondRatPri to NULL, indicating that E-UTRAN TDD and E-UTRAN FDD are not prioritized. Set this parameter based on the actual conditions.
LTE TDD inter-freq A2 Threshol d RSRP Offset	CnOperator HoCfg. TddIfHoA2T hdRsrpOffset	Network plan (negotiation not required)	This parameter value plus the value of InterFreqHoGroup.InterFreqHoA2ThdRsr p or InterFreqHoGroup.A3InterFreqHoA2Thd Rsrp is the offset of the RSRP threshold for LTE TDD inter-frequency measurement event A2.  Set this parameter based on the actual conditions.
LTE FDD inter-freq A2 Threshol d RSRP Offset	CnOperator HoCfg. FddIfHoA2T hdRsrpOffset	Network plan (negotiation not required)	This parameter value plus the value of InterFreqHoGroup.InterFreqHoA2ThdRsr p or InterFreqHoGroup.A3InterFreqHoA2Thd Rsrp is the offset of the RSRP threshold for LTE FDD inter-frequency measurement event A2.  Set this parameter based on the actual conditions.

(Optional, required for only coverage-based inter-frequency handovers) The following table describes the parameters that must be set in the **EutranNFreqRanShare** MO to configure the PLMN information in the RAN sharing configuration of the neighboring frequencies for enabling inter-frequency blind handovers when there is no neighboring cells.

Parameter Name	Parameter ID	Data Source	Setting Notes
Local cell ID	EutranNFreqRa nShare. LocalCellId	Network plan (negotiation not required)	Ensure that this parameter has been set in a <b>Cell</b> MO.

Parameter Name	Parameter ID	Data Source	Setting Notes
Downlink EARFCN	EutranNFreqRa nShare. DIEarfcn	Network plan (negotiation not required)	This parameter specifies the DL EARFCN of the cells on the neighboring E-UTRAN frequency. This parameter references the corresponding parameter in the Cell MO on the peer eNodeB. Add only the frequencies for blind handovers triggered when there is no neighboring cells, and ensure that EARFCN has been set in an EutranInterNFreq MO.
Mobile country code	EutranNFreqRa nShare. <i>Mcc</i>	Network plan (negotiation required)	This parameter specifies the MCC of the frequency for blind handovers triggered when there is no neighboring cells.  This parameter references the corresponding parameter in the eNodeB MO on the peer eNodeB.
Mobile network code	EutranNFreqRa nShare.Mnc	Network plan (negotiation required)	This parameter specifies the MNC of the frequency for blind handovers triggered when there is no neighboring cells.  This parameter references the corresponding parameter in the eNodeB MO on the peer eNodeB.

# 9.2.4 Deployment Requirements

<b>Operating Environmen</b>	t
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None.

**Transmission Networking** 

None.

License

None.

## 9.2.5 Activation

## Using the CME to Perform Batch Configuration for Newly Deployed eNodeBs

Enter the values of related parameters in a summary data file, which also contains other data for the new eNodeBs to be deployed. Then, import the summary data file into the Configuration Management Express (CME) for batch configuration. For detailed instructions, see section "Creating eNodeBs in Batches" in the initial configuration guide for the eNodeB.

The summary data file may be a scenario-specific file provided by the CME or a customized file, depending on the following conditions:

- Related managed objects (MOs) are contained in a scenario-specific summary data file. In this situation, set the parameters in the MOs, and then verify and save the file.
- Some related MOs are not contained in a scenario-specific summary data file. In this situation, customize a summary data file to include the MOs before you can set the parameters.

Related MOs and parameters in each scenario are listed as follows:

Table 9-3 Coverage-based Inter-Frequency Handover

МО	Sheet in the Summary Data File	Parameter Group	Remarks
ENodeBAlg oSwitch	User-defined sheet  ENodeBAlgoSwitc  h is recommended.	Handover Algo switch	A list-type sheet is recommended.
EutranExter nalCell	User-defined sheet  EutranExternal- Cell is recommended.	Mobile country code, Mobile network code, eNodeB identity, Cell identity, Downlink EARFCN, Uplink EARFCN indicator, Uplink EARFCN, Physical cell identity, Tracking area code, Cell name	A list-type sheet is recommended.
EutranExter nalCellPlmn	User-defined sheet  EutranExternal- CellPlmn is recommended.	Mobile country code, Mobile network code, eNodeB identity, Cell identity, Share mobile country code, Share mobile network code	A list-type sheet is recommended.

МО	Sheet in the Summary Data File	Parameter Group	Remarks
EutranInter NFreq	User-defined sheet EutranInterNFreq is recommended.	Local cell identity, Downlink EARFCN, Uplink EARFCN configure indicator, Uplink EARFCN, Inter frequency cell resel priority configure indicator, Inter frequency cell resel priority, EUTRAN reselection time (s), Speed dependent resel parameter configuring indicator, Scaling factor of treseleutra in medium mobility state, Scaling factor of treseleutra in high mobility state, Measurement bandwidth (MHz), Frequency offset (dB), Inter frequency high priority threshold(2dB), Inter frequency lower priority threshold(2dB), Minimum required RX level(2dBm), PMAX configure indicator, PMAX(dBm), Neighbor cell config, Presence antenna port1, Inter-Freq HO trigger Event Type	A list-type sheet is recommended.
EutranInter- FreqNCell	User-defined sheet  EutranInter- FreqNCell is recommended.	Local cell identity, Mobile country code, Mobile network code, eNodeB identity, Cell identity, Cell individual offset(dB), Cell offset(dB), No handover indicator, No remove indicator, Blind handover Priority, ANR flag, Local cell name, Neighbour cell name	A list-type sheet is recommended.

## Using the CME to Perform Batch Configuration for Existing eNodeBs

Batch reconfiguration using the CME is the recommended method to activate a feature on existing eNodeBs. This method reconfigures all data, except neighbor relationships, for multiple eNodeBs in a single procedure. The procedure is as follows:

5

Cell active s... Deactivated

Cell admin ... Unblock

Cell middle

Cell FDD T.

Subframe a.

Special sub.

Cell specific... 0dB

**Step 1** Choose CME > Advanced > Customize Summary Data File (M2000 client mode), or choose Advanced > Customize Summary Data File (CME client mode), to customize a summary data file for batch reconfiguration.

#### M NOTE

For context-sensitive help on a current task in the client, press F1.

- Step 2 Choose CME > LTE Application > Export Data > Export Base Station Bulk Configuration Data (M2000 client mode), or choose Advanced > Base Station Bulk Configuration > Export Data (CME client mode), to export the eNodeB data stored on the CME into the customized summary data file.
- **Step 3** In the summary data file, set the parameters in the MOs listed in **Table 9-3** and close the file.
- **Step 4** Choose CME > LTE Application > Import Data > Import Base Station Bulk Configuration Data (M2000 client mode), or choose LTE Application > Import Data > Import Base Station Bulk Configuration Data (CME client mode), to import the summary data file into the CME.
- **Step 5** Choose CME > Planned Area > Export Incremental Scripts (M2000 client mode), or choose Area Management > Planned Area > Export Incremental Scripts (CME client mode), to export and activate the incremental scripts.

----End

#### Using the CME to Perform Single Configuration

On the CME, set the parameters listed in the "Data Preparation" section for a single eNodeB. The procedure is as follows:

- **Step 1** In the planned data area, click **Base Station** in the upper left corner of the configuration window.
- Step 2 In area 1 shown in Figure 9-2, select the eNodeB to which the MOs belong.

Cell Ba ic Information@LTE\_04 Details x Active area: Planned Area:min • Property Value \*Cell X Local cell ID ✓ Auto submit + - 
✓ 
♦ GS 4 Physical Cell name Local ce I ID △ ▼ Cell name △ ▼ Csg indicator ∧ alse Q+ Enter a keyword >> Csg indicator 0 False Uplink cyclic... △ Base Station ormal ID 0 LTE\_04 Downlink cy.. \* # MRAT\_59 Frequency b. 10 141 Uplink earfc... Not configure \*A MRAT\_591111 Uplink earfcn 10.141. Downlink e.. > Uplink band.. Object Group Downlink b. 63 Cell ID Attribute Name ^ Object Name Physical cel. Additional s...

Figure 9-2 MO search and configuration window

Cell(CELL)

Cell(CELL)

Cell(CELL)

Cell(CELL)

Cell(CELL)

Csg indicator

Uplink earfcn

Downlink cyclic prefi... Frequency band

Jolink earfco indicat

Uplink cyclic prefix le... Cell(CELL)

<

#### **□** NOTE

Description

- To view descriptions of the parameters in the MO, click in area 4 and press F1.
- Area 5 displays the details of a selected area-4 entry in vertical format. Click the "Details" button to show or hide this area.
- Step 3 On the Search tab page in area 2, enter an MO name, for example, CELL.
- **Step 4** In area 3, double-click the MO in the **Object Name** column. All parameters in this MO are displayed in area 4.
- **Step 5** Set the parameters in area 4 or 5.
- Step 6 Choose CME > Planned Area > Export Incremental Scripts (M2000 client mode), or choose Area Management > Planned Area > Export Incremental Scripts (CME client mode), to export and activate the incremental scripts.

----End

#### **Using MML Commands**

- **Step 1** Run the **MOD ENODEBALGOSWITCH** command to enable coverage-based inter-frequency handover.
- **Step 2** Run the following commands to add neighbor relationships with inter-frequency E-UTRAN cells:
  - 1. ADD EUTRANEXTERNALCELL
  - 2. (Optional) ADD EUTRANEXTERNALCELLPLMN
  - 3. ADD EUTRANINTERNFREQ
  - 4. ADD EUTRANINTERFREQNCELL

----End

#### 9.2.6 Activation Observation

This section uses A4-triggered inter-frequency handover as an example. The observation procedure is as follows:

- **Step 1** Trace messages over the Uu interface on the M2000 client after UEs access the network. Check the A1- and A2-related measurement report information in the RRC\_CONN\_RECFG message.
- Step 2 Trace messages over the Uu interface while the UE is moving towards the cell edge. After the eNodeB receives an A2-related measurement report from the UE, check the RRC\_CONN\_RECFG message that contains the inter-frequency measurement configuration and A4-related measurement report information.
- Step 3 Trace messages over the Uu interface after the UE moves to the cell edge. Check the target cell access information in the handover command after the eNodeB receives an A4-related measurement report from the UE. The handover command is an RRC\_CONN\_RECFG message.

----End

# 9.2.7 Reconfiguration

# **Inter-Frequency Handover Parameters**

Inter-frequency handover parameters are contained in the **InterFreqHoGroup** MO. The following table provides suggestions on how to reconfigure these parameters.

Paramete r Name	Parameter ID	Data Source	Setting Notes
Local cell ID	InterFreqHo Group. LocalCellId	Network plan (negotiation not required)	Ensure that this parameter has been set in a Cell MO based on the network plan.
Interfreq handover group ID	InterFreqHo Group. InterFreqHo GroupId	Network plan (negotiation not required)	This parameter specifies the ID of the parameter group related to inter-frequency handovers.  If you want to set different inter-frequency handover parameters for services with a specific QCI, you must create a parameter group, and reference the parameter group ID to the corresponding QCI. For detailed configuration, see section "Scenario-specific Data".
Interfreq A1A2 hysteresis	InterFreqHo Group. InterFreqHo A1A2Hyst	Network plan (negotiation not required)	This parameter specifies the hysteresis for inter-frequency measurement events A1 and A2.  A larger value causes a lower probability of triggering inter-frequency measurement event A1 or A2. A smaller value causes a higher probability.  It is recommended that the default value be used.
Interfreq A1A2 time to trigger	InterFreqHo Group. InterFreqHo A1A2TimeTo Trig	Network plan (negotiation not required)	This parameter specifies the time-to-trigger for inter-frequency measurement events A1 and A2.  This time-to-trigger effectively reduces the number of inter-frequency measurements to be started, preventing unnecessary inter-frequency measurement. The average number of inter-frequency measurements to be started has a negative correlation with the time-to-trigger. At the same time, an excessively large time-to-trigger value results in a high risk of call drops.  It is recommended that the default value be used.

Paramete r Name	Parameter ID	Data Source	Setting Notes
Interfreq A1 RSRP threshold	InterFreqHo Group. InterFreqHo	Network plan (negotiation not required)	This parameter specifies the RSRP-based threshold for inter-frequency measurement event A1.
	A1ThdRsrp		A larger value causes a lower probability of triggering event A1. A smaller value causes a higher probability.
			The value of this parameter must be greater than or equal to (usually 4 dB greater than) the sum of the value of InterFreqHoGroup.InterFreqHoA2ThdR srp and RSRP threshold offset for interfrequency measurement event A2 (set in the CnOperatorHoCfg MO).
Interfreq A1 RSRQ threshold	InterFreqHo Group. InterFreqHo	Network plan (negotiation not required)	This parameter specifies the RSRQ-based threshold for inter-frequency measurement event A1.
	A1ThdRsrq		A larger value causes a lower probability of triggering event A1. A smaller value causes a higher probability.
			The value of this parameter must be greater than or equal to (usually 2 dB greater than) the value of InterFreqHoGroup.InterFreqHoA2ThdR srq.
Interfreq A2 RSRP threshold	InterFreqHo Group. InterFreqHo	Network plan (negotiation not required)	This parameter specifies the RSRP-based threshold for inter-frequency measurement event A2.
	A2ThdRsrp	A larger value causes a lower probability of triggering event A2. A smaller value causes a higher probability.	
			Set this parameter based on the actual conditions. Usually, set this parameter to the RSRP in the area where the UE throughput in the serving cell and that in the neighboring cell are similar.

Paramete r Name	Parameter ID	Data Source	Setting Notes
Interfreq A2 RSRQ threshold	InterFreqHo Group. InterFreqHo	Network plan (negotiation not required)	This parameter specifies the RSRQ-based threshold for inter-frequency measurement event A2.
	A2ThdRsrq		A larger value causes a lower probability of triggering event A2. A smaller value causes a higher probability.
			Set this parameter based on the actual conditions. Usually, set this parameter to the RSRQ in the area where the UE throughput in the serving cell and that in the neighboring cell are similar.
Interfreq handover	InterFreqHo Group.	Network plan (negotiation	This parameter specifies the hysteresis for event A4.
hysteresis	1 1	A larger value causes a lower probability of triggering event A4. A smaller value causes a higher probability.	
			It is recommended that the default value be used.
Coverage Based Interfreq RSRP	InterFreqHo Group. InterFreqHo A4ThdRsrp	Network plan (negotiation not required)	This parameter specifies the RSRP threshold for event A4 in a coverage-based, UL-quality-based, or distance-based handover, or in a SPID-based handover to the HPLMN.
threshold			A larger value causes a lower probability of triggering event A4. A smaller value causes a higher probability.
			The value of this parameter must be greater than the sum of the peer-end RSRP threshold for inter-frequency measurement event A2 (set in the InterFreqHoGroup MO at the peer eNodeB) and the RSRP threshold offset for inter-frequency measurement event A2 for the higher-priority RAT(set in the CnOperatorHoCfg MO at the peer eNodeB).

Paramete r Name	Parameter ID	Data Source	Setting Notes
Coverage Based Interfreq RSRQ	InterFreqHo Group. InterFreqHo A4ThdRsrq	Network plan (negotiation not required)	This parameter specifies the RSRQ threshold for event A4 in a coverage-based, UL-quality-based, or distance-based handover, or in a SPID-based handover to the HPLMN.
threshold			A larger value causes a lower probability of triggering event A4. A smaller value causes a higher probability.
			The value of this parameter must be greater than or equal to the peer-end RSRQ threshold for inter-frequency measurement event A2 set at the peer eNodeB (set in the InterFreqHoGroup MO at the peer eNodeB).
Interfreq HandOver	InterFreqHo Group.	Network plan (negotiation	This parameter specifies the time-to-trigger for event A4.
Time to Trigger	Time to InterFreqHo not r	not required)	A larger value causes a lower probability of handover to inter-frequency neighboring E-UTRAN cells and a smaller average number of handovers, but a higher risk of call drops. A smaller value causes the opposite effect.
			If both coverage-based inter-frequency handovers and coverage-based inter-RAT handovers are enabled, you are advised to set the time-to-trigger for the inter-frequency handover event to be smaller than that for the inter-RAT handover event. This helps increase the possibility of inter-frequency handovers.
Interfreq A3 offset	InterFreqHo Group. InterFreqHo A3Offset	Network plan (negotiation not required)	This parameter specifies the offset for event A3 associated with inter-frequency handover. It determines the border between the serving cell and the neighboring cell. If the parameter is set to a large value, an interfrequency handover is performed only when the signal quality of the neighboring cell is significantly better than that of the serving cell and other triggering conditions are met.
			It is recommended that you adjust the parameter value based on the application scenario. Increase the parameter value if premature inter-frequency handovers occur. Decrease the parameter value if delayed inter-frequency handovers occur.

Paramete r Name	Parameter ID	Data Source	Setting Notes
A3 based interfreq A1 RSRP threshold	InterFreqHo Group. A3InterFreq HoA1ThdRsr p	Network plan (negotiation not required)	This parameter specifies the RSRP threshold for event A1 associated with event-A3-triggered inter-frequency handover. A relatively large value results in a low probability of stopping inter-frequency measurements, whereas a relatively small value results in a high probability.
			The value of this parameter must be greater than or equal to (usually 4 dB greater than) the sum of the value of InterFreqHoGroup. A3InterFreqHoA2Th dRsrp and RSRP threshold offset for interfrequency measurement event A2 (set in the CnOperatorHoCfg MO).
A3 based Interfreq A2 RSRP threshold	InterFreqHo Group. A3InterFreq HoA2ThdRsr p	Network plan (negotiation not required)	This parameter specifies the RSRP threshold for event A2 associated with event-A3-triggered inter-frequency handover. A relatively small value results in a low probability of starting inter-frequency measurements, whereas a relatively large value results in a high probability.
			Set this parameter based on actual conditions to ensure that event-A3-triggered interfrequency handovers can occur timely.

# Cell Individual Offset for Inter-Frequency Neighboring Cells

The following table provides the parameter that must be set in the **EutranIntraFreqNCell** MO to adjust cell individual offset for the inter-frequency neighboring cells.

Paramete r Name	Parameter ID	Data Source	Setting Notes
Cell individual offset	EutranIntra- FreqNCell. CellIndividua- lOffset	Network plan (negotiation not required)	This parameter affects the probability of reporting inter-frequency measurement events. A larger value indicates a higher probability.
			If there are multiple target cells for the inter-frequency handover and related handover parameters need to be optimized, you can decrease this parameter value for a neighboring cell to reduce the possibility of the handover to the neighboring cell, or you can increase this parameter value for a neighboring cell to raise the possibility of the handover to the neighboring cell.

For detailed parameter configuration for inter-frequency neighboring cells, see the "Required Data" part in 9.2.3 Data Preparation.

## **Intra-RAT Inter-Frequency Handover Parameters**

Intra-RAT handover parameters are contained in the **IntraRatHoComm** MO. The following table provides suggestions on how to reconfigure these parameters.

Parameter Name	Parameter ID	Data Source	Setting Notes
Max report cell number	IntraRatHoCo mm. IntraRatHo- MaxRprtCell	Network plan (negotiation not required)	This parameter specifies the maximum number of cells to be included in each intra-frequency or inter-frequency measurement report after the corresponding event is triggered. Set this parameter to a larger value if the eNodeB requires more candidate cells to make a handover decision. An excessively large parameter value, however, causes a waste of air interface resources.  It is recommended that the default value be used.

Parameter Name	Parameter ID	Data Source	Setting Notes
Measureme nt report amount	IntraRatHoCo mm. IntraRatHoRpr tAmount	Network plan (negotiation not required)	This parameter specifies the number of intra-frequency or inter-frequency measurement reports to be periodically sent after the corresponding event is triggered. Set this parameter to a larger value if the eNodeB requires more measurement reports to make a handover decision. An excessively large parameter value, however, causes a waste of air interface resources. It is recommended that the default value be used.
Measureme nt A4 report quantity	IntraRatHoCo mm. InterFreqHoA4 RprtQuan	Network plan (negotiation not required)	This parameter specifies the reporting quantity to be included in the measurement reports after event A4 is triggered. It can be either the same as the triggering quantity for interfrequency measurement events A1 and A2 or both RSRP and RSRQ. That is, the measurement results can be RSRP-based, RSRQ-based, or both in A4-related measurement reports.  It is recommended that the default value be used if the traffic load of LTE cells is not stable.
Interfreq measureme nt report interval	IntraRatHoCo mm. InterFreqHoRp rtInterval	Network plan (negotiation not required)	This parameter specifies the interval between every two reports that are triggered by event A4. A smaller value causes more measurement reports and greater consumption of air interface resources, but a higher probability of triggering handover. An excessively large value, however, causes a long delay in retries and a low handover success rate.  It is recommended that the default value be used.

Parameter Name	Parameter ID	Data Source	Setting Notes
A1A2 Measureme nt trig quantity	IntraRatHoCo mm. InterFreqHoA1 A2TrigQuan	Network plan (negotiation not required)	This parameter specifies the triggering quantity for inter-frequency measurement events A1 and A2. The parameter can be either RSRP or RSRQ. RSRQ-based measurement results reflect signal quality in real time, whereas RSRP-based measurement results are stable.  It is recommended that the default value be used if the traffic load of LTE cells is not stable.

When event A3 is used to trigger coverage-based inter-frequency handovers, the reconfiguration of other parameters is the same as those in coverage-based intra-frequency handovers. For details, see **9.1.7 Reconfiguration**.

## Threshold Parameters Related to Coverage-based Handovers

Coverage-based inter-frequency blind handover thresholds are contained in the **CellHoParaCfg** MO. The following table provides suggestions on how to reconfigure these parameters.

Parameter Name	Parameter ID	Data Source	Setting Notes
BlindHOA1A2 ThdRsrp	CellHoPara Cfg. BlindHOA1 A2ThdRsrp	Network plan (negotiation not required)	This parameter specifies the RSRP threshold for events A1 and A2 that are used for coverage-based interfrequency and inter-RAT blind handovers.  Reconfigure this parameter based on
			the actual coverage conditions to ensure that service drops do not occur within corresponding areas.
BlindHOA1A2 ThdRsrq	CellHoPara Cfg. BlindHoA1 A2ThdRsrq	Network plan (negotiation not required)	This parameter specifies the RSRQ threshold for events A1 and A2 that are used for coverage-based interfrequency and inter-RAT blind handovers.
			Reconfigure this parameter based on the actual coverage conditions to ensure that service drops do not occur within corresponding areas.

#### 9.2.8 Deactivation

Description

#### Using the CME to Perform Batch Configuration

Batch reconfiguration using the CME is the recommended method to deactivate a feature on eNodeBs. This method reconfigures all data, except neighbor relationships, for multiple eNodeBs in a single procedure. The procedure for feature deactivation is similar to that for feature activation described in **Using the CME to Perform Batch Configuration for Existing eNodeBs**. In the procedure, modify related parameters described below.

**Table 9-4** Parameters related to coverage-based inter-frequency handovers

МО	Sheet in the Summary Data File	Parameter Group	Setting Notes
ENodeBAlgo	ENodeBAlgoSwitc	Handover Algo	Clear the InterFreqCoverHoS-witch check box.
Switch	h	switch	

#### Using the CME to Perform Single Configuration

On the CME, set the parameters listed in each scenario for a single eNodeB. For detailed instructions, see **Using the CME to Perform Single Configuration** for feature activation.

## **Using MML Commands**

To deactivate coverage-based inter-frequency handover, disable its algorithm by running the **MOD ENODEBALGOSWITCH** command.

# 9.2.9 Performance Monitoring

For details about how to monitor and evaluate load-based inter-frequency handovers, see *MLB Feature Parameter Description*.

Inter-frequency handovers are intended to ensure service continuity when users move around. How well these handovers serve this purpose reflects their performance. After activating coverage-based inter-frequency handover, check the following counters to monitor and evaluate the handover performance:

- KPIs indicating handover success rates, including the following:
  - Intra-eNB Inter-frequency Handover Out Success Rate
  - Intra-eNB Inter-frequency Handover In Success Rate
  - Inter-eNB Inter-frequency Handover Out Success Rate
  - Inter-eNB Inter-frequency Handover In Success Rate
  - Blind Handover Out Success Rate
  - Blind Handover In Success Rate
- KPI indicating the call drop rate: Abnormal Release Rate

Description

If the handover success rates have not noticeably fallen and the call drop rate has not noticeably risen after coverage-based inter-frequency handover was activated, this type of handover has been delivering good performance.

# 9.2.10 Parameter Optimization

#### Types of Events That Trigger Inter-Frequency Handovers

Inter-frequency handovers are triggered by event A3 or A4, depending on the value of the **EutranInterNFreq**. *InterFreqHoEventType* parameter.

Set this parameter based on the following two conditions in addition to bandwidth consideration:

- If a neighboring E-UTRAN frequency belongs to the same frequency band as the serving frequency, set the EutranInterNFreq.InterFreqHoEventType
  parameter to EventA3 for this neighboring E-UTRAN frequency. This setting improves the performance of interfrequency handovers within the same frequency band in terms of timeliness and interference-proneness.
- If a neighboring E-UTRAN frequency does not belong to the same frequency band as the serving frequency, set the EutranInterNFreq.InterFreqHoEventTypeparameter to EventA4 for this neighboring E-UTRAN frequency. This setting reduces the probability of inter-frequency handovers between frequency bands.

# RSRP and RSRQ Thresholds for Triggering Coverage-based Inter-Frequency Handovers

RSRP and RSRQ thresholds for coverage-based inter-frequency handovers are included in inter-frequency handover parameters. To ensure that inter-frequency handovers are triggered as expected, set all thresholds to appropriate values and, in particular, set the event A4 threshold for load- and frequency-priority-based inter-frequency handovers to be higher than the event A4 threshold for coverage-based inter-frequency handovers.

- If one of these thresholds is too high, it is difficult for event A4 to be triggered for interfrequency handovers, and therefore handovers may not be triggered in time. Delayed coverage-based inter-frequency handovers affect user experience. For load-based interfrequency handovers, this delays transferring the load to neighboring cells. Delayed frequency-priority-based inter-frequency handovers affect service distribution among cells working at the 900 MHz and 2600 MHz frequencies.
- If one of these thresholds is too low, event A4 is too easily triggered and ping-ping handovers occur as a result. For coverage-based inter-frequency handovers, this makes it probable for CCUs to be handed over. For load- and frequency-priority-based inter-frequency handovers, if event A4 is too easily triggered, the handover success rates are lowered. In either case, user experience is affected.

In an LTE system, RSRQ may not reflect the actual coverage. Unless required, RSRQ is not used for handover decisions. If the IntraRatHoComm.InterFreqHoA1A2TrigQuan parameter is set to RSRP, set the IntraRatHoComm.InterFreqHoA4RprtQuan parameter to the same value.

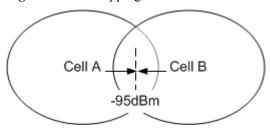
If both event A2 and event A4 thresholds are used for inter-frequency handovers, both are set to absolute values based on the actual coverage. The RSRP and RSRQ quantities in the overlapping area of two cells must be taken into consideration. With these quantities, the event A2 and event A4 thresholds can be adjusted to prevent delayed or premature handovers. If RSRQ is not used, the RSRQ quantity is not required. The event A2 threshold can be less than the

Description

measured values, and the event A4 threshold can be greater than the measured values, but the event A2 threshold must be less than the event A4 threshold. This prevents the eNodeB from delivering GAP-assisted measurement configurations immediately after a UE is handed over to a neighboring cell and also prevents ping-pong handovers.

Assume that cell A and cell B are inter-frequency neighboring cells and the RSRP of the overlapping area is –95 dBm, as shown in the following figure.

Figure 9-3 Overlapping area



In this situation, set the event A2 threshold to –96 dBm and the event A4 threshold to –94 dBm, and set hysteresis for event A2 and that for event A4 to 4, which means 2 dB. With this configuration, a UE can be smoothly handed over between cell A and cell B. During the handover, the RSRP difference between the two cells is 4 dB, which means a ping-pong handover will not occur. If the signal fluctuates greatly in the handover area, increase the difference between the event A2 threshold and the event A4 threshold. However, if the difference is too large, handovers may not be performed in time.

## Hysteresis

In inter-frequency handovers, the hysteresis for events A1 and A2 is specified by the **InterFreqHoGroup**. *InterFreqHoA1A2Hyst* parameter and that for event A4 by the **InterFreqHoGroup**. *InterFreqHoA4Hyst* parameter. These parameters are QCI-specific and are used in decisions for events A1, A2, and A4, effectively reducing frequent event reporting caused by radio signal fluctuations. The default values for these parameters are recommended.

- A greater hysteresis makes it more difficult for events to be reported, and therefore handovers may not be triggered in time. This affects user experience.
- A smaller hysteresis makes it easier for events to be reported. This may result in incorrect handover decisions and ping-pong handovers.

#### CIO

The CIO for an inter-frequency neighboring cell is included in event A4 measurement reports, and it is specified by the **EutranInterFreqNCell**. *CellIndividualOffset* parameter in the configuration data for this neighbor relationship. This cell-level parameter varies according to the neighboring cells. Each UE adds the CIO to the measurement results of neighboring cells. The UE considers this sum when making decisions for handovers. This measure is equivalent to relocating cell borders.

- A larger value for this parameter makes it easier for the UE to be handed over to an interfrequency neighboring cell.
- A smaller value for this parameter makes it more difficult for the UE to be handed over to an inter-frequency neighboring cell.

## **Blind Handover Priority**

The blind handover priority of a neighboring cell is specified by the **EutranInterFreqNCell**. *BlindHoPriority* parameter.

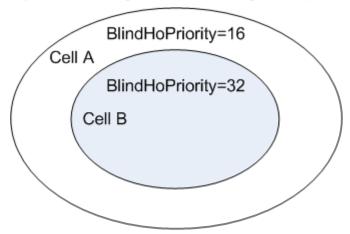
Note the following when tuning this parameter:

- If this parameter is set to **0** for a neighboring cell, this cell cannot be selected as the target cell in a blind handover. If this parameter is set to **1** to **32** for a neighboring cell, this cell can be selected as the target cell in a blind handover. Multiple neighboring cells can be configured with the same blind-handover priority. If multiple neighboring cells have the highest blind-handover priority, the eNodeB randomly selects one from them.
- If this parameter is set to a value ranging from 1 to 16 for a neighboring cell, this cell can be selected as the target cell in a coverage-based blind handover from a cell that covers the same area or a smaller area. A larger value for this parameter gives a higher priority to a neighboring cell as the target cell in a coverage-based blind handover.
- If this parameter is set to a value ranging from 17 to 32 for a neighboring cell, this cell can be selected as the target cell in a frequency-priority-based blind handover from a cell that covers a larger area. A larger value for this parameter gives a higher priority to a neighboring cell as the target cell in a frequency-based blind handover. The blind handover priority of an inter-frequency neighboring cell must be set to a value in the range from 17 to 32 for frequency-priority-based inter-frequency handovers.
- After a blind handover is triggered, the eNodeB attempts to hand over the UE to the cell
  with the highest blind handover priority. A cell with a probably higher blind handover
  success rate should be assigned a higher blind handover priority.

Figure 9-4 shows an example of blind handover prioritizing. If cell A needs to be configured as a neighboring cell to accept blind handovers from cell B, set

**EutranInterFreqNCell**. *BlindHoPriority* to 16 for cell A. If cell B needs to be configured as a neighboring cell to accept frequency-priority-based handovers from cell A, set **EutranInterFreqNCell**. *BlindHoPriority* to 32 for cell B.

Figure 9-4 An example of blind handover prioritizing



# 9.2.11 Troubleshooting

#### Fault description:

An event A4 measurement report may not be submitted when a UE moving toward the cell edge experiences a call drop.

#### Fault handling

Perform the following steps to determine whether the handover parameters are set correctly:

- **Step 1** Check the messages over the S1 interface and locate the IE Cause in the S1AP\_UE\_CONTEXT\_REL\_REQ message.
  - If the value of this IE is radioNetwork:radio-connection-with-ue-lost, go to Step 2.
  - If the value of this IE is not radioNetwork:radio-connection-with-ue-lost, the handover parameters are set correctly. Contact Huawei engineers.
- **Step 2** Check the messages over the Uu interface for A4 measurement reports in RRC\_MEAS\_RPRT messages prior to RRC\_CONN\_REL messages.
  - If such reports cannot be found, you can further confirm inappropriate settings of handover parameters as the cause of this problem. Go to Step 3.
  - If such reports can be found, contact Huawei engineers.
- **Step 3** Run the **MOD INTERFREQHOGROUP** command to reconfigure the following parameters:
  - InterFreqHoGroup.InterFreqHoA2ThdRsrp
  - InterFreqHoGroup.InterFreqHoA2ThdRsrq
  - InterFreqHoGroup.InterFreqHoA4Hyst
  - InterFreqHoGroup.InterFreqHoA4ThdRsrp
  - InterFreqHoGroup.InterFreqHoA4ThdRsrq

----End

# 9.3 Frequency-Priority-based Inter-Frequency Handover

# 9.3.1 When to Use Frequency-Priority-based Inter-Frequency Handover

Frequency-priority-based inter-frequency handover applies to the following scenario:

Some eNodeB sites use a high frequency band (for example, 2600 MHz) and a low band (for example, 900 MHz) as co-coverage bands. The high band is preferentially used to provide services, and the low band is used to ensure continuous coverage.

In this scenario, frequency-priority-based inter-frequency handover can be used to hand over UEs from the low to high band.

Note that frequency-priority-based inter-frequency handovers are performed to transfer UEs only from the low band to the high band. If a UE needs to be handed over from the high band to the low band, a coverage-based inter-frequency handover can be performed.

# 9.3.2 Required Information

To prevent failures in frequency-priority-based inter-frequency handovers, verify that blind handover is disabled and the high and low bands have the same coverage under the same eNodeB.

Collect information about the coverage of the high and low bands. This information serves as a basis for setting the thresholds used to trigger events A1, A2, and A4.

If blind handover is used in frequency-priority-based inter-frequency handover scenarios, collect information about the neighboring cells to configure them with blind handover priorities in the range of 17 to 32.

# 9.3.3 Data Preparation

This section describes the data that you need to collect for setting parameters. Required data is data that you must collect for all scenarios. Collect scenario-specific data when necessary for a specific feature deployment scenario.

There are three types of data sources:

- Network plan (negotiation required): parameter values planned by the operator and negotiated with the EPC or peer transmission equipment
- Network plan (negotiation not required): parameter values planned and set by the operator
- User-defined: parameter values set by users.

#### Required Data

For details about the required data, see 9.2.3 Data Preparation.

# Scenario-specific Data

Frequency-priority-based inter-frequency handover can be enabled only after coverage-based inter-frequency handover is enabled. This section describes the required parameters except those for coverage-based inter-frequency handover. For details on the required parameters for coverage-based inter-frequency handover, see the "Scenario-specific Data" part in 9.2.3 Data Preparation.

The following table describes the parameter that must be set in the **CellAlgoSwitch** MO to configure frequency-priority-based inter-frequency handover.

Parameter	Paramet	Data	Setting Notes
Name	er ID	Source	
FreqPriorityH oSwitch	CellAlgo Switch. FreqPrio rityHoSw itch	Network plan (negotiatio n not required)	To enable frequency-priority-based interfrequency handover in scenarios where the high and low bands have the same coverage under the same eNodeB and the low band has a smaller bandwidth, select the FreqPriorIFHOSwitch (FreqPriorIFHOSwitch) check box. For details such scenarios, see 5.1.3 Frequency-Priority-based Handover. You are advised not to select this check box for other scenarios.  To enable frequency-priority-based blind handover, select the FreqPriorIFBlindHOS-witch(FreqPriorIFBlindHOSwitch) check box.

The following table describes the parameter that must be set in the **EutranInterFreqNCell** MO to configure the blind handover priorities for inter-frequency neighboring cells.

Parame ter Name	Parameter ID	Data Source	Setting Notes
Blind handove r Priority	EutranInter FreqNCell. BlindHoPrio rity	Network plan (negotiation not required)	If this parameter value is set to 0, blind handovers and frequency-priority-based handovers cannot be performed. The values 1 to 16 indicate blind-handover priorities.  Multiple neighboring cells can be configured with the same blind-handover priority. If multiple neighboring cells have the highest blind-handover priority, the eNodeB randomly selects one from them. The values 17 to 32 indicate the priorities for frequency-priority-based handovers. Set this parameter to a value ranging from 1 to 16 only for those inter-frequency neighboring cells that have overlapped coverage with the serving cell. Set this parameter to a larger value for a neighboring cell that has wider overlapped coverage or a lower frequency. Set this parameter to 0 for all inter-frequency neighboring cells if no inter-frequency neighboring cells have overlapped coverage with the serving cell.

# 9.3.4 Deployment Requirements

#### **Operating Environment**

None.

## **Transmission Networking**

None.

License

None.

#### 9.3.5 Activation

#### Using the CME to Perform Batch Configuration for Newly Deployed eNodeBs

Enter the values of related parameters in a summary data file, which also contains other data for the new eNodeBs to be deployed. Then, import the summary data file into the Configuration Management Express (CME) for batch configuration. For detailed instructions, see section "Creating eNodeBs in Batches" in the initial configuration guide for the eNodeB.

The summary data file may be a scenario-specific file provided by the CME or a customized file, depending on the following conditions:

- Related managed objects (MOs) are contained in a scenario-specific summary data file. In this situation, set the parameters in the MOs, and then verify and save the file.
- Some related MOs are not contained in a scenario-specific summary data file. In this situation, customize a summary data file to include the MOs before you can set the parameters.

Related MOs and parameters in each scenario are listed as follows:

Table 9-5 Frequency-Priority-based Inter-Frequency Handover

МО	Sheet in the Summary Data File	Parameter Group	Remarks
CellAlgoS witch	User-defined sheet  CellAlgoSwitch is recommended.	Based on Frequency Priority HO Switch	A list-type sheet is recommended.
EutranExter nalCell	User-defined sheet  EutranExternal- Cell is recommended.	Mobile country code, Mobile network code, eNodeB identity, Cell identity, Downlink EARFCN, Uplink EARFCN indicator, Uplink EARFCN, Physical cell identity, Tracking area code, Cell name	A list-type sheet is recommended.

МО	Sheet in the Summary Data File	Parameter Group	Remarks
EutranInter NFreq	User-defined sheet  EutranInterNFr eq is recommended.	Local cell identity, Downlink EARFCN, Uplink EARFCN configure indicator, Uplink EARFCN, Inter frequency cell resel priority configure indicator, Inter frequency cell resel priority, EUTRAN reselection time(s), Speed dependent resel parameter configuring indicator, Scaling factor of treseleutra in medium mobility state, Scaling factor of treseleutra in high mobility state, Measurement bandwidth(MHz), Frequency offset (dB), Inter frequency high priority threshold(2dB), Inter frequency lower priority threshold(2dB), Minimum required RX level(2dBm), PMAX configure indicator, PMAX(dBm), Neighbor cell config, Presence antenna port1, Inter-Freq HO trigger Event Type	A list-type sheet is recommended.
EutranInter FreqNCell	User-defined sheet  EutranInter- FreqNCell is recommended.	Local cell identity, Mobile country code, Mobile network code, eNodeB identity, Cell identity, Cell individual offset(dB), Cell offset(dB), No handover indicator, No remove indicator, Blind handover Priority, ANR flag, Local cell name, Neighbour cell name	A list-type sheet is recommended.
EutranExter nalCellPlm n	User-defined sheet  EutranExternal-CellPlmn is recommended.	Mobile country code, Mobile network code, eNodeB identity, Cell identity, Share mobile country code, Share mobile network code	A list-type sheet is recommended.

## Using the CME to Perform Batch Configuration for Existing eNodeBs

Batch reconfiguration using the CME is the recommended method to activate a feature on existing eNodeBs. This method reconfigures all data, except neighbor relationships, for multiple eNodeBs in a single procedure. The procedure is as follows:

**Step 1** Choose CME > Advanced > Customize Summary Data File (M2000 client mode), or choose Advanced > Customize Summary Data File (CME client mode), to customize a summary data file for batch reconfiguration.

■ NOTE

For context-sensitive help on a current task in the client, press F1.

- Step 2 Choose CME > LTE Application > Export Data > Export Base Station Bulk Configuration Data (M2000 client mode), or choose Advanced > Base Station Bulk Configuration > Export Data (CME client mode), to export the eNodeB data stored on the CME into the customized summary data file.
- Step 3 In the summary data file, set the parameters in the MOs listed in Table 9-5 and close the file.
- **Step 4** Choose CME > LTE Application > Import Data > Import Base Station Bulk Configuration Data (M2000 client mode), or choose LTE Application > Import Data > Import Base Station Bulk Configuration Data (CME client mode), to import the summary data file into the CME.
- Step 5 Choose CME > Planned Area > Export Incremental Scripts (M2000 client mode), or choose Area Management > Planned Area > Export Incremental Scripts (CME client mode), to export and activate the incremental scripts.

----End

#### **Using the CME to Perform Single Configuration**

On the CME, set the parameters listed in the "Data Preparation" section for a single eNodeB. The procedure is as follows:

- **Step 1** In the planned data area, click **Base Station** in the upper left corner of the configuration window.
- **Step 2** In area 1 shown in **Figure 9-5**, select the eNodeB to which the MOs belong.

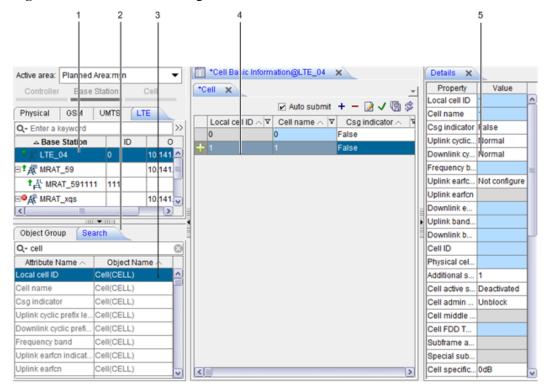


Figure 9-5 MO search and configuration window

#### ■ NOTE

- To view descriptions of the parameters in the MO, click in area 4 and press F1.
- Area 5 displays the details of a selected area-4 entry in vertical format. Click the "Details" button to show or hide this area.
- Step 3 On the Search tab page in area 2, enter an MO name, for example, CELL.
- **Step 4** In area 3, double-click the MO in the **Object Name** column. All parameters in this MO are displayed in area 4.
- **Step 5** Set the parameters in area 4 or 5.
- Step 6 Choose CME > Planned Area > Export Incremental Scripts (M2000 client mode), or choose Area Management > Planned Area > Export Incremental Scripts (CME client mode), to export and activate the incremental scripts.

----End

#### **Using MML Commands**

- **Step 1** Run the **MOD CELLALGOSWITCH** command to enable frequency-priority-based interfrequency handover.
- **Step 2** Run the following commands to add neighbor relationships with inter-frequency E-UTRAN cells:
  - 1. ADD EUTRANINTERNFREQ
  - 2. ADD EUTRANINTERFREQNCELL
  - M NOTE

Set EutranInterFreqNCell. BlindHOPriority to a value ranging from 17 to 32.

----End

#### 9.3.6 Activation Observation

The observation procedure is as follows:

- **Step 1** Trace messages over the Uu interface on the M2000 client after UEs access the network at the center of a 900 MHz cell.
- **Step 2** Check the measurement configuration in the RRC\_CONN\_RECFG message for a frequency-priority-based handover.
  - After receiving a measurement report for event A1 from the UE, the eNodeB sends a measurement configuration for event A4 to start the gap-assisted inter-frequency measurement.
- **Step 3** Trace messages over the Uu interface on the M2000 client. After receiving a measurement report for event A4 from the UE, the eNodeB sends an RRC\_CONN\_RECFG message to the UE for a frequency-priority-based inter-frequency handover. The RRC\_CONN\_RECFG message contains the access information of the target cell.

----End

# 9.3.7 Reconfiguration

The reconfiguration of parameters that are not involved in this section is the same as the reconfiguration of parameters for coverage-based inter-frequency handovers. For details, see **9.2.7 Reconfiguration**.

# **Inter-Frequency Handover Parameters**

Inter-frequency handover parameters are contained in the **InterFreqHoGroup** MO. The following table provides suggestions on how to reconfigure these parameters.

Param eter Name	Parameter ID	Data Source	Setting Notes
Local cell ID	InterFreqHoGro up.LocalCellId	Network plan (negotiation not required)	Ensure that this parameter has been set in a <b>Cell</b> MO based on the network plan.
Load Based Interfr eq RSRP thresh old	InterFreqHoGro up. InterFreqLoadBa sedHoA4ThdRsrp	Network plan (negotiation not required)	This parameter specifies the RSRP threshold for event A4 in a load-based, frequency-priority-based, and service-based inter-frequency handover. A larger value causes a lower probability of triggering event A4. A smaller value causes a higher probability.
			The value of this parameter must be greater than the sum of the peer-end RSRP threshold for inter-frequency measurement event A2 (set in the InterFreqHoGroup MO at the peer eNodeB) and the RSRP threshold offset for inter-frequency measurement event A2 (set in the CnOperatorHoCfg MO at the peer eNodeB).
Load Based Interfr q RSRQ thresh old	InterFreqHoGro up. InterFreqLoadBa sedHoA4ThdRsrq	Network plan (negotiation not required)	This parameter specifies the RSRQ-based event A4 threshold for load-based, frequency-priority-based, and service-based inter-frequency handover. A larger value causes a lower probability of triggering event A4. A smaller value causes a higher probability.  The value of this parameter must be greater than the sum of the peer-end RSRQ threshold for inter-frequency measurement event A2 (set in the InterFreqHoGroup MO at the peer eNodeB) and the RSRQ threshold offset for inter-frequency measurement event A2 (set in the CnOperatorHoCfg MO at the peer eNodeB).

Param eter Name	Parameter ID	Data Source	Setting Notes
Freq Priorit y Based Interfr eq A1 RSRP thresh old	InterFreqHoGro up. FreqPriInterFreq HoA1ThdRsrp	Network plan (negotiation not required)	This parameter specifies the RSRP-based event A1 threshold for frequency-priority-based inter-frequency handover. A larger value causes a lower probability of triggering event A1. A smaller value causes a higher probability.  Set this parameter based on the actual conditions. You are advised to set this parameter to the sum of the following
			values:  1. Peer-end RSRP threshold for inter-frequency measurement event A2 (set in the InterFreqHoGroup MO at the peer eNodeB)
			2. Peer-end RSRP threshold offset for inter- frequency measurement event A2 (set in the <b>CnOperatorHoCfg</b> MO at the peer eNodeB)
			3. RSRP difference between frequency bands
			4. Compensation (6 dB is recommended)
Freq Priorit y Based Interfr eq A1	InterFreqHoGro up. FreqPriInterFreq HoA1ThdRsrq	Network plan (negotiation not required)	This parameter specifies the RSRQ-based event A1 threshold for frequency-priority-based inter-frequency handover. A larger value causes a lower probability of triggering event A1. A smaller value causes a higher probability.
RSRQ thresh old			Set this parameter based on the actual conditions. You are advised to set this parameter to the sum of the following values:
			1. Peer-end RSRQ threshold for inter- frequency measurement event A2 (set in the <b>InterFreqHoGroup</b> MO at the peer eNodeB)
			<ul><li>2. RSRQ difference between frequency bands</li><li>3. Compensation (3 dB is recommended)</li></ul>
			5. Compensation (5 ab is recommended)

Param eter Name	Parameter ID	Data Source	Setting Notes
Freq Priorit y Based Interfr eq A2 RSRP thresh old	InterFreqHoGro up. FreqPriInterFreq HoA2ThdRsrp	Network plan (negotiation not required)	This parameter specifies the RSRP-based event A2 threshold for frequency-priority-based inter-frequency handover. It is used in determining when to exit the gap-assisted measurement triggered by frequency-priority-based inter-frequency handover.  The value of this parameter must be less than or equal to (usually 4 dB less than) the value of InterFreqHoGroup. FreqPriInterFreqHoA1ThdRsrp.
Freq Priorit y Based Interfr eq A2 RSRQ thresh old	InterFreqHoGro up. FreqPriInterFreq HoA2ThdRsrq	Network plan (negotiation not required)	This parameter specifies the RSRQ-based event A2 threshold for frequency-priority-based inter-frequency handover. It is used in determining when to exit the gap-assisted measurement triggered by frequency-priority-based inter-frequency handover.  The value of this parameter must be less than or equal to (usually 2 dB less than) the value of InterFreqHoGroup. FreqPriInterFreqHoA1ThdRsrq.

#### **Intra-RAT Handover Parameters**

Intra-RAT handover parameters are contained in the **IntraRatHoComm** MO. The following table provides suggestions on how to reconfigure these parameters.

Paramete r Name	Parameter ID	Data Source	Setting Notes
A1 Measurem ent trigger quantity of Freq Priority	IntraRatH oComm. FreqPriInt erFreqHo A1TrigQu an	Network plan (negotiation not required)	This parameter specifies the triggering quantity for frequency-priority-based inter-frequency measurement events A1 and A2. The quantity can be either RSRP or RSRQ. The measured RSRP values are stable, slightly varying with the load, and therefore there is little signal fluctuation. The measured RSRQ values vary with the load and are likely to reflect the signal quality of the cell in real time.  It is recommended that the default value be used if the traffic load of LTE cells is not stable.

Paramete r Name	Parameter ID	Data Source	Setting Notes
FreqPrior loadBased A4 Measurem ent trigger quantity	IntraRatH oComm. InterFreq HoA4Trig Quan	Network plan (negotiation not required)	This parameter specifies the event A4 triggering quantity for inter-frequency handovers other than coverage-based handovers. The quantity can be either RSRP or RSRQ, or both. The measured RSRP values are stable, slightly varying with the load, and therefore there is little signal fluctuation. The measured RSRQ values vary with the load and are likely to reflect the signal quality of the cell in real time.  It is recommended that the default value be used if the traffic load of LTE cells is not stable.

#### 9.3.8 Deactivation

### Using the CME to Perform Batch Configuration

Batch reconfiguration using the CME is the recommended method to deactivate a feature on eNodeBs. This method reconfigures all data, except neighbor relationships, for multiple eNodeBs in a single procedure. The procedure for feature deactivation is similar to that for feature activation described in **Using the CME to Perform Batch Configuration for Existing eNodeBs**. In the procedure, modify related parameters described below.

Table 9-6 Parameters related to frequency-priority-based inter-frequency handover

МО	Sheet in the Summary Data File	Parameter Group	Setting Notes
CELLALGOSWITC	CELLALGOSWITC	Based on Frequency	Clear the FreqPriorIFHOS- witch check box.
H	H	Priority HO Switch	

### Using the CME to Perform Single Configuration

On the CME, set the parameters listed in each scenario for a single eNodeB. For detailed instructions, see **Using the CME to Perform Single Configuration** for feature activation.

### **Using MML Commands**

To deactivate frequency-priority-based inter-frequency handover, disable its algorithm by running the **MOD CELLALGOSWITCH** command.

# 9.3.9 Performance Monitoring

For details about how to monitor, see 9.2.9 Performance Monitoring.

# 9.3.10 Parameter Optimization

For details about parameter optimization, see 9.2.10 Parameter Optimization.

# 9.3.11 Troubleshooting

### Fault description

An eNodeB may not initiate a handover procedure upon receipt of an event A1 measurement report.

### Fault handling

Perform the following steps to determine whether the blind handover priorities for neighboring cells are accurate:

- **Step 1** Run the **LST EUTRANINTERFREQNCELL** command to list the inter-frequency neighboring cells. Check the list for cells whose blind handover priorities range from 17 to 32.
  - If such cells cannot be found, go to **Step 2**.
  - If such cells can be found, contact Huawei engineers.
- **Step 2** Run the **MOD EUTRANINTERFREQNCELL** command to change the blind handover priorities of neighboring cells for frequency-priority-based blind handovers to a value in the range from 17 to 32.

----End

# 9.4 Distance-based Inter-frequency Handover

# 9.4.1 When to Use Distance-based Inter-frequency Handover

If high bands and low bands are used to cover separate areas that border each other, RF signals from a high-band cell may be able to travel a long distance (for example, three times the intersite spacing) and cause severe cross-cell coverage to low-band cells. If the low-band cells are not configured as neighboring cells of the high-band cell, inter-frequency measurements cannot be triggered in time and call drops will occur. To reduce the probability of such call drops, you can enable distance-based inter-frequency handover.

# 9.4.2 Required Information

Before deploying distance-based inter-frequency handover, collect information about the normal inter-site spacing and the distance that the RF signals of the cell exerting cross-cell coverage can travel to properly set the TA threshold.

# 9.4.3 Data Preparation

This section describes the data that you need to collect for setting parameters. Required data is data that you must collect for all scenarios. Collect scenario-specific data when necessary for a specific feature deployment scenario.

There are three types of data sources:

- Network plan (negotiation required): parameter values planned by the operator and negotiated with the EPC or peer transmission equipment
- Network plan (negotiation not required): parameter values planned and set by the operator
- User-defined: parameter values set by users.

### Required Data

For details about the required data, see 9.2.3 Data Preparation.

### Scenario-specific Data

Distance-based inter-frequency handover can be enabled only after coverage-based inter-frequency handover is enabled. This section describes the required parameters except those for coverage-based inter-frequency handover. For details on the required parameters for coverage-based inter-frequency handover, see the "Scenario-specific Data" part in 9.2.3 Data Preparation.

To enable distance-based inter-frequency handovers, the corresponding switch must be turned on and the measurement object type must be set to EUTRAN.

The following table describes the parameters that must be set in the **CellAlgoSwitch** MO to enable distance-based inter-frequency handovers.

Parameter Name	Parameter ID	Data Source	Setting Notes
Local cell ID	CellAlgoSwitch.  LocalCellId	Network plan (negotiation not required)	Ensure that this parameter has been set in a <b>Cell</b> MO.
Distance-based Handover Switch	CellAlgoSwitch.  DistBasedHoSwitch	Network plan (negotiation not required)	This parameter specifies whether to enable distance-based handovers. If this switch is turned on, distance-based handovers are allowed. If this switch is turned off, distance-based handovers to any cells are prohibited.

The following table describes the parameters that must be set in the **DistBasedHo** MO to set the measurement object type.

Parameter Name	Parameter ID	Data Source	Setting Notes
Local cell ID	DistBasedHO.  LocalCellId	Network plan (negotiation not required)	Ensure that this parameter has been set in a <b>Cell</b> MO.

Parameter Name	Parameter ID	Data Source	Setting Notes
Distance-based Measurement Object Type	DistBasedHO.  DistBasedMea- sObjType	Network plan (negotiation not required)	This parameter specifies the measurement object type for distance-based handovers.  If this parameter is set to EUTRAN, distanced-based handovers to inter-frequency neighboring cells are allowed.

# 9.4.4 Deployment Requirements

## **Operating Environment**

None.

### **Transmission Networking**

None.

License

None.

#### 9.4.5 Activation

## Using the CME to Perform Batch Configuration for Newly Deployed eNodeBs

Enter the values of related parameters in a summary data file, which also contains other data for the new eNodeBs to be deployed. Then, import the summary data file into the Configuration Management Express (CME) for batch configuration. For detailed instructions, see section "Creating eNodeBs in Batches" in the initial configuration guide for the eNodeB.

The summary data file may be a scenario-specific file provided by the CME or a customized file, depending on the following conditions:

- Related managed objects (MOs) are contained in a scenario-specific summary data file. In this situation, set the parameters in the MOs, and then verify and save the file.
- Some related MOs are not contained in a scenario-specific summary data file. In this situation, customize a summary data file to include the MOs before you can set the parameters.

Related MOs and parameters in each scenario are listed as follows:

Table 9-7 Distance-based Inter-Frequency Handover

МО	Sheet in the Summary Data File	Parameter Group	Remarks
CellAlgoS witch	User-defined sheet CellAlgoSwitch is recommended.	Distance-based Handover Switch	A list-type sheet is recommended.
DistBaseD HO	User-defined sheet <b>DistBasedHO</b> is recommended.	Local cell identity, Distance-based Measurement Object Type, Distance-based Handover Threshold	A list-type sheet is recommended.
EutranExt ernalCell	User-defined sheet <b>EutranExternalCell</b> is recommended.	Mobile country code, Mobile network code, eNodeB identity, Cell identity, Downlink EARFCN, Uplink EARFCN indicator, Uplink EARFCN, Physical cell identity, Tracking area code, Cell name	A list-type sheet is recommended.
EutranExt ernalCellP lmn	User-defined sheet  EutranExternal- CellPlmn is recommended.	Mobile country code, Mobile network code, eNodeB identity, Cell identity, Share mobile country code, Share mobile network code	A list-type sheet is recommended.
EutranInte	User-defined sheet  EutranInterNFreq is recommended.	Local cell identity, Downlink EARFCN, Uplink EARFCN configure indicator, Uplink EARFCN, Inter frequency cell resel priority configure indicator, Inter frequency cell resel priority, EUTRAN reselection time(s), Speed dependent resel parameter configuring indicator, Scaling factor of treseleutra in medium mobility state, Scaling factor of treseleutra in high mobility state, Measurement bandwidth(MHz), Frequency offset(dB), Inter frequency high priority threshold (2dB), Inter frequency lower priority threshold(2dB), Minimum required RX level(2dBm), PMAX configure indicator, PMAX(dBm), Neighbor cell config, Presence antenna port1, Inter-Freq HO trigger Event Type	A list-type sheet is recommended.

Description

МО	Sheet in the Summary Data File	Parameter Group	Remarks
EutranInte rFreqNCel l	User-defined sheet <b>EutranInterFreqN- Cell</b> is recommended.	Local cell identity, Mobile country code, Mobile network code, eNodeB identity, Cell identity, Cell individual offset(dB), Cell offset(dB), No handover indicator, No remove indicator, Blind handover Priority, ANR flag, Local cell name, Neighbour cell name	A list-type sheet is recommended.

### Using the CME to Perform Batch Configuration for Existing eNodeBs

Batch reconfiguration using the CME is the recommended method to activate a feature on existing eNodeBs. This method reconfigures all data, except neighbor relationships, for multiple eNodeBs in a single procedure. The procedure is as follows:

- **Step 1** Choose CME > Advanced > Customize Summary Data File (M2000 client mode), or choose Advanced > Customize Summary Data File (CME client mode), to customize a summary data file for batch reconfiguration.
  - M NOTE

For context-sensitive help on a current task in the client, press F1.

- Step 2 Choose CME > LTE Application > Export Data > Export Base Station Bulk Configuration Data (M2000 client mode), or choose Advanced > Base Station Bulk Configuration > Export Data (CME client mode), to export the eNodeB data stored on the CME into the customized summary data file.
- **Step 3** In the summary data file, set the parameters in the MOs listed in **Table 9-7** and close the file.
- **Step 4** Choose CME > LTE Application > Import Data > Import Base Station Bulk Configuration Data (M2000 client mode), or choose LTE Application > Import Data > Import Base Station Bulk Configuration Data (CME client mode), to import the summary data file into the CME.
- Step 5 Choose CME > Planned Area > Export Incremental Scripts (M2000 client mode), or choose Area Management > Planned Area > Export Incremental Scripts (CME client mode), to export and activate the incremental scripts.

----End

## Using the CME to Perform Single Configuration

On the CME, set the parameters listed in the "Data Preparation" section for a single eNodeB. The procedure is as follows:

- **Step 1** In the planned data area, click **Base Station** in the upper left corner of the configuration window.
- **Step 2** In area 1 shown in Figure 9-6, select the eNodeB to which the MOs belong.

Cell Ba Active area: Planned Area:m/n Property Ease Statio \*Cell x Ce Local cell ID 🗹 Auto submit + 🗕 📝 🦪 🥏 Physical GS 4 UMTS LTE Cell name Local ce I ID ∧ ▼ Cell name ∧ ▼ Csg indicator ∧ Q- Enter a keywo >> Csq indicator alse 0 False Uplink cyclic... ormal △ Base Station 0 Downlink cy.. Normal 10,141. Frequency b. \* # MRAT\_59 Uplink earfc... Not configure **‡** № MRAT\_591111 Uplink earfcn 10.141 Downlink e. > Uplink band. Object Group Downlink b. Q- cell Cell ID **3** Physical cel.. Attribute Name ^ Object Name Additional s... Cell active s... Deactivated cell name Cell(CELL) Csg indicator Cell(CELL) Cell admin ... Unblock Uplink cyclic prefix le... Cell(CELL) Cell middle Downlink cyclic prefi.. Cell(CELL) Cell FDD T. Cell(CELL) Frequency band Subframe a. Uplink earfcn indicat... Cell(CELL) Special sub. Uplink earfcn Cell specific... 0dB

Figure 9-6 MO search and configuration window

#### M NOTE

- To view descriptions of the parameters in the MO, click in area 4 and press F1.
- Area 5 displays the details of a selected area-4 entry in vertical format. Click the "Details" button to show or hide this area.
- **Step 3** On the **Search** tab page in area 2, enter an MO name, for example, **CELL**.
- **Step 4** In area 3, double-click the MO in the **Object Name** column. All parameters in this MO are displayed in area 4.
- **Step 5** Set the parameters in area 4 or 5.
- Step 6 Choose CME > Planned Area > Export Incremental Scripts (M2000 client mode), or choose Area Management > Planned Area > Export Incremental Scripts (CME client mode), to export and activate the incremental scripts.

----End

#### **Using MML Commands**

- **Step 1** Run the **MOD DISTBASEDHO** command to enable distance-based inter-frequency handover.
- **Step 2** Run the following commands to add neighbor relationships with inter-frequency E-UTRAN cells:
  - 1. ADD EUTRANEXTERNALCELL
  - 2. (Optional) ADD EUTRANEXTERNALCELLPLMN
  - 3. ADD EUTRANINTERNFREQ

#### 4. ADD EUTRANINTERFREQNCELL

----End

#### 9.4.6 Activation Observation

The observation procedure is as follows:

- Step 1 Trace messages over the Uu interface on the M2000 client after a UE accesses the network at the center of a cell in the 2600 MHz band. Move the UE toward the cell edge. During the movement, inter-frequency measurements are not triggered for a coverage-based handover due to cross-cell coverage, but the threshold for distance-based inter-frequency handover is reached. Check the measurement configuration in the RRC\_CONN\_RECFG message for a distance-based handover.
- **Step 2** Trace messages over the Uu interface on the M2000 client again. Check the target cell access information in the RRC\_CONN\_RECFG message. This message is the handover command sent from the eNodeB after the eNodeB receives an A4-related inter-frequency measurement report from the UE for a distance-based handover.

----End

# 9.4.7 Reconfiguration

The reconfiguration of parameters that are not involved in this section is the same as the reconfiguration of parameters for coverage-based inter-frequency handovers. For details, see **9.2.7 Reconfiguration**.

#### **Distance-Based Handover Threshold**

Distance-based handover threshold is contained in the **DistBasedHO** MO. The following table provides suggestions on how to reconfigure this parameter.

Parameter Name	Parameter ID	Data Source	Setting Notes
Distance- based Handover Threshold	DistBasedHO.  DistBasedHOT  hd	Network plan (negotiation not required)	This parameter specifies the threshold for distance-based handovers.  It is recommended that you set this parameter based on the planned distance between sites.

### **Inter-Frequency Handover Parameters**

Inter-frequency handover parameters are contained in the **InterFreqHoGroup** MO. The following table provides suggestions on how to reconfigure these parameters.

Parameter Name	Parameter ID	Data Source	Setting Notes
Local cell ID	InterFreqHoG roup. LocalCellId	Network plan (negotiation not required)	Ensure that this parameter has been set in a Cell MO based on the network plan.
CoverageB ased Interfreq RSRP threshold	InterFreqHoG roup. InterFreqHoA 4ThdRsrp	Network plan (negotiation not required)	This parameter specifies the RSRP threshold for event A4 in a coverage-based, UL-quality-based, or distance-based handover, or in a SPID-based handover to the HPLMN. A larger value causes a lower probability of triggering event A4. A smaller value causes a higher probability.
			The value of this parameter must be greater than the sum of the peer-end RSRP threshold for inter-frequency measurement event A2 set at the peer eNodeB (set in the InterFreqHoGroup MO at the peer eNodeB) and the RSRP threshold offset for inter-frequency measurement event A2 (set in the CnOperatorHoCfg MO at the peer eNodeB).
CoverageB ased Interfrq RSRQ threshold	InterFreqHoG roup. InterFreqHoA 4ThdRsrq	Network plan (negotiation not required)	This parameter specifies the RSRQ threshold for event A4 in a coverage-based, UL-quality-based, or distance-based handover, or in a SPID-based handover to the HPLMN. A larger value causes a lower probability of triggering event A4. A smaller value causes a higher probability.  The value of this parameter must be greater than or equal to the peer-end RSRQ threshold for inter-frequency measurement event A2 set at the peer eNodeB (set in the InterFreqHoGroup MO at the peer eNodeB).

