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***E-UTRAN – cdma2000 HRPD Connectivity and  
Interworking Air Interface Specification***

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## 1 Revision History for C.S0087

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**FOREWORD****(This foreword is not part of this standard)**

This standard was prepared by Technical Specification Group C of the Third Generation Partnership Project 2 (3GPP2). This standard is evolved from and is a companion to the cdma2000<sup>®1</sup> standards. This standard contains the air interface requirements for facilitating High Rate Packet Data (HRPD) interworking with the Evolved Universal Terrestrial Radio Access Network (E-UTRAN). This specification applies to High Rate Packet Data Revision A and High Rate Packet Data Revision B compliant access terminals and access networks which are enhanced to support the E-UTRAN and HRPD interworking.

This is a supplementary specification to HRPD air interface specifications .

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<sup>1</sup> “cdma2000<sup>®</sup> is the trademark for the technical nomenclature for certain specifications and standards of the Organizational Partners (OPs) of 3GPP2. Geographically (and as of the date of publication), cdma2000<sup>®</sup> is a registered trademark of the Telecommunications Industry Association (TIA-USA) in the United States.”

## 1 REFERENCES

2 The following standards contain provisions which, through reference in this text, constitute  
 3 provisions of this standard. At the time of publication, the editions indicated were valid. All  
 4 standards are subject to revision, and parties to agreements based on this standard are  
 5 encouraged to investigate the possibility of applying the most recent editions of the  
 6 standards indicated below.

- 8 [1] C.S0024-A v3.0: "cdma2000 High Rate Packet Data Air Interface Specification".
- 9 [2] C.S0063-A v2.0: "cdma2000 High Rate Packet Data Supplemental Services".
- 10 [3] C.R1001: "Administration of Parameter Value Assignments for cdma2000 Spread  
 11 Spectrum Standards" (Informative reference)
- 12 [4] X.S0057: "E-UTRAN-eHRPD Connectivity and Interworking: Core Network Aspects"
- 13 [5] A.S0022: "Interoperability Specification (IOS) for Evolved High Rate Packet Data  
 14 (eHRPD) Radio Access Network Interfaces and Interworking with Enhanced Universal  
 15 Terrestrial Radio Access Network (E-UTRAN)"
- 16 [6] 3GPP TS 23.402: "Architecture Enhancements for non-3GPP accesses".
- 17 [7] C.S0005 "Upper Layer (Layer3) Signaling Specification for cdma2000 Spread  
 18 Spectrum Systems"
- 19 [8] ITU-T Recommendation E.212: "Identification Plan for Land Mobile Stations, 1988"
- 20 [9] 3GPP TS36.331 "Evolved Universal Terrestrial Radio Access (E-UTRA) Radio  
 21 Resource Control (RRC) Protocol specification"
- 22 [10] C.S0024-B v3.0: "cdma2000 High Rate Packet Data Air Interface Specification"
- 23 [11] C.S0004: "Signaling Link Access Control (LAC) Standard for cdma2000 Spread  
 24 Spectrum Systems"
- 25 [12] A.S0008-C: "Interoperability Specification (IOS) for High Rate Packet Data (HRPD)  
 26 Radio Access Network Interfaces with Session Control in the Access Network"
- 27 [13] A.S0009-C: "Interoperability Specification (IOS) for High Rate Packet Data (HRPD)  
 28 Radio Access Network Interfaces with Session Control in the Packet Control  
 29 Function"
- 30 [14] 3GPP TS23.272 "Circuit Switched Fallback in Evolved Packet System; Stage 2"
- 31 [15] 3GPP TS36.133 "Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements  
 32 for support of radio resource management "
- 33 [16] 3GPP TS36.304 "Evolved Universal Terrestrial Radio Access (E-UTRA); User  
 34 Equipment (UE) procedures in idle mode"
- 35 [17] 3GPP TS36.101, UE Radio Transmission And Reception
- 36 [18] C.S0057-D v1.0: "Band Class Specification for cdma2000 Spread Spectrum  
 37 Systems"
- 38 [19] A.S0014-C v3.0: "Interoperability Specification (IOS) for cdma2000 Access Network  
 39 Interfaces"
- 40 [20] C.S0016-D: "Over-the-Air Service Provisioning of Mobile Stations in Spread  
 41 Spectrum Standards"

# 1 OVERVIEW

## 1.1 Introduction

These technical requirements form a compatibility standard for facilitating cdma2000 High Rate Packet Data (HRPD) interworking with the Evolved Universal Terrestrial Radio Access Network (E-UTRAN). This technical specification also forms requirements on the air-interface to support eHRPD.

This is a supplementary specification built on top of the existing cdma2000 High Rate Packet Data (HRPD) air interface specifications. All requirements of the existing 3GPP2 C.S0024-A v3.0 [1], 3GPP2 C.S0063-A v2.0 [2], and C.S0024-B v3.0 [10] are included and assumed by this specification, unless explicitly excluded or modified herein.

The concept of handoff with optimization between E-UTRAN and cdma2000 is specified in 3GPP TS 23.402 [6]

## 1.2 Scope of This Document

This specification applies to High Rate Packet Data Revision A and Revision B compliant access terminals and access networks which are enhanced to support the E-UTRAN and HRPD interworking.

These requirements ensure that a compliant access terminal can obtain interworking service through any access network conforming to this standard. These requirements do not address the quality or reliability of that service, nor do they cover equipment performance or measurement procedures.

This specification is primarily oriented toward requirements necessary for the design and implementation of access terminals. As a result, detailed procedures are specified for access terminals to ensure a uniform response to all access networks. Access network procedures, however, are specified only to the extent necessary for compatibility with those specified for the access terminal.

This specification includes provisions for future service additions and expansion of system capabilities. The architecture defined by this specification permits such expansion without the loss of backward compatibility to older access terminals.

## 1.3 Requirement Language

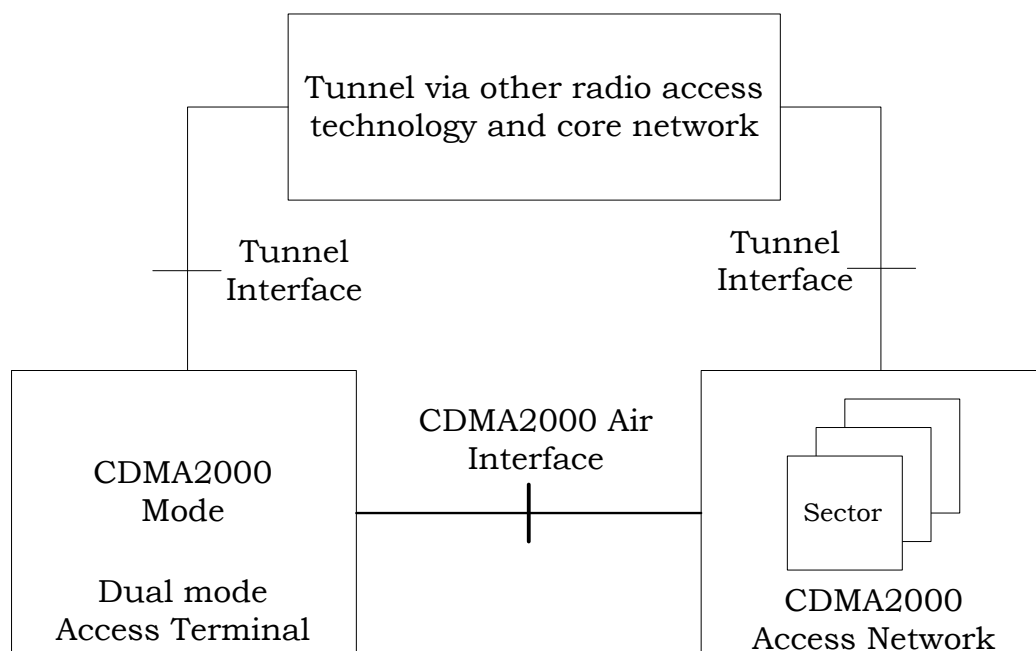
Compatibility, as used in connection with this standard, is understood to mean: Any access terminal can obtain service through any access network conforming to this standard. Conversely, all access networks conforming to this standard can service access terminals.

“Shall” and “shall not” identify requirements to be followed strictly to conform to the standard and from which no deviation is permitted. “Should” and “should not” indicate that one of several possibilities is recommended as particularly suitable, without mentioning or excluding others, that a certain course of action is preferred but not necessarily required, or that (in the negative form) a certain possibility or course of action is discouraged but not prohibited. “May” and “need not” indicate a course of action permissible within the limits of the standard. “Can”

and “cannot” are used for statements of possibility and capability, whether material, physical, or causal.

#### 1.4 Architecture Reference Model

The architecture reference model for inter radio access technology interworking, more specifically cdma2000 (HRPD ) interworking with E-UTRAN, is presented in Figure 1.4-1. The reference model consists of the following functional units: the cdma2000 mode of the dual mode access terminals, the cdma2000 access network and the Tunnel.



**Figure 1.4-1 Architecture Reference Model**

The cdma2000 mode of the dual mode access terminals and the cdma2000 access network are defined in section 1.6. The Tunnel involves the dual mode access terminals, air interface and access network associated with the other radio access technology, as well as the core networks. The elements related to the tunnel interface shown in Figure 1.4-1 are specified in [4], [5], [9], [12] and [13].

The reference model includes the cdma2000 air interface between the dual mode access terminal and the cdma2000 access network, the tunnel interface between the Tunnel and the cdma2000 mode of the dual mode access terminal, and the tunnel interface between the Tunnel and the cdma2000 access network.

The cdma2000 inter radio access technology interworking protocols used over the tunnel interfaces and the cdma2000 air interface are defined in this document.

#### 1.5 Protocol Overview For HRPD

This specification defines additional procedures and requirements on the following protocols in [1] and [10].

- Default Session Management Protocol

- Default Address Management Protocol
- Default Air-Link Management Protocol
- Default Connected State Protocol
- Default Packet Consolidation Protocol
- Subtype 3 Reverse Traffic Channel MAC Protocol
- Subtype 4 Reverse Traffic Channel MAC Protocol
- Subtype 2 Physical Layer Protocol
- Subtype 3 Physical Layer Protocol

Additionally, this specification defines a new protocol in Connection Layer called Signaling Adaptation Protocol. Default Signaling Adaptation Protocol and Inter-RAT Signaling Adaptation Protocol subtypes of the protocol are also defined in this specification.

[Figure 1.5-1](#)<sup>2</sup> presents the non-default protocols defined in this specification for each one of the layers show in Figure 1.4.1-1 of [1] and [10].

---

<sup>2</sup> Inter-RAT Quick Idle State Protocol and Subtype1 Based Inter-RAT Route Update Protocol apply to interworking between C.S0024-B and E-UTRAN only.

	Application Layer
	Stream Layer
	Session Layer
<div>Inter-RAT Initialization State Protocol</div> <div>Inter-RAT Idle State Protocol</div> <div>Inter-RAT Quick Idle State Protocol</div> <div>Subtype 1 Based inter-RAT Route Update Protocol</div> <div>Inter-RAT Route Update Protocol</div> <div>Inter-RAT Overhead Messages Protocol</div> <div>Inter-RAT Signaling Adaptation Protocol</div>	Connection Layer
	Security Layer
	MAC Layer
	Physical Layer

**Figure 1.5–1 Non-Default Protocols**

## 1.6 Terms

**Access Network (AN).** The network equipment providing data connectivity between a packet switched data network (typically the Internet) and the access terminals. An access network is equivalent to a base station in [1].

**Access Terminal (AT).** A device providing data connectivity to a user. An access terminal may be connected to a computing device such as a laptop personal computer or it may be a self-contained data device such as a personal digital assistant. An access terminal is equivalent to a mobile station in [1].



**cdma2000 Mode of Dual Mode Access Terminal.** An operation mode of a dual mode access terminal which provides the connectivity over the cdma2000 HRPD air interface. A dual mode access terminal may operate in the cdma2000 mode or the mode of another radio access technology such as E-UTRAN.

**Code Division Multiple Access (CDMA).** A technique for spread-spectrum multiple-access digital communications that creates channels through the use of unique code sequences.

**Closed Subscriber Group (CSG).** A Closed Subscriber Group identifies subscribers of an operator who are permitted to access one or more cells of the PLMN but which have restricted access (CSG cells).

**EARFCN.** Evolved Absolute Radio Frequency Channel Number.

**eHRPD.** Evolved High Rate Packet Data. The eHRPD network supports attachment to the EPC (evolved packet core) of 3GPP. The eHRPD network optionally supports seamless handoffs between E-UTRAN and evolved HRPD with single-radio terminals.

**E-UTRAN.** Evolved Universal Terrestrial Radio Access Network.

**HRPDPreRegistrationZoneID.** An identifier broadcasted by E-UTRAN cells associated with a neighboring HRPD subnet. This identifier is set to the value of ColorCode of the access network associated with the E-UTRAN cells.

**HRPDSecondaryPreRegistrationZoneID.** An identifier broadcasted by E-UTRAN cells associated with a neighboring HRPD subnet. This identifier is set to the value of ColorCode of a neighboring AN associated with the E-UTRAN cells.

**MAC Layer.** The MAC Layer defines the procedures used to receive and to transmit over the Physical Layer. The MAC Layer is defined in Chapter 10 of [1].

**MMSS.** Multimode System Selection.

**NULL.** A value which is not in the specified range of the field.

**PDN.** Packet Data Network.

**PLMN.** Public Land Mobile Network.

**Primary Radio Access Technology.** The Radio Access Technology on which the access terminal can transmit at the present time.

**PreRegistrationZone.** The group of E-UTRAN cells which broadcast the same HRPDPreRegistrationZoneID.

**Reverse Traffic Channel.** The portion of the Reverse Channel that carries information from a specific access terminal to the access network. The Reverse Traffic Channel can be used as either a Dedicated Resource or a non-Dedicated Resource. Prior to successful access terminal authentication, the Reverse Traffic Channel serves as a non-Dedicated Resource. Only after successful access terminal authentication can the Reverse Traffic Channel be used as a Dedicated Resource for the specific access terminal.

**RLP.** Radio Link Protocol provides retransmission and duplicate detection for an octet-aligned data stream.

**RSRP.** Reference Signal Received Power.

**RSRQ.** Reference Signal Received Quality.

## 1.7 Notation

$A[i]$	The $i^{\text{th}}$ element of array A. The first element of the array is $A[0]$ .
$\langle e_1, e_2, \dots, e_n \rangle$	A <i>structure</i> with elements ' $e_1$ ', ' $e_2$ ', ..., ' $e_n$ '. Two structures $E = \langle e_1, e_2, \dots, e_n \rangle$ and $F = \langle f_1, f_2, \dots, f_m \rangle$ are equal if and only if ' $m$ ' is equal to ' $n$ ' and $e_i$ is equal to $f_i$ for $i=1, \dots, n$ . Given $E = \langle e_1, e_2, \dots, e_n \rangle$ and $F = \langle f_1, f_2, \dots, f_m \rangle$ , the assignment " $E = F$ " denotes the following set of assignments: $e_i = f_i$ , for $i=1, \dots, n$ .
$S.e$	The member of the structure ' $S$ ' that is identified by ' $e$ '.
$M[i:j]$	Bits $i^{\text{th}}$ through $j^{\text{th}}$ inclusive ( $i \geq j$ ) of the binary representation of variable M. $M[0:0]$ denotes the least significant bit of M.
$ $	Concatenation operator. $(A   B)$ denotes variable A concatenated with variable B.
$\times$	Indicates multiplication.
$\lfloor x \rfloor$	Indicates the largest integer less than or equal to x: $\lfloor 1.1 \rfloor = 1, \lfloor 1.0 \rfloor = 1$ .
$\lceil x \rceil$	Indicates the smallest integer greater or equal to x: $\lceil 1.1 \rceil = 2, \lceil 2.0 \rceil = 2$ .
$ x $	Indicates the absolute value of x: $ -17  = 17,  17  = 17$ .
$\oplus$	Indicates exclusive OR (modulo-2 addition).
$\otimes$	Indicates bitwise logical AND operator.
$\min(x, y)$	Indicates the minimum of x and y.
$\max(x, y)$	Indicates the maximum of x and y.
$x \bmod y$	Indicates the remainder after dividing x by y: $x \bmod y = x - (y \times \lfloor x/y \rfloor)$ .
$x^y$	Indicates the result of x raised to the power y, also denoted as $x^y$ .
$x^y$	Indicates the result of x raised to the power y, also denoted as $x^y$ .
Unless otherwise specified, the format of field values is unsigned binary.	
Unless indicated otherwise, this standard presents numbers in decimal form. Binary numbers are distinguished in the text by the use of single quotation marks. Hexadecimal numbers are distinguished by the prefix '0x'.	
Unless specified otherwise, each field of a packet shall be transmitted in sequence such that the most significant bit (MSB) is transmitted first and the least significant bit (LSB) is	

1 transmitted last. The MSB is the left-most bit in the figures in this document. If there are  
2 multiple rows in a table, the top-most row is transmitted first. If a table is used to show the  
3 sub-fields of a particular field or variable, the top-most row consists of the MSBs of the field.  
4 Within a row in a table, the left-most bit is transmitted first. Notations of the form “repetition  
5 factor of N” or “repeated N times” mean that a total of N versions of the item are used.

1 No text

## 2 ACCESS TERMINAL SPECIFIC PROCEDURES

The procedures defined in this section describe general requirements to which access terminals and access networks shall comply with in order to enable E-UTRAN–HRPD interworking.

### 2.1 Access Terminal Bootup Procedure

When the HRPD protocol stack is created, if the primary radio access technology is E-UTRAN, then the access terminal shall create an InUse instance of each of the protocol types listed in Table 2.1-1, using the respective protocol subtype. For protocol types not listed in Table 2.1-1, the access terminal shall create the InUse protocol instance using the default protocol subtypes. When the HRPD protocol stack is created, if the primary radio access technology is not HRPD, the access terminal shall create the InUse instance of Inter-RAT Signaling Adaptation Protocol, and then create the InUse instances of other protocols.

**Table 2.1-1 Bootup Protocol Type and Protocol Subtype in E-UTRAN**

Protocol Type		Protocol Subtype	
Name	ID	Name	ID
Initialization State	0x0b	Inter-RAT Initialization State	0x0001
Idle State	0x0c	Inter-RAT Idle State	0x0003
Route Update	0x0e	Inter-RAT Route Update	0x0002
Overhead Messages	0x0f	Inter-RAT Overhead Messages	0x0001
Signaling Adaptation	0x1d	Inter-RAT Signaling Adaptation	0x0001
Reverse Traffic Channel MAC	0x04	Subtype 3 Reverse Traffic Channel MAC	0x0003

### 2.2 E-UTRAN to HRPD Idle Handoff Procedure

Upon the access terminal performing an E-UTRAN to HRPD idle handoff, if the protocol subtype of the Signaling Adaptation Protocol is equal to 0x0000 [3] or if there is no InUse instance of the Signaling Adaptation Protocol, then the access terminal shall issue an *AirLinkManagement.OpenConnection* command. Otherwise the access terminal shall issue a *SignalingAdaptation.IdleHandoffRequest* command.

### 2.3 Packet Application Negotiation

If the access terminal requires eHRPD service, the access terminal shall include Alternate Enhanced Multi-Flow Packet Application <sup>3</sup> subtype (0xFFFE) in the ATSupportedApplicationSubtypes attribute during session negotiation of the Session Configuration Protocol. The Alternate Enhanced Multi-Flow Packet Application subtype shall not be bound to any stream. During Stream Protocol negotiation, the access terminal shall not propose the Alternate Enhanced Multi-Flow Packet Application subtype (0xFFFE).

If the access terminal requests eHRPD service over Multi-Flow Packet Application, the access terminal shall include Alternate Multi-Flow Packet Application subtype (0xFFFD) in the ATSupportedApplicationSubtypes attribute during session negotiation of the Session Configuration Protocol. The Alternate Multi-Flow Packet Application subtype shall not be bound to any stream. During Stream Protocol negotiation, the access terminal shall not propose the Alternate Multi-Flow Packet Application subtype (0xFFFD).

If the access terminal requests eHRPD service over Multi-Link Multi-Flow Packet-Application, the access terminal shall include Alternate Multi-Link Multi-Flow Packet-Application subtype (0xFFFC) in the ATSupportedApplicationSubtypes attribute during session negotiation of the Session Configuration Protocol. The Alternate Multi-Link Multi-Flow Packet-Application subtype shall not be bound to any stream. During Stream Protocol negotiation, the access terminal shall not propose the Alternate Multi-Link Multi-Flow Packet-Application subtype (0xFFFC).

### 2.4 Session Management Protocol Activation

The access terminal shall not perform preregistration or session maintenance of HRPD session via E-UTRAN if the primary radio access technology is E-UTRAN and the E-UTRAN protocol within the access terminal has disabled preregistration<sup>4</sup>.

---

<sup>3</sup> The specification [3] defines Alternate Packet Application subtypes in addition to the existing Packet Application subtypes. The supported Alternate Packet Application subtype(s) is (are) only reported during SCP negotiation and is (are) not proposed as an application subtype during Stream Protocol configuration.

<sup>4</sup> HRPD session negotiation between the access terminal and the access network is established by other means than via HRPD radio access technology.

### 3 APPLICATION LAYER

#### 3.1 Additional Requirement to support eHRPD operation in Enhanced Multi-Flow Packet Application or Multi-Link Multi-Flow Packet Application

This section describes additional requirements from [2] for the access terminal and the access network supporting eHRPD operation. The requirements in this section apply to Enhanced Multi-Flow Packet Application bound to service network or Multi-Link Multi-Flow Packet Application bound to service network.

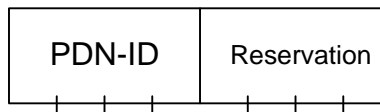
If the protocol subtype of the Signaling Adaptation Protocol is not equal to 0x0000 and TunnelModeEnabled, provided as public data of the Signaling Adaptation Protocol, is not equal to '0' and when Multi-Link Multi-Flow Packet Application is bound to service network, the access terminal and the access network shall set the QNSEQIncluded of QN Packet Header to '0'.

The access terminal that supports eHRPD operation shall indicate that ProtocolID 0x07 (see [3]) is supported in the ATSupportedFlowProtocolParametersPP attribute.

If the ATSupportedFlowProtocolParametersPP attribute indicates ProtocolID 0x07 is supported and the access network selects eHRPD operation, the access network shall negotiate the ProtocolID field of the FlowNNFlowProtocolParametersFwd and FlowNNFlowProtocolParametersRev attributes to 0x07 for the Link Flow bound to ReservationLabel 0xFF.

If the ProtocolID field of the FlowNNFlowProtocolParametersFwd and FlowNNFlowProtocolParametersRev attributes are set to 0x07 for the Link Flow bound to ReservationLabel 0xFF, the following requirements shall apply to both the access terminal and the access network:

- the ReservationLabel of each Reservation except ReservationLabel 0xFF and 0xFE shall be set as follows (see [4] ):
  - The upper four bits of the ReservationLabel shall be set to the PDN-ID that the Reservation is associated with. The PDN-ID shall be in the range '0000' to '1110'.
  - The lower four bits shall be set to identify the Reservation for the PDN identified by the upper four bits. ~~Figure 3.1-1~~ ~~Figure 3.1-1~~ shows the ReservationLabel format.



**Figure 3.1-1 ReservationLabel format**

- If ReservationLabel 0xFE is bound to an active Link Flow, then the ProtocolID field of the FlowNNFlowProtocolParametersFwd and FlowNNFlowProtocolParametersRev attributes shall be set to 0x08 (see [3]) for that Link Flow.
- If the ProtocolID field of the FlowNNFlowProtocolParametersFwd attribute is not set to 0x07 or 0x08 for a Link Flow NN:

- The upper four bits of each ReservationLabel field bound to the Link Flow in the FlowNNReservationFwd attribute shall be the same value.
- If the ProtocolID field of the FlowNNFlowProtocolParametersRev attribute is not set to 0x07 or 0x08 for a Link Flow NN:
  - The upper four bits of each ReservationLabel field bound to the Link Flow in the FlowNNReservationRev attribute shall be the same value.

### 3.2 Additional Requirements to support eHRPD operation in Multi-Flow Packet Application

This section describes additional requirements from [1] for the access terminal and the access network supporting eHRPD operation. The requirements in this section apply to Multi-Flow Packet Application bound to service network.

If the access terminal supports PDN multiplexing in Multi-Flow Packet Application, the access terminal shall indicate that ProtocolID 0x07 (see [3]) is supported in the SupportedHigherLayerProtocols attribute.

If the SupportedHigherLayerProtocols attribute indicates ProtocolID 0x07 is supported and the access network selects eHRPD operation, the access network shall negotiate the FlowNNHigherLayerProtocolFwd and FlowNNHigherLayerProtocolRev attributes to 0x07 for the RLP Flow bound to ReservationLabel 0xFF.

If FlowNNHigherLayerProtocolFwd and FlowNNHigherLayerProtocolRev attributes are set to 0x07 for the RLP Flow bound to ReservationLabel 0xFF, the following requirements shall apply to both the access terminal and the access network:

- the ReservationLabel of each Reservation except ReservationLabel 0xFF shall be set as follows (see [4] ):
  - The upper four bits of the ReservationLabel shall be set to the PDN-ID that the Reservation is associated with. The PDN-ID shall be in the range ‘0000’ to ‘1110’.
  - The lower four bits shall be set to identify the Reservation for the PDN identified by the upper four bits. ~~Figure 3.1-1~~ [Figure 3.1-1](#) shows the ReservationLabel format.

#### 3.2.1 ReservationOnRequest message for Radio Link Protocol of Multi-Flow Packet Application

This section supersedes 4.4.4.4.7 of [1].

The access terminal sends this message to request transition of one or more Reservations to the Open State.



Field	Length (bits)
MessageID	8
TransactionID	8
ReservationCount	8

ReservationCount occurrences of the following two fields:

Link	1
ReservationLabel	8

EmergencyIndication	0 or 1
Reserved	0 – 7 (as needed)

- 1    MessageID            The access terminal shall set this field to 0x16.
- 2    TransactionID        The access terminal shall set this field to one more (modulo 256) than  
3                            the TransactionID field of the last ReservationOnRequest or  
4                            ReservationOffRequest message sent by the access terminal. If this is the  
5                            first ReservationOnRequest or ReservationOffRequest message sent by  
6                            the access terminal, then the access terminal shall set this field to zero.
- 7    ReservationCount    The access terminal shall set this field to the number of the following two  
8                            fields in this message.
- 9    Link                    If this request is for a forward Reservation, then the access terminal shall  
10                            set this field to '1'. If this request is for a reverse Reservation, then the  
11                            access terminal shall set this field to '0'.
- 12   ReservationLabel    The access terminal shall set this field to the ReservationLabel for which  
13                            this request is generated.
- 14   EmergencyIndication If included, the access terminal shall set this field as follow:  
15                            If this is an emergency ReservationOnRequest, then the access terminal  
16                            shall set this field to '1'. Otherwise, the access terminal shall set this  
17                            field to '0'.
- 18   Reserved              The access terminal shall add reserved bits to make the length of the  
19                            entire message an integer number of octets. The access terminal shall set  
20                            these bits to '0'. The access network shall ignore this field.
- 21

<b>Channels</b>	AC                      RTC	<b>SLP</b>	Best Effort
<b>Addressing</b>	unicast	<b>Priority</b>	40

- 1 No Text.

## 4 SESSION LAYER

### 4.1 Default Session Management Protocol

#### 4.1.1 Keep Alive Functions

This section supersedes 7.2.6.1.6.1 of [1].

The access terminal and the access network shall monitor the traffic flowing to or from the access terminal. If either the access terminal or the access network detects a period of inactivity of at least  $T_{\text{SMPClose}}/N_{\text{SMPKeepAlive}}$  minutes,

- If the protocol subtype of the Signaling Adaptation Protocol is not equal to 0x0000 and TunnelModeEnabled, provided as public data of the Signaling Adaptation Protocol, is not equal to '0',
  - The access network should not send a KeepAliveRequest message.
- If the protocol subtype of the Signaling Adaptation Protocol is not equal to 0x0000 and TunnelModeEnabled, provided as public data of the Signaling Adaptation Protocol, is not equal to '0' and HRPDPReRegistrationAllowed, provided as public data of the Overhead Messages Protocol, is set to '1',
  - The access terminal should send a KeepAliveRequest message.
- If the protocol subtype of the Signaling Adaptation Protocol is not equal to 0x0000 and TunnelModeEnabled, provided as public data of the Signaling Adaptation Protocol, is not equal to '0' and HRPDPReRegistrationAllowed, provided as public data of the Overhead Messages Protocol, is set to '0',
  - The access terminal shall not send a KeepAliveRequest message.
- Otherwise the access terminal or the access network may send a KeepAliveRequest message.

The recipient of the message shall respond by sending the KeepAliveResponse message. When a KeepAliveResponse message is received, the access terminal shall not send another KeepAliveRequest message for at least  $T_{\text{SMPClose}}/N_{\text{SMPKeepAlive}}$  minutes.

If the access terminal does not detect any traffic from the access network directed to it for a period of at least  $T_{\text{SMPClose}}$  minutes, it shall perform the following:

- Issue an *AirLinkManagement.CloseConnection* command.
- Issue an *AddressManagement.Deactivate* command.
- Issue a *SessionConfiguration.Deactivate* command.
- Return a *SessionClosed* indication.
- Transition to the Inactive State.

If the access network does not detect any traffic from the access terminal directed to it for a period of at least  $T_{\text{SMPClose}}$  minutes, it should perform the following:

- Issue an *AirLinkManagement.CloseConnection* command.

- Issue an *AddressManagement.Deactivate* command.
- Issue a *SessionConfiguration.Deactivate* command.
- Return a *SessionClosed* indication.
- Transition to the AMP Setup State.

If the value of  $T_{SMPClose}$  is set to zero, the access terminal and the access network shall not send or expect keep-alive messages, and shall disable the transitions occurring as a consequence of not receiving these messages.

#### 4.1.2 HRPD to E-UTRAN Idle Handoff Procedure and HRPD Prior Session Handing

This is a new section under 7.2 of [1].

If the access terminal has a HRPD session and the primary radio access technology is E-UTRAN, then:

- If the HRPD session has at least one personality with the Signaling Adaptation Protocol subtype not equal to 0x0000 which can be used for E-UTRAN interworking, the access terminal may try to restore the HRPD session over the tunnel.
- Otherwise, if the Address Management Protocol in the access terminal is in the Open State and HRPDPReRegistrationAllowed public data of the Overhead Messages Protocol is set to '1', the access terminal shall:
  - Purge the HRPD session.
  - Follow the Access Terminal Bootup Procedures from 2.1.

## 4.2 Default Address Management Protocol

### 4.2.1 Overview

This section supersedes section 7.3.1 of [1].

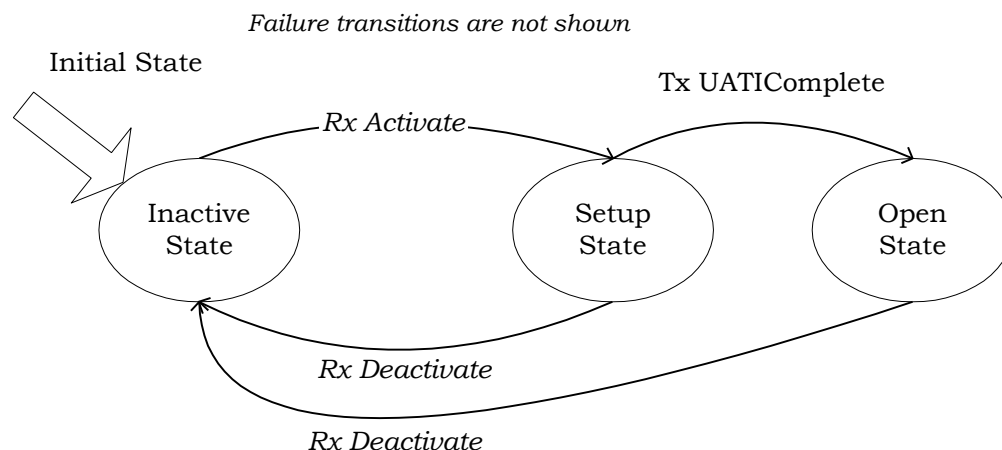
The Default Address Management Protocol provides the following functions:

- Initial UATI assignment
- Maintaining the access terminal unicast address as the access terminal moves between HRPD subnets when the primary radio access technology is HRPD or some other radio access technologies that support pre-registration.

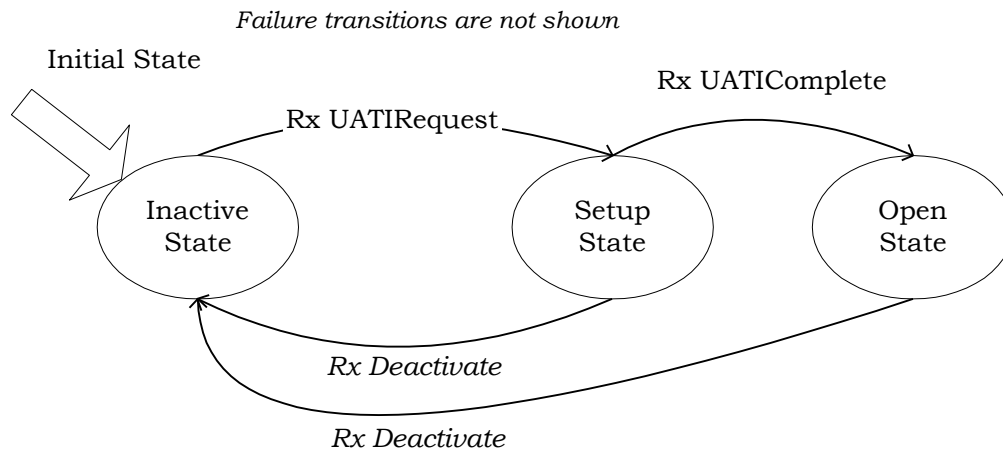
This protocol operates in one of three states:

- Inactive State: In this state there are no communications between the access terminal and the access network.
- Setup State: In this state the access terminal and the access network perform a UATIRequest/UATIAssignment/UATIComplete exchange to assign the access terminal a UATI.
- Open State: In this state the access terminal has been assigned a UATI. The access terminal and access network may also perform a UATIRequest/UATIAssignment/UATIComplete or a UATIAssignment/UATIComplete exchange so that the access terminal obtains a new UATI.

The protocol states and the messages and events causing the transition between the states are shown in [Figure 4.2.1-1](#) ~~Figure 4.2.1-1~~ and [Figure 4.2.1-2](#) ~~Figure 4.2.1-2~~.



**Figure 4.2.1-1 Default Address Management Protocol State Diagram (Access Terminal)**



**Figure 4.2.1–2 Default Address Management Protocol State Diagram (Access Network)**

#### 4.2.2 Primitives and Public Data

This section supersedes section 7.3.2 of [1].

##### 4.2.2.1 Commands

This protocol defines the following commands:

- *Activate*
- *Deactivate*
- *UpdateUATI*

##### 4.2.2.2 Return Indications

This protocol returns the following indications:

- *Opened*
- *UATIRelaxed*
- *UATIAssigned*
- *Failed*
- *SubnetChanged*
- *PreRegistrationZoneChanged*

##### 4.2.2.3 Public Data

- Subtype for this protocol
- ReceiveATIList
- TransmitATI
- SessionSeed

### 4.2.3 UpdateUATI

This section supersedes section 7.3.7.1.1.3 of [1].

The access network and the access terminal shall ignore the *UpdateUATI* command when it is received in any state other than the Open State.

If the access terminal receives an *UpdateUATI* command in the Open State, it shall set OldUATI to UATI and shall send a UATIRequest message except: when the protocol subtype of the Signaling Adaptation Protocol is equal to 0x0001 and TunnelModeEnabled public data of the Signaling Adaptation Protocol is set to '1' and HRPDPReRegistrationAllowed public data of the Overhead Messages Protocol is set to '0', the access terminal shall not set OldUATI to UATI and shall not send a UATIRequest message.

If the access network receives an *UpdateUATI* command in the Open State, it may send a UATIAssignment message.

A comprehensive list of events causing the *UpdateUATI* command is beyond the scope of this specification.

### 4.2.4 Setup State

This section supersedes section 7.3.7.1.5 of [1].

In this state, the access terminal sends a request to the access network asking for a UATI and waits for the access network's response.

#### 4.2.4.1 Access Terminal Requirements

Upon entering the Setup State the access terminal shall perform the following:

- Set the TransmitATI to  
<ATIType = '11', ATI = SessionSeed>,
- Add the following entry to the ReceiveATIList list  
<ATIType = '11', ATI = SessionSeed>.
- Send a UATIRequest message if any of the following conditions are true:
  - The protocol subtype of the InUse instance of Signaling Adaptation Protocol is equal to 0x0000.
  - There is no InUse instance of Signaling Adaptation Protocol.
  - The protocol subtype of the Signaling Adaptation Protocol is equal to 0x0001 and the TunnelModeEnabled public data of Signaling Adaptation Protocol is set to '0'.
  - The protocol subtype of the Signaling Adaptation Protocol is equal to 0x0001 and the HRPDPReRegistrationAllowed public data of the Overhead Messages Protocol is set to '1'.

A valid (see 4.2.6.1) UATIAssignment message that satisfies either of the following conditions is called a "fresh" UATIAssignment message:

- If the protocol subtype of the InUse instance of Signaling Adaptation Protocol is equal to 0x0000, or if there is no InUse instance of Signaling Adaptation Protocol, or if the protocol subtype of the Signaling Adaptation Protocol is equal to 0x0001 and the

TunnelModeEnabled public data of Signaling Adaptation Protocol is set to '0', and either of the following conditions are satisfied:

- OverheadParametersUpToDate, provided as the public data of the Overhead Messages Protocol, is equal to 1 and the UATIColorCode field in the message matches the ColorCode, given as public data of the Overhead Messages Protocol, or
- The SubnetIncluded field of the message is equal to '1',
- If the protocol subtype of the InUse instance of Signaling Adaptation Protocol is equal to 0x0001 and the TunnelModeEnabled public data of Signaling Adaptation Protocol is set to '1' and both of the following conditions are satisfied:
  - OverheadParametersUpToDate, provided as the public data of the Overhead Messages Protocol, is equal to 1 and the UATIColorCode field in the message matches the ColorCode, given as public data of the Overhead Messages Protocol, and
  - The SubnetIncluded field of the message is equal to '1'.

The access terminal shall discard a UATIAssignment message that is not "fresh".

If the access terminal does not receive a "fresh" UATIAssignment message within  $T_{\text{ADMPATResponse}}$  seconds after transmitting UATIRequest message, e.g., after receiving an *AccessChannelMAC.TxEnded* indication, it shall return a *Failed* indication and transition to the Inactive State.

If the access terminal receives a "fresh" UATIAssignment message then the access terminal shall perform the following:

- Set the UATIColorCode to the UATIColorCode given in the message.
- Set its UATI and UATISubnetMask as follows:
  - If the message includes the UATI104 field and UATISubnetMask field, the access terminal shall set its UATI to UATI104 | UATI024 and UATISubnetMask to UATISubnetMask field included in the message.
  - Otherwise, the access terminal shall set its UATI to (SectorID[127:24] | UATI024) and UATISubnetMask to SubnetMask where SectorID and SubnetMask are provided as public data of Overhead Messages Protocol.
- Delete any entry in the ReceiveATIList list whose ATIType is equal to '11' (i.e., RATI).
- Add the following entry to the ReceiveATIList:
 

<ATIType='10', ATI = (UATIColorCode | UATI[23:0])>.
- Set the TransmitATI to
 

<ATIType='10', ATI = (UATIColorCode | UATI[23:0])>.
- Return an *Opened* indication.
- Return a *UATIAssigned* indication.
- Send a UATIComplete message.
- Transition to the Open State.



#### 4.2.4.2 Access Network Requirements

When the access network sends a UATIAssignment message, it shall perform the following:

- Access network shall assign a Unicast Access Terminal Identifier (UATI) to the access terminal for the session as follows:
  - If the protocol subtype of the InUse instance of Signaling Adaptation Protocol is equal to 0x0000, or if there is no InUse instance of Signaling Adaptation Protocol, or if the protocol subtype of the Signaling Adaptation Protocol is equal to 0x0001 and TunnelModeEnabled public data of the Signaling Adaptation Protocol is set to '0',
    - + Access network may include both UATI104 and UATISubnetMask fields in the UATIAssignment message.
    - + Access network may omit the UATI104 and UATISubnetMask fields from the message. In this case, the UATI[127:24] is implicitly assigned to be equal to SectorID[127:24] and UATISubnetMask is implicitly assigned to be SubnetMask, where SectorID and SubnetMask correspond to the sector that has received the UATIRequest message.
  - If TunnelModeEnabled public data of the Signaling Adaptation Protocol is set to '1',
    - + Access network shall include both UATI104 and UATISubnetMask fields in the UATIAssignment message.

When the access network receives the corresponding UATIComplete message with the MessageSequence field of the UATIAssignment message sent, it shall perform the following:

- Return *Opened* indication.
- Return *UATIAssigned* indication.
- Transition to Open State.

If the access network does not receive the corresponding UATIComplete message in response to the UATIAssignment message, it may re-transmit the UATIAssignment message. If the access network does not receive the UATIComplete message after an implementation specific number of re-transmissions of the UATIAssignment message, it shall return a *Failed* indication and transition to the Inactive State.

#### 4.2.5 Open State

This section supersedes section 7.3.7.1.6 of [1].

In this state the access terminal has been assigned a UATI.

##### 4.2.5.1 Access Terminal Requirements

If the protocol subtype of the InUse instance of Signaling Adaptation Protocol is equal to 0x0000, or if there is no InUse instance of Signaling Adaptation Protocol, or if the protocol subtype of the Signaling Adaptation Protocol is equal to 0x0001 and the TunnelModeEnabled public data of Signaling Adaptation Protocol is set to '0', the subnet associated with the UATI

and the current subnet are defined to be different if either of the following two conditions are satisfied:

- The UATISubnetMask is not equal to the SubnetMask of the sector in the active set, or
- The result of bitwise logical AND of the UATI and its subnet mask specified by UATISubnetMask is different from the result of bitwise logical AND of SectorID and its subnet mask specified by SubnetMask (where SectorID and SubnetMask correspond to the sector in the active set).

If the access terminal receives a *RouteUpdate.IdleHO* indication or a *ConnectedState.ConnectionClosed* indication, and then it receives an *OverheadMessages.Updated* indication, and if all of the following conditions are true, then the access terminal shall set OldUATI to UATI and shall send a UATIRequest message:

- the protocol subtype of the InUse instance of Signaling Adaptation Protocol is equal to 0x0000, or there is no InUse instance of Signaling Adaptation Protocol, or the protocol subtype of the Signaling Adaptation Protocol is equal to 0x0001 and the TunnelModeEnabled public data of Signaling Adaptation Protocol is set to '0', and
- The subnet associated with UATI and the current subnet are different, and
- SupportSecondaryColorCodes is set to 0x00 or UATIColorCode is different from all of the SecondaryColorCode values provided as public data by the Overhead Messages Protocol<sup>5</sup>.

If the access terminal receives a *SignalingAdaptation.IdleHandoff* indication and then it receives an *OverheadMessages.Updated* indication, the access terminal shall perform the following:

- If both of the following two conditions are true, then the access terminal shall set OldUATI to UATI and shall send a UATIRequest message and wait for the UATIAssignment message:
  - The subnet associated with UATI and the current subnet are different, and
  - SupportSecondaryColorCodes is set to 0x00 or UATIColorCode is different from all of the SecondaryColorCode values provided as public data by the Overhead Messages Protocol.
- If InterRATMobilityEnabled is set to 0x01, the access terminal shall transmit an InterRATMobilityIndication message. Otherwise if InterRATMobilityEnabled is set to 0x00 it shall issue an *AirLinkManagement.OpenConnection* command.

Upon sending an InterRATMobilityIndication message, the access terminal shall start a InterRATMobilityAck timer with a timeout value of  $T_{ADMPIRMA}$  after receiving an *AccessChannelMAC.TransmissionSuccessful* indication or *AccessChannelMAC.TransmissionFailed* indication or *AccessChannelMAC.TransmissionAborted* indication.

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<sup>5</sup> The advertisement of SecondaryColorCode values might require the access network to deliver pages across subnet boundaries into areas in other subnets with the same ColorCode value that is advertised in the SecondaryColorCode values. The means by which the access network accomplishes this are beyond the scope of this specification.

If the InterRATMobilityAck timer expires without receipt of an InterRATMobilityAck message, the access terminal shall retry until a total of  $N_{\text{ADMPIRM}}$  InterRATMobilityIndication messages have been transmitted. If the timer expires for the final retry, the access terminal shall issue an *AirLinkManagement.OpenConnection* command.

If the access terminal receives an *OverheadMessages.Updated* indication and the protocol subtype of the InUse instance of Signaling Adaptation Protocol is equal to 0x0001 and the TunnelModeEnabled public data of Signaling Adaptation Protocol is set to '1', then the access terminal shall perform the following:

- Set  $(x_o, y_o)$  to (NULL, NULL).
- If HRPDPRegistrationAllowed, given as public data of the Overhead Messages Protocol, changes from '0' to '1', then the access terminal should return a Failed indication and transition to the Inactive State.
- If the UATIColorCode is different from ColorCode, given as public data of the Overhead Messages Protocol, then:
  - The access terminal shall return a *PreRegistrationZoneChanged* indication.
  - If SupportSecondaryColorCodes is set to 0x00 or UATIColorCode is different from all of the SecondaryColorCode values provided as public data by the Overhead Messages Protocol, then the access terminal shall perform the following after Signaling Adaptation Protocol has transitioned to Close State:
    - + Set the OldUATI to UATI,
    - + Send a UATIRequest message.

If the access terminal receives an *UpdateUATI* command, it shall process the command as specified in 4.2.3.

A valid (see 4.2.6.1) UATIAssignment message that satisfies either of the following conditions is called a "fresh" UATIAssignment message:

- If the protocol subtype of the InUse instance of Signaling Adaptation Protocol is equal to 0x0000, or if there is no InUse instance of Signaling Adaptation Protocol, or if the protocol subtype of the Signaling Adaptation Protocol is equal to 0x0001 and the TunnelModeEnabled public data of Signaling Adaptation Protocol is set to '0', and either of the following conditions are satisfied:
  - OverheadParametersUpToDate, provided as the public data of the Overhead Messages Protocol, is equal to 1 and the UATIColorCode field in the message matches the ColorCode, given as public data of the Overhead Messages Protocol, or
  - The SubnetIncluded field of the message equal to '1'.
- If the protocol subtype of the InUse instance of Signaling Adaptation Protocol is equal to 0x0001 and if the TunnelModeEnabled public data of Signaling Adaptation Protocol is set to '1' and both of the following conditions are satisfied:

- 1       – OverheadParametersUpToDate, provided as the public data of the Overhead Messages
- 2       Protocol, is equal to 1 and the UATIColorCode field in the message matches the
- 3       ColorCode, given as public data of the Overhead Messages Protocol, and
- 4       – The SubnetIncluded field of the message equal to '1'.

5 The access terminal shall discard a UATIAssignment message that is not “fresh”.

6 Upon sending a UATIRequest message, the access terminal shall start a UATIResponse timer

7 with a timeout value of  $T_{\text{ADMPATResponse}}$  seconds after the message is transmitted, e.g., after

8 receiving an *AccessChannelMAC.TxEnder* indication.

9 The access terminal shall disable this timer if either of the following conditions is true:

- 10 • The UATISubnetMask is equal to the SubnetMask of the sector in the active set, and the
- 11 result of bitwise logical AND of the UATI and its subnet mask specified by UATISubnetMask
- 12 is the same as the result of bitwise logical AND of SectorID and its subnet mask specified
- 13 by SubnetMask (where SectorID and SubnetMask correspond to the sector in the active
- 14 set), or
- 15 • The access terminal receives a “fresh” UATIAssignment message.

16 If the UATIResponse timer expires, the access terminal shall return a *Failed* indication and

17 transition to the Inactive State.

18 If the access terminal receives a “fresh” UATIAssignment message then the access terminal

19 shall perform the following:

- 20 • Set the UATIColorCode to the UATIColorCode given in the message.
- 21 • Set its UATI and UATISubnetMask as follows:
  - 22 – If the message includes the UATI104 field and UATISubnetMask field, the access
  - 23 terminal shall set its UATI to UATI104 | UATI024 and UATISubnetMask to
  - 24 UATISubnetMask field included in the message.
  - 25 – Otherwise, the access terminal shall set its UATI to (SectorID[127:24] | UATI024) and
  - 26 UATISubnetMask to SubnetMask where SectorID and SubnetMask are provided as
  - 27 public data of Overhead Messages Protocol.
- 28 • Add the following entry to the ReceiveATIList:
  - 29 <ATIType = '10', ATI = (UATIColorCode | UATI[23:0])>.
- 30 • Set the TransmitATI to
  - 31 <ATIType='10', ATI = (UATIColorCode | UATI[23:0])>.
- 32 • Return a *UATIAssigned* indication.
- 33 • Send a UATIComplete message.
- 34 • Reset and start an Address timer with a timeout value of  $T_{\text{ADMPAddress}}$  for the added entry to
- 35 the ReceiveATIList.

36 The access terminal shall perform the following when an Address timer corresponding to an

37 entry in the ReceiveATIList expires:

- 38 • Disable the Address timer for that entry.

- Delete all the entries in the ReceiveATIList that are older than the entry whose Address timer has expired. An entry X in the list is considered older than another entry Y, if the entry X has been added to the list prior to the entry Y.

If any of the following conditions are true,

- the protocol subtype of the InUse instance of Signaling Adaptation Protocol is equal to 0x0000, or
- there is no InUse instance of Signaling Adaptation Protocol, or
- the protocol subtype of the Signaling Adaptation Protocol is equal to 0x0001 and TunnelModeEnabled public data of Signaling Adaptation Protocol is set to '0',

and if the access terminal receives an *InitializationState.NetworkAcquired* indication followed by an *OverheadMessages.Updated* indication, then the access terminal shall perform the following:

- The access terminal shall create a ReducedSubnetMask by appending (128 - UATISubnetMask + ReducedSubnetMaskOffset) '0's to (UATISubnetMask - ReducedSubnetMaskOffset) '1's.
- If any of the following conditions is true, then the access terminal shall return a *Failed* indication and transition to the Inactive State:
  - The UATISubnetMask is not equal to the SubnetMask of the sector in the active set, or
  - The result of bitwise logical AND of the UATI and ReducedSubnetMask is different from the result of bitwise logical AND of SectorID and ReducedSubnetMask (where SectorID and SubnetMask correspond to the sector in the active set).

Upon receiving an *InitializationState.NetworkAcquired* indication followed by an *OverheadMessages.Updated* indication and if the protocol subtype of the InUse instance of Signaling Adaptation Protocol is equal to 0x0001 and TunnelModeEnabled, provided as public data of Signaling Adaptation Protocol, is set to '1', then:

- If all of the following conditions are true, then the access terminal shall return a *Failed* indication and transition to the Inactive State:
  - UATIColorCode is not equal to the ColorCode, given as public data of the Overhead Messages Protocol, and
  - SupportSecondaryColorCodes is set to 0x00 or UATIColorCode is different from all of the SecondaryColorCode values provided as public data by the Overhead Messages Protocol.
- Otherwise, the access terminal may send a UATIRequest message<sup>6</sup>.

Upon receiving an *OverheadMessages.Updated* indication, and the TunnelModeEnabled public data of Signaling Adaptation Protocol is set to '0' the access terminal shall perform the following if MaxNoMonitorDistance is not zero:

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<sup>6</sup> The access terminal may send a UATIRequest using RATI after a power up scenario. The Access Terminal may also use other criteria to determine if it is useful to perform a UATIRequest.

- 1 • If  $(x_o, y_o)$  is (NULL, NULL), then the access terminal shall set  $(x_o, y_o)$  to (Longitude,  
2 Latitude), where Longitude and Latitude are public data of the Overhead Messages Protocol.
- 3 • If  $(x_o, y_o)$  is not (NULL, NULL), then the access terminal shall perform the following:
  - 4 – The access terminal shall set  $(x_n, y_n)$  to (Longitude, Latitude), where Longitude and  
5 Latitude are public data of the Overhead Messages Protocol.
  - 6 – The access terminal shall compute NoMonitorDistance with an error of no more than  
7  $\pm 5\%$  of its true value when  $|y_o/14400|$  is less than 60 and with an error of no more  
8 than  $\pm 7\%$  of its true value when  $|y_o/14400|$  is between 60 and 70<sup>7</sup> using the  
9 expression

$$\text{NoMonitorDistance} = \sqrt{\frac{\left[ (x_n - x_o) \times \cos\left(\frac{\pi}{180} \times \frac{y_o}{14400}\right) \right]^2 + [y_n - y_o]^2}{16}}$$

- 11 – The access terminal shall set  $(x_o, y_o)$  to (Longitude, Latitude), where Longitude and  
12 Latitude are public data of the Overhead Messages Protocol.
- 13 – The access terminal shall return a *Failed* indication and transition to the Inactive State  
14 if both of the following conditions are true:
  - 15 + the computed value of NoMonitorDistance is greater than MaxNoMonitorDistance,  
16 and
  - 17 + one of the following conditions is true:
    - 18 ○ the UATISubnetMask is not equal to the SubnetMask of the sector in the active  
19 set, or
    - 20 ○ the result of bitwise logical AND of the UATI and its subnet mask specified by  
21 UATISubnetMask is different from the result of bitwise logical AND of SectorID  
22 and its subnet mask specified by SubnetMask (where SectorID and SubnetMask  
23 correspond to the sector in the active set).

24 If the access terminal receives *SignalingAdaptation.EnteringTunnelState* indication and it  
25 receives an *OverheadMessages.Updated* indication, the access terminal shall set OldUATI to  
26 UATI and shall send a UATIRequest message.

#### 27 4.2.5.2 Access Network Requirements

28 The access network may send a UATIAssignment message at any time in this state. The  
29 following are some of the possible triggers for sending a UATIAssignment message:

- 30 • Receiving *RouteUpdate.ActiveSetUpdated* indication,
- 31 • Receiving an *UpdateUATI* command,

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<sup>7</sup>  $x_o$  and  $y_o$  are given in units of 1/4 seconds.  $x_o/14400$  and  $y_o/14400$  are in units of degrees.

- Receiving a UATIRequest message.

The access network may return a *SubnetChanged* indication and send a UATIAssignment message after reception of a *RouteUpdate.ActiveSetUpdated* indication. The triggers for returning a *SubnetChanged* indication after reception of a *RouteUpdate.ActiveSetUpdated* indication are outside the scope of this specification.

When the access network sends a UATIAssignment message, it shall perform the following:

- Assign a Unicast Access Terminal Identifier (UATI) to the access terminal for the session and include it in a UATIAssignment message.
  - If the protocol subtype of the InUse instance of Signaling Adaptation Protocol is equal to 0x0000, or if there is no InUse instance of Signaling Adaptation Protocol, or if the protocol subtype of the Signaling Adaptation Protocol is equal to 0x0001 and TunnelModeEnabled public data of Signaling Adaptation Protocol is set to '0', and if the UATIAssignment message is sent in response to a UATIRequest message, the access network may include both UATI104 and UATISubnetMask. If the access network does not include the UATI104 and UATISubnetMask fields in the message, the UATI[127:24] is implicitly assigned to be equal to SectorID[127:24], where SectorID corresponds to the sector that has received the UATIRequest message.
  - Otherwise, the access network shall include both UATI104 and UATISubnetMask fields in the UATIAssignment message.

When the access network receives a UATISuccess message with the MessageSequence field that is equal to the MessageSequence field of the UATIAssignment message that it has sent, it shall return a *UATISuccess* indication.

If the access network does not receive the UATISuccess message in response to the corresponding UATIAssignment message within a certain time interval that is specified by the access network<sup>8</sup>, it should re-transmit the UATIAssignment message. If the access network does not receive the UATISuccess message after an implementation specific number of re-transmissions of the UATIAssignment message, it shall return a *Failed* indication and transition to the Inactive State.

When the access network receives a InterRATMobilityIndication message and if the protocol subtype of the InUse instance of Signaling Adaptation Protocol is equal to 0x0001, it shall transmit an InterRATMobilityAck message within  $T_{\text{ADMPIRMA}}$  seconds.

## 4.2.6 Message Formats

### 4.2.6.1 UATIAssignment

This section supersedes section 7.3.7.2.2 of [1].

The access network sends the UATIAssignment message to assign or re-assign a UATI to the access terminal.

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<sup>8</sup> The value of this timeout is determined by the access network and specification of the timeout value is outside the scope of this document.

1

Field	Length (bits)
MessageID	8
MessageSequence	8
Reserved1	7
SubnetIncluded	1
UATISubnetMask	0 or 8
UATI104	0 or 104
UATIColorCode <sup>9</sup>	8
UATIO24	24
UpperOldUATILength	4
Reserved2	4

2	MessageID	The access network shall set this field to 0x01.
3	MessageSequence	The access network shall set this to 1 higher than the MessageSequence
4		field of the last UATIAssignment message (modulo 256) that it has sent to
5		this access terminal.
6	Reserved1	The access network shall set this field to zero. The access terminal shall
7		ignore this field.
8	SubnetIncluded	The access network shall set this field to '1' if the UATI104 field and
9		UATISubnetMask fields are included in this message; otherwise, the
10		access network shall set this field to '0'.
11	UATISubnetMask	The access network shall omit this field if SubnetIncluded is set to '0'. If
12		included, the access network shall set this field to the number of
13		consecutive 1's in the subnet mask of the subnet to which the assigned
14		UATI belongs.
15	UATI104	The access network shall omit this field if SubnetIncluded is set to '0'. If
16		included, the access network shall set this field to UATI[127:24] of the
17		UATI that it is assigning to the access terminal.
18	UATIColorCode	UATI Color Code. The access network shall set this field to the Color
19		Code associated with the subnet to which the UATI belongs.

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<sup>9</sup> The UATIColorCode may be set to the color code associated with the SectorID received over the S101 [5] tunnel. This will reduce probability of color code mismatch when UE performs Idle Handover from E-UTRAN to HRPD.



UATI024 The access network shall set this field to UATI[23:0] of the UATI that it is assigning to the access terminal.

UpperOldUATILength The access network shall set this field to the number of least significant octets of OldUATI[127:24] that the access terminal is to send in the UATISuccess message, in the range from 0 to 13, inclusive.

Reserved2 The access network shall set this field to zero. The access terminal shall ignore this field.

<b>Channels</b>	CC	FTC	<b>SLP</b>	Best Effort
<b>Addressing</b>	unicast		<b>Priority</b>	10

#### 4.2.6.2 InterRATMobilityIndication

This section is a subsection under section 7.3.7.2 of [1].

If the protocol subtype of the Signaling Adaptation Protocol is equal to 0x0001, the access terminal sends the InterRATMobilityIndication message to notify the access network that it has changed its radio access technology.

Field	Length (bits)
MessageID	8

MessageID The access terminal shall set this field to 0x05.

<b>Channels</b>	AC	<b>SLP</b>	Best Effort
<b>Addressing</b>	unicast	<b>Priority</b>	20

#### 4.2.6.3 InterRATMobilityAck

This section is a subsection under section 7.3.7.2 of [1].

If the protocol subtype of the Signaling Adaptation Protocol is equal to 0x0001, the access network sends the InterRATMobilityAck message to acknowledge receipt of an InterRATMobilityIndication message.

Field	Length (bits)
MessageID	8

MessageID The access network shall set this field to 0x06.

<b>Channels</b>	CC	<b>SLP</b>	Best Effort
<b>Addressing</b>	unicast	<b>Priority</b>	20

#### 4.2.7 Indications

This section supersedes section 7.3.7.3.2 of [1].

This protocol registers to receive the following indications:

- *RouteUpdate.IdleHO*
- *RouteUpdate.ActiveSetUpdated*
- *InitializationState.NetworkAcquired*
- *OverheadMessages.Updated*
- *ConnectedState.ConnectionClosed*
- *AccessChannelMAC.TxEnded*
- *SignalingAdaptation.IdleHandoff* (Access Terminal only)

#### 4.2.8 Configuration Attributes

This section supersedes section 7.3.8 of [1].

Unless specified otherwise, the access terminal and the access network shall not use the Generic Attribute Update Protocol to update configurable attributes belonging to the Default Address Management Protocol. If the value of the SupportGAUPMaxNoMonitorDistance attribute is 0x01, then the access terminal and the access network shall support the use of the Generic Attribute Update Protocol to update values of the following attributes belonging to the Default Address Management Protocol:

- MaxNoMonitorDistance

If the value of the SupportGAUPMaxNoMonitorDistance attribute is not 0x01, the access network shall not include the MaxNoMonitorDistance attribute in an AttributeUpdateRequest message.

The access terminal shall not send an AttributeUpdateRequest message containing the MaxNoMonitorDistance attribute.