Parameter Name	Parameter ID	Data Source	Setting Notes
Interfreq HandOver Time to Trigger	InterFreqHoG roup. InterFreqHoA 4TimeToTrig	Network plan (negotiation not required)	This parameter specifies the time-to-trigger for event A4. A larger value causes a lower probability of handover to inter-frequency neighboring E-UTRAN cells and a smaller average number of handovers, but a higher risk of call drops. A smaller value causes the opposite effect.  If both distance-based inter-frequency handovers and distance-based inter-RAT handovers are enabled, you are advised to set the time-to-trigger for the inter-frequency handover event to be smaller than that for the inter-RAT handover event. This helps increase the possibility of inter-frequency handovers.

### **Intra-RAT Inter-Frequency Handover Parameters**

The intra-RAT handover parameter is contained in the **IntraRatHoComm** MO. The following table provides suggestions on how to reconfigure this parameter.

Parameter Name	Parameter ID	Data Source	Setting Notes
FreqPrior loadBased A4 Measureme nt trigger quantity	IntraRatHoC omm. InterFreqHoA 4TrigQuan	Network plan (negotiation not required)	This parameter specifies the event A4 triggering quantity for inter-frequency handovers other than coverage-based interfrequency handovers. The quantity can be either RSRP or RSRQ, or both. The measured RSRP values are stable, slightly varying with the load, and therefore there is little signal fluctuation. The measured RSRQ values vary with the load and are likely to reflect the signal quality of the cell in real time.  It is recommended that the default value be used if the traffic load of LTE cells is not stable.

## 9.4.8 Deactivation

## Using the CME to Perform Batch Configuration

Batch reconfiguration using the CME is the recommended method to deactivate a feature on eNodeBs. This method reconfigures all data, except neighbor relationships, for multiple

eNodeBs in a single procedure. The procedure for feature deactivation is similar to that for feature activation described in **Using the CME to Perform Batch Configuration for Existing eNodeBs**. In the procedure, modify related parameters described below.

Table 9-8 Parameters related to distance-based inter-frequency handover

МО	Sheet in the Summary Data File	Parameter Group	Setting Notes
CellAlgoSwitc h	CellAlgoSwitch	Distance-based Handover Switch	Set the switch to <b>OFF</b> ( <b>Off</b> ).

### Using the CME to Perform Single Configuration

On the CME, set the parameters listed in each scenario for a single eNodeB. For detailed instructions, see **Using the CME to Perform Single Configuration** for feature activation.

### **Using MML Commands**

To deactivate distance-based inter-frequency handover, disable its algorithm by running the **MOD DISTBASEDHO** command.

# 9.4.9 Performance Monitoring

For details about how to monitor, see 9.2.9 Performance Monitoring.

# 9.4.10 Parameter Optimization

For details about parameter optimization, see 9.2.10 Parameter Optimization.

# 9.4.11 Troubleshooting

None

# 9.5 Service-based Inter-frequency Handover

# 9.5.1 When to Use Service-based Inter-frequency Handover

You can enable service-based inter-frequency handover if service differentiation is required by assigning services of different priorities to different frequencies. For example, services with a QCI of 1 can be assigned to a narrow-bandwidth frequency and services with other QCIs be assigned to other wide-bandwidth frequencies. Note that service-based inter-frequency handover can be enabled on multiple E-UTRAN frequencies, but their QCI-based policy configurations must be the same.

# 9.5.2 Required Information

Before deploying distance-based inter-frequency handover, collect information about the normal inter-site spacing and the distance that the RF signals of the cell exerting cross-cell coverage can travel to properly set the TA threshold.

# 9.5.3 Data Preparation

This section describes the data that you need to collect for setting parameters. Required data is data that you must collect for all scenarios. Collect scenario-specific data when necessary for a specific feature deployment scenario.

There are three types of data sources:

- Network plan (negotiation required): parameter values planned by the operator and negotiated with the EPC or peer transmission equipment
- Network plan (negotiation not required): parameter values planned and set by the operator
- User-defined: parameter values set by users.

### Required Data

For details about the required data, see **9.2.3 Data Preparation**.

## Scenario-specific Data

Service-based inter-frequency handover can be enabled only after coverage-based inter-frequency handover is enabled. This section describes the required parameters except those for coverage-based inter-frequency handover. For details on the required parameters for coverage-based inter-frequency handover, see the "Scenario-specific Data" part in 9.2.3 Data Preparation.

The following table describes the parameter that must be set in the **ENodeBAlgoSwitch** MO to configure service-based inter-frequency handover.

Param eter Name	Parameter ID	Data Source	Setting Notes
Hando ver Algo switch	ENodeBAlgoS witch. HoAlgoSwitch	Network plan (negotiation not required)	To enable service-based inter-frequency handover, select the ServiceBasedInter-FreqHoSwitch(ServiceBasedInterFreq-HoSwitch) check box under this parameter.

The following table describes the parameter that must be set in the **ServiceIfHoCfgGroup** MO to configure a service-based inter-frequency handover policy.

Parameter Name	Parameter ID	Data Source	Setting Notes
CN Operator ID	ServiceIf- HoCfgGroup. CnOperatorId	Network plan (negotiation not required)	This parameter specifies the index of the operator. Ensure that this parameter has been set in a <b>CnOperator</b> MO.

Parameter Name	Parameter ID	Data Source	Setting Notes
Service- based inter- Freq handover policy group ID	ServiceIf- HoCfgGroup. ServiceIfHoCfg- GroupId	Network plan (negotiation not required)	This parameter specifies the ID of the service-based inter-frequency handover policy group.  This parameter can be referenced by services with a specific QCI.
Inter-Freq handover state	ServiceIf- HoCfgGroup. InterFreqHoState	Network plan (negotiation not required)	This parameter specifies whether to allow service-based inter-frequency handovers to a specific frequency.
Downlink EARFCN	ServiceIf- HoCfgGroup. <i>DIEarfcn</i>	Network plan (negotiation not required)	This parameter specifies the frequency to which services with a specific QCI are preferentially handed over.  Ensure that this parameter has been set in an <b>EutranInterNFreq</b> MO.

The following tables describe the parameter that must be set to configure inter-frequency handover policy groups for services with standard or extended QCIs.

The following tables describe the parameter that must be set in the **CnOperatorStandardQci** MO to configure inter-frequency handover policy groups for services with standard QCIs.

Parameter Name	Parameter ID	Data Source	Setting Notes
CN Operator ID	CnOperatorSta ndardQci. CnOperatorId	Network plan (negotiation not required)	This parameter specifies the index of the operator. Ensure that this parameter has been set in a <b>CnOperator</b> MO.
QoS Class Indication	CnOperatorSta ndardQci. <i>Qci</i>	Network plan (negotiation not required)	This parameter specifies the index of the standard QCI for which the parameter group is configured.
Service- based inter- Freq handover policy group ID	CnOperatorSta ndardQci. ServiceIfHoCfg- GroupId	Network plan (negotiation not required)	This parameter specifies the ID of the service-based inter-frequency handover policy group.  Set this parameter to an ID that is configured in ServiceIf-HoCfgGroup.ServiceIfHoCfg-GroupId.

The following tables describe the parameter that must be set in the **CnOperatorExtendedQci** MO to configure inter-frequency handover policy groups for services with extended QCIs.

Description

Parameter Name	Parameter ID	Data Source	Setting Notes
CN Operator ID	CnOperatorExt endedQci. CnOperatorId	Network plan (negotiation not required)	This parameter specifies the index of the operator. Ensure that this parameter has been set in a <b>CnOperator</b> MO.
CN Operator extended QCI	CnOperatorExt endedQci. ExtendedQci	Network plan (negotiation not required)	This parameter specifies the index of the extended QCI for which the parameter group is configured.
Service- based inter- Freq handover policy group ID	CnOperatorExt endedQci. ServiceIfHoCfg- GroupId	Network plan (negotiation not required)	This parameter specifies the ID of the service-based inter-frequency handover policy group.  Set this parameter to an ID that is configured in ServiceIf-HoCfgGroup.ServiceIfHoCfg-GroupId.

# 9.5.4 Deployment Requirements

Operating	Environment
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None.

**Transmission Networking** 

None.

License

None.

# 9.5.5 Activation

# Using the CME to Perform Batch Configuration for Newly Deployed eNodeBs

Enter the values of related parameters in a summary data file, which also contains other data for the new eNodeBs to be deployed. Then, import the summary data file into the Configuration Management Express (CME) for batch configuration. For detailed instructions, see section "Creating eNodeBs in Batches" in the initial configuration guide for the eNodeB.

The summary data file may be a scenario-specific file provided by the CME or a customized file, depending on the following conditions:

• Related managed objects (MOs) are contained in a scenario-specific summary data file. In this situation, set the parameters in the MOs, and then verify and save the file.

 Some related MOs are not contained in a scenario-specific summary data file. In this situation, customize a summary data file to include the MOs before you can set the parameters.

Related MOs and parameters in each scenario are listed as follows:

Table 9-9 Service-based Inter-Frequency Handover

МО	Sheet in the Summary Data File	Parameter Group	Remarks
ENodeBAlgo Switch	User-defined sheet  ENodeBAlg oSwitch is recommende d.	Handover Algo switch	A list-type sheet is recommended.
ServiceIf- HoCfgGroup	User-defined sheet ServiceIf-HoCfgGrou p is recommende d.	CN Operator ID, Service-based inter- Freq handover policy group ID, Inter- Freq handover state, Downlink EARFCN	A list-type sheet is recommended.
EutranExtern alCell	User-defined sheet  EutranExte rnalCell is recommende d.	Mobile country code, Mobile network code, eNodeB identity, Cell identity, Downlink EARFCN, Uplink EARFCN indicator, Uplink EARFCN, Physical cell identity, Tracking area code, Cell name	A list-type sheet is recommended.
EutranExtern alCellPlmn	User-defined sheet  EutranExte rnalCellPlm n is recommende d.	Mobile country code, Mobile network code, eNodeB identity, Cell identity, Share mobile country code, Share mobile network code	A list-type sheet is recommended.

МО	Sheet in the Summary Data File	Parameter Group	Remarks
EutranInterN Freq	User-defined sheet  EutranInter NFreq is recommende d.	Local cell identity, Downlink EARFCN, Uplink EARFCN configure indicator, Uplink EARFCN, Inter frequency cell resel priority configure indicator, Inter frequency cell resel priority, EUTRAN reselection time(s), Speed dependent resel parameter configuring indicator, Scaling factor of treseleutra in medium mobility state, Scaling factor of treseleutra in high mobility state, Measurement bandwidth(MHz), Frequency offset(dB), Inter frequency high priority threshold(2dB), Inter frequency lower priority threshold(2dB), Minimum required RX level(2dBm), PMAX configure indicator, PMAX (dBm), Neighbor cell config, Presence antenna port1, Inter-Freq HO trigger Event Type	A list-type sheet is recommended.
EutranInter- FreqNCell	User-defined sheet  EutranInter FreqNCell is recommende d.	Local cell identity, Mobile country code, Mobile network code, eNodeB identity, Cell identity, Cell individual offset(dB), Cell offset(dB), No handover indicator, No remove indicator, Blind handover Priority, ANR flag, Local cell name, Neighbour cell name	A list-type sheet is recommended.

## Using the CME to Perform Batch Configuration for Existing eNodeBs

Batch reconfiguration using the CME is the recommended method to activate a feature on existing eNodeBs. This method reconfigures all data, except neighbor relationships, for multiple eNodeBs in a single procedure. The procedure is as follows:

- **Step 1** Choose CME > Advanced > Customize Summary Data File (M2000 client mode), or choose Advanced > Customize Summary Data File (CME client mode), to customize a summary data file for batch reconfiguration.
  - M NOTE

For context-sensitive help on a current task in the client, press F1.

- **Step 2** Choose CME > LTE Application > Export Data > Export Base Station Bulk Configuration Data (M2000 client mode), or choose Advanced > Base Station Bulk Configuration > Export Data (CME client mode), to export the eNodeB data stored on the CME into the customized summary data file.
- Step 3 In the summary data file, set the parameters in the MOs listed in Table 9-9 and close the file.

- **Step 4** Choose CME > LTE Application > Import Data > Import Base Station Bulk Configuration Data (M2000 client mode), or choose LTE Application > Import Data > Import Base Station Bulk Configuration Data (CME client mode), to import the summary data file into the CME.
- **Step 5** Choose CME > Planned Area > Export Incremental Scripts (M2000 client mode), or choose Area Management > Planned Area > Export Incremental Scripts (CME client mode), to export and activate the incremental scripts.

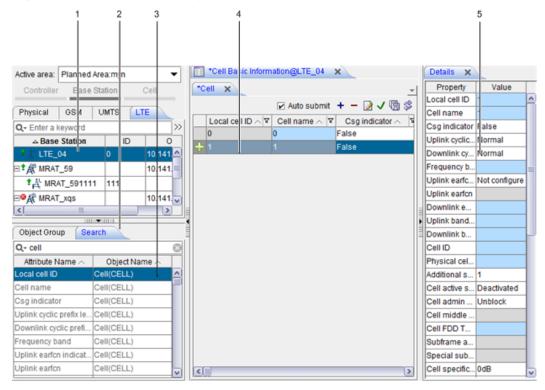
----End

### Using the CME to Perform Single Configuration

On the CME, set the parameters listed in the "Data Preparation" section for a single eNodeB. The procedure is as follows:

- **Step 1** In the planned data area, click **Base Station** in the upper left corner of the configuration window.
- Step 2 In area 1 shown in Figure 9-7, select the eNodeB to which the MOs belong.

Figure 9-7 MO search and configuration window



#### ■ NOTE

- To view descriptions of the parameters in the MO, click in area 4 and press F1.
- Area 5 displays the details of a selected area-4 entry in vertical format. Click the "Details" button to show or hide this area.
- Step 3 On the Search tab page in area 2, enter an MO name, for example, CELL.
- **Step 4** In area 3, double-click the MO in the **Object Name** column. All parameters in this MO are displayed in area 4.

- **Step 5** Set the parameters in area 4 or 5.
- Step 6 Choose CME > Planned Area > Export Incremental Scripts (M2000 client mode), or choose Area Management > Planned Area > Export Incremental Scripts (CME client mode), to export and activate the incremental scripts.

----End

#### **Using MML Commands**

- **Step 1** Run the **MOD ENODEBALGOSWITCH** command to enable service-based inter-frequency handover.
- **Step 2** Run the **ADD SERVICEIFHOCFGGROUP** command to configure a service-based interfrequency handover policy group.
- **Step 3** Run the following commands to add neighbor relationships with inter-frequency E-UTRAN cells:
  - 1. ADD EUTRANEXTERNALCELL
  - 2. (Optional) ADD EUTRANEXTERNALCELLPLMN
  - 3. ADD EUTRANINTERNFREQ
  - 4. ADD EUTRANINTERFREQNCELL

----End

#### 9.5.6 Activation Observation

The observation procedure is as follows:

- **Step 1** Trace messages over the S1 interface after a UE accesses the network at the center of a cell in the 2600 MHz band and sets up a handover-enabled dedicated bearer with a QCI of 2. Check for the dedicated-bearer configuration in the S1AP\_ERAB\_SETUP\_REQ message.
- **Step 2** Trace messages over the Uu interface on the M2000 client. Check the RRC\_CONN\_RECFG message that contains the A4-related inter-frequency measurement configuration for service-based handover.
- **Step 3** Trace messages over the Uu interface on the M2000 client again. Check the target cell access information in the RRC\_CONN\_RECFG message. This message is the handover command sent from the eNodeB after the eNodeB receives an A4-related inter-frequency measurement report from the UE for a service-based handover.

----End

# 9.5.7 Reconfiguration

The reconfiguration of parameters that are not involved in this section is the same as the reconfiguration of parameters for coverage-based inter-frequency handovers. For details, see **9.2.7 Reconfiguration**.

## **Inter-Frequency Handover Parameters**

Inter-frequency handover parameters are contained in the **InterFreqHoGroup** MO. The following table provides suggestions on how to reconfigure these parameters.

Param eter Name	Parameter ID	Data Source	Setting Notes
Local cell ID	InterFreqHoGrou p. <i>LocalCellId</i>	Network plan (negotiation not required)	Ensure that this parameter has been set in a Cell MO based on the network plan.
Load Based Interfre q RSRP threshol d	InterFreqHoGrou p. InterFreqLoadBase dHoA4ThdRsrp	Network plan (negotiation not required)	This parameter specifies the RSRP-based event A4 threshold for load-based, frequency-priority-based, and service-based inter-frequency handover. A larger value causes a lower probability of triggering event A4. A smaller value causes a higher probability.  The value of this parameter must be greater than the sum of the peer-end RSRP threshold for inter-frequency measurement event A2 (set in the InterFreqHoGroup MO at the peer eNodeB) and the RSRP threshold offset for inter-frequency measurement event A2 (set in the CnOperatorHoCfg MO at the peer eNodeB).
Load Based Interfrq RSRQ threshol d	InterFreqHoGrou p. InterFreqLoadBase dHoA4ThdRsrq	Network plan (negotiation not required)	This parameter specifies the RSRQ-based event A4 threshold for load-based, frequency-priority-based, and service-based inter-frequency handover. A larger value causes a lower probability of triggering event A4. A smaller value causes a higher probability.  The value of this parameter must be greater than or equal to the peer-end RSRQ threshold for inter-frequency measurement event A2 (set in the InterFreqHoGroup MO at the peer eNodeB).

## **Intra-RAT Inter-Frequency Handover Parameters**

Intra-RAT handover parameters are contained in the **IntraRatHoComm** MO. The following table provides suggestions on how to reconfigure these parameters.

Parameter Name	Parameter ID	Data Source	Setting Notes
FreqPrior loadBased A4 Measureme nt trigger quantity	IntraRatHoC omm. InterFreqHoA 4TrigQuan	Network plan (negotiation not required)	This parameter specifies the event A4 triggering quantity for inter-frequency handovers other than coverage-based inter-frequency handovers. The quantity can be either RSRP or RSRQ, or both. The measured RSRP values are stable, slightly varying the load, and therefore there is little signal fluctuation. The measured RSRQ values vary with the load and are likely to reflect the signal quality of the cell in real time. It is recommended that the default value be used if the traffic load of LTE cells is not stable.

### 9.5.8 Deactivation

### Using the CME to Perform Batch Configuration

Batch reconfiguration using the CME is the recommended method to deactivate a feature on eNodeBs. This method reconfigures all data, except neighbor relationships, for multiple eNodeBs in a single procedure. The procedure for feature deactivation is similar to that for feature activation described in **Using the CME to Perform Batch Configuration for Existing eNodeBs**. In the procedure, modify related parameters described below.

Table 9-10 Parameters related to service-based inter-frequency handover

МО	Sheet in the Summary Data File	Parameter Group	Setting Notes
ENodeBAlg	ENodeBAlgoSwitch	Handover Algo	Clear the ServiceBasedInter-
oSwitch		switch	FreqHoSwitch check box.

## Using the CME to Perform Single Configuration

On the CME, set the parameters listed in each scenario for a single eNodeB. For detailed instructions, see **Using the CME to Perform Single Configuration** for feature activation.

## **Using MML Commands**

To deactivate service-based inter-frequency handover, disable its algorithm by running the **MOD ENODEBALGOSWITCH** command.

Description

# 9.5.9 Performance Monitoring

For details about how to monitor, see 9.2.9 Performance Monitoring.

# 9.5.10 Parameter Optimization

For details about parameter optimization, see 9.2.10 Parameter Optimization.

# 9.5.11 Troubleshooting

None

# 9.6 UL-Quality-based Inter-Frequency Handover

# 9.6.1 When to Use UL-Quality-based Inter-Frequency Handover

Coverage-based inter-frequency handovers are triggered based on DL signal quality. However, there may be a huge imbalance between the DL and UL signal quality: The UL signal quality may be relatively poor while the DL signal quality is fairly satisfactory. If this occurs, inter-frequency handovers cannot be promptly triggered. To handle this problem, you can enable UL-quality-based inter-frequency handover.

# 9.6.2 Required Information

Before deploying UL-quality-based inter-frequency handover, collect the causes of the imbalance between the UL and DL signal quality as well as the possible magnitudes of the imbalance. In addition, you need to collect the requirements of the local network plan for the UL data rate at the cell edge.

# 9.6.3 Data Preparation

This section describes the data that you need to collect for setting parameters. Required data is data that you must collect for all scenarios. Collect scenario-specific data when necessary for a specific feature deployment scenario.

There are three types of data sources:

- Network plan (negotiation required): parameter values planned by the operator and negotiated with the EPC or peer transmission equipment
- Network plan (negotiation not required): parameter values planned and set by the operator
- User-defined: parameter values set by users.

### Required Data

For details about the required data, see **9.2.3 Data Preparation**.

# Scenario-specific Data

UL-quality-based inter-frequency handover can be enabled only after coverage-based inter-frequency handover is enabled. This section describes the required parameters except those for coverage-based inter-frequency handover. For details on the required parameters for coverage-

based inter-frequency handover, see the "Scenario-specific Data." part in 9.2.3 Data Preparation.

The following table describes the parameter that must be set in the **ENodeBAlgoSwitch** MO to configure UL-quality-based inter-frequency handover.

Param eter Name	Parameter ID	Data Source	Setting Notes
Hando ver Algo switch	ENodeBAlg oSwitch. HoAlgoSwit ch	Network plan (negotiation not required)	To enable UL-quality-based inter- frequency handover, select the UlQualityInterFreqHoSwitch (UlQualityInterFreqHoSwitch) check box under this parameter.

# 9.6.4 Deployment Requirements

## **Operating Environment**

None

#### **Transmission Networking**

None.

License

None.

#### 9.6.5 Activation

### Using the CME to Perform Batch Configuration for Newly Deployed eNodeBs

Enter the values of related parameters in a summary data file, which also contains other data for the new eNodeBs to be deployed. Then, import the summary data file into the Configuration Management Express (CME) for batch configuration. For detailed instructions, see section "Creating eNodeBs in Batches" in the initial configuration guide for the eNodeB.

The summary data file may be a scenario-specific file provided by the CME or a customized file, depending on the following conditions:

- Related managed objects (MOs) are contained in a scenario-specific summary data file. In this situation, set the parameters in the MOs, and then verify and save the file.
- Some related MOs are not contained in a scenario-specific summary data file. In this situation, customize a summary data file to include the MOs before you can set the parameters.

Related MOs and parameters in each scenario are listed as follows:

Table 9-11 UL-Quality-based Inter-Frequency Handover

МО	Sheet in the Summary Data File	Parameter Group	Remarks
ENodeBAlg oSwitch	User-defined sheet  ENodeBAlgoSwitch is recommended.	Handover Algo switch	A list-type sheet is recommended.
EutranExter nalCell	User-defined sheet  EutranExternalCell is recommended.	Mobile country code, Mobile network code, eNodeB identity, Cell identity, Downlink EARFCN, Uplink EARFCN indicator, Uplink EARFCN, Physical cell identity, Tracking area code, Cell name	A list-type sheet is recommended.
EutranExter nalCellPlmn	User-defined sheet  EutranExternal- CellPlmn is recommended.	Mobile country code, Mobile network code, eNodeB identity, Cell identity, Share mobile country code, Share mobile network code	A list-type sheet is recommended.
EutranInter NFreq	User-defined sheet  EutranInterNFreq is recommended.	Local cell identity, Downlink EARFCN, Uplink EARFCN configure indicator, Uplink EARFCN, Inter frequency cell resel priority configure indicator, Inter frequency cell resel priority, EUTRAN reselection time(s), Speed dependent resel parameter configuring indicator, Scaling factor of treseleutra in medium mobility state, Scaling factor of treseleutra in high mobility state, Measurement bandwidth (MHz), Frequency offset(dB), Inter frequency lower priority threshold(2dB), Inter frequency lower priority threshold(2dB), Minimum required RX level(2dBm), PMAX configure indicator, PMAX(dBm), Neighbor cell config, Presence antenna port1, Inter-Freq HO trigger Event Type	A list-type sheet is recommended.

Description

МО	Sheet in the Summary Data File	Parameter Group	Remarks
EutranInter- FreqNCell	User-defined sheet <b>EutranInterFreqNCell</b> is recommended.	Local cell identity, Mobile country code, Mobile network code, eNodeB identity, Cell identity, Cell individual offset (dB), Cell offset(dB), No handover indicator, No remove indicator, Blind handover Priority, ANR flag, Local cell name, Neighbour cell name	A list-type sheet is recommended.

### Using the CME to Perform Batch Configuration for Existing eNodeBs

Batch reconfiguration using the CME is the recommended method to activate a feature on existing eNodeBs. This method reconfigures all data, except neighbor relationships, for multiple eNodeBs in a single procedure. The procedure is as follows:

- **Step 1** Choose CME > Advanced > Customize Summary Data File (M2000 client mode), or choose Advanced > Customize Summary Data File (CME client mode), to customize a summary data file for batch reconfiguration.
  - NOTE

For context-sensitive help on a current task in the client, press F1.

- Step 2 Choose CME > LTE Application > Export Data > Export Base Station Bulk Configuration Data (M2000 client mode), or choose Advanced > Base Station Bulk Configuration > Export Data (CME client mode), to export the eNodeB data stored on the CME into the customized summary data file.
- **Step 3** In the summary data file, set the parameters in the MOs listed in **Table 9-11** and close the file.
- **Step 4** Choose CME > LTE Application > Import Data > Import Base Station Bulk Configuration Data (M2000 client mode), or choose LTE Application > Import Data > Import Base Station Bulk Configuration Data (CME client mode), to import the summary data file into the CME.
- **Step 5** Choose CME > Planned Area > Export Incremental Scripts (M2000 client mode), or choose Area Management > Planned Area > Export Incremental Scripts (CME client mode), to export and activate the incremental scripts.
  - ----End

### Using the CME to Perform Single Configuration

On the CME, set the parameters listed in the "Data Preparation" section for a single eNodeB. The procedure is as follows:

- **Step 1** In the planned data area, click **Base Station** in the upper left corner of the configuration window.
- **Step 2** In area 1 shown in **Figure 9-8**, select the eNodeB to which the MOs belong.

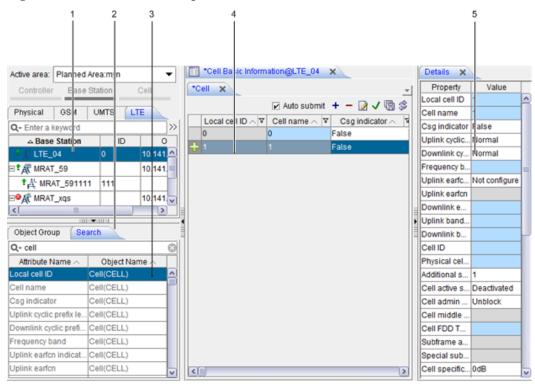


Figure 9-8 MO search and configuration window

### ■ NOTE

- To view descriptions of the parameters in the MO, click in area 4 and press F1.
- Area 5 displays the details of a selected area-4 entry in vertical format. Click the "Details" button to show or hide this area.
- Step 3 On the Search tab page in area 2, enter an MO name, for example, CELL.
- **Step 4** In area 3, double-click the MO in the **Object Name** column. All parameters in this MO are displayed in area 4.
- **Step 5** Set the parameters in area 4 or 5.
- Step 6 Choose CME > Planned Area > Export Incremental Scripts (M2000 client mode), or choose Area Management > Planned Area > Export Incremental Scripts (CME client mode), to export and activate the incremental scripts.

----End

#### **Using MML Commands**

- **Step 1** Run the **MOD ENODEBALGOSWITCH** command to enable UL-quality-based interfrequency handover.
- **Step 2** Run the following commands to add neighbor relationships with inter-frequency E-UTRAN cells:
  - 1. ADD EUTRANEXTERNALCELL
  - 2. (Optional) ADD EUTRANEXTERNALCELLPLMN
  - 3. ADD EUTRANINTERNFREQ

#### 4. ADD EUTRANINTERFREQNCELL

----End

### 9.6.6 Activation Observation

The observation procedure is as follows:

- **Step 1** Use a UE to access the network at the cell center in the 2600 MHz band. Then, move the UE from the cell center to the cell edge. During this process, the uplink quality of the UE becomes poor because the measurement of event A2 for triggering event-triggered coverage-based is not supported in the local cell.
- **Step 2** Observe the user-level measurement result on the M2000.
  - When the user uplink IBLER is greater than 30%, which is the threshold for an UL-quality-based inter-frequency handover, observe the messages traced over the Uu interface. The RRC\_CONN\_RECFG message from the eNodeB contains measurement control information for the UL-quality-based inter-frequency handover.
  - When the user uplink IBLER is greater than 40%, which is the threshold for UL-quality-based inter-frequency redirection, observe the messages traced over the Uu interface. The RRC\_CONN\_REL message from the eNodeB contains information about the target frequency for redirection.
- **Step 3** Observe messages traced over the Uu interface.
  - In the case of a handover, the UE receives an RRC\_CONN\_RECFG message that contains target cell information.
  - In the case of redirection, the UE receives an RRC\_CONN\_REL message that contains target frequency information.

----End

# 9.6.7 Reconfiguration

The reconfiguration of parameters that are not involved in this section is the same as the reconfiguration of parameters for coverage-based inter-frequency handovers. For details, see **9.2.7 Reconfiguration**.

## **Inter-Frequency Handover Parameters**

Inter-frequency handover parameters are contained in the **InterFreqHoGroup** MO. The following table provides suggestions on how to reconfigure these parameters.

Parameter Name	Parameter ID	Data Source	Setting Notes
Local cell ID	InterFreqHoG roup. LocalCellId	Network plan (negotiation not required)	Ensure that this parameter has been set in a <b>Cell</b> MO based on the network plan.

Parameter Name	Parameter ID	Data Source	Setting Notes
CoverageBas ed Interfreq RSRP threshold	InterFreqHoG roup. InterFreqHoA4 ThdRsrp	Network plan (negotiation not required)	This parameter specifies the RSRP threshold for event A4 in a coverage-based, UL-quality-based, or distance-based handover, or in a SPID-based handover to the HPLMN. A larger value causes a lower probability of triggering event A4. A smaller value causes a higher probability.  The value of this parameter must be greater than the sum of the peer-end RSRP threshold for inter-frequency measurement event A2 (set in the InterFreqHoGroup MO at the peer eNodeB) and the RSRP threshold offset for inter-frequency measurement event A2 (set in the CnOperatorHoCfg MO at the peer eNodeB).
CoverageBas ed Interfrq RSRQ threshold	InterFreqHoG roup. InterFreqHoA4 ThdRsrq	Network plan (negotiation not required)	This parameter specifies the RSRQ threshold for event A4 in a coverage-based, UL-quality-based, or distance-based handover, or in a SPID-based handover to the HPLMN. A larger value causes a lower probability of triggering event A4. A smaller value causes a higher probability.  The value of this parameter must be greater than or equal to the peer-end RSRQ threshold for inter-frequency measurement event A2 (set in the InterFreqHoGroup MO at the peer eNodeB).
Interfreq HandOver Time to Trigger	InterFreqHoG roup. InterFreqHoA4 TimeToTrig	Network plan (negotiation not required)	This parameter specifies the time-to-trigger for event A4. A larger value causes a lower probability of handover to inter-frequency neighboring E-UTRAN cells and a smaller average number of handovers, but a higher risk of call drops. A smaller value causes the opposite effect.  If both UL-quality-based inter-frequency handovers and UL-quality-based inter-RAT handovers are enabled, you are advised to set the time-to-trigger for the inter-frequency handover event to be smaller than that for the inter-RAT handover event, increasing the possibility of inter-frequency handovers.

#### **Intra-RAT Inter-Frequency Handover Parameters**

The intra-RAT handover parameter is contained in the **IntraRatHoComm** MO. The following table provides suggestions on how to reconfigure this parameter.

Parameter Name	Parameter ID	Data Source	Setting Notes
FreqPrior loadBased A4 Measureme nt trigger quantity	IntraRatH oComm. InterFreq HoA4Trig Quan	Network plan (negotiation not required)	This parameter specifies the event A4 triggering quantity for inter-frequency handovers other than coverage-based inter-frequency handovers. The quantity can be either RSRP or RSRQ, or both. The measured RSRP values are stable, slightly varying with the load, and therefore there is little signal fluctuation. The measured RSRQ values vary with the load and are likely to reflect the signal quality of the cell in real time.  It is recommended that the default value be used if the traffic load of LTE cells is not stable.

#### 9.6.8 Deactivation

## Using the CME to Perform Batch Configuration

Batch reconfiguration using the CME is the recommended method to deactivate a feature on eNodeBs. This method reconfigures all data, except neighbor relationships, for multiple eNodeBs in a single procedure. The procedure for feature deactivation is similar to that for feature activation described in **Using the CME to Perform Batch Configuration for Existing eNodeBs**. In the procedure, modify related parameters described below.

Table 9-12 Parameters related to UL-quality-based inter-frequency handover

МО	Sheet in the Summary Data File	Parameter Group	Setting Notes
ENodeBAlgoSwitch	ENodeBAlgoSwitch	Handover Algo switch	Clear the UlQualityInter- FreqHoSwitch check box.

### Using the CME to Perform Single Configuration

On the CME, set the parameters listed in each scenario for a single eNodeB. For detailed instructions, see **Using the CME to Perform Single Configuration** for feature activation.

### **Using MML Commands**

To deactivate UL-quality-based inter-frequency handover, disable its algorithm by running the **MOD ENODEBALGOSWITCH** command.

# 9.6.9 Performance Monitoring

For details about how to monitor, see 9.2.9 Performance Monitoring.

# 9.6.10 Parameter Optimization

For details about parameter optimization, see 9.2.10 Parameter Optimization.

# 9.6.11 Troubleshooting

**Table 9-13** shows the alarms related to the feature.

Table 9-13 Alarm list

Alarm ID	Alarm Name	NE	Feature ID	Feature Name
29219	Inter-Frequency Outgoing Cell Handover Success Rate Too Low	eNodeB	LBFD-0020180 2 LBFD-0020180 4	Coverage Based Inter-frequency Handover Distance Based Inter-frequency Handover

# 9.7 Coverage-based Inter-RAT Handover

# 9.7.1 When to Use Coverage-based Inter-RAT Handover

Mobility management is fundamental to service continuity. If the E-UTRAN cannot cover the entire network and therefore requires other inter-RAT networks to supplement coverage, you are advised to enable coverage-based inter-RAT handover.

Coverage-based inter-RAT handover is the basis for other types of inter-RAT handover. Before enabling another type of inter-RAT handover, you need to enable coverage-based inter-RAT handover.

Event B1 or event B2 triggers coverage-based inter-RAT handovers. If there are no special requirements for the serving cell signal quality, event B2 may not be used.

# 9.7.2 Required Information

All types of inter-RAT handovers have special network and UE requirements. The networks include the LTE network (consisting of the E-UTRAN and EPC) and the target network

(consisting of the radio access network and core network). Before enabling an inter-RAT handover policy, you need to check whether the networks support inter-RAT operations and whether the UE supports inter-RAT measurements and handovers.

- If the devices in the networks do not support inter-RAT operations, disable the inter-RAT PS handover policies.
- If the devices in the networks do not support SRVCC to inter-RAT systems, disable the inter-RAT SRVCC policies.
- If the devices in the networks do not support CCO to GERAN, disable the CCO/NACC policies to GERAN.
- If blind handovers are used to implement inter-RAT handovers, you need to collect the information about the neighboring cells to which blind handovers will be allowed as well as their blind-handover priorities ranging from 1 to 32. These priorities have a positive correlation with the values. Note that the value 0 indicates that blind handovers to this neighboring cell are prohibited.
- If an operator requires flash redirection or NACC, ensure that the equipment on the core network and RAN supports RIM. If the equipment does not support RIM, flash redirection cannot be used.

The information to be collected before deploying coverage-based inter-RAT handover includes the information to be collected before deploying coverage-based inter-frequency handover.

Verify that the inter-RAT networks provide continuous coverage in inter-RAT networking scenarios where eNodeBs often share sites with base stations of other RATs. Because the LTE network often provides higher data rates and has a lower threshold for inter-RAT measurement event A2, it is recommended that parameters are set to enable LTE networks to be preferentially used for carrying services.

Both events B1 and B2 can be configured for UEs to perform inter-RAT measurements. Before you deploy coverage-based inter-RAT handover, collect information about the event type configured for inter-RAT measurements. When event B2 is configured, the UE uses event B2 in inter-RAT measurements. If event B1 is configured, the UE uses either event B1 or event B2 in inter-RAT measurements based on whether the UE supports event B1. If the UE supports event B1, event B2 is used; if the UE does not support event B1, event B2 is used.

# 9.7.3 Data Preparation

This section describes the data that you need to collect for setting parameters. Required data is data that you must collect for all scenarios. Collect scenario-specific data when necessary for a specific feature deployment scenario.

There are three types of data sources:

- Network plan (negotiation required): parameter values planned by the operator and negotiated with the EPC or peer transmission equipment
- Network plan (negotiation not required): parameter values planned and set by the operator
- User-defined: parameter values set by users.

#### Required Data

This section describes the data required for configuring neighbor relationships with UTRAN and GERAN cells.

#### ■ NOTE

During coverage-based inter-RAT handovers, the eNodeB can perform a blind handover when there is no neighboring cells. To enable this function, you can configure only UTRAN neighboring frequencies, GERAN neighboring frequency groups, or GERAN BCCH neighboring frequencies.

To enable other inter-RAT handover features, you must configure required data described in this section.

#### Collecting Data for Neighboring UTRAN Cells

The following table describes the parameters that must be set in the **UtranNFreq** MO to configure a neighboring UTRAN frequency.

Parameter Name	Paramete r ID	Data Source	Setting Notes
Local cell ID	UtranNF req. LocalCell Id	Network plan (negotiation not required)	Ensure that this parameter has been set in a <b>Cell</b> MO.
Downlink UARFCN	UtranNF req. UtranDlA rfcn	Network plan (negotiation not required)	This parameter specifies the DL UARFCN of the cells on the neighboring UTRAN frequency. Set this parameter based on the neighboring relationship configuration.

The following table describes the parameters that must be set in the **UtranExternalCell** MO to configure an external UTRAN cell.

Parameter Name	Paramete r ID	Data Source	Setting Notes
Mobile country code	UtranExt ernalCell. <i>Mcc</i>	Network plan (negotiation required)	This parameter specifies the MCC of the home NodeB of the external UTRAN cell. If this external cell works in RAN sharing mode, set this parameter to the MCC of the primary operator.
Mobile network code	UtranExt ernalCell. Mnc	Network plan (negotiation required)	This parameter specifies the MNC of the home NodeB of the external UTRAN cell. If this external cell works in RAN sharing mode, set this parameter to the MNC of the primary operator.
UTRAN cell ID	UtranExt ernalCell. <i>CellId</i>	Network plan (negotiation required)	This parameter specifies the ID of the external UTRAN cell. It uniquely identifies a UTRAN cell within a NodeB.
			If the peer NodeB is provided by Huawei, this parameter must have the same value as the corresponding parameter in the ULOCELL MO of the Huawei NodeB.

Parameter Name	Paramete r ID	Data Source	Setting Notes
Downlink UARFCN	UtranExt ernalCell. UtranDlA rfcn	Network plan (negotiation required)	This parameter specifies the DL ARFCN of the external UTRAN cell.  If the peer NodeB is provided by Huawei, this parameter must have the same value as the corresponding parameter in the UCELLQUICKSETUP MO of the Huawei NodeB.
RNC ID	UtranExt ernalCell. RncId	Network plan (negotiation required)	This parameter specifies the home RNC ID of the external UTRAN cell.  If the peer NodeB is provided by Huawei, this parameter must have the same value as the corresponding parameter in the URNCBASIC MO of the Huawei NodeB.
Routing area code configure indicator	UtranExt ernalCell. RacCfgIn d	Network plan (negotiation required)	This parameter specifies whether to set the routing area code (RAC) for the external UTRAN cell. This parameter must be set to <b>CFG(Configure)</b> if the external UTRAN cell supports PS services.  If the peer NodeB is provided by Huawei, this parameter must have the same value as the corresponding parameter in the
Routing	UtranExt	Network plan	UCELLQUICKSETUP MO of the Huawei NodeB.  This parameter specifies the RAC of the
area code	ernalCell. Rac	(negotiation required)	external UTRAN cell. If <b>RacCfgInd</b> is set to <b>CFG(Configure)</b> , this parameter must be set. If the peer NodeB is provided by Huawei, this parameter must have the same value as the corresponding parameter in the <b>UCELLQUICKSETUP</b> MO of the Huawei NodeB.
Primary scrambling code	UtranExt ernalCell. PScramb Code	Network plan (negotiation required)	This parameter specifies the DL primary scrambling code of the external UTRAN cell. If the peer NodeB is provided by Huawei, this parameter must have the same value as the corresponding parameter in the URNCBASIC MO of the Huawei NodeB.
Location area code	UtranExt ernalCell. <i>Lac</i>	Network plan (negotiation required)	This parameter specifies the location area code (LAC) of the external UTRAN cell.  If the peer NodeB is provided by Huawei, this parameter must have the same value as the corresponding parameter in the ULAC MO of the Huawei NodeB.

The following table describes the parameters that must be set in the **UtranExternalCellPImn** MO to configure an additional PLMN ID (representing a secondary operator) for an external UTRAN cell. This MO is required only if the home NodeB of the external UTRAN cell works in RAN sharing with common carrier mode and multiple operators share the same external UTRAN cell.

Paramete Parameter Data Setting Notes					
r Name	ID	Source	Jetting Notes		
UTRAN cell ID	UtranExter nalCellPlm n.CellId	Network plan (negotiatio n required)	This parameter specifies the ID of the external UTRAN cell. It uniquely identifies a UTRAN cell within a NodeB.  If the peer NodeB is provided by Huawei, this parameter must have the same value as the corresponding parameter in the ULOCELL MO of the Huawei NodeB.		
Mobile country code	UtranExter nalCellPlm n.Mcc	Network plan (negotiatio n required)	This parameter specifies the MCC of the home RNC of the external UTRAN cell. If this external cell works in RAN sharing mode, set this parameter to the MCC of the primary operator. If the peer NodeB is provided by Huawei, this parameter must have the same value as the corresponding parameter in the URNCBASIC MO of the Huawei NodeB.		
Mobile network code	UtranExter nalCellPlm n.Mnc	Network plan (negotiatio n required)	This parameter specifies the MNC of the home RNC of the external UTRAN cell. If this external cell works in RAN sharing mode, set this parameter to the MNC of the primary operator. If the peer NodeB is provided by Huawei, this parameter must have the same value as the corresponding parameter in the URNCBASIC MO of the Huawei NodeB.		
Share mobile country code	UtranExter nalCellPlm n.ShareMcc	Network plan (negotiatio n required)	This parameter specifies the MCC of the secondary operator.  If the peer NodeB is provided by Huawei, this parameter must have the same value as the corresponding parameter in the UCNOPEREXTPLMN MO of the Huawei NodeB.		
Share mobile network code	UtranExter nalCellPlm n.ShareMnc	Network plan (negotiatio n required)	This parameter specifies the MNC of the secondary operator.  If the peer NodeB is provided by Huawei, this parameter must have the same value as the corresponding parameter in the UCNOPEREXTPLMN MO of the Huawei NodeB.		

The following table describes the parameters that must be set in the **UtranNCell** MO to configure the neighbor relationship with a UTRAN cell.

Parameter Name	Parameter ID	Data Source	Setting Notes
Local cell ID	UtranNCell . LocalCellId	Network plan (negotiatio n not required)	Ensure that this parameter has been set in a Cell MO.
Mobile country code	UtranNCell .Mcc	Network plan (negotiatio n required)	This parameter specifies the MCC of the home RNC of the neighboring UTRAN cell. If this neighboring cell works in RAN sharing mode, set this parameter to the MCC of the primary operator.
			If the peer NodeB is provided by Huawei, this parameter must have the same value as the corresponding parameter in the URNCBASIC MO of the Huawei NodeB.
Mobile network code	UtranNCell .Mnc	Network plan (negotiatio n required)	This parameter specifies the MNC of the home RNC of the neighboring UTRAN cell. If this neighboring cell works in RAN sharing mode, set this parameter to the MNC of the primary operator.
			If the peer NodeB is provided by Huawei, this parameter must have the same value as the corresponding parameter in the URNCBASIC MO of the Huawei NodeB.
UTRAN cell ID	UtranNCell .CellId	Network plan (negotiatio	This parameter specifies the ID of the neighboring UTRAN cell. It uniquely identifies a UTRAN cell within a NodeB.
		n required)	If the peer NodeB is provided by Huawei, this parameter must have the same value as the corresponding parameter in the ULOCELL MO of the Huawei NodeB.

### Collecting Data for Neighboring GERAN Cells

The following table describes the parameters that must be set in the **GeranNfreqGroup** MO to configure a group of neighboring GERAN carrier frequencies.

Parameter Name	Paramet er ID	Data Source	Setting Notes
Local cell ID	GeranNf reqGrou p. LocalCell Id	Network plan (negotiatio n not required)	Ensure that this parameter has been set in a <b>Cell</b> MO.
BCCH group ID	GeranNf reqGrou p. BcchGro upId	Network plan (negotiatio n required)	This parameter specifies the ID of the GERAN carrier frequency group.  This parameter references the corresponding parameter on the peer BTS.
GERAN version	GeranNf reqGrou p. GeranVer sion	Network plan (negotiatio n required)	This parameter specifies the RAT supported by the GERAN carrier frequency group.  This parameter references the corresponding parameter on the peer BTS.
Starting ARFCN	GeranNf reqGrou p. StartingA rfcn	Network plan (negotiatio n required)	This parameter specifies the first ARFCN in the GERAN carrier frequency group.  This parameter references the corresponding parameter on the peer BTS.
Band indicator	GeranNf reqGrou p. BandIndi cator	Network plan (negotiatio n required)	This parameter specifies the GSM band containing the GERAN carrier frequency group.  This parameter references the corresponding parameter on the peer BTS.

The following table describes the parameters that must be set in the **GeranNfreqGroupArfcn** MO to configure a neighboring frequency in a GERAN carrier frequency group.

Parame ter Name	Parameter ID	Data Source	Setting Notes
Local cell ID	GeranNfreq GroupArfen. <i>LocalCellId</i>	Network plan (negotiation not required)	Ensure that this parameter has been set in a <b>Cell</b> MO.
BCCH group ID	GeranNfreq GroupArfen. BechGroupId	Network plan (negotiation required)	This parameter specifies the ID of the GERAN carrier frequency group. Ensure that this parameter has been set in a GERANNFREQGROUP MO.

Parame ter Name	Parameter ID	Data Source	Setting Notes
GERAN ARFCN	GeranNfreq GroupArfen. GeranArfen	Network plan (negotiation required)	This parameter specifies the ARFCN of the GERAN BCCH.  This parameter references the corresponding parameter on the peer BTS.  You are advised to configure frequencies on different bands in different frequency groups.

The following table describes the parameters that must be set in the **GeranExternalCell** MO to configure an external GERAN cell.

Paramete r Name	Parameter ID	Data Source	Setting Notes
Mobile country code	GeranExterna ICell. <i>Mcc</i>	Network plan (negotiation required)	This parameter specifies the MCC of the home BTS of the external GERAN cell. If this external cell works in RAN sharing mode, set this parameter to the MCC of the primary operator.  This parameter references the corresponding parameter on the peer BTS.
Mobile network code	GeranExterna ICell.Mnc	Network plan (negotiation required)	This parameter specifies the MNC of the home BTS of the external GERAN cell. If this external cell works in RAN sharing mode, set this parameter to the MNC of the primary operator.  This parameter references the corresponding parameter on the peer BTS.
GERAN cell ID	GeranExterna lCell. GeranCellId	Network plan (negotiation required)	This parameter specifies the ID of the external GERAN cell.  This parameter references the corresponding parameter on the peer BTS.
Location area code	GeranExterna ICell. <i>Lac</i>	Network plan (negotiation required)	This parameter specifies the LAC of the external GERAN cell. It uniquely identifies a GERAN cell within a PLMN. This parameter references the corresponding parameter on the peer BTS.
Band indicator	GeranExterna ICell. BandIndicator	Network plan (negotiation required)	This parameter specifies the GSM band in which the external GERAN cell operates.  This parameter references the corresponding parameter on the peer BTS.

Paramete r Name	Parameter ID	Data Source	Setting Notes
GERAN ARFCN	GeranExterna ICell. GeranArfcn	Network plan (negotiation required)	This parameter specifies the ARFCN of the GERAN BCCH. This parameter references the corresponding parameter on the peer BTS.
Network color code	GeranExterna ICell. NetworkColou rCode	Network plan (negotiation required)	This parameter specifies the NCC of the GERAN. It uniquely identifies a network within a country.  This parameter references the corresponding parameter on the peer BTS.
Base station color code	GeranExterna ICell. BaseStationCo lourCode	Network plan (negotiation required)	This parameter specifies the BCC of the home BTS of the external GERAN cell. It is used by the UE to discriminate between cells on the same frequency.  This parameter references the corresponding parameter on the peer BTS.
DTM indication	GeranExterna ICell. <i>DtmInd</i>	Network plan (negotiation required)	This parameter specifies whether the external GERAN cell supports dual service mode. If the cell supports dual service mode, both CS and PS services can be handed over to the cell. Otherwise, only CS services or PS services can be handed over to the cell.  This parameter references the corresponding parameter on the peer BTS.

The following table describes the parameters that must be set in the **GeranExternalCellPlmn** MO to configure an additional PLMN ID (representing a secondary operator) for an external GERAN cell. This MO is required only if the home BTS of the external GERAN cell works in RAN sharing with common carrier mode and multiple operators share the same external GERAN cell.

Parameter Name	Parameter ID	Data Source	Setting Notes
GERAN cell ID	GeranExter nalCellPlmn .GeranCellId	Network plan (negotiation required)	This parameter specifies the ID of the external GERAN cell. It uniquely identifies a GERAN cell within a BTS.  This parameter references the corresponding parameter on the peer BTS.

Parameter Name	Parameter ID	Data Source	Setting Notes
Location area code	GeranExter nalCellPlmn .Lac	Network plan (negotiation required)	This parameter specifies the LAC of the external GERAN cell. It uniquely identifies a GERAN cell within a PLMN. This parameter references the corresponding parameter on the peer BTS.
Mobile country code	GeranExter nalCellPlmn .Mcc	Network plan (negotiation required)	This parameter specifies the MCC of the home BTS of the external GERAN cell. If this external cell works in RAN sharing mode, set this parameter to the MCC of the primary operator. This parameter references the corresponding parameter on the peer BTS.
Mobile network code	GeranExter nalCellPlmn .Mnc	Network plan (negotiation required)	This parameter specifies the MNC of the home BTS of the external GERAN cell. If this external cell works in RAN sharing mode, set this parameter to the MNC of the primary operator. This parameter references the corresponding parameter on the peer BTS.
Share mobile country code	GeranExter nalCellPlmn .ShareMcc	Network plan (negotiation required)	This parameter specifies the MCC of the secondary operator.  This parameter references the corresponding parameter on the peer BTS.
Share mobile network code	GeranExter nalCellPlmn .ShareMnc	Network plan (negotiation required)	This parameter specifies the MNC of the secondary operator. This parameter references the corresponding parameter on the peer BTS.

The following table describes the parameters that must be set in the **GERANNCELL** MO to configure the neighbor relationship with a GERAN cell.

Parameter Name	Parameter ID	Data Source	Setting Notes
Local cell ID	GeranNcell.  LocalCellId	Network plan (negotiation not required)	Ensure that this parameter has been set in a <b>Cell</b> MO.

Parameter Name	Parameter ID	Data Source	Setting Notes
Mobile country code	GeranNcell.  Mcc	Network plan (negotiation required)	This parameter specifies the MCC of the home BTS of the neighboring GERAN cell. If this external cell works in RAN sharing mode, set this parameter to the MCC of the primary operator.
			This parameter references the corresponding parameter on the peer BTS.
Mobile network code	GeranNcell.  Mnc	Network plan (negotiation required)	This parameter specifies the MNC of the home BTS of the neighboring GERAN cell. If this neighboring cell works in RAN sharing mode, set this parameter to the MNC of the primary operator.  This parameter references the corresponding parameter on the peer BTS.
Location area code	GeranNcell.  Lac	Network plan (negotiation required)	This parameter specifies the LAC of the neighboring GERAN cell. It uniquely identifies a GERAN cell within a PLMN.  This parameter references the corresponding parameter on the peer BTS.
GERAN cell ID	GeranNcell. GeranCellId	Network plan (negotiation required)	This parameter specifies the ID of the neighboring GERAN cell. It uniquely identifies a GERAN cell within a BTS.  This parameter references the corresponding parameter on the peer BTS.

The following table describes the parameters that must be set in the **InterRatPolicyCfgGroup** MO to configure an inter-RAT handover policy group.

Paramet er Name	Parameter ID	Data Source	Setting Notes
InterRAT policy config group ID	InterRatPolicyCfgGroup.  InterRatPolicyCfgGroupId	Network plan (negotiation not required)	This parameter specifies the ID of the inter-RAT handover policy group.  If you want to set a different inter-RAT handover policy for services with a specific QCI, you must create a policy group. This parameter will be referenced by a standard or extended QCI. For details, see the <b>StandardQci</b> or <b>ExtendedQci</b> MO described later.
UTRAN handover policy Configura tion	InterRatPolicyCfgGroup.  UtranHoCfg	Network plan (negotiation not required)	This parameter specifies the policy configuration for handovers to the UTRAN. Set this parameter based on the network plan.  It is recommended that the default value be used if there is no special requirement for forbidding certain kind of handovers.
GERAN GSM handover policy Configura tion	InterRatPolicyCfgGroup.  GeranGsmHoCf g	Network plan (negotiation not required)	This parameter specifies the policy configuration for handovers to GSM cells. Set this parameter based on the network plan.  It is recommended that the default value be used if there is no special requirement for forbidding certain kind of handovers.
GERAN GPRS EDGE handover policy Configura tion	InterRatPolicyCfgGroup.  GeranGprsEdge-HoCfg	Network plan (negotiation not required)	This parameter specifies the policy configuration for handovers to GPRS/EDGE cells. Set this parameter based on the network plan.  It is recommended that the default value be used if there is no special requirement for forbidding certain kind of handovers.
No handover flag	InterRatPoli- cyCfgGroup. NoHoFlag	Network plan (negotiation not required)	This parameter specifies whether to permit inter-RAT handovers. Set this parameter based on the network plan.  It is recommended that the default value be used if there is no special requirement for forbidding certain kind of handovers.

The following table describes the parameters that must be set in the **StandardQci** MO to configure the inter-RAT handover policy group for a standardized QCI.

Parame ter Name	Parameter ID	Data Source	Setting Notes
QoS Class Indicatio n	StandardQci. <i>Qci</i>	Network plan (negotiation not required)	This parameter specifies the QCI of an EPS bearer. Set this parameter to the standard QCI with which services need to be configured with the inter-RAT handover policy.
InterRA T policy config group ID	StandardQci. InterRatPoli- cyCfgGroupId	Network plan (negotiation not required)	This parameter specifies the ID of the inter-RAT handover policy group.  Set this parameter to the ID of an inter-RAT handover policy group that has been configured in an InterRatPolicyCfgGroup MO.

The following table describes the parameters that must be set in the **ExtendedQci** MO to configure the inter-RAT handover policy group for an extended QCI.

Parame ter Name	Parameter ID	Data Source	Setting Notes
Extende d QoS Class Identifie r	ExtendedQci. ExtendedQci	Network plan (negotiation not required)	This parameter specifies the QCI of an evolved packet system (EPS) bearer.  Set this parameter to the extended QCI with which services need to be configured with the inter-RAT handover policy.
InterRA T policy config group ID	ExtendedQci. InterRatPoli- cyCfgGroupId	Network plan (negotiation not required)	This parameter specifies the ID of a parameter group related to inter-RAT handover.  Set this parameter to the ID of an inter-RAT handover policy group that has been configured in an InterRatPolicyCfgGroup MO.

## Scenario-specific Data

The following table describes the parameters that must be set in the **ENodeBAlgoSwitch** MO to configure the mode for coverage-based inter-RAT handovers.

Param eter Name	Parameter ID	Data Source	Setting Notes
Handov er Mode switch	ENodeBAl goSwitch. HoModeS witch	Network plan (negotiati on not required)	Select a mode for each type of inter-RAT handover based on the operator's network plan.  Handover to UTRAN: UtranPsHoSwitch(UtranPsHoSwitch) UtranSrvccSwitch(UtranSrvccSwitch) UtranRedirectSwitch(UtranRedirectSwitch) Handover to GERAN: GeranPsHoSwitch(GeranPsHoSwitch) GeranNaccSwitch(GeranNaccSwitch) GeranCcoSwitch(GeranCcoSwitch) GeranSrvccSwitch(GeranSrvccSwitch) GeranRedirectSwitch(GeranRedirectSwitch) Among the preceding switches, UtranRedirectSwitch(UtranRedirectSwitch) and GeranRedirectSwitch(GeranRedirectSwitch) witch(GeranRedirectSwitch) are basic to inter-RAT handover. These redirection switches must be turned on. Other inter-RAT handover switches can be turned on based on the network capability.

By default, the inter-RAT handover parameter group Group0 is used for services with all QCIs. To apply different inter-RAT handover parameter groups to services based on the QCI, the corresponding parameter group ID must be changed.

The following table describes the parameter that must be set in the **CellStandardQci** MO to configure parameter groups for services with standard QCIs.

Parame ter Name	Paramete r ID	Data Source	Setting Notes
Local cell ID	CellStand ardQci. LocalCell Id	Network plan (negotiati on not required)	Ensure that this parameter has been set in a <b>Cell MO</b> based on the network plan.
QoS Class Indicatio n	CellStand ardQci. <i>Qci</i>	Network plan (negotiati on not required)	Set this parameter to the index of the standard QCI for which the parameter group is configured.

Parame ter Name	Paramete r ID	Data Source	Setting Notes
InterRA T handove r common group ID	CellStand ardQci. InterRat HoComm GroupId	Network plan (negotiati on not required)	Set this parameter to the index of the common inter-RAT handover parameter group.
InterRA T handove r to UTRAN Group ID	CellStand ardQci. InterRat HoUtran GroupId	Network plan (negotiati on not required)	Set this parameter to the index of the EUTRAN-to-UTRAN handover parameter group.
InterRA T handove r to GERAN Group ID	CellStand ardQci. InterRat HoGeran GroupId	Network plan (negotiati on not required)	Set this parameter to the index of the EUTRAN-to-GERAN handover parameter group.

The following table describes the parameter that must be set in the **CellExtendedQci** MO to configure parameter groups for services with extended QCIs.

Parame ter Name	Paramet er ID	Data Source	Setting Notes
Extende d QCI	CellExte ndedQci. Extended Qci	Network plan (negotiatio n not required)	Set this parameter to the index of the extended QCI for which the parameter group is configured.
Local cell ID	CellExte ndedQci. LocalCell Id	Network plan (negotiatio n not required)	Ensure that this parameter has been set in a <b>Cell</b> MO based on the network plan.
InterRA T handove r common group ID	CellExte ndedQci. InterRat HoComm GroupId	Network plan (negotiatio n not required)	Set this parameter to the index of the common inter-RAT handover parameter group.

Parame ter Name	Paramet er ID	Data Source	Setting Notes
InterRA T handove r to UTRAN Group ID	CellExte ndedQci. InterRat HoUtran GroupId	Network plan (negotiatio n not required)	Set this parameter to the index of the EUTRAN-to-UTRAN handover parameter group.
InterRA T handove r to GERAN Group ID	CellExte ndedQci. InterRat HoGeran GroupId	Network plan (negotiatio n not required)	Set this parameter to the index of the EUTRAN-to-GERAN handover parameter group.

For details about inter-RAT handover parameter group ID and corresponding thresholds, see **9.7.7 Reconfiguration**.

The following table describes the parameter that must be set in the **UtranNCell** MO to configure blind handover priorities and measurement priorities for UTRAN neighboring cells.

Param eter Name	Paramete r ID	Data Source	Setting Notes
Blind handov er	UtranNCe ll. <i>BlindHoPr</i>	Network plan (negotiation not required)	A larger parameter value indicates a higher priority for the UTRAN neighboring cell to be selected during a blind handover.
Priority	iority		The value 0 indicates that blind handovers to the UTRAN neighboring cell are prohibited.
			It is recommended that this parameter be set to a value ranging from 1 to 32 for UTRAN neighboring cells whose coverages cover that of the serving cell. Set this parameter to a larger value for a neighboring cell that has wider overlapped coverage or a lower frequency.  Different cells can be configured with the same blind-
			handover priority.
Cell Measur e Priority	UtranNCe II. CellMeasP riority	Network plan (negotiation not required)	You are advised to set this parameter to HIGH_PRIORITY(High Priority) for neighboring cells with optimal network coverage and the maximum number of possible handovers, and to LOW_PRIORITY(Low Priority) for other neighboring cells.

The following table describes the parameter that must be set in the **GeranNcell** MO to configure blind handover priorities and measurement priorities for GERAN neighboring cells.

Parame ter Name	Paramete r ID	Data Source	Setting Notes
Blind handove r Priority	GeranNce II. BlindHoP riority	Network plan (negotiation not required)	A larger parameter value indicates a higher priority for the GERAN neighboring cell to be selected during a blind handover. The value 0 indicates that blind handovers to the GERAN neighboring cell are prohibited.  It is recommended that this parameter be set to a value ranging from 1 to 32 for GERAN neighboring cells whose coverages cover that of the serving cell. Set this parameter to a larger value for a neighboring cell that has wider overlapped coverage or a lower frequency.

The following table describes the parameter must be set in a **UtranNFreq** MO to configure the UTRAN frequency priority.

Parame ter Name	Parameter ID	Data Source	Setting Notes
Connect frequenc y priority	UtranNFr eq. ConnFreq Priority	Network plan (negotiation not required)	Based on the frequency priority specified by this parameter, the eNodeB selects a target frequency for blind redirection or contains a frequency in a measurement configuration. A larger value indicates a higher priority. If this priority is set to 0 for a frequency, this frequency is not selected as the target frequency for a blind redirection.
			You are advised to set this parameter for UTRAN frequencies with continuous coverage. If there are multiple UTRAN frequencies with continuous coverage, set this parameter to a larger value for a frequency in a lower frequency band. Set this parameter to 0 for a UTRAN frequency with noncontinuous coverage.
			You must configure this parameter to a non-0 value for at least one UTRAN frequency to ensure that UEs that do not support UTRAN measurement can be handed over to the UTRAN in emergency conditions.
			Different frequencies can be configured with the same priority.

The following table describes the parameter must be set in a **GeranNfreqGroup** MO to configure the GERAN frequency priority.

Parame ter Name	Paramete r ID	Data Source	Setting Notes
Connect frequenc y priority	GeranNfr eqGroup. ConnFreq Priority	Network plan (negotiation not required)	Based on the frequency group priority specified by this parameter, the eNodeB selects a target frequency for blind redirection or contains a frequency in a measurement configuration. A larger value indicates a higher priority. If this priority is set to 0 for a frequency, this frequency is not selected as the target frequency for a blind redirection.  You are advised to set this parameter for GERAN frequency groups with continuous coverage. If there are multiple frequency groups with continuous coverage, set this parameter to a larger value for a frequency group in a lower frequency band. Set this parameter to 0 for a GETRAN frequency group with non-continuous coverage.  You must configure this parameter to a non-0 value for at least one GERAN frequency group to ensure that UEs that do not support GERAN measurement can be handed over to the GERAN in emergency conditions. Different frequencies can be configured with the same priority.

The following table describes the parameters must be set in a **CSFallBackBlindHoCfg** MO to configure RAT priorities for blind handovers. The **CSFallBackBlindHoCfg** MO takes effect for all inter-RAT handovers, rather than for only CSFB.

Param eter Name	Parameter ID	Data Source	Setting Notes
CN Operat or ID	CSFallBac kBlindHo Cfg. CnOperato rId	Network plan (negotiation not required)	This parameter specifies the index of the operator. Ensure that this parameter has been set in a <b>CnOperator</b> MO.  Set this parameter for operators who need to be configured with priorities.
Highest priority InterRa t	CSFallBac kBlindHo Cfg. InterRatHi ghestPri	Network plan (negotiation not required)	This parameter specifies the highest-priority RAT for blind handovers.  Setting this parameter to UTRAN ensures the optimal inter-RAT interoperability performance. If coverage holes exist in UTRAN, setting this parameter to GERAN to enhance the reliability of inter-RAT interoperability.

Param eter Name	Parameter ID	Data Source	Setting Notes
Second priority InterRa t	CSFallBac kBlindHo Cfg. InterRatSe condPri	Network plan (negotiation not required)	This parameter specifies the secondary-priority RAT for blind handovers.  Set this parameter based on the value of CSFallBackBlindHoCfg.InterRatHighestPri.
Lowest priority InterRa t	CSFallBac kBlindHo Cfg. InterRatLo westPri	Network plan (negotiation not required)	This parameter specifies the lowest-priority RAT for blind handovers.  Set this parameter to the remaining available RAT or the RAT that do not support interoperability.

(Optional, required for only coverage-based inter-RAT handovers.) The following table describes the parameters must be set in a **CnOperatorHoCfg** MO to configure measurement offsets and priorities for coverage-based handovers to UTRAN or GERAN.

Param eter Name	Parameter ID	Data Source	Setting Notes
CN Operat or ID	CnOperat orHoCfg. CnOperato rId	Network plan (negotiation not required)	This parameter specifies the index of the operator. Ensure that this parameter has been set in a  CnOperator MO.  Set this parameter for operators who need to be configured with priorities.
UTRA N A2 Thresh old RSRP Offset	CnOperat orHoCfg. UtranA2Th dRsrpOffse t	Network plan (negotiation not required)	This parameter value plus the value of <b>InterRatHo-CommGroup</b> . <i>InterRatHoA2ThdRsrp</i> is the RSRP threshold for UTRAN measurement event A2 Set this parameter based on the actual conditions.
GERA N A2 Thresh old RSRP Offset	CnOperat orHoCfg. GeranA2T hdRsrpOffs et	Network plan (negotiation not required)	This parameter value plus the value of <b>InterRatHo-CommGroup</b> . <i>InterRatHoA2ThdRsrp</i> is the RSRP threshold for GERAN measurement event A2 Set this parameter based on the actual conditions.

(Optional, required for only coverage-based inter-RAT handovers.) The following table describes the parameters must be set in a **UtranRanShare** MO to configure PLMN IDs of the operators that share a neighboring inter-RAT frequency. This information is required to enable inter-RAT blind redirection triggered by no neighboring cells.

Paramet er Name	Paramete r ID	Data Source	Setting Notes
Local cell ID	UtranRa nShare. LocalCell Id	Network plan (negotiation not required)	Ensure that this parameter has been set in a <b>Cell</b> MO.
Downlink UARFCN	UtranRa nShare. UtranDlA rfcn	Network plan (negotiation not required)	This parameter specifies the DL UARFCN of the neighboring UTRAN cell.  Add only the URTRAN frequencies for blind handovers triggered when there is no neighboring cells, and the UARFCN must have been set in a UtranNFreq MO.
Mobile country code	UtranRa nShare. <i>Mcc</i>	Network plan (negotiation required)	This parameter specifies the MCC of the UARFCN for blind handovers triggered when there is no neighboring cells.  This parameter references the corresponding parameter in the <b>eNodeB</b> MO on the peer eNodeB.
Mobile network code	UtranRa nShare. <i>Mnc</i>	Network plan (negotiation required)	This parameter specifies the MNC of the UARFCN for blind handovers triggered when there is no neighboring cells.  This parameter references the corresponding parameter in the <b>eNodeB</b> MO on the peer eNodeB.

The following table describes the parameters must be set in a **GeranRanShare** MO.

Parameter Name	Paramete r ID	Data Source	Setting Notes
Local cell ID	GeranRa nShare. LocalCell Id	Network plan (negotiatio n not required)	Ensure that this parameter has been set in a <b>Cell</b> MO.
BCCH group ID	GeranRa nShare. BcchGrou pId	Network plan (negotiatio n not required)	This parameter specifies the index of the GERAN carrier frequency group. It uniquely identifies a GERAN carrier frequency group.  Add only the GERAN frequency groups for blind handovers triggered when there is no neighboring cells, and the frequency groups must have been set in a GeranNfreqGroup MO.

Parameter Name	Paramete r ID	Data Source	Setting Notes
Mobile country code	GeranRa nShare. <i>Mcc</i>	Network plan (negotiatio n required)	This parameter specifies the MCC of the GERAN frequency group for blind handovers triggered when there is no neighboring cells.  This parameter references the corresponding parameter in the <b>eNodeB</b> MO on the peer eNodeB.
Mobile network code	GeranRa nShare. <i>Mnc</i>	Network plan (negotiatio n required)	This parameter specifies the MNC of the GERAN frequency group for blind handovers triggered when there is no neighboring cells.  This parameter references the corresponding parameter in the <b>eNodeB</b> MO on the peer eNodeB.

## 9.7.4 Deployment Requirements

### **Operating Environment**

The following three features of mobility management in connected mode have different requirements for operating environment:

• The feature LOFD-001019 PS Inter-RAT Mobility between E-UTRAN and UTRAN requires that the core-network equipment should support this feature.

If the core-network equipment is provided by Huawei, the equipment version must be SAE1.2 or later.

If the core-network equipment is provided by another vendor, check whether the equipment supports this feature.

• The feature LOFD-001020 PS Inter-RAT Mobility between E-UTRAN and GERAN requires that the core-network equipment should support this feature.

If the core-network equipment is provided by Huawei, the equipment version must be PS11.0.

If the core-network equipment is provided by another vendor, check whether the equipment supports this feature.

## **Transmission Networking**

None

#### License

To use coverage-based inter-RAT handovers, an operator must purchase and activate the licenses for the features listed in the following table.

Feature ID	Feature Name	License Control Item	NE	Sales Unit
LOFD-001019	PS Inter-RAT Mobility between E- UTRAN and UTRAN	PS Inter-RAT Mobility between E- UTRAN and UTRAN	eNodeB	per RRC Connected User
LOFD-001020	PS Inter-RAT Mobility between E- UTRAN and GERAN	PS Inter-RAT Mobility between E- UTRAN and GERAN	eNodeB	per RRC Connected User

#### 9.7.5 Activation

## Using the CME to Perform Batch Configuration for Newly Deployed eNodeBs

Enter the values of related parameters in a summary data file, which also contains other data for the new eNodeBs to be deployed. Then, import the summary data file into the Configuration Management Express (CME) for batch configuration. For detailed instructions, see section "Creating eNodeBs in Batches" in the initial configuration guide for the eNodeB.

The summary data file may be a scenario-specific file provided by the CME or a customized file, depending on the following conditions:

- Related managed objects (MOs) are contained in a scenario-specific summary data file. In this situation, set the parameters in the MOs, and then verify and save the file.
- Some related MOs are not contained in a scenario-specific summary data file. In this situation, customize a summary data file to include the MOs before you can set the parameters.

Related MOs and parameters in each scenario are listed as follows:

Table 9-14 Parameters related to coverage-based inter-RAT handovers to UTRAN

МО	Sheet in the Summary Data File	Parameter Group	Remarks
ENodeBAlg oSwitch	User-defined sheet <b>ENodeBAlgoSwitch</b> is recommended.	Handover Mode switch, Frequency Layer Switch	A list-type sheet is recommended.

МО	Sheet in the Summary Data File	Parameter Group	Remarks
UtranNFreq	User-defined sheet UtranNFreq is recommended.	Local cell identity, Downlink UARFCN, UTRAN version, UTRAN cell type indicator, Uplink UARFCN indicator, Uplink UARFCN, Reselection priority configure indicator, Cell reselection priority, PMAX (dBm), Frequency offset(dB), Minimum required quality level (dB), Minimum required RX level(dBm), UTRAN high priority threshold(2dB), UTRAN lower priority threshold (2dB)	A list-type sheet is recommended.
UtranExtern alCell	User-defined sheet UtranExternalCell is recommended.	Mobile country code, Mobile network code, UTRAN cell identity, UTRAN cell type indicator, Downlink UARFCN, Uplink UARFCN configure indicator, Uplink UARFCN, RNC identity, Routing area code configure indicator, Routing area code, Primary scrambling code, Location area code, Cell name	A list-type sheet is recommended.
UtranExtern alCellPlmn	User-defined sheet UtranExternal- CellPlmn is recommended.	UTRAN cell identity, Mobile country code, Mobile network code, Share mobile country code, Share mobile network code	A list-type sheet is recommended.
UtranNCell	User-defined sheet UtranNCell is recommended.	Local cell identity, Mobile country code, Mobile network code, UTRAN cell identity, No handover indicator, No remove indicator, Blind handover priority, ANR flag, Local cell name, Neighbour cell name	A list-type sheet is recommended.

Table 9-15 Parameters related to coverage-based inter-RAT handovers to GERAN

МО	Sheet in the Summary Data File	Parameter Group	Remarks
ENodeBAlgo Switch	User-defined sheet ENodeBAlgoSwit ch is recommended.	Handover Mode switch	A list-type sheet is recommended.
GeranNfreqGr oup	User-defined sheet GeranNfreqGrou p is recommended.	Local cell identity, BCCH group identity, GERAN version, Starting ARFCN, Band indicator, Cell reselection priority configure indicator, Cell reselection priority, PMAX configure indicator, PMAX (dBm), Minimum required RX level(dBm), High priority threshold(2dB), Lower priority threshold(2dB), Frequency offset (dB), NCC monitoring permitted	A list-type sheet is recommended.
GeranNfreqGr oupArfcn	User-defined sheet GeranNfreqGrou pArfcn is recommended.	Local cell identity, BCCH group identity, GERAN ARFCN	A list-type sheet is recommended.
GeranExternal Cell	User-defined sheet GeranExternal- Cell is recommended.	Mobile country code, Mobile network code, GERAN cell identity, Location area code, Routing area code configure indicator, Routing area code, Band indicator, GERAN ARFCN, Network colour code, Base station colour code, DTM indication, Cell name	A list-type sheet is recommended.
GeranExternal CellPlmn	User-defined sheet GeranExternal- CellPlmn is recommended.	GERAN cell identity, Location area code, Mobile country code, Mobile network code, Share mobile country code, Share mobile network code	A list-type sheet is recommended.
GeranNcell	User-defined sheet GeranNcell is recommended.	Local cell identity, Mobile country code, Mobile network code, Location area code, GERAN cell identity, No remove indicator, No handover indicator, Blind handover priority, ANR flag, Local cell name, Neighbour cell name	A list-type sheet is recommended.

## Using the CME to Perform Batch Configuration for Existing eNodeBs

Batch reconfiguration using the CME is the recommended method to activate a feature on existing eNodeBs. This method reconfigures all data, except neighbor relationships, for multiple eNodeBs in a single procedure. The procedure is as follows:

- **Step 1** Choose CME > Advanced > Customize Summary Data File (M2000 client mode), or choose Advanced > Customize Summary Data File (CME client mode), to customize a summary data file for batch reconfiguration.
  - M NOTE

For context-sensitive help on a current task in the client, press F1.

- Step 2 Choose CME > LTE Application > Export Data > Export Base Station Bulk Configuration Data (M2000 client mode), or choose Advanced > Base Station Bulk Configuration > Export Data (CME client mode), to export the eNodeB data stored on the CME into the customized summary data file.
- **Step 3** In the summary data file, set the parameters in the MOs listed in **Table 9-14** and **Table 9-15**, and close the file.
- **Step 4** Choose CME > LTE Application > Import Data > Import Base Station Bulk Configuration Data (M2000 client mode), or choose LTE Application > Import Data > Import Base Station Bulk Configuration Data (CME client mode), to import the summary data file into the CME.
- Step 5 Choose CME > Planned Area > Export Incremental Scripts (M2000 client mode), or choose Area Management > Planned Area > Export Incremental Scripts (CME client mode), to export and activate the incremental scripts.

----End

## Using the CME to Perform Single Configuration

On the CME, set the parameters listed in the "Data Preparation" section for a single eNodeB. The procedure is as follows:

- **Step 1** In the planned data area, click **Base Station** in the upper left corner of the configuration window.
- **Step 2** In area 1 shown in **Figure 9-9**, select the eNodeB to which the MOs belong.

Cell Ba Active area: Planned Area:m/n Ease Statio Property \*Cell X Ce Local cell ID 🗹 Auto submit + 🗕 📝 🦪 🥏 Physical GS 4 UMTS LTE Cell name Local ce I ID ∧ ▼ Cell name ∧ ▼ Csg indicator ∧ Q- Enter a keywo >> Csq indicator alse 0 False Uplink cyclic... △ Base Station 0 Downlink cy.. Vormal Frequency b. \* # MRAT\_59 10 141 Uplink earfc... Not configure **‡** № MRAT\_591111 Uplink earfcn 10.141 Downlink e. > Uplink band. Object Group Downlink b. Q- cell Cell ID **©** Physical cel. Attribute Name ^ Object Name Additional s... Cell(CELL) Cell active s... Deactivated Csg indicator Cell admin ... Unblock Uplink cyclic prefix le... Cell(CELL) Cell middle Downlink cyclic prefi.. Cell(CELL) Cell FDD T. Frequency band Cell(CELL) Subframe a. Uplink earfcn indicat... Cell(CELL) Special sub. Uplink earfcn Cell specific... 0dB

Figure 9-9 MO search and configuration window

#### ■ NOTE

- To view descriptions of the parameters in the MO, click in area 4 and press F1.
- Area 5 displays the details of a selected area-4 entry in vertical format. Click the "Details" button to show or hide this area.
- Step 3 On the Search tab page in area 2, enter an MO name, for example, CELL.
- **Step 4** In area 3, double-click the MO in the **Object Name** column. All parameters in this MO are displayed in area 4.
- **Step 5** Set the parameters in area 4 or 5.
- Step 6 Choose CME > Planned Area > Export Incremental Scripts (M2000 client mode), or choose Area Management > Planned Area > Export Incremental Scripts (CME client mode), to export and activate the incremental scripts.

----End

#### **Using MML Commands**

- Coverage-based inter-RAT handover to UTRAN
- **Step 1** Run the **MOD ENODEBALGOSWITCH** command to configure inter-RAT handover to UTRAN.
- **Step 2** Run the following commands to add neighbor relationships with UTRAN cells:
  - 1. ADD UTRANNFREQ
  - 2. ADD UTRANEXTERNALCELL

- 3. (Optional) ADD UTRANEXTERNALCELLPLMN
- 4. ADD UTRANNCELL

#### ----End

- Coverage-based inter-RAT handover to GERAN
- **Step 1** Run the **MOD ENODEBALGOSWITCH** command to configure inter-RAT handover to GERAN.
- **Step 2** Run the following commands to add neighbor relationships with GERAN cells:
  - 1. ADD GERANNFREQGROUP
  - 2. ADD GERANNFREQGROUPARFCN
  - 3. ADD GERANEXTERNALCELL
  - 4. (Optional) ADD GERANEXTERNALCELLPLMN
  - 5. ADD GERANNCELL
  - ----End

#### 9.7.6 Activation Observation

The observation procedure is as follows:

- **Step 1** Trace messages over the Uu interface on the M2000 client after UEs access the network. Check the A1- and A2-related measurement report information in the RRC\_CONN\_RECFG message.
- Step 2 Trace messages over the Uu interface while the UE is moving towards the cell edge. Check for the B1 or B2 measurement configuration in the RRC\_CONN\_RECFG message sent by the eNodeB after the eNodeB receives an A2-related measurement report from the UE.
- **Step 3** Trace messages over the Uu interface while the UE is moving towards an inter-frequency neighboring cell.

Coverage-based inter-RAT handover is activated if either of the following situations occurs:

#### ----End

- After the eNodeB receives an event B1 or B2 measurement report from the UE, the eNodeB sends an RRC\_MOBIL\_FROM\_EUTRA\_CMD message or an RRC\_CONN\_REL message containing an inter-RAT frequency to the UE.
- After the eNodeB receives an event A2 measurement report for a blind handover, the UE does not support measurement of a specified RAT and the eNodeB sends an RRC CONN REL message containing an inter-RAT frequency to the UE.

# 9.7.7 Reconfiguration

#### **Inter-RAT Handover Common Parameters**

Common parameters related to inter-RAT handovers are contained in the **InterRatHoCommGroup** MO. The following table provides suggestions on how to reconfigure these parameters.

Paramet er Name	Paramete r ID	Data Source	Setting Notes
Local cell ID	InterRat HoComm Group. LocalCell Id	Network plan (negotiation not required)	Ensure that this parameter has been set in a Cell MO based on the network plan.
InterRA T handover common group ID	InterRat HoComm Group. InterRatH oCommG roupId	Network plan (negotiation not required)	This parameter specifies the ID of a common parameter group related to inter-RAT handovers.  If you want to set different inter-RAT handover parameters for services with a specific QCI, you must create a parameter group and reference the parameter group ID to the corresponding QCI. For detailed configuration, see section "Scenariospecific Data".
InterRA T A1A2 hysteresi s	InterRat HoComm Group. InterRatH oA1A2Hy st	Network plan (negotiation not required)	This parameter specifies the hysteresis for event A1 or A2 related to inter-RAT handover. This parameter is used to decrease frequent triggering of event evaluation caused by radio signal fluctuation. In this way, the probability of ping-pong handovers or handover decision errors is reduced. The value of this parameter has a negative correlation with the probability of ping-pong handovers or handover decision errors.  It is recommended that the default value be used.
InterRA T A1A2 time to trigger	InterRat HoComm Group. InterRatH oA1A2Ti meToTrig	Network plan (negotiation not required)	This parameter specifies the time-to-trigger for inter-RAT measurement event A1 or A2. An appropriate parameter setting can effectively prevent unnecessary inter-RAT measurements and therefore reduce the number of inter-RAT measurements. A larger value results in a smaller average number of inter-RAT measurements but a higher probability of service drops.  It is recommended that the default value be used.

Paramet er Name	Paramete r ID	Data Source	Setting Notes
InterRA T A1 RSRP trigger threshold	InterRat HoComm Group. InterRatH oA1ThdR srp	Network plan (negotiation not required)	This parameter specifies the RSRP threshold for event A1 associated with inter-RAT handover. When the measured RSRP is above the threshold, the measurement report for event A1 will be sent. A higher threshold makes it more difficult to trigger event A1 and stop inter-RAT measurement. A lower threshold makes it easier to trigger event A1 and stop inter-RAT measurement.
			The value of this parameter must be greater than or equal to (usually 4 dB greater than) the sum of InterRatHoCommGroup.InterRatHoA1ThdRsrq and RSRP threshold offset for inter-RAT measurement event A2 (set in the CnOperatorHoCfg MO).
InterRA T A1 RSRQ trigger threshold	InterRat HoComm Group. InterRatH oA1ThdR srq	Network plan (negotiation not required)	This parameter specifies the RSRQ threshold for event A1 associated with inter-RAT handover. When the measured RSRQ is above the threshold, the measurement report for event A1 will be sent. A higher threshold makes it more difficult to trigger event A1 and stop inter-RAT measurement. A lower threshold makes it easier to trigger event A1 and stop inter-RAT measurement.
			The value of this parameter must be greater than or equal to (usually 2 dB greater than) the sum of the value of <pre>InterRatHoCommGroup.InterRatHoA2ThdRsrq</pre> .
InterRA T A2 RSRP trigger threshold	InterRat HoComm Group. InterRatH oA2ThdR srp	Network plan (negotiation not required)	This parameter specifies the RSRP threshold for event A2 associated with inter-RAT handover. When the measured RSRP is lower than the threshold, the measurement report for event A2 is sent. A higher threshold makes it easier to trigger event A2 and start inter-RAT measurement. A lower threshold makes it more difficult to trigger event A2 and start inter-RAT measurement.
			Set this parameter based on the actual conditions. Usually, set this parameter to the RSRP in the area where the UE throughput in the serving cell and that in the neighboring cell are similar.

Paramet	Paramete	Data	Setting Notes
er Name	r ID	Source	
InterRA T A2 RSRQ trigger threshold	InterRat HoComm Group. InterRatH oA2ThdR srq	Network plan (negotiation not required)	This parameter specifies the RSRQ threshold for event A2 associated with inter-RAT handover. When the measured RSRQ is lower than the threshold, the measurement report for event A2 is sent. A higher threshold makes it easier to trigger event A2 and start inter-RAT measurement. A lower threshold makes it more difficult to trigger event A2 and start inter-RAT measurement.  Set this parameter based on the actual conditions. Usually, set this parameter to the RSRQ in the area where the UE throughput in the serving cell and that in the neighboring cell are similar.

# Parameter Groups Related to Inter-RAT Handovers to UTRAN

Parameter groups related to inter-RAT handovers to UTRAN are contained in the InterRatHoUtranGroup MO. The following table provides suggestions on how to reconfigure these parameters.

Parameter Name	Parameter ID	Data Source	Setting Notes
Local cell ID	InterRatHo UtranGroup .LocalCellId	Network plan (negotiatio n not required)	Ensure that this parameter has been set in a <b>Cell</b> MO based on the network plan.
InterRAT handover to UTRAN Group ID	InterRatHo UtranGroup InterRatHoU tranGroupId	Network plan (negotiatio n not required)	This parameter specifies the ID of the parameter group related to inter-RAT handovers to UTRAN.  If you want to set a different parameter group for services with a specific QCI, you must create a parameter group, and reference the parameter group ID to the corresponding QCI. For detailed configuration, see section "Scenario-specific Data".
CoverageBa sed UTRAN ECN0 trigger threshold	InterRatHo UtranGroup InterRatHoU tranB1ThdE cn0	Network plan (negotiatio n not required)	This parameter specifies the Ec/No threshold for event B1 in a coverage-based, UL-quality-based, or distance-based handovers, or to a SPID-based handovers to the HPLMN. A larger value results in a lower probability of handovers to UTRAN, whereas a smaller value results in a higher probability.  It is recommended that the default value be used.

Parameter Name	Parameter ID	Data Source	Setting Notes	
CoverageBa sed UTRAN RSCP trigger threshold	InterRatHo UtranGroup InterRatHoU tranB1ThdR scp	Network plan (negotiatio n not required)	This parameter specifies the RSCP threshold for event B1 in a coverage-based, UL-quality-based, or distance-based handovers to UTRAN, or to a SPID-based handovers to the HPLMN. A larger value results in a lower probability of handovers to UTRAN, whereas a smaller value results in a higher probability. It is recommended that the default value be used.	
UTRAN handover hysteresis	InterRatHo UtranGroup InterRatHoU tranB1Hyst	Network plan (negotiatio n not required)	This parameter specifies the hysteresis for event B1 in an inter-RAT handover to UTRAN. This parameter is used to prevent frequent triggering of event evaluation caused by radio signal fluctuation. In this way, the probability of pingpong handovers or handover decision errors is reduced.  It is recommended that the default value be used.	
UTRAN time to trigger	InterRatHo UtranGroup InterRatHoU tranB1Time ToTrig	Network plan (negotiatio n not required)	This parameter specifies the time-to-trigger for event B1 in an inter-RAT handover to UTRAN. When detecting that the signal quality in at least one neighboring cell meets the entering condition, the UE does not send a measurement report to the eNodeB immediately. Instead, the UE sends a report only when the signal quality continuously meets the entering condition during the time-to-trigger period.  If both UTRAN and GERAN neighboring cells are measured, you are advised to set the time-to-trigger for UTRAN neighboring cells to be smaller than that for GERAN neighboring cells, increasing the possibility of handovers to UTRAN neighboring cells.  If both coverage-based inter-frequency handovers and coverage-based inter-RAT handovers are enabled, you are advised to set the time-to-trigger for the inter-RAT handover event be greater than that for the inter-frequency handover event, increasing the possibility of inter-frequency handovers.	

Parameter Name	Parameter ID	Data Source	Setting Notes	
Load Service Based UTRANB1 ECN0 threshold	InterRatHo UtranGroup . LdSvBasedH oUtranB1Th dEcn0	Network plan (negotiatio n not required)	This parameter specifies the Ec/No threshold for event B1 in a load- or service-based inter-RAT handover to UTRAN. A larger value results in a lower probability of handovers to UTRAN, whereas a smaller value results in a higher probability.  It is recommended that the default value be used.	
Load Service Based UTRAN EventB1 RSCP trigger threshold	InterRatHo UtranGroup LdSvBasedH oUtranB1Th dRscp	Network plan (negotiatio n not required)	This parameter specifies the RSCP threshold for event B1 in a load- or service-based inter-RAT handover to UTRAN. A larger value results in a lower probability of handovers to UTRAN, whereas a smaller value results in a higher probability.  It is recommended that the default value be used.	

## Parameter Groups Related to Inter-RAT Handovers to GERAN

Parameter groups related to inter-RAT handovers to GERAN are contained in the **InterRatHoGeranGroup** MO. The following table provides suggestions on how to reconfigure these parameters.

Parameter Name	Parameter ID	Data Source	Setting Notes
Local cell ID	InterRatHo GeranGrou p. LocalCellId	Network plan (negotiation not required)	Ensure that this parameter has been set in a <b>Cell</b> MO based on the network plan.
InterRAT handover to GERAN group ID	InterRatHo GeranGrou p. InterRatHo GeranGrou pId	Network plan (negotiation not required)	This parameter specifies the ID of the parameter group related to inter-RAT handovers to GERAN.  If you want to set a different parameter group for services with a specific QCI, you must create a parameter group, and reference the parameter group ID to the corresponding QCI. For detailed configuration, see section "Scenario-specific Data".

Parameter Name	Parameter ID	Data Source	Setting Notes
GERAN handover hysteresis	InterRatHo GeranGrou p. InterRatHo GeranB1Hy st	Network plan (negotiation not required)	This parameter specifies the hysteresis for event B1 in an inter-RAT handover to GERAN. This parameter is used to prevent frequent triggering of event evaluation caused by radio signal fluctuation. In this way, the probability of ping-pong handovers or handover decision errors is reduced.  It is recommended that the default value be used.
CoverageBa sed GERAN trigger threshold	InterRatHo GeranGrou p. InterRatHo GeranB1Th d	Network plan (negotiation not required)	This parameter specifies the RSSI threshold for event B1 in a coverage-based, UL-quality-based, or a distance-based handover to GERAN. A larger value results in a lower probability of handovers to GERAN, whereas a smaller value results in a higher probability. It is recommended that the default value be used.
GERAN time to trigger	InterRatHo GeranGrou p. InterRatHo GeranB1Ti meToTrig	Network plan (negotiation not required)	This parameter specifies the time-to-trigger for event B1 in an inter-RAT handover to GERAN. When detecting that the signal quality in at least one neighboring cell meets the entering condition, the UE does not send a measurement report to the eNodeB immediately. Instead, the UE sends a report only when the signal quality continuously meets the entering condition during the time-to-trigger period.  If both UTRAN and GERAN neighboring cells are measured, you are advised to set the time-to-trigger for GERAN neighboring cells to be greater than that for UTRAN neighboring cells, increasing the possibility of handovers to UTRAN neighboring cells.  If both coverage-based inter-frequency handovers and coverage-based inter-RAT handovers are enabled, you are advised to set the time-to-trigger for the inter-RAT handover event be greater than that for the inter-frequency handover event, increasing the possibility of inter-frequency handovers.

Parameter	Parameter	Data	Setting Notes
Name	ID	Source	
Load Service Based Geran EventB1 trigger threshold	InterRatHo GeranGrou p. LdSvBased HoGeranB 1Thd	Network plan (negotiation not required)	This parameter specifies the RSSI threshold for event B1 in a load- or service-based inter-RAT handover to GERAN. A larger value results in a lower probability of handovers to UTRAN, whereas a smaller value results in a higher probability.  It is recommended that the default value be used.

#### **Inter-RAT Handover Parameters**

Inter-RAT handover parameters are contained in the **InterRatHoComm** MO. The following table provides suggestions on how to reconfigure these parameters.

Parameter Name	Parameter ID	Data Source	Setting Notes
Max report cell number	InterRatHoC omm. InterRatHo- MaxRprtCell	Network plan (negotiation not required)	This parameter specifies the maximum number of cells to be included in the measurement report. A smaller value leads to less candidate target cells for handovers, which lowers the handover success rate but saves the air interface resources. A larger value leads to the opposite effect.  It is recommended that the default value be used.
Measureme nt report amount	InterRatHoC omm. InterRatHoR prtAmount	Network plan (negotiation not required)	This parameter specifies the number of periodical measurement reports to be sent after an inter-RAT handover event is triggered. It is used to prevent the impact of measurement report loss and internal processing failure on the handover. When the value is increased, the number of reports increases and the handover success rate rises to a certain extent. An excessively large number of reports, however, results in excessive signaling and hence causes a waste of radio interface resources.  It is recommended that the default value be used.

Parameter Name	Parameter ID	Data Source	Setting Notes	
Geran measureme nt report interval	measureme nt report		This parameter specifies the interval at which measurement reports are periodically sent to the eNodeB after the event for inter-RAT handover to GERAN is triggered. A smaller value leads to more measurement reports over the air interface and more resources are consumed. A larger value results in a larger handover delay, which lowers the handover success rate.  It is recommended that the default value be used.	
Utran measureme nt trigger quantity	InterRatHoC omm. InterRatHoUt ranB1MeasQ uan	Network plan (negotiation not required)	This parameter specifies the quantity to be included in the measurements for handovers to UTRAN. The RSCP values are relatively stable, whereas the Ec/No values may vary with the network load. The value BOTH applies only to UEs complying with 3GPP Release 10. For UEs complying with 3GPP Release 8 or 9, the value BOTH takes the same effect as the value RSCP.  It is recommended that the default value be used.	
UTRAN FDD measureme nt report interval	InterRatHoC omm. InterRatHoU- tranRprtInter val	Network plan (negotiation not required)	This parameter specifies the interval at which measurement reports are periodically sent to the eNodeB after the event for inter-RAT handover to UTRAN is triggered. A smaller value leads to more measurement reports over the air interface and more resources are consumed. A larger value results in a larger handover delay, which lowers the handover success rate.  It is recommended that the default value be used.	

Parameter Name	Parameter ID	Data Source	Setting Notes
InterRat A1A2 measureme nt trigger quantity	InterRatHoC omm. InterRatHoA 1A2TrigQuan	Network plan (negotiation not required)	This parameter specifies the quantity used to evaluate the triggering condition for the inter-RAT measurement event A1 or A2. The values are RSRP, RSRQ, and BOTH. The measured RSRP values are stable, slightly varying with the load. The measured RSRQ values vary with the load and are likely to reflect the signal quality of the cell in real time. By default, the reporting quantity for the inter-RAT measurement event A1 or A2 is BOTH, that is, both RSRP and RSRQ.  It is recommended that the default value be used if the traffic load of LTE cells is not stable.
Inter RAT HO Trigger Event Type	InterRatHoC omm. InterRatHoE ventType	Network plan (negotiation not required)	This parameter specifies the type of the inter-RAT handover event. This parameter applies only to coverage-based handovers. It is recommended that the default value be used.
Max Utran cell num in redirection	InterRatHoC omm. CellInfoMax UtranCellNu m	Network plan (negotiation not required)	This parameter specifies the maximum number of UTRAN cell system information messages that can be transmitted during a flash redirection procedure.  It is recommended that the default value be used.
Max Geran cell num in redirection	InterRatHoC omm. CellInfoMax GeranCellNu m	Network plan (negotiation not required)	This parameter specifies the maximum number of GERAN cell system information messages that can be transmitted during a flash redirection procedure.  It is recommended that the default value be used.

#### Threshold Parameters Related to Coverage-based Handovers

Coverage-based inter-RAT blind handovers use the same thresholds as overage-based inter-RAT blind handovers. For details, see "Threshold Parameters Related to Coverage-based Handovers" part in 9.2.7 Reconfiguration.

## 9.7.8 Deactivation

### Using the CME to Perform Batch Configuration

Batch reconfiguration using the CME is the recommended method to deactivate a feature on eNodeBs. This method reconfigures all data, except neighbor relationships, for multiple

eNodeBs in a single procedure. The procedure for feature deactivation is similar to that for feature activation described in **Using the CME to Perform Batch Configuration for Existing eNodeBs**. In the procedure, modify related parameters described below.

Table 9-16 Parameters related to coverage-based inter-RAT handovers

МО	Sheet in the Summary Data File	Parameter Group	Setting Notes
ENodeB AlgoSwit ch	User-defined sheet	Handover Mode switch	Clear the following check boxes:  UtranPsHoSwitch  GeranPsHoSwitch  UtranSrvccSwitch  GeranSrvccSwitch  UtranRedirectSwitch  GeranRedirectSwitch  GeranCcoSwitch  GeranNaccSwitch

### Using the CME to Perform Single Configuration

On the CME, set the parameters listed in each scenario for a single eNodeB. For detailed instructions, see **Using the CME to Perform Single Configuration** for feature activation.

#### **Using MML Commands**

To deactivate coverage-based inter-RAT handover, clear the check boxes under the **Handover Mode switch** parameter listed in **Table 9-16** by running the **MOD ENODEBALGOSWITCH** command.

## 9.7.9 Performance Monitoring

Parameter optimization for coverage-based inter-RAT handovers is similar to that for coverage-based inter-frequency handovers. In coverage-based inter-frequency handovers, event B1 measurement is performed. At present, an LTE system is usually deployed with other RAT systems at the same sites and the LTE system has the highest priority for carrying services. Therefore, compared with inter-frequency handovers within the LTE system, inter-RAT handovers from the LTE system to other RAT systems have a lower event A2 threshold. This means that it is difficult to trigger a GAP-assisted measurement for handovers from the LTE system to other RAT systems.

If inter-RAT handovers from an LTE system to a non-LTE system are not recommended, the corresponding algorithm needs to be disabled, and the frequency and neighboring cell information of this non-LTE system do not need to be configured in the LTE system. This prevents system performance deterioration.

Inter-RAT handovers are intended to ensure service continuity when users move around. How well these handovers serve this purpose reflects their performance. After activating inter-RAT handover, check the following KPIs to monitor and evaluate handover performance:

- KPIs indicating handover success rates, including the following:
  - Inter-RAT Handover IN Success Rate
  - Inter-RAT Handover Out Success Rate
- KPI indicating the call drop rate: Abnormal Release Rate

If the handover success rates have not noticeably fallen and the call drop rate has not noticeably risen after inter-RAT handover was activated, this type of handover has been delivering good performance.

## 9.7.10 Parameter Optimization

#### **Event B1 Thresholds for Inter-RAT Handovers**

Event B1 thresholds for inter-RAT handovers are QCI-specific. The parameters are as follows:

- The UTRAN reporting quantity can be RSCP or Ec/No, depending on the value of the **InterRatHoComm**.*InterRATHoUtranB1MeasQuan*parameter.

  - If the reporting quantity is Ec/No, the event B1 threshold for coverage- and UL-quality-based inter-RAT handovers is specified by the
     InterRatHoUtranGroup.InterRATHoUtranB1ThdEcN0 parameter, and the event B1 threshold for load- and service-based inter-RAT handovers is specified by the InterRatHoUtranGroup.LdSvBasedHoUtranB1ThdECN0 parameter.
- For GERAN, the reporting quantity is RSSI, the event B1 threshold for coverage- and UL-quality-based inter-RAT handovers is specified by the
   InterRatHoGeranGroup.InterRATHoGeranB1Thdparameter, and the event B1 threshold for load- and service-based inter-RAT handovers is specified by the
   InterRatHoGeranGroup.LdSvBasedHoGeranB1Thdparameter.

To ensure that inter-RAT handovers are triggered as expected, set all thresholds to appropriate values and, in particular, set the event B1 threshold for load- and service-based inter-RAT handovers to be greater than the event B1 threshold for coverage- and UL-quality-based inter-RAT handovers.

- If a threshold is too high, it is difficult for event B1 to be triggered for inter-RAT handovers, and therefore handovers may not be triggered in time. For coverage- and UL-quality-based inter-RAT handovers, this affects user experience. For load-based inter-RAT handovers, this delays transferring the load to neighboring cells. For service-based inter-RAT handovers, this delays handovers.
- If a threshold is too low, event B1 is too easily triggered and for ping-ping handovers to occur as a result. For coverage-based inter-RAT handovers, this makes it probable for CCUs to be handed over. For load- and service-based inter-RAT handovers, if event B1 is too easily triggered, the handover success rates are lowered. In either case, user experience is affected.

For cells with large signal fading variances, raise the thresholds to minimize the probability of unnecessary handovers. For cells with small signal fading variances, lower the thresholds to ensure timely handovers.

## Hysteresis

The hysteresis in events A1 and A2 for inter-RAT handovers is specified by the **InterRatHoCommGroup**. *InterRatHoA1A2Hyst* parameter. The hysteresis in event B1 for inter-RAT handovers is specified by:

- the InterRatHoUtranGroup.InterRATHoUtranB1Hyst parameter in WCDMA and TD-SCDMA systems
- the InterRatHoGeranGroup.InterRATHoGeranB1Hyst parameter in GSM systems

These parameters are QCI-specific and effectively reduce frequent event reporting caused by radio signal fluctuations. The default values for these parameters are recommended.

- A greater hysteresis makes it more difficult for events to be reported, and therefore handovers may not be triggered in time. This affects user experience.
- A smaller hysteresis makes it easier for events to be reported. This may result in incorrect handover decisions and ping-pong handovers.

### **Blind Handover Priority**

Note the following when adjusting the blind handover priority of an inter-RAT neighboring cell:

- The blind handover priorities for each RAT range from 0 to 32. The value 0 indicates that the cell cannot be selected as the target cell in a blind handover.
- Neighboring cells with different RATs (for example, a UTRAN cell and a GERAN cell) can have the same blind handover priority.

A cell with a probably higher blind handover success rate should be assigned a higher blind handover priority.

## 9.7.11 Troubleshooting

## Fault 1: No Delivery of A1/A2-related Inter-RAT Measurement Configuration

#### **Fault description**

The eNodeB does not deliver the A1/A2-related inter-RAT measurement configuration to some UEs that have accessed the network.

#### **Fault handling**

**Step 1** Trace messages over the Uu interface on the M2000 client. Check for the target system and frequency band in the IE interRAT-Parameters of the RRC\_UE\_CAP\_INFO message.

If the interRAT-Parameters IE does not contain information about the target system and frequency band, the UE does not support inter-RAT measurement of the specified target system and frequency. **Figure 9-10** shows a sample RRC\_UE\_CAP\_INFO message.

#### Figure 9-10 RRC\_UE\_CAP\_INFO message



- If the neighboring UTRAN cells are not configured, configure the cells.
- If the neighboring UTRAN cells are configured, go to Step 3.
- **Step 3** Run the **LST ENODEBALGOSWITCH** command to check whether the corresponding handover mode is enabled.
  - If the corresponding handover mode is disabled, enable it.
  - If the corresponding handover mode is enabled, contact Huawei technical support.

----End

### Fault 2: No Delivery of the B1/B2-related Measurement Configuration

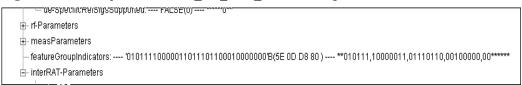
#### **Fault description**

After some UEs move to the cell edge, the eNodeB receives A2 measurement reports. However, the eNodeB does not deliver B1- or B2-related measurement configurations to the UEs.

#### **Fault handling**

- **Step 1** Trace messages over the Uu interface on the M2000 client. Check whether the bits are 1 for target system in the IE featureGroupIndicators. For example, if the target system is UTRAN and the fifteenth and twenty-second bits are 1, the UE supports B1 and B2 measurements of the UTRAN. **Figure 9-11** shows a sample of the RRC UE CAP INFO message.
  - If this IE indicates that the UE supports the target system and frequency band, go to **Step** 2.
  - If this IE indicates that the UE does not support the target system and frequency band, the fault is caused due to UE capability.

Figure 9-11 A sample of the RRC\_UE\_CAP\_INFO message



- **Step 2** Run an MML command to check for the neighboring cell configurations. For example, if the target system is UTRAN, run the **LST UTRANNCELL** command to check whether the neighboring UTRAN cells are configured.
  - If the neighboring UTRAN cells are not configured, configure the cells.
  - If the neighboring UTRAN cells are configured, go to Step 3.
- **Step 3** Run the **LST ENODEBALGOSWITCH** command to check whether the corresponding handover mode is enabled.

#### ----End

If the corresponding handover mode is disabled, enable it.

If the corresponding handover mode is enabled, contact Huawei technical support.

### Fault 3: No Delivery of a Redirection Command

Fault description: After receiving A2 measurement reports for blind redirections from UEs that have moved to the cell edge, the eNodeB does not send redirection commands to these UEs.

Fault handling:

**Step 1** Run an MML command to check the blind handover priorities of inter-RAT neighboring cells. For example, if the target system is UTRAN, run the **LST UTRANNCELL** command to check whether the blind handover priorities configured for the neighboring UTRAN cells are in the range of 1 to 31.

If the blind handover priorities configured for the neighboring UTRAN cells are not in this range, go to Step 2.

If the blind handover priorities configured for the neighboring UTRAN cells are in this range, contact Huawei technical support.

**Step 2** Run an MML command to change the blind handover priority to a value from 1 to 31. For example, if the target system is the UTRAN, run the **MOD UTRANNCELL** command.

----End

#### Alarm

Description

**Table 9-17** shows the alarms related to the feature.

Table 9-17 Alarm list

Alarm ID	Alarm Name	NE	Feature ID	Feature Name
29221	LTE-WCDMA Inter-System Outgoing Cell Handover Success Rate Too Low	eNodeB	LOFD-001072	Distance based Inter-RAT handover to UTRAN
29222	LTE-GERAN Inter-System Outgoing Cell Handover Success Rate Too Low	eNodeB	LOFD-001073	Distance based Inter-RAT handover to GERAN

# 9.8 UL-Quality-based Inter-RAT Handover

## 9.8.1 When to Use UL-Quality-based Inter-RAT Handover

Coverage-based inter-RAT handovers are triggered based on DL signal quality. However, there may be a huge imbalance between the DL and UL signal quality. The UL signal quality may be relatively poor while the DL signal quality is fairly satisfactory. If this occurs, prompt triggering of inter-RAT handovers cannot be ensured. To handle this problem, you can enable UL-quality-

based inter-RAT handover. It is good practice to enable UL-quality-based inter-RAT handover after the LTE network has stabilized. In the early phase of network deployment, however, enable this type of handover if it is required in the network plan.

If UL-quality-based inter-frequency handover and UL-quality-based inter-RAT handover are both applicable, the former is recommended over the latter.

# 9.8.2 Required Information

The information to be collected before deploying UL-quality-based inter-RAT handover is the same as that before deploying UL-quality-based inter-frequency handover.

# 9.8.3 Data Preparation

This section describes the data that you need to collect for setting parameters. Required data is data that you must collect for all scenarios. Collect scenario-specific data when necessary for a specific feature deployment scenario.

There are three types of data sources:

- Network plan (negotiation required): parameter values planned by the operator and negotiated with the EPC or peer transmission equipment
- Network plan (negotiation not required): parameter values planned and set by the operator
- User-defined: parameter values set by users.

### **Required Data**

For details about the required data, see **9.7.3 Data Preparation**.

# Scenario-specific Data

UL-Quality-based inter-RAT handover can be enabled only after coverage-based inter-RAT handover is enabled. This section describes the required parameters except those for coverage-based inter-RAT handover. For details on the required parameters for coverage-based inter-RAT handover, see the "Scenario-specific Data" part in 9.7.3 Data Preparation.

The following table describes the parameters that must be set in the **ENodeBAlgoSwitch** MO to configure the mode for inter-RAT handover based on UL quality.

Parameter Name	Parameter ID	Data Source	Setting Notes
Handover Algo switch	ENodeBAlgoSwitch. HoAlgoSwitch	Network plan (negotiation not required)	To enable UL-quality-based inter-RAT handover, select the UlPowerHoSwitch check box under this parameter.

# 9.8.4 Deployment Requirements

#### **Operating Environment**

Description

The following three features of mobility management in connected mode have different requirements for operating environment:

- The feature LOFD-001019 PS Inter-RAT Mobility between E-UTRAN and UTRAN requires that the core-network equipment should support this feature.
  - If the core-network equipment is provided by Huawei, the equipment version must be SAE1.2 or later.
  - If the core-network equipment is provided by another vendor, check whether the equipment supports this feature.
- The feature LOFD-001020 PS Inter-RAT Mobility between E-UTRAN and GERAN requires that the core-network equipment should support this feature.
  - If the core-network equipment is provided by Huawei, the equipment version must be PS11.0.

If the core-network equipment is provided by another vendor, check whether the equipment supports this feature.

## **Transmission Networking**

None

#### License

To use UL-quality-based inter-RAT handovers, an operator must purchase and activate the licenses for the features listed in the following table.

Feature ID	Feature Name	License Control Item	NE	Sales Unit
LOFD-001019	PS Inter-RAT Mobility between E- UTRAN and UTRAN	PS Inter-RAT Mobility between E- UTRAN and UTRAN	eNodeB	per RRC Connected User
LOFD-001020	PS Inter-RAT Mobility between E- UTRAN and GERAN	PS Inter-RAT Mobility between E- UTRAN and GERAN	eNodeB	per RRC Connected User

#### 9.8.5 Activation

### Using the CME to Perform Batch Configuration for Newly Deployed eNodeBs

Enter the values of related parameters in a summary data file, which also contains other data for the new eNodeBs to be deployed. Then, import the summary data file into the Configuration Management Express (CME) for batch configuration. For detailed instructions, see section "Creating eNodeBs in Batches" in the initial configuration guide for the eNodeB.

The summary data file may be a scenario-specific file provided by the CME or a customized file, depending on the following conditions:

- Related managed objects (MOs) are contained in a scenario-specific summary data file. In this situation, set the parameters in the MOs, and then verify and save the file.
- Some related MOs are not contained in a scenario-specific summary data file. In this situation, customize a summary data file to include the MOs before you can set the parameters.

Related MOs and parameters in each scenario are listed as follows:

Table 9-18 Parameters related to UL-quality-based inter-RAT handovers to UTRAN

МО	Sheet in the Summary Data File	Parameter Group	Remarks
ENodeBAlgo Switch	User-defined sheet ENodeBAlgoSwit ch is recommended.	Handover Algo switch, Handover Mode switch	A list-type sheet is recommended.

Table 9-19 Parameters related to UL-quality-based inter-RAT handovers to GERAN

МО	Sheet in the Summary Data File	Parameter Group	Remarks
ENodeBAlgo Switch	User-defined sheet ENodeBAlgoSwit ch is recommended.	Handover Algo switch, Handover Mode switch	A list-type sheet is recommended.

## Using the CME to Perform Batch Configuration for Existing eNodeBs

Batch reconfiguration using the CME is the recommended method to activate a feature on existing eNodeBs. This method reconfigures all data, except neighbor relationships, for multiple eNodeBs in a single procedure. The procedure is as follows:

**Step 1** Choose CME > Advanced > Customize Summary Data File (M2000 client mode), or choose Advanced > Customize Summary Data File (CME client mode), to customize a summary data file for batch reconfiguration.

M NOTE

For context-sensitive help on a current task in the client, press F1.

**Step 2** Choose CME > LTE Application > Export Data > Export Base Station Bulk Configuration Data (M2000 client mode), or choose Advanced > Base Station Bulk Configuration > Export Data (CME client mode), to export the eNodeB data stored on the CME into the customized summary data file.

- Step 3 In the summary data file, set the parameters in the MOs listed in **Table 9-18** and **Table 9-19**, and close the file.
- **Step 4** Choose CME > LTE Application > Import Data > Import Base Station Bulk Configuration Data (M2000 client mode), or choose LTE Application > Import Data > Import Base Station Bulk Configuration Data (CME client mode), to import the summary data file into the CME.
- **Step 5** Choose CME > Planned Area > Export Incremental Scripts (M2000 client mode), or choose Area Management > Planned Area > Export Incremental Scripts (CME client mode), to export and activate the incremental scripts.

----End

#### Using the CME to Perform Single Configuration

On the CME, set the parameters listed in the "Data Preparation" section for a single eNodeB. The procedure is as follows:

- **Step 1** In the planned data area, click **Base Station** in the upper left corner of the configuration window.
- **Step 2** In area 1 shown in **Figure 9-12**, select the eNodeB to which the MOs belong.

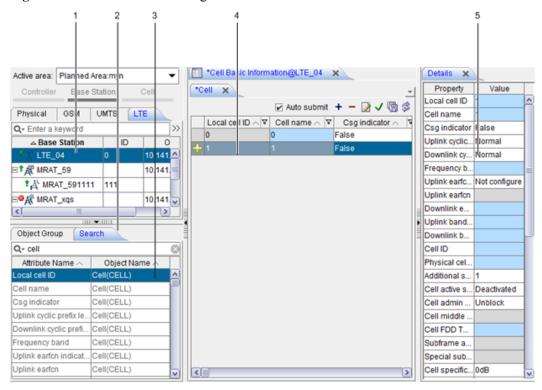


Figure 9-12 MO search and configuration window

#### M NOTE

- To view descriptions of the parameters in the MO, click in area 4 and press F1.
- Area 5 displays the details of a selected area-4 entry in vertical format. Click the "Details" button to show or hide this area.

Step 3 On the Search tab page in area 2, enter an MO name, for example, CELL.

- **Step 4** In area 3, double-click the MO in the **Object Name** column. All parameters in this MO are displayed in area 4.
- **Step 5** Set the parameters in area 4 or 5.
- Step 6 Choose CME > Planned Area > Export Incremental Scripts (M2000 client mode), or choose Area Management > Planned Area > Export Incremental Scripts (CME client mode), to export and activate the incremental scripts.

----End

#### **Using MML Commands**

- UL-quality-based inter-RAT handover to UTRAN
- **Step 1** Run the **MOD ENODEBALGOSWITCH** command to enable UL-quality-based handover and configure inter-RAT handover to UTRAN.
- **Step 2** Run the following commands to add neighbor relationships with UTRAN cells:
  - 1. ADD UTRANNFREQ
  - 2. ADD UTRANEXTERNALCELL
  - 3. (Optional) ADD UTRANEXTERNALCELLPLMN
  - 4. ADD UTRANNCELL
  - ----End
  - UL-quality-based inter-RAT handover to GERAN
- **Step 1** Run the **MOD ENODEBALGOSWITCH** command to enable UL-quality-based handover and configure inter-RAT handover to GERAN.
- **Step 2** Run the following commands to add neighbor relationships with GERAN cells:
  - 1. ADD GERANNFREQGROUP
  - 2. ADD GERANNFREQGROUPARFCN
  - 3. ADD GERANEXTERNALCELL
  - 4. (Optional) ADD GERANEXTERNALCELLPLMN
  - 5 ADD GERANNCELL

----End

#### 9.8.6 Activation Observation

The observation procedure is as follows:

- **Step 1** Use a UE to access the network at the center of a cell in the 2600 MHz band. Then, move the UE from the cell center to the cell edge. During this process, the uplink quality of the UE becomes poor.
- **Step 2** Observe the user-level measurement result on the M2000.
  - When the user uplink IBLER is greater than 30%, which is the threshold for an UL-quality-based inter-RAT handover, observe the messages traced over the Uu interface. The RRC\_CONN\_RECFG message from the eNodeB contains measurement control information for the UL-quality-based inter-RAT handover.

When the user uplink IBLER is greater than 40%, which is the threshold for UL-quality-based inter-RAT redirection, observe the messages traced over the Uu interface. The RRC\_CONN\_REL message from the eNodeB contains information about the target frequency for redirection.

#### **Step 3** Observe messages traced over the Uu interface.

- In the case of a handover, the UE receives an RRC\_CONN\_RECFG message that contains target cell information.
- In the case of redirection, the UE receives an RRC\_CONN\_REL message that contains target frequency information.

----End

# 9.8.7 Reconfiguration

The reconfiguration of parameters that are not involved in this section is the same as the reconfiguration of parameters for coverage-based inter-RAT handovers. For details, see **9.7.7 Reconfiguration**.

#### Parameter Groups Related to Inter-RAT Handovers to UTRAN

Parameter groups related to inter-RAT handovers to UTRAN are contained in the **InterRatHoUtranGroup** MO. The following table provides suggestions on how to reconfigure these parameters.

Parameter Name	Parameter ID	Data Source	Setting Notes
CoverageBa sed UTRAN ECN0 trigger threshold	InterRatHoU tranGroup. InterRatHoU tranB1ThdEc n0	Network plan (negotiation not required)	This parameter specifies the Ec/No threshold for event B1 in a coverage-based, UL-quality-based, or distance-based handover, or to a SPID-based handover to the HPLMN. A larger value results in a lower probability of handovers to UTRAN, whereas a smaller value results in a higher probability.  It is recommended that the default value be used.
CoverageBa sed UTRAN RSCP trigger threshold	InterRatHoU tranGroup. InterRatHoU tranB1ThdRs cp	Network plan (negotiation not required)	This parameter specifies the RSCP threshold for event B1 in a coverage-based, UL-quality-based, or distance-based handover, or to a SPID-based handover to the HPLMN. A larger value results in a lower probability of handovers to UTRAN, whereas a smaller value results in a higher probability.  It is recommended that the default value be used.

Parameter Name	Parameter ID	Data Source	Setting Notes
UTRAN time to trigger	InterRatHoU tranGroup. InterRatHoU tranB1TimeT oTrig	Network plan (negotiation not required)	This parameter specifies the time-to-trigger for event B1 in an inter-RAT handover to UTRAN. When detecting that the signal quality in at least one neighboring cell meets the entering condition, the UE does not send a measurement report to the eNodeB immediately. Instead, the UE sends a report only when the signal quality continuously meets the entering condition during the time-to-trigger period.  If both UTRAN and GERAN neighboring cells are measured, you are advised to set the time-to-trigger for UTRAN neighboring cells to be smaller than that for GERAN neighboring cells, increasing the possibility of handovers to UTRAN neighboring cells.  If both UL-quality-based inter-frequency handovers and UL-quality-based inter-RAT handovers are enabled, you are advised to set the time-to-trigger for the inter-RAT handover event be greater than that for the inter-frequency handover event, increasing the possibility of inter-frequency handovers.

## Parameter Groups Related to Inter-RAT Handovers to GERAN

Parameter groups related to inter-RAT handovers to GERAN are contained in the **InterRatHoGeranGroup** MO. The following table provides suggestions on how to reconfigure these parameters.

Parameter Name	Parameter ID	Data Source	Setting Notes
CoverageBa sed GERAN trigger threshold	InterRatHoG eranGroup. InterRatHoGe ranB1Thd	Network plan (negotiation not required)	This parameter specifies the RSSI threshold for event B1 in a coverage-based, UL-quality-based, or distance-based handover to GERAN. A larger value results in a lower probability of handovers to GERAN, whereas a smaller value results in a higher probability.  It is recommended that the default value be used.

Parameter Name	Parameter ID	Data Source	Setting Notes
GERAN time to trigger	InterRatHoG eranGroup. InterRatHoGe ranB1TimeTo Trig	Network plan (negotiation not required)	This parameter specifies the time-to-trigger for event B1 in an inter-RAT handover to GERAN. When detecting that the signal quality in at least one neighboring cell meets the entering condition, the UE does not send a measurement report to the eNodeB immediately. Instead, the UE sends a report only when the signal quality continuously meets the entering condition during the time-to-trigger period.  If both UTRAN and GERAN neighboring cells are measured, you are advised to set the time-to-trigger for GERAN neighboring cells to be greater than that for UTRAN neighboring cells, increasing the possibility of handovers to UTRAN neighboring cells.  If both UL-quality-based inter-frequency handovers and UL-quality-based inter-RAT handovers are enabled, you are advised to set the time-to-trigger for the inter-RAT handover event be greater than that for the inter-frequency handover event, increasing the possibility of inter-frequency handovers
			advised to set the time-to-trigger for the inter-RAT handover event be greater than that for the inter-frequency handover

## 9.8.8 Deactivation

## Using the CME to Perform Batch Configuration

Batch reconfiguration using the CME is the recommended method to deactivate a feature on eNodeBs. This method reconfigures all data, except neighbor relationships, for multiple eNodeBs in a single procedure. The procedure for feature deactivation is similar to that for feature activation described in **Using the CME to Perform Batch Configuration for Existing eNodeBs**. In the procedure, modify related parameters described below.

Table 9-20 Parameters related to UL-Quality-based inte	r-RAT handovers
--	-----------------

МО	Sheet in the Summary Data File	Parameter Group	Setting Notes
ENodeBAlgoSwitch	User-defined sheet	HoAlgoSwitch	Clear the UlQualityInterRA- THoSwitch check box.

### Using the CME to Perform Single Configuration

On the CME, set the parameters listed in each scenario for a single eNodeB. For detailed instructions, see **Using the CME to Perform Single Configuration** for feature activation.

#### **Using MML Commands**

To deactivate UL-quality-based inter-RAT handover, disable its algorithm by running the **MOD ENODEBALGOSWITCH** command.

# 9.8.9 Performance Monitoring

For details about how to monitor, see 9.7.9 Performance Monitoring.

# 9.8.10 Parameter Optimization

For details about parameter optimization, see 9.7.10 Parameter Optimization.

# 9.8.11 Troubleshooting

For details about troubleshooting, see 9.7.11 Troubleshooting.

# 9.9 Distance-based Inter-RAT Handover

#### 9.9.1 When to Use Distance-based Inter-RAT Handover

You are advised to enable distance-based inter-RAT handover when the E-UTRAN cannot cover the entire network and causes severe cross-cell coverage for the cells of another RAT. The latter situation occurs if the coverage of the E-UTRAN overlaps with that of another RAT and the RF signals from an E-UTRAN cell travels distances significantly longer than the inter-site spacing specified in the network plan. If the cells of the other RAT are not configured as neighboring cells of the E-UTRAN cell, inter-frequency handovers cannot be triggered in time and call drops will occur. To reduce the probability of such call drops, you can enable distance-based inter-RAT handover.

# 9.9.2 Required Information

The information to be collected before deploying distance-based inter-RAT handover is the same as that before deploying distance-based inter-frequency handover.

# 9.9.3 Data Preparation

This section describes the data that you need to collect for setting parameters. Required data is data that you must collect for all scenarios. Collect scenario-specific data when necessary for a specific feature deployment scenario.

There are three types of data sources:

- Network plan (negotiation required): parameter values planned by the operator and negotiated with the EPC or peer transmission equipment
- Network plan (negotiation not required): parameter values planned and set by the operator
- User-defined: parameter values set by users.

#### Required Data

For details about the required data, see **9.7.3 Data Preparation**.

### Scenario-specific Data

Distance-based inter-RAT handover can be enabled only after coverage-based inter-RAT handover is enabled. This section describes the required parameters except those for coverage-based inter-RAT handover. For details on the required parameters for coverage-based inter-RAT handover, see the "Scenario-specific Data." part in 9.7.3 Data Preparation.

To enable distance-based inter-RAT handovers, the corresponding switch must be turned on and the measurement object type must be set to UTRAN or GERAN.

The following table describes the parameters that must be set in the **CellAlgoSwitch** MO to enable distance-based inter-RAT handovers.

Parameter Name	Parameter ID	Data Source	Setting Notes
Local cell ID	CellAlgoSwit ch. LocalCellId	Network plan (negotiation not required)	Ensure that this parameter has been set in a Cell MO.
Distance-based Handover Switch	CellAlgoSwit ch. DistBasedHo Switch	Network plan (negotiation not required)	This parameter specifies whether to enable distance-based handovers. If this switch is turned on, distance-based handovers are allowed. If this switch is turned off, distance-based handovers to any cells are prohibited.

The following table describes the parameters that must be set in the **DistBasedHo** MO to set the measurement object type.

Parameter Name	Parameter ID	Data Source	Setting Notes
Local cell ID	DistBasedH O. LocalCellId	Network plan (negotiation not required)	Ensure that this parameter has been set in a Cell MO.
Distance-based Measurement Object Type	DistBasedH O. DistBasedMe asObjType	Network plan (negotiation not required)	This parameter specifies the measurement object type for distance-based handovers.  If this parameter is set to <b>UTRAN</b> or <b>GERAN</b> , distanced-based handovers to inter-frequency neighboring cells are allowed.

# 9.9.4 Deployment Requirements

#### **Operating Environment**

The following three features of mobility management in connected mode have different requirements for operating environment:

• The feature LOFD-001019 PS Inter-RAT Mobility between E-UTRAN and UTRAN requires that the core-network equipment should support this feature.

If the core-network equipment is provided by Huawei, the equipment version must be SAE1.2 or later.

If the core-network equipment is provided by another vendor, check whether the equipment supports this feature.

• The feature LOFD-001020 PS Inter-RAT Mobility between E-UTRAN and GERAN requires that the core-network equipment should support this feature.

If the core-network equipment is provided by Huawei, the equipment version must be PS11.0.

If the core-network equipment is provided by another vendor, check whether the equipment supports this feature.

Other features have no requirements for operating environment.

# **Transmission Networking**

None

#### License

To use distance-based inter-RAT handovers, an operator must purchase and activate the licenses for the features listed in the following table.

Feature ID	Feature Name	License Control Item	NE	Sales Unit
LOFD-001019	PS Inter-RAT Mobility between E- UTRAN and UTRAN	PS Inter-RAT Mobility between E- UTRAN and UTRAN	eNodeB	per RRC Connected User
LOFD-001020	PS Inter-RAT Mobility between E- UTRAN and GERAN	PS Inter-RAT Mobility between E- UTRAN and GERAN	eNodeB	per RRC Connected User
LOFD-001072	Distance based Inter-RAT handover to UTRAN	Distance based Inter-RAT handover to UTRAN	eNodeB	per RRC Connected User
LOFD-001073	Distance based Inter-RAT handover to GERAN	Distance based Inter-RAT handover to GERAN	eNodeB	per RRC Connected User

## 9.9.5 Activation

## Using the CME to Perform Batch Configuration for Newly Deployed eNodeBs

Enter the values of related parameters in a summary data file, which also contains other data for the new eNodeBs to be deployed. Then, import the summary data file into the Configuration Management Express (CME) for batch configuration. For detailed instructions, see section "Creating eNodeBs in Batches" in the initial configuration guide for the eNodeB.

The summary data file may be a scenario-specific file provided by the CME or a customized file, depending on the following conditions:

- Related managed objects (MOs) are contained in a scenario-specific summary data file. In this situation, set the parameters in the MOs, and then verify and save the file.
- Some related MOs are not contained in a scenario-specific summary data file. In this situation, customize a summary data file to include the MOs before you can set the parameters.

Related MOs and parameters in each scenario are listed as follows:

<b>Table 9-21</b> Parameters related to distance-based inter-RAT handovers to UTRAN
---

МО	Sheet in the Summary Data File	Parameter Group	Remarks
CellAlgoSw itch	User-defined sheet CellAlgoSwitch is recommended.	Distance-based Handover Switch	A list-type sheet is recommended.
DistBasedH o	User-defined sheet <b>DistBasedHo</b> is recommended.	Distance-based Measurement Object Type, Distance-based Handover Threshold	A list-type sheet is recommended.

Table 9-22 Parameters related to distance-based inter-RAT handovers to GERAN

МО	Sheet in the Summary Data File	Parameter Group	Remarks
CellAlgoS witch	User-defined sheet CellAlgoSwitch is recommended.	Distance-based Handover Switch	A list-type sheet is recommended.
DistBasedH o	User-defined sheet  DistBasedHo is recommended.	Distance-based Measurement Object Type, Distance-based Handover Threshold	A list-type sheet is recommended.

## Using the CME to Perform Batch Configuration for Existing eNodeBs

Batch reconfiguration using the CME is the recommended method to activate a feature on existing eNodeBs. This method reconfigures all data, except neighbor relationships, for multiple eNodeBs in a single procedure. The procedure is as follows:

**Step 1** Choose CME > Advanced > Customize Summary Data File (M2000 client mode), or choose Advanced > Customize Summary Data File (CME client mode), to customize a summary data file for batch reconfiguration.