The configurable simple attributes for this protocol are listed in Table 4.2.8–1. The access terminal and access network shall use as defaults the values in Table 4.2.8–1 that are typed in ***bold italics***.

1

**Table 4.2.8–1 Configurable Values**

<b>Attribute ID</b>	<b>Attribute</b>	<b>Values</b>	<b>Meaning</b>
0xff	MaxNoMonitorDistance	<b>0x0000</b>	The access terminal will not transition to the Inactive state based on distance.
		0x0001 to 0xffff	Maximum allowed distance traveled without monitoring overhead, beyond which the access terminal will transition to the Inactive state.
0xfe	HardwareSeparableFromSession	<b>0x00</b>	The session cannot be extricated from the hardware that is identified by the HardwareID.
		0x01	The session can be extricated from the hardware that is identified by the HardwareID.
		All other values	Reserved
0xfd	SupportGAUPMaxNoMonitorDistance	<b>0x00</b>	Use of Generic Attribute Update Protocol to update MaxNoMonitorDistance is not supported.
		0x01	Use of Generic Attribute Update Protocol to update MaxNoMonitorDistance is supported.
		All other values	Reserved
0xfc	ReducedSubnetMaskOffset	<b>0x00</b>	ReducedSubnetMaskOffset is zero.
		0x01 – 0x10	Difference between the number of consecutive ‘1’s in the subnet mask and that in the reduced subnet mask.
		All other values	Reserved
0xfb	SupportSecondaryColorCodes	<b>0x00</b>	Use of secondary color codes is not supported.
		0x01	Use of secondary color codes is supported.
		All other values	Reserved

Attribute ID	Attribute	Values	Meaning
0xfa	InterRATMobilityEnabled	0x00	Sending of the InterRATMobilityIndication is disabled
		0x01	Sending of the InterRATMobilityIndication is enabled upon resuming use of HRPD.
		0x02-0xff	Reserved

#### 4.2.9 Protocol Numeric Constants

This section supersedes section 7.3.9 of [1].

Constant	Meaning	Value
N <sub>ADMPType</sub>	Type field for this protocol.	Table 2.5.4-1 of [1]
N <sub>ADMPDefault</sub>	Subtype field for this protocol	0x0000
T <sub>ADMPATResponse</sub>	Time to receive UATIAssignment after sending UATIRequest	120 seconds
T <sub>ADMPAddress</sub>	The duration of time that the access terminal declares an address match if it receives a message that is addressed using either the old or the new UATI	180 seconds
T <sub>ADMPIRMA</sub>	Time to receive an InterRATMobilityAck after sending InterRATMobilityIndication.	1 second
N <sub>ADMPIRMI</sub>	Maximum number of attempts for sending an InterRATMobilityIndication	2

## 5 CONNECTION LAYER

This section contains specification for Inter-RAT Signaling Adaptation Protocol. In addition, it also contains specifications for Inter-RAT Initialization State Protocol, Inter-RAT Idle State Protocol, Inter-RAT Route Update Protocol and Inter-RAT Overhead Messages Protocol. These protocols operate with Inter-RAT Signaling Adaptation Protocol.

### 5.1 Inter-RAT Signaling Adaptation Protocol

#### 5.1.1 Overview

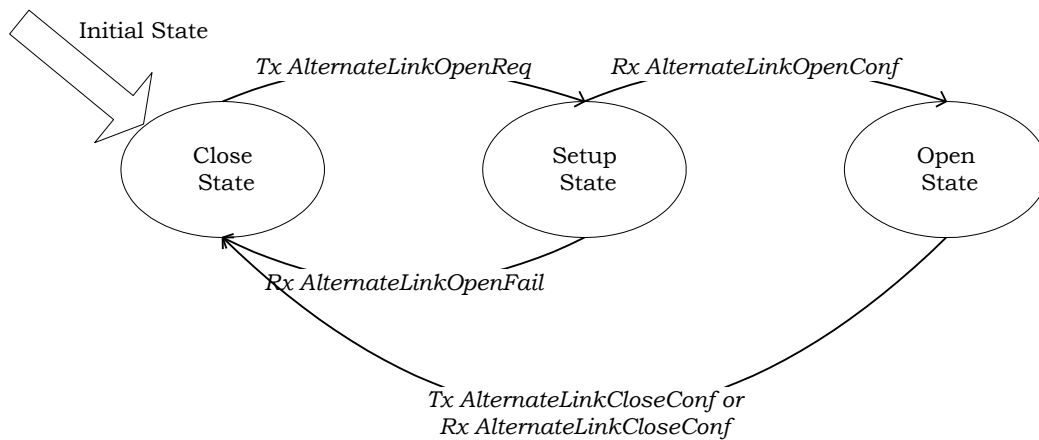
The Inter-RAT Signaling Adaptation Protocol provides the following functions:

- When instantiated, it keeps record of which air interface (HRPD or non-HRPD) the access terminal is currently receiving service in.
- When requested by upper layer protocols, it provides a virtual connection service between the access terminal and the access network over a non-HRPD radio access technology tunnel when the access terminal is receiving service in a non-HRPD radio access technology.
- Provides encapsulation of HRPD packets when sent over a non-HRPD radio access technology tunnel.
- Triggers idle and active handoffs from a non-HRPD radio access technology to HRPD access networks.

This protocol allows the creation and removal of a virtual connection between the access terminal and the access network. The virtual connection can be in one of the following states:

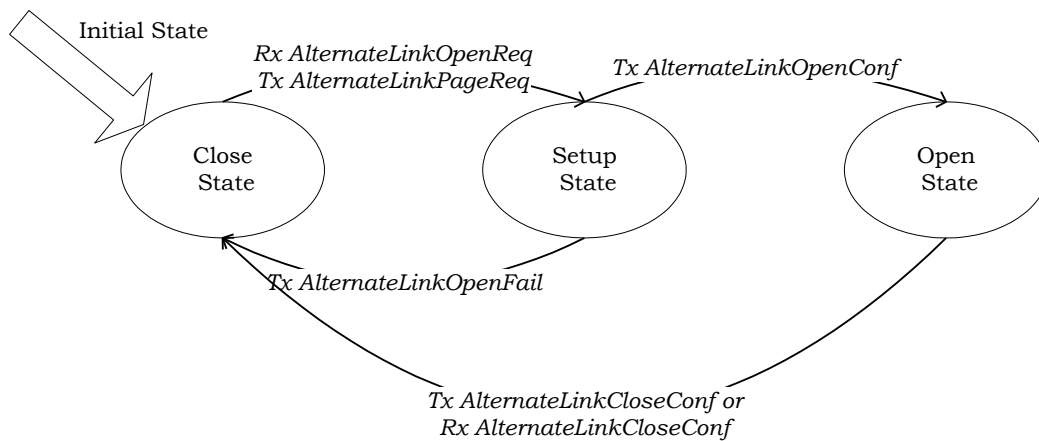
- Close State: The virtual connection does not exist.
- Setup State: The virtual connection setup is in progress.
- Open State: In this state the virtual connection is open.

[Figure 5.1.1-1](#) ~~Figure 5.1.1-1~~ provides an overview of the access terminal states and state transitions.



**Figure 5.1.1-1 Inter-RAT Signaling Adaptation Protocol State Diagram (Access Terminal)**

Figure 5.1.1-2 provides an overview of the access network states and state transitions.



**Figure 5.1.1-2 Inter-RAT Signaling Adaptation Protocol State Diagram (Access Network)**

## 5.1.2 Primitives and Public Data

### 5.1.2.1 Commands

This protocol defines the following commands:

- *ActiveHandoffRequest*
- *IdleHandoffRequest*
- *OpenConnection*
- *CloseConnection*

### 5.1.2.2 Return Indications

This protocol returns the following indications

- *ConnectionOpened*
- *ConnectionInitiated*
- *ConnectionClosed*
- *ConnectionFailed*
- *IdleHandoff*
- *LinkAcquired*
- *EnteringTunnelState*

#### 5.1.2.3 Public Data

This protocol makes the following data public

- Subtype for this protocol.
- TunnelModeEnabled

#### 5.1.3 Protocol Data Unit

The Protocol Data Unit for this protocol is a Signaling Adaptation packet.

If TunnelModeEnabled is set to '0'

- A Signaling Adaptation packet is the same as the packet from the Packet Consolidation Protocol i.e. Signaling Adaptation Protocol does not add any header to the packet received from the Packet Consolidation Protocol.
- All transmitted packets are forwarded to the Security Layer.
- All received packets are forwarded to the Packet Consolidation Protocol.

Otherwise,

- A Signaling Adaptation packet is constructed by adding a Signaling Adaptation header defined in 5.1.6.3 to each packet received from the Packet Consolidation Protocol.
- All transmitted Signaling Adaptation packets are forwarded to the non-HRPD radio access technology tunnel.
- All Signaling Adaptation packets received from the non-HRPD radio access technology tunnel are forwarded to the Packet Consolidation Protocol after removing the Signaling Adaptation header.

This protocol uses the Signaling Application (see section 2 in [1]) to transmit and receive messages.

#### 5.1.4 Protocol Initialization

##### 5.1.4.1 Protocol Initialization for the InConfiguration Protocol Instance

Upon creation, the InConfiguration instance of this protocol in the access terminal and the access network shall perform the following in the order specified:

- 1 • The fall-back values of the attributes for this protocol instance shall be set to the default  
2 values specified for each attribute.
- 3 • If the InUse instance of this protocol has the same protocol subtype as this InConfiguration  
4 protocol instance, then the fall-back values of the attributes defined by the InConfiguration  
5 protocol instance shall be set to the values of the corresponding attributes associated with  
6 the InUse protocol instance.
- 7 • The value for each attribute for this protocol instance shall be set to the fall-back value for  
8 that attribute.

#### 9 5.1.4.2 Protocol Initialization for the InUse Protocol Instance

10 Upon creation, the InUse instance of this protocol in the access terminal and access network  
11 shall perform the following:

- 12 • If the primary RAT is HRPD then the access terminal shall set the TunnelModeEnabled to  
13 '0', otherwise it shall set the TunnelModeEnabled to '1'.
- 14 • The value of the attributes for this protocol instance shall be set to the default values  
15 specified for each attribute.
- 16 • The protocol shall enter the Close State.

#### 17 5.1.5 Procedures and Messages for the InConfiguration Protocol Instance of the Protocol

##### 18 5.1.5.1 Procedures

19 This protocol uses the Generic Configuration Protocol (see section 14.7 in [1]) to define the  
20 processing of the configuration messages.

##### 21 5.1.5.2 Commit Procedures

22 The access terminal and the access network shall perform the procedures specified in this  
23 section, in the order specified, when directed by the InUse instance of the Session  
24 Configuration Protocol to execute the Commit procedures:

- 25 • All the public data that are defined by this protocol, but are not defined by the InUse  
26 protocol instance shall be added to the public data of the InUse protocol.
- 27 • If the InUse instance of this protocol has the same subtype as this protocol instance, then  
28 – The access terminal and the access network shall set the attribute values associated  
29 with the InUse instance of this protocol to the attribute values associated with the  
30 InConfiguration instance of this protocol, and  
31 – The access terminal and the access network shall purge the InConfiguration instance of  
32 the protocol.
- 33 • If the InUse instance of this protocol does not have the same subtype as this protocol  
34 instance, then  
35 – The access terminal and the access network shall set the initial state of the  
36 InConfiguration protocol instance to the Close State.



- The InConfiguration protocol instance shall become the InUse protocol instance for the Signaling Adaptation Protocol at the access terminal and access network.

All the public data not defined by this protocol shall be removed from the public data of the InUse protocol.

### 5.1.5.3 Message Formats

#### 5.1.5.3.1 ConfigurationRequest

The ConfigurationRequest message format is as follows:

Field	Length (bits)
MessageID	8
TransactionID	8
Zero or more instances of the following record	
AttributeRecord	Attribute dependent

- MessageID** The sender shall set this field to 0x50.
- TransactionID** The sender shall increment this value for each new ConfigurationRequest message sent.
- AttributeRecord** The format of this record is specified in section 14.3 in [1].

<b>Channels</b>	FTC    RTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.1.5.3.2 ConfigurationResponse

The ConfigurationResponse message format is as follows:

Field	Length (bits)
MessageID	8
TransactionID	8
Zero or more instances of the following record	
AttributeRecord	Attribute dependent

- MessageID** The sender shall set this field to 0x51.
- TransactionID** The sender shall set this value to the TransactionID field of the corresponding ConfigurationRequest message.

AttributeRecord An attribute record containing a single attribute value. If this message selects a complex attribute, only the ValueID field of the complex attribute shall be included in the message. The format of the AttributeRecord is given in section 14.3 in [1]. The sender shall not include more than one attribute record with the same attribute identifier.

<b>Channels</b>	FTC    RTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

## 5.1.6 Procedures and Messages for the InUse Protocol Instance of the Protocol

### 5.1.6.1 Procedures

#### 5.1.6.1.1 Command Processing

##### 5.1.6.1.1.1 OpenConnection

When the protocol receives an *OpenConnection* command:

- If the access terminal is in the Close State,
  - If TunnelModeEnabled is equal to '1', then it shall:
    - + Send an AlternateLinkOpenReq message,
    - + Set an AlternateLinkOpenConf timer to  $T_{\text{SAPALOpenConf}}$  seconds,
    - + Transition to the Setup state.
  - Otherwise it shall ignore this command.
- If the access terminal is in the Open or Setup state it shall ignore this command.
- If the access network is in the Close State,
  - If TunnelModeEnabled is equal to '1', then it shall:
    - + Send an AlternateLinkPageReq message,
    - + Set an AlternateLinkOpenReq timer to  $T_{\text{SAPALOpenReq}}$  seconds,
    - + Transition to the Setup state.
  - Otherwise it shall ignore this command.

If the access network is in the Open or Setup state it shall ignore this command

##### 5.1.6.1.1.2 CloseConnection

If the protocol receives the *CloseConnection* command in the Open State or in the Setup State, the access terminal or the access network:

- If TunnelModeEnabled is equal to '1', it shall:
  - Send an AlternateLinkCloseReq message,

- Set an *AlternateLinkCloseConf* timer to  $T_{\text{SAPALCloseConf}}$  seconds.

- Otherwise, it shall ignore this command.

When the protocol receives a *CloseConnection* command in the Close state, the access terminal or the access network:

- If the *TunnelModeEnabled* is equal to '1', then it shall return a *ConnectionClosed* indication.
- Otherwise, it shall ignore this command.

#### 5.1.6.1.1.3 ActiveHandoffRequest

The non-HRPD protocol within the access terminal issues this command when the access terminal performs an active handoff to HRPD. If the protocol receives an *ActiveHandoffRequest* command, then:

- If the access terminal is in the Open state, it shall disable the *AlternateLinkCloseConf* timer and transition to the Closed State.
- If the access terminal is in the Setup state it shall disable the *AlternateLinkOpenConf* timer.
- The access terminal shall set the *TunnelModeEnabled* equal to '2' and it shall issue an *AirLinkManagement.OpenConnection* command.

The access network shall ignore this command.

#### 5.1.6.1.1.4 IdleHandoffRequest

The non-HRPD protocol within the access terminal issues this command when the access terminal performs an idle handoff to HRPD. The access terminal shall perform the following in the order specified:

- Set *TunnelModeEnabled* to '0',
- Return an *IdleHandoff* indication,
- If the *InUse* instance of Overhead Messages Protocol subtype is equal to 0x0001<sup>10</sup>, issue an *OverheadMessages.TunnelDeactivate* command.
- If the protocol receives the command in the Setup state it shall disable the *AlternateLinkOpenConf* timer, return a *ConnectionClosed* indication and transition to the Close State.
- If the protocol receives the command in the Open state, it shall disable the *AlternateLinkCloseConf* timer, return a *ConnectionClosed* indication and transition to the Close state.

The access network shall ignore this command.

---

<sup>10</sup> *OverheadMessages.TunnelDeactivate* command is not supported in the default subtype of OverheadMessages protocol. The Signaling Adaptation Protocol is used with multiple RAT interworking specifications.

#### 5.1.6.1.2 Close State

In this state the virtual connection between the access terminal and access network is closed.

##### 5.1.6.1.2.1 Access Terminal Requirements

Upon an access terminal reselects to the RAT other than HRPD, if the access terminal requests that the tunnel treatment is enabled, the access terminal shall perform the following in the order specified:

- Set TunnelModeEnabled to '1',
- Return a *EnteringTunnelState* indication.

Upon entering this state the access terminal shall check which radio access technology (RAT) is selected as primary, if the primary RAT is set to HRPD then the access terminal shall set the TunnelModeEnabled to '0', otherwise it shall set the TunnelModeEnabled to '1' and issues *OverheadMessages.Activate* command.

If the protocol receives a *RouteUpdate.ConnectionInitiated* indication and if TunnelModeEnabled is equal to '2', the access terminal shall set the TunnelModeEnabled parameter to '0'. Otherwise it shall ignore this indication.

If the protocol receives an *IdleState.ConnectionFailed* indication and if TunnelModeEnabled is set to '2', the access terminal shall set the TunnelModeEnabled parameter equal to '1'. Otherwise it shall ignore this indication.

If the protocol receives an AlternateLinkPageReq message, the access terminal shall:

- Send an AlternateLinkOpenReq message,
- Set an AlternateLinkOpenConf timer to  $T_{SAPALOpenConf}$  seconds,
- Transition to the Setup state.

The access terminal should send an AlternateLinkCloseConf message upon receiving an AlternateLinkCloseReq message.

##### 5.1.6.1.2.2 Access Network Requirements

Upon entering this state the access network shall set the TunnelModeEnabled to NULL.

If the protocol receives a *RouteUpdate.ConnectionInitiated* indication and if TunnelModeEnabled is equal to '2', the access network shall set the TunnelModeEnabled parameter to '0'. Otherwise it shall ignore this indication.

If the access network receives an AlternateLinkOpenReq message and if TunnelModeEnabled is equal to '1', then it shall transition to the Setup State.

If the access network receives a Signaling Adaptation-encapsulated HRPD message from the access terminal over the non-HRPD radio access technology tunnel, it shall set the TunnelModeEnabled parameter to '1'.

If the access network receives a HRPD air interface message from the access terminal over the HRPD air interface, it shall set the TunnelModeEnabled parameter to '0'.

The access network should send an AlternateLinkCloseConf message upon receiving an AlternateLinkCloseReq message.

### 5.1.6.1.3 Setup State

#### 5.1.6.1.3.1 Access Terminal Requirements

If the access terminal receives an AlternateLinkOpenConf message, the access terminal shall:

- Disable the AlternateLinkOpenConf timer,
- Return a *ConnectionInitiated* indication.
- Transition to the Open State.

If the access terminal receives an AlternateLinkOpenFail message, the access terminal shall:

- Disable the AlternateLinkOpenConf timer,
- Return a *ConnectionFailed* indication if TunnelModeEnabled is equal to '1',
- Transition to the Close State.

If the access terminal receives an AlternateLinkCloseReq message, then it shall:

- Disable the AlternateLinkOpenConf timer,
- Send an AlternateLinkCloseConf message,
- Return a *ConnectionClosed* indication,
- Transition to the Close State.

If the access terminal receives an AlternateLinkCloseConf message, then it shall:

- Disable the AlternateLinkCloseConf timer,
- Return a *ConnectionClosed* indication,
- Transition to the Close State.

If the protocol receives an AlternateLinkPageReq message, the access terminal shall ignore this message.

If the AlternateLinkOpenConf timer expires without the protocol receiving the AlternateLinkOpenConf message, the access terminal shall:

- Return a *ConnectionFailed* indication if TunnelModeEnabled is equal to '1',
- Transition to the Close State.

If the access terminal receives an *AddressManagement.PreRegistrationZoneChanged* indication it shall:

- Disable the AlternateLinkOpenConf timer,
- Return a *ConnectionClosed* indication,
- Transition to the Close State.

## 5.1.6.1.3.2 Access Network Requirements

If the access network entered this state due to receiving an AlternateLinkOpenReq message, it shall perform the following:

- If the access network is unable to open the virtual connection, for reasons outside the scope of this standard, the access network shall:
  - Send an AlternateLinkOpenFail message,
  - Return a *ConnectionFailed* indication,
  - Transition to the Close State.
- Otherwise, the access network shall perform the following:
  - Return a *ConnectionInitiated* indication,
  - Send an AlternateLinkOpenConf message,
  - Transition to the Open State.

Otherwise it shall perform the following:

- If the access network receives an AlternateLinkOpenReq message, then it shall,
  - Disable the AlternateLinkOpenReq timer,
  - Return a *ConnectionInitiated* indication,
  - Send an AlternateLinkOpenConf message,
  - Transition to the Open State.
- If the AlternateLinkOpenReq timer expires without the protocol receiving the AlternateLinkOpenReq message, the access network shall:
  - Return a *ConnectionFailed* indication,
  - Transition to the Close State.
- If the access network receives an AlternateLinkCloseReq message, then it shall:
  - Send an AlternateLinkCloseConf message,
  - Return a *ConnectionClosed* indication,
  - Transition to the Close State.
- If the access network receives an AlternateLinkCloseConf message, then it shall:
  - Disable the AlternateLinkCloseConf timer,
  - Return a *ConnectionClosed* indication,
  - Transition to the Close State.
- If the access network receives an HRPD air interface message from the access terminal over the HRPD air interface, it shall set the TunnelModeEnabled parameter to '0', return a *ConnectionClosed* indication and transition to the Close State.
- If the protocol receives an *IdleState.ConnectionFailed* indication, the access network shall:

- Transition to the Close State.

If the protocol receives a *RouteUpdate.ConnectionInitiated* indication and TunnelModeEnabled is set to '2', the access network shall,

- Set the TunnelModeEnabled parameter to '0',
- Transition to the Close State.

#### 5.1.6.1.4 Open State

The access terminal or the access network shall return a *LinkAcquired* indication and a *ConnectionOpened* indication upon entering this state. The access network shall start an AlternateLinkOpenComplete timer to T<sub>SAPALOpenComplete</sub> seconds upon entering this state. The access terminal shall send an AlternateLinkOpenComplete message upon entering this state.

If the access terminal or the access network receives an AlternateLinkCloseReq message, then it shall:

- Send an AlternateLinkCloseConf message,
- Return a *ConnectionClosed* indication,
- Transition to the Close State.

If the access terminal or the access network receives an AlternateLinkCloseConf message, then it shall:

- Disable the AlternateLinkCloseConf timer,
- Return a *ConnectionClosed* indication,
- Transition to the Close State.

The access terminal and the access network may send an AlternateLinkCloseReq message after an implementation dependent period of inactivity over the tunnel. The access terminal and access network shall start AlternateLinkCloseConf timer after sending AlternateLinkCloseReq message.

If the access terminal receives an AlternateLinkPageReq message, then it shall return a *ConnectionClosed* indication, transition to the Close state and process the received AlternateLinkPageReq message in Close state.

Upon receiving an AlternateLinkOpenReq message, the access network shall return a *ConnectionClosed* indication and transition to the Setup state.

If the AlternateLinkCloseConf timer expires without receiving the AlternateLinkCloseConf message, the access terminal or the access network shall:

- Return a *ConnectionClosed* indication,
- Transition to the Close State.

If the access terminal receives an *AddressManagement.PreRegistrationZoneChanged* indication it shall,

- Return a *ConnectionClosed* indication,

- Transition to the Close State.

If the access network receives an *IdleState.ConnectionFailed* indication, the access network shall:

- Transition to the Close State.

If the protocol receives a *RouteUpdate.ConnectionInitiated* indication and TunnelModeEnabled is set to '2', the access network shall,

- Set the TunnelModeEnabled parameter to '0',
- Transition to the Close State.

If the access network receives an AlternateLinkOpenComplete message, then it shall disable the AlternateLinkOpenComplete timer.

If the AlternateLinkOpenComplete timer expires without receiving the AlternateLinkOpenComplete message, the access network shall:

- Return a *ConnectionFailed* indication,
- Transition to the Close State.

If the access network receives an HRPD air interface message from the access terminal over the HRPD air interface, it shall set the TunnelModeEnabled parameter to '0', return a *ConnectionClosed* indication and transition to the Close State.

#### 5.1.6.1.5 Processing the ReverseTrafficChannelMAC.OpenLoopParametersIssued indication

Upon reception of the *ReverseTrafficChannelMAC.OpenLoopParametersIssued* indication, the access network shall set TunnelModeEnabled to '2'.

#### 5.1.6.2 Message Formats

For the messages with the Channels information field set to non-Traffic channels (i.e., CC and/or AC), these messages are transmitted over non-HRPD radio access technology physical channels, and can be sent when an HRPD connection is not open. The Channels information fields are set to non-Traffic channels matching the direction of the message.

##### 5.1.6.2.1 AlternateLinkOpenReq

The access terminal sends the AlternateLinkOpenReq message to request a tunnel connection.

Field	Length (bits)
MessageID	8
TransactionID	8
RequestReason	4
Reserved	4

**MessageID** The access terminal shall set this field to 0x00.



TransactionID The access terminal shall increment this value for each new AlternateLinkOpenReq message sent.

RequestReason The access terminal shall set this field to one of the request reasons as shown in Table 5.1.6.2.1-1.

**Table 5.1.6.2.1-1 Encoding of the RequestReason Field**

Field value	Description
0x0	Access Terminal Initiated
0x1	Access Network Initiated
All other values are invalid	

Reserved The access terminal shall set this field to zero. The access network shall ignore this field.

<b>Channels</b>	AC	<b>SLP</b>	Best Effort
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.1.6.2.2 AlternateLinkOpenConf

The access network sends the AlternateLinkOpenConf message to confirm a tunnel connection.

Field	Length (bits)
MessageID	8
TransactionID	8

MessageID The access network shall set this field to 0x01.

TransactionID The access network shall set this value to the TransactionID field of the corresponding AlternateLinkOpenReq message.

<b>Channels</b>	CC	<b>SLP</b>	Best Effort
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.1.6.2.3 AlternateLinkOpenFail

The access network sends the AlternateLinkOpenFail message to respond to a tunnel connection.

Field	Length (bits)
MessageID	8
TransactionID	8

MessageID The access network shall set this field to 0x02.

TransactionID The access network shall set this value to the TransactionID field of the corresponding AlternateLinkOpenReq message.

<b>Channels</b>	CC	<b>SLP</b>	Best Effort
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.1.6.2.4 AlternateLinkCloseReq

The access terminal or the access network sends the AlternateLinkCloseReq message to close a tunnel connection.

Field	Length (bits)
MessageID	8
TransactionID	8

MessageID The sender shall set this field to 0x03.

TransactionID The sender shall increment this value for each new AlternateLinkCloseReq message sent.

<b>Channels</b>	CC AC	<b>SLP</b>	Best Effort
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.1.6.2.5 AlternateLinkCloseConf

The access terminal or the access network sends the AlternateLinkCloseConf message to confirm the request to close a tunnel connection.

Field	Length (bits)
MessageID	8
TransactionID	8

MessageID The sender shall set this field to 0x04.

TransactionID The sender shall set this value to the TransactionID field of the corresponding AlternateLinkCloseReq message.

<b>Channels</b>	CC AC	<b>SLP</b>	Best Effort
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.1.6.2.6 AlternateLinkPageReq

The access network sends the AlternateLinkPageReq message to request a tunnel connection.

Field	Length (bits)
MessageID	8

MessageID The access network shall set this field to 0x05.

<b>Channels</b>	CC	<b>SLP</b>	Best Effort
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.1.6.2.7 AlternateLinkOpenComplete

The access terminal sends the AlternateLinkOpenComplete message to confirm a tunnel connection.

Field	Length (bits)
MessageID	8
TransactionID	8

MessageID The access terminal shall set this field to 0x06.

TransactionID The access terminal shall set this value to the TransactionID field of the corresponding AlternateLinkOpenConf message.

<b>Channels</b>	AC	<b>SLP</b>	Best Effort
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.1.6.3 Header Format

When TunnelModeEnabled is not set to '0', the access terminal and the access network shall place the following header in front of each packet received from the Packet Consolidation Protocol.

Field	Length (bits)
SAPState	1
SessionConfigurationToken	0 or 16
ConnectionLayerFormat	1
ATI Record	34
Reserved	4

**SAPState** The sender shall set this field to '1' if the Inter-RAT Signaling Adaptation Protocol is currently in the Open State, otherwise the sender shall set this field to '0'.

**SessionConfigurationToken** If SAP is in the Open State, the access terminal shall omit this field. Otherwise, the access terminal shall set this field to the value of the SessionConfigurationToken which is public data of the Session Configuration Protocol. The access network shall omit this field.

**ConnectionLayerFormat** The access terminal or the access network shall set this field to '1' if the connection layer packet is Format B; otherwise, it shall set this field to '0'.

**ATI Record** Access Terminal Identifier Record. The access terminal or the access network shall set this field to the record specifying the access terminal's ID specified by TransmitATI.ATI and TransmitATI.ATIType. This record is defined in 14.2 in [1].

**Reserved** The access terminal or the access network shall this field to all zeros.

#### 5.1.6.4 Interface to Other Protocols

##### 5.1.6.4.1 Commands Sent

- *AirLinkManagement.OpenConnection*
- *OverheadMessages.TunnelDeactivate*
- *OverheadMessages.Activate*

##### 5.1.6.4.2 Indications

This protocol registers to receive the following indications:

- *RouteUpdate.ConnectionInitiated*
- *IdleState.ConnectionFailed*
- *AddressManagement.PreRegistrationZoneChanged* (Access Terminal Only)

- *ReverseTrafficChannelMAC.OpenLoopParametersIssued* (Access Network Only)

### 5.1.7 Configuration Attributes

No configuration attributes are defined for this protocol.

### 5.1.8 Protocol Numeric Constants

Constant	Meaning	Value	Comments
N <sub>SAPType</sub>	Type field for this protocol	0x1d	
N <sub>SAPInterRAT</sub>	Subtype field for this protocol	0x0001	
T <sub>SAPALCloseConf</sub>	Maximum time to wait for the AlternateLinkCloseConf message	5 seconds	
T <sub>SAPALOpenConf</sub>	Maximum time to wait for the AlternateLinkOpenConf message	5 seconds	
T <sub>SAPALOpenReq</sub>	Maximum time to wait for the AlternateLinkOpenReq message	5 seconds	
T <sub>SAPALOpenComplete</sub>	Maximum time to wait for the AlternateLinkOpenComplete message	5 seconds	

### 5.1.9 Session State Information

This protocol does not define any parameter record to be included in a Session State Information record (see section 14.8 of [1]).