#### NOTE

For context-sensitive help on a current task in the client, press F1.

- Step 2 Choose CME > LTE Application > Export Data > Export Base Station Bulk Configuration Data (M2000 client mode), or choose Advanced > Base Station Bulk Configuration > Export Data (CME client mode), to export the eNodeB data stored on the CME into the customized summary data file.
- Step 3 In the summary data file, set the parameters in the MOs listed in **Table 9-21** and **Table 9-22**, and close the file.

- **Step 4** Choose CME > LTE Application > Import Data > Import Base Station Bulk Configuration Data (M2000 client mode), or choose LTE Application > Import Data > Import Base Station Bulk Configuration Data (CME client mode), to import the summary data file into the CME.
- Step 5 Choose CME > Planned Area > Export Incremental Scripts (M2000 client mode), or choose Area Management > Planned Area > Export Incremental Scripts (CME client mode), to export and activate the incremental scripts.

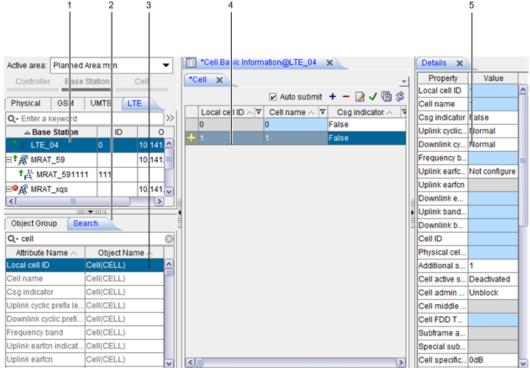
----End

#### Using the CME to Perform Single Configuration

On the CME, set the parameters listed in the "Data Preparation" section for a single eNodeB. The procedure is as follows:

- **Step 1** In the planned data area, click **Base Station** in the upper left corner of the configuration window.
- **Step 2** In area 1 shown in Figure 9-13, select the eNodeB to which the MOs belong.

Figure 9-13 MO search and configuration window



#### ■ NOTE

- To view descriptions of the parameters in the MO, click in area 4 and press F1.
- Area 5 displays the details of a selected area-4 entry in vertical format. Click the "Details" button to show or hide this area.
- Step 3 On the Search tab page in area 2, enter an MO name, for example, CELL.
- Step 4 In area 3, double-click the MO in the Object Name column. All parameters in this MO are displayed in area 4.

- **Step 5** Set the parameters in area 4 or 5.
- Step 6 Choose CME > Planned Area > Export Incremental Scripts (M2000 client mode), or choose Area Management > Planned Area > Export Incremental Scripts (CME client mode), to export and activate the incremental scripts.

----End

#### **Using MML Commands**

- Distance-based inter-RAT handover to UTRAN
- **Step 1** Run the **MOD CELLALGOSWITCH** command to enable distance-based inter-RAT handover.
- **Step 2** Run the **MOD DISTBASEDHO** command to set the measurement object type to UTRAN and set the threshold for distance-based handover.
- **Step 3** Run the following commands to add neighbor relationships with UTRAN cells:
  - 1. ADD UTRANNFREQ
  - 2. ADD UTRANEXTERNALCELL
  - 3. (Optional) ADD UTRANEXTERNALCELLPLMN
  - 4. ADD UTRANNCELL
  - ----End
  - Distance-based inter-RAT handover to GERAN
- **Step 1** Run the **MOD CELLALGOSWITCH** command to enable distance-based inter-RAT handover.
- **Step 2** Run the **MOD DISTBASEDHO** command to set the measurement object type to GERAN and set the threshold for distance-based handover.
- **Step 3** Run the following commands to add neighbor relationships with GERAN cells:
  - 1. ADD GERANNFREQGROUP
  - 2. ADD GERANNFREQGROUPARFCN
  - 3. ADD GERANEXTERNALCELL
  - 4. (Optional) ADD GERANEXTERNALCELLPLMN
  - 5. ADD GERANNCELL
  - ----End

#### 9.9.6 Activation Observation

- Step 1 Trace messages over the Uu interface on the M2000 client after the UE accesses the network at the center of an E-UTRAN cell that exerts cross-cell coverage to other cells. Move the UE toward the cell edge. During the movement, coverage-based A2 measurements are not triggered due to cross-cell coverage, but the threshold for distance-based handover is reached. Check for the distance-based inter-RAT measurement configuration in the RRC CONN RECFG message.
- **Step 2** Trace messages over the Uu interface on the M2000 client. Check the target cell access information in the RRC CONN RECFG message. This message is the handover command sent

from the eNodeB after the eNodeB receives a B1 measurement report from the UE for a distance-based inter-RAT handover.

----End

# 9.9.7 Reconfiguration

The reconfiguration of parameters that are not involved in this section is the same as the reconfiguration of parameters for coverage-based inter-RAT handovers. For details, see 9.7.7 **Reconfiguration**.

#### **Distance-Based Handover Threshold**

Distance-based handover threshold is contained in the **DistBasedHO** MO. The following table provides suggestions on how to reconfigure this parameter.

Parameter Name	Parameter ID	Data Source	Setting Notes
Distance-based Handover Threshold	DistBased HO. DistBased HOThd	Network plan (negotiation not required)	This parameter specifies the threshold for distance-based handovers.  It is recommended that you set this parameter based on the planned distance between sites.

### Parameter Groups Related to Inter-RAT Handovers to UTRAN

Parameter groups related to inter-RAT handovers to UTRAN are contained in the **InterRatHoUtranGroup** MO. The following table provides suggestions on how to reconfigure these parameters.

Parameter Name	Paramet er ID	Data Source	Setting Notes
CoverageBa sed UTRAN ECN0 trigger threshold	InterRat HoUtran Group. InterRat HoUtran B1ThdEc n0	Network plan (negotiation not required)	This parameter specifies the Ec/No threshold for event B1 in a coverage-based, UL-quality-based, or distance-based handover, or to a SPID-based handover to the HPLMN. A larger value results in a lower probability of handovers to UTRAN, whereas a smaller value results in a higher probability.  It is recommended that the default value be used.
CoverageBa sed UTRAN RSCP trigger threshold	InterRat HoUtran Group. InterRat HoUtran B1ThdRs cp	Network plan (negotiation not required)	This parameter specifies the RSCP threshold for event B1 in a coverage-based, UL-quality-based, or distance-based handover, or to a SPID-based handover to the HPLMN. A larger value results in a lower probability of handovers to UTRAN, whereas a smaller value results in a higher probability.  It is recommended that the default value be used.

Parameter	Paramet	Data	Setting Notes
Name	er ID	Source	
UTRAN time to trigger	InterRat HoUtran Group. InterRat HoUtran B1TimeT oTrig	Network plan (negotiation not required)	This parameter specifies the time-to-trigger for event B1 in an inter-RAT handover to UTRAN. When detecting that the signal quality in at least one neighboring cell meets the entering condition, the UE does not send a measurement report to the eNodeB immediately. Instead, the UE sends a report only when the signal quality continuously meets the entering condition during the time-to-trigger period.  If both UTRAN and GERAN neighboring cells are measured, you are advised to set the time-to-trigger for UTRAN neighboring cells to be smaller than that for GERAN neighboring cells, increasing the possibility of handovers to UTRAN neighboring cells.  If both distance-based inter-frequency handovers and distance-based inter-RAT handovers are enabled, you are advised to set the time-to-trigger for the inter-RAT handover event be greater than that for the inter-frequency handover event, increasing the possibility of inter-frequency handovers.

# Parameter Groups Related to Inter-RAT Handovers to GERAN

Parameter groups related to inter-RAT handovers to GERAN are contained in the **InterRatHoGeranGroup** MO. The following table provides suggestions on how to reconfigure these parameters.

Parameter	Paramete	Data	Setting Notes
Name	r ID	Source	
CoverageBa sed GERAN trigger threshold	InterRatH oGeranGr oup. InterRatH oGeranB1 Thd	Network plan (negotiatio n not required)	This parameter specifies the RSSI threshold for event B1 in a coverage-based, UL-quality-based, or distance-based handover to GERAN. A larger value results in a lower probability of handovers to GERAN, whereas a smaller value results in a higher probability.  It is recommended that the default value be used.

Parameter	Paramete	Data	Setting Notes
Name	r ID	Source	
GERAN time to trigger	InterRatH oGeranGr oup. InterRatH oGeranB1 TimeToTri g	Network plan (negotiatio n not required)	This parameter specifies the time-to-trigger for event B1 in an inter-RAT handover to GERAN. When detecting that the signal quality in at least one neighboring cell meets the entering condition, the UE does not send a measurement report to the eNodeB immediately. Instead, the UE sends a report only when the signal quality continuously meets the entering condition during the time-to-trigger period.  If both UTRAN and GERAN neighboring cells are measured, you are advised to set the time-to-trigger for GERAN neighboring cells to be greater than that for UTRAN neighboring cells, increasing the possibility of handovers to UTRAN neighboring cells.  If both distance-based inter-frequency handovers and distance-based inter-RAT handovers are enabled, you are advised to set the time-to-trigger for the inter-RAT handover event be greater than that for the inter-frequency handover event, increasing the possibility of inter-frequency handovers.

#### 9.9.8 Deactivation

### Using the CME to Perform Batch Configuration

Batch reconfiguration using the CME is the recommended method to deactivate a feature on eNodeBs. This method reconfigures all data, except neighbor relationships, for multiple eNodeBs in a single procedure. The procedure for feature deactivation is similar to that for feature activation described in **Using the CME to Perform Batch Configuration for Existing eNodeBs**. In the procedure, modify related parameters described below.

**Table 9-23** Parameters related to distance-based inter-RAT handovers

МО	Sheet in the Summary Data File	Parameter Group	Setting Notes
CellAlgoSwitch	CellAlgoSwitch	Distance-based Handover Switch	Set the switch to <b>OFF(Off)</b> .

## Using the CME to Perform Single Configuration

On the CME, set the parameters listed in each scenario for a single eNodeB. For detailed instructions, see **Using the CME to Perform Single Configuration** for feature activation.

### **Using MML Commands**

Description

- **Step 1** Run the **MOD CELLALGOSWITCH** command to turn off the switch for distance-based handover.
- **Step 2** Run the **MOD DISTBASEDHO** command, and clear the corresponding check box under the **Distance-based Measurement Object Type** parameter to disable distance-based handovers to the corresponding RAT.

----End

# 9.9.9 Performance Monitoring

For details about how to monitor, see 9.7.9 Performance Monitoring.

# 9.9.10 Parameter Optimization

For details about parameter optimization, see 9.7.10 Parameter Optimization.

# 9.9.11 Troubleshooting

For details about troubleshooting, see 9.7.11 Troubleshooting.

## 9.10 Service-based Inter-RAT Handover

#### 9.10.1 When to Use Service-based Inter-RAT Handover

You are advised to enable service-based inter-RAT handover to divert some services to another RAT in either of the following situations:

- In the early phase of LTE network construction, the E-UTRAN is incapable of providing continuous coverage.
- After the LTE network has stabilized, the E-UTRAN is heavily loaded with certain types of service.

# 9.10.2 Required Information

Before you deploy service-based inter-RAT handover, collect information about the coverage and load of the target inter-RAT system. Ensure that the target inter-RAT system provides continuous coverage. If the target inter-RAT system is heavily loaded, service-based inter-RAT handover is not recommended. Service-based inter-RAT handover to a heavily loaded system affects user experience.

# 9.10.3 Data Preparation

This section describes the data that you need to collect for setting parameters. Required data is data that you must collect for all scenarios. Collect scenario-specific data when necessary for a specific feature deployment scenario.

There are three types of data sources:

• Network plan (negotiation required): parameter values planned by the operator and negotiated with the EPC or peer transmission equipment

- Network plan (negotiation not required): parameter values planned and set by the operator
- User-defined: parameter values set by users.

## **Required Data**

For details about the required data, see **9.7.3 Data Preparation**.

#### Scenario-specific Data

Service-based inter-RAT handover can be enabled only after coverage-based inter-RAT handover is enabled. This section describes the required parameters except those for coverage-based inter-RAT handover. For details on the required parameters for coverage-based inter-RAT handover, see the "Scenario-specific Data" part in 9.7.3 Data Preparation

The following table describes the parameter that must be set in the **ENodeBAlgoSwitch** MO to enable service-based inter-RAT handovers.

Paramete	Paramete	Data	Setting Notes
r Name	r ID	Source	
Handover Algo switch	ENodeBA lgoSwitch	Network plan (negotiatio n not required)	Turn on an inter-RAT handover algorithm switch based on the operator's network plan.  Handover to UTRAN: UtranServiceHoSwitch (UtranServiceHoSwitch)  Handover to GERAN: GeranServiceHoSwitch (GeranServiceHoSwitch)

The following table describes the parameters that must be set in the **ServiceIrHoCfgGroup** MO to configure a service-based inter-RAT handover policy.

Parameter Name	Parameter ID	Data Source	Setting Notes
CN Operator ID	ServiceIr- HoCfgGroup. CnOperatorId	Network plan (negotiation not required)	Ensure that this parameter has been set in a <b>CnOperator</b> MO.
Service- based inter- RAT handover policy group ID	ServiceIr- HoCfgGroup. ServiceIrHoCf gGroupId	Network plan (negotiation not required)	Indicates the ID of the service-based inter-RAT handover policy group.

Parameter Name	Parameter ID	Data Source	Setting Notes
Inter-RAT handover state	ServiceIr- HoCfgGroup. InterRatHoSta te	Network plan (negotiation not required)	This parameter specifies whether the service-based inter-RAT handover is forbidden, allowed, or required for services with the QCI. Parameter values 0, 1, and 2 indicate forbidden, allowed, and required, respectively. Set this parameter based on the application scenario.

The following tables describe the parameter that must be set to configure inter-RAT handover policy groups for services with standard or extended QCIs.

The following table describes the parameter that must be set in the **CnOperatorStandardQci** MO to configure parameter groups for services with standard QCIs.

Parameter Name	Parameter ID	Data Source	Setting Notes
CN Operator ID	CnOperatorS tandardQci. CnOperatorId	Network plan (negotiation not required)	Set this parameter according to the network plan. Ensure that this parameter is already set in the corresponding <b>CnOperator</b> MO.
QoS Class Indication	CnOperatorS tandardQci. <i>Qci</i>	Network plan (negotiation not required)	This parameter specifies the index of the standard QCI for which the parameter group is configured.
Service-based inter-RAT handover policy group ID	CnOperatorS tandardQci. ServiceIrHoC fgGroupId	Network plan (negotiation not required)	Set this parameter to the ID configured in ServiceIrHoCfgGroup.ServiceIrHoCfgGroupId.

# 9.10.4 Deployment Requirements

## **Operating Environment**

The following three features of mobility management in connected mode have different requirements for operating environment:

• The feature LOFD-001019 PS Inter-RAT Mobility between E-UTRAN and UTRAN requires that the core-network equipment should support this feature.

If the core-network equipment is provided by Huawei, the equipment version must be SAE1.2 or later.

If the core-network equipment is provided by another vendor, check whether the equipment supports this feature.

• The feature LOFD-001020 PS Inter-RAT Mobility between E-UTRAN and GERAN requires that the core-network equipment should support this feature.

If the core-network equipment is provided by Huawei, the equipment version must be PS11.0.

If the core-network equipment is provided by another vendor, check whether the equipment supports this feature.

#### **Transmission Networking**

None

#### License

To use service-based inter-RAT handovers, an operator must purchase and activate the licenses for the features listed in the following table.

Feature ID	Feature Name	License Control Item	NE	Sales Unit
LOFD-001019	PS Inter-RAT Mobility between E- UTRAN and UTRAN	PS Inter-RAT Mobility between E- UTRAN and UTRAN	eNodeB	per RRC Connected User
LOFD-001020	PS Inter-RAT Mobility between E- UTRAN and GERAN	PS Inter-RAT Mobility between E- UTRAN and GERAN	eNodeB	per RRC Connected User
LOFD-001043	Service based inter-RAT handover to UTRAN	Service based inter-RAT handover to UTRAN	eNodeB	per RRC Connected User
LOFD-001046	Service based inter-RAT handover to GERAN	Service based inter-RAT handover to GERAN	eNodeB	per RRC Connected User

#### 9.10.5 Activation

### Using the CME to Perform Batch Configuration for Newly Deployed eNodeBs

Enter the values of related parameters in a summary data file, which also contains other data for the new eNodeBs to be deployed. Then, import the summary data file into the Configuration Management Express (CME) for batch configuration. For detailed instructions, see section "Creating eNodeBs in Batches" in the initial configuration guide for the eNodeB.

The summary data file may be a scenario-specific file provided by the CME or a customized file, depending on the following conditions:

- Related managed objects (MOs) are contained in a scenario-specific summary data file. In this situation, set the parameters in the MOs, and then verify and save the file.
- Some related MOs are not contained in a scenario-specific summary data file. In this situation, customize a summary data file to include the MOs before you can set the parameters.

Related MOs and parameters in each scenario are listed as follows:

Table 9-24 Parameters related to service-based inter-RAT handovers to UTRAN

МО	Sheet in the Summary Data File	Parameter Group	Remarks
ENodeBA lgoSwitch	User-defined sheet ENodeBAlgoSwitc h is recommended.	Handover Algo switch, Handover Mode switch	A list-type sheet is recommended.
ServiceIr- HoCfgGr oup	User-defined sheet ServiceIr- HoCfgGroup is recommended.	CN Operator ID, Service-based inter-RAT handover policy group ID, Inter-RAT handover state	A list-type sheet is recommended.
UtranNFr	User-defined sheet UtranNFreq is recommended.	Local cell identity, Downlink UARFCN, UTRAN version, UTRAN cell type indicator, Uplink UARFCN indicator, Uplink UARFCN, Reselection priority configure indicator, Cell reselection priority, PMAX(dBm), Frequency offset(dB), Minimum required quality level(dB), Minimum required RX level(dBm), UTRAN high priority threshold (2dB), UTRAN lower priority threshold(2dB)	A list-type sheet is recommended.
UtranExte rnalCell	User-defined sheet UtranExternalCell is recommended.	Mobile country code, Mobile network code, UTRAN cell identity, UTRAN cell type indicator, Downlink UARFCN, Uplink UARFCN configure indicator, Uplink UARFCN, RNC identity, Routing area code configure indicator, Routing area code, Primary scrambling code, Location area code, Cell name	A list-type sheet is recommended.
UtranExte rnalCellPl mn	User-defined sheet UtranExternal- CellPlmn is recommended.	UTRAN cell identity, Mobile country code, Mobile network code, Share mobile country code, Share mobile network code	A list-type sheet is recommended.

МО	Sheet in the Summary Data File	Parameter Group	Remarks
UtranNCe 11	UtranNCell is recommended.	Local cell identity, Mobile country code, Mobile network code, UTRAN cell identity, No handover indicator, No remove indicator, Blind handover priority, ANR flag, Local cell name, Neighbour cell name	A list-type sheet is recommended.

Table 9-25 Parameters related to service-based inter-RAT handovers to GERAN

МО	Sheet in the Summary Data File	Parameter Group	Remarks
ENodeBA lgoSwitch	User-defined sheet ENodeBAlgoSwit ch is recommended.	Handover Algo switch, Handover Mode switch	A list-type sheet is recommended.
ServiceIr- HoCfgGro up	User-defined sheet ServiceIr- HoCfgGroup is recommended.	CN Operator ID, Service-based inter-RAT handover policy group ID, Inter-RAT handover state	A list-type sheet is recommended.
GeranNfre qGroup	User-defined sheet GeranNfreqGrou p is recommended.	Local cell identity, BCCH group identity, GERAN version, Starting ARFCN, Band indicator, Cell reselection priority configure indicator, Cell reselection priority, PMAX configure indicator, PMAX (dBm), Minimum required RX level (dBm), High priority threshold (2dB), Lower priority threshold (2dB), Frequency offset(dB), NCC monitoring permitted	A list-type sheet is recommended.
GeranNfre qGroupAr fcn	User-defined sheet GeranNfreqGroupArfcn is recommended.	Local cell identity, BCCH group identity, GERAN ARFCN	A list-type sheet is recommended.

МО	Sheet in the Summary Data File	Parameter Group	Remarks
GeranExte rnalCell	User-defined sheet  GeranExternal- Cell is recommended.	Mobile country code, Mobile network code, GERAN cell identity, Location area code, Routing area code configure indicator, Routing area code, Band indicator, GERAN ARFCN, Network colour code, Base station colour code, DTM indication, Cell name	A list-type sheet is recommended.
GeranExte rnalCellPl mn	User-defined sheet  GeranExternal- CellPlmn is recommended.	GERAN cell identity, Location area code, Mobile country code, Mobile network code, Share mobile country code, Share mobile network code	A list-type sheet is recommended.
GeranNcel 1	User-defined sheet GeranNcell is recommended.	Local cell identity, Mobile country code, Mobile network code, Location area code, GERAN cell identity, No remove indicator, No handover indicator, Blind handover priority, ANR flag, Local cell name, Neighbour cell name	A list-type sheet is recommended.

## Using the CME to Perform Batch Configuration for Existing eNodeBs

Batch reconfiguration using the CME is the recommended method to activate a feature on existing eNodeBs. This method reconfigures all data, except neighbor relationships, for multiple eNodeBs in a single procedure. The procedure is as follows:

**Step 1** Choose CME > Advanced > Customize Summary Data File (M2000 client mode), or choose Advanced > Customize Summary Data File (CME client mode), to customize a summary data file for batch reconfiguration.

#### NOTE

For context-sensitive help on a current task in the client, press F1.

- Step 2 Choose CME > LTE Application > Export Data > Export Base Station Bulk Configuration Data (M2000 client mode), or choose Advanced > Base Station Bulk Configuration > Export Data (CME client mode), to export the eNodeB data stored on the CME into the customized summary data file.
- Step 3 In the summary data file, set the parameters in the MOs listed in **Table 9-24** and **Table 9-25**, and close the file.
- **Step 4** Choose CME > LTE Application > Import Data > Import Base Station Bulk Configuration Data (M2000 client mode), or choose LTE Application > Import Data > Import Base Station Bulk Configuration Data (CME client mode), to import the summary data file into the CME.

**Step 5** Choose CME > Planned Area > Export Incremental Scripts (M2000 client mode), or choose Area Management > Planned Area > Export Incremental Scripts (CME client mode), to export and activate the incremental scripts.

----End

### Using the CME to Perform Single Configuration

On the CME, set the parameters listed in the "Data Preparation" section for a single eNodeB. The procedure is as follows:

- **Step 1** In the planned data area, click **Base Station** in the upper left corner of the configuration window.
- **Step 2** In area 1 shown in **Figure 9-14**, select the eNodeB to which the MOs belong.

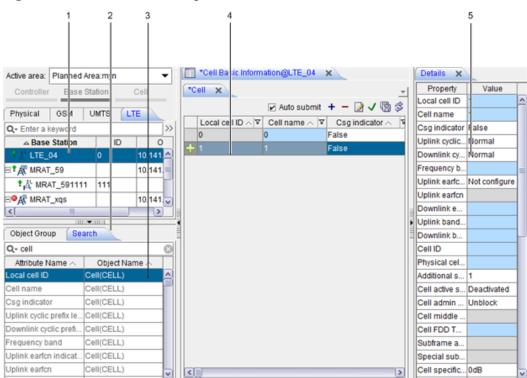


Figure 9-14 MO search and configuration window

#### MOTE

- To view descriptions of the parameters in the MO, click in area 4 and press F1.
- Area 5 displays the details of a selected area-4 entry in vertical format. Click the "Details" button to show or hide this area.
- Step 3 On the Search tab page in area 2, enter an MO name, for example, CELL.
- **Step 4** In area 3, double-click the MO in the **Object Name** column. All parameters in this MO are displayed in area 4.
- **Step 5** Set the parameters in area 4 or 5.

Step 6 Choose CME > Planned Area > Export Incremental Scripts (M2000 client mode), or choose Area Management > Planned Area > Export Incremental Scripts (CME client mode), to export and activate the incremental scripts.

----End

#### **Using MML Commands**

- Service-based inter-RAT handover to UTRAN
- **Step 1** Run the **MOD ENODEBALGOSWITCH** command to configure service-based inter-RAT handover to UTRAN.
- **Step 2** Run the **ADD SERVICEIRHOCFGGROUP** command to configure a service-based inter-RAT handover policy group.
- **Step 3** Run the following commands to add neighbor relationships with UTRAN cells:
  - 1. **ADD UTRANNFREQ**
  - 2. ADD UTRANEXTERNALCELL
  - 3. (Optional) ADD UTRANEXTERNALCELLPLMN
  - 4. ADD UTRANNCELL
  - ----End
  - Service-based inter-RAT handover to GERAN
- **Step 1** Run the **MOD ENODEBALGOSWITCH** command to configure service-based inter-RAT handover between E-UTRAN and GERAN.
- **Step 2** Run the **ADD SERVICEIRHOCFGGROUP** command to configure a service-based inter-RAT handover policy group.
- **Step 3** Run the following commands to add neighbor relationships with GERAN cells:
  - 1. ADD GERANNFREQGROUP
  - 2. ADD GERANNFREQGROUPARFCN
  - 3. ADD GERANEXTERNALCELL
  - 4. (Optional) ADD GERANEXTERNALCELLPLMN
  - 5. ADD GERANNCELL

----End

### 9.10.6 Activation Observation

- **Step 1** Trace messages over the Uu interface for UEs running only voice services with QCI 1. Check for B1 measurement information in the RRC\_CONN\_RECFG message.
- **Step 2** Trace messages over the Uu interface while the UE is moving towards an inter-frequency neighboring cell.

Service-based inter-RAT handover is activated if the eNodeB sends an RRC\_MOBIL\_FROM\_EUTRA\_CMD message after receiving a B1-related measurement report from the UE.

----End

# 9.10.7 Reconfiguration

The reconfiguration of parameters that are not involved in this section is the same as the reconfiguration of parameters for coverage-based inter-RAT handovers. For details, see **9.7.7 Reconfiguration**.

### Parameter Groups Related to Inter-RAT Handovers to UTRAN

Parameter groups related to inter-RAT handovers to UTRAN are contained in the **InterRatHoUtranGroup** MO. The following table provides suggestions on how to reconfigure these parameters.

Paramet er Name	Paramete r ID	Data Source	Setting Notes
Load Service Based UTRAN B1 ECN0 threshold	InterRat HoUtran Group. LdSvBase dHoUtran B1ThdEc n0	Network plan (negotiation not required)	This parameter specifies the Ec/No threshold for event B1 in a load- or service-based inter-RAT handover to UTRAN. A larger value results in a lower probability of handovers to UTRAN, whereas a smaller value results in a higher probability.  It is recommended that the default value be used.
Load Service Based UTRAN EventB1 RSCP trigger threshold	InterRat HoUtran Group. LdSvBase dHoUtran B1ThdRsc p	Network plan (negotiation not required)	This parameter specifies the RSCP threshold for event B1 in a load- or service-based inter-RAT handover to UTRAN. A larger value results in a lower probability of handovers to UTRAN, whereas a smaller value results in a higher probability.  It is recommended that the default value be used.
UTRAN time to trigger	InterRat HoUtran Group. InterRatH oUtranB1 TimeToTr ig	Network plan (negotiation not required)	This parameter specifies the time-to-trigger for event B1 in an inter-RAT handover to UTRAN. When detecting that the signal quality in at least one neighboring cell meets the entering condition, the UE does not send a measurement report to the eNodeB immediately. Instead, the UE sends a report only when the signal quality continuously meets the entering condition during the time-to-trigger period.  If both UTRAN and GERAN neighboring cells are measured, you are advised to set the time-to-trigger for UTRAN neighboring cells to be smaller than that for GERAN neighboring cells, increasing the possibility of handovers to UTRAN neighboring cells.

### Parameter Groups Related to Inter-RAT Handovers to GERAN

Parameter groups related to inter-RAT handovers to GERAN are contained in the **InterRatHoGeranGroup** MO. The following table provides suggestions on how to reconfigure these parameters.

Paramet er Name	Parameter ID	Data Source	Setting Notes
Load Service Based Geran EventB1 trigger threshold	InterRatHo GeranGrou p. LdSvBased HoGeranB1 Thd	Network plan (negotiation not required)	This parameter specifies the RSSI threshold for event B1 in a load- or service-based inter-RAT handover to GERAN. A larger value results in a lower probability of handovers to GERAN, whereas a smaller value results in a higher probability.  It is recommended that the default value be used.
GERAN time to trigger	InterRatHo GeranGrou p. InterRatHo GeranB1Ti meToTrig	Network plan (negotiation not required)	This parameter specifies the time-to-trigger for event B1 in an inter-RAT handover to GERAN. When detecting that the signal quality in at least one neighboring cell meets the entering condition, the UE does not send a measurement report to the eNodeB immediately. Instead, the UE sends a report only when the signal quality continuously meets the entering condition during the time-to-trigger period.  If both UTRAN and GERAN neighboring cells are measured, you are advised to set the time-to-trigger for GERAN neighboring cells to be greater than that for UTRAN neighboring cells, increasing the possibility of handovers to UTRAN neighboring cells.

#### 9.10.8 Deactivation

#### Using the CME to Perform Batch Configuration

Batch reconfiguration using the CME is the recommended method to deactivate a feature on eNodeBs. This method reconfigures all data, except neighbor relationships, for multiple eNodeBs in a single procedure. The procedure for feature deactivation is similar to that for feature activation described in **Using the CME to Perform Batch Configuration for Existing eNodeBs**. In the procedure, modify related parameters described below.

Table (	1 26	Doromotoro	related to	garviaa bagad	lintor DA	T handovers
- i anie s	9-ZN	Parameters	refaled to	Service-Dased	i imier <b>-</b> K <i>e</i>	i nandovers

МО	Sheet in the Summary Data File	Parameter Group	Setting Notes
ENodeBAlgoSwitch	User-defined sheet	HoAlgoSwitch	Clear the following check boxes: UtranServiceHoS-witch, GeranServiceHoS-witch, Cdma1xRttService-HoSwitch, and CdmaHrpdService-HoSwitch

## Using the CME to Perform Single Configuration

On the CME, set the parameters listed in each scenario for a single eNodeB. For detailed instructions, see **Using the CME to Perform Single Configuration** for feature activation.

#### **Using MML Commands**

To deactivate service-based inter-RAT handover, disable the algorithms for service-based UTRAN handovers and service-based GERAN handovers by running the **MOD ENODEBALGOSWITCH** command.

# 9.10.9 Performance Monitoring

For details about how to monitor, see 9.7.9 Performance Monitoring.

# 9.10.10 Parameter Optimization

For details about parameter optimization, see 9.7.10 Parameter Optimization.

# 9.10.11 Troubleshooting

For details about troubleshooting, see 9.7.11 Troubleshooting.

# 9.11 E-URTAN to UTRAN CS/PS Steering

# 9.11.1 When to Use E-URTAN to UTRAN CS/PS Steering

You are advised to enable E-UTRAN to UTRAN CS/PS steering on the eNodeB if the following conditions are met:

- Inter-RAT interoperability between E-UTRAN and UTRAN is enabled.
- The operator has multiple UTRAN frequencies and these frequencies are planned for CS/ PS steering.

# 9.11.2 Required Information

Before deploying E-UTRAN to UTRAN CS/PS steering, collect information about frequencies used to carry CS and PS services in UTRAN.

# 9.11.3 Data Preparation

This section describes the data that you need to collect for setting parameters. Required data is data that you must collect for all scenarios. Collect scenario-specific data when necessary for a specific feature deployment scenario.

There are three types of data sources:

- Network plan (negotiation required): parameter values planned by the operator and negotiated with the EPC or peer transmission equipment
- Network plan (negotiation not required): parameter values planned and set by the operator
- User-defined: parameter values set by users.

### Required Data

For details about required data for coverage-based inter-RAT handover to UTRAN, see 9.7.3 **Data Preparation**.

For details about required data for CSFB to UTRAN, see CS Fallback Feature Parameter Description.

## Scenario-specific Data

E-URTAN to UTRAN CS/PS steering can be enabled only after coverage-based inter-RAT handover is enabled. This section describes the required parameters except those for coverage-based inter-RAT handover. For details on the required parameters for coverage-based inter-RAT handover, see the "Scenario-specific Data" part in 9.7.3 Data Preparation.

For details about scenario-specific data for CSFB to UTRAN, see *CS Fallback Feature Parameter Description*.

The following table describes the parameter that must be set in the **ENodeBAlgoSwitch** MO to configure E-UTRAN to UTRAN CS/PS steering.

Paramet er Name	Paramet er ID	Data Source	Setting Notes
Frequenc y Layer Switch	ENodeB AlgoSwi tch. FreqLay erSwtich	Network plan (negotiation not required)	Select one or both of the following options based on the actual network deployment:  • UtranFreqLayerMeasSwitch (UtranFreqLayerMeasSwitch)  • UtranFreqLayerBlindSwitch (UtranFreqLayerBlindSwitch)

The following table describes the parameters that must be set in a **UtranNFreq** MO to set CS and PS service priorities of a UTRAN frequency.

Parameter Name	Paramete r ID	Data Source	Setting Notes
PS service priority	UtranNFr eq. PsPriority	Network plan (negotiation not required)	Set this parameter based on the network plan about CS and PS service priorities.  Do not set this parameter to <b>Priority_0</b> for UTRAN frequencies that carry PS services. The priorities must be consistent with those in the live network. If the UTRAN frequencies that carry PS services have the same priority in the live network, set this parameter to <b>Priority_16</b> for all UTRAN frequencies that carry PS services.  Set this parameter to <b>Priority_0</b> for all UTRAN frequencies that carry CS services.
CS service priority	UtranNFr eq. CsPriority	Network plan (negotiation not required)	Set this parameter based on the network plan about CS and PS service priorities.  Do not set this parameter to <b>Priority_0</b> for UTRAN frequencies for CS services. The priority must be consistent with that in the live network. If the UTRAN frequencies that carry CS services have the same priority in the live network, set this parameter to <b>Priority_16</b> for all UTRAN frequencies that carry CS services. Set this parameter to <b>Priority_0</b> for all UTRAN frequencies that carry PS services.

# 9.11.4 Deployment Requirements

# **Operating Environment**

Both coverage-based inter-RAT handover to UTRAN and CSFB to UTRAN are enabled. For details, see **Operating Environment** part in **9.7.4 Deployment Requirements** and *CS Fallback Feature Parameter Description*.

## **Transmission Networking**

None.

#### License

The operator has purchased and activated the license for the feature listed in the following table.

Feature ID	Feature Name	License Control Item	NE	Sales Unit
LOFD-00107 8	E-UTRAN to UTRAN CS/PS Steering	E-UTRAN to UTRAN CS/PS Steering	eNodeB	per RRC Connected User

This feature requires LOFD-001019 PS Inter-RAT Mobility between E-UTRAN and UTRAN and LOFD-001033 CS Fallback to UTRAN. For the corresponding license requirement, see **License** part in **9.7.4 Deployment Requirements** and *CS Fallback Feature Parameter Description*.

#### 9.11.5 Activation

#### Using the CME to Perform Batch Configuration for Newly Deployed eNodeBs

Enter the values of related parameters in a summary data file, which also contains other data for the new eNodeBs to be deployed. Then, import the summary data file into the Configuration Management Express (CME) for batch configuration. For detailed instructions, see section "Creating eNodeBs in Batches" in the initial configuration guide for the eNodeB.

The summary data file may be a scenario-specific file provided by the CME or a customized file, depending on the following conditions:

- Related managed objects (MOs) are contained in a scenario-specific summary data file. In this situation, set the parameters in the MOs, and then verify and save the file.
- Some related MOs are not contained in a scenario-specific summary data file. In this situation, customize a summary data file to include the MOs before you can set the parameters.

Related MOs and parameters in each scenario are listed as follows:

Table 9-27 Parameters related to E-UTRAN to UTRAN CS/PS steering

МО	Sheet in the Summary Data File	Parameter Group	Remarks
ENodeBAlgoSwitch	User-defined sheet ENodeBAlgoSwitch is recommended.	Frequency Layer Switch	A list-type sheet is recommended.
UtranNFreq	User-defined sheet UtranNFreq is recommended.	PS service priority/ CS service priority	A list-type sheet is recommended.

To use E-UTRAN to UTRAN CS/PS steering, coverage-based inter-RAT handover to UTRAN and CSFB to UTRAN must have been configured. For details about configurations for coverage-based inter-RAT handover to UTRAN, see **Using the CME to Perform Batch Configuration** 

Description

**for Newly Deployed eNodeBs** part in **9.7.5 Activation**. For details about configurations for CSFB to UTRAN, see *CS Fallback Feature Parameter Description*.

### Using the CME to Perform Batch Configuration for Existing eNodeBs

Batch reconfiguration using the CME is the recommended method to activate a feature on existing eNodeBs. This method reconfigures all data, except neighbor relationships, for multiple eNodeBs in a single procedure. The procedure is as follows:

- **Step 1** Choose CME > Advanced > Customize Summary Data File (M2000 client mode), or choose Advanced > Customize Summary Data File (CME client mode), to customize a summary data file for batch reconfiguration.
  - **□** NOTE

For context-sensitive help on a current task in the client, press F1.

- **Step 2** Choose CME > LTE Application > Export Data > Export Base Station Bulk Configuration Data (M2000 client mode), or choose Advanced > Base Station Bulk Configuration > Export Data (CME client mode), to export the eNodeB data stored on the CME into the customized summary data file.
- **Step 3** In the summary data file, set the parameters in the MOs listed in **Table 9-27** and close the file.
- **Step 4** Choose CME > LTE Application > Import Data > Import Base Station Bulk Configuration Data (M2000 client mode), or choose LTE Application > Import Data > Import Base Station Bulk Configuration Data (CME client mode), to import the summary data file into the CME.
- **Step 5** Choose CME > Planned Area > Export Incremental Scripts (M2000 client mode), or choose Area Management > Planned Area > Export Incremental Scripts (CME client mode), to export and activate the incremental scripts.

----End

## Using the CME to Perform Single Configuration

On the CME, set the parameters listed in the "Data Preparation" section for a single eNodeB. The procedure is as follows:

- **Step 1** In the planned data area, click **Base Station** in the upper left corner of the configuration window.
- **Step 2** In area 1 shown in Figure 9-15, select the eNodeB to which the MOs belong.

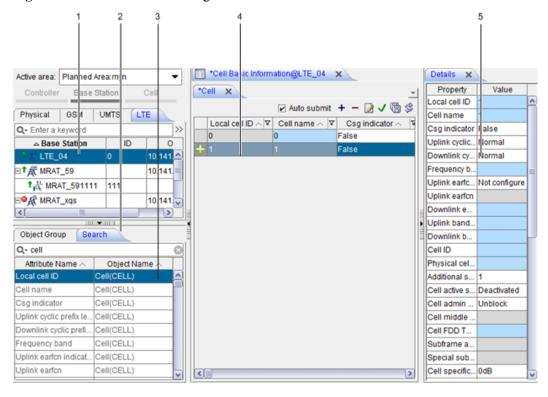


Figure 9-15 MO search and configuration window

#### NOTE

- To view descriptions of the parameters in the MO, click in area 4 and press F1.
- Area 5 displays the details of a selected area-4 entry in vertical format. Click the "Details" button to show or hide this area.
- Step 3 On the Search tab page in area 2, enter an MO name, for example, CELL.
- **Step 4** In area 3, double-click the MO in the **Object Name** column. All parameters in this MO are displayed in area 4.
- **Step 5** Set the parameters in area 4 or 5.
- Step 6 Choose CME > Planned Area > Export Incremental Scripts (M2000 client mode), or choose Area Management > Planned Area > Export Incremental Scripts (CME client mode), to export and activate the incremental scripts.

----End

#### **Using MML Commands**

For details about how to enable coverage-based inter-RAT handover to UTRAN and CSFB to UTRAN by using MML commands, see **Using MML Commands** part in **9.7.5 Activation** and *CS Fallback Feature Parameter Description*.

**Step 1** Run the **MOD ENODEBALGOSWITCH** command to enable E-UTRAN to UTRAN CS/PS steering.

**Step 2** Run the **MOD UTRANNFREQ** command to set CS and PS service priorities for UTRAN frequencies.

----End

#### 9.11.6 Activation Observation

The observation procedure is as follows:

- **Step 1** Trace messages over the Uu interface on the M2000 client after UEs access the network.
- **Step 2** Trace messages over the Uu interface while the UE is moving towards the cell edge. After the eNodeB receives an A2-related measurement report from the UE, check the RRC\_CONN\_RECFG message that contains the UTRAN frequency with the highest PS service priority.
- Step 3 Trace messages over the Uu interface after the UE moves to the cell edge. After the eNodeB receives an B1- or B2-related measurement report from the UE, check RRC\_MOBIL\_FROM\_EUTRA\_CMD that contains the cell under the UTRAN frequency with the highest PS service priority or the RRC\_CONN\_REL message that contains the UTRAN frequency with the highest PS service priority.

■ NOTE

For details about activation observations for CS service priority configuration, see *CS Fallback Feature Parameter Description*.

----End

# 9.11.7 Reconfiguration

None.

### 9.11.8 Deactivation

### Using the CME to Perform Batch Configuration

Batch reconfiguration using the CME is the recommended method to deactivate a feature on eNodeBs. This method reconfigures all data, except neighbor relationships, for multiple eNodeBs in a single procedure. The procedure for feature deactivation is similar to that for feature activation described in **Using the CME to Perform Batch Configuration for Existing eNodeBs**. In the procedure, modify related parameters described below.

Table 9-28 Parameters related to service-based inter-RAT handovers

МО	Sheet in the Summary Data File	Paramete r Group	Setting Notes
ENodeBAl	User-defined sheet	FreqLayer	Clear the following check boxes:
goSwitch	Swtich	Swtich	UtranFreqLayerMeasSwitch
			UtranFreqLayerBlindSwitch

#### Using the CME to Perform Single Configuration

On the CME, set the parameters listed in each scenario for a single eNodeB. For detailed instructions, see **Using the CME to Perform Single Configuration** for feature activation.

#### **Using MML Commands**

Run the MOD ENODEBALGOSWITCH command and clear the check boxes UtranFreqLayerMeasSwitch(UtranFreqLayerMeasSwitch) and UtranFreqLayerBlindSwitch(UtranFreqLayerBlindSwitch) under Frequency Layer Switch.

### 9.11.9 Performance Monitoring

For details about how to monitor, see 9.7.9 Performance Monitoring.

## 9.11.10 Parameter Optimization

For details about parameter optimization, see 9.7.10 Parameter Optimization.

## 9.11.11 Troubleshooting

For details about troubleshooting, see 9.7.11 Troubleshooting.

# $10_{\text{Parameters}}$

Table 10-1 Parameter description

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
CnOperatorHoC	FirstRatPri	MOD CNOPERATO RHOCFG LST CNOPERATO RHOCFG	LBFD-0020180 2 / TDLBFD-0020 1802	Coverage Based Inter-frequency	Meaning:Indicates the priorities of E-UTRAN TDD and E-UTRAN FDD. To prioritize E-UTRAN FDD, set this parameter to EUTRAN_TDD or EUTRAN_TDD or EUTRAN_TDD and E-UTRAN FDD equally, set this parameter to EUTRAN. GUI Value Range:EUTRAN_TDD, EUTRAN_FDD, EUTRAN_TDD, EUTRAN_TDD, EUTRAN_Unit:None Actual Value Range:EUTRAN_Unit:None Actual Value Range:EUTRAN_TDD, EUTRAN_EUTRAN_Unit:None Actual Value Range:EUTRAN_TDD, EUTRAN_FDD, EUTRAN_FDD

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					Default Value:EUTRA N
CnOperatorHoC fg	SecondRatPri	MOD CNOPERATO RHOCFG LST CNOPERATO RHOCFG	LBFD-0020180 2 / TDLBFD-0020 1802	Coverage Based Inter-frequency	Meaning:Indicates the priorities of E-UTRAN TDD and E-UTRAN FDD. To prioritize E-UTRAN TDD and E-UTRAN FDD, set this parameter to EUTRAN_TDD or EUTRAN_TDD or EUTRAN_FDD . If FirstRatPri is set to EUTRAN, set SecondRatPri to NULL, indicating that E-UTRAN TDD and E-UTRAN FDD are not prioritized. GUI Value Range:EUTRAN N_TDD, EUTRAN_FDD , EUTRAN, NULL Unit:None Actual Value Range:EUTRAN_TDD, EUTRAN_FDD , EUTRAN_TDD, EUTRAN_FDD , EUTRAN_NULL Unit:None Actual Value Range:EUTRAN, NULL Unit:None Actual Value Range:EUTRAN, NULL Default Value:NULL Default Value:NULL
					value.INULL

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranInterNFre q	ConnFreqPriorit	ADD EUTRANINTE RNFREQ MOD EUTRANINTE RNFREQ LST EUTRANINTE RNFREQ	LBFD-0020180 2 / TDLBFD-0020 1802 LBFD-0020180 4 / TDLBFD-0020 1804	Coverage Based Inter-frequency Handover Distance Based Inter-frequency Handover	Meaning:Indicates the frequency priority based on which the eNodeB selects a target frequency for blind redirection or contains a frequency in a measurement configuration. If a blind redirection is triggered and the target neighboring cell is not specified, the eNodeB selects a target frequency based on this priority. If a measurement configuration is to be delivered, the eNodeB preferentially delivers a frequency with the highest priority. If this priority is set to 0 for a frequency, this frequency is not selected as the target frequency for a blind redirection. A larger value indicates a higher priority. GUI Value Range:0~8 Unit:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					Actual Value Range:0~8 Default Value:0

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
UtranNFreq	ConnFreqPriorit	ADD UTRANNFRE Q MOD UTRANNFRE Q LST UTRANNFRE Q	LOFD-001019 / TDLOFD-0010 19  TDLBFD-0020 1803  TDLOFD-0010 22  TDLOFD-0010 52  TDLOFD-0010 43  TDLOFD-0010 72  TDLOFD-0010 78	PS Inter-RAT Mobility between E- UTRAN and UTRAN Cell Selection and Re-selection SRVCC to UTRAN CS Fallback to UTRAN Flash CS Fallback to UTRAN Service based Inter-RAT handover to UTRAN Distance based Inter-RAT handover to UTRAN E-UTRAN to UTRAN to UTRAN CS/PS steering	Meaning:Indicates the frequency priority based on which the eNodeB selects a target frequency for blind redirection or contains a frequency in a measurement configuration. If a blind redirection is triggered and the target neighboring cell is not specified, the eNodeB selects a target frequency based on this priority. If a measurement configuration is to be delivered, the eNodeB preferentially delivers a frequency with the highest priority. If this priority is set to 0 for a frequency, this frequency is not selected as the target frequency for a blind redirection. A larger value indicates a higher priority. GUI Value Range:0~8 Unit:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					Actual Value Range:0~8 Default Value:0

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
GeranNfreqGroup	ConnFreqPriority	ADD GERANNFRE QGROUP MOD GERANNFRE QGROUP LST GERANNFRE QGROUP	LOFD-001020 / TDLOFD-0010 20 TDLOFD-0010 34 TDLOFD-0010 53	PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN CS Fallback to GERAN Flash CS Fallback to GERAN	Meaning:Indicates the frequency group priority based on which the eNodeB selects a target frequency group for blind redirection or delivers a frequency group in measurement configuration messages. If a blind redirection is triggered and the target neighboring cell is not specified, the eNodeB selects a target frequency group based on the setting of this parameter. If a measurement configuration is to be delivered, the eNodeB preferentially delivers the frequency group with the highest priority. If this parameter is set to 0 for a frequency group is not selected as the target frequency group for a blind redirection. A larger value indicates a higher priority.

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					GUI Value Range:0~8 Unit:None Actual Value Range:0~8 Default Value:0
CellHoParaCfg	BlindHoA1A2T hdRsrp	MOD CELLHOPARA CFG LST CELLHOPARA CFG	LBFD-0020180 2 / TDLBFD-0020 1802 LOFD-001019 / TDLOFD-0010 19 LOFD-001020 / TDLOFD-0010 20 LOFD-001021 / TDLOFD-0010 21	Coverage Based Inter-frequency Handover PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and CERAN OB Inter-RAT Mobility Detween E- UTRAN and CDMA2000	Meaning:Indicates the RSRP threshold for events A1 and A2 that are used for interfrequency and inter-RAT blind handovers based on coverage. If the RSRP measurement result of the serving cell is higher than the threshold, an event A1 is reported. If the RSRP measurement result of the serving cell is higher than the threshold, an event A1 is reported. If the RSRP measurement result of the serving cell is lower than the threshold, an event A2 is reported.  GUI Value Range:-140~-43  Unit:dBm  Actual Value Range:-140~-43  Default  Value:-121

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
CellHoParaCfg	BlindHoA1A2T hdRsrq	MOD CELLHOPARA CFG LST CELLHOPARA CFG	LBFD-0020180 2 / TDLBFD-0020 1802 LOFD-001019 / TDLOFD-0010 19 LOFD-001020 / TDLOFD-0010 20 LOFD-001021 / TDLOFD-0010 21	Coverage Based Inter-frequency Handover PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and CDMA2000	Meaning:Indicates the RSRQ threshold for events A1 and A2 that are used for interfrequency and inter-RAT blind handovers based on coverage. If the RSRQ measurement result of the serving cell is higher than the threshold, an event A1 is reported. If the RSRQ measurement result of the serving cell is higher than the threshold, an event A1 is reported. If the RSRQ measurement result of the serving cell is lower than the threshold, an event A2 is reported.  GUI Value Range:-40~-6 Unit:0.5dB Actual Value Range:-20~-3, step:0.5 Default Value:-28

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
CnOperatorHoC fg	FddIfHoA2Thd RsrpOffset	MOD CNOPERATO RHOCFG LST CNOPERATO RHOCFG	LBFD-0020180 2 / TDLBFD-0020 1802	Coverage Based Inter-frequency Handover	Meaning:Indicates the offset of the RSRP threshold for LTE FDD interfrequency measurement event A2 relative to the RSRP threshold for interfrequency measurement event A2 (which is specified by InterFreqHoA2 ThdRsrp). If TddIfHoA2Thd RsrpOffset and FddIfHoA2Thd RsrpOffset are set to the same value (excluding the value -100), LTE TDD measurement and LTE FDD measurement are not prioritized, and the RSRP threshold delivered by the eNodeB is the sum of the value of TddIfHoA2Thd RsrpOffset or FddIfHoA2Thd RsrpOffset or FddIfHoA2Thd RsrpOffset or FddIfHoA2Thd RsrpOffset and the RSRP threshold for inter-frequency measurement event A2. If both TddIfHoA2Thd RsrpOffset and FddIfHoA2Thd RsrpOffset are

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
		Command			set to -100, LTE TDD measurement and LTE FDD measurement are not prioritized, and the RSRP threshold delivered by the eNodeB is the RSRP threshold for inter- frequency measurement event A2. If only FddIfHoA2Thd RsrpOffset is set to -100, LTE FDD measurement is not performed and the RSRP threshold delivered by the eNodeB is the sum of the value of TddIfHoA2Thd RsrpOffset and the RSRP threshold delivered by the eNodeB is the sum of the value of TddIfHoA2Thd RsrpOffset and the RSRP threshold for inter-frequency measurement event A2. GUI Value
					Range:-100,-20 ~20 Unit:dBm
					Actual Value Range:-100,-20 ~20
					Default Value:0

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
CnOperatorHoC	TddIfHoA2Thd RsrpOffset	MOD CNOPERATO RHOCFG LST CNOPERATO RHOCFG	LBFD-0020180 2 / TDLBFD-0020 1802	Coverage Based Inter-frequency	Meaning:Indicates the offset of the RSRP threshold for LTE TDD interfrequency measurement event A2 relative to the RSRP threshold for interfrequency measurement event A2 (which is specified by InterFreqHoA2 ThdRsrp). If TddIfHoA2Thd RsrpOffset and FddIfHoA2Thd RsrpOffset are set to the same value (excluding the value -100), LTE TDD measurement and LTE FDD measurement are not prioritized, and the RSRP threshold delivered by the eNodeB is the sum of the value of TddIfHoA2Thd RsrpOffset or FddIfHoA2Thd RsrpOffset or FddIfHoA2Thd RsrpOffset and the RSRP threshold for inter-frequency measurement event A2. If both TddIfHoA2Thd RsrpOffset and fddIfHoA2Thd RsrpOffset are

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
		Command			set to -100, LTE TDD measurement and LTE FDD measurement are not prioritized, and the RSRP threshold delivered by the eNodeB is the RSRP threshold for inter- frequency measurement event A2. If only TddIfHoA2Thd RsrpOffset is set to -100, LTE TDD measurement is not performed and the RSRP threshold delivered by the eNodeB is the sum of the value of FddIfHoA2Thd RsrpOffset and the RSRP threshold delivered by the eNodeB is the sum of the value of FddIfHoA2Thd RsrpOffset and the RSRP threshold for inter-frequency measurement event A2. GUI Value
					Range:-100,-20 ~20 Unit:dBm
					Actual Value Range:-100,-20 ~20
					Default Value:0

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
CnOperatorHoC	UtranA2ThdRsr pOffset	MOD CNOPERATO RHOCFG LST CNOPERATO RHOCFG	LOFD-001019 / TDLOFD-0010 19	PS Inter-RAT Mobility between E-UTRAN and UTRAN	Meaning:Indicates the offset of the RSRP threshold for UTRAN inter-RAT handover event A2 relative to the RSRP threshold for inter-RAT handover event A2 (which is specified by InterRatHoA2T hdRsrp). If the value of UtranA2ThdRsr pOffset and that of GeranA2ThdRs rpOffset are identical (excluding the value -100), UTRAN measurement and GERAN measurement are not prioritized, and the RSRP threshold delivered by the eNodeB is the sum of the value of this parameter and the RSRP threshold for inter-RAT measurement event A2. If both UtranA2ThdRsr pOffset and GeranA2ThdRsr pOffset are set to -100, UTRAN measurement and GERAN measurement event A2. If both UtranA2ThdRsr pOffset and GeranA2ThdRsr pOffset are set to -100, UTRAN measurement and GERAN measurement and GERAN measurement and GERAN measurement

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					are not prioritized, and the RSRP threshold delivered by the eNodeB is the RSRP threshold for inter-RAT measurement event A2. If only UtranA2ThdRsr pOffset is set to -100, UTRAN measurement is not performed and the RSRP threshold delivered by the eNodeB is the sum of the value of GeranA2ThdRs rpOffset and the RSRP threshold for inter-RAT measurement event A2. GUI Value Range:-100,-20 ~20
					Unit:dBm Actual Value Range:-100,-20 ~20
					Default Value:0

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
CnOperatorHoC	GeranA2ThdRs rpOffset	MOD CNOPERATO RHOCFG LST CNOPERATO RHOCFG	LOFD-001020 / TDLOFD-0010 20	PS Inter-RAT Mobility between E- UTRAN and GERAN	Meaning:Indicates the offset of the RSRP threshold for GERAN inter-RAT handover event A2 relative to the RSRP threshold for inter-RAT handover event A2 (which is specified by InterRatHoA2T hdRsrp). If the value of UtranA2ThdRsr pOffset and that of GeranA2ThdRs rpOffset are identical (excluding the value -100), UTRAN measurement and GERAN measurement are not prioritized, and the RSRP threshold delivered by the eNodeB is the sum of the value of this parameter and the RSRP threshold for inter-RAT measurement event A2. If both UtranA2ThdRsr pOffset and GeranA2ThdRsr pOffset are set to -100, UTRAN measurement and GERAN measurement event A2. If both UtranA2ThdRsr pOffset and GeranA2ThdRsr pOffset are set to -100, UTRAN measurement and GERAN measurement and GERAN measurement and GERAN measurement and GERAN measurement

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					are not prioritized, and the RSRP threshold delivered by the eNodeB is the RSRP threshold for inter-RAT measurement event A2. If only GeranA2ThdRs rpOffset is set to -100, GERAN measurement is not performed and the RSRP threshold delivered by the eNodeB is the sum of the value of UtranA2ThdRsr pOffset and the RSRP threshold for inter-RAT measurement event A2. GUI Value Range:-100,-20 ~20
					Unit:dBm Actual Value
					Range:-100,-20 ~20
					Default Value:0

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
CellResel	MeasBandWidt hCfgInd	MOD CELLRESEL LST CELLRESEL	LBFD-0020180 3 / TDLBFD-0020 1803 LBFD-002009 / TDLBFD-0020 09	Cell Selection and Re-selection Broadcast of system information	Meaning:Indicates whether to set the measurement bandwidth.  GUI Value Range:NOT_CF G(Not configure), CFG (Configure)  Unit:None  Actual Value Range:NOT_CF G, CFG  Default Value:NOT_CF G(Not configure)

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					5, CELL_BW_N5 0, CELL_BW_N7 5, CELL_BW_N1 00 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
HoMeasComm	EutranFilter-CoeffRsrp	MOD HOMEASCOM M LST HOMEASCOM M	LBFD-0020180 1 / TDLBFD-0020 1801 LBFD-0020180 2 / TDLBFD-0020 1802 LBFD-0020180 4 / TDLBFD-0020 1804 LBFD-0020180 5 / TDLBFD-0020 1805	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Distance Based Inter-frequency Handover Service Based Inter-frequency Handover	Meaning:Indicates the upper-layer filtering coefficient for RSRP measurements on E-UTRAN. A larger value of this parameter indicates a stronger smoothing effect and higher resistance to fast fading, but it may weaken the tracing capability towards varying signals. For details, see 3GPP TS 36.331.  GUI Value Range:FC0, FC1, FC2, FC3, FC4, FC5, FC6, FC7, FC8, FC9, FC11, FC13, FC15, FC17, FC19  Unit:None  Actual Value Range:FC0, FC1, FC2, FC3, FC4, FC5, FC6, FC7, FC8, FC9, FC11, FC13, FC15, FC17, FC19  Unit:None  Actual Value Range:FC0, FC1, FC2, FC3, FC4, FC5, FC6, FC7, FC8, FC9, FC11, FC13, FC15, FC17, FC19  Default Value:FC6

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
HoMeasComm	EutranFilter-CoeffRsrq	MOD HOMEASCOM M LST HOMEASCOM M	LBFD-0020180 1 / TDLBFD-0020 1801 LBFD-0020180 2 / TDLBFD-0020 1802 LBFD-0020180 4 / TDLBFD-0020 1804 LBFD-0020180 5 / TDLBFD-0020 1805	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Distance Based Inter-frequency Handover Service Based Inter-frequency	Meaning:Indicates the upper-layer filtering coefficient for RSRQ measurements on E-UTRAN. A larger value of this parameter indicates a stronger smoothing effect and higher resistance to fast fading, but it may weaken the tracing capability towards varying signals. For details, see 3GPP TS 36.331.  GUI Value Range:FC0, FC1, FC2, FC3, FC4, FC5, FC6, FC7, FC8, FC9, FC11, FC13, FC15, FC17, FC19  Unit:None  Actual Value Range:FC0, FC1, FC2, FC3, FC4, FC5, FC6, FC7, FC8, FC9, FC11, FC13, FC15, FC17, FC19  Unit:None  Actual Value Range:FC0, FC1, FC2, FC3, FC4, FC5, FC6, FC7, FC8, FC9, FC11, FC13, FC15, FC17, FC19  Default Value:FC6

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
HoMeasComm	UtranFilter-CoeffRscp	MOD HOMEASCOM M LST HOMEASCOM M	LOFD-001019 / TDLOFD-001019 TDLOFD-001022 TDLOFD-001033	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN	Meaning:Indicates the filtering coefficient for RSCP measurements on UTRAN. A larger value of this parameter indicates a stronger smoothing effect and higher resistance to fast fading, but it may weaken the tracing capability towards varying signals. For details, see 3GPP TS 36.331.  GUI Value Range:FC0, FC1, FC2, FC3, FC4, FC5, FC6, FC7, FC8, FC9, FC11, FC13, FC15, FC17, FC19  Unit:None  Actual Value Range:FC0, FC1, FC2, FC3, FC4, FC5, FC6, FC7, FC8, FC9, FC11, FC13, FC15, FC17, FC19  Unit:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
HoMeasComm	UtranFilterCoef fEcn0	MOD HOMEASCOM M LST HOMEASCOM M	LOFD-001019 / TDLOFD-0010 19 TDLOFD-0010 22 TDLOFD-0010 33	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN	Meaning:Indicates the upper-layer filtering coefficient for Ec/No measurements on UTRAN. A larger value of this parameter indicates a stronger smoothing effect and higher resistance to fast fading, but it may weaken the tracing capability towards varying signals. For details, see 3GPP TS 36.331.  GUI Value Range:FC0, FC1, FC2, FC3, FC4, FC5, FC6, FC7, FC8, FC9, FC11, FC13, FC15, FC17, FC19  Unit:None  Actual Value Range:FC0, FC1, FC2, FC3, FC4, FC5, FC6, FC7, FC8, FC9, FC11, FC13, FC15, FC17, FC19  Unit:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
HoMeasComm	GeranFilterCoef	MOD HOMEASCOM M LST HOMEASCOM M	LOFD-001020 / TDLOFD-0010 20 TDLOFD-0010 23 TDLOFD-0010 34 TDLOFD-0010 53	PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN CS Fallback to GERAN Flash CS Fallback to GERAN	Meaning:Indicates the L3 filtering coefficient used for the measurement quantity in inter- RAT measurements of GERAN. A great value of this parameter indicates a strong smoothing effect and a high anti-fast-fading capability, but a low signal change tracing capability. For details, see 3GPP TS 36.331. GUI Value Range:FC0, FC1, FC2, FC3, FC4, FC5, FC6, FC7, FC8, FC9, FC11, FC13, FC15, FC17, FC19 Unit:None Actual Value Range:FC0, FC1, FC2, FC3, FC4, FC5, FC6, FC7, FC8, FC9, FC11, FC13, FC15, FC17, FC19 Unit:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
ENodeBAlgoS witch	HoModeSwitch	MOD ENODEBALG OSWITCH LST ENODEBALG OSWITCH	LOFD-001022 / TDLOFD-0010 22   LOFD-001023 / TDLOFD-0010 23   LOFD-001033 / TDLOFD-0010 33   LOFD-001034 / TDLOFD-0010 34   LOFD-001019 / TDLOFD-0010 19   LOFD-001020 / TDLOFD-0010 20   LOFD-001021 / TDLOFD-0010 21   TDLOFD-0010 52   TDLOFD-0010 88   TDLOFD-0010 43   TDLOFD-0010 72   TDLOFD-0010 73	SRVCC to UTRAN  SRVCC to GERAN  CS Fallback to UTRAN  CS Fallback to GERAN  PS Inter-RAT Mobility between E- UTRAN and UTRAN  PS Inter-RAT Mobility between E- UTRAN and GERAN  PS Inter-RAT Mobility between E- UTRAN and GERAN  PS Inter-RAT Mobility between E- UTRAN and CDMA2000  Flash CS Fallback to UTRAN  CS Fallback Steering to UTRAN  Service based Inter-RAT handover to UTRAN  Distance based Inter-RAT handover to UTRAN  Service based Inter-RAT handover to UTRAN  Distance based Inter-RAT handover to GERAN  Distance based Inter-RAT handover to GERAN  Distance based	Meaning:Indicates the switches corresponding to the inputs based on which the eNodeB determines handover policies. EutranVoipCap Switch: This switch will be removed in later versions. In this version, the setting of this switch is still synchronized between the M2000 and the eNodeB, but it is no longer used internally. Therefore, avoid using this switch. UtranVoipCapS witch: If this switch is turned on, UTRAN supports VoIP. If this switch is turned off, UTRAN does not support VoIP. GeranVoipCapS witch: If this switch is turned on, GERAN supports VoIP. If this switch is turned off, GERAN does not support VoIP. If this switch is turned off, GERAN does not support VoIP. If this switch is turned off, GERAN does not support VoIP. Cdma1xRttVoip CapSwitch: If

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
MO	Parameter ID		Feature ID	Feature Name	this switch is turned on, CDMA2000 1xRTT supports VoIP. If this switch is turned off, CDMA2000 1xRTT does not support VoIP. UtranPsHoSwit ch: If this switch is turned on, UTRAN supports PS handovers. If this switch is turned off, UTRAN does not support PS handovers. GeranPsHoSwit ch: If this switch is turned on, GERAN supports PS handovers. If this switch is turned on, GERAN supports PS handovers. If this switch is turned off, GERAN does not support PS handovers. If this switch is turned off, GERAN does not support PS handovers. CdmaHrpdNon OtpimisedHoSwitch: If this switch is turned on, non-optimized
					handovers to CDMA2000 HRPD are enabled. If this switch is turned off, non- optimized handovers to CDMA2000 HRPD are disabled. CdmaHrpdOpti