## 5.2 Inter-RAT Initialization State Protocol

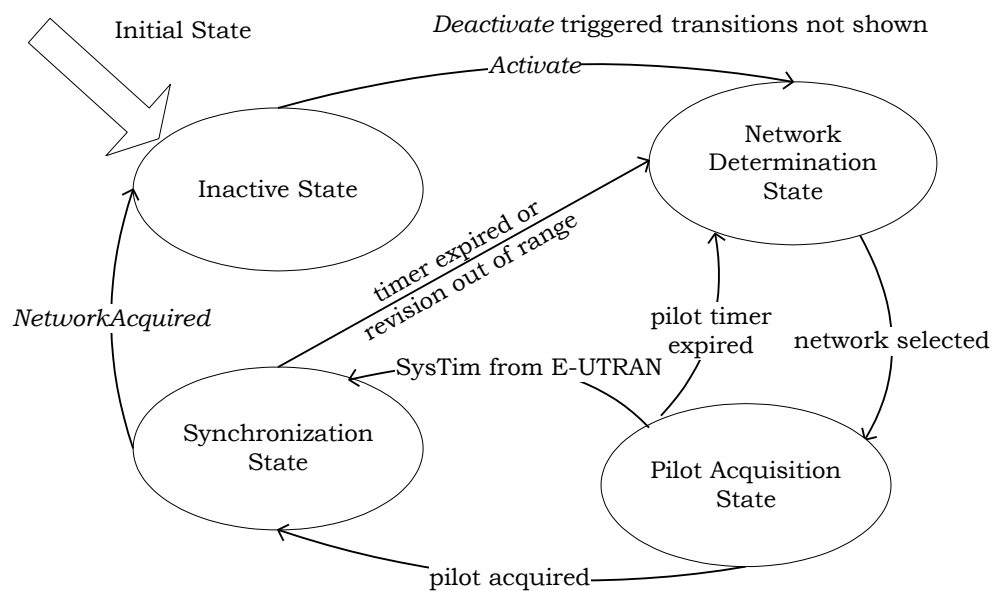
### 5.2.1 Overview

The Inter-RAT Initialization State Protocol provides the procedures and messages required for an access terminal to acquire a serving network.

At the access terminal, this protocol operates in one of the following four states:

- Inactive State: In this state the protocol waits for an *Activate* command.
- Network Determination State: In this state the access terminal chooses an access network on which to operate.
- Pilot Acquisition State: In this state the access terminal acquires a Forward Pilot Channel.
- Synchronization State: In this state the access terminal synchronizes to the Control Channel cycle, receives the Sync message, and synchronizes to CDMA System Time.

Protocol states and events causing transition between states are shown in Figure 5.2.1-1.



**Figure 5.2.1-1. Inter-RAT Initialization State Protocol State Diagram**

### 5.2.2 Primitives and Public Data

#### 5.2.2.1 Commands

This protocol defines the following commands:

- *Activate* (an optional Channel Record can be specified with the command)
- *Deactivate*
- *HRPDMeasStart*

- *HRPDMeasStop*

#### 5.2.2.2 Return Indications

This protocol returns the following indications:

- *NetworkAcquired*
- *HRPDMeasActivated*
- *HRPDMeasDeactivated*

#### 5.2.2.3 Public Data

This protocol makes the following data public:

- Subtype for this protocol
- Selected CDMA Channel
- CDMA System Time
- The following fields of the Sync message:
  - MaximumRevision
  - MinimumRevision
  - PilotPN
- HRPDMeasEnabled

#### 5.2.3 Protocol Data Unit

The transmission unit of this protocol is a message. This is a control protocol; and, therefore, it does not carry payload on behalf of other layers or protocols.

This protocol uses the Signaling Application to transmit and receive messages.

#### 5.2.4 Protocol Initialization

##### 5.2.4.1 Protocol Initialization for the InConfiguration Protocol Instance

Upon creation, the InConfiguration instance of this protocol in the access terminal and the access network shall perform the following in the order specified:

- The fall-back values of the attributes for this protocol instance shall be set to the default values specified for each attribute.
- If the InUse instance of this protocol has the same protocol subtype as this InConfiguration protocol instance, then the fall-back values of the attributes defined by the InConfiguration protocol instance shall be set to the values of the corresponding attributes associated with the InUse protocol instance.
- The value for each attribute for this protocol instance shall be set to the fall-back value for that attribute.

#### 5.2.4.2 Protocol Initialization for the InUse Protocol Instance

Upon creation, the InUse instance of this protocol in the access terminal shall perform the following:

- The value of the attributes for this protocol instance shall be set to the default values specified for each attribute.
- The protocol shall enter the Inactive State.
- The access terminal shall set HRPDMeasEnabled to '0'.

#### 5.2.5 Procedures and Messages for the InConfiguration Instance of the Protocol

##### 5.2.5.1 Procedures

This protocol uses the Generic Configuration Protocol (see section 14.7 of [1]) to define the processing of the configuration messages.

##### 5.2.5.2 Commit Procedures

The access terminal shall perform the procedures specified in this section, in the order specified, when directed by the InUse instance of the Session Configuration Protocol to execute the Commit procedures:

- All the public data that are defined by this protocol, but are not defined by the InUse protocol instance shall be added to the public data of the InUse protocol.
- If the InUse instance of any of the Connection Layer protocols does not have the same subtype as the corresponding InConfiguration protocol instance, then the access terminal shall set the initial state of the InConfiguration and InUse protocol instances of the Initialization State protocol to the Network Determination State.
- If the InUse instance of this protocol has the same subtype as this protocol instance, then
  - The access terminal shall set the attribute values associated with the InUse instance of this protocol to the attribute values associated with the InConfiguration instance of this protocol, and
  - The access terminal shall purge the InConfiguration instance of the protocol.
- If the InUse instance of this protocol does not have the same subtype as this protocol instance, then the access terminal shall perform the following in the order specified:
  - The InConfiguration protocol instance shall become the InUse protocol instance for the Initialization State Protocol at the access terminal.
- All the public data that are not defined by this protocol shall be removed from the list of public data for the InUse protocol instance.

##### 5.2.5.3 Message Formats

###### 5.2.5.3.1 ConfigurationRequest

The ConfigurationRequest message format is as follows:



Field	Length (bits)
MessageID	8
TransactionID	8
Zero or more instances of the following record	
AttributeRecord	Attribute dependent

- MessageID      The sender shall set this field to 0x50.
- TransactionID      The sender shall increment this value for each new ConfigurationRequest message sent.
- AttributeRecord      The format of this record is specified in 14.3 of [1].

<b>Channels</b>	FTC    RTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.2.5.3.2 ConfigurationResponse

The ConfigurationResponse message format is as follows:

Field	Length (bits)
MessageID	8
TransactionID	8
Zero or more instances of the following record	
AttributeRecord	Attribute dependent

- MessageID      The sender shall set this field to 0x51.
- TransactionID      The sender shall set this value to the TransactionID field of the corresponding ConfigurationRequest message.
- AttributeRecord      An attribute record containing a single attribute value. If this message selects a complex attribute, only the ValueID field of the complex attribute shall be included in the message. The format of the AttributeRecord is given in 14.3 of [1]. The sender shall not include more than one attribute record with the same attribute identifier.

<b>Channels</b>	FTC    RTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

## 5.2.6 Procedures and Messages for the InUse Instance of the Protocol

### 5.2.6.1 Procedures

The access network shall broadcast the Sync message periodically in a synchronous Control Channel capsule. This period should not exceed  $T_{ISPSync}$  seconds.

The access network need not keep state for this protocol.

#### 5.2.6.1.1 Command Processing

The access network shall ignore all commands.

##### 5.2.6.1.1.1 Activate

If the protocol receives an *Activate* command in the Inactive State, the access terminal shall transition to the Network Determination State.

If the protocol receives this command in any other state, the access terminal shall ignore it.

##### 5.2.6.1.1.2 Deactivate

If the protocol receives a *Deactivate* command in the Inactive State, the access terminal shall ignore it.

If the protocol receives this command in any other state, the access terminal shall transition to the Inactive State.

##### 5.2.6.1.1.3 HRPDMeasStart

If the protocol receives a *HRPDMeasStart*<sup>11</sup> command, the access terminal shall perform the following:

- If the access terminal is in the Network Determination State it shall select a CDMA Channel from the HRPD neighbor list received.
- Set the HRPDMeasEnabled parameter to '1'.
- Return an *HRPDMeasActivated* indication.

The access network shall ignore this command.

##### 5.2.6.1.1.4 HRPDMeasStop

If the protocol receives a *HRPDMeasStop* command, the access terminal shall perform the following:

---

<sup>11</sup> The E-UTRAN protocol within the access terminal requests measurements of neighboring HRPD cells to the HRPD protocol.

- The access terminal shall set the *HRPDMeasEnabled* parameter to '0'.
- The access terminal shall return an *HRPDMeasDeactivated* indication.

The access network shall ignore this command.

#### 5.2.6.1.2 Inactive State

In the Inactive State the access terminal waits for the protocol to receive an *Activate* command.

#### 5.2.6.1.3 Network Determination State

In the Network Determination State the access terminal selects a CDMA Channel (see section 14.1 of [1]). If *TunnelModeEnabled* public data of Signaling Adaptation Protocol is set to '0', the access terminal attempts acquire the access network on that CDMA Channel.

If a Channel Record was provided with the *Activate* command and if the *TunnelModeEnabled* public data of Signaling Adaptation Protocol is set to '0', the access terminal should select the system and channel specified by the record.

Upon entering this state, if *TunnelModeEnabled* is set to '1' and *HRPDMeasEnabled* is set to '0' the access terminal shall remain in the Network Determination state. Upon entering this state if the *HRPDMeasEnabled* is set to "1", the access terminal shall select a CDMA Channel<sup>12</sup> from the CDMA network information provided by E-UTRAN .

The specific mechanisms to provision the access terminal with a list of preferred networks and with the actual algorithm used for network selection are beyond the scope of this specification.

Upon selecting a CDMA Channel the access terminal shall enter the Pilot Acquisition State.

#### 5.2.6.1.4 Pilot Acquisition State

Upon entering this state, if *TunnelModeEnabled* is set to '1' and if the *CDMA2000-SystemTimeInfo* is available from E-UTRAN, the access terminal may transition to the Synchronization State.

In the Pilot Acquisition State the access terminal acquires the Forward Pilot Channel of the selected CDMA Channel.

Upon entering the Pilot Acquisition State, the access terminal shall tune to the selected CDMA Channel and shall search for the pilot. If the access terminal acquires the pilot, it shall enter the Synchronization State<sup>13</sup>. If the access terminal fails to acquire the pilot within *T<sub>ISPPilotAcq</sub>* seconds of entering the Pilot Acquisition State, it shall enter the Network Determination State.

---

<sup>12</sup> It is beyond the scope of this standard in specifying how the AT might obtain this information during initialization.

<sup>13</sup> The Access Terminal Minimum Performance Requirements contains specifications regarding pilot acquisition performance.

## 5.2.6.1.5 Synchronization State

In the Synchronization State the access terminal completes timing synchronization or acquire CDMA system time information using HRPDSYSTEMTIME<sup>14</sup>.

Upon entering this state, the access terminal which wish to perform sync with HRPDSYSTEMTIME shall perform the following if the TunnelModeEnabled is set to '1':

- Set default value for MaximumRevision (max value) and MinimumRevision (0x01)
- Retrieve CDMA system time information from HRPDSYSTEMTIME.
- The access terminal shall set the CDMA System time based on HRPDSYSTEMTIME information.
- Return a *NetworkAcquired* indication,
- Enter the Inactive State.

Upon entering this state, if the TunnelModeEnabled is set to '0' or if the TunnelModeEnabled is set to '1' and the access terminal which wish to receive Sync message, the access terminal shall perform the following:

- Issue the *ControlChannelMAC.Activate* command.
- If the access terminal fails to receive a Sync message within  $T_{ISPSyncAcq}$  seconds of entering the Synchronization State, the access terminal shall issue a *ControlChannelMAC.Deactivate* command and shall enter the Network Determination State. While attempting to receive the Sync message, the access terminal shall discard any other messages received on the Control Channel.
- When the access terminal receives a Sync message:
  - If the access terminal's revision number is not in the range defined by the MinimumRevision and MaximumRevision fields (inclusive) specified in the message, the access terminal shall issue a *ControlChannelMAC.Deactivate* command and enter the Network Determination State.
  - Otherwise, the access terminal shall:
    - + Set the access terminal time to the time specified in the message; The time specified in the message is the time applicable 160 ms following the beginning of the Control Channel Cycle in which the Sync message was received,
    - + Return a *NetworkAcquired* indication,
    - + Enter the Inactive State.

---

<sup>14</sup> HRPDSYSTEMTIME is local parameter of Inter-RAT Initialization State Protocol that derives from the "cdma-System Time" parameters from E-UTRAN broadcast element (i.e. SIB8). Please refer to E-UTRAN specification [9] on how UE obtains the CDMA timing reference.

## 5.2.6.2 Message Formats

### 5.2.6.2.1 Sync

The access network broadcasts the Sync message to convey basic network and timing information.

Field	Length (bits)
MessageID	2
MaximumRevision	8
MinimumRevision	8
PilotPN	9
SystemTime	37

MessageID	The access network shall set this field to '00'.
MaximumRevision	Maximum Air-Interface protocol revision supported by the access network. The access network shall set this field to the value specified in 1.15 of [1]. This value shall be in the range [0x00, 0xff].
MinimumRevision	Minimum Air-Interface protocol revision supported by the access network. The access network shall set this field to the value specified in 1.15 of [1]. This value shall be in the range [0x00, MaximumRevision].
PilotPN	Pilot PN Offset. The access network shall set this field to the pilot PN sequence offset for this sector in units of 64 PN Chips.
SystemTime	The access network shall set this field to the CDMA System Time 160 ms after the start of the Control Channel Cycle in which this Sync message is being sent. The CDMA System Time is specified in units of 26.66... ms.

<b>Channels</b>	CCsyn	<b>SLP</b>	Best Effort
<b>Addressing</b>	broadcast	<b>Priority</b>	30

## 5.2.6.3 Interface to Other Protocols

### 5.2.6.3.1 Commands Sent

This protocol issues the following commands:

- ControlChannelMAC.Activate*
- ControlChannelMAC.Deactivate*

### 5.2.6.3.2 Indications

This protocol does not register to receive any indications.

## 5.2.7 Configuration Attributes

No configuration attributes are defined for this protocol.

## 5.2.8 Protocol Numeric Constants

Constant	Meaning	Value	Comments
NISPTYPE	Type field for this protocol	Table 2.5.4-1 of [1]	
NISPInterRAT	Subtype field for this protocol	0x0001	
TISPSync	Sync message transmission period	1.28 seconds	3 × Control Channel Cycle
TISPPilotAcq	Time to acquire pilot in access terminal	60 seconds	
TISPSyncAcq	Time to acquire Sync message in access terminal	5 seconds	

## 5.2.9 Session State Information

This protocol does not define any parameter record to be included in a Session State Information record (see section 14.8 of [1]).

### 5.3 Inter-RAT Idle State Protocol

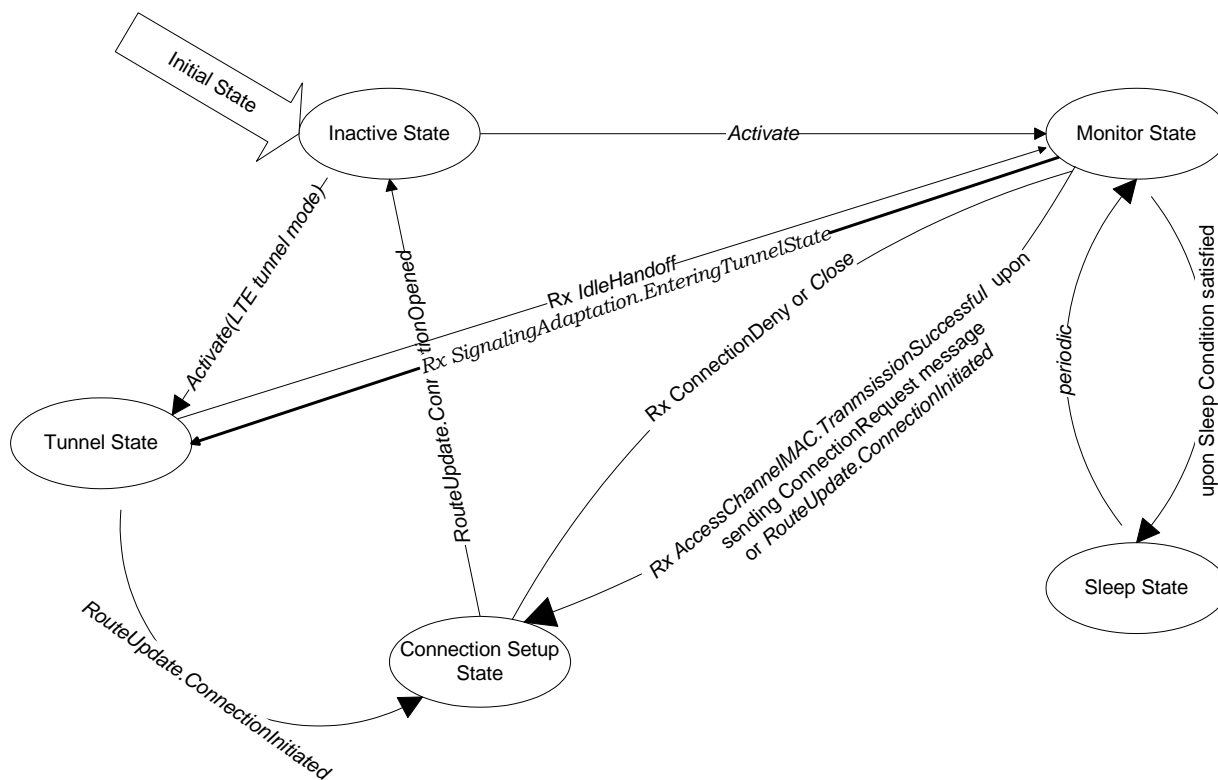
#### 5.3.1 Overview

The Inter-RAT Idle State Protocol provides the procedures and messages used by the access terminal and the access network when the access terminal has acquired a network and a connection is not open.

This protocol operates in one of the following five states:

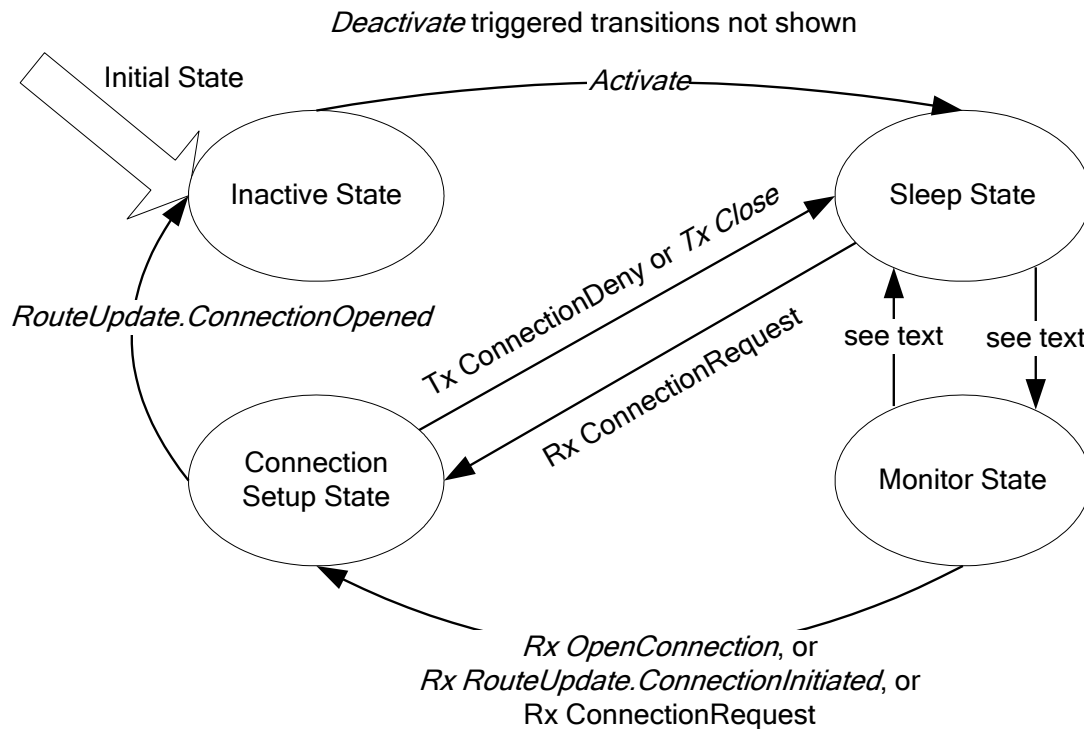
- Inactive State: In this state the protocol waits for an *Activate* command.
- Sleep State: In this state the access terminal may shut down part of its subsystems to conserve power. The access terminal does not monitor the Forward Channel, and the access network is not allowed to transmit unicast packets to it.
- Monitor State: In this state the access terminal monitors the Control Channel, listens for Page messages and if necessary, updates the parameters received from the Overhead Messages Protocol. The access network may transmit unicast packets to the access terminal in this state.
- Connection Setup State: In this state the access terminal and the access network set-up a connection.
- Tunnel State: In this state the access terminal stop monitoring the Control Channel. All communications to the access network are provided by the other radio access technology tunnel. The access terminal performs pilot measurement in this state. When pilot measurement is no longer required, the access terminal has the option to go into an implementation dependent power saving mode.

Protocol states and events causing the transition between the states are shown in [Figure 5.3.1-1](#) and [Figure 5.3.1-2](#).



**Figure 5.3.1-1 Inter-RAT Idle State Protocol State Diagram (Access Terminal)**





**Figure 5.3.1–2 Inter-RAT Idle State Protocol State Diagram (Access Network)**

This protocol supports periodic network monitoring by the access terminal, allowing for significant power savings. The following access terminal operation modes are supported:

- Continuous operation, in which the access terminal continuously monitors the Control Channel.
- Suspended mode operation, in which the access terminal monitors the Control Channel continuously for a period of time and then proceeds to operate in the slotted mode. Suspended mode follows operation in the Air-Link Management Protocol Connected State and allows for quick network-initiated reconnection.
- Slotted mode operation, in which the access terminal monitors only selected slots.

This protocol supports two types of connection set-ups:

- Normal setup: this procedure is always performed at the initiative of the access terminal<sup>15</sup>. It consists of the access terminal sending a ConnectionRequest message which in turn causes the lower layers to open the connection. The Connection Setup State contains the requirements for normal setup.

<sup>15</sup> The access network may transmit a Page message to the access terminal directing it to initiate the procedure.

- Fast Connect: this procedure is always performed at the initiative of the access network and consists of the access network opening the connection directly via a *RouteUpdate.Open* command<sup>16</sup>. Fast Connect eliminates the need for the Page / ConnectionRequest exchange when the access network has pending data to transmit to an access terminal, and is especially useful when the access terminal is in suspended mode. Support for Fast Connect at the access network is optional. Support for Fast Connect at the access terminal is mandatory. The Monitor State contains the requirements for Fast Connect.

### 5.3.2 Primitives and Public Data

#### 5.3.2.1 Commands

This protocol defines the following commands:

- Activate*
- Deactivate*
- OpenConnection*
- Close*

#### 5.3.2.2 Return Indications

This protocol returns the following indications:

- ConnectionOpened*
- ConnectionFailed*

#### 5.3.2.3 Public Data

- Subtype for this protocol

### 5.3.3 Protocol Data Unit

The transmission unit of this protocol is a message. This is a control protocol; and, therefore, it does not carry payload on behalf of other layers or protocols.

This protocol uses the Signaling Application to transmit and receive messages.

### 5.3.4 Protocol Initialization

#### 5.3.4.1 Protocol Initialization for the InConfiguration Protocol Instance

Upon creation, the InConfiguration instance of this protocol in the access terminal and the access network shall perform the following in the order specified:

- The fall-back values of the attributes for this protocol instance shall be set to the default values specified for each attribute.

---

<sup>16</sup> This command triggers a transmission of a TrafficChannelAssignment message based on the last RouteUpdate message received from the access terminal.

- 1 • If the InUse instance of this protocol has the same protocol subtype as this InConfiguration  
2 protocol instance, then the fall-back values of the attributes defined by the InConfiguration  
3 protocol instance shall be set to the values of the corresponding attributes associated with  
4 the InUse protocol instance.
- 5 • The value for each attribute for this protocol instance shall be set to the fall-back value for  
6 that attribute.

### 7 5.3.5 Procedures and Messages for the InConfiguration Instance of the Protocol

#### 8 5.3.5.1 Procedures

9 This protocol uses the Generic Configuration Protocol (see section 14.7 of [1]) to define the  
10 processing of the configuration messages.

#### 11 5.3.5.2 Commit Procedures

12 The access terminal and the access network shall perform the procedures specified in this  
13 section, in the order specified, when directed by the InUse instance of the Session  
14 Configuration Protocol to execute the Commit procedures:

- 15 • All the public data that are defined by this protocol, but are not defined by the InUse  
16 protocol instance shall be added to the public data of the InUse protocol.
- 17 • If the InUse instance of any of the Connection Layer protocols does not have the same  
18 subtype as the corresponding InConfiguration protocol instance, then
  - 19 – the access terminal shall set the initial state of the InConfiguration and InUse protocol  
20 instances of the Idle State protocol to the Inactive State.
  - 21 – the access network shall set the initial state of the InConfiguration and InUse protocol  
22 instances of the Idle State protocol to the Sleep State.
- 23 • If the InUse instance of this protocol has the same subtype as this protocol instance, then
  - 24 – The access terminal and the access network shall set the attribute values associated  
25 with the InUse instance of this protocol to the attribute values associated with the  
26 InConfiguration instance of this protocol, and
  - 27 – The access terminal and the access network shall purge the InConfiguration instance of  
28 the protocol.
- 29 • If the InUse instance of this protocol does not have the same subtype as this protocol  
30 instance, then the access terminal and the access network shall perform the following:
  - 31 – The InConfiguration protocol instance shall become the InUse protocol instance for the  
32 Idle State Protocol at the access terminal and the access network.
- 33 • All the public data not defined by this protocol shall be removed from the public data of the  
34 InUse protocol.

## 5.3.5.3 Message Formats

## 5.3.5.3.1 ConfigurationRequest

The ConfigurationRequest message format is as follows:

Field	Length (bits)
MessageID	8
TransactionID	8

Zero or more instances of the following record

AttributeRecord	Attribute dependent
-----------------	---------------------

**MessageID** The sender shall set this field to 0x50.

**TransactionID** The sender shall increment this value for each new ConfigurationRequest message sent.

**AttributeRecord** The format of this record is specified in 14.3 of [1].

<b>Channels</b>	FTC    RTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

## 5.3.5.3.2 ConfigurationResponse

The ConfigurationResponse message format is as follows:

Field	Length (bits)
MessageID	8
TransactionID	8

Zero or more instances of the following record

AttributeRecord	Attribute dependent
-----------------	---------------------

**MessageID** The sender shall set this field to 0x51.

**TransactionID** The sender shall set this value to the TransactionID field of the corresponding ConfigurationRequest message.

**AttributeRecord** An attribute record containing a single attribute value. If this message selects a complex attribute, only the ValueID field of the complex attribute shall be included in the message. The format of the AttributeRecord is given in 14.3 of [1]. The sender shall not include more than one attribute record with the same attribute identifier.

<b>Channels</b>	FTC    RTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

### 5.3.6 Procedures and Messages for the InUse Instance of the Protocol

#### 5.3.6.1 Procedures

##### 5.3.6.1.1 Command Processing

###### 5.3.6.1.1.1 Activate

When the protocol receives an *Activate* command in the Inactive State and TunnelModeEnabled public data of Signaling Adaptation Protocol equal to '0':

- The access terminal shall transition to the Monitor State.
- The access network shall transition to the Sleep State<sup>17</sup>.

When the protocol receives an *Activate* command in the Inactive State and TunnelModeEnabled public data of Signaling Adaptation Protocol is equal to '1':

- The access terminal shall transition to the Tunnel State.
- The access network shall transition to the Sleep State <sup>17</sup>~~17~~.

If the protocol receives this command in any other state it shall be ignored.

###### 5.3.6.1.1.2 Deactivate

When the protocol receives a *Deactivate* command in the Inactive State it shall be ignored.

When the protocol receives this command in any other state:

- The access terminal shall transition to the Inactive State.
- The access network shall transition to the Inactive State.

###### 5.3.6.1.1.3 OpenConnection

When the protocol receives an *OpenConnection* command in the Inactive State or the Connection Setup State, the command shall be ignored.

When the protocol receives this command in the Sleep State:

- The access terminal shall transition to the Monitor state and perform the procedures in 5.3.6.1.2 for sending a ConnectionRequest message.
- The access network shall queue the command and execute it when it is in the Monitor State.

---

<sup>17</sup> Since the transitions happen asynchronously, this requirement guarantees that the access network will not transmit unicast packets to the access terminal over the Control Channel when the access terminal is not monitoring the channel.

When the protocol receives this command in the Monitor State:

- The access terminal shall perform the procedures in 5.3.6.1.2 for sending a ConnectionRequest message.
- The access network shall send a Page message to the access terminal and transition to the Connection Setup State.

When the protocol receives this command in the Tunnel State:

- The access terminal shall set a TunnelConnection timer for  $T_{ConnReq}$  seconds, and send a ConnectionRequest message.

#### 5.3.6.1.1.4 Close

When the protocol receives a *Close* command in the Inactive State or Tunnel State it shall be ignored.

When the protocol receives a *Close* command in any other state:

- The access terminal shall transition to the Monitor State.
- The access network shall transition to the Sleep State.

#### 5.3.6.1.2 Access Terminal Procedures for Sending a ConnectionRequest Message

When procedures in this section are invoked, the access terminal shall perform the following:

- Send a ConnectionRequest message,
- If an *AccessChannelMAC.TransmissionSuccessful* indication is received, it shall transition to the Connection Setup State,
- If an *AccessChannelMAC.TransmissionFailed* indication is received, it shall return a *ConnectionFailed* indication.