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
	Tarameter ID		reature 11)	reature name	misedHoSwitch : If this switch is turned on, optimized handovers to CDMA2000 HRPD are enabled. If this switch is turned off, optimized handovers to CDMA2000 HRPD are disabled. GeranNaccSwit ch: This switch does not take effect if GeranCcoSwitc h is disabled. If this switch is turned on, GERAN supports network assisted cell change (NACC). If this switch is turned off, GERAN does not support NACC. GeranCcoSwitc h: If this switch is turned on, GERAN supports cell change order (CCO). If this switch is turned
					off, GERAN does not support CCO. UtranSrvccSwit ch: If this switch is turned on, UTRAN supports single radio voice call continuity

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
MO	Parameter ID		Feature ID	Feature Name	(SRVCC). If this switch is turned off, UTRAN does not support SRVCC. GeranSrvccSwit ch: If this switch is turned on, GERAN supports SRVCC. If this switch is turned off, GERAN does not support SRVCC. Cdma1xRttSrvc cSwitch: If this switch is turned on, CDMA2000 1xRTT supports SRVCC. If this switch is turned off, CDMA2000 1xRTT does not support SRVCC. UtranRedirectSwitch: If this switch is turned off, CDMA2000 1xRTT does not support SRVCC. UtranRedirectSwitch: If this switch is turned on, redirection to UTRAN is enabled. If this switch is turned off, redirection to UTRAN is disabled. GeranRedirectS witch: If this switch is turned off, redirection to UTRAN is disabled. GeranRedirectS witch: If this switch is turned
					on, redirection to GERAN is enabled. If this switch is turned off, redirection to GERAN is disabled. CdmaHrpdRedi rectSwitch: If this switch is

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
МО	Parameter ID		Feature ID	Feature Name	turned on, redirection to CDMA2000 HRPD is enabled. If this switch is turned off, redirection to CDMA2000 HRPD is disabled. Cdma1xRttRedi rectSwitch: If this switch is turned on, redirection to CDMA2000 1xRTT is enabled. If this switch is turned off, redirection to CDMA2000 1xRTT is enabled. If this switch is turned off, redirection to CDMA2000 1xRTT is disabled. BlindHoSwitch: If this switch is turned on, blind handovers for CSFB are enabled. If this switch is turned off, blind handovers for CSFB are disabled. LcsSrvccSwitch: If this switch is turned off, blind handovers for CSFB are disabled. LcsSrvccSwitch : If this switch is turned on, an SRVCC procedure is triggered when a UE receives a CSFB
					instruction during a VoIP service. If this switch is turned off, an SRVCC procedure is not triggered when a

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
		Command			UE receives a CSFB instruction during a VoIP service. AutoGapSwitch : If this switch is turned on and UEs support automatic measurement gap configurations on the target frequency, the eNodeB does not deliver gap configurations to UEs. If this switch is turned off, the eNodeB delivers gap configurations to UEs during all inter-frequency and inter-RAT measurements. GUI Value Range:Eutran- VoipCapSwitch (EutranVoipCap Switch), UtranVoipCap Switch), UtranVoipCap Switch), GeranVoipCapS
					witch (GeranVoipCap Switch), Cdma1xRttVoip CapSwitch (Cdma1xRttVoi pCapSwitch), UtranPsHoSwit ch (UtranPsHoSwit ch), GeranPsHoSwit

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					ch (GeranPsHoSwi tch), CdmaHrpdNon OtpimisedHoS- witch (CdmaHrpdNon OtpimisedHoS- witch), CdmaHrpdOpti misedHoSwitch
					(CdmaHrpdOpti misedHoSwitch ), GeranNaccSwit ch (GeranNaccSwi tch), GeranCcoSwitc
					(GeranCcoSwit ch), UtranSrvccSwit ch (UtranSrvccS-witch), GeranSrvccSwit ch
					(GeranSrvccS-witch), Cdma1xRttSrvc cSwitch (Cdma1xRttSrv ccSwitch), UtranRedirectS-witch (UtranRedirectS witch),
					GeranRedirectS witch (GeranRedirect Switch), CdmaHrpdRedi rectSwitch (CdmaHrpdRed irectSwitch), Cdma1xRttRedi rectSwitch (Cdma1xRttRed

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
	rarameter ID		reature ID	reature Name	irectSwitch), BlindHoSwitch (BlindHoSwitch), LcsSrvccSwitch (LcsSrvccSwitch (LcsSrvccSwitch), AutoGapSwitch (AutoGapSwitch (AutoGapSwitch ) Unit:None Actual Value Range:Eutran- VoipCapSwitch, UtranVoipCapS witch, GeranVoipCapS witch, Cdma1xRttVoip CapSwitch, UtranPsHoSwit ch, GeranPsHoSwit ch, CdmaHrpdNon OtpimisedHoS- witch, CdmaHrpdOpti misedHoSwitch , GeranNaccSwit ch, GeranCcoSwitc h, UtranSrvccSwit ch, GeranSrvccSwit ch, Cdma1xRttSrvc
					cSwitch, UtranRedirectS- witch, GeranRedirectS witch, CdmaHrpdRedi rectSwitch, Cdma1xRttRedi rectSwitch,

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					BlindHoSwitch, LcsSrvccSwitch
					LesSrvccSwitch , AutoGapSwitch Default Value:EutranVo ipCapSwitch:O n, UtranVoipCapS witch:Off, GeranVoipCapS witch:Off, Cdma1xRttVoip CapSwitch:Off, UtranPsHoSwit ch:Off, GeranPsHoSwit ch:Off, CdmaHrpdNon OtpimisedHoS witch:Off, CdmaHrpdOpti misedHoSwitch:Off, GeranNaccSwit ch:Off, GeranCcoSwitc h:Off, GeranSrvccSwit ch:Off, UtranSrvccSwit ch:Off, Cdma1xRttSrvc cSwitch:Off, UtranRedirectS witch:Off, GeranRedirectS witch:Off,
					CdmaHrpdRedi rectSwitch:Off, Cdma1xRttRedi rectSwitch:Off, BlindHoSwitch:
					Off, LcsSrvccSwitch :Off, AutoGapSwitch :Off

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
HoMeasComm	GapPatternType	MOD HOMEASCOM M LST HOMEASCOM M	LBFD-0020180 2 / TDLBFD-0020 1802 LOFD-001019 / TDLOFD-0010 19 LOFD-001020 / TDLOFD-0010 20 LOFD-001021 / TDLOFD-0010 21 TDLBFD-0020 18 TDLBFD-0020 1804 TDLBFD-0020 1805 TDLOFD-0010 22 TDLOFD-0010 33 TDLOFD-0010 33 TDLOFD-0010 34 TDLOFD-0010 35 TDLOFD-0010 35 TDLOFD-0010 43 TDLOFD-0010 72 TDLOFD-0010 73	Coverage Based Inter-frequency Handover PS Inter-RAT Mobility between E-UTRAN and UTRAN PS Inter-RAT Mobility between E-UTRAN and GERAN PS Inter-RAT Mobility between E-UTRAN and GERAN PS Inter-RAT Mobility between E-UTRAN and CDMA2000 Mobility Management Distance Based Inter-frequency Handover Service Based Inter-frequency Handover SRVCC to UTRAN SRVCC to GERAN CS Fallback to UTRAN	Meaning:Indicates the measurement gap pattern. The eNodeB defines measurement gaps for UEs in connected mode. During the measurement gaps, a UE measures the signal quality of the cells on a specific frequency. There are two gap patterns: pattern 1 and pattern 2. In pattern 1, the gap width is 6 ms and the repetition period is 40 ms. In pattern 2, the gap width is 6 ms and the repetition period is 80 ms. For details, see 3GPP TS 36.331. Pattern 1 and pattern 2 correspond to Gap Pattern Id 0 and Gap Pattern Id 1 in 3GPP TS 36.331, respectively.  GUI Value Range:GAP_PA TTERN_TYPE_1, GAP_PATTER N_TYPE_2 Unit:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
				Service based Inter-RAT handover to GERAN Distance based Inter-RAT handover to GERAN	Actual Value Range:GAP_PA TTERN_TYPE _1, GAP_PATTER N_TYPE_2 Default Value:GAP_PA TTERN_TYPE _1
EutranIntra-FreqNCell	CellMeasPriority	ADD EUTRANINTR AFREQNCELL MOD EUTRANINTR AFREQNCELL LST EUTRANINTR AFREQNCELL	LBFD-0020180 1 / TDLBFD-0020 1801 LBFD-0020180 4 / TDLBFD-0020 1804 LBFD-0020180 5 / TDLBFD-0020 1805	Coverage Based Intra-frequency Handover Distance Based Inter-frequency Handover Service Based Inter-frequency Handover	Meaning:Indicates the priority of measurement on the intrafrequency neighboring cell. The eNodeB preferentially contains the information about a neighboring cell with this priority set to HIGH_PRIORI TY while delivering a measurement configuration.  GUI Value Range:LOW_P RIORITY(Low Priority), HIGH_PRIORI TY(High Priority)  Unit:None  Actual Value Range:LOW_P RIORITY, HIGH_PRIORI TY  Default Value:LOW_P RIORITY, HIGH_PRIORI TY

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranInter-FreqNCell	CellMeasPriorit	ADD EUTRANINTE RFREQNCELL MOD EUTRANINTE RFREQNCELL LST EUTRANINTE RFREQNCELL	LBFD-0020180 2 / TDLBFD-0020 1802 LBFD-0020180 4 / TDLBFD-0020 1804 LBFD-0020180 5 / TDLBFD-0020 1805 TDLOFD-0010 50	Coverage Based Inter-frequency Handover Distance Based Inter-frequency Handover Service Based Inter-frequency Handover Mobility between LTE TDD and LTE FDD	Meaning:Indicates the priority of measurement on the interfrequency neighboring cell. The eNodeB preferentially contains the information about a neighboring cell with this priority set to HIGH_PRIORI TY while delivering a measurement configuration. GUI Value Range:LOW_P RIORITY(Low Priority), HIGH_PRIORI TY(High Priority) Unit:None Actual Value Range:LOW_P RIORITY, HIGH_PRIORI TY HIGH_PRIORI TY HIGH_PRIORI TY Default Value:LOW_P RIORITY, HIGH_PRIORI TY

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
UtranNCell	CellMeasPriorit	ADD UTRANNCEL L MOD UTRANNCEL L LST UTRANNCEL L	LOFD-001019 TDLOFD-0010 22 TDLOFD-0010 33 TDLOFD-0010 52 TDLOFD-0010 19 TDLOFD-0010 43 TDLOFD-0010 72 TDLOFD-0010 78	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN Flash CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN Service based Inter-RAT handover to UTRAN Distance based Inter-RAT handover to UTRAN E-UTRAN to UTRAN to UTRAN CS/PS steering	Meaning:Indicates the priority of measurement on the neighboring UTRAN cell. The eNodeB preferentially contains the information about a neighboring cell with this priority set to HIGH_PRIORI TY while delivering a measurement configuration. GUI Value Range:LOW_P RIORITY(Low Priority), HIGH_PRIORI TY(High Priority) Unit:None Actual Value Range:LOW_P RIORITY, HIGH_PRIORI TY HIGH_PRIORI TY HIGH_PRIORI TY Default Value:LOW_P RIORITY, HIGH_PRIORI TY

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranInter-FreqNCell	BlindHoPriority	ADD EUTRANINTE RFREQNCELL MOD EUTRANINTE RFREQNCELL LST EUTRANINTE RFREQNCELL	LBFD-0020180 2 / TDLBFD-0020 1802 LBFD-0020180 4 / TDLBFD-0020 1804 TDLOFD-0010 50	Coverage Based Inter-frequency Handover Distance Based Inter-frequency Handover Mobility between LTE TDD and LTE FDD	Meaning:Indicates the priority of the neighboring cell during handovers. The parameter values are divided into three segments, indicating the blind-handover priority, frequency-based-handover priority, and 0. Within the same segment, a larger parameter value indicates a higher priority. Blind handover is a process in which the eNodeB instructs a UE to hand over to a specified neighboring cell without measurements. If this parameter value is set to 0, blind handovers and frequency-based handovers cannot be performed. The parameter values 1 to 16 indicate the blind-handover priorities. The parameter values 17 to 32 indicate the frequency-based-handover priorities for

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					frequency-based blind handovers and measurement- based handovers. GUI Value Range:0~32 Unit:None Actual Value Range:0~32 Default Value:0

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
ENodeBAlgoS witch	RedirectSwitch	MOD ENODEBALG OSWITCH LST ENODEBALG OSWITCH	LBFD-002023 / TDLBFD-0020 23 LBFD-002024 / TDLBFD-0020 24 LOFD-0010290 1 / TDLOFD-0010 2901 LOFD-001019 / TDLOFD-0010 19 LOFD-001020 / TDLOFD-0010 20 LOFD-001021 / TDLOFD-0010 21	Admission Control Congestion Control Radio/transport resource pre- emption PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and CERAN OBJECT OF THE PROPERTY OF THE PR	Meaning:Indicates the switch used to enable or disable the redirection algorithm. This switch does not control redirection or fast redirection for CSFB.  GeranFlashRedirectSwitch: If this switch and GeranRedirectS witch are turned on, fast redirection to GERAN can be performed.  UranFlashRedirectSwitch: If this switch and UtranRedirectSwitch: If this switch and UtranRedirectSwitch are turned on, fast redirection to UTRAN can be performed.  LoadBasedSwit ch: If this switch is turned on, load based redirection can be performed.  GUI Value Range:LoadBas edSwitch, GeranFlashRedirectSwitch, UranFlashRedirectSwitch Unit:None Actual Value Range:LoadBas edSwitch, GeranFlashRedirectSwitch Unit:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					UranFlashRedir ectSwitch Default Value:LoadBas edSwitch:Off, GeranFlashRedir rectSwitch:Off, UranFlashRedir ectSwitch:Off
InterRatHoComm	CellInfoMaxU-tranCellNum	MOD INTERRATHO COMM LST INTERRATHO COMM	LOFD-001019 / TDLOFD-0010 19 TDLOFD-0010 52	PS Inter-RAT Mobility between E- UTRAN and UTRAN Flash CS Fallback to UTRAN	Meaning:Indicates the maximum number of UTRAN cell system information messages that can be transmitted during a flash redirection procedure.  GUI Value Range:1~16 Unit:None Actual Value Range:1~16 Default Value:8

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatHoCom m	CellInfoMaxGe ranCellNum	MOD INTERRATHO COMM LST INTERRATHO COMM	LOFD-001020 / TDLOFD-0010 20 TDLOFD-0010 53	PS Inter-RAT Mobility between E- UTRAN and GERAN Flash CS Fallback to GERAN	Meaning:Indicates the maximum number of GERAN cell system information messages that can be transmitted during a flash redirection procedure.  GUI Value Range:1~32 Unit:None Actual Value Range:1~32 Default Value:8

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
CSFallBackBlindHoCfg	InterRatHighest Pri	MOD CSFALLBACK BLINDHOCFG LST CSFALLBACK BLINDHOCFG	LOFD-001033 / TDLOFD-0010 33 LOFD-001034 / TDLOFD-0010 34 LOFD-001035 / TDLOFD-0010 35 LOFD-001019 / TDLOFD-0010 19 LOFD-001020 / TDLOFD-0010 20 LOFD-001021 TDLOFD-0010 52 TDLOFD-0010 53 TDLOFD-0010 43 TDLOFD-0010 43 TDLOFD-0010 43 TDLOFD-0010 72 TDLOFD-0010 73	CS Fallback to UTRAN CS Fallback to GERAN CS Fallback to CDMA2000 1xRTT PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and CDMA2000 Flash CS Fallback to UTRAN Flash CS Fallback to GERAN Enhanced CS Fallback to GERAN Enhanced CS Fallback to CDMA2000 1xRTT Service based Inter-RAT handover to UTRAN Distance based Inter-RAT handover to UTRAN Service based Inter-RAT handover to UTRAN Distance based Inter-RAT handover to UTRAN Distance based Inter-RAT handover to UTRAN Distance based	Meaning:Indicates the highest-priority RAT for handovers. It is UTRAN by default. If this parameter is set to UTRAN, GERAN, or CDMA2000, the highest-priority RAT is UTRAN, GERAN, or CDMA2000, respectively. GUI Value Range:UTRAN, GERAN, CDMA2000 Unit:None Actual Value Range:UTRAN, GERAN, CDMA2000 Default Value:UTRAN

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
				handover to GERAN	

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
CSFallBackBlindHoCfg	InterRatSecond-Pri	MOD CSFALLBACK BLINDHOCFG LST CSFALLBACK BLINDHOCFG	LOFD-001033 / TDLOFD-0010 33 LOFD-001034 / TDLOFD-0010 34 LOFD-001035 / TDLOFD-0010 35 LOFD-001019 / TDLOFD-0010 19 LOFD-001020 / TDLOFD-0010 20 LOFD-001021 TDLOFD-0010 52 TDLOFD-0010 53 TDLOFD-0010 43 TDLOFD-0010 43 TDLOFD-0010 72 TDLOFD-0010 73	CS Fallback to UTRAN CS Fallback to GERAN CS Fallback to CDMA2000 1xRTT PS Inter-RAT Mobility between E-UTRAN and UTRAN PS Inter-RAT Mobility between E-UTRAN and GERAN PS Inter-RAT Mobility between E-UTRAN and GERAN PS Inter-RAT Mobility between E-UTRAN and CDMA2000 Flash CS Fallback to UTRAN Flash CS Fallback to GERAN Enhanced CS Fallback to GERAN Enhanced CS Fallback to CDMA2000 1xRTT Service based Inter-RAT handover to UTRAN Distance based Inter-RAT handover to UTRAN Service based Inter-RAT handover to UTRAN Service based Inter-RAT handover to UTRAN Distance based Inter-RAT handover to UTRAN Service based Inter-RAT handover to UTRAN Distance based Inter-RAT handover to GERAN Distance based Inter-RAT handover to GERAN Distance based Inter-RAT	Meaning:Indicates the medium-priority RAT for handovers. It is GERAN by default. If this parameter is set to UTRAN, GERAN, or CDMA2000, the medium-priority RAT is UTRAN, GERAN, or CDMA2000, respectively. If this parameter is set to NULL, no medium-priority RAT is specified and only the highest-priority RAT can be selected for handovers. GUI Value Range:UTRAN, GERAN, CDMA2000, NULL Unit:None Actual Value Range:UTRAN, GERAN, CDMA2000, NULL Unit:None Actual Value Range:UTRAN, GERAN, CDMA2000, NULL Default Value:GERAN

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
				handover to GERAN	

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
CSFallBackBlindHoCfg	InterRatLowest-Pri	MOD CSFALLBACK BLINDHOCFG LST CSFALLBACK BLINDHOCFG	LOFD-001033 / TDLOFD-0010 33   LOFD-001034 / TDLOFD-0010 34   LOFD-001035 / TDLOFD-0010 35   LOFD-001019 / TDLOFD-0010 19   LOFD-001020 / TDLOFD-0010 20   LOFD-001021 TDLOFD-0010 52   TDLOFD-0010 53   TDLOFD-0010 43   TDLOFD-0010 43   TDLOFD-0010 72   TDLOFD-0010 72   TDLOFD-0010 73	CS Fallback to UTRAN CS Fallback to GERAN CS Fallback to CDMA2000 1xRTT PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and CDMA2000 Flash CS Fallback to UTRAN Flash CS Fallback to GERAN Enhanced CS Fallback to CDMA2000 1xRTT Service based Inter-RAT handover to UTRAN Distance based Inter-RAT handover to UTRAN Service based Inter-RAT handover to UTRAN Distance based Inter-RAT handover to UTRAN Distance based Inter-RAT handover to UTRAN Distance based	Meaning:Indicates the lowest-priority RAT for handovers. It is CDMA2000 by default. If this parameter is set to UTRAN, GERAN, or CDMA2000, the lowest-priority RAT is UTRAN, GERAN, or CDMA2000, respectively. If this parameter is set to NULL, no lowest-priority RAT is specified and only the highest- or medium-priority RAT can be selected for handovers.  GUI Value Range:UTRAN, GERAN, CDMA2000, NULL Unit:None Actual Value Range:UTRAN, GERAN, CDMA2000, NULL Default Value:CDMA2000

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
				handover to GERAN	
EutranNFreqRanShare	Mcc	ADD EUTRANNFRE QRANSHARE LST EUTRANNFRE QRANSHARE MOD EUTRANNFRE QRANSHARE RMV EUTRANNFRE QRANSHARE	LOFD-001036 / TDLOFD-0010 36 TDLOFD-0011 12	RAN Sharing with Common Carrier MOCN Flexible Priority Based Camping	Meaning:Indicates the mobile country code (MCC) of the operator that shares the neighboring E-UTRAN frequency. A public land mobile network (PLMN) ID is comprised of an MCC and a mobile network code (MNC). The MCC consists of three digits. The MNC consists of two to three digits. For example, if the MCC is 123 and the MNC is 45, the PLMN ID is 12345. GUI Value Range:3 characters Unit:None Actual Value Range:000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranNFreqRanShare	Mnc	ADD EUTRANNFRE QRANSHARE LST EUTRANNFRE QRANSHARE MOD EUTRANNFRE QRANSHARE RMV EUTRANNFRE QRANSHARE	LOFD-001036 / TDLOFD-0010 36 TDLOFD-0011 12	RAN Sharing with Common Carrier MOCN Flexible Priority Based Camping	Meaning:Indicates the mobile network code (MNC) of the operator that shares the neighboring E-UTRAN frequency. A public land mobile network (PLMN) ID is comprised of a mobile network code (MCC) and an MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, if the MCC is 123 and the MNC is 45, the PLMN ID is 12345.  GUI Value Range:2~3 characters Unit:None Actual Value Range: 00~99,000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
UtranRanShare	Mcc	ADD UTRANRANS HARE LST UTRANRANS HARE MOD UTRANRANS HARE RMV UTRANRANS HARE	LOFD-001036 / TDLOFD-0010 36 TDLOFD-0011 12	RAN Sharing with Common Carrier MOCN Flexible Priority Based Camping	Meaning:Indicates the mobile country code (MCC) of the neighboring UTRAN cell. A public land mobile network (PLMN) ID is comprised of an MCC and a mobile network code (MNC). The MCC consists of three digits. The MNC consists of two to three digits. For example, if the MCC is 123 and the MNC is 45, then the PLMN ID is 12345.  GUI Value Range:3 characters Unit:None Actual Value Range:000~999  Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
UtranRanShare	Mnc	ADD UTRANRANS HARE LST UTRANRANS HARE MOD UTRANRANS HARE RMV UTRANRANS HARE	LOFD-001036 / TDLOFD-0010 36 TDLOFD-0011 12	RAN Sharing with Common Carrier MOCN Flexible Priority Based Camping	Meaning:Indicates the mobile network code (MNC) of the neighboring UTRAN cell. A public land mobile network (PLMN) ID is comprised of a mobile country code (MCC) and an MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, if the MCC is 123 and the MNC is 45, then the PLMN ID is 12345.  GUI Value Range:2~3 characters Unit:None Actual Value Range: 00~99,000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
GeranRanShare	Mcc	ADD GERANRANS HARE LST GERANRANS HARE MOD GERANRANS HARE RMV GERANRANS HARE	LOFD-001036 / TDLOFD-0010 36 TDLOFD-0011 12	RAN Sharing with Common Carrier MOCN Flexible Priority Based Camping	Meaning:Indicates the mobile country code (MCC) of the operator that shares the neighboring GERAN carrier frequency group. A public land mobile network (PLMN) ID is comprised of an MCC and a mobile network code (MNC). The MCC consists of three digits. The MNC consists of two to three digits. For example, if the MCC is 123 and the MNC is 45, then the PLMN ID is 12345.  GUI Value Range:3 characters Unit:None Actual Value Range:000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
GeranRanShare	Mnc	ADD GERANRANS HARE LST GERANRANS HARE MOD GERANRANS HARE RMV GERANRANS HARE	LOFD-001036 / TDLOFD-001036 TDLOFD-001112	RAN Sharing with Common Carrier MOCN Flexible Priority Based Camping	Meaning:Indicates the mobile network code (MNC) of the operator that shares the neighboring GERAN carrier frequency group. A public land mobile network (PLMN) ID is comprised of a mobile country code (MCC) and an MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, if the MCC is 123 and the MNC is 45, then the PLMN ID is 12345.  GUI Value Range:2~3 characters Unit:None Actual Value Range: 00~99,000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
UtranNCell	BlindHoPriority	ADD UTRANNCEL L MOD UTRANNCEL L LST UTRANNCEL L	LOFD-001019 TDLOFD-0010 22 TDLOFD-0010 33 TDLOFD-0010 52 TDLOFD-0010 19 TDLOFD-0010 43 TDLOFD-0010 72 TDLOFD-0010 78	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN Flash CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN Service based Inter-RAT handover to UTRAN Distance based Inter-RAT handover to UTRAN E-UTRAN to UTRAN to UTRAN CS/PS steering	Meaning:Indicates the priority of the neighboring cell during blind handovers. Blind handover is a process in which the eNodeB instructs a UE to hand over to a specified neighboring cell. There are 32 priorities altogether. The priority has a positive correlation with the value of this parameter. Note that the value 0 indicates that blind handovers to the neighboring cell are not allowed. GUI Value Range:0~32 Unit:None Actual Value Range:0~32 Default Value:0

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
UtranNFreq	PsPriority	ADD UTRANNFRE Q MOD UTRANNFRE Q LST UTRANNFRE Q	LOFD-001019 / TDLOFD-0010 19 TDLOFD-0010 78	PS Inter-RAT Mobility between E- UTRAN and UTRAN E-UTRAN to UTRAN CS/PS steering	Meaning:Indicates the priority for the neighboring UTRAN frequency to carry PS services. In coverage-based inter-RAT PS handovers, if UtranFreqLayer MeasSwitch is turned on, the eNodeB determines the UTRAN frequency to be delivered to a UE based on PS service priorities. The eNodeB delivers the UTRAN frequency with the highest PS priority to the UE by default. In blind handovers to UTRAN, the target cell for a blind handover is selected based on PS service priorities. The cell on the UTRAN frequency with the highest PS priority is selected by default. When this parameter is set to Priority_0 for a UTRAN frequency, the UTRAN frequency, the UTRAN frequency is not included in PS

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
MO	Parameter ID		Feature ID	Feature Name	service priority arrangement. GUI Value Range:Priority_ 0(Priority 0), Priority_1 (Priority 1), Priority_2 (Priority 2), Priority_3 (Priority_3), Priority_4 (Priority 4), Priority_5 (Priority 5), Priority_6 (Priority 6), Priority_7 (Priority_7), Priority_8 (Priority_8), Priority_9 (Priority_9), Priority_10 (Priority_11), Priority_11 (Priority_11), Priority_12 (Priority_13), Priority_13 (Priority_13), Priority_14
					(Priority 14), Priority_15 (Priority 15), Priority_16 (Priority 16)
					Unit:None Actual Value Range:Priority_ 0, Priority_1, Priority_2, Priority_3, Priority_4, Priority_5, Priority_6, Priority_7, Priority_8, Priority_9,

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					Priority_10, Priority_11, Priority_12, Priority_13, Priority_14, Priority_15, Priority_16  Default Value:Priority_ 2(Priority_2)

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
UtranNFreq	CsPriority	ADD UTRANNFRE Q MOD UTRANNFRE Q LST UTRANNFRE Q	LOFD-001078 / TDLOFD-0010 78 TDLOFD-0010 33 TDLOFD-0010 52 TDLOFD-0010 88	E-UTRAN to UTRAN CS/PS Steering CS Fallback to UTRAN Flash CS Fallback to UTRAN CS Fallback Steering to UTRAN	Meaning:Indicates the priority for a neighboring UTRAN frequency to carry CS services. In coverage-based inter-RAT SRVCC or CSFB to UTRAN, if UtranFreqLayer MeasSwitch is turned on, the eNodeB determines the UTRAN frequency to be delivered to a UE based on CS service priorities. The eNodeB delivers the UTRAN frequency with the highest CS priority to the UE by default. In blind handovers for CSFB to UTRAN, if UtranFreqLayer BlindSwitch is turned on, the target cell for a blind handover is selected based on CS service priorities. The cell on the UTRAN frequency with the highest CS priority is selected by default. When this parameter is

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
MO	Parameter ID		Feature ID	Feature Name	set to Priority_0 for a UTRAN frequency, the UTRAN frequency is not included in CS service priority arrangement.  GUI Value Range:Priority_0(Priority 0), Priority_1 (Priority 1), Priority_2 (Priority 2), Priority_3 (Priority 3), Priority_4 (Priority 4), Priority_5 (Priority 5), Priority_6 (Priority 6), Priority_7 (Priority 7), Priority_8 (Priority 8), Priority_9 (Priority 9), Priority_10 (Priority 10), Priority_11 (Priority 11), Priority_12 (Priority 12), Priority_13 (Priority_13),
					Priority_14 (Priority_14), Priority_15 (Priority_15), Priority_16 (Priority_16)
					Unit:None Actual Value Range:Priority_ 0, Priority_1, Priority_2, Priority_3,

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					Priority_4, Priority_5, Priority_6, Priority_7, Priority_8, Priority_9, Priority_10, Priority_11, Priority_12, Priority_13, Priority_14, Priority_15, Priority_16 Default Value:Priority_ 2(Priority_2)
RatFreqPriori- tyGroup	Priority	ADD RATFREQPRI ORITYGROUP MOD RATFREQPRI ORITYGROUP LST RATFREQPRI ORITYGROUP	LOFD-0010540 1 / TDLOFD-0010 5401	Camp & Handover Based on SPID	Meaning:Indicates the priority of the RAT or frequency. The value 0 indicates the lowest priority.  GUI Value Range:0~7  Unit:None  Actual Value Range:0~7  Default Value:0

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
ENodeBAlgoS witch	HoAlgoSwitch	MOD ENODEBALG OSWITCH LST ENODEBALG OSWITCH	LBFD-0020180 1 / TDLBFD-0020 1801 LBFD-0020180 2 / TDLBFD-0020 1802 LBFD-0020180 4 / TDLBFD-0020 1804 LBFD-0020180 5 / TDLBFD-0020 1805 LOFD-001033 / TDLOFD-0010 33 LOFD-001034 / TDLOFD-0010 34 LOFD-001035 / TDLOFD-0010 52 LOFD-001052 / TDLOFD-0010 52 LOFD-001088 / TDLOFD-0010 88 LOFD-001088 / TDLOFD-0010 88 LOFD-001089 / TDLOFD-0010 89 LOFD-001090 / TDLOFD-0010 90 LOFD-001019 / TDLOFD-0010 19	Coverage Based Intra-frequency Handover Distance Based Inter-frequency Handover Service Based Inter-frequency Handover CS Fallback to UTRAN CS Fallback to GERAN CS Fallback to CDMA2000 1xRTT Flash CS Fallback to UTRAN Flash CS Fallback to UTRAN CS Fallback to CDMA2000 1xRTT Flash CS Fallback to GERAN CS Fallback Steering to UTRAN CS Fallback Steering to GERAN Enhanced CS Fallback Steering to GERAN Enhanced CS Fallback to CDMA2000 1xRTT PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and GERAN Service based inter-RAT handover to UTRAN	Meaning:Indicates the collective switch used to enable or disable. IntraFreqCover-HoSwitch: If this switch is turned on, coverage-based intra-frequency handovers are enabled to ensure service continuity. If this switch is turned off, coverage-based intra-frequency handovers are disabled. InterFreqCover-HoSwitch: If this switch is turned on, coverage-based inter-frequency handovers are enabled to ensure service continuity. If this switch is turned on, coverage-based inter-frequency handovers are enabled to ensure service continuity. If this switch is turned off, coverage-based inter-frequency handovers are disabled. UtranCsfbSwitch: If this switch is turned on, CSFB to UTRAN is enabled and UEs can fall back to UTRAN. If this switch is turned off, CSFB to UTRAN is

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
			LOFD-001020 / TDLOFD-0010 20 LOFD-001043 / TDLOFD-0010 43 LOFD-001072 / TDLOFD-0010 72 LOFD-001073 / TDLOFD-0010 73 TDLBFD-0020 18 TDLOFD-0010 22	Service based inter-RAT handover to GERAN Distance based inter-RAT handover to UTRAN Distance based inter-RAT handover to GERAN Mobility Management Coverage Based Inter-frequency Handover SRVCC to UTRAN	disabled. GeranCsfbSwitc h: If this switch is turned on, CSFB to GERAN is enabled and UEs can fall back to GERAN. If this switch is turned off, CSFB to GERAN is disabled. Cdma1xRttCsfb Switch: If this switch is turned on, CSFB to CDMA2000 1xRTT is enabled and UEs can fall back to CDMA2000 1xRTT. If this switch is turned off, CSFB to CDMA2000 1xRTT. If this switch is turned off, CSFB to CDMA2000 1xRTT. If this switch is turned off, CSFB to CDMA2000 1xRTT is disabled. UtranServiceHo Switch: If this switch is turned on, service- based handovers to UTRAN are enabled and UEs with a specific type of services can be handed over to UTRAN. If this switch is turned off, service-based handovers to UTRAN are disabled. GeranServiceH oSwitch: If this switch is turned on, service-

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
MO	Parameter ID		Feature ID	Feature Name	based handovers to GERAN are enabled and UEs with a specific type of services can be handed over to GERAN. If this switch is turned off, service-based handovers to GERAN are disabled. CdmaHrpdServi ceHoSwitch: If this switch is turned on, service-based handovers to CDMA2000 HRPD are enabled and UEs with a specific type of services can be handed over to CDMA2000 HRPD. If this switch is turned off, service-based handovers to CDMA2000 HRPD. If this switch is turned off, service-based handovers to CDMA2000 HRPD are disabled. Cdma1xRttServiceHoSwitch: If this switch is
					turned on, service-based handovers to CDMA2000 1xRTT are enabled and UEs with a specific type of services can be handed over to CDMA2000 1xRTT. If this

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
МО	Parameter ID		Feature ID	Feature Name	switch is turned off, service-based handovers to CDMA2000 1xRTT are disabled. UlQualityInter-RATHoSwitch: If this switch is turned on, UL-quality-based inter-RAT handovers are enabled and UEs can be handed over to inter-RAT cells to ensure service continuity when the UL signal quality is poor. If this switch is turned off, UL-quality-based inter-RAT handovers are disabled. InterPlmnHoS-witch: If this switch is turned on, inter-PLMN handovers are enabled and UEs can be handed over to cells in other PLMNs. If this switch is turned off, inter-PLMN handovers are
					disabled. UtranFlashCsfb Switch: This switch takes effect only when UtranCsfbSwitc h is turned on. If UtranFlashCsfb Switch is turned

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
MO	Parameter ID		Feature ID	Feature Name	on, flash CSFB to UTRAN is enabled and the eNodeB sends system information of candidate target UTRAN cells to UEs during redirection. If UtranFlashCsfb Switch is turned off, flash CSFB to UTRAN is disabled. GeranFlashCsfb Switch: This switch takes effect only when GeranCsfbSwitch is turned on. If GeranFlashCsfb Switch is turned on, flash CSFB to GERAN is enabled and the eNodeB sends system information of candidate target GERAN cells to UEs during redirection. If GeranFlashCsfb Switch is turned off, flash CSFB to GERAN is disabled.
					ServiceBasedInterFreqHoSwitch: If this switch is turned on,
					is turned on, service-based inter-frequency handovers are enabled and UEs with a specific
					type of services can be handed

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
MO	Parameter ID		Feature ID	Feature Name	over to inter- frequency cells. If this switch is turned off, service-based inter-frequency handovers are disabled. UlQualityInter- FreqHoSwitch: If this switch is turned on, UL- quality-based inter-frequency handovers are enabled and UEs can be handed over to inter- frequency cells to ensure service continuity when the UL signal quality is poor. If this switch is turned off, UL- quality-based inter-frequency handovers are disabled. CsfbAdaptive- BlindHoSwitch: This switch takes effect only when BlindHoSwitch is enabled. If CsfbAdaptive- BlindHoSwitch is enabled. If CsfbAdaptive- BlindHoSwitch is turned on, adaptive blind
					handovers for CSFB are enabled and appropriate handover mechanisms are selected for UEs based on their locations. If

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
МО	Parameter ID		Feature ID	Feature Name	CsfbAdaptive-BlindHoSwitch is turned off, adaptive blind handovers for CSFB are disabled. UtranCsfbSteeringSwitch: If this switch is turned on, CSFB steering to UTRAN is enabled and CSFB policies for idle UEs can be configured. If this switch is turned off, CSFB steering to UTRAN is disabled. GeranCsfbSteeringSwitch: If this switch is turned on, CSFB steering to GERAN is enabled and CSFB policies for idle UEs can be configured. If this switch is turned on, CSFB steering to GERAN is enabled and CSFB policies for idle UEs can be configured. If this switch is turned off, CSFB steering to GERAN is disabled.
					CSFBLoadInfo Switch: If this switch is turned on, load-based CSFB is enabled and a target cell for CSFB is selected based
					on loads of candidate target cells. If this switch is turned

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
MO	Parameter ID		Feature ID	Feature Name	off, load-based CSFB is disabled. Cdma1XrttEcsf bSwitch: If this switch is turned on, eCSFB to CDMA2000 1xRTT is enabled and UEs can fall back to CDMA2000 1xRTT through handovers. If this switch is turned off, eCSFB to CDMA2000 1xRTT is disabled. EmcBlindHoA1 Switch: If this switch is turned on, blind handover event A1 measurements are enabled. If a blind handover event measurement conflicts with a handover procedure, an emergency blind handover can be triggered after the handover procedure is
					complete. If this switch is turned off, blind handover event A1 measurements are disabled. If a blind handover event measurement

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
		Command			conflicts with a handover procedure, an emergency blind handover cannot be triggered. EmcInterFreq-BlindHoSwitch: If this switch is turned on, the eNodeB preferentially performs an inter-frequency blind handover when an emergency blind handover is triggered. If this switch is turned off, the eNodeB only performs an inter-RAT blind handover when an emergency blind handover when an emergency blind handover is triggered. GUI Value Range:IntraFreq CoverHoSwitch (IntraFreqCoverHoSwitch), InterFreqCoverHoSwitch) (InterFreqCoverHoSwitch), UtranCsfbSwitch (UtranCsfbSwitch), UtranCsfbSwitch), UtranCsfbSwitch), UtranCsfbSwitch),
					GeranCsfbSwitch (GeranCsfbSwitch), Cdma1xRttCsfbSwitch (Cdma20001xRttCsfbSwitch),

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
		Command			UtranServiceHo Switch (UtranService- HoSwitch), GeranServiceHoSwitch (GeranService- HoSwitch), CdmaHrpdServiceHoSwitch (Cdma2000HrpdServiceHoSwitch (Cdma20001xRttServiceHoSwitch), UlqualityInter- RATHoSwitch (UlQualityInter- RATHoSwitch), InterPlmnHoSwitch), InterPlmnHoSwitch), UtranFlashCsfb Switch(Utran- FlashCsfbSwitch), UtranFlashCsfb Switch(Geran- FlashCsfbSwitch), ServiceBasedInterFreqHoSwitch (ServiceBasedInterFreqHoSwitch), UlqualityInter- FreqHoSwitch), UlqualityInter- FreqHoSwitch), UlqualityInter- FreqHoSwitch), UlqualityInter- FreqHoSwitch), UlqualityInter- FreqHoSwitch), UlqualityInter- FreqHoSwitch), UlqualityInter- FreqHoSwitch)
					(UlQualityInter- FreqHoSwitch), CsfbAdaptive- BlindHoSwitch (CsfbAdaptive- BlindHoSwitch)
		l			, ,

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					UtranCsfbSteeringSwitch (UtranCsfbSteeringSwitch), GeranCsfbSteeringSwitch (GeranCsfbSteeringSwitch), CSFBLoadInfo Switch (CSFBLoadInfo Switch), Cdma1XrttEcsf bSwitch (Cdma1XrttEcsf bSwitch), EmcBlindHoA1 Switch (EmcBlindHoA 1Switch), EmcInterFreq- BlindHoSwitch (EmcInterFreq- BlindHoSwitch)
					Unit:None Actual Value Range:IntraFreq CoverHoSwitch , InterFreqCover- HoSwitch, UtranCsfbSwitc h, GeranCsfbSwitc h, Cdma1xRttCsfb Switch, UtranServiceHo Switch, GeranServiceH oSwitch, CdmaHrpdServi ceHoSwitch, Cdma1xRttServ
					Cdma1xRttServ iceHoSwitch, UlQualityInter- RATHoSwitch, InterPlmnHoS- witch,

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					UtranFlashCsfb Switch, GeranFlashCsfb Switch, ServiceBasedInterFreqHoSwitch, UlQualityInterFreqHoSwitch, CsfbAdaptive-BlindHoSwitch, UtranCsfbSteeringSwitch, GeranCsfbSteeringSwitch, CSFBLoadInfo Switch, Cdma1XrttEcsf bSwitch, EmcBlindHoA1
					Switch, EmcInterFreq- BlindHoSwitch
					Default Value:IntraFreq CoverHoSwitch :On, InterFreqCover HoSwitch:On,
					UtranCsfbSwitc h:Off, GeranCsfbSwitc h:Off, Cdma20001xRtt
					CsfbSwitch:Off, UtranServiceHo Switch:Off, GeranServiceH oSwitch:Off, Cdma2000Hrpd
					ServiceHoSwitc h:Off, Cdma20001xRtt ServiceHoSwitc h:Off,
					UlQualityInterR ATHoSwitch:O ff, InterPlmnHoSw

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					itch:Off, UtranFlashCsfb Switch:Off, GeranFlashCsfb Switch:Off, ServiceBasedInt erFreqHoSwitch :Off, UlQualityInterF reqHoSwitch:Off f, CsfbAdaptiveBl indHoSwitch:Off f, UtranCsfbSteeri ngSwitch:Off, GeranCsfbSteer ingSwitch:Off, CSFBLoadInfo Switch:Off, Cdma1XrttEcsf bSwitch:Off, EmcBlindHoA1 Switch:Off, EmcInterFreqBl indHoSwitch:Off
CnOperator	CnOperatorId	ADD CNOPERATO R LST CNOPERATO R MOD CNOPERATO R RMV CNOPERATO R	LOFD-001086	RAN Sharing by More Operators	Meaning:Indicates the index of the operator. GUI Value Range:0~5 Unit:None Actual Value Range:0~5 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterPlmnHoLis t	TarMcc	ADD INTERPLMNH OLIST LST INTERPLMNH OLIST RMV INTERPLMNH OLIST	LBFD-0020180 1 / TDLBFD-0020 1801 LBFD-0020180 2 / TDLBFD-0020 1802 LBFD-0020180 4 / TDLBFD-0020 1804 LBFD-0020180 5 / TDLBFD-0020 1805 LOFD-001019 / TDLOFD-0010 19 LOFD-001020 / TDLOFD-0010 20 TDLOFD-0010 33	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Distance Based Inter-frequency Handover Service Based Inter-frequency Handover Service Based Inter-frequency Handover PS Inter-RAT Mobility between E-UTRAN and UTRAN PS Inter-RAT Mobility between E-UTRAN and GERAN CS Fallback to UTRAN	Meaning:Indicates the mobile country code of the target PLMN. GUI Value Range:3 characters Unit:None Actual Value Range:000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterPlmnHoLis t	TarMnc	ADD INTERPLMNH OLIST LST INTERPLMNH OLIST RMV INTERPLMNH OLIST	LBFD-0020180 1 / TDLBFD-0020 1801 LBFD-0020180 2 / TDLBFD-0020 1802 LBFD-0020180 4 / TDLBFD-0020 1804 LBFD-0020180 5 / TDLBFD-0020 1805 LOFD-001019 / TDLOFD-0010 19 LOFD-001020 / TDLOFD-0010 20 TDLOFD-0010 33	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Distance Based Inter-frequency Handover Service Based Inter-frequency Handover Service Based Inter-frequency Handover PS Inter-RAT Mobility between E-UTRAN and UTRAN PS Inter-RAT Mobility between E-UTRAN and GERAN CS Fallback to UTRAN	Meaning:Indicates the mobile network code of the target PLMN. GUI Value Range:2~3 characters Unit:None Actual Value Range: 00~99,000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
eNBRsvdPara	RsvdSwPara0	MOD ENBRSVDPAR A LST ENBRSVDPAR A	None	None	Meaning:Indicates reserved 32-bit switch parameter 0 that is reserved for future requirements. Note on parameter replacement: Reserved parameters are temporarily used in patch versions and will be replaced with new parameters. For example, the ID of a new parameter can signify the parameter function. Therefore, avoid using this parameter.  GUI Value Range:RsvdSw Para0_bit1 (ReservedSwitch Parameter0_bit 1), RsvdSwPara0_bit2 (ReservedSwitch Parameter0_bit 3), RsvdSwPara0_bit3 (ReservedSwitch Parameter0_bit 3), RsvdSwPara0_bit4 (ReservedSwitch Parameter0_bit 4), RsvdSwPara0_bit4 (ReservedSwitch Parameter0_bit 3), RsvdSwPara0_bit4 (ReservedSwitch Parameter0_bit 4)
					4), RsvdSwPara0_b

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
MO	Parameter ID		Feature ID	Feature Name	it5 (ReservedSwitc hParameter0_bit 5), RsvdSwPara0_b it6 (ReservedSwitc hParameter0_bit 6), RsvdSwPara0_b it7 (ReservedSwitc hParameter0_bit 7), RsvdSwPara0_b it8 (ReservedSwitc hParameter0_bit 8), RsvdSwPara0_b it9 (ReservedSwitc hParameter0_bit 9), RsvdSwPara0_b it10 (ReservedSwitc hParameter0_bit 10), RsvdSwPara0_b it11 (ReservedSwitc hParameter0_bit 10), RsvdSwPara0_b it11 (ReservedSwitc hParameter0_bit 10), RsvdSwPara0_b it11 (ReservedSwitc hParameter0_bit 10),
					hParameter0_bit 11), RsvdSwPara0_b it12 (ReservedSwitc hParameter0_bit 12), RsvdSwPara0_b it13 (ReservedSwitc hParameter0_bit 13), RsvdSwPara0_b it14 (ReservedSwitc hParameter0_bit 14),

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
MO	Parameter ID		Feature ID	Feature Name	RsvdSwPara0_b it15 (ReservedSwitc hParameter0_bit 15), RsvdSwPara0_b it16 (ReservedSwitc hParameter0_bit 16), RsvdSwPara0_b it17 (ReservedSwitc hParameter0_bit 17), RsvdSwPara0_b it18 (ReservedSwitc hParameter0_bit 18), RsvdSwPara0_b it19 (ReservedSwitc hParameter0_bit 18), RsvdSwPara0_b it19 (ReservedSwitc hParameter0_bit 19), RsvdSwPara0_b it20 (ReservedSwitc hParameter0_bit 20),
					RsvdSwPara0_b it21 (ReservedSwitc hParameter0_bit 21), RsvdSwPara0_b it22 (ReservedSwitc hParameter0_bit 22), RsvdSwPara0_b it23 (ReservedSwitc hParameter0_bit 23), RsvdSwPara0_b it24 (ReservedSwitc hParameter0_bit

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
		Command			24), RsvdSwPara0_b it25 (ReservedSwitc hParameter0_bit 25), RsvdSwPara0_b it26 (ReservedSwitc hParameter0_bit 26), RsvdSwPara0_b it27 (ReservedSwitc hParameter0_bit 27), RsvdSwPara0_b it28 (ReservedSwitc hParameter0_bit 28), RsvdSwPara0_b it29 (ReservedSwitc hParameter0_bit 29), RsvdSwPara0_b it30 (ReservedSwitc hParameter0_bit 30), RsvdSwPara0_b it31 (ReservedSwitc hParameter0_bit 30), RsvdSwPara0_b it31 (ReservedSwitc hParameter0_bit 31), RsvdSwPara0_b it32 (ReservedSwitc hParameter0_bit 31), RsvdSwPara0_b it32 (ReservedSwitc hParameter0_bit
					Unit:None Actual Value Range:RsvdSw Para0_bit1, RsvdSwPara0_b it2,
					RsvdSwPara0_b it3,

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
МО	Parameter ID		Feature ID	Feature Name	RsvdSwPara0_b it4, RsvdSwPara0_b it5, RsvdSwPara0_b it6, RsvdSwPara0_b it7, RsvdSwPara0_b it8, RsvdSwPara0_b it9, RsvdSwPara0_b it10, RsvdSwPara0_b it11, RsvdSwPara0_b it11, RsvdSwPara0_b it11, RsvdSwPara0_b it12, RsvdSwPara0_b it13, RsvdSwPara0_b it14, RsvdSwPara0_b it15, RsvdSwPara0_b
					it16, RsvdSwPara0_b it17, RsvdSwPara0_b it18, RsvdSwPara0_b it19, RsvdSwPara0_b it20, RsvdSwPara0_b it21, RsvdSwPara0_b it21, RsvdSwPara0_b it22, RsvdSwPara0_b it22, RsvdSwPara0_b it23, RsvdSwPara0_b it24, RsvdSwPara0_b it25, RsvdSwPara0_b it25, RsvdSwPara0_b it27, RsvdSwPara0_b it27, RsvdSwPara0_b

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					it28, RsvdSwPara0_b it29, RsvdSwPara0_b it30, RsvdSwPara0_b it31, RsvdSwPara0_b it32
					Default Value:Reserved SwitchParamete r0_bit1:Off, ReservedSwitch Parameter0_bit2 :Off, ReservedSwitch Parameter0_bit3 :Off, ReservedSwitch Parameter0_bit4 :Off, ReservedSwitch Parameter0_bit5 :Off, ReservedSwitch Parameter0_bit6 :Off, ReservedSwitch Parameter0_bit6 :Off, ReservedSwitch Parameter0_bit7 :Off, ReservedSwitch
					Parameter0_bit8 :Off, ReservedSwitch Parameter0_bit9 :Off, ReservedSwitch Parameter0_bit1 0:Off, ReservedSwitch Parameter0_bit1 1:Off, ReservedSwitch Parameter0_bit1 2:Off, ReservedSwitch Parameter0_bit1 3:Off,

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
MO	Parameter ID		Feature ID	Feature Name	ReservedSwitch Parameter0_bit1 4:Off, ReservedSwitch Parameter0_bit1 5:Off, ReservedSwitch Parameter0_bit1 6:Off, ReservedSwitch Parameter0_bit1 7:Off, ReservedSwitch Parameter0_bit1 8:Off, ReservedSwitch Parameter0_bit1 9:Off, ReservedSwitch Parameter0_bit2 0:Off, ReservedSwitch Parameter0_bit2 1:Off, ReservedSwitch Parameter0_bit2 1:Off, ReservedSwitch Parameter0_bit2 2:Off, ReservedSwitch Parameter0_bit2 3:Off, ReservedSwitch Parameter0_bit2 3:Off, ReservedSwitch Parameter0_bit2 3:Off, ReservedSwitch Parameter0_bit2 5:Off, ReservedSwitch Parameter0_bit2 5:Off, ReservedSwitch Parameter0_bit2 5:Off, ReservedSwitch
					Parameter0_bit2 6:Off, ReservedSwitch Parameter0_bit2 7:Off, ReservedSwitch Parameter0_bit2 8:Off, ReservedSwitch Parameter0_bit2 9:Off, ReservedSwitch

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					Parameter0_bit3 0:Off, ReservedSwitch Parameter0_bit3 1:Off, ReservedSwitch Parameter0_bit3 2:Off
Cell	DlEarfcn	ADD CELL MOD CELL LST CELL	LBFD-002009 / TDLBFD-0020 09 LBFD-0020180 1 / TDLBFD-0020 1801 LBFD-0020180 3 / TDLBFD-0020 1803	Broadcast of system information Coverage Based Intra-frequency Handover Cell Selection and Re-selection	Meaning:Indicates the DL EARFCN of the cell. For details, see the 3GPP TS 36.104. GUI Value Range: 0~45589,54436 ~65535 Unit:None Actual Value Range: 0~45589,54436 ~65535 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
CellResel	MeasBandWidt	MOD CELLRESEL LST CELLRESEL	LBFD-0020180 3 / TDLBFD-0020 1803 LBFD-002009 / TDLBFD-0020 09	Cell Selection and Re-selection Broadcast of system information	Meaning:Indicates the measurement bandwidth on the serving frequency on which the UE camps. It is used in intrafrequency measurements for cell reselection and those by UEs in RRC_CONNEC TED mode. This parameter is optional; if it is not set, the downlink bandwidth of the serving cell is used by default. GUI Value Range:MBW6 (1.4M), MBW15(3M), MBW25(5M), MBW50(10M), MBW75(15M), MBW75(15M), MBW100(20M) Unit:MHz  Actual Value Range:MBW6, MBW15, MBW50, MBW75, MBW50, MBW75, MBW50, MBW75, MBW75, MBW75, MBW75, MBW100  Default Value:MBW6
					(1.4M)

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
Cell	QoffsetFreq	ADD CELL MOD CELL LST CELL	LBFD-0020180 1 LBFD-0020180 3 TDLBFD-0020 18 TDLBFD-0020 1802 TDLBFD-0020 1804 TDLBFD-0020 1805 TDLOFD-0010 19 TDLOFD-0010 43 TDLOFD-0010 72 TDLOFD-0010 20 TDLOFD-0010 46 TDLOFD-0010 73	Coverage Based Intra-frequency Handover Cell Selection and Re-selection Mobility Management Coverage Based Inter-frequency Handover Distance Based Inter-frequency Handover Service Based Inter-frequency Handover PS Inter-RAT Mobility between E-UTRAN and UTRAN Service based Inter-RAT handover to UTRAN Distance based Inter-RAT handover to UTRAN PS Inter-RAT handover to UTRAN Service based Inter-RAT handover to UTRAN Distance based Inter-RAT handover to UTRAN PS Inter-RAT handover to UTRAN PS Inter-RAT handover to UTRAN Distance based Inter-RAT handover to GERAN Distance based Inter-RAT handover to GERAN Distance based Inter-RAT handover to GERAN	Meaning:Indicates the specific frequency offset of the serving cell. This parameter is contained in the measurement control information and is related to the handover difficulty between the serving cell and the neighboring cell. For details, see 3GPP TS 36.331.  GUI Value Range:dB-24 (-24dB), dB-22 (-22dB), dB-18 (-18dB), dB-16 (-16dB), dB-14 (-14dB), dB-12 (-12dB), dB-10 (-10dB), dB-8 (-8dB), dB-6 (-6dB), dB-5 (-5dB), dB-4 (-4dB), dB-3 (-3dB), dB-2 (-2dB), dB-1 (-1dB), dB0 (0dB), dB1 (1dB), dB2 (2dB), dB3 (3dB), dB4 (4dB), dB5 (5dB), dB6 (6dB), dB8 (8dB), dB10 (10dB), dB12 (12dB), dB14 (14dB), dB16 (16dB), dB18

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					(18dB), dB20 (20dB), dB22 (22dB), dB24 (24dB)
					Unit:dB
					Actual Value Range:dB-24, dB-22, dB-20, dB-18, dB-16, dB-14, dB-12, dB-10, dB-8, dB-6, dB-5, dB-4, dB-3, dB-2, dB-1, dB0, dB1, dB2, dB3, dB4, dB5, dB6, dB8, dB10, dB12, dB14, dB16, dB18, dB20, dB22, dB24
					Default Value:dB0 (0dB)

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
IntraFreqHoGro up	IntraFreqHoA3 Offset	ADD INTRAFREQH OGROUP MOD INTRAFREQH OGROUP LST INTRAFREQH OGROUP	LBFD-0020180 1 / TDLBFD-0020 1801	Coverage Based Intra-frequency Handover	Meaning:Indicates the offset for event A3. If the parameter is set to a large value, an intrafrequency handover is performed only when the signal quality of the neighboring cell is significantly better than that of the serving cell and other triggering conditions are met. For details, see 3GPP TS 36.331.  GUI Value Range:-30~30  Unit:0.5dB  Actual Value Range:-15~15, step:0.5  Default Value:2

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
IntraFreqHoGroup	IntraFreqHoA3 Hyst	ADD INTRAFREQH OGROUP MOD INTRAFREQH OGROUP LST INTRAFREQH OGROUP	LBFD-0020180 1 / TDLBFD-0020 1801	Coverage Based Intra-frequency Handover	Meaning:Indicates the hysteresis for intra-frequency handover event A3. This parameter decreases frequent event triggering due to radio signal fluctuations and reduces the probability of handover decision errors and ping-pong handovers. A larger value of this parameter results in a lower probability. The hysteresis for inter-frequency handover event A3 is the same as the value of this parameter. For details, see 3GPP TS 36.331.  GUI Value Range:0~30  Unit:0.5dB  Actual Value Range:0~15, step:0.5  Default Value:2

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
IntraFreqHoGroup	IntraFreqHoA3 TimeToTrig	ADD INTRAFREQH OGROUP MOD INTRAFREQH OGROUP LST INTRAFREQH OGROUP	LBFD-0020180 1 / TDLBFD-0020 1801	Coverage Based Intra-frequency Handover	Meaning:Indicates the time- to-trigger for intra-frequency handover event A3. When the UE detects that the signal quality in the serving cell and that in at least one neighboring cell meet the entering condition, it does not immediately send a measurement report to the eNodeB. Instead, the UE sends a report only when the signal quality meets the entering condition throughout the time-to-trigger. This parameter helps decrease the number of occasionally triggered event reports, the average number of handovers, and the number of incorrect handovers, preventing unnecessary handovers. The time-to-trigger for interfrequency handover event A3 is the same as

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					the value of this parameter.  GUI Value Range:0ms, 40ms, 64ms, 80ms, 100ms, 128ms, 160ms, 256ms, 320ms, 480ms, 512ms, 640ms, 1024ms,
					1280ms, 2560ms, 5120ms
					Unit:ms Actual Value Range:0ms, 40ms, 64ms, 80ms, 100ms, 128ms, 160ms, 256ms, 320ms, 480ms, 512ms, 640ms, 1024ms, 1280ms, 2560ms, 5120ms
					Default Value: 320ms

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
IntraRatHoComm	IntraFreqHoA3 TrigQuan	MOD INTRARATHO COMM LST INTRARATHO COMM	LBFD-0020180 1 / TDLBFD-0020 1801	Coverage Based Intra-frequency Handover	Meaning:Indicates the quantity used to evaluate the triggering condition for the intra-frequency handover event. The quantity can be RSRP or RSRQ. The measured RSRP values are stable, varying little with the load, and therefore there is little signal fluctuation. The measured RSRQ values vary with the load and are likely to reflect the signal quality of the cell in real time. For details, see 3GPP TS 36.331.  GUI Value Range:RSRP, RSRQ Unit:None Actual Value Range:RSRP, RSRQ Default Value:RSRP

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
IntraRatHoComm	IntraRatHo- MaxRprtCell	MOD INTRARATHO COMM LST INTRARATHO COMM	LBFD-0020180 1 / TDLBFD-0020 1801 LBFD-0020180 2 / TDLBFD-0020 1802 LBFD-0020180 4 / TDLBFD-0020 1804 LBFD-0020180 5 / TDLBFD-0020 1805 TDLBFD-0020 18 TDLBFD-0010 22 TDLBFD-0010 23 TDLBFD-0010 33 TDLBFD-0010 34 TDLBFD-0010 35 TDLBFD-0010 19	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Distance Based Inter-frequency Handover Service Based Inter-frequency Handover Mobility Management SRVCC to UTRAN SRVCC to GERAN CS Fallback to UTRAN CS Fallback to UTRAN CS Fallback to GERAN CS Fallback to GERAN CS Fallback to GERAN CS Fallback to GERAN CS Fallback to CDMA2000 1xRTT PS Inter-RAT Mobility between E- UTRAN and UTRAN	Meaning:Indicates the maximum number of cells to be included in the measurement report after an intra-RAT interfrequency or intra-RAT intra-frequency measurement event for handover purposes or a periodic intra-RAT measurement for ANR purposes is triggered. For details, see 3GPP TS 36.331.  GUI Value Range:1~8 Unit:None Actual Value Range:1~8 Default Value:4

Command	
IntraRatHoCom m IntraFreqHoRpr tInterval	cates the interval between periodic

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
IntraRatHoCom	IntraRatHoRprt Amount	MOD INTRARATHO COMM LST INTRARATHO COMM	LBFD-0020180 1 / TDLBFD-0020 1801 LBFD-0020180 2 / TDLBFD-0020 1801 LBFD-0020180 4 / TDLBFD-0020 1801 LBFD-0020180 4 / TDLBFD-0020 1801 TDLBFD-0020 18 TDLBFD-0010 22 TDLBFD-0010 23 TDLBFD-0010 33 TDLBFD-0010 34 TDLBFD-0010 35 TDLBFD-0010 19	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Distance Based Inter-frequency Handover Service Based Inter-frequency Handover Mobility Management SRVCC to UTRAN SRVCC to GERAN CS Fallback to UTRAN CS Fallback to GERAN CS Fallback to GERAN CS Fallback to CDMA2000 1xRTT PS Inter-RAT Mobility between E- UTRAN and	Meaning:Indicates the number of periodical measurement reports to be sent after an event for the intra- or inter-frequency handover within the E-UTRAN is triggered. It is used to prevent the impact of measurement report loss and internal processing failure on the handover. For details, see 3GPP TS 36.331.  GUI Value Range:r1(1), r2 (2), r4(4), r8(8), r16(16), r32 (32), r64(64), Infinity (Infinity)  Unit:None  Actual Value Range:r1, r2, r4, r8, r16, r32, r64, Infinity  Default Value:Infinity (Infinity)

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
IntraRatHoComm	IntraFreqHoA3 RprtQuan	MOD INTRARATHO COMM LST INTRARATHO COMM	LBFD-0020180 1 / TDLBFD-0020 1801	Coverage Based Intra-frequency Handover	Meaning:Indicates the quantity to be included in the measurement report for the intra-frequency handover event. The quantity can be RSRP, RSRQ, or both. The measured RSRP values are stable, varying little with the load, and therefore there is little signal fluctuation. The measured RSRQ values vary with the load and are likely to reflect the signal quality of the cell in real time. Even when this parameter is set to BOTH, the eNodeB triggers a handover based on the setting of the IntraFreqHoA3 TrigQuan parameter.The value of this parameter is also used as the quantity to be included in the measurement report between A3-related interfrequency measurement reports. For details, see

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					3GPP TS 36.331.
					GUI Value Range:SAME_ AS_TRIG_QU AN(Same as Trig Quan), BOTH
					Unit:None
					Actual Value Range:SAME_ AS_TRIG_QU AN, BOTH
					Default Value:SAME_ AS_TRIG_QU AN(Same as Trig Quan)

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranIntra-FreqNCell	CellIndividua-IOffset	ADD EUTRANINTR AFREQNCELL MOD EUTRANINTR AFREQNCELL LST EUTRANINTR AFREQNCELL	LBFD-0020180 1 / TDLBFD-0020 1801 TDLBFD-0020 18	Coverage Based Intra-frequency Handover Mobility Management	Meaning:Indicates the cell individual offset for the intrafrequency neighboring cell, which is used in evaluation for handovers. It affects the probability of triggering intrafrequency measurement reports. A larger value of this parameter indicates a higher probability. For details, see 3GPP TS 36.331.  GUI Value Range:dB-24 (-24dB), dB-22 (-22dB), dB-18 (-18dB), dB-16 (-16dB), dB-14 (-14dB), dB-12 (-12dB), dB-10 (-10dB), dB-8 (-8dB), dB-6 (-6dB), dB-5 (-5dB), dB-4 (-4dB), dB-3 (-3dB), dB-2 (-2dB), dB-1 (-1dB), dB0 (0dB), dB1 (1dB), dB0 (0dB), dB1 (1dB), dB2 (2dB), dB3 (3dB), dB4 (4dB), dB5 (5dB), dB6 (6dB), dB6 (6dB), dB8 (8dB), dB10