#### 5.3.6.1.3 $T_{12}$ and $T_{23}$ Computation

The access terminal shall compute  $T_{12}$  and  $T_{23}$  when an *AccessChannelMAC.TransmissionSuccessful* indication or a *ConnectedState.ConnectionClosed* indication is received. The access network shall compute  $T_{12}$  and  $T_{23}$  when an *AccessChannelMAC.MACLayerCapsuleReceived* indication, a *ConnectedState.ConnectionClosed*, or a *RouteUpdate.ConnectionLost* indication is received. The access terminal and the access network shall compute  $T_{12}$  and  $T_{23}$  as follows:

$$T_{12} = T_c + Period1 - [(T_c + 256 \times R) \bmod Period1] + Period1 \times [24 \times (WakeCount1 + 1) - 1]$$

$$T_{23} = T_{12} + Period2 - [(T_{12} + 256 \times R) \bmod Period2] + Period2 \times [24 \times (WakeCount2 + 1) - 1]$$

where Period1 and Period2 are specified in units of slots,  $T_c$  is the current CDMA system time.

#### 5.3.6.1.4 Inactive State

When the protocol is in the Inactive State it waits for an *Activate* command.

If the access terminal receives an *OverheadMessages.Updated* indication in this state, then the access terminal shall queue the latest *OverheadMessages.Updated* indication for processing in the Monitor state.

If the access terminal receives a *SignalingAdaptation.ConnectionOpened* indication in this state, then the access terminal shall return a *ConnectionOpened* indication.

If the access terminal receives a *SignalingAdaptation.ConnectionFailed* indication in this state, then the access terminal shall return a *ConnectionFailed* indication.

#### 5.3.6.1.5 Sleep State

When the access terminal is in the Sleep State it may stop monitoring the Control Channel by issuing the following commands:

- *OverheadMessages.Deactivate*
- *ControlChannelMAC.Deactivate*

The access terminal may shut down processing resources to reduce power consumption.

In order to transmit on the Access Channel in this state, the access terminal shall first transition from the Sleep State to the Monitor State. If the access terminal requires opening a connection, it shall transition to the Monitor state and perform the procedures in 5.3.6.1.2 for sending a *ConnectionRequest* message.

When the access network is in the Sleep State, it is prohibited from sending unicast packets to the access terminal.

If the access network receives a *ConnectionRequest* message, it shall transition to the Connection Setup State.

If the access terminal has determined that the *OtherRATNeighborList* message is transmitted in that sector and it does not have up to date parameters from *OtherRATNeighborList* message, the access terminal shall transition from the Sleep State to the Monitor State in time to receive next *OtherRATNeighborList* message at Control Channel cycle *C* satisfying the following condition:

$$C \bmod \text{OtherRATTXCycle} = 0,$$

Where *C* is the number of Control Channel cycles since the beginning of the CDMA System Time, and *OtherRATTXCycle* is public data of the Overhead Messages protocol.

If the access terminal advertised a suspend period that is current, the access network may transition to the Monitor State.

The access network and the access terminal shall transition from the Sleep State to the Monitor State in time to send and receive, respectively, the sub-synchronous capsule or the synchronous capsule sent at time *T* satisfying the following condition:

$$[T+256 \times R] \bmod \text{Period} = \text{Offset},$$

where *T* is the CDMA System Time in slots, and *Offset* is public data of the Control Channel MAC protocol.

$R$  shall be obtained as follows:

- If PreferredControlChannelCycleEnabled is equal to '0', then  $R$  is the result of applying the hash function (see section 14.4 of [1]) using the following parameters:
  - Key = SessionSeed
  - Decorrelate =  $6 \times \text{SessionSeed}[11:0]$
  - $N = \text{Max}(\text{Period3}/256, 1)$
  - where SessionSeed is given as public data of the Address Management Protocol.
- If PreferredControlChannelCycleEnabled is equal to '1', then  $R$  is set to PreferredControlChannelCycle.

Period shall be computed as follows:

$$\text{Period} = \begin{cases} \text{Period1}, & \text{CDMA System Time in slots} < T_{12} \\ \text{Period2}, & T_{12} \leq \text{CDMA System Time in slots} < T_{23} \\ \text{Period3}, & \text{Otherwise} \end{cases}$$

The access network and the access terminal shall compute  $\text{Period}_i$  according to [Table 5.3.6.1.5-1](#).

**Table 5.3.6.1.5-1 Computation of  $\text{Period}_i$  from  $\text{SlotCycle}_i$**

SlotCycle $_i$	Period $_i$
0x00 to 0x06	$2^{\text{SlotCycle}_i} \times 4$ slots
0x07 to 0x1c	$2^{(\text{SlotCycle}_i - 0x7)} \times 768$ slots

If the access network receives a *SignalingAdaptation.ConnectionOpened* indication in this state, then the access network shall return a *ConnectionOpened* indication.

If the access network receives a *SignalingAdaptation.ConnectionFailed* indication in this state, then the access network shall return a *ConnectionFailed* indication.

#### 5.3.6.1.6 Monitor State

A paging mask is defined as a periodic interval with period and duty cycle defined by three associated fields PreMaskDuration, MaskDuration, and PostMaskDuration in the PagingMask attribute (see 5.3.7.2.3).

When the access terminal is in the Monitor State, it shall continuously monitor the Control Channel if MaskCount is equal to 0x00 or one of the following conditions is true for all MaskCount paging masks specified by the PagingMask attribute:

$$T \bmod [(\text{PreMaskDuration} + \text{MaskDuration} + \text{PostMaskDuration}) \times 4] < \text{PreMaskDuration} \times 4, \text{ or}$$

$$T \bmod [(\text{PreMaskDuration} + \text{MaskDuration} + \text{PostMaskDuration}) \times 4] \geq (\text{PreMaskDuration} + \text{MaskDuration}) \times 4,$$

where  $T$  is the CDMA System Time in slots, and PreMaskDuration, MaskDuration, and PostMaskDuration are parameters of the PagingMask complex attribute.



When the access network is in the Monitor State, it may send unicast packets to the access terminal. When the access network is in the Monitor State, it should not send unicast packets to the access terminal unless one of the following conditions is true for all MaskCount paging masks specified by the PagingMask attribute:

$$T \bmod [(\text{PreMaskDuration} + \text{MaskDuration} + \text{PostMaskDuration}) \times 4] < \text{PreMaskDuration} \times 4, \text{ or}$$

$$T \bmod [(\text{PreMaskDuration} + \text{MaskDuration} + \text{PostMaskDuration}) \times 4] \geq (\text{PreMaskDuration} + \text{MaskDuration}) \times 4.$$

where T is the CDMA System Time in slots, and PreMaskDuration, MaskDuration, and PostMaskDuration are parameters of the PagingMask complex attribute.

#### 5.3.6.1.6.1 Access Terminal Requirements

Upon entering the Monitor State, the access terminal shall issue the following commands:

- *OverheadMessages.Activate*
- *ControlChannelMAC.Activate*

The access terminal shall comply with the following requirements when in the Monitor State:

- If the access terminal has queued an *OverheadMessages.Updated* indication or upon receiving an *OverheadMessages.Updated* indication, the access terminal shall tune to the CDMA Channel selected as specified in 5.3.6.1.6.1.1.
- If the access terminal entered Monitor State to receive the synchronous capsule, it shall monitor the overhead messages as specified in the Inter-RAT Overhead Messages Protocol (see 5.5).
- If the access terminal entered Monitor State to receive the OtherRATNeighborList message, it shall monitor the OtherRATNeighborList message as specified in the Inter-RAT Overhead Messages Protocol (see 5.5).
- If the access terminal receives a Page message, it shall perform the procedures in 5.3.6.1.2 for sending a ConnectionRequest message.
- If the access terminal requires opening a connection, it shall perform the procedures in 5.3.6.1.2 for sending a ConnectionRequest message.
- If the access terminal receives a *RouteUpdate.ConnectionInitiated* indication it shall transition to the Connection Setup State<sup>18</sup>.
- Access terminal may transition to the Sleep State if the requirements specified in 5.3.6.1.6.1.2 are satisfied.

If the access terminal receives a *SignalingAdaptation.EnteringTunnelState* indication it shall transition to the Tunnel State.

---

<sup>18</sup> This requirement provides Fast Connect on the access terminal side.

## 5.3.6.1.6.1.1 CDMA Channel Selection

The access terminal shall select a CDMA Channel from the list of channels or extended channels in the SectorParameters message. If no channels or extended channels are listed, the access terminal shall use the channel it is currently monitoring. If one or more channels are available, the access terminal shall use a hash function (see section 14.4 of [1]) to compute an index into the subset of a subset of advertised CDMA Channels according to the following procedures.

The access terminal shall create a combined channel list as follows:

- If the extended channel list is included in the SectorParameters message, the access terminal shall create a combined channel list by appending each CDMA Channel in the extended channel list (in order) to the set of CDMA Channels in the channel list (in order). Otherwise, the access terminal shall set the combined channel list to the set of CDMA Channels in the channel list.
- If the SupportedCDMAChannels public data of the Route Update Protocol lists any channels, then the access terminal shall remove from the combined channel list all CDMA Channels that are not supported by the access terminal as indicated by the SupportedCDMAChannels public data of the Route Update Protocol.

The set,  $S$ , of CDMA Channels is determined as follows:

- If the AccessHashingChannelMaskIncluded field in the SectorParameters message is not included or is included and set to '0', the access terminal shall set  $S$  to the subset of CDMA Channels in the combined channel list.
- If the AccessHashingChannelMaskIncluded field in the SectorParameters message is included and is set to '1', the access terminal shall set  $S$  to the subset of CDMA Channels in the combined channel list for which:
  - $N_i$  is equal to  $N_{\max}$ , where  $i$  is the index of the CDMA Channel in the combined channel list,

where  $N_j = \text{bitcount}(\text{AccessHashingClassMask} [\text{AccessHashingMaskLength}:0] \otimes M_j)$ , where  $M_j$  is the AccessHashingChannelMask field in the SectorParameters message corresponding to the  $j$ th CDMA Channel in the combined channel list;

$N_{\max}$  is the maximum value of  $N_k$  for all  $k$ , where  $k$  is the index of the CDMA Channel in the combined channel list; and

$\text{bitcount}(x)$  is the number of '1' bits in the binary representation of  $x$ .

The CDMA Channels supported by the access terminal are public data of the Route Update Protocol. The access terminal shall use the following hash function parameters to obtain the index into set  $S$ :

- Key = SessionSeed
- Decorrelate = 0
- $N$  = Number of CDMA Channels in set  $S$

where SessionSeed is provided as public data by the Address Management Protocol.

#### 5.3.6.1.6.1.2 Transition to Sleep State

The access terminal may transition to the Sleep State if all of the following requirements are met:

- One of the following requirements is met:
  - The access terminal entered the Monitor State to receive the synchronous capsule and has received a Control Channel synchronous Sleep State capsule in the current Control Channel Cycle and has determined that the SectorParameters message is up to date (see 5.5.6.1.4.2). The current Control Channel Cycle is defined to be the Control Channel Cycle that started at slot  $\lfloor T/256 \rfloor$ , where T is the current CDMA System Time in slots.
  - The access terminal entered the Monitor State to receive a sub-synchronous capsule, and has received the sub-synchronous capsule, or did not receive the sub-synchronous capsule in the expected slots.
  - The access terminal entered the Monitor State to receive an OtherRATNeighborList message, and has received the OtherRATNeighborList message, or did not receive the OtherRATNeighborList message in the expected Control Channel Cycle.
- Access terminal received an *AccessChannelMAC.TxEnded* indication for every *AccessChannelMAC.TxStarted* indication it received since entering the Monitor State.<sup>19</sup>
- Access terminal has not advertised a suspend period that is current (see section 8.6.6.1.2.1.1 of [1]). The suspend period is current if the time advertised in the associated ConnectionClose message is greater than the current CDMA System Time<sup>20</sup>.

#### 5.3.6.1.6.2 Access Network Requirements

##### 5.3.6.1.6.2.1 General Requirements

- Access network shall select the CDMA Channel following the same specifications as the access terminal, see 5.3.6.1.6.1.1.
- If the access network receives a ConnectionRequest message, it shall transition to the Connection Setup State.
- If the access network requires opening a connection with the access terminal and does not use an accelerated procedure to set-up a connection, the access network shall send a Page message to the access terminal over the Control Channel.

---

<sup>19</sup> This pairing ensures that the access terminal does not have any outstanding messages waiting for an answer.

<sup>20</sup> The access terminal monitors the Control Channel continuously during a suspend period thus avoiding the delay in opening access network initiated connections due to the sleep period.

- Access network may use an accelerated procedure to set-up a connection with the access terminal by bypassing the paging process. The access network should only use this procedure if it has a reasonable estimate of the access terminal's current location. To set-up a connection in an accelerated fashion (Fast Connect) the access network shall:

- Issue a *RouteUpdate.Open* command.
- Transition to the Connection Setup State, when the protocol receives a *RouteUpdate.ConnectionInitiated* indication.

- Access network shall transition to the Sleep State if the access terminal did not advertise a suspend period that is current.

If the access network receives a *SignalingAdaptation.ConnectionOpened* indication in this state, then the access network shall return a *ConnectionOpened* indication.

If the access network receives a *SignalingAdaptation.ConnectionFailed* indication in this state, then the access network shall return a *ConnectionFailed* indication.

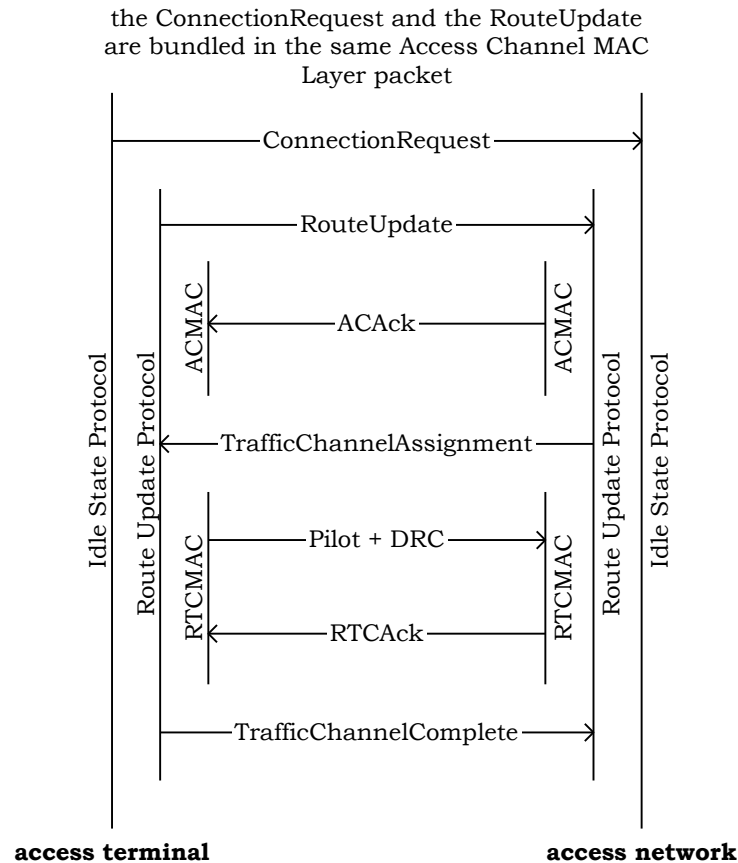
#### 5.3.6.1.7 Connection Setup State

The access terminal and the access network use the Connection Setup State to perform a normal connection set-up.

[Figure 5.3.6.1.7-1](#) ~~Figure 5.3.6.1.7-1~~ illustrates the process of opening a connection between the access terminal and the access network when this protocol is used along with the default Route Update and the default Reverse Traffic Channel MAC protocols<sup>21</sup>.

---

<sup>21</sup> The Fast Connect message exchange is identical except for not having the Idle State Protocol ConnectionRequest message and the Route Update Protocol RouteUpdate message.



**Figure 5.3.6.1.7-1 Connection Setup Exchange**

#### 5.3.6.1.7.1 Access Terminal Requirements

The access terminal shall comply with the following requirements.

- Upon entering the Connection Setup State the access terminal shall:
  - Issue an *OverheadMessages.Activate* command,
  - Issue a *ControlChannelMAC.Activate* command,
  - Set a state timer for  $T_{IDPATSetup}$  seconds,
- If the access terminal receives a ConnectionDeny message, the access terminal shall return a *ConnectionFailed* indication,
- If the state timer expires, the access terminal shall return a *ConnectionFailed* indication,
- If the access terminal receives a *RouteUpdate.ConnectionOpened* indication, it shall return a *ConnectionOpened* indication and transition to the Inactive State.

#### 5.3.6.1.7.2 Access Network Requirements

If the ConnectionRequest message contains one or more preferred CDMA channels, then the access network should assign a Traffic Channel on one of the preferred CDMA channels.

The access network should deny the connection request if all of the following conditions are true:

- the ConnectionRequest message from the access terminal contains one or more preferred CDMA channels, and
- none of the preferred CDMA channels in the ConnectionRequest message can be used to assign a Traffic Channel.

If the access network entered this state due to receiving a *RouteUpdate.ConnectionInitiated* indication, it shall perform the following:

- Set state timer for  $T_{IDPANSetup}$  seconds.
- If the protocol receives a *RouteUpdate.ConnectionOpened* indication, the access network shall return a *ConnectionOpened* indication and transition to the Inactive State.
- If the state timer expires, the access network shall return a *ConnectionFailed* indication and shall transition to the Sleep State.

Otherwise, the access network shall perform the following:

- Upon reception of a ConnectionRequest message while in this state or if the access network entered this state due to reception of a ConnectionRequest message, the access network shall perform the following:
  - If the access network denies the connection request, it should send the access terminal a ConnectionDeny message, shall return a *ConnectionFailed* indication, and shall transition to the Sleep State.
  - Otherwise, the access network shall perform the following:
    - + Set state timer for  $T_{IDPANSetup}$  seconds.
    - + Issue a *RouteUpdate.Open* command.
    - + If the protocol receives a *RouteUpdate.ConnectionOpened* indication, the access network shall return a *ConnectionOpened* indication and transition to the Inactive State.
    - + If the state timer expires, the access network shall return a *ConnectionFailed* indication and shall transition to the Sleep State.
- If the access network did not enter this state as a result of receiving a ConnectionRequest message, and if the access network does not receive a ConnectionRequest message within an implementation dependent time interval, then the access network shall return a *ConnectionFailed* indication, and shall transition to the Sleep State.

#### 5.3.6.1.8 Tunnel State

Upon entering the Tunnel State, the access terminal should enable its pilot measurement entity if HRPDMeasEnabled is set to '1', otherwise the access terminal should disable its pilot measurement entity.

When the access terminal is in the Tunnel State it shall stop monitoring the Control Channel by issuing the following commands:

- 1 • *OverheadMessages.Activate*
- 2 • *ControlChannelMAC.Deactivate*

3 When the access terminal receives a *RouteUpdate.ConnectionInitiated* indication and  
 4 TunnelModeEnabled, provided as public data of the Signaling Adaptation Protocol, is equal to  
 5 '2',:

- 6 • stop the TunnelConnection timer if it is running
- 7 • send an *OverheadMessages.TunnelDeactivate* command
- 8 • transition to the Connection Setup state

9 When the access terminal receives a *SignalingAdaptation.IdleHandoff* indication it shall  
 10 transition to the Monitor State.

11 If the TunnelConnection timer expired or access terminal receives a ConnectionDeny message,  
 12 then the access terminal shall return a *ConnectionFailed* indication.

13 When the access terminal receives an *InitializationState.HRPDMeasActivated* indication, the  
 14 access terminal should enable its pilot measurement entity.

15 When the access terminal receives an *InitializationState.HRPDMeasDeactivated*, the access  
 16 terminal should disable its pilot measurement entity.

17 The access terminal may shut down processing resources to reduce power consumption when  
 18 it is not required to provide power measurement for report purposes.<sup>22</sup>

19 The access terminal shall start monitoring the other radio access technology when  
 20 "Measurement Gap" ends. The access terminal shall perform measurement when requested by  
 21 the other radio technology.<sup>23</sup>

22 If the access terminal receives a *SignalingAdaptation.ConnectionOpened* indication in this state,  
 23 then the access terminal shall return a *ConnectionOpened* indication.

24 If the access terminal receives a *SignalingAdaptation.ConnectionFailed* indication in this state,  
 25 then the access terminal shall return a *ConnectionFailed* indication.

## 26 5.3.6.2 Message Formats

### 27 5.3.6.2.1 Page

28 The access network sends the Page message to direct the access terminal to request a  
 29 connection.  
 30

---

<sup>22</sup> The access terminal provide measurement report based on E-UTRAN measurement configuration as defined in [9]

<sup>23</sup> Definition of Measurement Gap is defined in [9]

Field	Length (bits)
MessageID	8

MessageID The access network shall set this field to 0x00.

<b>Channels</b>	CCsynSS CCsubsyn	<b>SLP</b>	Best Effort
<b>Addressing</b>	unicast	<b>Priority</b>	20

### 5.3.6.2.2 ConnectionRequest

The access terminal sends the ConnectionRequest message to request a connection.

Field	Length (bits)
MessageID	8
TransactionID	8
RequestReason	4
PreferredChannelCount	5

PreferredChannelCount occurrences of the following field:

PreferredChannel	24
------------------	----

EmergencyIndication	0 or 1
Reserved	0-7 (as needed)

MessageID The access terminal shall set this field to 0x01.

TransactionID The access terminal shall increment this value for each new ConnectionRequest message sent.

RequestReason The access terminal shall set this field to one of the request reasons as shown in [Table 5.3.6.2.2-1](#) ~~Table 5.3.6.2.2-1~~.

**Table 5.3.6.2.2-1 Encoding of the RequestReason Field**

Field value	Description
0x0	Access Terminal Initiated
0x1	Access Network Initiated
All other values are invalid	

PreferredChannelCount



The access terminal shall set this field to the number of occurrences of the PreferredChannel field in this message.

**PreferredChannel** The access terminal shall set this field to the Channel record specification for the CDMA channel on which the access terminal prefers to be assigned a Traffic Channel.

**EmergencyIndication**<sup>24</sup>

If included, the access terminal shall set this field as follows: If this is an emergency ConnectionRequest, then the access terminal shall set this field to '1'. Otherwise, the access terminal shall set this field to '0'.

**Reserved** The access terminal shall add reserved bits to make the length of the entire message an integer number of octets. The access terminal shall set these bits to zero. The access network shall ignore this field.

<b>Channels</b>	AC	<b>SLP</b>	Best Effort
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.3.6.2.3 ConnectionDeny

The access network sends the ConnectionDeny message to deny a connection.

Field	Length (bits)
MessageID	8
TransactionID	8
DenyReason	4
Reserved	4

**MessageID** The access network shall set this field to 0x02.

**TransactionID** The access network shall set this value to the TransactionID field of the corresponding ConnectionRequest message.

**DenyReason** The access network shall set this field to indicate the reason it is denying the connection, as shown in [Table 5.3.6.2.3-1](#) ~~Table 5.3.6.2.3-1~~.

<sup>24</sup> EmergencyIndication field is also supported in ReservationOnRequest message of Radio Link Protocol of Multi-flow Packet Application.

**Table 5.3.6.2.3–1 Encoding of the DenyReason Field**

Field value	Description
0x0	General
0x1	Network Busy
0x2	Authentication or billing failure
0x3	Preferred channel not available
All other values are reserved	

Reserved                      The access network shall set this field to zero. The access terminal shall ignore this field.

<b>Channels</b>	CC	<b>SLP</b>	Best Effort
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.3.6.2.4 AttributeUpdateRequest

The sender sends an AttributeUpdateRequest message to offer a set of attribute values for a given attribute.

Field	Length (bits)
MessageID	Protocol dependent
TransactionID	8
One or more instances of the following record	
AttributeRecord	Attribute dependent

MessageID                      The sender shall set this field to 0x52.

TransactionID                      The sender shall increment this value for each new AttributeUpdateRequest message sent.

AttributeRecord                      The format of this record is specified in 14.3 of [1].

<b>Channels</b>	FTC    RTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.3.6.2.5 AttributeUpdateAccept

The sender sends an AttributeUpdateAccept message in response to an AttributeUpdateRequest message to accept the offered attribute values.

Field	Length (bits)
MessageID	Protocol dependent
TransactionID	8

MessageID The sender shall set this field to 0x53.

TransactionID The sender shall set this value to the TransactionID field of the corresponding AttributeUpdateRequest message.

<b>Channels</b>	FTC    RTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.3.6.2.6 AttributeUpdateReject

The access network sends an AttributeUpdateReject message in response to an AttributeUpdateRequest message to reject the offered attribute values.

Field	Length (bits)
MessageID	Protocol dependent
TransactionID	8

MessageID The access network shall set this field to 0x54.

TransactionID The access network shall set this value to the TransactionID field of the corresponding AttributeUpdateRequest message.

<b>Channels</b>	FTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.3.6.3 Interface to Other Protocols

##### 5.3.6.3.1 Commands Sent

This protocol issues the following commands:

- *RouteUpdate.Open* (access network only)
- *OverheadMessages.Activate*
- *OverheadMessages.Deactivate*
- *OverheadMessages.TunnelDeactivate*
- *ControlChannelMAC.Activate*
- *ControlChannelMAC.Deactivate*

### 5.3.6.3.2 Indications

This protocol registers to receive the following indications:

- *RouteUpdate.ConnectionOpened*
- *RouteUpdate.ConnectionInitiated*
- *AccessChannelMAC.TxStarted*
- *AccessChannelMAC.TxEnded*
- *AccessChannelMAC.TransmissionSuccessful*
- *AccessChannelMAC.MACLayerCapsuleReceived*
- *AccessChannelMAC.TransmissionFailed*
- *OverheadMessages.Updated*
- *ConnectedState.ConnectionClosed*
- *RouteUpdate.ConnectionLost*
- *InitializationState.HRPDMeasActivated*
- *InitializationState.HRPDMeasDeactivated*
- *SignalingAdaptation.IdleHandoff*
- *SignalingAdaptation.ConnectionOpened*
- *SignalingAdaptation.ConnectionFailed*
- *SignalingAdaptation.EnteringTunnelState* (access terminal only)

### 5.3.7 Configuration Attributes

Unless specified otherwise, the access terminal and the access network shall not use the Generic Attribute Update Protocol to update configurable attributes belonging to the Inter-RAT Idle State Protocol. The access terminal and the access network shall support the use of the Generic Attribute Update Protocol to update values of the following attributes belonging to the Inter-RAT Idle State Protocol:

- PreferredControlChannelCycle
- SlottedMode
- PagingMask
- AccessHashingClassMask

The access terminal shall not include the AccessHashingClassMask in an AttributeUpdateRequest message.

The access network shall not send an AttributeUpdateRequest message containing the PreferredControlChannelCycle or the PagingMask attribute.

If the SmallSlotCycleAllowed attribute is set to 0x00, then the access network and the access terminal shall not send an AttributeUpdateRequest message proposing a value of the SlotCycle1 field of the SlottedMode attribute that is less than 0x06.

#### 5.3.7.1 Simple Attributes

The simple configurable attributes are listed in [Table 5.3.7.1-1](#)~~Table 5.3.7.1-1~~. The access network and the access terminal shall use the default values that are typed in ***bold italics***.

**Table 5.3.7.1-1 Configurable Simple Attributes**

Attribute ID	Attribute	Values	Meaning
0xff	SmallSlotCycleAllowed	0x00	Access terminal and access network will not propose a value of SlotCycle1 that is less than 0x06.
		<b><i>0x01</i></b>	Access terminal and access network can propose a value of SlotCycle1 that is less than 0x06.
		0x02 to 0xff	Reserved
0xfe	AccessHashingClassMask	<b><i>0x0000</i></b>	Access terminal and access network will hash to channels with any access hashing class.
		0x0001 to 0xffff	Access terminal and access network will hash to channels with designated access hashing classes (see 5.3.6.1.6.1.1).

#### 5.3.7.2 Complex Attributes

##### 5.3.7.2.1 PreferredControlChannelCycle Attribute

Field	Length (bits)	Default
Length	8	N/A
AttributeID	8	N/A

One or more of the following attribute value record:

{

ValueID	8	N/A
PreferredControlChannelCycleEnabled	1	'0'
PreferredControlChannelCycle	0 or 15	N/A
Reserved	7 or 0	N/A

}

- 1    Length                      Length of the complex attribute in octets. The sender shall set this field  
2                                      to the length of the complex attribute excluding the Length field.
- 3    AttributeID                The sender shall set this field to 0x00.
- 4    ValueID                    The sender shall set this field to an identifier assigned to this complex  
5                                      value.
- 6    PreferredControlChannelCycleEnabled  
7                                      The sender shall set this field to '1' if PreferredControlChannelCycle field  
8                                      is included in this attribute; otherwise, the sender shall set this field to  
9                                      '0'.
- 10   PreferredControlChannelCycle  
11                                      If PreferredControlChannelCycleEnabled is set to '1', the sender shall  
12                                      include this field and set it to specify the Control Channel Cycle in which  
13                                      the access terminal transitions out of the Sleep State (see 5.3.6.1.5) in  
14                                      order to monitor the Control Channel. The sender shall omit this field if  
15                                      PreferredControlChannelCycleEnabled is set to '0'.
- 16   Reserved                    The length of this field shall be such that the attribute value record is  
17                                      octet-aligned. The sender shall set this field to zero. The receiver shall  
18                                      ignore this field.

#### 19    5.3.7.2.2 SlottedMode Attribute

20

Field	Length (bits)	Default
Length	8	N/A
AttributeID	8	N/A

One or more of the following attribute value record:

{

ValueID	8	N/A
SlotCycle1	5	0x9
SlotCycle2	5	0x9
SlotCycle3	5	0x9
WakeCount1	4	0x0
WakeCount2	4	0x0
Reserved	1	N/A

}

- 1    Length                      Length of the complex attribute in octets. The sender shall set this field  
2                                      to the length of the complex attribute excluding the Length field.
- 3    AttributeID                The sender shall set this field to 0x01.
- 4    ValueID                    The sender shall set this field to an identifier assigned to this complex  
5                                      value.
- 6    SlotCycle1                The sender shall set this field to SlotCycle1. The sender shall not set this  
7                                      field to more than 0x1c.
- 8    SlotCycle2                The sender shall set this field to SlotCycle2. SlotCycle2 shall be greater  
9                                      than or equal to SlotCycle1. The sender shall not set this field to more  
10                                     than 0x1c.
- 11   SlotCycle3                The sender shall set this field to SlotCycle3. SlotCycle3 shall be greater  
12                                      than or equal to SlotCycle2. The sender shall not set this field to more  
13                                      than 0x1c.
- 14   WakeCount1                The sender shall set this field to WakeCount1.
- 15   WakeCount2                The sender shall set this field to WakeCount2. WakeCount2 shall be  
16                                      greater or equal to than WakeCount1.
- 17   Reserved                    The sender shall set this field to '0'. The receiver shall ignore this field.