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					(10dB), dB12 (12dB), dB14 (14dB), dB16 (16dB), dB18 (18dB), dB20 (20dB), dB22 (22dB), dB24 (24dB) Unit:dB
					Actual Value Range:dB-24, dB-22, dB-20, dB-18, dB-16, dB-14, dB-12, dB-10, dB-8, dB-6, dB-5, dB-4, dB-3, dB-2, dB-1, dB0, dB1, dB2, dB3, dB4, dB5, dB6, dB8, dB10, dB12, dB14, dB16, dB18, dB20, dB22, dB24
					Default Value:dB0 (0dB)

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
Cell	CellSpecificOff set	ADD CELL MOD CELL LST CELL	LBFD-0020180 1 / TDLBFD-0020 1801 TDLBFD-0020 18 TDLBFD-0020 1802 TDLBFD-0020 1804 TDLBFD-0020 1805 TDLOFD-0010 19 TDLOFD-0010 43 TDLOFD-0010 72 TDLOFD-0010 30 TDLOFD-0010 46 TDLOFD-0010 73	Coverage Based Intra-frequency Handover Mobility Management Coverage Based Inter-frequency Handover Distance Based Inter-frequency Handover Service Based Inter-frequency Handover PS Inter-RAT Mobility between E-UTRAN and UTRAN Service based Inter-RAT handover to UTRAN Distance based Inter-RAT handover to UTRAN PS Inter-RAT Mobility between E-UTRAN and GERAN Service based Inter-RAT handover to UTRAN Distance based Inter-RAT handover to UTRAN Distance Based Inter-RAT handover to GERAN Distance based Inter-RAT handover to GERAN Distance based Inter-RAT handover to GERAN	Meaning:Indicates the cell specific offset for the serving cell. It affects the probability of triggering handovers from the serving cell to its neighboring cells. A smaller value of this parameter leads to a higher probability. For details, see 3GPP TS 36.331.  GUI Value Range:dB-24 (-24dB), dB-22 (-22dB), dB-20 (-20dB), dB-18 (-18dB), dB-16 (-16dB), dB-14 (-14dB), dB-12 (-12dB), dB-10 (-10dB), dB-8 (-8dB), dB-6 (-6dB), dB-5 (-5dB), dB-4 (-4dB), dB-3 (-3dB), dB-2 (-2dB), dB-1 (1dB), dB0 (0dB), dB1 (1dB), dB0 (0dB), dB1 (1dB), dB2 (2dB), dB3 (3dB), dB4 (4dB), dB5 (5dB), dB6 (6dB), dB6 (6dB), dB1 (10dB), dB12 (12dB), dB14 (14dB), dB16 (10dB), dB12 (12dB), dB14 (14dB), dB16 (16dB), dB16 (16dB), dB18 (18dB), dB16 (18dB), dB18 (18dB), dB20

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					(20dB), dB22 (22dB), dB24 (24dB)
					Unit:dB
					Actual Value Range:dB-24, dB-22, dB-20, dB-18, dB-16, dB-14, dB-12, dB-10, dB-8, dB-6, dB-5, dB-4, dB-3, dB-2, dB-1, dB0, dB1, dB2, dB3, dB4, dB5, dB6, dB8, dB10, dB12, dB14, dB16, dB18, dB20, dB22, dB24
					Default Value:dB0 (0dB)

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterFreqHoGro up	InterFreqHoA1 A2Hyst	ADD INTERFREQH OGROUP MOD INTERFREQH OGROUP LST INTERFREQH OGROUP	LBFD-0020180 2 / TDLBFD-0020 1802	Coverage Based Inter-frequency Handover	Meaning:Indicates the hysteresis for inter-frequency measurement events A1 and A2. This parameter is used to prevent frequent triggering of event evaluation caused by radio signal fluctuation. In this way, the probability of ping-pong handovers or handover decision errors is reduced. A larger value of this parameter results in a lower probability.  GUI Value Range:0~30 Unit:0.5dB Actual Value Range:0~15, step:0.5 Default Value:2

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterFreqHoGroup	InterFreqHoA2 ThdRsrp	ADD INTERFREQH OGROUP MOD INTERFREQH OGROUP LST INTERFREQH OGROUP	LBFD-0020180 2 / TDLBFD-0020 1802	Coverage Based Inter-frequency Handover	Meaning:Indicates the RSRP threshold for inter-frequency measurement event A2. When the measured RSRP value is below the threshold, a measurement report will be sent. The value -141 does not take effect and is reserved for forward compatibility. If this parameter is set to -141, the value -140 is used as the threshold in implementation. GUI Value Range:-141~-43 Unit:dBm  Actual Value Range:-141~-43  Default Value:-109

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterFreqHoGro up	InterFreqHoA2 ThdRsrq	ADD INTERFREQH OGROUP MOD INTERFREQH OGROUP LST INTERFREQH OGROUP	LBFD-0020180 2 / TDLBFD-0020 1802	Coverage Based Inter-frequency Handover	Meaning:Indicates the RSRQ threshold for inter-frequency measurement event A2. When the measured RSRQ value is below this threshold, a measurement report will be sent.  GUI Value Range:-40~-6 Unit:0.5dB Actual Value Range:-20~-3, step:0.5 Default Value:-24

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
IntraRatHoComm	InterFreqHoA1 A2TrigQuan	MOD INTRARATHO COMM LST INTRARATHO COMM	LBFD-0020180 2 / TDLBFD-0020 1802	Coverage Based Inter-frequency Handover	Meaning:Indicates the quantity used in the evaluation for interfrequency measurement event A1 or A2. The quantity can be RSRP, RSRQ, or both. The measured RSRP values are stable, varying little with the load, and therefore there is little signal fluctuation. The measured RSRQ values vary with the load and are likely to reflect the signal quality of the cell in real time. For details, see 3GPP TS 36.331.  GUI Value Range:RSRP, RSRQ, BOTH Unit:None Actual Value Range:RSRP, RSRQ, BOTH Default Value:RSRP

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterFreqHoGroup	InterFreqHoA1 A2TimeToTrig	ADD INTERFREQH OGROUP MOD INTERFREQH OGROUP LST INTERFREQH OGROUP	LBFD-0020180 2 / TDLBFD-0020 1802	Coverage Based Inter-frequency Handover	Meaning:Indicates the time-to-trigger for inter-frequency measurement event A1 or A2. When detecting that the signal quality in the serving cell meets the triggering condition, the UE does not send a measurement report to the eNodeB immediately. Instead, the UE sends a report only when the signal quality continuously meets the entering condition during the time-to-trigger. This parameter helps decrease the number of occasionally triggered event reports, the average number of handovers, and the number of wrong handovers. In summary, it helps prevent unnecessary handovers.  GUI Value Range:Oms, 40ms, 64ms, 80ms, 100ms, 128ms, 160ms, 128ms, 160ms,

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					256ms, 320ms, 480ms, 512ms, 640ms, 1024ms, 1280ms, 2560ms, 5120ms Unit:ms Actual Value Range:0ms, 40ms, 64ms, 80ms, 100ms, 128ms, 160ms, 256ms, 320ms, 480ms, 512ms, 640ms, 1024ms, 1280ms, 2560ms, 5120ms Default Value: 640ms

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterFreqHoGro up	InterFreqHoA1 ThdRsrp	ADD INTERFREQH OGROUP MOD INTERFREQH OGROUP LST INTERFREQH OGROUP	LBFD-0020180 2 / TDLBFD-0020 1802	Coverage Based Inter-frequency Handover	Meaning:Indicates the RSRP threshold for inter-frequency measurement event A1. When the measured RSRP value exceeds this threshold, a measurement report will be sent. The value -141 does not take effect and is reserved for forward compatibility. If this parameter is set to -141, the value -140 is used as the threshold in implementation. GUI Value Range:-141~-43 Unit:dBm  Actual Value Range:-141~-43  Default Value:-105

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterFreqHoGro up	InterFreqHoA1 ThdRsrq	ADD INTERFREQH OGROUP MOD INTERFREQH OGROUP LST INTERFREQH OGROUP	LBFD-0020180 2 / TDLBFD-0020 1802	Coverage Based Inter-frequency Handover	Meaning:Indicates the RSRQ threshold for inter-frequency measurement event A1. When the measured RSRQ value exceeds this threshold, a measurement report will be sent.  GUI Value Range:-40~-6 Unit:0.5dB Actual Value Range:-20~-3, step:0.5 Default Value:-20

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatHoComm	InterRatHoA1A 2TrigQuan	MOD INTERRATHO COMM LST INTERRATHO COMM	LOFD-001019 / TDLOFD-0010 19 LOFD-001020 / TDLOFD-0010 20 LOFD-001021 / TDLOFD-0010 21 TDLOFD-0010 22 TDLOFD-0010 23	PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and CDMA2000 SRVCC to UTRAN SRVCC to GERAN	Meaning:Indicates the quantity used to evaluate the triggering condition for the inter-RAT measurement event A1 or A2. The values are RSRP, RSRQ and BOTH. The measured RSRP values are stable, varying little with the load, and therefore there is little signal fluctuation. The measured RSRQ values vary with the load and are likely to reflect the signal quality of the cell in real time. By default, the reporting quantity for the inter-RAT measurement event A1 or A2 is BOTH, that is, both RSRP and RSRQ. For details, see 3GPP TS 36.331.  GUI Value Range:RSRP, RSRQ, BOTH Unit:None Actual Value Range:RSRP, RSRQ, BOTH Default Value:RSRP

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatHo-CommGroup	InterRatHoA1A 2Hyst	ADD INTERRATHO COMMGROUP MOD INTERRATHO COMMGROUP LST INTERRATHO COMMGROUP	LOFD-001019 / TDLOFD-0010 19 LOFD-001020 / TDLOFD-0010 20 LOFD-001021 / TDLOFD-0010 21 TDLOFD-0010 22 TDLOFD-0010 23	PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and CDMA2000 SRVCC to UTRAN SRVCC to GERAN	Meaning:Indicates the hysteresis for inter-RAT measurement events A1 and A2. This parameter is used to prevent frequent triggering of event evaluation caused by radio signal fluctuation. In this way, the probability of ping-pong handovers or handover decision errors is reduced. A larger value of this parameter results in a lower probability.  GUI Value Range:0~30 Unit:0.5dB Actual Value Range:0~15, step:0.5 Default Value:2

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatHo-CommGroup	InterRatHoA1A 2TimeToTrig	ADD INTERRATHO COMMGROUP MOD INTERRATHO COMMGROUP LST INTERRATHO COMMGROUP	LOFD-001019 / TDLOFD-0010 19 LOFD-001020 / TDLOFD-0010 20 LOFD-001021 / TDLOFD-0010 21 TDLOFD-0010 22 TDLOFD-0010 23	PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and CDMA2000 SRVCC to UTRAN SRVCC to GERAN	Meaning:Indicates the time-to-trigger for inter-RAT measurement event A1 or A2. When detecting that the signal quality in the serving cell meets the entering condition, the UE does not send a measurement report to the eNodeB immediately. Instead, the UE sends a report only when the signal quality continuously meets the entering condition during the time-to-trigger. This parameter helps decrease the number of occasionally triggered event reports, the average number of handovers, and the number of wrong handovers. In summary, it helps prevent unnecessary handovers.  GUI Value Range:Oms, 40ms, 64ms, 80ms, 100ms, 128ms, 160ms, 160ms, 128ms, 160ms,

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					256ms, 320ms, 480ms, 512ms, 640ms, 1024ms, 1280ms, 2560ms, 5120ms Unit:ms Actual Value Range:0ms, 40ms, 64ms, 80ms, 100ms, 128ms, 160ms, 256ms, 320ms, 480ms, 512ms, 640ms, 1024ms, 1280ms, 2560ms, 5120ms Default Value: 640ms

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
CellAlgoSwitch	FreqPriorityHo Switch	MOD CELLALGOS WITCH LST CELLALGOS WITCH	None	None	Meaning:Indicates the switch related to the frequency-priority-based inter-frequency handover. FreqPriorIFHO Switch: Indicates the frequency-priority-based inter-frequency handover switch.Frequency handover switch.Frequency handover is applicable when the eNodeB provides dual coverage and one frequency is preferred for carrying services. If this switch is set to On, the frequency-priority-based inter-frequency handover will be triggered even when the serving cell provides a good signal quality. If this switch is set to Off, the frequency-priority-based inter-frequency handover is disabled. The inter-frequency handover can only be triggered when other conditions

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
				Teature Ivalite	for triggering inter-frequency handovers are met. Freq Prior IF Blind HOS witch: Indicates the frequency-priority-based inter-frequency blind handover switch. If this switch is set to On, the frequency-priority-based inter-frequency blind handover is enabled. If this switch is set to Off, the eNodeB decides whether to perform the frequency-priority-based inter-frequency handover based on measurements. This switch is valid only when Freq Prior IF HO Switch is set to On.  GUI Value Range: Freq Prior IF HO Switch (Freq Prior IF HO Switch), Freq Prior IF Blind HOS witch (Freq Prior IF B
					BlindHOSwitch ) Unit:None Actual Value Range:FreqPrio

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					FreqPriorIF- BlindHOSwitch Default Value:FreqPrior IFHOSwitch:Of f, FreqPriorIFBlin dHOSwitch:On
IntraRatHoComm	FreqPriInterFre qHoA1TrigQua n	MOD INTRARATHO COMM LST INTRARATHO COMM	None	None	Meaning:Indicates the triggering quantity for frequency-priority-based inter-frequency measurement events A1 and A2. The quantity can be either RSRP or RSRQ. The measured RSRP values are stable, varying little with the load, and therefore there is little signal fluctuation. The measured RSRQ values vary with the load and are likely to reflect the signal quality of the cell in real time. For details, see 3GPP TS 36.331.  GUI Value Range:RSRP, RSRQ, BOTH Unit:None Actual Value Range:RSRP, RSRQ, BOTH Default Value:RSRP

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterFreqHoGro up	FreqPriInterFre qHoA1ThdRsrp	ADD INTERFREQH OGROUP MOD INTERFREQH OGROUP LST INTERFREQH OGROUP	None	None	Meaning:Indicates the RSRP threshold for frequency-priority-based inter-frequency measurement event A1. When the measured RSRP value exceeds this threshold, an event A1 report will be sent. The value -141 does not take effect, and is reserved for forward compatibility. If this parameter is set to -141, the value -140 is used as the threshold in implementation. GUI Value Range:-141~-43 Unit:dBm  Actual Value Range:-141~-43  Default Value:-85

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterFreqHoGro up	FreqPriInterFre qHoA1ThdRsrq	ADD INTERFREQH OGROUP MOD INTERFREQH OGROUP LST INTERFREQH OGROUP	None	None	Meaning:Indicates the RSRQ threshold for frequency-priority-based inter-frequency measurement event A1. When the measured RSRQ value exceeds this threshold, an event A1 report will be sent.  GUI Value Range:-40~-6 Unit:0.5dB Actual Value Range:-20~-3, step:0.5 Default Value:-16
InterFreqHoGro up	FreqPriInterFre qHoA2ThdRsrp	ADD INTERFREQH OGROUP MOD INTERFREQH OGROUP LST INTERFREQH OGROUP	None	None	Meaning:Indicates the RSRP threshold for frequency-priority-based inter-frequency measurement event A2. If the measured RSRP value is less than this threshold, an event A2 report will be sent.  GUI Value Range:-140~-43 Unit:dBm Actual Value Range:-140~-43 Default Value:-87

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterFreqHoGro up	FreqPriInterFre qHoA2ThdRsrq	ADD INTERFREQH OGROUP MOD INTERFREQH OGROUP LST INTERFREQH OGROUP	None	None	Meaning:Indicates the RSRQ threshold for inter-frequency measurement event A2. When the measured RSRQ value is below this threshold, a measurement report will be sent.  GUI Value Range:-40~-6 Unit:0.5dB Actual Value Range:-20~-3, step:0.5 Default Value:-20
CellAlgoSwitch	DistBasedHoS-witch	MOD CELLALGOS WITCH LST CELLALGOS WITCH	LBFD-0020180 4 / TDLBFD-0020 1804 LOFD-001072 / TDLOFD-0010 72 LOFD-001073 / TDLOFD-0010 73	Distance Based Inter-frequency Handover Distance based Inter-RAT handover to UTRAN Distance based Inter-RAT handover to GERAN	Meaning:Indicates the switch used to enable or disable distance-based handovers. If this switch is turned on, distance-based handovers are allowed. If this switch is turned off, distance-based handovers are prohibited. GUI Value Range:OFF (Off), ON(On) Unit:None Actual Value Range:OFF, ON Default Value:OFF(Off)

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
DistBasedHO	DistBasedMea- sObjType	MOD DISTBASEDH O LST DISTBASEDH O	LOFD-001072 / TDLOFD-0010 72 LOFD-001073 / TDLOFD-0010 73 LBFD-0020180 4 / TDLBFD-0020 1804	Distance based Inter-RAT handover to UTRAN Distance based Inter-RAT handover to GERAN Distance Based Inter-frequency Handover	Meaning:Indicates the measurement object type for distance-based handovers. The measurement object type can be E-UTRAN, UTRAN, or GERAN. GUI Value Range:EUTRAN, UTRAN Unit:None Actual Value Range:EUTRAN, UTRAN Unit:None Actual Value Range:EUTRAN, GERAN, UTRAN UTRAN UTRAN UTRAN Default Value:EUTRAN:Off, GERAN:Off,

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
DistBasedHO	DistBasedHOT	MOD DISTBASEDH O LST DISTBASEDH O	LBFD-0020180 4 / TDLBFD-0020 1804 LOFD-001072 / TDLOFD-0010 72 LOFD-001073 / TDLOFD-0010 73	Distance Based Inter-frequency Handover Distance based Inter-RAT handover to UTRAN Distance based Inter-RAT handover to GERAN	Meaning:Indicates the threshold for distance-based handovers. If the distance between a UE and the cell center is greater than this threshold, a distance-based handover is triggered for this UE.  GUI Value Range:1~1000 (metric system); 3~3281 (imperial system)  Unit:100m (100ft)  Actual Value Range: 100~100000 (metric system); 300~328100 (imperial system)  Default Value: 10(metric system); 300 (imperial system)  Default Value: 10(metric system); 33 (imperial system)

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
ServiceIf- HoCfgGroup	ServiceIfHoCfg GroupId	ADD SERVICEIF- HOCFGGROU P LST SERVICEIF- HOCFGGROU P MOD SERVICEIF- HOCFGGROU P RMV SERVICEIF- HOCFGGROU P	LBFD-0020180 5 / TDLBFD-0020 1805	Service Based Inter-frequency Handover	Meaning:Indicates the ID of the service-based interfrequency handover policy group.  GUI Value Range:0~9  Unit:None  Actual Value Range:0~9  Default  Value:None
ServiceIf- HoCfgGroup	DlEarfcn	ADD SERVICEIF- HOCFGGROU P MOD SERVICEIF- HOCFGGROU P LST SERVICEIF- HOCFGGROU P	LBFD-0020180 5 / TDLBFD-0020 1805	Service Based Inter-frequency Handover	Meaning:Indicates the frequency to which a service with a specified QCI is preferentially handed over. GUI Value Range: 0~45589,64436 ~65535 Unit:None Actual Value Range: 0~45589,64436 ~65535 Default Value:0

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
ServiceIf- HoCfgGroup	CnOperatorId	ADD SERVICEIF- HOCFGGROU P LST SERVICEIF- HOCFGGROU P MOD SERVICEIF- HOCFGGROU P RMV SERVICEIF- HOCFGGROU P	LBFD-0020180 5	Service Based Inter-frequency Handover	Meaning:Indicates the ID of the operator. GUI Value Range:0~5 Unit:None Actual Value Range:0~5 Default Value:None
ServiceIf- HoCfgGroup	InterFreqHoStat e	ADD SERVICEIF- HOCFGGROU P MOD SERVICEIF- HOCFGGROU P LST SERVICEIF- HOCFGGROU P	LBFD-0020180 5 / TDLBFD-0020 1805	Service Based Inter-frequency Handover	Meaning:Indicates whether to allow service-based interfrequency handovers to a specified frequency.  GUI Value Range:NO_HO, PERMIT_HO Unit:None Actual Value Range:NO_HO, PERMIT_HO Default Value:NO_HO

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranInterNFre q	DIEarfcn	ADD EUTRANINTE RNFREQ LST EUTRANINTE RNFREQ MOD EUTRANINTE RNFREQ RMV EUTRANINTE RNFREQ	LBFD-0020180 2 / TDLBFD-0020 1802 LBFD-0020180 3 / TDLBFD-0020 1803 LBFD-0020180 4 / TDLBFD-0020 1804 LBFD-0020180 5 / TDLBFD-0020 1805 TDLBFD-0010 50	Coverage Based Inter-frequency Handover Cell Selection and Re-selection Distance Based Inter-frequency Handover Service Based Inter-frequency Handover Mobility between LTE TDD and LTE FDD	Meaning:Indicates the DL EARFCN of the neighboring cell on the neighboring E-UTRAN frequency. For details, see the 3GPP TS 36.104. GUI Value Range: 0~45589,54436 ~65535 Unit:None Actual Value Range: 0~45589,54436 ~65535 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranInterNFre	MeasBandWidth	ADD EUTRANINTE RNFREQ MOD EUTRANINTE RNFREQ LST EUTRANINTE RNFREQ	LBFD-0020180 2 / TDLBFD-0020 1802 LBFD-0020180 4 / TDLBFD-0020 1804 LBFD-0020180 5 / TDLBFD-0020 1805	Coverage Based Inter-frequency Handover Distance Based Inter-frequency Handover Service Based Inter-frequency Handover	Meaning:Indicates the measurement bandwidth of the inter-frequency neighboring cell on the frequency. The setting of this parameter depends on the bandwidth configuration of the cell. In E-UTRAN, a cell bandwidth is also expressed in units of resource blocks (RBs). Cell bandwidths 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, and 20 MHz correspond to 6 RBs, 15 RBs, 25 RBs, 50 RBs, 75 RBs, and 100 RBs, respectively. GUI Value Range:MBW6 (1.4M), MBW15(3M), MBW25(5M), MBW50(10M), MBW75(15M), MBW75(15M), MBW75(15M), MBW100(20M) Unit:None Actual Value Range:MBW6, MBW15, MBW25, MBW50, MBW75, MBW50, MBW75, MBW50, MBW75, MBW50, MBW75, MBW75, MBW75, MBW100

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranInterNFre q	QoffsetFreq	ADD EUTRANINTE RNFREQ MOD EUTRANINTE RNFREQ LST EUTRANINTE RNFREQ	LBFD-0020180 2 / TDLBFD-0020 1802 LBFD-0020180 3 / TDLBFD-0020 1803 LBFD-0020180 4 / TDLBFD-0020 1804 LBFD-0020180 5 / TDLBFD-0020 1805	Coverage Based Inter-frequency Handover Cell Selection and Re-selection Distance Based Inter-frequency Handover Service Based Inter-frequency Handover	Meaning:Indicates the frequency offset of the cell on the neighboring E-UTRAN frequency. It is delivered in system information block type 5 (SIB5) and measurement configurations. It is used in the judgment for cell reselection and for the triggering and stopping of events A3, A4, and A5. For details, see 3GPP TS 36.331.  GUI Value Range:dB-24 (-24dB), dB-22 (-22dB), dB-18 (-18dB), dB-16 (-16dB), dB-14 (-14dB), dB-12 (-12dB), dB-10 (-10dB), dB-8 (-8dB), dB-6 (-6dB), dB-5 (-5dB), dB-6 (-6dB), dB-7 (-1dB), dB-

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					(8dB), dB10 (10dB), dB12 (12dB), dB14 (14dB), dB16 (16dB), dB18 (18dB), dB20 (20dB), dB22 (22dB), dB24 (24dB)
					Unit:dB Actual Value Range:dB-24, dB-22, dB-20, dB-18, dB-16, dB-14, dB-12, dB-10, dB-8, dB-6, dB-5, dB-4, dB-3, dB-2, dB-1, dB0, dB1, dB2, dB3, dB4, dB5, dB6, dB8, dB10, dB12, dB14, dB16, dB18, dB20, dB22, dB24
					Default Value:dB0 (0dB)

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterFreqHoGro up	InterFreqHoA4 Hyst	ADD INTERFREQH OGROUP MOD INTERFREQH OGROUP LST INTERFREQH OGROUP	LBFD-0020180 2 / TDLBFD-0020 1802 LBFD-0020180 4 / TDLBFD-0020 1804 LBFD-0020180 5 / TDLBFD-0020 1805	Coverage Based Inter-frequency Handover Distance Based Inter-frequency Handover Service Based Inter-frequency Handover	Meaning:Indicates the hysteresis for event A4. This parameter is used to prevent frequent triggering of event evaluation caused by radio signal fluctuation. In this way, the probability of ping-pong handovers or handover decision errors is reduced. A larger value of this parameter results in a lower probability.  GUI Value Range:0~30 Unit:0.5dB Actual Value Range:0~15, step:0.5 Default Value:2

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterFreqHoGroup	InterFreqHoA4 TimeToTrig	ADD INTERFREQH OGROUP MOD INTERFREQH OGROUP LST INTERFREQH OGROUP	LBFD-0020180 2 / TDLBFD-0020 1802 LBFD-0020180 4 / TDLBFD-0020 1804 LBFD-0020180 5 / TDLBFD-0020 1805	Coverage Based Inter-frequency Handover Distance Based Inter-frequency Handover Service Based Inter-frequency Handover	Meaning:Indicates the time- to-trigger for event A4 for the inter-frequency handover. When detecting that the signal quality in at least one neighboring cell meets the entering condition, the UE does not send a measurement report to the eNodeB immediately. Instead, the UE sends a report only when the signal quality continuously meets the entering condition during the time-to- trigger. This parameter helps decrease the number of occasionally triggered event reports, the average number of handovers, and the number of wrong handovers. In summary, it helps prevent unnecessary handovers. GUI Value Range:Oms, 40ms, 64ms, 80ms, 100ms, 128ms, 160ms,

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					256ms, 320ms, 480ms, 512ms, 640ms, 1024ms, 1280ms, 2560ms, 5120ms Unit:ms Actual Value Range:0ms, 40ms, 64ms, 80ms, 100ms, 128ms, 160ms, 256ms, 320ms, 480ms, 512ms, 640ms, 1024ms, 1280ms, 2560ms, 5120ms Default Value: 640ms

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
IntraRatHoComm	InterFreqHoRpr tInterval	MOD INTRARATHO COMM LST INTRARATHO COMM	LBFD-0020180 2 / TDLBFD-0020 1802 LBFD-0020180 4 / TDLBFD-0020 1804 LBFD-0020180 5 / TDLBFD-0020 1805	Coverage Based Inter-frequency Handover Distance Based Inter-frequency Handover Service Based Inter-frequency Handover	Meaning:Indicates the interval at which periodical measurement reports are sent after an interfrequency handover event is triggered. For details, see 3GPP TS 36.331.  GUI Value Range:120ms, 240ms, 480ms, 640ms, 1024ms, 2048ms, 5120ms, 10240ms, 1min, 6min, 12min, 30min, 60min Unit:None Actual Value Range:120ms, 240ms, 480ms, 640ms, 1024ms, 2048ms, 5120ms, 10240ms, 1024ms, 2048ms, 5120ms, 10240ms, 1min, 6min, 12min, 30min, 60min Default Value: 240ms

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
IntraRatHoComm	InterFreqHoA4 RprtQuan	MOD INTRARATHO COMM LST INTRARATHO COMM	LBFD-0020180 2 / TDLBFD-0020 1802 LBFD-0020180 4 / TDLBFD-0020 1804 LBFD-0020180 5 / TDLBFD-0020 1805	Coverage Based Inter-frequency Handover Distance Based Inter-frequency Handover Service Based Inter-frequency Handover	Meaning:Indicates the quantity to be included in the measurement report for the inter-frequency handover event. The quantity can be RSRP, RSRQ, or both. The measured RSRP values are stable, varying little with the load, and therefore there is little signal fluctuation. The measured RSRQ values vary with the load and are likely to reflect the signal quality of the cell in real time. After an interfrequency handover event is triggered, the default reporting quantity is BOTH, that is, both RSRP and RSRQ. For details, see 3GPP TS 36.331.  GUI Value Range:SAME_AS_TRIG_QU AN(Same as Trig Quan), BOTH Unit:None Actual Value Range:SAME_Actual Value Range:

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					AS_TRIG_QU AN, BOTH
					Default Value:SAME_ AS_TRIG_QU AN(Same as Trig Quan)

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranInterNFre	InterFreqHoE-ventType	ADD EUTRANINTE RNFREQ MOD EUTRANINTE RNFREQ LST EUTRANINTE RNFREQ	LBFD-0020180 2 / TDLBFD-0020 1802	Coverage Based Inter-frequency Handover	Meaning:Indicates the event to trigger coverage-based inter-frequency handovers. This parameter can be set to EventA3, EventA4, or EventA5. If the neighboring E-UTRAN frequency and the serving frequency are in the same frequency band, event A3 is recommended as it provides better handover performance in this situation. If the neighboring E-UTRAN frequency and the serving frequency are in different frequency and the serving frequency and the serving frequency are in different frequency bands, event A4 or A5 is used.  GUI Value Range:EventA3 (EventA4), EventA5 (EventA5) Unit:None Actual Value Range:EventA3, EventA4, EventA5  Default Value Range:EventA3, EventA4, EventA5  Default Value Range:EventA3, EventA4, EventA5

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterFreqHoGroup	InterFreqHoA3 Offset	ADD INTERFREQH OGROUP MOD INTERFREQH OGROUP LST INTERFREQH OGROUP	LBFD-0020180 2 / TDLBFD-0020 1802	Coverage Based Inter-frequency Handover	Meaning:Indicates the offset for event A3 associated with inter-frequency handover. This parameter determines the border between the serving cell and the neighboring cell. If the parameter is set to a large value, an interfrequency handover is performed only when the signal quality of the neighboring cell is significantly better than that of the serving cell and other triggering conditions are met. For details, see 3GPP TS 36.331.  GUI Value Range:-30~30 Unit:0.5dB Actual Value Range:-15~15, step:0.5 Default Value:2

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterFreqHoGro up	A3InterFreqHo A1ThdRsrp	ADD INTERFREQH OGROUP MOD INTERFREQH OGROUP LST INTERFREQH OGROUP	LBFD-0020180 2 / TDLBFD-0020 1802	Coverage Based Inter-frequency Handover	Meaning:Indicates the RSRP threshold for event A1 associated with event-A3-triggered interfrequency handover. When the measured RSRP value exceeds this threshold, a measurement report will be sent. The value -141 does not take effect and is reserved for forward compatibility. If this parameter is set to -141, the value -140 is used as the threshold in implementation. GUI Value Range:-141~-43 Unit:dBm  Actual Value Range:-141~-43  Default Value:-95

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterFreqHoGroup	A3InterFreqHo A2ThdRsrp	ADD INTERFREQH OGROUP MOD INTERFREQH OGROUP LST INTERFREQH OGROUP	LBFD-0020180 2 / TDLBFD-0020 1802	Coverage Based Inter-frequency Handover	Meaning:Indicates the RSRP threshold for event A2 associated with event-A3-triggered interfrequency handover. When the measured RSRP value is below the threshold, a measurement report will be sent. The value -141 does not take effect and is reserved for forward compatibility. If this parameter is set to -141, the value -140 is used as the threshold in implementation. GUI Value Range:-141~-43 Unit:dBm  Actual Value Range:-141~-43  Default Value:-99

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranInter-FreqNCell	CellIndividua-IOffset	ADD EUTRANINTE RFREQNCELL MOD EUTRANINTE RFREQNCELL LST EUTRANINTE RFREQNCELL	LBFD-0020180 2 / TDLBFD-0020 1802 LBFD-0020180 4 / TDLBFD-0020 1804 LBFD-0020180 5 / TDLBFD-0020 1805	Coverage Based Inter-frequency Distance Based Inter-frequency Handover Service Based Inter-frequency Handover	Meaning:Indicates the cell individual offset for the interfrequency neighboring cell, which is used in evaluation for handovers. It affects the probability of triggering interfrequency measurement reports. A larger value of this parameter indicates a higher probability. For details, see 3GPP TS 36.331.  GUI Value Range:dB-24 (-24dB), dB-22 (-22dB), dB-20 (-20dB), dB-18 (-18dB), dB-16 (-16dB), dB-14 (-14dB), dB-12 (-12dB), dB-10 (-10dB), dB-8 (-8dB), dB-6 (-6dB), dB-5 (-5dB), dB-1 (-1dB), dB-1 (

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					(10dB), dB12 (12dB), dB14 (14dB), dB16 (16dB), dB18 (18dB), dB20 (20dB), dB22 (22dB), dB24 (24dB) Unit:dB
					Actual Value Range:dB-24, dB-22, dB-20, dB-18, dB-16, dB-14, dB-12, dB-10, dB-8, dB-6, dB-5, dB-4, dB-3, dB-2, dB-1, dB0, dB1, dB2, dB3, dB4, dB5, dB6, dB8, dB10, dB12, dB14, dB16, dB18, dB20, dB22, dB24
					Default Value:dB0 (0dB)

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterFreqHoGroup	InterFreqHoA4 ThdRsrp	ADD INTERFREQH OGROUP MOD INTERFREQH OGROUP LST INTERFREQH OGROUP	LBFD-0020180 2 / TDLBFD-0020 1802 LBFD-0020180 4 / TDLBFD-0020 1804	Coverage Based Inter-frequency Handover Distance Based Inter-frequency Handover	Meaning:Indicates the RSRP threshold for event A4 related to coverage-based interfrequency handover. When the measured RSRP value exceeds this threshold, an inter-frequency measurement report will be sent. The value -141 does not take effect and is reserved for forward compatibility. If this parameter is set to -141, the value -140 is used as the threshold in implementation. The value of this parameter is also used as the RSRP threshold for event A4 related to distance-based, UL-power-based, or SPID-based interfrequency handover back to the HPLMN. GUI Value Range:-141~-43 Unit:dBm  Actual Value Range:-141~-43  Default Value:-105

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterFreqHoGro up	InterFreqHoA4 ThdRsrq	ADD INTERFREQH OGROUP MOD INTERFREQH OGROUP LST INTERFREQH OGROUP	LBFD-0020180 2 / TDLBFD-0020 1802 LBFD-0020180 4 / TDLBFD-0020 1804	Coverage Based Inter-frequency Handover Distance Based Inter-frequency Handover	Meaning:Indicates the RSRQ threshold for event A4 related to coverage-based interfrequency handover. When the measured RSRQ value exceeds this threshold, an inter-frequency measurement report will be sent. The value of this parameter is also used as the RSRQ threshold for event A4 related to distance-based, UL-power-based, or SPID-based inter-frequency handover back to the HPLMN. GUI Value Range:-40~-6 Unit:0.5dB Actual Value Range:-20~-3, step:0.5 Default Value:-20

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
IntraRatHoCom m	InterFreqHoA4 TrigQuan	MOD INTRARATHO COMM LST INTRARATHO COMM	LBFD-0020180 2 / TDLBFD-0020 1802 LBFD-0020180 4 / TDLBFD-0020 1804 LBFD-0020180 5 / TDLBFD-0020 1805	Coverage Based Inter-frequency Handover Distance Based Inter-frequency Handover Service Based Inter-frequency Handover	Meaning:Indicates the triggering quantity for frequency-priority- and load-based inter-frequency handover event A4.  GUI Value Range:RSRP, RSRQ, BOTH Unit:None Actual Value Range:RSRP, RSRQ, BOTH Default Value:RSRP

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterFreqHoGroup	InterFreqLoadB asedHoA4ThdR srp	ADD INTERFREQH OGROUP MOD INTERFREQH OGROUP LST INTERFREQH OGROUP	LBFD-0020180 5 / TDLBFD-0020 1805	Service Based Inter-frequency Handover	Meaning:Indicates the RSRP threshold for event A4 related to load-based inter-frequency handover. When the measured RSRP value exceeds this threshold, an inter-frequency measurement report will be sent. The value -141 does not take effect and is reserved for forward compatibility. If this parameter is set to -141, the value -140 is used as the threshold in implementation. The value of this parameter is also used as the RSRP threshold for event A4 related to frequency-priority-based or service-based inter-frequency handover.  GUI Value Range:-141~-43 Unit:dBm  Actual Value Range:-141~-43  Default Value:-103

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterFreqHoGroup	InterFreqLoadB asedHoA4ThdR srq	ADD INTERFREQH OGROUP MOD INTERFREQH OGROUP LST INTERFREQH OGROUP	LBFD-0020180 5 / TDLBFD-0020 1805	Service Based Inter-frequency Handover	Meaning:Indicates the RSRQ threshold for event A4 related to load-based inter-frequency handover. When the measured RSRQ value exceeds this threshold, an inter-frequency measurement report will be sent.The value of this parameter is also used as the RSRQ threshold for event A4 related to frequency-priority-based or service-based inter-frequency handover.  GUI Value Range:-40~-6 Unit:0.5dB Actual Value Range:-20~-3, step:0.5 Default Value:-18

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatHo-CommGroup	InterRatHoA2T hdRsrp	ADD INTERRATHO COMMGROUP MOD INTERRATHO COMMGROUP LST INTERRATHO COMMGROUP	LOFD-001019 / TDLOFD-0010 19 LOFD-001020 / TDLOFD-0010 20 LOFD-001021 / TDLOFD-0010 21 TDLOFD-0010 22 TDLOFD-0010 23	PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and CDMA2000 SRVCC to UTRAN SRVCC to GERAN	Meaning:Indicates the RSRP threshold for inter-RAT measurement event A2. When the measured RSRP value of the serving cell is below this threshold, an event A2 report will be sent. The value -141 does not take effect and is reserved for forward compatibility. If this parameter is set to -141, the value -140 is used as the threshold in implementation. GUI Value Range:-141~-43 Unit:dBm Actual Value Range:-141~-43 Default Value:-115

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatHo-CommGroup	InterRatHoA2T hdRsrq	ADD INTERRATHO COMMGROUP MOD INTERRATHO COMMGROUP LST INTERRATHO COMMGROUP	LOFD-001019 / TDLOFD-0010 19 LOFD-001020 / TDLOFD-0010 20 LOFD-001021 / TDLOFD-0010 21 TDLOFD-0010 22 TDLOFD-0010 23	PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and CDMA2000 SRVCC to UTRAN SRVCC to GERAN	Meaning:Indicates the RSRQ threshold for inter-RAT measurement event A2. When the measured RSRQ value of the serving cell is below this threshold, an event A2 report will be sent.  GUI Value Range:-40~-6 Unit:0.5dB Actual Value Range:-20~-3, step:0.5 Default Value:-24

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatHo-CommGroup	InterRatHoA1T hdRsrp	ADD INTERRATHO COMMGROUP MOD INTERRATHO COMMGROUP LST INTERRATHO COMMGROUP	LOFD-001019 / TDLOFD-0010 19 LOFD-001020 / TDLOFD-0010 20 LOFD-001021 / TDLOFD-0010 21 TDLOFD-0010 22 TDLOFD-0010 23	PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and CDMA2000 SRVCC to UTRAN SRVCC to GERAN	Meaning:Indicates the RSRP threshold for inter-RAT measurement event A1. When the measured RSRP value of the serving cell exceeds this threshold, an event A1 report will be sent. The value -141 does not take effect and is reserved for forward compatibility. If this parameter is set to -141, the value -140 is used as the threshold in implementation. GUI Value Range:-141~-43 Unit:dBm  Actual Value Range:-141~-43  Default Value:-111

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatHo-CommGroup	InterRatHoA1T hdRsrq	ADD INTERRATHO COMMGROUP MOD INTERRATHO COMMGROUP LST INTERRATHO COMMGROUP	LOFD-001019 / TDLOFD-0010 19 LOFD-001020 / TDLOFD-0010 20 LOFD-001021 / TDLOFD-0010 21 TDLOFD-0010 22 TDLOFD-0010 23	PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and CERAN SRVCC to UTRAN SRVCC to GERAN	Meaning:Indicates the RSRQ threshold for inter-RAT measurement event A1. When the measured RSRQ value of the serving cell exceeds this threshold, an event A1 report will be sent.  GUI Value Range:-40~-6 Unit:0.5dB Actual Value Range:-20~-3, step:0.5 Default Value:-20
ServiceIr- HoCfgGroup	CnOperatorId	ADD SERVICEIR- HOCFGGROU P LST SERVICEIR- HOCFGGROU P MOD SERVICEIR- HOCFGGROU P RMV SERVICEIR- HOCFGGROU P	LOFD-001043 / TDLOFD-0010 43 LOFD-001046 / TDLOFD-0010 46	Service based inter-RAT handover to UTRAN Service based inter-RAT handover to GERAN	Meaning:Indicates the index of the operator. GUI Value Range:0~5 Unit:None Actual Value Range:0~5 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
ServiceIr- HoCfgGroup	ServiceIrHoCfg GroupId	ADD SERVICEIR- HOCFGGROU P LST SERVICEIR- HOCFGGROU P MOD SERVICEIR- HOCFGGROU P RMV SERVICEIR- HOCFGGROU P	LOFD-001043 / TDLOFD-0010 43 LOFD-001046 / TDLOFD-0010 46	Service based inter-RAT handover to UTRAN Service based inter-RAT handover to GERAN	Meaning:Indicates the ID of the service-based inter-RAT handover policy group.  GUI Value Range:0~9  Unit:None  Actual Value Range:0~9  Default  Value:None
ServiceIr- HoCfgGroup	InterRatHoState	ADD SERVICEIR- HOCFGGROU P MOD SERVICEIR- HOCFGGROU P LST SERVICEIR- HOCFGGROU P	LOFD-001043 / TDLOFD-0010 43 LOFD-001046 / TDLOFD-0010 46	Service based inter-RAT handover to UTRAN Service based inter-RAT handover to GERAN	Meaning:Indicates whether service-based inter-RAT handovers are required, allowed, or not allowed for a QCI. GUI Value Range:NO_HO, PERMIT_HO, MUST_HO Unit:None Actual Value Range:NO_HO, PERMIT_HO, MUST_HO Default Value:NO_HO

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
UtranNFreq	UtranDlArfcn	ADD UTRANNFRE Q LST UTRANNFRE Q MOD UTRANNFRE Q RMV UTRANNFRE Q	LBFD-0020180 3 / TDLBFD-0020 1803 LOFD-001019 / TDLOFD-0010 19 LBFD-002009 / TDLBFD-0020 09 TDLOFD-0010 78	Cell Selection and Re-selection PS Inter-RAT Mobility between E- UTRAN and UTRAN Broadcast of system information E-UTRAN to UTRAN CS/PS steering	Meaning:Indicates the DL UARFCN of the neighboring cell on the UTRAN frequency. The UARFCN range in each FDD frequency band is shown as follows: Band 1: Normal UARFCNs: [10562-10838] Special UARFCNs: none Band 2: Normal UARFCNs: [9662-9938] Special UARFCNs: [9662-9938] Special UARFCNs: [1162-1513] Special UARFCNs: [1162-1513] Special UARFCNs: [1162-1513] Special UARFCNs: [1162-1513] Special UARFCNs: [1537-1738] Special UARFCNs: [1537-1738] Special UARFCNs: [1537-1738] Special UARFCNs: [1537-1738] Special UARFCNs: [1537-1748] Special UARFCNs: [1537-17458] Special UARFCNs: [1537-17458] Special UARFCNs: [1537-4458] Special UARFCNs: [1537-4458] Special UARFCNs: [1007, 1012, 1032, 1037, 1032, 1037,

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
МО	Parameter ID		Feature ID	Feature Name	1062, 1087) Band 6: Normal UARFCNs: [4387-4413] Special UARFCNs: (1037, 1062) Band 7: Normal UARFCNs: [2237-2563] Special UARFCNs: (2587, 2612, 2637, 2662, 2687, 2712, 2737, 2762, 2787, 2812, 2837, 2862, 2887, 2912) Band 8: Normal UARFCNs: [2937-3088] Special UARFCNs: [2937-3088] Special UARFCNs: [9237-9387] Special UARFCNs: none Band 9: Normal UARFCNs: [9237-9387] Special UARFCNs: [9237-9387] Special UARFCNs: [9237-9387] Special UARFCNs: [9237-9387] Special UARFCNs: [9500-9600] and [10050-10125] Special UARFCNs:
					none Band 2: Normal UARFCNs: [9250-9550] and [9650-9950] Special UARFCNs:

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					none Band 3: Normal UARFCNs: [9550-9650] Special UARFCNs: none Band 4: Normal UARFCNs: [12850-13100] Special UARFCNs: (2112, 2137, 2162, 2187, 2212, 2237, 2262, 2287, 2312, 2337) Band 5: Normal UARFCNs: [11500-12000] Special UARFCNs: none Band 6: Normal UARFCNs: none Band 6: Normal UARFCNs: [9400-9600] Special UARFCNs: [9400-9600] Special UARFCNs: none For details, see 3GPP TS 25.104 and 3GPP TS 25.105. GUI Value
					Range:0~16383 Unit:None
					Actual Value Range:0~16383
					Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
UtranNFreq	OffsetFreq	ADD UTRANNFRE Q MOD UTRANNFRE Q LST UTRANNFRE Q	LOFD-001019 / TDLOFD-0010 19 TDLOFD-0010 22 TDLOFD-0010 33 TDLOFD-0010 52	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN Flash CS Fallback to UTRAN	Meaning:Indicates the frequency offset of the cell on the UTRAN frequency. It determines the probability of triggering measurement reports for events B1 and B2. For details, see 3GPP TS 36.331.  GUI Value Range:-15~15 Unit:dB Actual Value Range:-15~15 Default Value:0
GeranNfreqGroup	OffsetFreq	ADD GERANNFRE QGROUP MOD GERANNFRE QGROUP LST GERANNFRE QGROUP	LOFD-001020 / TDLOFD-0010 20 TDLOFD-0010 23 TDLOFD-0010 34 TDLOFD-0010 53	PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN CS Fallback to GERAN Flash CS Fallback to GERAN	Meaning:Indicates the frequency offset of the group of neighboring GERAN carrier frequencies. This parameter is used in the decision of the UE to send measurement reports for inter-RAT handovers. For details, see 3GPP TS 36.331. GUI Value Range:-15~15 Unit:dB  Actual Value Range:-15~15  Default Value:0

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatHoU-tranGroup	InterRatHoUtra nB1Hyst	ADD INTERRATHO UTRANGROU P MOD INTERRATHO UTRANGROU P LST INTERRATHO UTRANGROU P	LOFD-001019 / TDLOFD-0010 19 TDLOFD-0010 22	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN	Meaning:Indicates the hysteresis for event B1 related to inter-RAT handover to UTRAN. This parameter is used to prevent frequent triggering of event evaluation caused by radio signal fluctuation. In this way, the probability of ping-pong handovers or handover decision errors is reduced. A larger value of this parameter results in a lower probability of ping-pong handovers or handover decision errors. GUI value Range:0~30 Unit:0.5dB Actual Value Range:0~15, step:0.5 Default Value:2

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatHoGeranGroup	InterRatHoGera nB1Hyst	ADD INTERRATHO GERANGROU P MOD INTERRATHO GERANGROU P LST INTERRATHO GERANGROU P	LOFD-001020 / TDLOFD-0010 20 TDLOFD-0010 23	PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN	Meaning:Indicates the hysteresis for event B1 related to inter-RAT handover to GERAN. This parameter is used to prevent frequent triggering of event evaluation caused by radio signal fluctuation. In this way, the probability of ping-pong handovers or handover decision errors is reduced. A larger value of this parameter results in a lower probability of ping-pong handovers or handover decision errors. GUI value Range:0~30 Unit:0.5dB Actual Value Range:0~15, step:0.5 Default Value:2

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatHoU-tranGroup	InterRatHoUtra nB1TimeToTrig	ADD INTERRATHO UTRANGROU P MOD INTERRATHO UTRANGROU P LST INTERRATHO UTRANGROU P	LOFD-001019 / TDLOFD-0010 19 TDLOFD-0010 22	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN	Meaning:Indicates the time-to-trigger for event B1 related to inter-RAT handover to UTRAN. When detecting that the signal quality in at least one neighboring cell meets the entering condition, the UE does not send a measurement report to the eNodeB immediately. Instead, the UE sends a report only when the signal quality continuously meets the entering condition during the time-to-trigger. This parameter helps decrease the number of occasionally triggered event reports, the average number of handovers and the number of wrong handovers, preventing unnecessary handovers.  GUI Value Range:Oms, 40ms, 64ms, 80ms, 100ms, 128ms, 160ms,

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					256ms, 320ms, 480ms, 512ms, 640ms, 1024ms, 1280ms, 2560ms, 5120ms Unit:ms Actual Value Range:0ms, 40ms, 64ms, 80ms, 100ms, 128ms, 160ms, 256ms, 320ms, 480ms, 512ms, 640ms, 1024ms, 1280ms, 2560ms, 5120ms Default Value: 640ms

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatHoGeranGroup	InterRatHoGera nB1TimeToTrig	ADD INTERRATHO GERANGROU P MOD INTERRATHO GERANGROU P LST INTERRATHO GERANGROU P	LOFD-001020 / TDLOFD-0010 20 TDLOFD-0010 23	PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN	Meaning:Indicates the time-to-trigger for event B1 related to inter-RAT handover to GERAN. When detecting that the signal quality in at least one neighboring cell meets the entering condition, the UE does not send a measurement report to the eNodeB immediately. Instead, the UE sends a report only when the signal quality continuously meets the entering condition during the time-to-trigger. This parameter helps decrease the number of occasionally triggered event reports, the average number of handovers and the number of wrong handovers, preventing unnecessary handovers.  GUI Value Range:0ms, 40ms, 64ms, 80ms, 100ms, 128ms, 160ms, 128ms, 160ms,

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					256ms, 320ms, 480ms, 512ms, 640ms, 1024ms, 1280ms, 2560ms, 5120ms Unit:ms Actual Value Range:0ms, 40ms, 64ms, 80ms, 100ms, 128ms, 160ms, 256ms, 320ms, 480ms, 512ms, 640ms, 1024ms, 1280ms, 2560ms, 5120ms Default Value: 640ms

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatHoComm	InterRatHoUtra nB1MeasQuan	MOD INTERRATHO COMM LST INTERRATHO COMM	LOFD-001019 / TDLOFD-0010 19 TDLOFD-0010 22 TDLOFD-0010 33	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN	Meaning:Indicates the quantity to be included in the measurements for handovers to UTRAN. This parameter is dedicated to UTRAN FDD. The RSCP values are relatively stable, while the Ec/No values may vary with the network load. The value BOTH applies only to UEs complying with 3GPP Release 10. For UEs complying with 3GPP Release 8 or 9, the value BOTH takes the same effect as the value RSCP. For details, see 3GPP TS 23.003.  GUI Value Range:RSCP, ECNO, BOTH Unit:None Actual Value Range:RSCP, ECNO, BOTH Default Value:RSCP

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatHoComm	InterRatHo- MaxRprtCell	MOD INTERRATHO COMM LST INTERRATHO COMM	LOFD-001090 / TDLOFD-0010 90 LOFD-001019 / TDLOFD-0010 19 LOFD-001020 / TDLOFD-0010 20 LOFD-001021 / TDLOFD-0010 21 TDLBFD-0010 23 TDLBFD-0010 43 TDLBFD-0010 72 TDLBFD-0010 72 TDLBFD-0010 73	Enhanced CS Fallback to CDMA2000 1xRTT PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and CDMA2000 SRVCC to UTRAN SRVCC to GERAN Service based Inter-RAT handover to UTRAN Distance based Inter-RAT handover to UTRAN Service based Inter-RAT handover to UTRAN Distance based Inter-RAT handover to GERAN Distance based Inter-RAT handover to GERAN Distance based Inter-RAT handover to GERAN	Meaning:Indicates the maximum number of cells to be included in the measurement report after an inter-RAT handover event or a periodic inter-RAT measurement for ANR purposes is triggered. For details, see 3GPP TS 36.331.  GUI Value Range:1~8  Unit:None  Actual Value Range:1~8  Default Value:4

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatHoComm	InterRatHoU-tranRprtInterval	MOD INTERRATHO COMM LST INTERRATHO COMM	LOFD-001019 / TDLOFD-0010 19 TDLOFD-0010 22 TDLOFD-0010 33	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN	Meaning:Indicates the interval at which periodical measurement reports are sent after the event for the handover to UTRAN is triggered. For details, see 3GPP TS 36.331.  GUI Value Range:120ms, 240ms, 480ms, 640ms, 1024ms, 2048ms, 5120ms, 10240ms, 1min, 6min, 12min, 30min, 60min Unit:None  Actual Value Range:120ms, 240ms, 480ms, 640ms, 1024ms, 2048ms, 5120ms, 10240ms, 1min, 6min, 12min, 30min, 60min Unit:None Actual Value Range:120ms, 240ms, 480ms, 640ms, 1024ms, 2048ms, 5120ms, 10240ms, 1min, 6min, 12min, 30min, 60min Default Value: 480ms

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatHoCom m	InterRatHoGeranRprtInterval	MOD INTERRATHO COMM LST INTERRATHO COMM	LOFD-001020 / TDLOFD-0010 20 LOFD-001021 TDLOFD-0010 23 TDLOFD-0010 34 TDLOFD-0010 35 TDLOFD-0010 19 TDLOFD-0010 46 TDLOFD-0010 73	PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and CDMA2000 SRVCC to GERAN CS Fallback to UTRAN CS Fallback to GERAN CS Fallback to CDMA2000 1xRTT PS Inter-RAT Mobility between E- UTRAN and UTRAN Service based Inter-RAT handover to GERAN Distance based Inter-RAT handover to GERAN	Meaning:Indicates the interval at which periodic measurement reports are sent to the eNodeB after the event for inter-RAT handover to GERAN is triggered. For details, see 3GPP TS 36.331.  GUI Value Range:120ms, 240ms, 480ms, 640ms, 1024ms, 2048ms, 5120ms, 10240ms, 1min, 6min, 12min, 30min, 60min Unit:None Actual Value Range:120ms, 240ms, 480ms, 640ms, 1024ms, 2048ms, 5120ms, 10240ms, 1min, 6min, 12min, 30min, 60min Unit:None Actual Value Range:120ms, 240ms, 480ms, 640ms, 1024ms, 2048ms, 5120ms, 10240ms, 1min, 6min, 12min, 30min, 60min Default Value: 480ms

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatHoComm	InterRatHoRprt Amount	MOD INTERRATHO COMM LST INTERRATHO COMM	LOFD-001090 / TDLOFD-0010 90 LOFD-001019 / TDLOFD-0010 19 LOFD-001020 / TDLOFD-0010 20 LOFD-001021 / TDLOFD-0010 21 TDLBFD-0010 23 TDLBFD-0010 43 TDLBFD-0010 72 TDLBFD-0010 72 TDLBFD-0010 73	Enhanced CS Fallback to CDMA2000 1xRTT PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN SINTER-RAT Mobility between E- UTRAN and CDMA2000 SRVCC to UTRAN SRVCC to GERAN Service based Inter-RAT handover to UTRAN Distance based Inter-RAT handover to UTRAN Service based Inter-RAT handover to UTRAN Distance based Inter-RAT handover to GERAN Distance based Inter-RAT handover to GERAN Distance based Inter-RAT handover to GERAN	Meaning:Indicates the number of periodical measurement reports to be sent after an inter-RAT handover event is triggered. It is used to prevent the impact of measurement report loss and internal processing failure on the handover. For details, see 3GPP TS 36.331.  GUI Value Range:r1(1), r2 (2), r4(4), r8(8), r16(16), r32 (32), r64(64), Infinity (Infinity)  Unit:None  Actual Value Range:r1, r2, r4, r8, r16, r32, r64, Infinity  Default Value:Infinity (Infinity)

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
ENodeBAlgoS witch	FreqLayerSwtic	MOD ENODEBALG OSWITCH LST ENODEBALG OSWITCH	LOFD-001087 LOFD-001078 / TDLOFD-0010 22 TDLOFD-0010 33 TDLOFD-0010 52 TDLOFD-0010 88	SRVCC Flexible Steering to UTRAN E-UTRAN to UTRAN CS/PS Steering SRVCC to UTRAN CS Fallback to UTRAN Flash CS Fallback to UTRAN CS Fallback Steering to UTRAN	Meaning:This parameter includes the following three switches: UtranFreqLayer MeasSwitch, UtranFreqLayer BlindSwitch, and UtranSrvccSwit ch. UtranSrvccSwit ch takes effect only when UtranFreqLayer MeasSwitch is turned on. If UtranFreqLayer MeasSwitch is turned on, the UTRAN hierarchy-based measurement algorithm takes effect for measurements related to coverage-based and CSFB-triggered handovers from EUTRAN hierarchy-based blind-handover algorithm takes effect for coverage-based and CSFB-triggered blind-handover algorithm takes effect for coverage-based and CSFB-triggered blind handovers from EUTRAN to UTRAN. If UtranSrvccSwit

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					ch is turned on, the UTRAN SRVCC hierarchy-based measurement algorithm takes effect for SRVCC-triggered handovers from EUTRAN to UTRAN.
					GUI Value Range:UtranFre qLayerMeasSwi tch (UtranFreqLaye rMeasSwitch), UtranFreqLayer BlindSwitch (UtranFreqLaye rBlindSwitch), UtranSrvccSteer ingSwitch (UtranSrvcc- SteeringSwitch)
					Unit:None Actual Value Range:UtranFre qLayerMeasSwi tch, UtranFreqLayer BlindSwitch, UtranSrvccSteer ingSwitch
					Default Value:UtranFre qLayerMeasSwi tch:Off, UtranFreqLayer BlindSwitch:Of f, UtranSrvccSteer ingSwitch:Off

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatHoComm	InterRatHoEven tType	MOD INTERRATHO COMM LST INTERRATHO COMM	LOFD-001019 / TDLOFD-0010 19 LOFD-001020 / TDLOFD-0010 20 LOFD-001021 / TDLOFD-0010 21 TDLOFD-0010 22 TDLOFD-0010 23	PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and CDMA2000 SRVCC to UTRAN SRVCC to GERAN	Meaning:Indicates the type of the inter-RAT handover event. The event type can be B1 or B2. This parameter applies only to coverage-based handovers. For details, see 3GPP TS 36.331.  GUI Value Range:EventB1 (EventB1), EventB2 (EventB2)  Unit:None  Actual Value Range:EventB1, EventB2  Default Value:EventB1 (EventB1)

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatHoU-tranGroup	InterRatHoUtra nB1ThdRscp	ADD INTERRATHO UTRANGROU P MOD INTERRATHO UTRANGROU P LST INTERRATHO UTRANGROU P	LOFD-001019 / TDLOFD-0010 19 TDLOFD-0010 22	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN	Meaning:Indicates the RSCP threshold for event B1 related to coverage-based inter-RAT handover to UTRAN. This parameter specifies the requirement for RSCP of the target UTRAN cell. When the measurement value exceeds this threshold, a measurement report will be sent.  GUI Value Range:-120~-25 Unit:dBm  Actual Value Range:-120~-25  Default Value:-103

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatHoU-tranGroup	LdSvBasedHoU tranB1ThdRscp	ADD INTERRATHO UTRANGROU P MOD INTERRATHO UTRANGROU P LST INTERRATHO UTRANGROU P	LOFD-001043 TDLOFD-0010 22	Service based inter-RAT handover to UTRAN SRVCC to UTRAN	Meaning:Indicates the RSCP threshold for event B1 related to load- or service-based inter-RAT handover to UTRAN. This parameter specifies the requirement for RSCP of the target UTRAN cell. When the measurement value exceeds this threshold, a measurement report will be sent.  GUI Value Range:-120~-25 Unit:dBm  Actual Value Range:-120~-25 Default Value:-101

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatHoU-tranGroup	InterRatHoUtra nB1ThdEcn0	ADD INTERRATHO UTRANGROU P MOD INTERRATHO UTRANGROU P LST INTERRATHO UTRANGROU P	LOFD-001019 / TDLOFD-001019 TDLOFD-001022	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN	Meaning:Indicates the Ec/No threshold for event B1 related to coverage-based inter-RAT handover to UTRAN. This parameter specifies the requirement for Ec/No of the target UTRAN cell. For a cell with large signal fading variance, set this parameter to a large value to prevent unnecessary handovers. For a cell with small signal fading variance, set this parameter to a small value to ensure timely handovers. A large value of this parameter results in a low probability of handover to the UTRAN cell, and a small value leads to a high probability. When the measurement value exceeds this threshold, a measurement report will be sent.  GUI Value Range:-48~0 Unit:0.5dB

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					Actual Value Range:-24~0, step:0.5
					Default Value:-20

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatHoU-tranGroup	LdSvBasedHoU tranB1ThdEcn0	ADD INTERRATHO UTRANGROU P MOD INTERRATHO UTRANGROU P LST INTERRATHO UTRANGROU P	LOFD-001043 TDLOFD-0010 22	Service based inter-RAT handover to UTRAN SRVCC to UTRAN	Meaning:Indicates the Ec/No threshold for event B1 related to load- or service-based inter-RAT handover to UTRAN. This parameter specifies the requirement for Ec/No of the target UTRAN cell. When the measurement value exceeds this threshold, a measurement report may be sent. For a cell with large signal fading variance, set this parameter to a large value to prevent unnecessary handovers. For a cell with small signal fading variance, set this parameter to a small value to ensure timely handovers.  GUI Value Range:-48~0 Unit:0.5dB  Actual Value Range:-24~0, step:0.5  Default Value:-18

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatHoGeranGroup	InterRatHoGera nB1Thd	ADD INTERRATHO GERANGROU P MOD INTERRATHO GERANGROU P LST INTERRATHO GERANGROU P	LOFD-001020 / TDLOFD-0010 20	PS Inter-RAT Mobility between E- UTRAN and GERAN	Meaning:Indicates the RSSI threshold for event B1 related to coverage-based inter-RAT handover to GERAN. A UE sends a measurement report related to event B1 to the eNodeB when the RSSI in at least one GERAN cell exceeds this threshold and other triggering conditions are met. For details, see 3GPP TS 36.331.  GUI Value Range:-110~-48 Unit:dBm Actual Value Range:-110~-48 Default Value:-100

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatHoGeranGroup	LdSvBasedHoG eranB1Thd	ADD INTERRATHO GERANGROU P MOD INTERRATHO GERANGROU P LST INTERRATHO GERANGROU P	LOFD-001046 / TDLOFD-0010 46	Service based inter-RAT handover to GERAN	Meaning:Indicates the RSSI threshold for event B1 related to load- or service-based inter-RAT handover to GERAN. When the measured RSSI value exceeds this threshold, a measurement report will be sent.  GUI Value Range:-110~-48 Unit:dBm  Actual Value Range:-110~-48  Default Value:-98
InterRatPoli- cyCfgGroup	InterRatPoli- cyCfgGroupId	ADD INTERRATPO LICYCFGGRO UP LST INTERRATPO LICYCFGGRO UP MOD INTERRATPO LICYCFGGRO UP RMV INTERRATPO LICYCFGGRO UP	LOFD-001022 / TDLOFD-0010 22 LOFD-001023 / TDLOFD-0010 23 LOFD-001019 / TDLOFD-0010 19 LOFD-001020 / TDLOFD-0010 20 LOFD-001021 / TDLOFD-0010 21	SRVCC to UTRAN SRVCC to GERAN PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and CDMA2000	Meaning:Indicates the group ID of the parameters related to the inter-RAT handover with a specific QCI. GUI Value Range:0~39 Unit:None Actual Value Range:0~39 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranExternal-Cell	Mcc	ADD EUTRANEXTE RNALCELL ADD EUTRANEXTE RNALCELLBA ND LST EUTRANEXTE RNALCELL LST EUTRANEXTE RNALCELLBA ND MOD EUTRANEXTE RNALCELL RMV	LOFD-001036 LOFD-001037 TDLBFD-0020 1801 TDLBFD-0020 1802 TDLBFD-0020 1804 TDLBFD-0020 1805 TDLOFD-0010 50	RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Distance Based Inter-frequency Handover Service Based Inter-frequency Handover Mobility between LTE TDD and LTE FDD	Meaning:Indicates the mobile country code of the external E-UTRAN cell. The PLMN consists of the MCC and the MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, MCC = 123, MNC = 45, PLMN = 12345. GUI Value Range:3 characters Unit:None Actual Value Range:000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranExternal-Cell	Mnc	ADD EUTRANEXTE RNALCELL ADD EUTRANEXTE RNALCELLBA ND LST EUTRANEXTE RNALCELL LST EUTRANEXTE RNALCELLBA ND MOD EUTRANEXTE RNALCELL RMV	LOFD-001036 / TDLOFD-0010 36 LOFD-001037 / TDLOFD-0010 37 TDLBFD-0020 1801 TDLBFD-0020 1802 TDLBFD-0020 1804 TDLBFD-0020 1805 TDLOFD-0010 50	RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Distance Based Inter-frequency Handover Service Based Inter-frequency Handover Mobility between LTE TDD and LTE FDD	Meaning:Indicates the mobile network code of the external E-UTRAN cell. The PLMN consists of the MCC and the MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, MCC = 123, MNC = 45, PLMN = 12345. GUI Value Range:2~3 characters Unit:None Actual Value Range: 00~99,000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranExternal-Cell	eNodeBId	ADD EUTRANEXTE RNALCELL ADD EUTRANEXTE RNALCELLBA ND LST EUTRANEXTE RNALCELL LST EUTRANEXTE RNALCELLBA ND MOD EUTRANEXTE RNALCELL RMV	None	None	Meaning:Indicates the eNodeB identity of the external E-UTRAN cell. It uniquely identifies an eNodeB within a PLMN. The 28-bit E-UTRAN cell identity is comprised of the cell identity and the eNodeB identity (represented by the most significant 20 bits). The cell global identity (CGI) of an E-UTRAN cell is comprised of the E-UTRAN cell is comprised of the E-UTRAN cell identity and the PLMN ID. For details, see 3GPP TS 36.413.  GUI Value Range: 0~1048575 Unit:None Actual Value Range: 0~1048575 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranExternal-Cell	CellId	ADD EUTRANEXTE RNALCELL ADD EUTRANEXTE RNALCELLBA ND LST EUTRANEXTE RNALCELL LST EUTRANEXTE RNALCELLBA ND MOD EUTRANEXTE RNALCELL RMV EUTRANEXTE RNALCELLBA ND	LBFD-0020180 1 / TDLBFD-0020 1801 LBFD-0020180 2 / TDLBFD-0020 1802	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover	Meaning:Indicates the cell identity of the external E-UTRAN cell. It uniquely identifies a cell within an eNodeB. The 28-bit E-UTRAN cell identity is comprised of the cell identity (represented by the least significant eight bits) and the eNodeB identity. The cell global identity (CGI) of an E-UTRAN cell is comprised of the E-UTRAN cell identity and the E-UTRAN cell identity and the PLMN ID. For details, see 3GPP TS 36.413.  GUI Value Range:0~255 Unit:None Actual Value Range:0~255 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranExternal-Cell	DlEarfcn	ADD EUTRANEXTE RNALCELL MOD EUTRANEXTE RNALCELL LST EUTRANEXTE RNALCELL	LOFD-001036 / TDLOFD-0010 36 LOFD-001037 / TDLOFD-0010 37 TDLBFD-0020 1801 TDLBFD-0020 1802 TDLBFD-0020 1804 TDLBFD-0020 1805 TDLOFD-0010 50	RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Distance Based Inter-frequency Handover Service Based Inter-frequency Handover Mobility between LTE TDD and LTE FDD	Meaning:Indicates the DL EARFCN of the external E- UTRAN cell. For details, see 3GPP TS 36.104. GUI Value Range: 0~45589,54436 ~65535 Unit:None Actual Value Range: 0~45589,54436 ~65535 Default Value:None
EutranExternal-Cell	PhyCellId	ADD EUTRANEXTE RNALCELL MOD EUTRANEXTE RNALCELL LST EUTRANEXTE RNALCELL	LBFD-0020180 1 LBFD-0020180 2 LBFD-0020180 3	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Cell Selection and Reselection	Meaning:Indicates the physical cell ID of the external E-UTRAN cell. For details, see 3GPP TS 36.331. GUI Value Range:0~503 Unit:None Actual Value Range:0~503 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranExternal-Cell	Tac	ADD EUTRANEXTE RNALCELL MOD EUTRANEXTE RNALCELL LST EUTRANEXTE RNALCELL	LBFD-0020180 1 / TDLBFD-0020 1801 LBFD-0020180 2 / TDLBFD-0020 1802	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover	Meaning:Indicates the tracking area code (TAC) of the external E-UTRAN cell. Two TAC values 0x0000 (0) and 0xFFFE (65534) are reserved according to the protocol and will not be used in future versions. Therefore, do not use 0 or 65534 as a TAC value in TAC planning or configuration. GUI Value Range:0~65535 Unit:None Actual Value Range:0~65535 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranExternal-CellPlmn	Mcc	ADD EUTRANEXTE RNALCELLPL MN LST EUTRANEXTE RNALCELLPL MN RMV EUTRANEXTE RNALCELLPL MN	LOFD-001036 / TDLOFD-0010 36 LOFD-001037 / TDLOFD-0010 37	RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier	Meaning:Indicates the mobile country code of the external cell. A PLMN ID is comprised of an MCC and an MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, if the MCC is 123 and the MNC is 45, then the PLMN ID is 12345.  GUI Value Range:3 characters Unit:None Actual Value Range:000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranExternal-CellPlmn	Mnc	ADD EUTRANEXTE RNALCELLPL MN LST EUTRANEXTE RNALCELLPL MN RMV EUTRANEXTE RNALCELLPL MN	LOFD-001036 / TDLOFD-0010 36 LOFD-001037 / TDLOFD-0010 37	RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier	Meaning:Indicates the mobile network code of the external cell. A PLMN ID is comprised of an MCC and an MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, if the MCC is 123 and the MNC is 45, then the PLMN ID is 12345.  GUI Value Range:2~3 characters Unit:None Actual Value Range: 00~99,000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
Eutran External-Cell Plmn	eNodeBId	ADD EUTRANEXTE RNALCELLPL MN LST EUTRANEXTE RNALCELLPL MN RMV EUTRANEXTE RNALCELLPL MN	None	None	Meaning:Indicates the eNodeB identity of the external E-UTRAN cell. It uniquely identifies an eNodeB within a PLMN. The 28-bit E-UTRAN cell identity is comprised of the cell identity and the eNodeB identity (represented by the most significant 20 bits). The cell global identity (CGI) of an E-UTRAN cell is comprised of the E-UTRAN cell is comprised of the E-UTRAN cell identity and the PLMN ID. For details, see 3GPP TS 36.413.  GUI Value Range: 0~1048575 Unit:None Actual Value Range: 0~1048575 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranExternal-CellPlmn	CellId	ADD EUTRANEXTE RNALCELLPL MN LST EUTRANEXTE RNALCELLPL MN RMV EUTRANEXTE RNALCELLPL MN	LOFD-001036 / TDLOFD-0010 36 LOFD-001037 / TDLOFD-0010 37	RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier	Meaning:Indicates the cell identity of the external E-UTRAN cell. It uniquely identifies a cell within an eNodeB. The 28-bit E-UTRAN cell identity is comprised of the cell identity (represented by the least significant eight bits) and the eNodeB identity. The cell global identity (CGI) of an E-UTRAN cell is comprised of the E-UTRAN cell identity and the PLMN ID. For details, see 3GPP TS 36.413.  GUI Value Range:0~255 Unit:None Actual Value Range:0~255 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranExternal-CellPlmn	ShareMcc	ADD EUTRANEXTE RNALCELLPL MN LST EUTRANEXTE RNALCELLPL MN RMV EUTRANEXTE RNALCELLPL MN	LOFD-001036 / TDLOFD-0010 36 LOFD-001037 / TDLOFD-0010 37	RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier	Meaning:Indicates the mobile country code of the external E-UTRAN cell that is shared among multiple operators. A PLMN ID is comprised of an MCC and an MCC and an MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, if the MCC is 123 and the MNC is 45, then the PLMN ID is 12345.  GUI Value Range:3 characters Unit:None Actual Value Range:000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranExternal-CellPlmn	ShareMnc	ADD EUTRANEXTE RNALCELLPL MN LST EUTRANEXTE RNALCELLPL MN RMV EUTRANEXTE RNALCELLPL MN	LOFD-001036 / TDLOFD-0010 36 LOFD-001037 / TDLOFD-0010 37	RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier	Meaning:Indicates the mobile network code of the external E-UTRAN cell that is shared among multiple operators. A PLMN ID is comprised of an MCC and an MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, if the MCC is 123 and the MNC is 45, then the PLMN ID is 12345.  GUI Value Range:2~3 characters Unit:None Actual Value Range: 00~99,000~999 Default Value:None
EutranIntra- FreqNCell	LocalCellId	ADD EUTRANINTR AFREQNCELL LST EUTRANINTR AFREQNCELL MOD EUTRANINTR AFREQNCELL RMV EUTRANINTR AFREQNCELL	None	None	Meaning:Indicates the cell ID of the local cell. It uniquely identifies a cell within an eNodeB.  GUI Value Range:0~17  Unit:None  Actual Value Range:0~17  Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranIntra- FreqNCell	Mcc	ADD EUTRANINTR AFREQNCELL LST EUTRANINTR AFREQNCELL MOD EUTRANINTR AFREQNCELL RMV EUTRANINTR AFREQNCELL	LBFD-0020180 1 / TDLBFD-0020 1801	Coverage Based Intra-frequency Handover	Meaning:Indicates the mobile country code of the E-UTRAN neighboring cell. The PLMN consists of the MCC and the MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, MCC = 123, MNC = 45, PLMN = 12345. GUI Value Range:3 characters Unit:None Actual Value Range:000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranIntra-FreqNCell	Mnc	ADD EUTRANINTR AFREQNCELL LST EUTRANINTR AFREQNCELL MOD EUTRANINTR AFREQNCELL RMV EUTRANINTR AFREQNCELL	LBFD-0020180 1 / TDLBFD-0020 1801	Coverage Based Intra-frequency Handover	Meaning:Indicates the mobile network code of the E-UTRAN neighboring cell. The PLMN consists of the MCC and the MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, MCC = 123, MNC = 45, PLMN = 12345. GUI Value Range:2~3 characters Unit:None Actual Value Range: 00~99,000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranIntra-FreqNCell	eNodeBId	ADD EUTRANINTR AFREQNCELL LST EUTRANINTR AFREQNCELL MOD EUTRANINTR AFREQNCELL RMV EUTRANINTR AFREQNCELL	None	None	Meaning:Indicates the eNodeB identity of the intrafrequency neighboring cell. It uniquely identifies an eNodeB within a PLMN. The 28-bit E-UTRAN cell identity is comprised of the cell identity and the eNodeB identity (represented by the most significant 20 bits). The cell global identity (CGI) of an E-UTRAN cell is comprised of the E-UTRAN cell is comprised of the E-UTRAN cell identity and the PLMN ID. For details, see 3GPP TS 36.413.  GUI Value Range: 0~1048575 Unit:None Actual Value Range: 0~1048575 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranIntra-FreqNCell	CellId	ADD EUTRANINTR AFREQNCELL LST EUTRANINTR AFREQNCELL MOD EUTRANINTR AFREQNCELL RMV EUTRANINTR AFREQNCELL	LBFD-0020180 1 / TDLBFD-0020 1801	Coverage Based Intra-frequency Handover	Meaning:Indicates the local identity of the intra-frequency neighboring cell. It uniquely identifies a cell within an eNodeB. The 28-bit E-UTRAN cell identity is comprised of the cell identity (represented by the least significant eight bits) and the eNodeB identity. The cell global identity (CGI) of an E-UTRAN cell is comprised of the E-UTRAN cell identity and the PLMN ID. For details, see 3GPP TS 36.413.  GUI Value Range:0~255 Unit:None Actual Value Range:0~255 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
CellStandardQc	LocalCellId	LST CELLSTANDA RDQCI MOD CELLSTANDA RDQCI	None	None	Meaning:Indicates the local ID of the cell. It uniquely identifies a cell within a BS.  GUI Value Range:0~17  Unit:None  Actual Value Range:0~17  Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
CellStandardQc	Qei	LST CELLSTANDA RDQCI MOD CELLSTANDA RDQCI	LBFD-002025 / TDLBFD-0020 25 LOFD-0010150 2 / TDLOFD-0010 1502	Basic Scheduling Dynamic Scheduling	Meaning:Indicates the QoS class identifier (QCI) of an evolved packet system (EPS) bearer. Different QCIs indicate different QoS requirements, such as the packet delay budget, packet error loss rate, and resource type. For details, see Table 6.1.7 in 3GPP TS 23.203.  GUI Value Range:QCI1 (QCI 1), QCI2 (QCI 2), QCI3 (QCI 3), QCI4 (QCI 4), QCI5 (QCI 5), QCI6 (QCI 6), QCI7 (QCI 7), QCI8 (QCI 9)  Unit:None  Actual Value Range:QCI1, QCI9, QCI3, QCI4, QCI5, QCI4, QCI5, QCI4, QCI5, QCI4, QCI5, QCI6, QCI7, QCI8, QCI9  Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
CellStandardQc i	IntraFreqHoGro upId	MOD CELLSTANDA RDQCI LST CELLSTANDA RDQCI	LBFD-0020180 1 / TDLBFD-0020 1801	Coverage Based Intra-frequency Handover	Meaning:Indicates the ID of a parameter group related to intrafrequency handover.  GUI Value Range:0~9  Unit:None  Actual Value Range:0~9  Default Value:0
CellExtendedQc	ExtendedQci	ADD CELLEXTEND EDQCI LST CELLEXTEND EDQCI MOD CELLEXTEND EDQCI RMV CELLEXTEND EDQCI	LBFD-002032	Extended-QCI	Meaning:Indicates the extended QoS Class Identifier (QCI), which is required by the operator for service differentiation.  GUI Value Range:10~254  Unit:None  Actual Value Range:10~254  Default  Value:None
CellExtendedQc	LocalCellId	ADD CELLEXTEND EDQCI LST CELLEXTEND EDQCI MOD CELLEXTEND EDQCI RMV CELLEXTEND EDQCI	None	None	Meaning:Indicates the local ID of the cell. It uniquely identifies a cell within a BS.  GUI Value Range:0~17  Unit:None  Actual Value Range:0~17  Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
CellExtendedQc i	IntraFreqHoGro upId	ADD CELLEXTEND EDQCI MOD CELLEXTEND EDQCI LST CELLEXTEND EDQCI	LBFD-0020180 1 / TDLBFD-0020 1801	Coverage Based Intra-frequency Handover	Meaning:Indicates the ID of a parameter group related to intrafrequency handover.  GUI Value Range:0~9  Unit:None  Actual Value Range:0~9  Default Value:0
IntraFreqHoGro up	LocalCellId	ADD INTRAFREQH OGROUP LST INTRAFREQH OGROUP MOD INTRAFREQH OGROUP RMV INTRAFREQH OGROUP	None	None	Meaning:Indicates the local ID of the cell. It uniquely identifies a cell within a BS.  GUI Value Range:0~17 Unit:None Actual Value Range:0~17 Default Value:None
IntraFreqHoGro up	IntraFreqHoGro upId	ADD INTRAFREQH OGROUP LST INTRAFREQH OGROUP MOD INTRAFREQH OGROUP RMV INTRAFREQH OGROUP	None	None	Meaning:Indicates the ID of the parameter group related to intra-frequency handover.  GUI Value Range:0~9  Unit:None  Actual Value Range:0~9  Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranInterNFre q	LocalCellId	ADD EUTRANINTE RNFREQ LST EUTRANINTE RNFREQ MOD EUTRANINTE RNFREQ RMV EUTRANINTE RNFREQ	None	None	Meaning:Indicates the cell ID of the local cell. It uniquely identifies a cell within an eNodeB.  GUI Value Range:0~17  Unit:None  Actual Value Range:0~17  Default Value:None
EutranInter- FreqNCell	LocalCellId	ADD EUTRANINTE RFREQNCELL LST EUTRANINTE RFREQNCELL MOD EUTRANINTE RFREQNCELL RMV EUTRANINTE RFREQNCELL	None	None	Meaning:Indicates the cell ID of the local cell. It uniquely identifies a cell within an eNodeB.  GUI Value Range:0~17  Unit:None  Actual Value Range:0~17  Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranInter-FreqNCell	Mcc	ADD EUTRANINTE RFREQNCELL LST EUTRANINTE RFREQNCELL MOD EUTRANINTE RFREQNCELL RMV EUTRANINTE RFREQNCELL	LBFD-0020180 2 / TDLBFD-0020 1802	Coverage Based Inter-frequency Handover	Meaning:Indicates the mobile country code of the E-UTRAN neighboring cell. The PLMN consists of the MCC and the MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, MCC = 123, MNC = 45, PLMN = 12345. GUI Value Range:3 characters Unit:None Actual Value Range:000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranInter-FreqNCell	Mnc	ADD EUTRANINTE RFREQNCELL LST EUTRANINTE RFREQNCELL MOD EUTRANINTE RFREQNCELL RMV EUTRANINTE RFREQNCELL	LBFD-0020180 2 / TDLBFD-0020 1802	Coverage Based Inter-frequency Handover	Meaning:Indicates the mobile network code of the E-UTRAN neighboring cell. The PLMN consists of the MCC and the MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, MCC = 123, MNC = 45, PLMN = 12345. GUI Value Range:2~3 characters Unit:None Actual Value Range: 00~99,000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranInter-FreqNCell	eNodeBId	ADD EUTRANINTE RFREQNCELL LST EUTRANINTE RFREQNCELL MOD EUTRANINTE RFREQNCELL RMV EUTRANINTE RFREQNCELL	None	None	Meaning:Indicates the eNodeB identity of the interfrequency neighboring cell. It uniquely identifies an eNodeB within a PLMN. The 28-bit E-UTRAN cell identity is comprised of the cell identity and the eNodeB identity (represented by the most significant 20 bits). The cell global identity (CGI) of an E-UTRAN cell is comprised of the E-UTRAN cell is comprised of the E-UTRAN cell identity and the PLMN ID. For details, see 3GPP TS 36.413.  GUI Value Range: 0~1048575  Unit:None  Actual Value Range: 0~1048575  Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranInter-FreqNCell	CellId	ADD EUTRANINTE RFREQNCELL LST EUTRANINTE RFREQNCELL MOD EUTRANINTE RFREQNCELL RMV EUTRANINTE RFREQNCELL	LBFD-0020180 2	Coverage Based Inter-frequency Handover	Meaning:Indicates the local identity of the inter-frequency neighboring cell. It uniquely identifies a cell within an eNodeB. The 28-bit E-UTRAN cell identity is comprised of the cell identity (represented by the least significant eight bits) and the eNodeB identity. The cell global identity (CGI) of an E-UTRAN cell is comprised of the E-UTRAN cell identity and the PLMN ID. For details, see 3GPP TS 36.413.  GUI Value Range:0~255 Unit:None Actual Value Range:0~255 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
CellStandardQc	InterFreqHoGro upId	MOD CELLSTANDA RDQCI LST CELLSTANDA RDQCI	/ TDLBFD-0020 1804 LBFD-0020180 5 / TDLBFD-0020 1805	Distance Based Inter-frequency Handover Service Based Inter-frequency Handover	Meaning:Indicates the ID of a parameter group related to interfrequency handovers.  GUI Value Range:0~9  Unit:None  Actual Value Range:0~9  Default Value:0
CellExtendedQc	InterFreqHoGro upId	ADD CELLEXTEND EDQCI MOD CELLEXTEND EDQCI LST CELLEXTEND EDQCI	/ TDLBFD-0020 1802 / TDLBFD-0020 1804 LBFD-0020180 5 / TDLBFD-0020 1805	Coverage Based Inter-frequency Handover Distance Based Inter-frequency Handover Service Based Inter-frequency Handover	Meaning:Indicates the ID of a parameter group related to interfrequency handover.  GUI Value Range:0~9  Unit:None  Actual Value Range:0~9  Default Value:0
CnOperatorHoC fg	CnOperatorId	LST CNOPERATO RHOCFG MOD CNOPERATO RHOCFG	None	None	Meaning:Indicates the ID of the operator.  GUI Value Range:0~5 Unit:None Actual Value Range:0~5 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
EutranNFreqRa nShare	LocalCellId	ADD EUTRANNFRE QRANSHARE LST EUTRANNFRE QRANSHARE MOD EUTRANNFRE QRANSHARE RMV EUTRANNFRE QRANSHARE	None	None	Meaning:Indicates the ID of the local cell. It uniquely identifies a cell within an eNodeB.  GUI Value Range:0~17  Unit:None  Actual Value Range:0~17  Default Value:None
EutranNFreqRanShare	DlEarfcn	ADD EUTRANNFRE QRANSHARE LST EUTRANNFRE QRANSHARE MOD EUTRANNFRE QRANSHARE RMV EUTRANNFRE QRANSHARE	LOFD-001036 / TDLOFD-0010 36 TDLOFD-0011 12	RAN Sharing with Common Carrier MOCN Flexible Priority Based Camping	Meaning:Indicates the DL EARFCN of the operator that shares the neighboring E-UTRAN frequency. For details, see the 3GPP TS 36.104. GUI Value Range: 0~45589,54436 ~65535 Unit:None Actual Value Range: 0~45589,54436 ~65535 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterFreqHoGro up	LocalCellId	ADD INTERFREQH OGROUP LST INTERFREQH OGROUP MOD	None	None	Meaning:Indicates the local ID of the cell. It uniquely identifies a cell within a BS. GUI Value
		INTERFREQH			Range:0~17
		OGROUP RMV INTERFREQH OGROUP			Unit:None Actual Value Range:0~17
		OGROOI			Default Value:None
InterFreqHoGro up	InterFreqHoGro upId	ADD INTERFREQH OGROUP LST INTERFREQH OGROUP MOD INTERFREQH OGROUP RMV INTERFREQH	None	None	Meaning:Indicates the ID of the parameter group related to inter-frequency handover.  GUI Value Range:0~9  Unit:None  Actual Value Range:0~9
		OGROUP			Default Value:None
CellAlgoSwitch	LocalCellId	LST CELLALGOS WITCH MOD CELLALGOS WITCH	None	None	Meaning:Indicates the local ID of the cell. It uniquely identifies a cell within a BS.
		WITCH			GUI Value Range:0~17
					Unit:None
					Actual Value Range:0~17
					Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
DistBasedHO	LocalCellId	LST DISTBASEDH O MOD DISTBASEDH O	None	None	Meaning:Indicates the local identity of the cell. It uniquely identifies a cell within an eNodeB.  GUI Value Range:0~17  Unit:None  Actual Value Range:0~17  Default Value:None
CnOperatorStan dardQci	CnOperatorId	LST CNOPERATO RSTANDARD QCI MOD CNOPERATO RSTANDARD QCI	None	None	Meaning:Indicates the index of the operator. GUI Value Range:0~5 Unit:None Actual Value Range:0~5 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
CnOperatorStan dardQci	Qci	LST CNOPERATO RSTANDARD QCI MOD CNOPERATO RSTANDARD QCI	None	None	Meaning:Indicates the QoS Class Identifier (QCI) of an EPS bearer. Different QCIs represent different QoS specifications such as the packet delay budget, packet error loss rate, and resource type (whether the service is a GBR service or not). For details, see Table 6.1.7 in 3GPP TS 23.203. GUI Value Range:QCI1 (QCI 1), QCI2 (QCI 2), QCI3 (QCI 3), QCI4 (QCI 4), QCI5 (QCI 5), QCI6 (QCI 6), QCI7 (QCI 7), QCI8 (QCI 9) Unit:None Actual Value Range:QCI1, QCI2, QCI3, QCI4, QCI5, QCI4, QCI5, QCI4, QCI5, QCI6, QCI7, QCI8, QCI9 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
CnOperatorStan dardQci	ServiceIfHoCfg GroupId	MOD CNOPERATO RSTANDARD QCI LST CNOPERATO RSTANDARD QCI	LBFD-0020180 5	Service Based Inter-frequency Handover	Meaning:Indicates the ID of the service-based interfrequency handover policy group.  GUI Value Range:0~9  Unit:None  Actual Value Range:0~9  Default Value:0
CnOperatorExte ndedQci	CnOperatorId	ADD CNOPERATO REXTENDED QCI LST CNOPERATO REXTENDED QCI MOD CNOPERATO REXTENDED QCI RMV CNOPERATO REXTENDED QCI RMV CNOPERATO REXTENDED QCI	LBFD-002032	Extended-QCI	Meaning:Indicates the index of the operator. GUI Value Range:0~5 Unit:None Actual Value Range:0~5 Default Value:None
CnOperatorExte ndedQci	ExtendedQci	ADD CNOPERATO REXTENDED QCI LST CNOPERATO REXTENDED QCI MOD CNOPERATO REXTENDED QCI RMV CNOPERATO REXTENDED QCI RMV CNOPERATO REXTENDED QCI	LBFD-002032	Extended-QCI	Meaning:Indicates the extended QoS Class Identifier (QCI), which is required by the operator for user differentiation. GUI Value Range:10~254 Unit:None Actual Value Range:10~254 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
CnOperatorExte ndedQci	ServiceIfHoCfg GroupId	ADD CNOPERATO REXTENDED QCI MOD CNOPERATO REXTENDED QCI LST CNOPERATO REXTENDED QCI	LBFD-0020180 5	Service Based Inter-frequency Handover	Meaning:Indicates the ID of the service-based interfrequency handover policy group.  GUI Value Range:0~9  Unit:None  Actual Value Range:0~9  Default Value:0
UtranNFreq	LocalCellId	ADD UTRANNFRE Q LST UTRANNFRE Q MOD UTRANNFRE Q RMV UTRANNFRE Q	None	None	Meaning:Indicates the cell ID of the local cell. It uniquely identifies a cell within an eNodeB.  GUI Value Range:0~17  Unit:None  Actual Value Range:0~17  Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
UtranExternal-Cell	Mcc	ADD UTRANEXTE RNALCELL ADD UTRANEXTE RNALCELLBA ND LST UTRANEXTE RNALCELL LST UTRANEXTE RNALCELLBA ND MOD UTRANEXTE RNALCELL RMV	LOFD-001019 / TDLOFD-0010 19	PS Inter-RAT Mobility between E- UTRAN and UTRAN	Meaning:Indicates the mobile country code of the external UTRAN cell. The PLMN consists of the MCC and the MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, MCC = 123, MNC = 45, PLMN = 12345. GUI Value Range:3 characters Unit:None Actual Value Range:000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
UtranExternal-Cell	Mnc	ADD UTRANEXTE RNALCELL ADD UTRANEXTE RNALCELLBA ND LST UTRANEXTE RNALCELL LST UTRANEXTE RNALCELLBA ND MOD UTRANEXTE RNALCELL RMV	LOFD-001019 / TDLOFD-0010 19	PS Inter-RAT Mobility between E- UTRAN and UTRAN	Meaning:Indicates the mobile network code of the external UTRAN cell. The PLMN consists of the MCC and the MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, MCC = 123, MNC = 45, PLMN = 12345. GUI Value Range:2~3 characters Unit:None Actual Value Range: 00~99,000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
UtranExternal-Cell	CellId	ADD UTRANEXTE RNALCELL ADD UTRANEXTE RNALCELLBA ND LST UTRANEXTE RNALCELL LST UTRANEXTE RNALCELLBA ND MOD UTRANEXTE RNALCELL RMV	LOFD-001019 / TDLOFD-0010 19	PS Inter-RAT Mobility between E- UTRAN and UTRAN	Meaning:Indicates the RNC cell ID of an external UTRAN cell. It uniquely identifies a cell within an RNC. The 28-bit UTRAN cell ID is comprised of the RNC cell ID and the RNC ID that are represented by the least significant 16 bits and the most significant 12 bits, respectively. The formula for calculating the UTRAN cell ID is as follows: UTRAN cell ID = RNC ID x 65536 + RNC cell ID. For details, see 3GPP TS 25.401. GUI Value Range:0~65535 Unit:None Actual Value Range:0~65535 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
UtranExternal-Cell	UtranDlArfcn	ADD UTRANEXTE RNALCELL MOD UTRANEXTE RNALCELL LST UTRANEXTE RNALCELL	LOFD-001019 / TDLOFD-0010 19	PS Inter-RAT Mobility between E-UTRAN and UTRAN	Meaning:Indicates the DL UARFCN of the external UTRAN cell. The UARFCN range in each FDD frequency band is shown as follows: Band 1: Normal UARFCNs: [10562-10838] Special UARFCNs: none Band 2: Normal UARFCNs: [9662-9938] Special UARFCNs: [9662-9938] Special UARFCNs: [112,437,462,48 7,512,537,562,5 87,612,637,662, 687) Band 3: Normal UARFCNs: [1162-1513] Special UARFCNs: [1162-1513] Special UARFCNs: [1537-1738] Special UARFCNs: (1887, 1912, 1937, 1962, 1987, 2012, 2037, 2062, 2087) Band 5: Normal UARFCNs: [4357-4458] Special UARFCNs: [4357-4458] Special UARFCNs: [1007, 1012, 1032, 1037, 1062, 1087)

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
МО	Parameter ID		Feature ID	Feature Name	Band 6: Normal UARFCNs: [4387-4413] Special UARFCNs: (1037, 1062) Band 7: Normal UARFCNs: [2237-2563] Special UARFCNs: (2587, 2612, 2637, 2662, 2687, 2712, 2737, 2762, 2787, 2812, 2837, 2862, 2887, 2912) Band 8: Normal UARFCNs: [2937-3088] Special UARFCNs: [2937-3088] Special UARFCNs: none Band 9: Normal UARFCNs: none Band 9: Normal UARFCNs: [9237-9387] Special UARFCNs: none The UARFCNs:
					Special UARFCNs: none Band 2: Normal UARFCNs: [9250-9550] and [9650-9950] Special UARFCNs: none Band 3:

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					Normal UARFCNs: [9550-9650] Special UARFCNs: none Band 4: Normal UARFCNs: [12850-13100] Special UARFCNs: (2112, 2137, 2162, 2187, 2212, 2237, 2262, 2287, 2312, 2337) Band 5: Normal UARFCNs: [11500-12000] Special UARFCNs: none Band 6: Normal UARFCNs: none Band 6: Normal UARFCNs: 19400-9600] Special UARFCNs: [9400-9600] Special UARFCNs: 19400-9600]
					Actual Value Range:0~16383
					Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
UtranExternal-Cell	RncId	ADD UTRANEXTE RNALCELL ADD UTRANEXTE RNALCELLBA ND LST UTRANEXTE RNALCELL LST UTRANEXTE RNALCELLBA ND MOD UTRANEXTE RNALCELL RMV UTRANEXTE RNALCELLBA ND	LOFD-001052 / TDLOFD-0010 52	Flash CS Fallback to UTRAN	Meaning:Indicates the RNC ID of the external UTRAN cell. The 28-bit UTRAN cell ID is comprised of the RNC cell ID and the RNC ID that are represented by the least significant 16 bits and the most significant 12 bits, respectively. The formula for calculating the UTRAN cell ID is as follows: UTRAN cell ID = RNC ID x 65536 + RNC cell ID. For details, see 3GPP TS 25.401. GUI Value Range:0~4095 Unit:None Actual Value Range:0~4095 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
UtranExternal-Cell	RacCfgInd	ADD UTRANEXTE RNALCELL MOD UTRANEXTE RNALCELL LST UTRANEXTE RNALCELL	LOFD-001019 / TDLOFD-0010 19	PS Inter-RAT Mobility between E- UTRAN and UTRAN	Meaning:Indicates whether to set the routing area code (RAC) of the external UTRAN cell. This parameter must be set to CFG (Configure) if the external UTRAN cell supports packet switched (PS) services.  GUI Value Range:NOT_CFG(Not configure), CFG (Configure) Unit:None Actual Value Range:NOT_CFG, CFG Default Value:NOT_CFG(Not configure)

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
UtranExternal-Cell	Rac	ADD UTRANEXTE RNALCELL MOD UTRANEXTE RNALCELL LST UTRANEXTE RNALCELL	LOFD-001019 / TDLOFD-0010 19 LOFD-001034 / TDLOFD-0010 34 LOFD-001052 / TDLOFD-0010 52 TDLOFD-0010 43 TDLOFD-0010 72 TDLOFD-0010 78	PS Inter-RAT Mobility between E- UTRAN and UTRAN CS Fallback to GERAN Flash CS Fallback to UTRAN CS Fallback to UTRAN Service based Inter-RAT handover to UTRAN Distance based Inter-RAT handover to UTRAN E-UTRAN to UTRAN to UTRAN CS/PS steering	Meaning:Indicates the routing area code.  GUI Value Range:0~255 Unit:None Actual Value Range:0~255 Default Value:0
UtranExternal-Cell	PScrambCode	ADD UTRANEXTE RNALCELL MOD UTRANEXTE RNALCELL LST UTRANEXTE RNALCELL	LOFD-001019 / TDLOFD-0010 19	PS Inter-RAT Mobility between E- UTRAN and UTRAN	Meaning:Indicates the primary DL scrambles of the external UTRAN cell. For details, see 3GPP TS 25.331. GUI Value Range:0~511 Unit:None Actual Value Range:0~511 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
UtranExternal-Cell	Lac	ADD UTRANEXTE RNALCELL MOD UTRANEXTE RNALCELL LST UTRANEXTE RNALCELL	LOFD-001022 / TDLOFD-0010 22 LOFD-001068 / TDLOFD-0010 68 TDLOFD-0010 78	SRVCC to UTRAN CS Fallback with LAI to UTRAN E-UTRAN to UTRAN CS/PS steering	Meaning:Indicates the LAC of the external UTRAN cell. GUI Value Range: 1~65533,65535 Unit:None Actual Value Range: 1~65533,65535 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
UtranExternal-CellPlmn	CellId	ADD UTRANEXTE RNALCELLPL MN LST UTRANEXTE RNALCELLPL MN RMV UTRANEXTE RNALCELLPL MN	LOFD-001036 / TDLOFD-0010 36 LOFD-001037 / TDLOFD-0010 37	RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier	Meaning:Indicates the RNC cell ID of an external UTRAN cell. It uniquely identifies a cell within an RNC. The 28-bit UTRAN cell ID is comprised of the RNC cell ID and the RNC ID that are represented by the least significant 16 bits and the most significant 12 bits, respectively. The formula for calculating the UTRAN cell ID is as follows: UTRAN cell ID = RNC ID x 65536 + RNC cell ID. For details, see 3GPP TS 25.401.  GUI Value Range:0~65535 Unit:None  Actual Value Range:0~65535 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
UtranExternal-CellPlmn	Mcc	ADD UTRANEXTE RNALCELLPL MN LST UTRANEXTE RNALCELLPL MN RMV UTRANEXTE RNALCELLPL MN	LOFD-001036 / TDLOFD-0010 36 LOFD-001037 / TDLOFD-0010 37	RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier	Meaning:Indicates the mobile country code of the external UTRAN cell. A PLMN ID is comprised of an MCC and an MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, if the MCC is 123 and the MNC is 45, then the PLMN ID is 12345.  GUI Value Range:3 characters Unit:None Actual Value Range:000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
UtranExternal-CellPlmn	Mnc	ADD UTRANEXTE RNALCELLPL MN LST UTRANEXTE RNALCELLPL MN RMV UTRANEXTE RNALCELLPL MN	LOFD-001036 / TDLOFD-0010 36 LOFD-001037 / TDLOFD-0010 37	RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier	Meaning:Indicates the mobile network code of the external UTRAN cell. A PLMN ID is comprised of an MCC and an MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, if the MCC is 123 and the MNC is 45, then the PLMN ID is 12345.  GUI Value Range:2~3 characters Unit:None Actual Value Range: 00~99,000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
UtranExternal-CellPlmn	ShareMcc	ADD UTRANEXTE RNALCELLPL MN LST UTRANEXTE RNALCELLPL MN RMV UTRANEXTE RNALCELLPL MN	LOFD-001036 / TDLOFD-0010 36 LOFD-001037 / TDLOFD-0010 37	RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier	Meaning:Indicates the mobile country code of the external UTRAN cell that is shared among multiple operators. A PLMN ID is comprised of an MCC and an MCC and an MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, if the MCC is 123 and the MNC is 45, then the PLMN ID is 12345.  GUI Value Range:3 characters Unit:None Actual Value Range:000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
UtranExternal-CellPlmn	ShareMnc	ADD UTRANEXTE RNALCELLPL MN LST UTRANEXTE RNALCELLPL MN RMV UTRANEXTE RNALCELLPL MN	LOFD-001036 / TDLOFD-0010 36 LOFD-001037 / TDLOFD-0010 37	RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier	Meaning:Indicates the mobile network code of the external UTRAN cell that is shared among multiple operators. A PLMN ID is comprised of an MCC and an MCC and an MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, if the MCC is 123 and the MNC is 45, then the PLMN ID is 12345.  GUI Value Range:2~3 characters Unit:None Actual Value Range: 00~99,000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
UtranNCell	LocalCellId	ADD UTRANNCEL L DSP UTRANRIMIN FO DSP UTRANRIML OADINFO LST UTRANNCEL L MOD UTRANNCEL L RMV UTRANNCEL L	None	None	Meaning:Indicates the cell ID of the local cell. It uniquely identifies a cell within an eNodeB.  GUI Value Range:0~17  Unit:None  Actual Value Range:0~17  Default  Value:None
UtranNCell	Mcc	ADD UTRANNCEL L LST UTRANNCEL L MOD UTRANNCEL L RMV UTRANNCEL L DSP UTRANRIMIN FO DSP UTRANRIML OADINFO	LOFD-001019 / TDLOFD-0010 19	PS Inter-RAT Mobility between E- UTRAN and UTRAN	Meaning:Indicates the mobile country code of the neighboring UTRAN cell. The PLMN consists of the MCC and the MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, MCC = 123, MNC = 45, PLMN = 12345. GUI Value Range:3 characters Unit:None Actual Value Range:000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
UtranNCell	Mnc	ADD UTRANNCEL L LST UTRANNCEL L MOD UTRANNCEL L RMV UTRANNCEL L DSP UTRANRIMIN FO DSP UTRANRIMIL OADINFO	LOFD-001019 / TDLOFD-0010 19	PS Inter-RAT Mobility between E- UTRAN and UTRAN	Meaning:Indicates the mobile network code of the neighboring UTRAN cell. The PLMN consists of the MCC and the MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, MCC = 123, MNC = 45, PLMN = 12345. GUI Value Range:2~3 characters Unit:None Actual Value Range: 00~99,000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
UtranNCell	CellId	ADD UTRANNCEL L LST UTRANNCEL L MOD UTRANNCEL L RMV UTRANNCEL L DSP UTRANRIMIN FO DSP UTRANRIML OADINFO	LOFD-001052 / TDLOFD-0010 52 LOFD-001019 / TDLOFD-0010 19	Flash CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN	Meaning:Indicates the RNC cell ID of an external UTRAN cell. It uniquely identifies a cell within an RNC. The 28-bit UTRAN cell ID is comprised of the RNC cell ID and the RNC ID that are represented by the least significant 16 bits and the most significant 12 bits, respectively. The formula for calculating the UTRAN cell ID is as follows: UTRAN cell ID = RNC ID x 65536 + RNC cell ID. For details, see 3GPP TS 25.401. GUI Value Range:0~65535 Unit:None Actual Value Range:0~65535 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
GeranNfreqGro up	LocalCellId	ADD GERANNFRE QGROUP LST GERANNFRE QGROUP MOD GERANNFRE QGROUP RMV GERANNFRE QGROUP	None	None	Meaning:Indicates the cell ID of the local cell. It uniquely identifies a cell within an eNodeB.  GUI Value Range:0~17  Unit:None  Actual Value Range:0~17  Default Value:None
GeranNfreqGroup	BechGroupId	ADD GERANNFRE QGROUP LST GERANNFRE QGROUP MOD GERANNFRE QGROUP RMV GERANNFRE QGROUP	LBFD-0020180 3 / TDLBFD-0020 1803 LOFD-001020 / TDLOFD-0010 20	Cell Selection and Re-selection PS Inter-RAT Mobility between E- UTRAN and GERAN	Meaning:Indicates a GERAN carrier frequency group. In the cell reselection procedure, the GERAN carrier frequencies are organized in groups and the cell reselection parameters are provided per group of GERAN carrier frequencies.  GUI Value Range:0~31  Unit:None  Actual Value Range:0~31  Default  Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
GeranNfreqGroup	GeranVersion	ADD GERANNFRE QGROUP MOD GERANNFRE QGROUP LST GERANNFRE QGROUP	LOFD-001020 / TDLOFD-0010 20	PS Inter-RAT Mobility between E- UTRAN and GERAN	Meaning:Indicates the standard that is supported by the current carrier frequency group.  GUI Value Range:GSM, GPRS, EDGE Unit:None Actual Value Range:GSM, GPRS, EDGE Default Value:None
GeranNfreqGroup	StartingArfcn	ADD GERANNFRE QGROUP MOD GERANNFRE QGROUP LST GERANNFRE QGROUP	LBFD-0020180 3 / TDLBFD-0020 1803 LOFD-001020 / TDLOFD-0010 20	Cell Selection and Re-selection PS Inter-RAT Mobility between E- UTRAN and GERAN	Meaning:Indicates the first ARFCN in the GERAN carrier frequency group. If the GERAN ARFCN is not between 512 and 810, one ARFCN can only in one frequency band. For details, see 3GPP TS 45.005.  GUI Value Range:0~1023 Unit:None Actual Value Range:0~1023 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
GeranNfreqGroup	BandIndicator	ADD GERANNFRE QGROUP MOD GERANNFRE QGROUP LST GERANNFRE QGROUP	LBFD-0020180 3 / TDLBFD-0020 1803 LOFD-001020 / TDLOFD-0010 20	Cell Selection and Re-selection PS Inter-RAT Mobility between E- UTRAN and GERAN	Meaning:Indicates the GERAN band indicator. If the GERAN ARFCN is between 512 and 810, this parameter indicates whether the GERAN ARFCN is in the 1800 MHz band or the 1900 MHz band. If the GERAN ARFCN is not in either band, this parameter does not take effect and can be set to either value and one ARFCN can only in one frequency band. For details, see 3GPP TS 45.005.  GUI Value Range:GSM_dc s1800, GSM_pcs1900 Unit:None Actual Value Range:GSM_dc s1800, GSM_pcs1900 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
GeranNfreqGro upArfcn	LocalCellId	ADD GERANNFRE QGROUPARF CN LST GERANNFRE QGROUPARF CN RMV GERANNFRE QGROUPARF CN	None	None	Meaning:Indicates the cell ID of the local cell. It uniquely identifies a cell within an eNodeB.  GUI Value Range:0~17  Unit:None  Actual Value Range:0~17  Default Value:None
GeranNfreqGro upArfcn	BcchGroupId	ADD GERANNFRE QGROUPARF CN LST GERANNFRE QGROUPARF CN RMV GERANNFRE QGROUPARF CN	LBFD-0020180 3 / TDLBFD-0020 1803 LOFD-001020 / TDLOFD-0010 20 LBFD-002009 / TDLBFD-0020 09	Cell Selection and Re-selection PS Inter-RAT Mobility between E- UTRAN and GERAN Broadcast of system information	Meaning:Indicates the index of the BCCH carrier frequency group. It identifies a BCCH carrier frequency group.  GUI Value Range:0~31  Unit:None  Actual Value Range:0~31  Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
GeranNfreqGroupArfen	GeranArfen	ADD GERANNFRE QGROUPARF CN LST GERANNFRE QGROUPARF CN RMV GERANNFRE QGROUPARF CN	LBFD-0020180 3 / TDLBFD-0020 1803 LOFD-001020 / TDLOFD-0010 20 LBFD-002009 / TDLBFD-0020 09	Cell Selection and Re-selection PS Inter-RAT Mobility between E- UTRAN and GERAN Broadcast of system information	Meaning:Specifies the ARFCN of the GERAN BCCH. If the GERAN ARFCN value is not between 512 and 810, one ARFCN can only in one frequency band. For details about this parameter, see 3GPP TS 45.005.  GUI Value Range:0~1023 Unit:None Actual Value Range:0~1023 Default Value:None
GeranExternal-Cell	Mcc	ADD GERANEXTE RNALCELL LST GERANEXTE RNALCELL MOD GERANEXTE RNALCELL RMV GERANEXTE RNALCELL	LOFD-001020 / TDLOFD-0010 20	PS Inter-RAT Mobility between E- UTRAN and GERAN	Meaning:Indicates the mobile country code of the external cell. The PLMN consists of the MCC and the MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, MCC = 123, MNC = 45, PLMN = 12345. GUI Value Range:3 characters Unit:None Actual Value Range:000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
GeranExternal-Cell	Mnc	ADD GERANEXTE RNALCELL LST GERANEXTE RNALCELL MOD GERANEXTE RNALCELL RMV GERANEXTE RNALCELL	LOFD-001020 / TDLOFD-0010 20	PS Inter-RAT Mobility between E- UTRAN and GERAN	Meaning:Indicates the mobile network code of the external cell. The PLMN consists of the MCC and the MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, MCC = 123, MNC = 45, PLMN = 12345. GUI Value Range:2~3 characters Unit:None Actual Value Range: 00~99,000~999 Default Value:None
GeranExternal-Cell	GeranCellId	ADD GERANEXTE RNALCELL LST GERANEXTE RNALCELL MOD GERANEXTE RNALCELL RMV GERANEXTE RNALCELL	LOFD-001020 / TDLOFD-0010 20	PS Inter-RAT Mobility between E- UTRAN and GERAN	Meaning:Indicates the cell ID of the external GERAN cell. It uniquely identifies a GERAN cell within the area specified by the location area identity (LAI). An LAI consists of the MCC, MNC, and LAC. GUI Value Range:0~65535 Unit:None Actual Value Range:0~65535 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
GeranExternal-Cell	Lac	ADD GERANEXTE RNALCELL LST GERANEXTE RNALCELL MOD GERANEXTE RNALCELL RMV GERANEXTE RNALCELL	LOFD-001023 / TDLOFD-0010 23 LOFD-001069	SRVCC to GERAN CS Fallback with LAI to GERAN	Meaning:Indicates the LAC of the external GERAN cell. It uniquely identifies a location within a PLMN. GUI Value Range: 1~65533,65535 Unit:None Actual Value Range: 1~65533,65535 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
GeranExternal-Cell	BandIndicator	ADD GERANEXTE RNALCELL MOD GERANEXTE RNALCELL LST GERANEXTE RNALCELL	LOFD-001020 / TDLOFD-0010 20 LOFD-001023 / TDLOFD-0010 23 LOFD-001034 / TDLOFD-0010 34 LOFD-001046 / TDLOFD-0010 46 LOFD-001073 / TDLOFD-0010 73	PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN CS Fallback to GERAN Service based inter-RAT handover to GERAN Distance based inter-RAT handover to GERAN	Meaning:Indicates the GERAN band indicator. If the GERAN ARFCN is a value in the range of 512 to 810, the value of this parameter is used to indicate whether the GERAN ARFCN is in the 1800 MHz band or the 1900 MHz band. If the GERAN ARFCN is not in either band, this parameter does not take effect and can be set to either value. For details, see 3GPP TS 36.331.  GUI Value Range:GSM_dc s1800, GSM_pcs1900 Unit:None Actual Value Range:GSM_dc s1800, GSM_pcs1900 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
GeranExternal-Cell	GeranArfen	ADD GERANEXTE RNALCELL MOD GERANEXTE RNALCELL LST GERANEXTE RNALCELL	LOFD-001020 / TDLOFD-0010 20	PS Inter-RAT Mobility between E- UTRAN and GERAN	Meaning:Indicates the GERAN BCCH ARFCN. For details, see 3GPP TS 45.005. GUI Value Range:0~1023 Unit:None Actual Value Range:0~1023 Default Value:None
GeranExternal-Cell	NetworkColour-Code	ADD GERANEXTE RNALCELL MOD GERANEXTE RNALCELL LST GERANEXTE RNALCELL	LOFD-001020 / TDLOFD-0010 20	PS Inter-RAT Mobility between E- UTRAN and GERAN	Meaning:Indicates the network color code (NCC) of GERAN. It is operator-specific and identifies a network within the whole country.The base transceiver station identity code (BSIC) consists of the NCC and the base station color code (BCC). For details, see 3GPP TS 23.003.  GUI Value Range:0~7  Unit:None  Actual Value Range:0~7  Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
GeranExternal-Cell	BaseStationCo-lourCode	ADD GERANEXTE RNALCELL MOD GERANEXTE RNALCELL LST GERANEXTE RNALCELL	LOFD-001020 / TDLOFD-0010 20	PS Inter-RAT Mobility between E- UTRAN and GERAN	Meaning:Indicates the base station color code (BCC) of an external GERAN cell. This parameter is used to discriminate external GERAN cells working at the same frequency. The base transceiver station identity code (BSIC) consists of the BCC and the network color code (NCC). For details, see 3GPP TS 23.003. GUI Value Range:0~7 Unit:None Actual Value Range:0~7 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
GeranExternal-Cell	DtmInd	ADD GERANEXTE RNALCELL MOD GERANEXTE RNALCELL LST GERANEXTE RNALCELL	LOFD-001020 / TDLOFD-0010 20 LOFD-001046 / TDLOFD-0010 46	PS Inter-RAT Mobility between E- UTRAN and GERAN Service based inter-RAT handover to GERAN	Meaning:Indicates whether the cell supports the dual transmission mode. If the cell supports the dual transmission mode, both CS and PS services can be handed over to the cell at the same time. Otherwise, only the CS service or the PS service can be handed over to the cell. GUI Value Range:DTM_A VAILABLE, DTM_NOT_A VAILABLE Unit:None  Actual Value Range:DTM_A VAILABLE  Unit:None  Actual Value Range:DTM_A VAILABLE  Unit:None  Actual Value  Range:DTM_A VAILABLE  Unit:None  Actual Value  Range:DTM_A VAILABLE  Default  Value:DTM_NOT_A VAILABLE  Default  Value:DTM_N

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
GeranExternal-CellPlmn	GeranCellId	ADD GERANEXTE RNALCELLPL MN LST GERANEXTE RNALCELLPL MN RMV GERANEXTE RNALCELLPL MN	LOFD-001036 / TDLOFD-0010 36 LOFD-001037 / TDLOFD-0010 37	RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier	Meaning:Indicates the identity of the external GERAN cell. It uniquely identifies a GERAN cell within a PLMN. GUI Value Range:0~65535 Unit:None Actual Value Range:0~65535 Default Value:None
GeranExternal-CellPlmn	Lac	ADD GERANEXTE RNALCELLPL MN LST GERANEXTE RNALCELLPL MN RMV GERANEXTE RNALCELLPL MN	LOFD-001036 / TDLOFD-0010 36 LOFD-001037 / TDLOFD-0010 37	RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier	Meaning:Indicates the LAC of the external GERAN cell. GUI Value Range: 1~65533,65535 Unit:None Actual Value Range: 1~65533,65535 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
GeranExternal-CellPlmn	Mcc	ADD GERANEXTE RNALCELLPL MN LST GERANEXTE RNALCELLPL MN RMV GERANEXTE RNALCELLPL MN	LOFD-001036 / TDLOFD-0010 36 LOFD-001037 / TDLOFD-0010 37	RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier	Meaning:Indicates the mobile country code of the external cell. A PLMN ID is comprised of an MCC and an MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, if the MCC is 123 and the MNC is 45, then the PLMN ID is 12345.  GUI Value Range:3 characters Unit:None Actual Value Range:000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
GeranExternal-CellPlmn	Mnc	ADD GERANEXTE RNALCELLPL MN LST GERANEXTE RNALCELLPL MN RMV GERANEXTE RNALCELLPL MN	LOFD-001036 / TDLOFD-0010 36 LOFD-001037 / TDLOFD-0010 37	RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier	Meaning:Indicates the mobile network code of the external cell. A PLMN ID is comprised of an MCC and an MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, if the MCC is 123 and the MNC is 45, then the PLMN ID is 12345.  GUI Value Range:2~3 characters Unit:None Actual Value Range: 00~99,000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
GeranExternal-CellPlmn	ShareMcc	ADD GERANEXTE RNALCELLPL MN LST GERANEXTE RNALCELLPL MN RMV GERANEXTE RNALCELLPL MN	LOFD-001036 / TDLOFD-0010 36 LOFD-001037 / TDLOFD-0010 37	RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier	Meaning:Indicates the mobile country code of the external GERAN cell that is shared among multiple operators. A PLMN ID is comprised of an MCC and an MCC and an MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, if the MCC is 123 and the MNC is 45, then the PLMN ID is 12345.  GUI Value Range:3 characters Unit:None Actual Value Range:000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
GeranExternal-CellPlmn	ShareMnc	ADD GERANEXTE RNALCELLPL MN LST GERANEXTE RNALCELLPL MN RMV GERANEXTE RNALCELLPL MN	LOFD-001036 / TDLOFD-0010 36 LOFD-001037 / TDLOFD-0010 37	RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier	Meaning:Indicates the mobile network code of the external GERAN cell that is shared among multiple operators. A PLMN ID is comprised of an MCC and an MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, if the MCC is 123 and the MNC is 45, then the PLMN ID is 12345.  GUI Value Range:2~3 characters Unit:None Actual Value Range: 00~99,000~999 Default Value:None
GeranNcell	LocalCellId	ADD GERANNCEL L DSP GERANRIMIN FO LST GERANNCEL L MOD GERANNCEL L RMV GERANNCEL L	None	None	Meaning:Indicates the cell ID of the Local cell. It uniquely identifies a cell within an eNodeB.  GUI Value Range:0~17  Unit:None  Actual Value Range:0~17  Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
GeranNcell	Mcc	ADD GERANNCEL L LST GERANNCEL L MOD GERANNCEL L RMV GERANNCEL L DSP GERANRIMIN FO	LOFD-001020 / TDLOFD-0010 20	PS Inter-RAT Mobility between E- UTRAN and GERAN	Meaning:Indicates the mobile country code of the neighboring GERAN cell. The PLMN consists of the MCC and the MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, MCC = 123, MNC = 45, PLMN = 12345. GUI Value Range:3 characters Unit:None Actual Value Range:000~999 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
GeranNcell	Mnc	ADD GERANNCEL L LST GERANNCEL L MOD GERANNCEL L RMV GERANNCEL L DSP GERANRIMIN FO	LOFD-001020 / TDLOFD-0010 20	PS Inter-RAT Mobility between E- UTRAN and GERAN	Meaning:Indicates the mobile network code of the neighboring GERAN cell. The PLMN consists of the MCC and the MNC. The MCC consists of three digits. The MNC consists of two to three digits. For example, MCC = 123, MNC = 45, PLMN = 12345. GUI Value Range:2~3 characters Unit:None Actual Value Range: 00~99,000~999 Default Value:None
GeranNcell	Lac	ADD GERANNCEL L LST GERANNCEL L MOD GERANNCEL L RMV GERANNCEL L DSP GERANRIMIN FO	LOFD-001023 / TDLOFD-0010 23 LOFD-001053 LOFD-001069 LOFD-001020/ TDLOFD-0010 20	SRVCC to GERAN Flash CS Fallback to GERAN CS Fallback with LAI to GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN	Meaning:Indicates the LAC of the GERAN neighboring cell. It uniquely identifies a location within a PLMN. GUI Value Range: 1~65533,65535 Unit:None Actual Value Range: 1~65533,65535 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
GeranNcell	GeranCellId	ADD GERANNCEL L LST GERANNCEL L MOD GERANNCEL L RMV GERANNCEL L DSP GERANRIMIN FO	LOFD-001020 / TDLOFD-0010 20	PS Inter-RAT Mobility between E- UTRAN and GERAN	Meaning:Indicates the cell ID of the GERAN neighboring cell. It uniquely identifies a GERAN cell within the area specified by the location area identity (LAI). An LAI consists of the MCC, MNC, and LAC. GUI Value Range:0~65535 Unit:None Actual Value Range:0~65535 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatPoli-cyCfgGroup	UtranHoCfg	ADD INTERRATPO LICYCFGGRO UP MOD INTERRATPO LICYCFGGRO UP LST INTERRATPO LICYCFGGRO UP	LOFD-001022 / TDLOFD-0010 22 LOFD-001019 / TDLOFD-0010 19	SRVCC to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN	Meaning:Indicates the policy of handovers to UTRAN. PS_HO: indicates whether to allow PS handovers to UTRAN. SRVCC: indicates whether to allow transfers to UTRAN in SRVCC mode. REDIRECTIO N: indicates whether to allow redirection to UTRAN. GUI Value Range:PS_HO, SRVCC, REDIRECTIO N Unit:None Actual Value Range:PS_HO, SRVCC, REDIRECTIO N Unit:None Actual Value Range:PS_HO, SRVCC, REDIRECTIO N SRVCC, REDIRECTIO N Default Value:PS_HO; SRVCC, REDIRECTIO N Default Value:PS_HO: On, SRVCC:Off, REDIRECTIO N Default Value:PS_HO: On, SRVCC:Off, REDIRECTIO N:Off

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatPoli- cyCfgGroup	GeranGsmHoCf	ADD INTERRATPO LICYCFGGRO UP MOD INTERRATPO LICYCFGGRO UP LST INTERRATPO LICYCFGGRO UP	LOFD-001023 / TDLOFD-0010 23 LOFD-001020 / TDLOFD-0010 20	SRVCC to GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN	Meaning:Indicates the switch used to enable or disable the single radio voice call continuity (SRVCC) handover to GERAN GSM. If this switch is set to On, the UE can perform the SRVCC handover to the GERAN GSM cell. If this switch is set to Off, the UE cannot perform the SRVCC handover to the GERAN GSM cell. If this switch is set to Off, the UE cannot perform the SRVCC handover to the GERAN GSM cell.  GUI Value Range:SRVCC Unit:None  Actual Value Range:SRVCC Default Value:SRVCC: On

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatPoli-cyCfgGroup	GeranGprsEdge HoCfg	ADD INTERRATPO LICYCFGGRO UP MOD INTERRATPO LICYCFGGRO UP LST INTERRATPO LICYCFGGRO UP	TDLOFD-0010 23 LOFD-001020 / TDLOFD-0010 20	SRVCC to GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN	Meaning:Indicates the policy of handovers to GPRS/EDGE. PS_HO: Indicates whether PS handovers to neighboring GPRS/EDGE cells are allowed. NACC_HO: Indicates whether NACC handovers to neighboring GPRS/EDGE cells are allowed. This switch will be removed in the later versions. In this version, the setting of this switch is still synchronized between the M2000 and the eNodeB, but it is no longer used internally. Therefore, avoid using this parameter. CCO_HO: Indicates whether CCO handovers to neighboring GPRS/EDGE cells are allowed. SRVCC: Indicates whether SRVCC handovers to neighboring

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					GPRS/EDGE cells are allowed. REDIRECTIO N: Indicates whether redirections to neighboring GPRS/EDGE cells are allowed. GUI Value Range:PS_HO, NACC_HO, CCO_HO, SRVCC, REDIRECTIO N
					Unit:None Actual Value Range:PS_HO, NACC_HO, CCO_HO, SRVCC, REDIRECTIO N
					Default Value:PS_HO: On, NACC_HO:Off , CCO_HO:Off, SRVCC:Off, REDIRECTIO N:Off

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatPoli- cyCfgGroup	NoHoFlag	ADD INTERRATPO LICYCFGGRO UP MOD INTERRATPO LICYCFGGRO UP LST INTERRATPO LICYCFGGRO UP	LOFD-001019 / TDLOFD-0010 19 LOFD-001020 / TDLOFD-0010 20 LOFD-001021 / TDLOFD-0010 21 TDLBFD-0020 1801 TDLOFD-0010 22 TDLOFD-0010 23 TDLOFD-0010 33 TDLOFD-0010 34	PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and CDMA2000 Coverage Based Intra-frequency Handover SRVCC to UTRAN SRVCC to UTRAN CS Fallback to UTRAN CS Fallback to GERAN	Meaning:Indicates whether to permit or forbid the inter-RAT handover under the QCI.  GUI Value Range:PERMIT _HO_ENUM (Permit Ho), FORBID_HO_ENUM(Forbid Ho)  Unit:None Actual Value Range:PERMIT _HO_ENUM, FORBID_HO_ENUM, FORBID_HO_ENUM CENUM Default Value:PERMIT _HO_ENUM (Permit Ho)

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
StandardQci	Qci	LST STANDARDQ CI MOD STANDARDQ CI	LOFD-0010150 2 / TDLOFD-0010 1502	Dynamic Scheduling	Meaning:Indicates the QoS Class Identifier (QCI) of an EPS bearer. Different QCIs represent different QoS specifications such as the packet delay budget, packet error loss rate, and resource type (whether the service is a GBR service or not). For details, see Table 6.1.7 in 3GPP TS 23.203. GUI Value Range:QCI1 (QCI 1), QCI2 (QCI 2), QCI3 (QCI 3), QCI4 (QCI 4), QCI5 (QCI 5), QCI6 (QCI 6), QCI7 (QCI 7), QCI8 (QCI 9) Unit:None Actual Value Range:QCI1, QCI2, QCI3, QCI4, QCI5, QCI4, QCI5, QCI6, QCI7, QCI8, QCI9 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
StandardQci	InterRatPoli- cyCfgGroupId	MOD STANDARDQ CI LST STANDARDQ CI	/ TDLOFD-0010 19 / TDLOFD-0010 20 LOFD-001021 / TDLOFD-0010 21	PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN Oblity between E- UTRAN and CDMA2000	Meaning:Indicates the ID of a parameter group related to inter-RAT handover. GUI Value Range:0~39 Unit:None Actual Value Range:0~39 Default Value:0
ExtendedQci	ExtendedQci	ADD EXTENDEDQ CI LST EXTENDEDQ CI MOD EXTENDEDQ CI RMV EXTENDEDQ CI	LOFD-0010150 2 / TDLOFD-0010 1502	Dynamic Scheduling	Meaning:Indicates the extended QoS Class Identifier (QCI), which is required by the operator for user differentiation. GUI Value Range:10~254 Unit:None Actual Value Range:10~254 Default Value:None
ExtendedQci	InterRatPoli- cyCfgGroupId	ADD EXTENDEDQ CI MOD EXTENDEDQ CI LST EXTENDEDQ CI	/ TDLOFD-0010 19 / TDLOFD-0010 20 LOFD-001021 / TDLOFD-0010 21	PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN Obility between E- UTRAN and CDMA2000	Meaning:Indicates the group ID of the parameters related to the inter-RAT handover with the extended QCI.  GUI Value Range:0~39 Unit:None Actual Value Range:0~39 Default Value:0

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
CellStandardQc	InterRatHoCom mGroupId	MOD CELLSTANDA RDQCI LST CELLSTANDA RDQCI	/ TDLOFD-0010 19 / TDLOFD-0010 20 LOFD-001021 / TDLOFD-0010 21	PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and CDMA2000	Meaning:Indicates the ID of a common parameter group related to inter-RAT handover.  GUI Value Range:0~9  Unit:None  Actual Value Range:0~9  Default Value:0
CellStandardQc i	InterRatHoUtra nGroupId	MOD CELLSTANDA RDQCI LST CELLSTANDA RDQCI	LOFD-001019 / TDLOFD-0010 19	PS Inter-RAT Mobility between E- UTRAN and UTRAN	Meaning:Indicates the ID of a parameter group related to inter-RAT handover to UTRAN. GUI Value Range:0~9 Unit:None Actual Value Range:0~9 Default Value:0
CellStandardQc i	InterRatHoGera nGroupId	MOD CELLSTANDA RDQCI LST CELLSTANDA RDQCI	LOFD-001020 / TDLOFD-0010 20	PS Inter-RAT Mobility between E- UTRAN and GERAN	Meaning:Indicates the ID of a parameter group related to inter-RAT handover to GERAN. GUI Value Range:0~9 Unit:None Actual Value Range:0~9 Default Value:0

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
CellExtendedQc	InterRatHoCom mGroupId	ADD CELLEXTEND EDQCI MOD CELLEXTEND EDQCI LST CELLEXTEND EDQCI	/ TDLOFD-0010 19 / TDLOFD-0010 20 LOFD-001021 / TDLOFD-0010 21	PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and CDMA2000	Meaning:Indicates the ID of a group of common parameters related to inter-RAT handover. GUI Value Range:0~9 Unit:None Actual Value Range:0~9 Default Value:0
CellExtendedQc i	InterRatHoUtra nGroupId	ADD CELLEXTEND EDQCI MOD CELLEXTEND EDQCI LST CELLEXTEND EDQCI	LOFD-001019 / TDLOFD-0010 19	PS Inter-RAT Mobility between E- UTRAN and UTRAN	Meaning:Indicates the ID of a parameter group related to inter-RAT handover to UTRAN. GUI Value Range:0~9 Unit:None Actual Value Range:0~9 Default Value:0
CellExtendedQc i	InterRatHoGera nGroupId	ADD CELLEXTEND EDQCI MOD CELLEXTEND EDQCI LST CELLEXTEND EDQCI	LOFD-001020 / TDLOFD-0010 20	PS Inter-RAT Mobility between E- UTRAN and GERAN	Meaning:Indicates the ID of a parameter group related to inter-RAT handover to GERAN. GUI Value Range:0~9 Unit:None Actual Value Range:0~9 Default Value:0