#### 18    5.3.7.2.3 PagingMask Attribute

19

Field	Length (bits)	Default
Length	8	N/A
AttributeID	8	N/A

One or more of the following record:

ValueID	8	N/A
MaskCount	8	0x00

MaskCount occurrences of the following four fields:

MaskPurpose	8	N/A
PreMaskDuration	16	N/A
MaskDuration	16	N/A
PostMaskDuration	16	N/A

- 1    Length                      Length of the complex attribute in octets. The sender shall set this field  
2                                      to the length of the complex attribute excluding the Length field.
- 3    AttributeID                The sender shall set this field to 0x02.
- 4    ValueID                    The sender shall set this field to an identifier assigned to this complex  
5                                      value.
- 6    MaskCount                The sender shall set this field to the number of paging masks specified in  
7                                      this complex attribute.
- 8    MaskPurpose              The sender shall set this field to indicate the purpose of the mask  
9                                      according to [Table 5.3.7.2.3-1](#) ~~Table 5.3.7.2.3-1~~.

**Table 5.3.7.2.3-1 Definition of MaskPurpose Field of a Paging Mask**

MaskPurpose Value	Meaning
0x00	Unspecified purpose.
0x01	The paging mask is associated with monitoring the cdma2000 1x system (see <a href="#">[7]</a> <del>[7]</del> ).
0x02-0xff	Specified by <a href="#">[3]</a> <del>[3]</del> .

- 11   PreMaskDuration        The sender shall set this field to the length of the pre-mask duration in  
12                                      units of four slots.
- 13   MaskDuration            The sender shall set this field to the length of the masked duration in  
14                                      units of four slots.
- 15   PostMaskDuration        The sender shall set this field to the length of the post-mask duration in  
16                                      units of four slots.



### 5.3.8 Protocol Numeric Constants

Constant	Meaning	Value	Comments
NIDPType	Type field for this protocol	Table 2.5.4-1 of [1]	
NIDPInterRAT	Subtype field for this protocol	0x0003	
TIDPATSetup	Maximum access terminal time in the Connection Setup State	2.5 seconds	
TIDPANSetup	Maximum access network time in the Connection Setup State	1 second	
TConnReq	Maximum time to wait for transition to Connection Setup State when Connection Request is tunneled through E-UTRAN	2 seconds	

### 5.3.9 Session State Information

The Session State Information record (see section 14.8 of [1]) consists of parameter records.

The parameter records for this protocol consist of only the configuration attributes of this protocol.

## 5.4 Inter-RAT Route Update Protocol

### 5.4.1 Overview

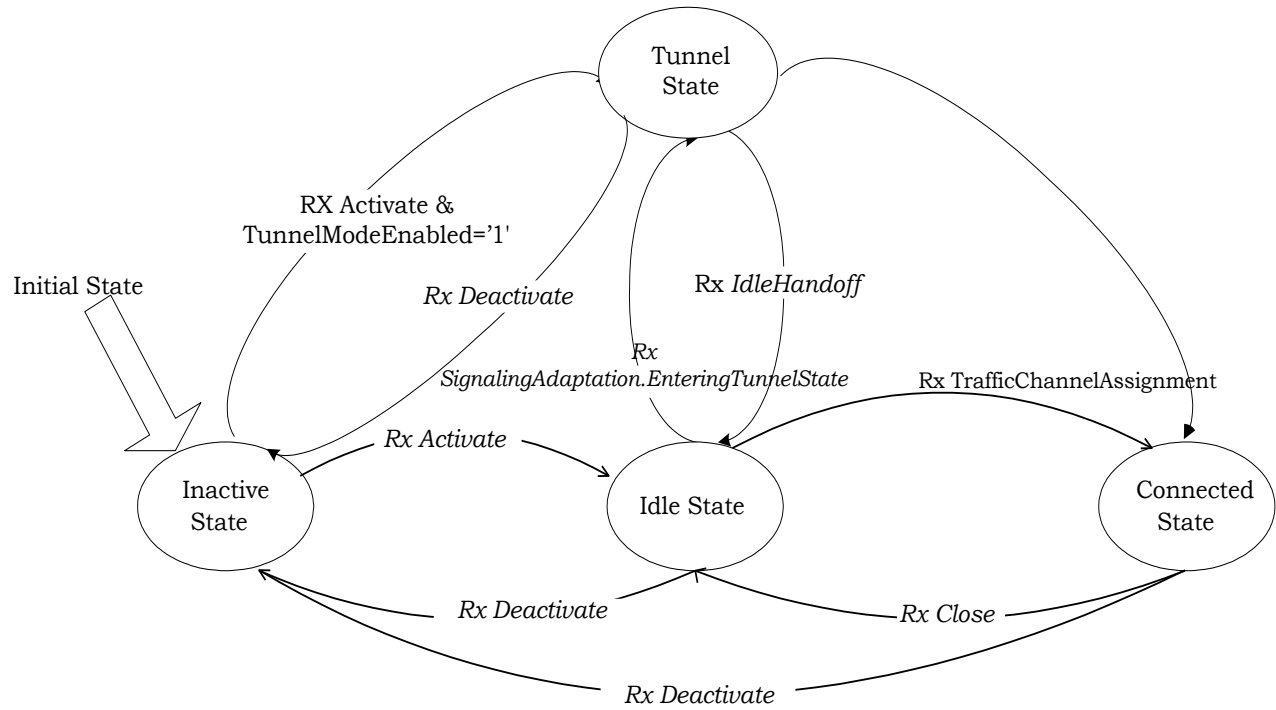
The Inter-RAT Route Update Protocol provides the procedures and messages used by the access terminal and the access network to keep track of the access terminal's approximate location and to maintain the radio link as the access terminal moves between the coverage areas of different sectors. The Inter-RAT Route Update Protocol also provides procedures used by the access terminal when it moves from a different radio access technology to HRPD.

This protocol can be in one of four states:

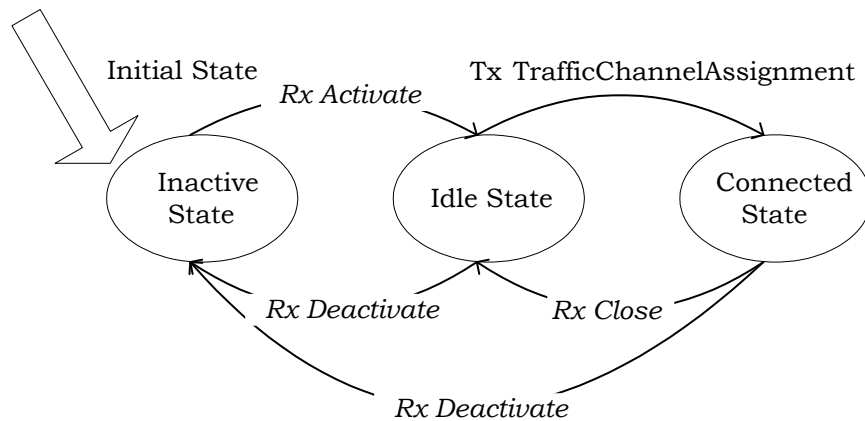
- Inactive State: In this state the protocol waits for an *Activate* command.
- Idle State: In this state, the access terminal autonomously maintains the Active Set. RouteUpdate messages from the access terminal to the access network are based on the distance between the access terminal's current serving sector and the serving sector at the time the access terminal last sent an update.
- Connected State: In this state the access network dictates the access terminal's Active Set. Route update messages from the access terminal to the access network are based on changing radio link conditions.
- Tunnel State: This state is associated only with the access terminal. In this state, the access terminal autonomously maintains the pilot sets the same manner as in the Idle State. The pilot measurement results of all the pilots in the neighbor list from the public data are made public to the other radio access technology. The access terminal only reports the RouteUpdate message when it sends ConnectionRequest message or is requested by the access network.

Transitions between states are driven by commands received from Connection Layer protocols and the transmission and reception of the TrafficChannelAssignment message.

The protocol states, messages and commands causing the transition between the states are shown in [Figure 5.4.1-1](#) and [Figure 5.4.1-2](#) for the access terminal and the access network respectively.



**Figure 5.4.1-1 Inter-RAT Route Update Protocol State Diagram (Access Terminal)**



**Figure 5.4.1-2 Inter-RAT Route Update Protocol State Diagram (Access Network)**

This protocol uses parameters that are provided, as public data by the Overhead Messages Protocol, configured attributes, or protocol constants.

[Table 5.4.1-1](#) ~~Table 5.4.1-1~~ lists all of the protocol parameters obtained from the public data of the Overhead Messages Protocol.

**Table 5.4.1–1 Route Update Protocol Parameters that are Public Data of the Overhead Messages Protocol**

RU Parameter	Comment
Latitude	Latitude of sector in units of 0.25 second
Longitude	Longitude of sector in units of 0.25 second
RouteUpdateRadiusOverhead	Distance (unless modified by the RouteUpdateRadiusMultiply and/or RouteUpdateRadiusAdd attributes) between the serving sector and the sector in which location was last reported which triggers a new report. If this field is set to zero, then distance triggered reporting is disabled
NumNeighbors	Number of neighbors specified in the message
NeighborPN	PN Offset of each neighbor in units of 64 PN chips
NeighborChannelIncluded	Set to '1' if a Channel Record is included for the neighbor
NeighborChannel	Neighbor Channel Record specifying network type and frequency

## 5.4.2 Primitives and Public Data

### 5.4.2.1 Commands

This protocol defines the following commands:

- *Activate*
- *Deactivate*
- *Open*
- *Close*
- *SendRouteUpdate*

### 5.4.2.2 Return Indications

This protocol returns the following indications:

- *ConnectionLost* (access network only)
- *NetworkLost*
- *IdleHO*
- *ActiveSetUpdated*
- *AssignmentRejected*
- *ConnectionInitiated*
- *ConnectionOpened*

### 5.4.2.3 Public Data

This protocol shall make the following data public:

- Subtype for this protocol
- Active Set
- Pilot PN for every pilot in the Active Set
- Information provided by the SofterHandoff field in the TrafficChannelAssignment message for every pilot in the Active Set
- MACIndex for every pilot in the Active Set
- Channel record specified in the TrafficChannelAssignment message
- FrameOffset specified in the TrafficChannelAssignment message
- Current RouteUpdate message
- Information listed in SupportedCDMAChannels attribute
- Pilot strength of all pilots in the Active Set

### 5.4.3 Protocol Data Unit

The transmission unit of this protocol is a message. This is a control protocol and, therefore, it does not carry payload on behalf of other layers or protocols.

This protocol uses the Signaling Application to transmit and receive messages.

### 5.4.4 Protocol Initialization

#### 5.4.4.1 Protocol Initialization for the InConfiguration Protocol Instance

Upon creation, the InConfiguration instance of this protocol in the access terminal and the access network shall perform the following in the order specified:

- The fall-back values of the attributes for this protocol instance shall be set to the default values specified for each attribute.
- If the InUse instance of this protocol has the same protocol subtype as this InConfiguration protocol instance, then the fall-back values of the attributes defined by the InConfiguration protocol instance shall be set to the values of the corresponding attributes associated with the InUse protocol instance.
- The value for each attribute for this protocol instance shall be set to the fall-back value for that attribute.

#### 5.4.4.2 Protocol Initialization for the InUse Protocol Instance

Upon creation, the InUse instance of this protocol in the access terminal and the access network shall perform the following:

- The value of the attributes for this protocol instance shall be set to the default values specified for each attribute.

- The protocol shall enter the Inactive State.

#### 5.4.5 Procedures and Messages for the InConfiguration Instance of the Protocol

##### 5.4.5.1 Procedures

This protocol uses the Generic Configuration Protocol (see section 14.7 of [1]) to define the processing of the configuration messages. The access terminal should send a ConfigurationRequest message containing the SupportedCDMAChannels attribute. If the access terminal sends a ConfigurationRequest message containing the SupportedCDMAChannels attribute, then the access terminal shall include in the attribute all Band Classes and Band Sub-classes supported by the access terminal.

##### 5.4.5.2 Commit Procedures

The access terminal and the access network shall perform the procedures specified in this section, in the order specified, when directed by the InUse instance of the Session Configuration Protocol to execute the Commit procedures:

- All the public data that are defined by this protocol, but are not defined by the InUse protocol instance shall be added to the public data of the InUse protocol.
- The value of the following public data of the InUse instance of the protocol shall be set to the corresponding attribute value of the InConfiguration protocol instance:
  - SupportedCDMAChannels
  - If the InUse instance of the Route Update Protocol has the same subtype as this protocol instance, but the InUse instance of any other protocol in the Connection Layer does not have the same subtype as the corresponding InConfiguration protocol instance, then
    - The access terminal and the access network shall set the attribute values associated with the InUse instance of this protocol to the attribute values associated with the InConfiguration instance of this protocol, and
    - The access terminal shall set the initial state of the InConfiguration and InUse protocol instances of the Route Update protocol to the Inactive State.
    - The access network shall set the initial state of the InConfiguration and InUse protocol instances of the Route Update protocol to the Idle State.
    - The access terminal and the access network shall purge the InConfiguration instance of the protocol.
- If the InUse instance of all protocols in the Connection Layer have the same subtype as the corresponding InConfiguration protocol instance, then
  - The access terminal and the access network shall set the attribute values associated with the InUse instance of this protocol to the attribute values associated with the InConfiguration instance of this protocol, and
  - The InUse protocol instance at the access terminal shall perform the procedures specified in 5.4.6.1.2.1.

- The access terminal and the access network shall purge the InConfiguration instance of the protocol.
- If the InUse instance of the Route Update Protocol does not have the same subtype as this protocol instance, then the access terminal and the access network shall perform the following:
  - The access terminal shall set the initial state of the InConfiguration and InUse protocol instances of the Route Update protocol to the Inactive State.
  - The access network shall set the initial state of the InConfiguration and InUse protocol instances of the Route Update protocol to the Idle State.
  - The InConfiguration protocol instance shall become the InUse protocol instance for the Route Update Protocol at the access terminal and the access network.
- All the public data that are not defined by this protocol shall be removed from the list of public data for the InUse protocol instance.

#### 5.4.5.3 Message Formats

##### 5.4.5.3.1 ConfigurationRequest

The ConfigurationRequest message format is as follows:

Field	Length (bits)
MessageID	8
TransactionID	8
Zero or more instances of the following record	
AttributeRecord	Attribute dependent

- MessageID** The sender shall set this field to 0x50.
- TransactionID** The sender shall increment this value for each new ConfigurationRequest message sent.
- AttributeRecord** The format of this record is specified in 14.3 of [1].

<b>Channels</b>	FTC    RTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

##### 5.4.5.3.2 ConfigurationResponse

The ConfigurationResponse message format is as follows:

Field	Length (bits)
MessageID	8
TransactionID	8

Zero or more instances of the following record

AttributeRecord	Attribute dependent
-----------------	---------------------

- 1 MessageID The sender shall set this field to 0x51.
- 2 TransactionID The sender shall set this value to the TransactionID field of the  
3 corresponding ConfigurationRequest message.
- 4 AttributeRecord An attribute record containing a single attribute value. If this message  
5 selects a complex attribute, only the ValueID field of the complex  
6 attribute shall be included in the message. The format of the  
7 AttributeRecord is given in 14.3 of [1]. The sender shall not include more  
8 than one attribute record with the same attribute identifier.  
9

<b>Channels</b>	FTC RTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 10 5.4.6 Procedures and Messages for the InUse Instance of the Protocol

##### 11 5.4.6.1 Procedures

##### 12 5.4.6.1.1 Command Processing

##### 13 5.4.6.1.1.1 Activate

14 If the protocol receives an *Activate* command in the Inactive State and the TunnelModeEnabled  
15 public data being set to '0', the access terminal shall perform the following:

- 16 • Issue an *AccessChannelMAC.Activate* command,
- 17 • Transition to the Idle State.

18 If the protocol receives an *Activate* command in the Inactive State and the TunnelModeEnabled  
19 public data is set to '1', the access terminal shall perform the following:

- 20 • Transition to the Tunnel State.

21 If the protocol receives an *Activate* command in the Inactive State, the access network shall  
22 perform the following:

- 23 • Issue an *AccessChannelMAC.Activate* command,
- 24 • Transition to the Idle State.

25 If this command is received in any other state, it shall be ignored.



#### 5.4.6.1.1.2 Deactivate

If the protocol receives a *Deactivate* command in the Inactive State, it shall be ignored.

If the protocol receives this command in any other state, the access terminal and the access network shall:

- Issue a *ReverseTrafficChannelMAC.Deactivate* command,
- Issue a *ForwardTrafficChannelMAC.Deactivate* command,
- Issue an *AccessChannelMAC.Deactivate* command,
- Transition to the Inactive State.

#### 5.4.6.1.1.3 Open

If the protocol receives an *Open* command in the Idle State,

- The access terminal shall ignore it.
- The access network shall:
  - Transmit a *TrafficChannelAssignment* message as follows:
    - + The access network should base the *TrafficChannelAssignment* message on the last *RouteUpdate* message it received from the access terminal.
    - + If the *SupportedCDMAChannels* attribute contains one or more band classes, then the access network shall assign a Traffic Channel on a CDMA Channel supported by the access terminal as indicated by the value of the *SupportedCDMAChannels* attribute.
  - Return a *ConnectionInitiated* indication,
  - Issue a *ReverseTrafficChannelMAC.Activate* command,
  - Issue a *ForwardTrafficChannelMAC.Activate* command,
  - Issue an *AccessChannelMAC.Deactivate* command,
  - Transition to the Connected State.

If this command is received in any other state it shall be ignored.

#### 5.4.6.1.1.4 Close

If the protocol receives a *Close* command in the Connected State the access terminal and the access network shall:

- Issue a *ReverseTrafficChannelMAC.Deactivate* command,
- Issue a *ForwardTrafficChannelMAC.Deactivate* command,
- Issue an *AccessChannelMAC.Activate* command,
- Transition to the Idle State.

If this command is received in any other state it shall be ignored.

#### 5.4.6.1.2 Pilots and Pilot Sets

The access terminal estimates the strength of the Forward Channel transmitted by each sector in its neighborhood. This estimate is based on measuring the strength of the Forward Pilot Channel (specified by the pilot's PN offset and the pilot's CDMA Channel), henceforth referred to as the pilot.

When this protocol is in the Connected State, the access terminal uses pilot strengths to decide when to generate RouteUpdate messages.

When this protocol is in the Idle State, the access terminal uses pilot strengths to decide which sector's Control Channel it monitors.

When this protocol is in the Tunnel State, the access terminal maintains the pilot sets and reports to the other radio access technology the PilotPN and strengths of all the pilots in the neighbor list from the Overhead Messages Protocol public data.

The following pilot sets are defined to support the Route Update process<sup>25</sup>:

- Active Set: The set of pilots (specified by the pilot's PN offset and the pilot's CDMA Channel) associated with the sectors currently serving the access terminal. When a connection is open, a sector is considered to be serving an access terminal when there is a Forward Traffic Channel, Reverse Traffic Channel and Reverse Power Control Channel assigned to the access terminal. When a connection is not open, a sector is considered to be serving the access terminal when the access terminal is monitoring that sector's control channel.
- Candidate Set: The pilots (specified by the pilot's PN offset and the pilot's CDMA Channel) that are not in the Active Set, but are received by the access terminal with sufficient strength to indicate that the sectors transmitting them are good candidates for inclusion in the Active Set.
- Neighbor Set: The set of pilots (specified by the pilot's PN offset and the pilot's CDMA Channel) that are not in either one of the two previous sets, but are likely candidates for inclusion in the Active Set.
- Remaining Set: The set of all possible pilots (specified by the pilot's PN offset and the pilot's CDMA Channel) on the current channel assignment, excluding the pilots that are in any of the three previous sets.

At any given instant a pilot in the current CDMA Channel is a member of exactly one set.

The access terminal maintains all four sets. The access network maintains only the Active Set.

The access terminal complies with the following rules when searching for pilots, estimating the strength of a given pilot, and moving pilots between sets.

##### 5.4.6.1.2.1 Neighbor Set Search Window Parameters Update

The access terminal shall maintain RouteUpdateNeighborList which is a list of structures of type Neighbor (defined below). For each pilot (specified by the pilot's PN offset and the pilot's

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<sup>25</sup> In this context, a pilot identifies a sector.

CDMA Channel) in the Neighbor Set, the access terminal shall maintain a structure in the RouteUpdateNeighborList.

A Neighbor structure consists of four fields: PilotPN, Channel, SearchWindowSize, and SearchWindowOffset.

The RouteUpdateNeighborList is used by the access terminal to perform pilot search on a pilot in the Neighbor Set.

When this set of procedures is invoked, the access terminal shall perform the following steps in the order specified:

- For each pilot (specified by its pilot PN and its channel) in the Neighbor Set, the access terminal shall first initialize the corresponding Neighbor structure in RouteUpdateNeighborList as follows:
  - Set the structure's PilotPN field to the neighbor pilot's PN.
  - Set the structure's Channel field to the neighbor pilot's channel record.
  - Set the structure's SearchWindowSize field to the configurable attribute SearchWindowNeighbor.
  - Set the structure's SearchWindowOffset to zero.
- For each pilot (specified by the pilot's PN offset and the pilot's CDMA Channel) listed in the OverheadMessagesNeighborList, the access terminal shall set the non-NULL fields of the corresponding Neighbor structure in the RouteUpdateNeighborList to the fields of the Neighbor structure in the OverheadMessagesNeighborList for this pilot.
- For each pilot (specified by the pilot's PN offset and the pilot's CDMA Channel) listed in the NeighborListMessageNeighborList, the access terminal shall set the non-NULL fields of the corresponding Neighbor structure in the RouteUpdateNeighborList to the fields of the Neighbor structure in the NeighborListMessageNeighborList for this pilot.

#### 5.4.6.1.2.2 Pilot Search

The access terminal shall continually search for pilots in the Connected State and whenever it is monitoring the Control Channel in the Idle State. The access terminal shall search for pilots in all pilot sets in the Connected State and Idle State.

The access terminal shall continually search for pilots in the Tunnel State. In the Tunnel State, the access terminal shall search for pilots in the Active Set, the Candidate Set and the Neighbor Set, and may search for the pilots in the Remaining Set.

This pilot search shall be governed by the following rules:

Search Priority: The access terminal should use the same search priority for pilots in the Active Set and Candidate Set. In descending order of search rate, the access terminal shall search, most often, the pilots in the Active Set and Candidate Set, then shall search the pilots in the Neighbor Set, and lastly shall search the pilots in the Remaining Set.

Search Window Size: The access terminal shall use the search window size specified by the configurable attribute SearchWindowActive for pilots in the Active Set and Candidate Set. For each pilot in the Neighbor Set, the access terminal shall use the search window size specified by [Table 5.4.6.2.5-1](#)~~Table 5.4.6.2.5-1~~ and SearchWindowSize field of the corresponding Neighbor structure in the RouteUpdateNeighborList. The access terminal shall use search window size specified by configurable attribute SearchWindowRemaining for pilots in the Remaining Set.

Search Window Center: The access terminal should center the search window around the earliest usable multipath component for pilots in the Active Set. The access terminal should center the search window for each pilot in the Neighbor Set around the pilot's PN sequence offset plus the search window offset specified by [Table 5.4.6.2.5-2](#)~~Table 5.4.6.2.5-2~~ and SearchWindowOffset field of the corresponding Neighbor structure in the RouteUpdateNeighborList using timing defined by the access terminal's time reference (see section 12.3.1.3.6 of [1]). The access terminal should center the search window around the pilot's PN sequence offset using timing defined by the access terminal's time reference (see section 12.3.1.3.6 of [1]) for the Remaining Set.

#### 5.4.6.1.2.3 Pilot Strength Measurement

The access terminal shall measure the strength of every pilot it searches. The strength estimate formed by the access terminal shall be computed as the sum of the ratios of received pilot energy per chip,  $E_c$ , to total received spectral density,  $I_0$  (signal and noise) for at most  $k$  multipath components, where  $k$  is the maximum number of multipath components that can be demodulated simultaneously by the access terminal.

#### 5.4.6.1.2.4 Pilot Drop Timer Maintenance

For each pilot, the access terminal shall maintain a pilot drop timer.

If DynamicThresholds is equal to '0', the access terminal shall perform the following:

- The access terminal shall start a pilot drop timer for each pilot in the Candidate Set or the Active Set whenever the strength becomes less than the value specified by PilotDrop. The access terminal shall consider the timer to be expired after the time specified by PilotDropTimer.
- The access terminal shall reset and disable the timer whenever the strength of the pilot becomes greater than the value specified by PilotDrop.

If DynamicThresholds is equal to '1', the access terminal shall perform the following:

- The access terminal shall start a pilot drop timer for each pilot in the Candidate Set whenever the strength of the pilot becomes less than the value specified by PilotDrop. The access terminal shall consider the timer value to be expired after the time specified by PilotDropTimer. The access terminal shall reset and disable the timer if the strength of the pilot becomes greater than the value specified by PilotDrop.

- For each pilot in the Active Set, the access terminal shall sort pilots in the Active Set in order of increasing strengths, i.e.,  $PS_1 < PS_2 < PS_3 < \dots < PS_{N_A}$ , where  $N_A$  is the number of the pilots in the Active Set. The access terminal shall start the Pilot drop timer for each pilot  $PS_i$  in the Active Set whenever the strength  $PS_i$  satisfies the following inequality:

$$10 \times \log_{10} PS_i < \max \left( \frac{\text{SoftSlope}}{8} \times 10 \times \log_{10} \sum_{j>i} PS_j + \frac{\text{DropIntercept}}{2}, -\frac{\text{PilotDrop}}{2} \right)$$

$i = 1, 2, \dots, N_A - 1$

The access terminal shall reset and disable the timer whenever the above inequality is not satisfied for the corresponding pilot.

Sections 5.4.6.1.2.6 and 5.4.6.1.6.5 specify the actions the access terminal takes when the pilot drop timer expires.

#### 5.4.6.1.2.5 Active Set Management

The access terminal shall support a maximum Active Set size of  $N_{\text{RUPActive}}$  pilots.

Rules for maintaining the Active Set are specific to each protocol state (see 5.4.6.1.5.1 and 5.4.6.1.6.3).

#### 5.4.6.1.2.6 Candidate Set Management

The access terminal shall support a maximum Candidate Set size of  $N_{\text{RUPCandidate}}$  pilots.

The access terminal shall add a pilot to the Candidate Set if one of the following conditions is met:

- Pilot is not already in the Active Set or Candidate Set and the strength of the pilot exceeds the value specified by PilotAdd.
- Pilot is deleted from the Active Set, its pilot drop timer has expired, DynamicThresholds is equal to '1', and the pilot strength is above the threshold specified by PilotDrop.
- Pilot is deleted from the Active Set but its pilot drop timer has not expired.

The access terminal shall delete a pilot from the Candidate Set if one of the following conditions is met:

- Pilot is added to the Active Set.
- Pilot's drop timer has expired.
- Pilot is added to the Candidate Set; and, as a consequence, the size of the Candidate Set exceeds  $N_{\text{RUPCandidate}}$ . In this case, the access terminal shall delete the weakest pilot in the set. Pilot A is considered weaker than pilot B:
  - If pilot A has an active drop timer but pilot B does not,
  - If both pilots have an active drop timer and pilot A's drop timer is closer to expiration than pilot B's, or
  - If neither of the pilots has an active drop timer and pilot A's strength is less than pilot B's.

## 5.4.6.1.2.7 Neighbor Set Management

The access terminal shall support a minimum Neighbor Set size of  $N_{RUPNeighbor}$  pilots.

- The access terminal shall maintain a counter, AGE, for each pilot in the Neighbor Set as follows.

The access terminal shall perform the following in the order specified:

- If a pilot is added to the Active Set or Candidate Set, it shall be deleted from the Neighbor Set.
- If a pilot is deleted from the Active Set, but not added to the Candidate Set, then it shall be added to the Neighbor Set with the AGE of 0.
- If a pilot is deleted from the Candidate Set, but not added to the Active Set, then it shall be added to the Neighbor Set with the AGE of 0.
- If the size of the Neighbor Set is greater than the maximum Neighbor Set supported by the access terminal, the access terminal shall delete enough pilots from the Neighbor Set such that the size of the Neighbor Set is the maximum size supported by the access terminal and pilots with higher AGE are deleted first<sup>26</sup>.
- If the access terminal receives an *OverheadMessages.Updated* indication, then:
  - The access terminal shall increment the AGE for every pilot in the Neighbor Set.
  - For each pilot in the neighbor list given as public data by the Overhead Messages Protocol that is a member of the Neighbor Set, the access terminal shall perform the following:
    - + The access terminal shall set the AGE of this neighbor list pilot to the minimum of its current AGE and NeighborMaxAge.
  - For each pilot in the neighbor list given as public data by the Overhead Messages Protocol (in the order specified in the neighbor list) that is a member of the Remaining Set, the access terminal shall perform the following:
    - + If the addition of this neighbor list pilot to the Neighbor Set would not cause the size of the Neighbor Set size to increase beyond the maximum Neighbor Set size supported by the access terminal, then the access terminal shall add this neighbor list pilot to the Neighbor Set with its AGE set to NeighborMaxAge.
    - + If the addition of this neighbor list pilot would cause the size of the Neighbor Set to increase beyond the maximum Neighbor Set size supported by the access terminal and the Neighbor Set contains at least one pilot with AGE greater than NeighborMaxAge associated with the pilot's channel, then the access terminal shall delete the pilot in the Neighbor Set for which the difference between its AGE and the NeighborMaxAge associated with that pilot's channel (i.e., AGE - NeighborMaxAge) is the greatest and shall add this neighbor list pilot to the Neighbor Set with its AGE set to NeighborMaxAge associated with the pilot's channel.

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<sup>26</sup> The order in which pilots of the same AGE are deleted does not matter in this case.

- 1       + If the addition of this neighbor list pilot would cause the size of the Neighbor Set to  
2       increase beyond the maximum Neighbor Set size supported by the access terminal  
3       and the Neighbor Set does not contain a pilot with AGE greater than  
4       NeighborMaxAge associated with the pilot's channel, the access terminal shall not  
5       add this neighbor list pilot to the Neighbor Set.
- 6       • If the access terminal receives a NeighborList message, then:
  - 7       – The access terminal shall increment the AGE for every pilot in the Neighbor Set.
  - 8       – For each pilot in the neighbor list given in the NeighborList message that is a member of  
9       the Neighbor Set, the access terminal shall perform the following:
    - 10       + The access terminal shall set the AGE of this neighbor list pilot to the minimum of  
11       its current AGE and NeighborMaxAge.
    - 12       – For each pilot in the neighbor list given in the NeighborList message (in the order  
13       specified in the message) that is a member of the Remaining Set, the access terminal  
14       shall perform the following:
      - 15       + If the addition of this neighbor list pilot to the Neighbor Set would not cause the size  
16       of the Neighbor Set size to increase beyond the maximum Neighbor Set size  
17       supported by the access terminal, then the access terminal shall add this neighbor  
18       list pilot to the Neighbor Set with its AGE set to NeighborMaxAge.
      - 19       + If the addition of this neighbor list pilot would cause the size of the Neighbor Set to  
20       increase beyond the maximum Neighbor Set size supported by the access terminal  
21       and the Neighbor Set contains at least one pilot with AGE greater than  
22       NeighborMaxAge associated with the pilot's channel, then the access terminal shall  
23       delete the pilot in the Neighbor Set for which the difference between its AGE and the  
24       NeighborMaxAge associated with that pilot's channel (i.e., AGE - NeighborMaxAge) is  
25       the greatest and add shall this neighbor list pilot to the Neighbor Set with its AGE  
26       set to NeighborMaxAge associated with the pilot's channel.
      - 27       + If the addition of this neighbor list pilot would cause the size of the Neighbor Set to  
28       increase beyond the maximum Neighbor Set size supported by the access terminal  
29       and the Neighbor Set does not contain a pilot with AGE greater than  
30       NeighborMaxAge associated with the pilot's channel, the access terminal shall not  
31       add this neighbor list pilot to the Neighbor Set.

32   The access terminal shall perform the procedures specified in 5.4.6.1.2.1 if a pilot (specified by  
33   the pilot's PN offset and the pilot's CDMA Channel) is added to or deleted from the Neighbor  
34   Set.

#### 35   5.4.6.1.2.8 Remaining Set Management

36   The access terminal shall initialize the Remaining Set to contain all the pilots whose PN offset  
37   index is an integer multiple of PilotIncrement and are not already members of any other set.

38   The access terminal shall add a pilot to the Remaining Set if it deletes the pilot from the  
39   Neighbor Set and if the pilot was not added to the Active Set or Candidate Set.

40   The access terminal shall delete the pilot from the Remaining Set if it adds it to another set.

#### 5.4.6.1.2.9 Pilot PN Phase Measurement

The access terminal shall measure the arrival time, PILOT\_ARRIVAL, for each pilot reported to the access network. The pilot arrival time shall be the time of occurrence, as measured at the access terminal antenna connector, of the earliest arriving usable multipath component of the pilot. The arrival time shall be measured relative to the access terminal's time reference in units of PN chips. The access terminal shall compute the reported pilot PN phase, PILOT\_PN\_PHASE, as:

$$\text{PILOT\_PN\_PHASE} = (\text{PILOT\_ARRIVAL} + (64 \times \text{PILOT\_PN})) \bmod 2^{15},$$

where PILOT\_PN is the PN sequence offset index of the pilot.

#### 5.4.6.1.3 Message Sequence Numbers

The access network shall validate all received RouteUpdate messages as specified in 5.4.6.1.3.1.

The access terminal shall validate all received TrafficChannelAssignment messages as specified in 5.4.6.1.3.2.

The RouteUpdate message and the TrafficChannelAssignment message carry a MessageSequence field that serves to flag duplicate or stale messages.

The MessageSequence field of the RouteUpdate message is independent of the MessageSequence field of the TrafficChannelAssignment message.

##### 5.4.6.1.3.1 RouteUpdate Message Validation

When the access terminal first sends a RouteUpdate message, it shall set the MessageSequence field of the message to zero. Subsequently, the access terminal shall increment this field each time it sends a RouteUpdate message.

The access network shall consider all RouteUpdate messages it receives in the Idle State as valid.

The access network shall initialize the receive pointer,  $V(R)$  to the MessageSequence field of the first RouteUpdate message it received in the Idle State, and the access network shall subsequently set it to the MessageSequence field of each received RouteUpdate message.

When the access network receives a RouteUpdate message in the Connected State, it shall validate the message using the procedure defined in 14.6 of [1]. The access network shall discard the message if it is invalid.

##### 5.4.6.1.3.2 TrafficChannelAssignment Message Validation

The access network shall set the MessageSequence field of the TrafficChannelAssignment message it sends in the Idle State to zero. Subsequently, each time the access network sends a new TrafficChannelAssignment message in the Connected State, it shall increment this field. If



the access network is sending the same message multiple times, it shall not change the value of this field between transmissions<sup>27</sup>.

The access terminal shall initialize the receive pointer,  $V(R)$ , to the MessageSequence field of the TrafficChannelAssignment message that it receives in the Idle State or in the Tunnel State.

When the access terminal receives a TrafficChannelAssignment message in the Connected State, it shall validate the message using the procedure defined in 14.6 of [1]. The access terminal shall discard the message if it is invalid.

#### 5.4.6.1.3.3 AttributeOverride Message Validation

The access network shall set the MessageSequence field of the first AttributeOverride message that it sends after the Route Update protocol enters the Connected State to zero. Subsequently, each time the access network sends a new AttributeOverride message in the Connected State, it shall increment this field. If the access network is sending the same message multiple times, it shall not change the value of this field between transmissions<sup>28</sup>.

The access terminal shall initialize the receive pointer,  $V(R)$ , to the MessageSequence field of the first AttributeOverride message that it receives in the Connected State.

When the access terminal receives a subsequent AttributeOverride message, it shall validate the message using the procedure defined in 14.6 of [1]. The access terminal shall discard the message if it is invalid.

#### 5.4.6.1.4 Inactive State

Upon entering this state, the access terminal shall perform the following:

- The access terminal shall set the Active Set, the Candidate Set, and the Neighbor Set to NULL.
- The access terminal shall initialize the Remaining Set to contain all the pilots whose PN offset index is an integer multiple of PilotIncrement and are not already members of any other set.
- The access terminal shall perform the following in the order specified:
  - Remove all Neighbor structures from OverheadMessagesNeighborList.
  - Remove all Neighbor structures from NeighborListMessageNeighborList.
  - Perform the procedures specified in 5.4.6.1.2.1.
- The access terminal shall set  $(x_L, y_L)$ , the longitude and latitude of the sector in whose coverage area the access terminal last sent a RouteUpdate message, to (NULL, NULL).

If the access terminal receives a *SignalingAdaptation.ConnectionInitiated* indication in this state, then the access terminal shall return a *ConnectionInitiated* indication.

---

<sup>27</sup> The access network may send a message multiple times to increase its delivery probability.

<sup>28</sup> The access network may send a message multiple times to increase its delivery probability.

## 5.4.6.1.5 Idle State

In this state, RouteUpdate messages from the access terminal are based on the distance between the sector where the access terminal last sent a RouteUpdate message and the sector currently in its active set.

The access network sends the TrafficChannelAssignment message to open a connection in this state. If the access network sends a TrafficChannelAssignment message when the TunnelModeEnabled public data of the Signaling Adaptation Protocol is not set to '0', the order of sending related messages with TrafficChannelAssignment is specified in illustrated in [Figure 5.4.6.1.5-1](#)~~Figure 5.4.6.1.5-1~~.

Upon entering this state, the access terminal shall perform the following:

- Remove all Neighbor structures from NeighborListMessageNeighborList and perform the procedures specified in 5.4.6.1.2.1.
- Stop using the parameters specified in the AttributeOverride message in the set management procedures and start using values specified by the SetManagementSameChannelParameters and the SetManagementDifferentChannelParameters attributes whichever applicable, in the set management procedures.

If the access terminal receives a *SignalingAdaptation.ConnectionInitiated* indication in this state, then the access terminal shall return a *ConnectionInitiated* indication.

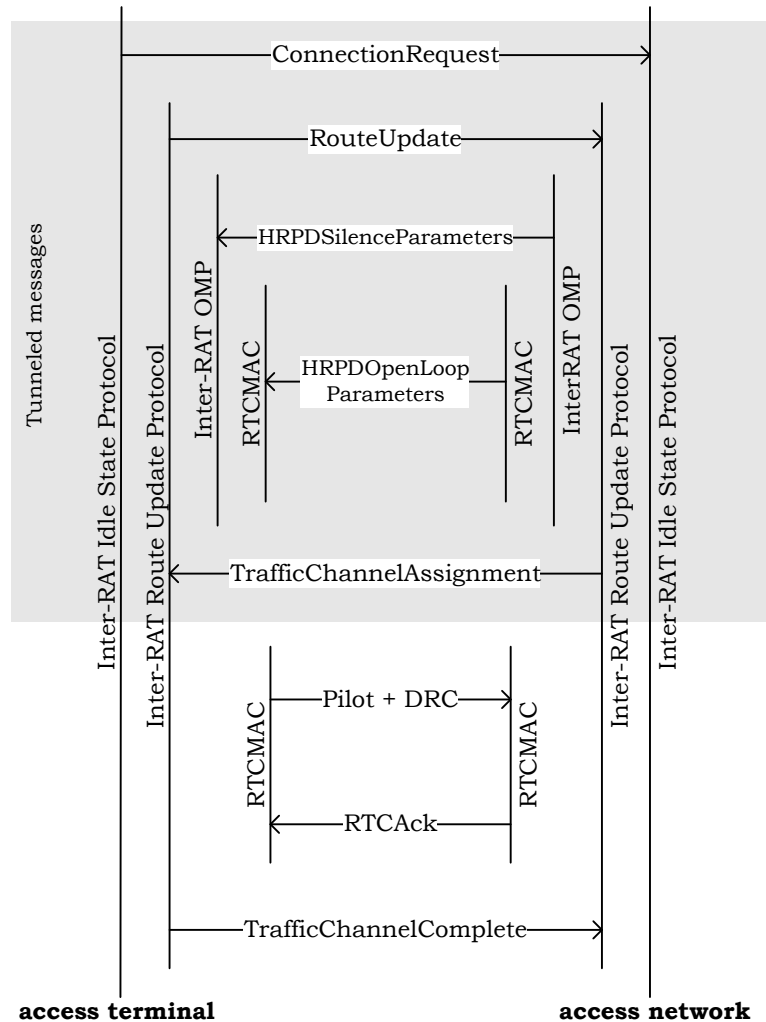
If the access terminal receives a *SignalingAdaptation.EnteringTunnelState* indication, the access terminal shall:

- Transition to the Tunnel State

[Figure 5.4.6.1.5-1](#)~~Figure 5.4.6.1.5-1~~ illustrates the connection setup exchange process<sup>29</sup> between the access terminal and the access network when the TunnelModeEnabled public data of the Signaling Adaptation Protocol is not set to '0'.

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<sup>29</sup> It is suggested that the access terminal sends RouteUpdate message with ConnectionRequest message in 3GPP E-UTRA "Handoff-Preperation Message". It is suggested that the access network sends HRPDSilenceParameters message and HRPDOpenLoopParameters message before access network sends TrafficChannelAssignment message.



**Figure 5.4.6.1.5-1 Connection Setup Exchange for inter-RAT tunneling mode**

#### 5.4.6.1.5.1 Active Set Maintenance

The access network shall not initially maintain an Active Set for the access terminal in this state.

If the access network receives an *Open* command, prior to send a *TrafficChannelAssignment* message, the access network shall initialize the Active Set to the set of pilots in the *TrafficChannelAssignment* message that it sends in response to command (see 5.4.6.1.1.3).

The access terminal shall initially keep an Active Set of size one when it is in the Idle State. The Active Set pilot shall be the pilot associated with the Control Channel the access terminal is currently monitoring. The access terminal shall return an *IdleHO* indication when the Active Set changes in the Idle State.

The access terminal shall not change its Active Set pilot at a time that causes it to miss a synchronous Control Channel capsule. Other rules governing when to replace this Active Set pilot are beyond the scope of this specification.

If the access terminal receives a TrafficChannelAssignment message, it shall set its Active Set to the list of pilots specified in the message if the TrafficChannelAssignment message does not contain a Channel Record, or if the TrafficChannelAssignment message contains a Channel Record and the access terminal supports the CDMA Channel specified by the Channel Record.

#### 5.4.6.1.5.2 Pilot Channel Supervision in the Idle State

The access terminal shall perform pilot channel supervision in the Idle State as follows:

- Access terminal shall monitor the pilot strength of the pilot in its active set, all the pilots in the candidate set and all the pilots in the neighbor set that are on the same frequency.
- If the strength of all the pilots that the access terminal is monitoring goes below the value specified by PilotDrop, the access terminal shall start a pilot supervision timer. The access terminal shall consider the timer to be expired after the time specified by PilotDropTimer.
- If the strength of at least one of the pilots goes above the value specified by PilotDrop while the pilot supervision timer is counting down, the access terminal shall reset and disable the timer.
- If the pilot supervision timer expires, the access terminal shall return a *NetworkLost* indication.

#### 5.4.6.1.5.3 Processing the TrafficChannelAssignment Message in the Idle State

If the access terminal receives a TrafficChannelAssignment message in this state, it shall perform the following if the TrafficChannelAssignment message does not contain a Channel Record, or if the TrafficChannelAssignment message contains a Channel Record and the access terminal supports the CDMA Channel specified by the Channel Record:

- Update its Active Set as described in 5.4.6.1.5.1
- Set the following public data of the Forward Traffic Channel MAC Protocol to the corresponding fields of the TrafficChannelAssignment message:
  - DRCLength
  - ACKChannelGain
  - DRCCover for every pilot in the Active Set
  - DSC for every cell in the Active Set
- If the Forward Traffic Channel MAC protocol defines the DRCCChannelGainBase as a public data, then set that public data to the DRCCChannelGainBase field of the TrafficChannelAssignment message. Otherwise, set the DRCCChannelGain public data of the Forward Traffic Channel MAC protocol to the DRCCChannelGainBase field of the TrafficChannelAssignment message.

- 1 • If the Forward Traffic Channel MAC protocol defines the DSCChannelGainBase as a public  
2 data, then set that public data to the DSCChannelGainBase field of the  
3 TrafficChannelAssignment message.
- 4 • Set the following public data of the Reverse Traffic Channel MAC Protocol to the  
5 corresponding fields of the TrafficChannelAssignment message:
  - 6 – RACHannelGain for every pilot in the Active Set
  - 7 – RABLength for every pilot in the Active Set
  - 8 – RABOffset for every pilot in the Active Set
- 9 • If MACIndexMSB fields are included in the TrafficChannelAssignment message, then the  
10 access terminal shall determine the 7-bit MACIndex for each pilot in the Active Set by  
11 prepending the corresponding MACIndexMSB field of the TrafficChannelAssignment  
12 message to the corresponding MACIndexLSBs field of the TrafficChannelAssignment  
13 message. Otherwise the access terminal shall set the MACIndex to the corresponding  
14 MACIndexLSBs field.
- 15 • Return a *ConnectionInitiated* Indication.
- 16 • If the Channel Record is included in the message, then the access terminal shall tune to  
17 the CDMA Channel specified by the Channel Record.
- 18 • Issue the following commands:
  - 19 – *ReverseTrafficChannelMAC.Activate*
  - 20 – *ForwardTrafficChannelMAC.Activate*
  - 21 – *AccessChannelMAC.Deactivate*
- 22 • Transition to the Connected State.

#### 23 5.4.6.1.5.4 Route Update Report Rules

24 The access terminal shall send RouteUpdate messages to update its location with the access  
25 network.

26 The access terminal shall not send a RouteUpdate message if the state timer of the Connection  
27 Setup State in the Idle State Protocol is active.

28 The access terminal shall comply with the following rules regarding RouteUpdate messages:

- 29 • The Inter-RAT Route Update Protocol shall send a RouteUpdate message upon receiving a  
30 *SendRouteUpdate* command.
- 31 • If the value of the SupportRouteUpdateEnhancements attribute is not 0x00, then the  
32 access terminal shall send a RouteUpdate message whenever it receives a  
33 RouteUpdateRequest message.
- 34 • The access terminal shall send a RouteUpdate message with every access channel capsule  
35 transmitted by the access terminal.
- 36 • The access terminal shall include in the RouteUpdate message the pilot PN phase, pilot  
37 strength, and drop timer status for every pilot in the Active Set and Candidate Set.

- 1 • The access terminal shall send a RouteUpdate message if all of the following conditions are  
2 true:
  - 3 – the RouteUpdateRadiusOverhead field of the SectorParameters message is not set to  
4 zero, and
  - 5 – the value of the RouteUpdateRadiusMultiply attribute is not 0x00, and
  - 6 – the computed value  $r$  is greater than  $\max(0, r_m \times r_o + r_a)$ , where  $r_o$  is the value  
7 provided in the RouteUpdateRadiusOverhead field of the SectorParameters message  
8 transmitted by the sector in which the access terminal last sent a RouteUpdate  
9 message,  $r_m$  is the value of the RouteUpdateRadiusMultiply attribute, and  $r_a$  is the  
10 value of the RouteUpdateRadiusAdd attribute.
- 11 • The access terminal shall set the ReferencePilotChannelIncluded field of the RouteUpdate  
12 message to '0'.

13 If  $(x_L, y_L)$  are the longitude and latitude of the sector to which the access terminal last sent a  
14 RouteUpdate, and  $(x_C, y_C)$  are the longitude and latitude of the sector currently providing  
15 coverage to the access terminal, then  $r$  is given by<sup>30</sup>

$$r = \left\lfloor \frac{\sqrt{\left[ (x_C - x_L) \times \cos\left(\frac{\pi}{180} \times \frac{y_L}{14400}\right) \right]^2 + [y_C - y_L]^2}}{16} \right\rfloor^{31}$$

17 The access terminal shall compute  $r$  with an error of no more than  $\pm 5\%$  of its true value when  
18  $|y_L/14400|$  is less than 60 and with an error of no more than  $\pm 7\%$  of its true value when  
19  $|y_L/14400|$  is between 60 and 70<sup>32</sup>.

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<sup>30</sup> The  $x$ 's denote longitude and the  $y$ 's denote latitude.

<sup>31</sup> This equation applies if the access terminal does not cross longitude = 180. Modified equation that is applicable in all cases is:

$$r = \left\lfloor \frac{\sqrt{\left[ D_{\text{longitude}} \times \cos\left(\frac{\pi}{180} \times \frac{y_L}{14400}\right) \right]^2 + [y_C - y_L]^2}}{16} \right\rfloor$$

$$D_{\text{longitude}} = x_C - x_L \text{ if } \left| \frac{x_C - x_L}{14400} \right| < 180$$

$$D_{\text{longitude}} = 360 \times 14400 - |x_C - x_L| \text{ if } \left| \frac{x_C - x_L}{14400} \right| \geq 180$$

<sup>32</sup>  $x_L$  and  $y_L$  are given in units of 1/4 seconds.  $x_L/14400$  and  $y_L/14400$  are in units of degrees.

If the value of the *SupportRouteUpdateEnhancements* attribute is 0x00, then the access network shall not send a *RouteUpdateRequest* message. If the value of the *SupportRouteUpdateEnhancements* attribute is not 0x00, then the access network may send a *RouteUpdateRequest* message.

#### 5.4.6.1.6 Connected State

In this state, *RouteUpdate* messages from the access terminal are based on changes in the radio link between the access terminal and the access network, obtained through pilot strength measurements at the access terminal.

The access network determines the contents of the Active Set through *TrafficChannelAssignment* messages.

##### 5.4.6.1.6.1 Access Terminal Requirements

In the Connected State, the access terminal shall perform the following:

- If the protocol receives a *ReverseTrafficChannelMAC.LinkAcquired* indication the access terminal shall:
  - Send a *TrafficChannelComplete* message with the *MessageSequence* field of the message set to the *MessageSequence* field of the *TrafficChannelAssignment* message,
  - Return a *ConnectionOpened* indication.

##### 5.4.6.1.6.2 Access Network Requirements

In the Connected State, the access network shall perform the following:

- If the protocol receives a *ReverseTrafficChannelMAC.LinkAcquired* indication the access network shall return a *ConnectionOpened* indication.

##### 5.4.6.1.6.3 Active Set Maintenance

###### 5.4.6.1.6.3.1 Access Network

Whenever the access network sends a *TrafficChannelAssignment* message to the access terminal, it shall add to the Active Set any pilots listed in the message that are not currently in the Active Set. Upon sending a *TrafficChannelAssignment* message, the access network shall set the following public data of the Forward Traffic Channel MAC Protocol to the corresponding fields of the *TrafficChannelAssignment* message:

- *DRCLength*
- *ACKChannelGain*
- *DRCCover* for every pilot in the Active Set
- *DSC* for every cell in the Active Set

- 1 • If the Forward Traffic Channel MAC protocol defines the DRCChannelGainBase as a public  
2 data, then set that public data to the DRCChannelGainBase field of the  
3 TrafficChannelAssignment message. Otherwise, set the DRCChannelGain public data of  
4 the Forward Traffic Channel MAC protocol to the DRCChannelGainBase field of the  
5 TrafficChannelAssignment message.
- 6 • If the Forward Traffic Channel MAC protocol defines the DSCChannelGainBase as a public  
7 data, then set that public data to the DSCChannelGainBase field of the  
8 TrafficChannelAssignment message.

9 Upon sending a TrafficChannelAssignment message, the access network shall set the following  
10 public data of the Reverse Traffic Channel MAC Protocol to the corresponding fields of the  
11 TrafficChannelAssignment message:

- 12 • RACHannelGain for every pilot in the Active Set
- 13 • RABLength for every pilot in the Active Set
- 14 • RABOffset for every pilot in the Active Set

15 The access network shall delete a pilot from the Active Set if the pilot was not listed in a  
16 TrafficChannelAssignment message and if the access network received the  
17 TrafficChannelComplete message, acknowledging that TrafficChannelAssignment message.

18 The access network should send a TrafficChannelAssignment message to the access terminal  
19 in response to changing radio link conditions, as reported in the access terminal's RouteUpdate  
20 messages.

21 The access network should only specify a pilot in the TrafficChannelAssignment message if it  
22 has allocated the required resources in the associated sector. This means that the sector  
23 specified by the pilot is ready to receive data from the access terminal and is ready to transmit  
24 queued data to the access terminal should the access terminal point its DRC at that sector.

25 If the SupportedCDMAChannels attribute contains one or more band classes, then the access  
26 network shall assign a Traffic Channel on a CDMA Channel supported by the access terminal  
27 as indicated by the value of the SupportedCDMAChannels attribute.

28 If the access network adds or deletes a pilot in the Active Set, it shall send an *ActiveSetUpdated*  
29 indication.

30 If the access network adds a pilot specified in a RouteUpdate message to the Active Set, the  
31 access network may use the PilotPNPhase field provided in the message to obtain a round trip  
32 delay estimate from the access terminal to the sector associated with this pilot. The access  
33 network may use this estimate to accelerate the acquisition of the access terminal's Reverse  
34 Traffic Channel in that sector.

#### 35 5.4.6.1.6.3.2 Access Terminal

36 If the access terminal receives a valid TrafficChannelAssignment message (see 5.4.6.1.3.2), it  
37 shall replace the contents of its current Active Set with the pilots specified in the message. The  
38 access terminal shall process the message as defined in 5.4.6.1.6.6.



#### 5.4.6.1.6.4 ResetReport Message

The access network may send a ResetReport message to reset the conditions under which RouteUpdate messages are sent from the access terminal. Access terminal usage of the ResetReport message is specified in the following section.

#### 5.4.6.1.6.5 Route Update Report Rules

The access terminal sends a RouteUpdate message to the access network in this state to request addition or deletion of pilots from its Active Set. If the access terminal is sending the RouteUpdate message in response to a RouteUpdateRequest message that contains a Channel record, the access terminal shall include in a RouteUpdate message the pilot PN phase, pilot strength, and drop status for pilots whose strength is above the value specified by PilotAdd and subject to the following conditions:

- If the RouteUpdateRequest message contains one or more SectorPilotPN fields, the access terminal shall include pilots in the CDMA channel indicated by the Channel record and that are indicated by the SectorPilotPN fields. Otherwise, the access terminal shall include pilots which are in the CDMA channel indicated by the Channel record.

If the access terminal is not sending the RouteUpdate message in response to a RouteUpdateRequest message that contains a Channel record, the access terminal shall determine which pilots to include in the RouteUpdate message as follows:

- If DynamicThresholds is equal to '0', the access terminal shall include in the RouteUpdate message the pilot PN phase, pilot strength, and drop timer status for every pilot in the Active Set and Candidate Set. If DynamicThresholds is equal to '1', then the access terminal shall include in the RouteUpdate message the pilot PN phase, pilot strength, and drop timer status for every pilot in the Active Set, for each pilot in the Candidate Set whose strength is above the values specified by PilotAdd, and for each pilot in the Candidate set whose strength, PS, satisfies the following inequality:

$$10 \times \log_{10} PS > \frac{\text{SoftSlope}}{8} \times 10 \times \log_{10} \sum_{i \in A} PS_i + \frac{\text{AddIntercept}}{2},$$

where the summation is performed over all pilots currently in the Active Set.

The access terminal shall send a RouteUpdate message if any one of the following occurs:

- The value of the SupportRouteUpdateEnhancements attribute is not 0x00 and the access terminal receives a RouteUpdateRequest message.
- The Inter-RAT Route Update Protocol receives a *SendRouteUpdate* command.
- If DynamicThresholds is equal to '0' and the strength of a Neighbor Set or Remaining Set pilot is greater than the value specified by PilotAdd.
- If DynamicThresholds is equal to '1' and the strength of a Neighbor Set or Remaining Set pilot, PS, satisfies the following inequality:

$$10 \times \log_{10} PS > \max \left( \frac{\text{SoftSlope}}{8} \times 10 \times \log_{10} \sum_{i \in A} PS_i + \frac{\text{AddIntercept}}{2}, -\frac{\text{PilotAdd}}{2} \right)$$

where the summation is performed over all pilots currently in the Active Set.

- 1 • If DynamicThresholds is equal to '0' and the strength of a Candidate Set pilot is greater  
2 than the value specified by PilotCompare above an Active Set pilot, and a RouteUpdate  
3 message carrying this information has not been sent since the last ResetReport message  
4 was received.
- 5 • If DynamicThresholds is equal to '0' and the strength of a Candidate Set pilot is above  
6 PilotAdd, and a RouteUpdate message carrying this information has not been sent since the  
7 last ResetReport message was received.
- 8 • If DynamicThresholds is equal to '1' and
  - 9 – the strength of a Candidate Set pilot, PS, satisfies the following inequality:

$$10 \times \log_{10} PS > \frac{\text{SoftSlope}}{8} \times 10 \times \log_{10} \sum_{i \in A} PS_i + \frac{\text{AddIntercept}}{2}$$

- 11 where the summation is performed over all pilots currently in the Active Set, and
  - 12 – a RouteUpdate message carrying this information has not been sent since the last  
13 ResetReport message was received.
- 14 • If DynamicThresholds is equal to '1' and
  - 15 – the strength of a Candidate Set pilot is greater than the value specified by PilotCompare  
16 above an Active Set pilot, and
  - 17 – the strength of a Candidate Set pilot, PS, satisfies the following inequality:

$$10 \times \log_{10} PS > \frac{\text{SoftSlope}}{8} \times 10 \times \log_{10} \sum_{i \in A} PS_i + \frac{\text{AddIntercept}}{2}$$

- 19 where the summation is performed over all pilots currently in the Active Set, and
  - 20 – a RouteUpdate message carrying this information has not been sent since the last  
21 ResetReport message was received.
- 22 • The pilot drop timer of an Active Set pilot has expired, and a RouteUpdate message carrying  
23 this information has not been sent since the last ResetReport message was received.

24 The access terminal shall set the ReferencePilotChannelIncluded field of the RouteUpdate  
25 message to '0',

26 If the value of the SupportRouteUpdateEnhancements attribute is 0x00, then the access  
27 network shall not send a RouteUpdateRequest message. If the value of the  
28 SupportRouteUpdateEnhancements attribute is not 0x00, then the access network may send a  
29 RouteUpdateRequest message.

#### 30 5.4.6.1.6.6 Processing the TrafficChannelAssignment Message in the Connected State

31 If valid TrafficChannelAssignment (see 5.4.6.1.3.2) message does not contain a Channel  
32 Record, or if a valid TrafficChannelAssignment message contains a Channel Record and the  
33 access terminal supports the CDMA Channel specified by the Channel Record, then the access  
34 terminal shall process the message as follows:

- 35 • The access terminal shall set the following public data of the Forward Traffic Channel MAC  
36 Protocol to the corresponding fields of the TrafficChannelAssignment message:

- 1       – DRCLength
- 2       – ACKChannelGain
- 3       – DRCCover for every pilot in the Active Set
- 4       – DSC for every cell in the Active Set
- 5       • If the Forward Traffic Channel MAC protocol defines the DRCChannelGainBase as a public
- 6       data, then set that public data to the DRCChannelGainBase field of the
- 7       TrafficChannelAssignment message. Otherwise, set the DRCChannelGain public data of
- 8       the Forward Traffic Channel MAC protocol to the DRCChannelGainBase field of the
- 9       TrafficChannelAssignment message.
- 10      • If the Forward Traffic Channel MAC protocol defines the DSCChannelGainBase as a public
- 11      data, then set that public data to the DSCChannelGainBase field of the
- 12      TrafficChannelAssignment message.
- 13      • The access terminal shall set the following public data of the Reverse Traffic Channel MAC
- 14      Protocol to the corresponding fields of the TrafficChannelAssignment message:
- 15      – RACHannelGain for every pilot in the Active Set
- 16      – RABLength for every pilot in the Active Set
- 17      – RABOffset for every pilot in the Active Set
- 18      • If the TrafficChannelAssignment message contains a value for the FrameOffset that is
- 19      different from the value of the FrameOffset received in the last TrafficChannelAssignment
- 20      message that was received in the Idle state, then the access terminal shall return a
- 21      *RouteUpdate.AssignmentRejected* indication and shall discard the message.
- 22      • The access terminal shall update its Active Set as defined in 5.4.6.1.6.3.2.
- 23      • The access terminal shall tune to the CDMA Channel defined by the Channel Record, if this
- 24      record is included in the message.
- 25      • If MACIndexMSB fields are included in the TrafficChannelAssignment message, then the
- 26      access terminal shall determine the 7-bit MACIndex for each pilot in the Active Set by
- 27      prepending the corresponding MACIndexMSB field of the TrafficChannelAssignment
- 28      message to the corresponding MACIndexLSBs field of the TrafficChannelAssignment
- 29      message. Otherwise the access terminal shall set the MACIndex to the corresponding
- 30      MACIndexLSBs field.
- 31      • The access terminal shall start monitoring and responding to the Power Control Channels
- 32      defined by the MACIndex fields provided in the message. The access terminal should use
- 33      the SofterHandoff fields to identify the Power Control Channels that are carrying identical
- 34      information and can therefore be soft-combined.
- 35      • The access terminal shall send the access network a TrafficChannelComplete message
- 36      specifying the MessageSequence value received in the TrafficChannelAssignment message.