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
CSFallBackBlin dHoCfg	CnOperatorId	LST CSFALLBACK BLINDHOCFG MOD CSFALLBACK BLINDHOCFG	LOFD-001033 / TDLOFD-0010 33 LOFD-001034 / TDLOFD-0010 34 TDLOFD-0010 52 TDLOFD-0010 53 TDLOFD-0010 35 TDLOFD-0010 90	CS Fallback to UTRAN CS Fallback to GERAN Flash CS Fallback to UTRAN Flash CS Fallback to GERAN CS Fallback to GERAN CS Fallback to CDMA2000 1xRTT Enhanced CS Fallback to CDMA2000 1xRTT	Meaning:Indicates the index of the operator. GUI Value Range:0~5 Unit:None Actual Value Range:0~5 Default Value:None
UtranRanShare	LocalCellId	ADD UTRANRANS HARE LST UTRANRANS HARE MOD UTRANRANS HARE RMV UTRANRANS HARE	None	None	Meaning:Indicates the cell identity of the local cell. It uniquely identifies a cell within an eNodeB.  GUI Value Range:0~17  Unit:None  Actual Value Range:0~17  Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
UtranRanShare	UtranDlArfcn	ADD UTRANRANS HARE LST UTRANRANS HARE MOD UTRANRANS HARE RMV UTRANRANS HARE	LOFD-001036 / TDLOFD-001036 TDLOFD-001112	RAN Sharing with Common Carrier MOCN Flexible Priority Based Camping	Meaning:Indicates the DL UARFCN of the neighboring cell operating on the UTRAN frequency. The UARFCN range in each FDD frequency band is shown as follows: Band 1: Normal UARFCNs: [10562-10838] Special UARFCNs: none Band 2: Normal UARFCNs: [9662-9938] Special UARFCNs: [9662-9938] Special UARFCNs: (412, 437, 462, 487, 512, 537, 562, 587, 612, 637, 662, 687) Band 3: Normal UARFCNs: [1162-1513] Special UARFCNs: [1162-1513] Special UARFCNs: [1537-1738] Special UARFCNs: (1887, 1912, 1937, 1962, 1987, 2012, 2037, 2062, 2087) Band 5: Normal UARFCNs: [4357-4458] Special

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
мо	Parameter ID		Feature ID	Feature Name	1032, 1037, 1062, 1087) Band 6: Normal UARFCNs: [4387-4413] Special UARFCNs: (1037, 1062) Band 7: Normal UARFCNs: [2237-2563] Special UARFCNs: (2587, 2612, 2637, 2662, 2687, 2712, 2737, 2762, 2787, 2812, 2837, 2862, 2887, 2912) Band 8: Normal UARFCNs: [2937-3088] Special UARFCNs: [2937-3088] Special UARFCNs: [2937-3088] Special UARFCNs: none Band 9: Normal UARFCNs: [9237-9387] Special UARFCNs: none The UARFCNs: none The UARFCNs: 19237-9387] Special UARFCNs: none The UARFCNs: 19237-9387] Special UARFCNs: 19500-9600] and 110050-10125] Special
					UARFCNs: none Band 2: Normal UARFCNs: [9250-9550] and [9650-9950] Special

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
					UARFCNs: none Band 3: Normal UARFCNs: [9550-9650] Special UARFCNs: none Band 4: Normal UARFCNs: [12850-13100] Special UARFCNs: [12850-13100] Special UARFCNs: (2112, 2137, 2162, 2187, 2212, 2237, 2262, 2287, 2312, 2337) Band 5: Normal UARFCNs: [11500-12000] Special UARFCNs: none Band 6: Normal UARFCNs: none Band 6: Normal UARFCNs: none Band 6: Normal UARFCNs: none For details, see 3GPP TS 25.104 and 3GPP TS 25.105.
					GUI Value Range:0~16383 Unit:None
					Actual Value Range:0~16383 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
GeranRanShare	LocalCellId	ADD GERANRANS HARE LST GERANRANS HARE MOD GERANRANS HARE RMV GERANRANS HARE	None	None	Meaning:Indicates the cell identity of the local cell. It uniquely identifies a cell within an eNodeB.  GUI Value Range:0~17  Unit:None  Actual Value Range:0~17  Default Value:None
GeranRanShare	BcchGroupId	ADD GERANRANS HARE LST GERANRANS HARE MOD GERANRANS HARE RMV GERANRANS HARE	LOFD-001036 / TDLOFD-0010 36 TDLOFD-0011 12	RAN Sharing with Common Carrier MOCN Flexible Priority Based Camping	Meaning:Indicates the index of the GERAN carrier frequency group. It uniquely identifies a GERAN carrier frequency group. GUI Value Range:0~31 Unit:None Actual Value Range:0~31 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatHo-CommGroup	LocalCellId	ADD INTERRATHO COMMGROUP LST INTERRATHO COMMGROUP MOD INTERRATHO COMMGROUP RMV INTERRATHO COMMGROUP	None	None	Meaning:Indicates the local ID of the cell. It uniquely identifies a cell within a BS.  GUI Value Range:0~17  Unit:None  Actual Value Range:0~17  Default Value:None
InterRatHo-CommGroup	InterRatHoCom mGroupId	ADD INTERRATHO COMMGROUP LST INTERRATHO COMMGROUP MOD INTERRATHO COMMGROUP RMV INTERRATHO COMMGROUP	LOFD-001019 / TDLOFD-0010 19 LOFD-001020 / TDLOFD-0010 20 LOFD-001021 / TDLOFD-0010 21 TDLOFD-0010 22 TDLOFD-0010 23	PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and CERAN SRVCC to UTRAN SRVCC to GERAN	Meaning:Indicates the ID of the common parameter group related to inter-RAT handover. GUI Value Range:0~9 Unit:None Actual Value Range:0~9 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatHoU-tranGroup	LocalCellId	ADD INTERRATHO UTRANGROU P LST INTERRATHO UTRANGROU P MOD INTERRATHO UTRANGROU P RMV INTERRATHO UTRANGROU P	None	None	Meaning:Indicates the local ID of the cell. It uniquely identifies a cell within a BS.  GUI Value Range:0~17  Unit:None  Actual Value Range:0~17  Default Value:None
InterRatHoU- tranGroup	InterRatHoUtra nGroupId	ADD INTERRATHO UTRANGROU P LST INTERRATHO UTRANGROU P MOD INTERRATHO UTRANGROU P RMV INTERRATHO UTRANGROU P	LOFD-001019 / TDLOFD-0010 19 TDLOFD-0010 22	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN	Meaning:Indicates the ID of the parameter group related to inter-RAT handover to UTRAN. GUI Value Range:0~9 Unit:None Actual Value Range:0~9 Default Value:None

МО	Parameter ID	MML Command	Feature ID	Feature Name	Description
InterRatHoGer- anGroup	LocalCellId	ADD INTERRATHO GERANGROU P LST INTERRATHO GERANGROU P MOD INTERRATHO GERANGROU P RMV INTERRATHO GERANGROU P	None	None	Meaning:Indicates the local ID of the cell. It uniquely identifies a cell within a BS. GUI Value Range:0~17 Unit:None Actual Value Range:0~17 Default Value:None
InterRatHoGer- anGroup	InterRatHoGera nGroupId	ADD INTERRATHO GERANGROU P LST INTERRATHO GERANGROU P MOD INTERRATHO GERANGROU P RMV INTERRATHO GERANGROU P	LOFD-001020 / TDLOFD-0010 20 TDLOFD-0010 23	PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN	Meaning:Indicates the ID of the parameter group related to inter-RAT handover to GERAN. GUI Value Range:0~9 Unit:None Actual Value Range:0~9 Default Value:None
CnOperatorStan dardQci	ServiceIrHoCfg GroupId	MOD CNOPERATO RSTANDARD QCI LST CNOPERATO RSTANDARD QCI	LOFD-001043 / TDLOFD-0010 43 LOFD-001046 / TDLOFD-0010 46	Service based inter-RAT handover to UTRAN Service based inter-RAT handover to GERAN	Meaning:Indicates the ID of the service-based inter-RAT handover policy group.  GUI Value Range:0~9  Unit:None  Actual Value Range:0~9  Default Value:0

## 11 Counters

Table 11-1 Counter description

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526726989	L.IRATHO.E2W.Pr epAttOut	Number of inter- RAT handover attempts from E- UTRAN to WCDMA network	LOFD-001019 LOFD-001022 LOFD-001033 TDLOFD-001019 TDLOFD-001022 TDLOFD-001033	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN
1526726990	L.IRATHO.E2W.E xecAttOut	Number of inter- RAT handover executions from E- UTRAN to WCDMA network	LOFD-001019 LOFD-001022 LOFD-001033 TDLOFD-001019 TDLOFD-001022 TDLOFD-001033	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526726991	L.IRATHO.E2W.E xecSuccOut	Number of successful inter- RAT handovers from E-UTRAN to WCDMA network	LOFD-001019 LOFD-001022 LOFD-001033 TDLOFD-001019 TDLOFD-001022 TDLOFD-001033	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN
1526726992	L.IRATHO.E2G.Pr epAttOut	Number of inter- RAT handover attempts from E- UTRAN to GERAN	LOFD-001020 LOFD-001023 LOFD-001034 TDLOFD-001020 TDLOFD-001023 TDLOFD-001034	PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN CS Fallback to GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN CS Fallback to GERAN
1526726993	L.IRATHO.E2G.Ex ecAttOut	Number of inter- RAT handover executions from E- UTRAN to GERAN	LOFD-001020 LOFD-001023 LOFD-001034 TDLOFD-001020 TDLOFD-001023 TDLOFD-001034	PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN CS Fallback to GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN CS Fallback to GERAN

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526726994	L.IRATHO.E2G.Ex ecSuccOut	Number of successful inter- RAT handovers from E-UTRAN to GERAN	LOFD-001020 LOFD-001023 LOFD-001034 TDLOFD-001020 TDLOFD-001023 TDLOFD-001034	PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN CS Fallback to GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN CS Fallback to GERAN
1526726995	L.HHO.IntraeNB.In traFreq.PrepAttOut	Number of intra- eNodeB intra- frequency outgoing handover attempts in a cell	LBFD-00201801 TDLBFD-0020180	Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover
1526726996	L.HHO.IntraeNB.In traFreq.ExecAttOut	Number of intra- eNodeB intra- frequency outgoing handovers executions in a cell	LBFD-00201801 TDLBFD-0020180 1	Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover
1526726997	L.HHO.IntraeNB.In traFreq.ExecSucc- Out	Number of successful intra- eNodeB intra- frequency outgoing handovers in a cell	LBFD-00201801 TDLBFD-0020180 1	Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover
1526726998	L.HHO.IntraeNB.In terFreq.PrepAttOut	Number of intra- eNodeB inter- frequency outgoing handover attempts in a cell	LBFD-00201802 TDLBFD-0020180 2	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526726999	L.HHO.IntraeNB.In terFreq.ExecAttOut	Number of intra- eNodeB inter- frequency outgoing handovers executions in a cell	LBFD-00201802 TDLBFD-0020180 2	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover
1526727000	L.HHO.IntraeNB.In terFreq.ExecSucc- Out	Number of successful intra- eNodeB inter- frequency outgoing handovers in a cell	LBFD-00201802 TDLBFD-0020180 2	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover
1526727001	L.HHO.IntereNB.In traFreq.PrepAttOut	Number of inter- eNodeB intra- frequency outgoing handover attempts in a cell	LBFD-00201801 TDLBFD-0020180	Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover
1526727002	L.HHO.IntereNB.In traFreq.ExecAttOut	Number of inter- eNodeB intra- frequency outgoing handovers executions in a cell	LBFD-00201801 TDLBFD-0020180	Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover
1526727003	L.HHO.IntereNB.In traFreq.ExecSucc- Out	Number of successful inter- eNodeB intra- frequency outgoing handovers in a cell	LBFD-00201801 TDLBFD-0020180	Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover
1526727004	L.HHO.IntereNB.In terFreq.PrepAttOut	Number of inter- eNodeB inter- frequency outgoing handover attempts in a cell	LBFD-00201802 TDLBFD-0020180 2	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover
1526727005	L.HHO.IntereNB.In terFreq.ExecAttOut	Number of inter- eNodeB inter- frequency outgoing handovers executions in a cell	LBFD-00201802 TDLBFD-0020180 2	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526727006	L.HHO.IntereNB.In terFreq.ExecSucc- Out	Number of successful inter- eNodeB inter- frequency outgoing handovers in a cell	LBFD-00201802 TDLBFD-0020180 2	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover
1526727031	Intra-frequency Handover Success Rate	Intra-Frequency handover success rate This counter will be deleted in later versions. It is reported normally in the current version but the measurement value is invalid. You are advised not to use this counter.	LBFD-00201801 TDLBFD-0020180	Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover
1526727032	Inter-frequency Handover Success Rate	Inter-Frequency handover success rate  This counter will be deleted in later versions. It is reported normally in the current version but the measurement value is invalid. You are advised not to use this counter.	LBFD-00201801 TDLBFD-0020180	Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover
1526727034	Handover from E- UTRAN to WCDMA Success Rate	Success rate of inter- RAT handovers from E-UTRAN to WCDMA network The counter will be deleted in later versions. It is reported normally in the current version but the measurement value is invalid. You are advised not to use this counter.	LOFD-001019 LOFD-001022 LOFD-001033 TDLOFD-001019 TDLOFD-001022 TDLOFD-001033	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526727035	Handover from E- UTRAN to GERAN Success Rate	Success rate of inter-RAT handovers from E-UTRAN to GERAN The counter will be deleted in later versions. It is reported normally in the current version but the measurement value is invalid. You are advised not to use this counter.	LOFD-001020 LOFD-001023 TDLOFD-001020 TDLOFD-001023	PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN
1526727202	L.Sig.X2.SendSetu p.Att	Number of X2 link setup attempts at the local eNodeB	LBFD-002018 TDLBFD-002018	Mobility Management Mobility Management
1526727203	L.Sig.X2.SendSetu p.Succ	Number of successful X2 link setups at the local eNodeB	LBFD-002018 TDLBFD-002018	Mobility Management Mobility Management
1526727204	L.Sig.X2.RecvSetu p.Att	Number of X2 link setup attempts at the peer eNodeB	LBFD-002018 TDLBFD-002018	Mobility Management Mobility Management
1526727205	L.Sig.X2.RecvSetu p.Succ	Number of successful X2 link setups at the peer eNodeB	LBFD-002018 TDLBFD-002018	Mobility Management Mobility Management
1526727226	L.IRATHO.E2T.Pr epAttOut	Number of inter- RAT Handover Attempts from E- UTRAN to TD- SCDMA network	LOFD-001019 LOFD-001022 TDLOFD-001019 TDLOFD-001022	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526727227	L.IRATHO.E2T.Ex ecAttOut	Number of inter- RAT handover executions from E- UTRAN to TD- SCDMA network	LOFD-001019 LOFD-001022 TDLOFD-001019 TDLOFD-001022	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN
1526727228	L.IRATHO.E2T.Ex ecSuccOut	Number of successful inter- RAT handovers from E-UTRAN to TD-SCDMA network	LOFD-001019 LOFD-001022 TDLOFD-001019 TDLOFD-001022	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN
1526727253	L.HHO.IntraeNB.Pr epAttIn	Number of intra- eNodeB incoming handover attempts in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency
1526727254	L.HHO.IntraeNB.E xecAttIn	Number of intra- eNodeB incoming handovers executions in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526727255	L.HHO.IntraeNB.E xecSuccIn	Number of successful intra- eNodeB incoming handovers in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover
1526727256	L.HHO.IntereNB.Pr epAttIn	Number of inter- eNodeB incoming handover attempts in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover
1526727257	L.HHO.IntereNB.E xecAttIn	Number of inter- eNodeB incoming handovers executions in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526727258	L.HHO.IntereNB.E xecSuccIn	Number of successful inter- eNodeB incoming handovers in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover
1526727264	L.HHO.X2.IntraFre q.PrepAttOut	Number of X2- based intra- frequency outgoing handover attempts in a cell	LBFD-00201801 TDLBFD-0020180	Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover
1526727265	L.HHO.X2.IntraFre q.ExecAttOut	Number of X2- based intra- frequency outgoing handover executions in a cell	LBFD-00201801 TDLBFD-0020180	Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover
1526727266	L.HHO.X2.IntraFre q.ExecSuccOut	Number of successful X2-based intra-frequency outgoing handovers	LBFD-00201801 TDLBFD-0020180	Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover
1526727267	L.HHO.X2.InterFre q.PrepAttOut	Number of X2- based inter- frequency outgoing handover attempts in a cell	LBFD-00201802 TDLBFD-0020180 2	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover
1526727268	L.HHO.X2.InterFre q.ExecAttOut	Number of X2- based inter- frequency outgoing handovers in a cell	LBFD-00201802 TDLBFD-0020180 2	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526727269	L.HHO.X2.InterFre q.ExecSuccOut	Number of successful X2-based inter-frequency outgoing handovers in a cell	LBFD-00201802 TDLBFD-0020180 2	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover
1526727285	L.HHO.DRX.Intrae NB.IntraFreq.Exe- cAttOut	Number of intra- eNodeB intra- frequency outgoing handovers executions in the DRX state	LBFD-002017 LBFD-00201801 TDLBFD-002017 TDLBFD-0020180	DRX Coverage Based Intra-frequency Handover DRX Coverage Based Intra-frequency Handover
1526727286	L.HHO.DRX.Intrae NB.IntraFreq.Exe- cSuccOut	Number of successful intra- eNodeB intra- frequency outgoing handovers in the DRX state	LBFD-002017 LBFD-00201801 TDLBFD-002017 TDLBFD-0020180	DRX Coverage Based Intra-frequency Handover DRX Coverage Based Intra-frequency Handover
1526727287	L.HHO.DRX.Intrae NB.InterFreq.Exe- cAttOut	Number of intra- eNodeB inter- frequency outgoing handovers executions in the DRX state	LBFD-002017 LBFD-00201802 TDLBFD-002017 TDLBFD-0020180	DRX Coverage Based Inter-frequency Handover DRX Coverage Based Inter-frequency Handover
1526727288	L.HHO.DRX.Intrae NB.InterFreq.Exe- cSuccOut	Number of successful intra- eNodeB inter- frequency outgoing handovers in the DRX state	LBFD-002017 LBFD-00201802 TDLBFD-002017 TDLBFD-0020180	DRX Coverage Based Inter-frequency Handover DRX Coverage Based Inter-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526727289	L.HHO.DRX.Intere NB.IntraFreq.Exe- cAttOut	Number of inter- eNodeB intra- frequency outgoing handovers executions in the DRX state	LBFD-002017 LBFD-00201802 TDLBFD-0020180 2	DRX Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover
1526727290	L.HHO.DRX.Intere NB.IntraFreq.Exe- cSuccOut	Number of successful inter- eNodeB intra- frequency outgoing handovers in the DRX state	LBFD-00201801 LBFD-00201802 LBFD-002017 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover DRX Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover
1526727291	L.HHO.DRX.Intere NB.InterFreq.Exe- cAttOut	Number of inter- eNodeB inter- frequency outgoing handovers executions in the DRX state	LBFD-00201801 LBFD-00201802 LBFD-002017 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover DRX Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526727292	L.HHO.DRX.Intere NB.InterFreq.Exe- cSuccOut	Number of successful inter- eNodeB inter- frequency outgoing handovers in the DRX state	LBFD-002017 LBFD-00201802 TDLBFD-002017 TDLBFD-0020180 1 TDLBFD-0020180 2	DRX Coverage Based Inter-frequency Handover DRX Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover
1526727293	L.HHO.NCell.Pre-pAttOut	Number of outgoing handover attempts between two specific cells	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover
1526727294	L.HHO.NCell.Exe-cAttOut	Number of outgoing handover executions between two specific cells	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526727295	L.HHO.NCell.Exe-cSuccOut	Number of successful outgoing handovers between two cells	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover
1526727317	L.E- RAB.NormRel.HO Out.QCI.1	Number of normal E-RAB releases for outgoing handovers of services with the QCI of 1 in a cell	LOFD-001019 LBFD-00201801 LBFD-00201802 TDLOFD-001019 TDLBFD-0020180 1 TDLBFD-0020180 2	PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526727318	L.E- RAB.NormRel.HO Out.QCI.2	Number of normal E-RAB releases for outgoing handovers of services with the QCI of 2 in a cell	LOFD-001019 LBFD-00201801 LBFD-00201802 TDLOFD-001019 TDLBFD-0020180 1 TDLBFD-0020180 2	PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Coverage Based Coverage Based Coverage Based Coverage Based
				Inter-frequency Handover
1526727319	L.E-RAB.NormRel.HO Out.QCI.3	Number of normal E-RAB releases for outgoing handovers of services with the QCI of 3 in a cell	LOFD-001019 LBFD-00201801 LBFD-00201802 TDLOFD-001019 TDLBFD-0020180 1 TDLBFD-0020180 2	PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526727320	L.E-RAB.NormRel.HO Out.QCI.4	Number of normal E-RAB releases for outgoing handovers of services with the QCI of 4 in a cell	LOFD-001019 LBFD-00201801 LBFD-00201802 TDLOFD-001019 TDLBFD-0020180 1 TDLBFD-0020180 2	PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Intra-frequency
1526727321	L.E-RAB.NormRel.HO Out.QCI.5	Number of normal E-RAB releases for outgoing handovers of services with the QCI of 5 in a cell	LOFD-001019 LBFD-00201801 LBFD-00201802 TDLOFD-001019 TDLBFD-0020180 1 TDLBFD-0020180 2	PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526727322	L.E-RAB.NormRel.HO Out.QCI.6	Number of normal E-RAB releases for outgoing handovers of services with the QCI of 6 in a cell	LOFD-001019 LBFD-00201801 LBFD-00201802 TDLOFD-001019 TDLBFD-0020180 1 TDLBFD-0020180 2	PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Intra-frequency
1526727323	L.E- RAB.NormRel.HO Out.QCI.7	Number of normal E-RAB releases for outgoing handovers of services with the QCI of 7 in a cell	LOFD-001019 LBFD-00201801 LBFD-00201802 TDLOFD-001019 TDLBFD-0020180 1 TDLBFD-0020180 2	PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526727324	L.E- RAB.NormRel.HO Out.QCI.8	Number of normal E-RAB releases for outgoing handovers of services with the QCI of 8 in a cell	LOFD-001019 LBFD-00201801 LBFD-00201802 TDLOFD-001019 TDLBFD-0020180 1 TDLBFD-0020180 2	PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Intra-frequency
1526727325	L.E- RAB.NormRel.HO Out.QCI.9	Number of normal E-RAB releases for outgoing handovers of services with the QCI of 9 in a cell	LOFD-001019 LBFD-00201801 LBFD-00201802 TDLOFD-001019 TDLBFD-0020180 1 TDLBFD-0020180 2	PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526727326	L.E- RAB.AbnormRel.H OOut.QCI.1	Number of abnormal E-RAB releases for outgoing handovers of services with the QCI of 1 in a cell	LOFD-001019 LBFD-00201801 LBFD-00201802 TDLOFD-001019 TDLBFD-0020180 1 TDLBFD-0020180 2	PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based
1526727327	L.E- RAB.AbnormRel.H OOut.QCI.2	Number of abnormal E-RAB releases for outgoing handovers of services with the QCI of 2 in a cell	LOFD-001019 LBFD-00201801 LBFD-00201802 TDLOFD-001019 TDLBFD-0020180 1 TDLBFD-0020180 2	PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526727328	L.E- RAB.AbnormRel.H OOut.QCI.3	Number of abnormal E-RAB releases for outgoing handovers of services with the QCI of 3 in a cell	LOFD-001019 LBFD-00201801 LBFD-00201802 TDLOFD-001019 TDLBFD-0020180 1 TDLBFD-0020180 2	PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover PS Inter-RAT Mobility between E- UTRAN and UTRAN
				Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover
1526727329	L.E- RAB.AbnormRel.H OOut.QCI.4	Number of abnormal E-RAB releases for outgoing handovers of services with the QCI of 4 in a cell	LOFD-001019 LBFD-00201801 LBFD-00201802 TDLOFD-001019 TDLBFD-0020180 1 TDLBFD-0020180 2	PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526727330	L.E-RAB.AbnormRel.H OOut.QCI.5	Number of abnormal E-RAB releases for outgoing handovers of services with the QCI of 5 in a cell	LOFD-001019 LBFD-00201801 LBFD-00201802 TDLOFD-001019 TDLBFD-0020180 1 TDLBFD-0020180 2	PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover
1526727331	L.E-RAB.AbnormRel.H OOut.QCI.6	Number of abnormal E-RAB releases for outgoing handovers of services with the QCI of 6 in a cell	LOFD-001019 LBFD-00201801 LBFD-00201802 TDLOFD-001019 TDLBFD-0020180 1 TDLBFD-0020180 2	PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526727332	L.E- RAB.AbnormRel.H OOut.QCI.7	Number of abnormal E-RAB releases for outgoing handovers of services with the QCI of 7 in a cell	LOFD-001019 LBFD-00201801 LBFD-00201802 TDLOFD-001019 TDLBFD-0020180 1 TDLBFD-0020180 2	PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Coverage Based Inter-frequency
1526727333	L.E- RAB.AbnormRel.H OOut.QCI.8	Number of abnormal E-RAB releases for outgoing handovers of services with the QCI of 8 in a cell	LOFD-001019 LBFD-00201801 LBFD-00201802 TDLOFD-001019 TDLBFD-0020180 1 TDLBFD-0020180 2	PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526727334	L.E-RAB.AbnormRel.H OOut.QCI.9	Number of abnormal E-RAB releases for outgoing handovers of services with the QCI of 9 in a cell	LOFD-001019 LBFD-00201801 LBFD-00201802 TDLOFD-001019 TDLBFD-0020180 1 TDLBFD-0020180 2	PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728173	L.HHO.Ncell.Ping-PongHo	Number of ping- pong handovers between two specific cells	LBFD-00201801 LBFD-00201802 LOFD-001019 LOFD-001021 TDLBFD-0020180 1 TDLBFD-0020180 2 TDLOFD-001019 TDLOFD-001020	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and CDMA2000 Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover PS Inter-RAT Mobility between E- UTRAN and UTRAN AN PS Inter-RAT Mobility between E- UTRAN and GERAN
1526728229	L.HHO.BlindHO.Pr epAttOut	Number of outgoing blind handover attempts in a cell	LBFD-00201802 TDLBFD-0020180 2	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover
1526728230	L.HHO.BlindHO.E xecAttOut	Number of outgoing blind handovers executions in a cell	LBFD-00201802 TDLBFD-0020180 2	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728231	L.HHO.BlindHO.E xecSuccOut	Number of successful outgoing blind handovers in a cell	LBFD-00201802 TDLBFD-0020180 2	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover
1526728244	L.E-RAB.AttEst.HOIn	Total number of E-RAB setup attempts for incoming handovers in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover
1526728245	L.E-RAB.SuccEst.HOIn	Total number of successful E-RAB setups for incoming handovers in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728246	L.E- RAB.NormRel.HO- Out	Total number of normal E-RAB releases for outgoing handovers in a cell	LOFD-001019 LBFD-00201801 LBFD-00201802 TDLOFD-001019 TDLBFD-0020180 1 TDLBFD-0020180 2	PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover
1526728247	L.E-RAB.AbnormRel.H OOut	Total number of abnormal E-RAB releases for outgoing handovers in a cell	LOFD-001019 LBFD-00201801 LBFD-00201802 TDLOFD-001019 TDLBFD-0020180 1 TDLBFD-0020180 2	PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover PS Inter-RAT Mobility between E- UTRAN and UTRAN Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728252	L.E- RAB.AttEst.HOIn. PLMN	Total number of E-RAB setup attempts for incoming handovers for a specific operator in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier
1526728253	L.E-RAB.SuccEst.HOIn .PLMN	Number of successful E-RAB setups for incoming handovers for a specific operator in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2 LOFD-001036 LOFD-001037 TDLOFD-001037	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728254	L.E- RAB.AbnormRel.P LMN	Total number of abnormal releases of activated E-RABs for a specific operator in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier
1526728255	L.E- RAB.NormRel.PL MN	Total number of normal E-RAB releases for a specific operator in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2 LOFD-001036 LOFD-001037 TDLOFD-001037	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728285	L.HHO.Prep.FailOu t.MME	Number of outgoing handover preparation failures because of faults on the MME side	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover
1526728286	L.HHO.Prep.FailOu t.NoReply	Number of outgoing handover preparation failures because of no responses from the target cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover
1526728287	L.HHO.Prep.FailOu t.PrepFailure	Number of outgoing handover preparation failures because the target cell sending handover preparation failure messages	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728288	L.HHO.Prep.FailOu t.HOCancel	Number of failed outgoing handover preparations because the source cell sending handover cancellation messages	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover
1526728289	L.HHO.Prep.FailIn. AdmitFail	Number of incoming handover preparation failures because of admission rejection	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover
1526728290	L.HHO.Prep.FailIn. HOCancel	Number of incoming handover preparation failures because the target cell receives handover cancellation messages	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728306	L.IRATHO.E2G.Pr ep.FailOut.MME	Number of inter- RAT handover preparation failures from E-UTRAN to GERAN because of faults on the MME side	LOFD-001034 TDLOFD-001034 LOFD-001020 TDLOFD-001046 TDLOFD-001046 LOFD-001073	CS Fallback to GERAN CS Fallback to GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN Service based inter- RAT handover to GERAN Service based inter- RAT handover to GERAN Distance based inter-RAT handover to GERAN
1526728307	L.IRATHO.E2G.Pr ep.FailOut.NoReply	Number of inter- RAT handover preparation failures from E-UTRAN to GERAN because of no responses from GERAN	LOFD-001034 TDLOFD-001034 LOFD-001020 TDLOFD-001046 TDLOFD-001046 LOFD-001073	CS Fallback to GERAN CS Fallback to GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN Service based inter- RAT handover to GERAN Service based inter- RAT handover to GERAN Distance based inter-RAT handover to GERAN

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728308	L.IRATHO.E2G.Pr ep.FailOut.PrepFai- lure	Number of inter- RAT handover preparation failures from E-UTRAN to GERAN due tobecause GERAN cells send handover preparation failure messages	LOFD-001034 TDLOFD-001034 LOFD-001020 TDLOFD-001046 TDLOFD-001046 LOFD-001073	CS Fallback to GERAN CS Fallback to GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN Service based inter- RAT handover to GERAN Service based inter- RAT handover to GERAN Distance based inter-RAT handover to GERAN
1526728309	L.IRATHO.E2T.Pr ep.FailOut.MME	Number of inter- RAT handover preparation failures from E-UTRAN to TD-SCDMA network because of faults on the MME side	LOFD-001033 TDLOFD-001033 LOFD-001019 TDLOFD-001043 TDLOFD-001043 LOFD-001072	CS Fallback to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN Service based inter- RAT handover to UTRAN Service based inter- RAT handover to UTRAN Distance based inter-RAT handover to UTRAN

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728310	L.IRATHO.E2T.Pr ep.FailOut.NoReply	Number of inter- RAT handover preparation failures from E-UTRAN to TD-SCDMA network due tobecause of no responses from TD- SCDMA network	LOFD-001033 TDLOFD-001033 LOFD-001019 TDLOFD-001043 TDLOFD-001043 LOFD-001072	CS Fallback to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN Service based inter- RAT handover to UTRAN Service based inter- RAT handover to UTRAN Distance based inter-RAT handover to UTRAN
1526728311	L.IRATHO.E2T.Pr ep.FailOut.PrepFai- lure	Number of inter- RAT handover preparation failures because TD- SCDMA network cells send handover preparation failure messages	LOFD-001033 TDLOFD-001033 LOFD-001019 TDLOFD-001043 TDLOFD-001043 LOFD-001072	CS Fallback to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN Service based inter- RAT handover to UTRAN Service based inter- RAT handover to UTRAN Distance based inter-RAT handover to UTRAN

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728312	L.IRATHO.BlindH O.E2W.ExecAttOut	Number of inter- RAT blind handovers executions from E- UTRAN to WCDMA network	LOFD-001019 LOFD-001022 LOFD-001033 TDLOFD-001019 TDLOFD-001022 TDLOFD-001033	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN
1526728313	L.IRATHO.BlindH O.E2W.ExecSucc- Out	Number of successful inter- RAT blind handovers from E- UTRAN to WCDMA network	LOFD-001019 LOFD-001022 LOFD-001033 TDLOFD-001019 TDLOFD-001022 TDLOFD-001033	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN
1526728314	L.IRATHO.BlindH O.E2G.ExecAttOut	Number of inter- RAT blind handovers executions from E- UTRAN to GERAN	LOFD-001020 LOFD-001023 LOFD-001034 TDLOFD-001020 TDLOFD-001023 TDLOFD-001034	PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN CS Fallback to GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN CS Fallback to GERAN

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728315	L.IRATHO.BlindH O.E2G.ExecSucc- Out	Number of successful inter- RAT blind handovers from E- UTRAN to GERAN	LOFD-001020 LOFD-001023 LOFD-001034 TDLOFD-001020 TDLOFD-001023 TDLOFD-001034	PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN CS Fallback to GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN CS Fallback to GERAN
1526728316	L.IRATHO.E2W.Pr ep.FailOut.MME	Number of inter- RAT handover preparation failures from E-UTRAN to WCDMA network because of faults on the MME side	LOFD-001033 TDLOFD-001019 TDLOFD-001019 LOFD-001043 TDLOFD-001072	CS Fallback to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN Service based inter- RAT handover to UTRAN Service based inter- RAT handover to UTRAN Distance based inter-RAT handover to UTRAN

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728317	L.IRATHO.E2W.Pr ep.FailOut.PrepFai- lure	Number of inter-RAT handover preparation failures from E-UTRAN to WCDMA network because WCDMA network cells send handover preparation failure messages	LOFD-001033 TDLOFD-001033 LOFD-001019 TDLOFD-001043 TDLOFD-001043 LOFD-001072	CS Fallback to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN Service based inter- RAT handover to UTRAN Service based inter- RAT handover to UTRAN Distance based inter-RAT handover to UTRAN
1526728318	L.IRATHO.E2W.Pr ep.FailOut.NoReply	Number of inter- RAT handover preparation failures from E-UTRAN to WCDMA network because of no responses from WCDMA network	LOFD-001033 TDLOFD-001033 LOFD-001019 TDLOFD-001043 TDLOFD-001043 LOFD-001072	CS Fallback to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN Service based inter- RAT handover to UTRAN Service based inter- RAT handover to UTRAN Distance based inter-RAT handover to UTRAN

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728325	L.RRCRedirection.I ntraLTE	Number of intra- RAT redirections	LBFD-002023 TDLBFD-002023 LBFD-00201802 TDLBFD-0020180 2 LBFD-00201804	Admission Control Admission Control Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover Distance Based Inter-frequency Handover
1526728326	L.RRCRedirection. E2W	Number of redirections from E-UTRAN to WCDMA network	LOFD-001019 LOFD-001033 TDLOFD-001019 TDLOFD-001033	PS Inter-RAT Mobility between E- UTRAN and UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN CS Fallback to UTRAN
1526728327	L.RRCRedirection. E2G	Number of redirections from E- UTRAN to GERAN	LOFD-001020 LOFD-001034 TDLOFD-001020 TDLOFD-001034	PS Inter-RAT Mobility between E- UTRAN and GERAN CS Fallback to GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN CS Fallback to GERAN

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728328	L.IRATHO.BlindH O.E2W.PrepAttOut	Number of inter- RAT blind handover attempts from E- UTRAN to WCDMA network	LOFD-001033 TDLOFD-001033 LOFD-001019 TDLOFD-001019	CS Fallback to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN and UTRAN and
1526728329	L.IRATHO.BlindH O.E2G.PrepAttOut	Number of inter- RAT blind handover attempts from E- UTRAN to GERAN	LOFD-001034 TDLOFD-001034 LOFD-001020 TDLOFD-001020	CS Fallback to GERAN CS Fallback to GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN About the second of the second
1526728330	L.RRCRedirection. E2W.PrepAtt	Number of redirection preparations from E-UTRAN to WCDMA network	LOFD-001019 LOFD-001033 TDLOFD-001019 TDLOFD-001033	PS Inter-RAT Mobility between E- UTRAN and UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN CS Fallback to UTRAN

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728331	L.RRCRedirection. E2G.PrepAtt	Number of redirection preparations from E-UTRAN to GERAN	LOFD-001020 LOFD-001034 TDLOFD-001020 TDLOFD-001034	PS Inter-RAT Mobility between E- UTRAN and GERAN CS Fallback to GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN CS Fallback to GERAN CS Fallback to GERAN
1526728353	L.HHO.IntereNB.P athSwAtt	Number of path switch requests for inter-eNodeB incoming handovers in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover
1526728354	L.HHO.IntereNB.P athSwSucc	Number of successful path switches for inter- eNodeB incoming handovers in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728359	L.HHO.IntraeNB.In traFreq.PrepAttOut. PLMN	Number of intra- eNodeB intra- frequency outgoing handover attempts for a specific operator	LBFD-00201801 TDLBFD-0020180 1 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier
1526728360	L.HHO.IntraeNB.In traFreq.ExecAttOut .PLMN	Number of intra- eNodeB intra- frequency outgoing handover executions for a specific operator	LBFD-00201801 TDLBFD-0020180 1 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier
1526728361	L.HHO.IntraeNB.In traFreq.ExecSuccO ut.PLMN	Number of successful intra- eNodeB intra- frequency outgoing handovers for a specific operator	LBFD-00201801 TDLBFD-0020180 1 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728362	L.HHO.IntraeNB.In terFreq.PrepAttOut. PLMN	Number of intra- eNodeB inter- frequency outgoing handover attempts for a specific operator	LBFD-00201802 TDLBFD-0020180 2 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier
1526728363	L.HHO.IntraeNB.In terFreq.ExecAttOut .PLMN	Number of intra- eNodeB inter- frequency outgoing handover executions for a specific operator	LBFD-00201802 TDLBFD-0020180 2 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier
1526728364	L.HHO.IntraeNB.In terFreq.ExecSuccO ut.PLMN	Number of successful intra- eNodeB inter- frequency outgoing handovers for a specific operator	LBFD-00201802 TDLBFD-0020180 2 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728365	L.HHO.IntereNB.In traFreq.PrepAttOut. PLMN	Number of inter- eNodeB intra- frequency outgoing handover attempts for a specific operator	LBFD-00201801 TDLBFD-0020180 1 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier
1526728366	L.HHO.IntereNB.In traFreq.ExecAttOut .PLMN	Number of inter- eNodeB intra- frequency outgoing handover executions for a specific operator	LBFD-00201801 TDLBFD-0020180 1 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier
1526728367	L.HHO.IntereNB.In traFreq.ExecSuccO ut.PLMN	Number of successful inter- eNodeB intra- frequency outgoing handovers for a specific operator	LBFD-00201801 TDLBFD-0020180 1 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728368	L.HHO.IntereNB.In terFreq.PrepAttOut. PLMN	Number of inter- eNodeB inter- frequency outgoing handover attempts for a specific operator	LBFD-00201802 TDLBFD-0020180 2 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier
1526728369	L.HHO.IntereNB.In terFreq.ExecAttOut .PLMN	Number of inter- eNodeB inter- frequency outgoing handover executions for a specific operator	LBFD-00201802 TDLBFD-0020180 2 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier
1526728370	L.HHO.IntereNB.In terFreq.ExecSuccO ut.PLMN	Number of successful inter- eNodeB inter- frequency outgoing handovers for a specific operator	LBFD-00201802 TDLBFD-0020180 2 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728371	L.HHO.X2.IntraFre q.PrepAttOut.PLM N	Number of X2- based intra- frequency outgoing handover attempts for a specific operator	LBFD-00201801 TDLBFD-0020180 1 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier
1526728372	L.HHO.X2.IntraFre q.ExecAttOut.PLM N	Number of X2- based intra- frequency outgoing handover executions for a specific operator	LBFD-00201801 TDLBFD-0020180 1 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier
1526728373	L.HHO.X2.IntraFre q.ExecSuccOut.PL MN	Number of successful X2-based intra-frequency outgoing handovers for a specific operator	LBFD-00201801 TDLBFD-0020180 1 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728374	L.HHO.X2.InterFre q.PrepAttOut.PLM N	Number of X2- based inter- frequency outgoing handover attempts for a specific operator	LBFD-00201802 TDLBFD-0020180 2 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier
1526728375	L.HHO.X2.InterFre q.ExecAttOut.PLM N	Number of X2- based inter- frequency outgoing handover executions for a specific operator	LBFD-00201802 TDLBFD-0020180 2 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier
1526728376	L.HHO.X2.InterFre q.ExecSuccOut.PL MN	Number of successful X2-based inter-frequency outgoing handovers for a specific operator	LBFD-00201802 TDLBFD-0020180 2 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728377	L.IRATHO.E2W.Pr epAttOut.PLMN	Number of inter- RAT handover attempts from E- UTRAN to WCDMA network for a specific operator	LOFD-001019 LOFD-001022 LOFD-001019 TDLOFD-001022 TDLOFD-001033 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728378	L.IRATHO.E2W.E xecAttOut.PLMN	Number of inter- RAT handover executions from E- UTRAN to WCDMA network for a specific operator	LOFD-001019 LOFD-001022 LOFD-001019 TDLOFD-001022 TDLOFD-001033 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728379	L.IRATHO.E2W.E xecSuccOut.PLMN	Number of successful inter-RAT handovers from E-UTRAN to WCDMA network for a specific operator	LOFD-001019 LOFD-001022 LOFD-001019 TDLOFD-001022 TDLOFD-001033 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728380	L.IRATHO.E2G.Pr epAttOut.PLMN	Number of inter- RAT handover attempts from E- UTRAN to GERAN for a specific operator	LOFD-001020 LOFD-001023 LOFD-001020 TDLOFD-001023 TDLOFD-001034 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN CS Fallback to GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN CS Fallback to GERAN RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728381	L.IRATHO.E2G.Ex ecAttOut.PLMN	Number of inter- RAT handover executions from E- UTRAN to GERAN for a specific operator	LOFD-001020 LOFD-001023 LOFD-001034 TDLOFD-001023 TDLOFD-001034 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN CS Fallback to GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN CS Fallback to GERAN RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728382	L.IRATHO.E2G.Ex ecSuccOut.PLMN	Number of successful inter-RAT handovers from E-UTRAN to GERAN for a specific operator	LOFD-001020 LOFD-001023 LOFD-001020 TDLOFD-001023 TDLOFD-001034 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN CS Fallback to GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN CS Fallback to GERAN RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728389	L.IRATHO.BlindH O.E2W.PrepAttOut. PLMN	Number of inter-RAT blind handover attempts from E-UTRAN to WCDMA network for a specific operator	LOFD-001019 LOFD-001022 LOFD-001019 TDLOFD-001022 TDLOFD-001033 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728390	L.IRATHO.BlindH O.E2G.PrepAttOut. PLMN	Number of inter- RAT blind handover attempts from E- UTRAN to GERAN for a specific operator	LOFD-001020 LOFD-001023 LOFD-001020 TDLOFD-001023 TDLOFD-001034 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN CS Fallback to GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN CS Fallback to GERAN RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728391	L.IRATHO.BlindH O.E2W.ExecAttOut .PLMN	Number of inter- RAT blind handover executions from E- UTRAN to WCDMA network for a specific operator	LOFD-001019 LOFD-001022 LOFD-001019 TDLOFD-001022 TDLOFD-001033 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728392	L.IRATHO.BlindH O.E2W.ExecSuccO ut.PLMN	Number of successful inter-RAT blind handover executions from E-UTRAN to WCDMA network for a specific operator	LOFD-001019 LOFD-001022 LOFD-001019 TDLOFD-001022 TDLOFD-001033 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728393	L.IRATHO.BlindH O.E2G.ExecAttOut. PLMN	Number of inter- RAT blind handover executions from E- UTRAN to GERAN for a specific operator	LOFD-001020 LOFD-001023 LOFD-001020 TDLOFD-001023 TDLOFD-001034 LOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN CS Fallback to GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN CS Fallback to GERAN RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728394	L.IRATHO.BlindH O.E2G.ExecSuccO ut.PLMN	Number of successful inter-RAT blind handover executions from E-UTRAN to GERAN for a specific operator	LOFD-001020 LOFD-001023 LOFD-001034 TDLOFD-001020 TDLOFD-001033 TDLOFD-001036 LOFD-001037 TDLOFD-001036 TDLOFD-001037	PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN CS Fallback to GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN CS Fallback to GERAN RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Common Carrier RAN Sharing with Common Carrier
1526728395	L.HHO.BlindHO.Pr epAttOut.PLMN	Number of outgoing blind handover attempts for a specific operator	LBFD-00201802 TDLBFD-0020180 2 LOFD-001036 TDLOFD-001037 TDLOFD-001037	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover RAN Sharing with Common Carrier RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Dedicated Carrier

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728396	L.HHO.BlindHO.E xecAttOut.PLMN	Number of outgoing blind handover executions for a specific operator	LBFD-00201802 TDLBFD-0020180 2 LOFD-001036 TDLOFD-001037 TDLOFD-001037	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover RAN Sharing with Common Carrier RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Dedicated Carrier
1526728397	L.HHO.BlindHO.E xecSuccOut.PLMN	Number of successful outgoing blind handover executions for a specific operator	LBFD-00201802 TDLBFD-0020180 2 LOFD-001036 TDLOFD-001037 TDLOFD-001037	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover RAN Sharing with Common Carrier RAN Sharing with Common Carrier RAN Sharing with Dedicated Carrier RAN Sharing with Dedicated Carrier
1526728398	L.IntraFreqHO.No NRT	Number of intra- frequency handover initiation failures because the adjacent cell is not on the NRT of the source cell	LBFD-00201801 TDLBFD-0020180	Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover
1526728399	L.InterFreqHO.No NRT	Number of inter- frequency handover initiation failures because the target cell is not configured as a neighboring cell for the source cell	LBFD-00201801 TDLBFD-0020180	Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728441	L.CCO.E2G.Exe-cAttOut	Number of CCO executions from E- UTRAN to GERAN	LOFD-001020 TDLOFD-001020	PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN
1526728442	L.CCO.E2G.Exe-cSuccOut	Number of successful CCOs from E-UTRAN to GERAN	LOFD-001020 TDLOFD-001020	PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN
1526728468	L.IRATHO.E2W.N oNRT	Number of inter- RAT initiation failures from E- UTRAN to WCDMA network because the adjacent cell is not on the NRT of the source cell	LOFD-001019 LOFD-002002 TDLOFD-001019 TDLBFD-002002	PS Inter-RAT Mobility between E- UTRAN and UTRAN Inter-RAT ANR PS Inter-RAT Mobility between E- UTRAN and UTRAN Transport Channel Management
1526728469	L.IRATHO.E2T.No NRT	Number of inter- RAT initiation failures from E- UTRAN to TD- SCDMA network because the adjacent cell is not on the NRT of the source cell	LOFD-001019 LOFD-002002 TDLOFD-001019 TDLBFD-002002	PS Inter-RAT Mobility between E- UTRAN and UTRAN Inter-RAT ANR PS Inter-RAT Mobility between E- UTRAN and UTRAN Transport Channel Management

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728470	L.IRATHO.E2G.N oNRT	Number of inter- RAT initiation failures from E- UTRAN to GERAN because the adjacent cell is not on the NRT of the source cell	LOFD-001020 LOFD-002002 TDLOFD-001020 TDLBFD-002002	PS Inter-RAT Mobility between E- UTRAN and GERAN Inter-RAT ANR PS Inter-RAT Mobility between E- UTRAN and GERAN Transport Channel Management
1526728491	L.HHO.PrepAttIn.d isc.FlowCtrl	Number of times the HANDOVER REQUEST message is discarded over the S1 or X2 interface because of flow control	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover
1526728492	L.HHO.Prep.FailIn. FlowCtrl	Number of times that the target eNodeB sends a handover preparation failure message over the S1 or X2 interface to the source eNodeB because of flow control	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover
1526728554	L.HHO.IntraFreq.N oData.ExecAttOut	Number of intra- frequency handover execution attempts triggered for UEs that do not transmit or receive data	LBFD-00201801 TDLBFD-0020180 1 LOFD-001105 TDLOFD-001105	Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Dynamic DRX Dynamic DRX

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728555	L.HHO.IntraFreq.N oData.ExecSuccOut	Number of successful intra- frequency handover executions triggered for UEs that do not	LBFD-00201801 TDLBFD-0020180 1 LOFD-001105	Coverage Based Intra-frequency Handover Coverage Based Intra-frequency
		transmit or receive data	TDLOFD-001105	Handover Dynamic DRX Dynamic DRX
1526728557	L.HHO.InterFreq.N oData.ExecAttOut	Number of inter- frequency handover execution attempts triggered for UEs that do not transmit or receive data	LBFD-00201802 TDLBFD-0020180 2 LOFD-001105 TDLOFD-001105	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover Dynamic DRX Dynamic DRX
1526728558	L.HHO.InterFreq.N oData.ExecSuccOut	Number of successful inter- frequency handover executions triggered for UEs that do not transmit or receive data	LBFD-00201802 TDLBFD-0020180 2 LOFD-001105 TDLOFD-001105	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover Dynamic DRX Dynamic DRX
1526728560	L.IRATHO.E2W.N oData.ExecAttOut	Number of inter- RAT handover executions from E- UTRAN to WCDMA network triggered for UEs that do not transmit or receive data	LOFD-001019 LOFD-001022 LOFD-001033 TDLOFD-001019 TDLOFD-001022 TDLOFD-001033 LOFD-001105 TDLOFD-001105	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN Dynamic DRX Dynamic DRX

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728561	L.IRATHO.E2W.N oData.ExecSuccOut	Number of successful inter-RAT handovers from E-UTRAN to WCDMA network triggered for UEs that do not transmit or receive data	LOFD-001019 LOFD-001022 LOFD-001033 TDLOFD-001019 TDLOFD-001022 TDLOFD-001033 LOFD-001105 TDLOFD-001105	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN CS Fallback to UTRAN Dynamic DRX Dynamic DRX
1526728711	L.HHO.Prep.FailIn. AdmitFail.Load	Number of incoming handover preparation failures because of high load	LBFD-002018	Mobility Management
1526728742	L.MeasCtrl.WCDM A.Add	Number of measurement control messages delivered to WCDMA network triggered by poor coverage in a cell	LOFD-001019 TDLOFD-001019	PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN
1526728743	L.MeasCtrl.GERA N.Add	Number of measurement control messages delivered to GERAN triggered by poor coverage in a cell	LOFD-001020 TDLOFD-001020	PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728744	L.UECNTX.Releas e.DurMeasU	Number of UE context releases during WCDMA network measurement	LBFD-002008 LOFD-001019 TDLBFD-002008 TDLOFD-001019	Radio Bearer Management PS Inter-RAT Mobility between E- UTRAN and UTRAN Radio Bearer Management PS Inter-RAT Mobility between E- UTRAN and UTRAN
1526728745	L.UECNTX.Releas e.DurMeasG	Number of UE context releases during a GERAN measurement	LBFD-002008 LOFD-001020 TDLBFD-002008 TDLOFD-001020	Radio Bearer Management PS Inter-RAT Mobility between E- UTRAN and GERAN Radio Bearer Management PS Inter-RAT Mobility between E- UTRAN and GERAN
1526728746	L.IRATHO.BlindH O.E2T.PrepAttOut	Number of inter- RAT blind handover attempts from E- UTRAN to TD- SCDMA network	LOFD-001033 TDLOFD-001033 LOFD-001019 TDLOFD-001019	CS Fallback to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN and UTRAN and

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728747	L.IRATHO.BlindH O.E2T.ExecAttOut	Number of inter- RAT blind handover executions from E- UTRAN to TD- SCDMA network	LOFD-001019 LOFD-001022 LOFD-001033 TDLOFD-001019 TDLOFD-001022 TDLOFD-001033	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN
1526728748	L.IRATHO.BlindH O.E2T.ExecSucc- Out	Number of successful inter- RAT blind handovers from E- UTRAN to TD- SCDMA network	LOFD-001019 LOFD-001022 LOFD-001033 TDLOFD-001019 TDLOFD-001022 TDLOFD-001033	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN
1526728751	L.RRCRedirection. E2T.PrepAtt	Number of redirection preparations to TD-SCDMA network	LOFD-001019 LOFD-001033 TDLOFD-001019 TDLOFD-001033	PS Inter-RAT Mobility between E- UTRAN and UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN CS Fallback to UTRAN

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728752	L.RRCRedirection. E2T	Number of redirections to TD-SCDMA network	LOFD-001019 LOFD-001033 TDLOFD-001019 TDLOFD-001033	PS Inter-RAT Mobility between E- UTRAN and UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN CS Fallback to UTRAN
1526728766	L.X2.Unavail.Dur.S ys	Duration of X2 link unavailability due to system faults	LBFD-002018 TDLBFD-002018	Mobility Management Mobility Management
1526728778	L.E- RAB.SuccEst.HOIn .QCI.1	Number of successful E-RAB setups for incoming handovers of services with QCI of 1 in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover
1526728779	L.E-RAB.SuccEst.HOIn .QCI.2	Number of successful E-RAB setups for incoming handovers of services with QCI of 2 in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728780	L.E-RAB.SuccEst.HOIn .QCI.3	Number of successful E-RAB setups for incoming handovers of services with QCI of 3 in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover
1526728781	L.E- RAB.SuccEst.HOIn .QCI.4	Number of successful E-RAB setups for incoming handovers of services with QCI of 4 in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover
1526728782	L.E- RAB.SuccEst.HOIn .QCI.5	Number of successful E-RAB setups for incoming handovers of services with QCI of 5 in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728783	L.E-RAB.SuccEst.HOIn .QCI.6	Number of successful E-RAB setups for incoming handovers of services with QCI of 6 in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency
1526728784	L.E- RAB.SuccEst.HOIn .QCI.7	Number of successful E-RAB setups for incoming handovers of services with QCI of 7 in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover
1526728785	L.E- RAB.SuccEst.HOIn .QCI.8	Number of successful E-RAB setups for incoming handovers of services with QCI of 8 in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728786	L.E- RAB.SuccEst.HOIn .QCI.9	Number of successful E-RAB setups for incoming handovers of services with QCI of 9 in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency
1526728863	L.HHO.FailOut.HO Cancel	Number of inter- eNodeB outgoing handover cancellation	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover
1526728864	L.HHO.X2.FailOut. HOCancel	Number of X2- based outgoing handover cancellation in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728865	L.HHO.Prep.FailIn	Number of eNodeB incoming handover preparation failures	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover
1526728866	L.IRATHO.G2E.Pr epAttIn	Number of inter- RAT handover attempts from GERAN to E- UTRAN	LOFD-001020 LOFD-001023 TDLOFD-001020 TDLOFD-001023	PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN
1526728867	L.IRATHO.G2E.Pr epInSucc	Number of successful inter- RAT handover preparations from GERAN to E- UTRAN	LOFD-001020 LOFD-001023 TDLOFD-001020 TDLOFD-001023	PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN
1526728868	L.IRATHO.G2E.Ex ecSuccIn	Number of successful inter- RAT handovers from GERAN to E- UTRAN	LOFD-001020 LOFD-001023 TDLOFD-001020 TDLOFD-001023	PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728869	L.IRATHO.G2E.Pr epInFail.TgtNotAl- low	Number of inter- RAT handover preparation failures from GERAN in the target cell due to Handover Target not allowed	LOFD-001020 LOFD-001023 TDLOFD-001020 TDLOFD-001023	PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN SRVCC to GERAN
1526728870	L.IRATHO.T2E.Pr epAttIn	Number of inter- RAT handover attempts from TD- SCDMA network to E-UTRAN	LOFD-001019 LOFD-001022 LOFD-001033 TDLOFD-001019 TDLOFD-001022 TDLOFD-001033	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN
1526728871	L.IRATHO.T2E.Pr epInSucc	Number of successful inter- RAT handover preparations from TD-SCDMA network to E- UTRAN	LOFD-001019 LOFD-001022 LOFD-001033 TDLOFD-001019 TDLOFD-001022 TDLOFD-001033	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728872	L.IRATHO.T2E.Ex ecSuccIn	Number of successful inter- RAT handovers from TD-SCDMA network to E- UTRAN	LOFD-001019 LOFD-001022 LOFD-001033 TDLOFD-001019 TDLOFD-001022 TDLOFD-001033	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN
1526728873	L.IRATHO.T2E.Pr epInFail.TgtNotAl- low	Number of inter- RAT handover preparation failures from TD-SCDMA network with the cause of "Handover Target not allowed" in the target cell	LOFD-001019 LOFD-001022 LOFD-001033 TDLOFD-001019 TDLOFD-001022 TDLOFD-001033	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN
1526728874	L.IRATHO.W2E.Pr epAttIn	Number of inter- RAT handover attempts from WCDMA network to E-UTRAN	LOFD-001019 LOFD-001022 LOFD-001033 TDLOFD-001019 TDLOFD-001022 TDLOFD-001033	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728875	L.IRATHO.W2E.Pr epInSuce	Number of successful inter- RAT handover preparations from WCDMA network to E-UTRAN	LOFD-001019 LOFD-001022 LOFD-001033 TDLOFD-001019 TDLOFD-001022 TDLOFD-001033	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN
1526728876	L.IRATHO.W2E.E xecSuccIn	Number of successful inter- RAT handovers from WCDMA network to E- UTRAN	LOFD-001019 LOFD-001022 LOFD-001033 TDLOFD-001019 TDLOFD-001022 TDLOFD-001033	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN
1526728877	L.IRATHO.W2E.Pr epInFail.TgtNotAl- low	Number of inter- RAT handover preparation failures from WCDMA network in the target cell due to Handover Target not allowed	LOFD-001019 LOFD-001022 LOFD-001033 TDLOFD-001019 TDLOFD-001022 TDLOFD-001033	PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN SRVCC to UTRAN CS Fallback to UTRAN

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728878	L.HHO.NCell.Prep AttOut.Coverage	Number of coverage-based outgoing handover attempts between two specific cells	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency
1526728883	L.HHO.S1.IntraFre q.MMEAbnormRsp	Number of responses for abnormal causes received by the eNodeB from the MME during S1-based outgoing intra-frequency handover executions in a cell	LBFD-00201801 TDLBFD-0020180	Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover
1526728884	L.HHO.S1.InterFre q.MMEAbnormRsp	Number of responses for abnormal causes received by the eNodeB from the MME during S1-based outgoing inter-frequency handover executions in a cell	LBFD-00201802 TDLBFD-0020180 2	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover
1526728885	L.HHO.X2.PrepAttln	Number of X2- based incoming handover attempts in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728886	L.HHO.X2.ExecAttIn	Number of X2-based incoming handover executions in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency
1526728887	L.HHO.X2.Exe- cSuccIn	Number of successful X2-based incoming handovers in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover
1526728888	L.HHO.NCell.MM EAbnormRsp	Number of responses for abnormal causes received by the eNodeB from the MME during outgoing handover executions between two specific cells	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728891	L.IRATHO.E2W.M MEAbnormRsp	Number of responses for abnormal causes received by the eNodeB from the MME during inter-RAT handover executions from E-UTRAN to WCDMA network	LOFD-001019 TDLOFD-001019	PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN
1526728892	L.IRATHO.E2G.M MEAbnormRsp	Number of responses for abnormal causes received by the eNodeB from the MME during inter-RAT handover executions from E-UTRAN to GERAN	LOFD-001020 TDLOFD-001020	PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN
1526728893	L.IRATHO.E2T.M MEAbnormRsp	Number of responses for abnormal causes received by the eNodeB from the MME during inter-RAT handover executions from E-UTRAN to TD-SCDMA network	LOFD-001019 TDLOFD-001019	PS Inter-RAT Mobility between E- UTRAN and UTRAN PS Inter-RAT Mobility between E- UTRAN and UTRAN
1526728897	L.CCO.E2G.MME AbnormRsp	Number of responses for abnormal causes received by the eNodeB from the MME during CCO executions from E- UTRAN to GERAN	LOFD-001020 TDLOFD-001020	PS Inter-RAT Mobility between E- UTRAN and GERAN PS Inter-RAT Mobility between E- UTRAN and GERAN
1526728902	L.HHO.IntraeNB.In traFreq.Succ.ReEst 2Src	Number of successful intra- eNodeB intra- frequency outgoing handovers where RRC connections are reestablished to the source cell for UEs in a cell	LBFD-00201801 TDLBFD-0020180	Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728903	L.HHO.IntraeNB.In terFreq.Succ.ReEst 2Src	Number of successful intra- eNodeB inter- frequency outgoing handovers where RRC connections are reestablished to the source cell for UEs in a cell	LBFD-00201802 TDLBFD-0020180 2	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover
1526728904	L.HHO.IntereNB.In traFreq.Succ.ReEst 2Src	Number of successful interende intrafrequency outgoing handovers where RRC connections are reestablished to the source cell for UEs in a cell	LBFD-00201801 TDLBFD-0020180	Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover
1526728905	L.HHO.IntereNB.In terFreq.Succ.ReEst 2Src	Number of successful inter- eNodeB inter- frequency outgoing handovers where RRC connections are reestablished to the source cell for UEs in a cell	LBFD-00201802 TDLBFD-0020180 2	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover
1526728906	L.HHO.X2.IntraFre q.Succ.ReEst2Src	Number of successful X2-based intra-frequency outgoing handovers where RRC connections are reestablished to the source cell for UEs in a cell	LBFD-00201801 TDLBFD-0020180	Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover
1526728907	L.HHO.X2.InterFre q.Succ.ReEst2Src	Number of successful X2-based inter-frequency outgoing handovers where RRC connections are reestablished to the source cell for UEs in a cell	LBFD-00201802 TDLBFD-0020180 2	Coverage Based Inter-frequency Handover Coverage Based Inter-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728908	L.HHO.NCell.Succ. ReEst2Src	Number of successful outgoing handovers between two specific cells where RRC connections are reestablished to the source cell for UEs in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency
1526728909	L.HHO.S1.Cancel. ExecIn	Number of UE CONTEXT RELEASE COMMAND messages with the cause value of "Handover Cancellation" received by the target eNodeB from the MME during S1- based incoming handover executions in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover
1526728910	L.HHO.X2.Cancel. ExecIn	Number of HANDOVER CANCEL messages received by the target cell from the source cell during X2-based incoming handover executions in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover

Counter ID	Counter Name	Counter Description	Feature ID	Feature Name
1526728922	L.HHO.BlindHO.S ucc.ReEst2Src	Number of successful blind outgoing handovers where RRC connections are reestablished to the source cell for UEs in a cell	LBFD-00201801 LBFD-00201802 TDLBFD-0020180 1 TDLBFD-0020180 2	Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Intra-frequency Handover Coverage Based Inter-frequency Handover

 $12_{\rm Glossary}$ 

For the acronyms, abbreviations, terms, and definitions, see *Glossary*.

## 13 Reference Documents

This chapter lists the reference documents related to mobility management in connected mode:

- 1. 3GPP TS 36.331, "RRC Protocol Specification"
- 2. 3GPP TS 36.300, "E-UTRAN Overall description"
- 3. 3GPP TS 36.423, "X2 Application Protocol"
- 4. 3GPP TS 36.413, "S1 Application Protocol"
- 5. 3GPP TS 23.203, "Policy and charging control architecture"
- 6. 3GPP TS 36.104, "Base Station (BS) radio transmission and reception"
- 7. 3GPP TS 23.401, "General Packet Radio Service (GPRS) enhancements for Evolved Universal Terrestrial Radio Access Network (E-UTRAN) access"
- 8. eNodeB Performance Counter Reference
- 9. eNodeB MO Reference
- 10. Idle Mode Management Feature Parameter Description
- 11. ANR Management Feature Parameter Description
- 12. MLB Feature Parameter Description
- 13. ICIC Feature Parameter Description
- 14. eNodeB Initial Configuration Guide
- 15. eNodeB Reconfiguration Guide