#### 5.4.6.1.6.7 Processing the TrafficChannelComplete Message

The access network should set a transaction timer when it sends a TrafficChannelAssignment message. If the access network sets a transaction timer, it shall reset the timer when it receives a TrafficChannelComplete message containing a MessageSequence field equal to the one sent in the TrafficChannelAssignment message.

If the timer expires, the access network should return a *ConnectionLost* indication.

#### 5.4.6.1.6.8 Transmission and Processing of the NeighborList Message

The access network may send the NeighborList message to the access terminal when the protocol is in the Connected State to override the search window size and/or search window offset corresponding to a pilot in the Neighbor Set.

Upon receiving a NeighborList message, the access terminal shall perform the following in the order specified:

- The access terminal shall remove all Neighbor structures from NeighborListMessageNeighborList.
- For each pilot (specified by its pilot PN and its channel) listed in the received NeighborList message, the access terminal shall add a Neighbor structure to NeighborListMessageNeighborList and populate it as follows:
  - Set the structure's PilotPN field to the message's corresponding PilotPN field.
  - If the message's ChannelIncluded field is set to '1', set the structure's Channel field to the message's corresponding Channel field. Otherwise, set the structure's Channel field to the current channel.
  - If the message's SearchWindowSizeIncluded field is set to '1', then set the structure's SearchWindowSize field to the message's corresponding SearchWindowSize field. Otherwise, set the structure's SearchWindowSize field to NULL.
  - If the SearchWindowOffsetIncluded field is set to '1', then set the structure's SearchWindowOffset field to the message's corresponding SearchWindowOffset field. Otherwise, set the structure's SearchWindowOffset field to NULL.
- Perform the procedures specified in 5.4.6.1.2.1.

#### 5.4.6.1.6.9 Transmission and Processing of the AttributeOverride Message

The access network may send the AttributeOverride message to the access terminal to override the parameters specified in the SetManagementSameChannelParameters and SetManagementDifferentChannelParameters configuration attributes.

If the value of the SetManagementOverrideAllowed attribute is 0x01, then upon receiving a valid (see 5.4.6.1.3.3) AttributeOverride message, the access terminal shall start using the values specified in the message.

The access terminal shall discard the values of the SetManagementSameChannelParameters and SetManagementDifferentChannelParameters in the AttributeOverride message if the SetManagementOverrideAllowed attribute is set to 0x00.

When the access terminal receives a valid (see 5.4.6.1.3.3) *AttributeOverride* message, it shall send the access network an *AttributeOverrideResponse* message specifying the *MessageSequence* value received in the *AttributeOverride* message.

#### 5.4.6.1.6.10 Processing of *OverheadMessages.Updated* Indication

Upon receiving *OverheadMessages.Updated* indication, the access terminal shall perform the *OverheadMessagesNeighborList* Initialization procedures as specified in 5.4.6.1.6.11 and then perform the procedures specified in 5.4.6.1.2.1.

#### 5.4.6.1.6.11 *OverheadMessagesNeighborList* Initialization

When the *OverheadMessagesNeighborList* initialization procedures are invoked by the access terminal, it shall perform the following:

- The access terminal shall remove all Neighbor structures from the *OverheadMessagesNeighborList* list.
- For each pilot (specified by its pilot PN and its channel) in the neighbor list given as public data of *Overhead Messages Protocol*, the access terminal shall add a Neighbor structure to the *OverheadMessagesNeighborList* list and populate it as follows:
  - Set the structure's *PilotPN* field to the corresponding *NeighborPilotPN* field given as public data of the *Overhead Messages Protocol*.
  - If the *Overhead Messages Protocol*'s *NeighborChannelIncluded* field is set to '1', set the structure's *Channel* field to the *Overhead Messages Protocol*'s corresponding *NeighborChannel*. Otherwise, set the structure's *Channel* field to the current channel.
  - If the *Overhead Messages Protocol*'s *SearchWindowSizeIncluded* field is set to '1', then set the structure's *SearchWindowSize* field to the *Overhead Messages Protocol*'s corresponding *SearchWindowSize* field. Otherwise, set the structure's *SearchWindowSize* field to NULL.
  - If the *Overhead Messages Protocol*'s *SearchWindowOffsetIncluded* field is set to '1', then set the structure's *SearchWindowOffset* field to the *Overhead Messages Protocol*'s corresponding *SearchWindowOffset* field. Otherwise, set the structure's *SearchWindowOffset* field to NULL.

#### 5.4.6.1.7 Tunnel State

Upon entering this state, the access terminal shall perform the following:

- Remove all Neighbor structures from *NeighborListMessageNeighborList* and perform the procedures specified in 5.4.6.1.2.1.
- Stop using the parameters specified in the *AttributeOverride* message in the set management procedures and start using values specified by the *SetManagementSameChannelParameters* and the *SetManagementDifferentChannelParameters* attributes whichever applicable, in the set management procedures.

If the protocol receives a *SignalingAdaptation.IdleHandoff* indication, the access terminal shall:

- Issue an *AccessChannelMAC.Activate* command,
- Transition to the Idle State.

If the access terminal receives a *SignalingAdaptation.ConnectionInitiated* indication in this state, then the access terminal shall return a *ConnectionInitiated* indication.

#### 5.4.6.1.7.1 Pilot Sets Maintenance

In the Tunnel State, the access terminal shall maintain the Candidate Set and Neighbor Set, and may maintain the Remaining Set following the same procedures specified in sections 5.4.6.1.2.6, 5.4.6.1.2.7 and 5.4.6.1.2.8 respectively.

##### 5.4.6.1.7.1.1 Active Set Maintenance

The access network shall not initially maintain an Active Set for the access terminal in this state.

The access terminal shall initially keep an Active Set of size one when it is in the Tunnel State.

If the access terminal is currently monitoring the Control Channel:

- The Active Set pilot shall be the pilot associated with the Control Channel the access terminal is currently monitoring. The access terminal shall return an *IdleHO* indication when the Active Set changes in the Tunnel State.
- The access terminal shall not change its Active Set pilot at a time that causes it to miss a synchronous Control Channel capsule. Other rules governing when to replace this Active Set pilot are beyond the scope of this specification.

Otherwise:

- The Active Set pilot shall be the pilot the access terminal uses as reference pilot.

If the access terminal receives a *TrafficChannelAssignment* message, it shall set its Active Set to the list of pilots specified in the message if the *TrafficChannelAssignment* message does not contain a Channel Record, or if the *TrafficChannelAssignment* message contains a Channel Record and the access terminal supports the CDMA Channel specified by the Channel Record.

#### 5.4.6.1.7.2 Pilot Channel Supervision in the Tunnel State

The access terminal shall perform pilot channel supervision in the Tunnel State following the procedures specified in section 5.4.6.1.5.2

#### 5.4.6.1.7.3 Processing the TrafficChannelAssignment Message in the Tunnel State

If the access terminal receives a *TrafficChannelAssignment* message in this state, it shall process the *TrafficChannelAssignment* message following the procedures specified in section 5.4.6.1.5.3.

#### 5.4.6.1.7.4 Route Update Report Rules in the Tunnel State

The access terminal shall comply with the following rules regarding *RouteUpdate* messages:

- The Inter-RAT Route Update Protocol shall send a RouteUpdate message together with the ConnectionRequest message when the active handoff from the other radio access technology to HRPD occurs.
- The Inter-RAT Route Update Protocol shall send a RouteUpdate message upon receiving a *SendRouteUpdate* command.
- If the value of the SupportRouteUpdateEnhancements attribute is not 0x00, then the access terminal shall send a RouteUpdate message whenever it receives a RouteUpdateRequest message.
- The access terminal shall set the ReferencePilotChannelIncluded field, and the ReferencePilotChannel field to the channel record (see [1]) of the reference pilot if this field is included in the message.
- The access terminal shall include the pilot PN phase, pilot strength, and drop timer status for every pilot in the Active Set and Candidate Set in the RouteUpdate message.
- The access terminal shall send a RouteUpdate<sup>33</sup> message if all of the following conditions are true:
  - the RouteUpdateRadiusOverhead field of the SectorParameters message is not set to zero, and
  - the value of the RouteUpdateRadiusMultiply attribute is not 0x00, and
  - the computed value  $r$  is greater than  $\max(0, r_m \times r_o + r_a)$ , where  $r_o$  is the value provided in the RouteUpdateRadiusOverhead field of the SectorParameters message transmitted by the sector in which the access terminal used as ReferencePilotChannel when it last sent a RouteUpdate message,  $r_m$  is the value of the RouteUpdateRadiusMultiply attribute, and  $r_a$  is the value of the RouteUpdateRadiusAdd attribute.

If  $(x_L, y_L)$  are the longitude and latitude of the sector to which the access terminal last sent a RouteUpdate, and  $(x_C, y_C)$  are the longitude and latitude of the sector currently providing coverage to the access terminal, then  $r$  is given by<sup>34</sup>

$$r = \left\lfloor \frac{\sqrt{\left[ (x_C - x_L) \times \cos\left( \frac{\pi}{180} \times \frac{y_L}{14400} \right) \right]^2 + [y_C - y_L]^2}}{16} \right\rfloor$$

- The access terminal shall compute  $r$  with an error of no more than  $\pm 5\%$  of its true value when  $|y_L/14400|$  is less than 60 and with an error of no more than  $\pm 7\%$  of its true value when  $|y_L/14400|$  is between 60 and 70<sup>35</sup>.

<sup>33</sup> This applies when the access terminal is currently monitoring the Control Channel.

<sup>34</sup> The  $x$ 's denote longitude and the  $y$ 's denote latitude.

<sup>35</sup>  $x_L$  and  $y_L$  are given in units of 1/4 seconds.  $x_L/14400$  and  $y_L/14400$  are in units of degrees.

## 5.4.6.2 Message Formats

## 5.4.6.2.1 RouteUpdate

The access terminal sends the RouteUpdate message to notify the access network of its current location and provide it with an estimate of its surrounding radio link conditions.

Field	Length (bits)
MessageID	8
MessageSequence	8
ReferencePilotPN	9
ReferencePilotStrength	6
ReferenceKeep	1
NumPilots	4

NumPilots occurrences of the following fields:

PilotPNPhase	15
ChannelIncluded	1
Channel	0 or 24
PilotStrength	6
Keep	1

CompatibleReserved	1
ReferencePilotChannelIncluded	1
ReferencePilotChannel	0 or 24
ReferencePilotArrivalIncluded	1
ReferencePilotArrival	0 or 15
Reserved	Variable

**MessageID** The access terminal shall set this field to 0x00.

**MessageSequence** The access terminal shall set this field to the sequence number of this message. The sequence number of this message is 1 more than the sequence number of the last RouteUpdate message (modulo  $2^8$ ) sent by this access terminal. If this is the first RouteUpdate message sent by the access terminal, it shall set this field to 0x00.

**ReferencePilotPN** The access terminal shall set this field to the access terminal's time reference (the reference pilot), relative to the zero offset pilot PN sequence in units of 64 PN chips.



1	ReferencePilotStrength	
2		The access terminal shall set this field to $\lfloor -2 \times 10 \times \log_{10} PS \rfloor$ , where PS
3		is the strength of the reference pilot, measured as specified in
4		5.4.6.1.2.3. If this value is less than 0, the access terminal shall set this
5		field to '000000'. If this value is greater than '111111', the access
6		terminal shall set this field to '111111'.
7	ReferenceKeep	If the pilot drop timer corresponding to the reference pilot has expired,
8		the access terminal shall set this field to '0'; otherwise, the access
9		terminal shall set this field to '1'.
10	NumPilots	The access terminal shall set this field to the number of pilots that follow
11		this field in the message.
12	PilotPNPhase	The PN offset in resolution of 1 chip of a pilot in the Active Set or
13		Candidate Set of the access terminal that is not the reference pilot.
14	ChannelIncluded	The access terminal shall set this field to '1' if the channel for this pilot
15		offset is not the same as the current channel. Otherwise, the access
16		terminal shall set this field to '0'.
17	Channel	The access terminal shall include this field if the ChannelIncluded field is
18		set to '1'. The access terminal shall set this to the channel record
19		corresponding to this pilot (see section 14.1 of [1]). Otherwise, the access
20		terminal shall omit this field for this pilot offset.
21	PilotStrength	The access terminal shall set this field to $\lfloor -2 \times 10 \times \log_{10} PS \rfloor$ , where PS
22		is the strength of the pilot in the above field, measured as specified in
23		5.4.6.1.2.3. If this value is less than 0, the access terminal shall set this
24		field to '000000'. If this value is greater than '111111', the access
25		terminal shall set this field to '111111'.
26	Keep	If the pilot drop timer corresponding to the pilot in the above field has
27		expired, the access terminal shall set this field to '0'; otherwise, the
28		access terminal shall set this field to '1'.
29	CompatibleReserved	The access terminal shall always set this bit to '0'.
30	ReferencePilotChannelIncluded	
31		The access terminal shall set this field to '1' if the channel for the
32		reference pilot is included in this message, otherwise, the access terminal
33		shall set this field to '0'.
34	ReferencePilotChannel	

If the ReferencePilotChannelIncluded field is set to '1', the access terminal shall set this field to the channel record (see [1]) corresponding to the reference pilot. Otherwise, the access terminal shall omit this field.

#### ReferencePilotArrivalIncluded

The access terminal shall set this field to '1' if the relative arrival time of the reference pilot to its current timing reference<sup>36</sup> is supported<sup>37</sup> in this message. Otherwise, the access terminal shall set this field to '0'.

#### ReferencePilotArrival

If the ReferencePilotArrivalIncluded field is set to '1', the access terminal shall include this field. The access terminal shall set this field to the difference between the expected arrival time calculated from its current timing reference and the actual arrival time of the HRPD reference pilot. The access terminal shall set this field as a 15-bit 2's complement in units of 1 chip.

If the ReferencePilotArrivalIncluded field is set to '0', the access terminal shall omit this field.

#### Reserved

The number of bits in this field is equal to the number needed to make the message length an integer number of octets. This field shall be set to all zeros.

<b>Channels</b>	AC	RTC	<b>SLP</b>	Reliable <sup>38</sup>	Best Effort
<b>Addressing</b>	unicast		<b>Priority</b>	20	

#### 5.4.6.2.2 TrafficChannelAssignment

The access network sends the TrafficChannelAssignment message to manage the access terminal's Active Set.

<sup>36</sup> The timing reference of the access terminal can be set by a different air interface technology.

<sup>37</sup> If the access terminal supports E-UTRAN release 9, the access terminal will include this field.

<sup>38</sup> This message is sent reliably when it is sent over the Reverse Traffic Channel.

Field	Length (bits)
MessageID	8
MessageSequence	8
ChannelIncluded	1
Channel	0 or 24
FrameOffset	4
DRCLength	2
DRCChannelGainBase	6
ACKChannelGain	6
NumPilots	4

NumPilots occurrences of the following record:

PilotPN	9
SofterHandoff	1
MACIndexLSBs	6
DRCCover	3
RABLength	2
RABOffset	3

RACChannelGainIncluded	0 or 1
------------------------	--------

NumPilots occurrences of the following field:

RACChannelGain	0 or 2
----------------	--------

MACIndexMSBsIncluded	0 or 1
----------------------	--------

NumPilots occurrences of the following field:

MACIndexMSB	0 or 1
-------------	--------

DSCChannelGainBase	0 or 5
--------------------	--------

0 or N occurrences of the following field, where N is the number of SofterHandoff fields set to '0' in this message

DSC	0 or 3
-----	--------

Reserved	Variable
----------	----------

1 MessageID

The access network shall set this field to 0x01.

1	MessageSequence	The access network shall set this to 1 higher than the MessageSequence
2		field of the last TrafficChannelAssignment message (modulo $2^S$ , $S=8$ ) sent
3		to this access terminal.
4	ChannelIncluded	The access network shall set this field to '1' if the Channel record is
5		included for these pilots. Otherwise, the access network shall set this
6		field to '0'.
7	Channel	The access network shall include this field if the ChannelIncluded field is
8		set to '1'. The access network shall set this to the channel record
9		corresponding to this pilot (see section 14.1 of [1]). Otherwise, the access
10		network shall omit this field for this pilot offset. If Channel is included,
11		the access network shall set the SystemType field of the Channel record
12		to '0000'.
13	FrameOffset	The access network shall set this field to the frame offset the access
14		terminal shall use when transmitting the Reverse Traffic Channel, in
15		units of slots.
16	DRCLength	The access network shall set this field to the number of slots the access
17		terminal shall use to transmit a single DRC value, as shown in <a href="#">Table</a>
18		<a href="#">5.4.6.2.2-1</a> <del>Table 5.4.6.2.2-1</del> .

**Table 5.4.6.2.2-1 DRCLength Encoding**

Field value (binary)	DRCLength (slots)
'00'	1
'01'	2
'10'	4
'11'	8

#### 20 DRCCChannelGainBase

21 The access network shall set this field to the ratio of the power level of  
 22 the DRC Channel (when it is transmitted) to the power level of the  
 23 Reverse Traffic Pilot Channel expressed as 2's complement value in units  
 24 of 0.5 dB. The valid range for this field is from -9 dB to +6 dB, inclusive.  
 25 The access terminal shall support all the values in the valid range for  
 26 this field.

#### 27 ACKChannelGain

28 The access network shall set this field to the ratio of the power level of  
 29 the Ack Channel (when it is transmitted) to the power level of the Reverse  
 30 Traffic Pilot Channel expressed as 2's complement value in units of 0.5  
 31 dB. The valid range for this field is from -3 dB to +6 dB, inclusive. The  
 access terminal shall support all the values in valid range for this field.

NumPilots	The access network shall set this field to the number of pilots included in this message.
PilotPN	The access network shall set this field to the PN Offset associated with the sector that will transmit a Power Control Channel to the access terminal, to whom the access terminal is allowed to point its DRC, and whose Control Channel and Forward Traffic Channel the access terminal may monitor.
SofterHandoff	If the Forward Traffic Channel associated with this pilot will carry the same closed-loop power-control bits as that of the previous pilot in this message, the access network shall set this field to '1'; otherwise, the access network shall set this field to '0'. The access network shall set the first instance of this field to '0'. If the SofterHandoff field associated with a PilotPN is equal to '1', then the PilotPN is defined to belong to the same cell as the previous PilotPN in this message.
MACIndexLSBs	Least Significant Bits of the Medium Access Control Index. The access network shall set this field to the six least significant bits of the MACIndex assigned to the access terminal by this sector.
DRCCover	The access network shall set this field to the index of the DRC cover associated with the sector specified in this record.
RABLength	If the traffic channel being assigned by this message is to use Subtype 0 or Subtype 1 Reverse Traffic Channel MAC protocol, the access network shall set the RABLength to specify the Reverse Activity Bit length according to <a href="#">Table 5.4.6.2.2-2</a> <del>Table 5.4.6.2.2-2</del> . Otherwise, the access network shall set this field to '00'.

**Table 5.4.6.2.2-2 Encoding of the RABLength Field**

Field value (binary)	RABLength (slots)
'00'	8
'01'	16
'10'	32
'11'	64

RABOffset	If the traffic channel being assigned by this message is to use Subtype 0 or Subtype 1 Reverse Traffic Channel MAC protocol, the access network shall set this field to indicate the offset associated with the Reverse Activity Bit. Otherwise, the access network shall set this field to '000'. The value (in slots) of RABOffset is the number the field is set to multiplied by RABLength/8.
-----------	---

# RACHannelGainIncluded

If this field is included, the access network shall set this field as follows:  
If RACHannelGain field is included in this message, then the access network shall set this field to '1'. Otherwise, the access network shall set this field to '0'.

# RACHannelGain

If RACHannelGainIncluded field is not included in this message or if RACHannelGainIncluded field is equal to '0', then the access network shall omit this field. Otherwise, the access network shall set this field as follows:

The *i*th occurrence of this field corresponds to the *i*th occurrence of the PilotPN field in this message. The access network shall set the *i*th occurrence of this field to the RA Channel Gain to be used by the access terminal according to [Table 5.4.6.2.2-3](#) of the *i*th PilotPN. The access terminal uses this information to demodulate the RA Channel.

**Table 5.4.6.2.2-3 Reverse Activity Channel Gain Encoding**

Field value (binary)	RA Channel Gain (dB)
'00'	-6
'01'	-9
'10'	-12
'11'	-15

# MACIndexMSBsIncluded

If the RACHannelGainIncluded field is not included in this message or if RACHannelGainIncluded field is equal to '0', then the access network shall omit this field. Otherwise, the access network shall set this field as follows: If MACIndexMSB fields are included in this message, then the access network shall set this field to '1'. Otherwise, the access network shall set this field to '0'.

# MACIndexMSB

Most significant bit of the Medium Access Control Index. If MACIndexMSBsIncluded field is not included in this message or if MACIndexMSBsIncluded field is equal to '0', then the access network shall omit this field. Otherwise, the access network shall set this field as follows:

The *i*th occurrence of this field corresponds to the *i*th occurrence of the PilotPN field in this message. The access network shall set the *i*th occurrence of this field to the most significant bit of the 7-bit MACIndex assigned to the access terminal by the *i*th PilotPN.

## DSCChannelGainBase

If MACIndexMSBsIncluded field is not included in this message or if MACIndexMSBsIncluded field is equal to '0', then the access network shall omit this field. Otherwise, the access network shall set this field to the power of the DSC channel relative to the pilot channel in units of – 0.5 dB, in the range from zero to –15.5 dB, inclusive.

## DSC

If MACIndexMSBsIncluded field is not included in this message or if MACIndexMSBsIncluded field is equal to '0', then the access network shall omit this field. Otherwise, the access network shall set this field as follows: The access network shall set the *i*th occurrence of this field to the DSC associated with the *i*th cell specified by the PilotPN fields in this message.

## Reserved

The number of bits in this field is equal to the number needed to make the message length an integer number of octets. This field shall be set to all zeros.

<b>Channels</b>	CC	FTC
-----------------	----	-----

<b>SLP</b>	Reliable	Best Effort <sup>39</sup>
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<b>Addressing</b>	unicast
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<b>Priority</b>	20
-----------------	----

## 5.4.6.2.3 TrafficChannelComplete

The access terminal sends the TrafficChannelComplete message to provide an acknowledgment for the TrafficChannelAssignment message.

Field	Length (bits)
MessageID	8
MessageSequence	8

## MessageID

The access terminal shall set this field to 0x02.

## MessageSequence

The access terminal shall set this field to the MessageSequence field of the TrafficChannelAssignment message whose receipt this message is acknowledging.

<sup>39</sup> The TrafficChannelAssignment message sent in response to the Open command is sent using best effort SLP. All subsequent TrafficChannelAssignment messages are sent using reliable delivery SLP.

<b>Channels</b>	RTC
<b>Addressing</b>	unicast

<b>SLP</b>	Reliable
<b>Priority</b>	40

#### 5.4.6.2.4 ResetReport

The access network sends the ResetReport message to reset the RouteUpdate transmission rules at the access terminal.

Field	Length (bits)
MessageID	8

**MessageID** The access network shall set this field to 0x03.

<b>Channels</b>	FTC
<b>Addressing</b>	unicast

<b>SLP</b>	Reliable
<b>Priority</b>	40

#### 5.4.6.2.5 NeighborList

The NeighborList message is used to convey information corresponding to the neighboring sectors to the access terminals when the access terminal is in the Connected State.



Field	Length (bits)
MessageID	8
Count	5

Count occurrences of the following field:

PilotPN	9
---------	---

Count occurrences of the following two fields:

ChannelIncluded	1
Channel	0 or 24

SearchWindowSizeIncluded	1
--------------------------	---

Count occurrences of the following field

SearchWindowSize	0 or 4
------------------	--------

SearchWindowOffsetIncluded	1
----------------------------	---

Count occurrences of the following field

SearchWindowOffset	0 or 3
--------------------	--------

FPDCHSupportedIncluded	0 or 1
------------------------	--------

$m$ ,  $0 \leq m \leq \text{Count}$ . occurrences of the following field:

FPDCHSupported	0 or 1
----------------	--------

Reserved	Variable
----------	----------

- |    |                 |   |
|----|-----------------|---|
| 1  | MessageID       | The access network shall set this field to 0x04.  |
| 2  | Count           | The access network shall set this field to the number of records specifying neighboring sectors information included in this message.   |
| 3  |                 |   |
| 4  | PilotPN         | The access network shall set this field to the PN Offset of a neighboring sector for which the access network is providing search window information in this message.   |
| 5  |                 |   |
| 6  |                 |   |
| 7  | ChannelIncluded | The access network shall set this field to '1' if a Channel record is included for this neighbor, and to '0' otherwise. The access network may set this field to '0' if the channel associated with this pilot is the same as the channel that is used to carry this message. If this field is set to '0', the access terminal shall assume that the channel associated with this pilot is the same as the channel on which this message is received. The |
| 8  |                 |   |
| 9  |                 |   |
| 10 |                 |   |
| 11 |                 |   |
| 12 |                 |   |

1		$n^{\text{th}}$ occurrence of this field corresponds to the $n^{\text{th}}$ occurrence of PilotPN in
2		the record that contains the PilotPN field above.
3	Channel	Channel record specification for the neighbor channel. See 14.1 of [1] for
4		the Channel record format. The $n^{\text{th}}$ occurrence of this field corresponds
5		to the $n^{\text{th}}$ occurrence of PilotPN in the record that contains the PilotPN
6		field above.
7	SearchWindowSizeIncluded	
8		The access network shall set this field to '1' if SearchWindowSize field for
9		neighboring sectors is included in this message. Otherwise, the access
10		network shall set this field to '0'.
11	SearchWindowSize	The access network shall omit this field if SearchWindowSizeIncluded is
12		set to '0'. If SearchWindowSizeIncluded is set to '1', the access network
13		shall set this field to the value shown in <a href="#">Table 5.4.6.2.5-1</a> <del>Table</del>
14		<del>5.4.6.2.5-1</del> corresponding to the search window size to be used by the
15		access terminal for the neighbor pilot. The $n^{\text{th}}$ occurrence of this field
16		corresponds to the $n^{\text{th}}$ occurrence of PilotPN in the record that contains
17		the PilotPN field above.

**Table 5.4.6.2.5–1 Search Window Sizes**

<b>SearchWindowSize Value</b>	<b>Search Window Size (PN chips)</b>
0	4
1	6
2	8
3	10
4	14
5	20
6	28
7	40
8	60
9	80
10	100
11	130
12	160
13	226
14	320
15	452

**SearchWindowOffsetIncluded**

The access network shall set this field to '1' if SearchWindowOffset field for neighboring sectors is included in this message. Otherwise, the access network shall set this field to '0'.

**SearchWindowOffset**

The access network shall omit this field if SearchWindowOffsetIncluded is set to '0'. If SearchWindowOffsetIncluded is set to '1', the access network shall set this field to the value shown in [Table 5.4.6.2.5–2](#) ~~Table 5.4.6.2.5–2~~ corresponding to the search window offset to be used by the access terminal for the neighbor pilot. The  $n^{\text{th}}$  occurrence of this field corresponds to the  $n^{\text{th}}$  occurrence of PilotPN in the record that contains the PilotPN field above.

**Table 5.4.6.2.5-2 Search Window Offset**

<b>SearchWindowOffset</b>	<b>Offset ( PN chips)</b>
0	0
1	WindowSize <sup>40</sup> / 2
2	WindowSize
3	3 × WindowSize / 2
4	- WindowSize / 2
5	- WindowSize
6	-3 × WindowSize / 2
7	Reserved

**FPDCHSupportedIncluded**

If this field is included, the access network shall set this field as follows:

The access network shall set this field to '0' if the FPDCHSupported fields are omitted. Otherwise, the access network shall set this field to '1'.

**FPDCHSupported**

If FPDCHSupportedIncluded is not included or is included and is set to '0', the access network shall omit all occurrences of this field. Otherwise, the access network shall include  $m$  occurrences of this field, where  $m$  is the number of Channel records in this message that have SystemType equal to 0x01, and the access network shall set the occurrences of this field as follows:

The access network shall set the  $i$ th occurrence of this field as follows:

If the system on the CDMA Channel corresponding to the  $i$ th Channel record that has SystemType equal to 0x01 supports the Forward Packet Data Channel (see [7]), the access terminal shall set the  $i$ th occurrence of this field to '1'. Otherwise, the access network shall set the  $i$ th occurrence of this field to '0'.

**Reserved**

The number of bits in this field is equal to the number needed to make the message length an integer number of octets. The access network shall set this field to zero. The access terminal shall ignore this field.

---

<sup>40</sup> WindowSize is pilot's search window size in PN chips.

<b>Channels</b>	FTC
<b>Addressing</b>	unicast

<b>SLP</b>	Reliable
<b>Priority</b>	40

#### 5.4.6.2.6 AttributeOverride

The access network may send this message in order to override the configured values for the attributes included in this message.

Field	Length (bits)
MessageID	8
MessageSequence	8

One or more instances of the following record:

AttributeRecord	variable
-----------------	----------

**MessageID** The access network shall set this field to 0x05.

**MessageSequence** The access network shall set this to 1 higher than the MessageSequence field of the last AttributeOverride message (modulo  $2^S$ ,  $S=8$ ) sent to this access terminal.

The access network shall include one or more instances of the following record:

**AttributeRecord** The access network shall set this record to the attribute record that the access terminal is to use to override the values of the configured attribute specified by the AttributeID of this record. See 14.3 of [1] for the format of the attributes. The access network shall not include more than one AttributeRecord with the same AttributeID in this message. The access network shall include exactly one instance of attribute values per AttributeID. The access network shall set the ValueID associated with the complex attributes to zero. The valid attribute records that can be included in this message are SetManagementSameChannelParameters and SetManagementDifferentChannelParameters.

<b>Channels</b>	FTC
<b>Addressing</b>	unicast

<b>SLP</b>	Best Effort
<b>Priority</b>	40

#### 5.4.6.2.7 AttributeOverrideResponse

The access terminal sends the AttributeOverrideResponse message to provide an acknowledgment for the AttributeOverride message.

Field	Length (bits)
MessageID	8
MessageSequence	8

1 MessageID The access terminal shall set this field to 0x06.

2 MessageSequence The access terminal shall set this field to the MessageSequence field of  
3 the AttributeOverride message whose receipt this message is  
4 acknowledging.

<b>Channels</b>	RTC	<b>SLP</b>	Best Effort
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 6 5.4.6.2.8 RouteUpdateRequest

7 The access network sends a RouteUpdateRequest message to request the access terminal to  
8 send a RouteUpdate message.

9

Field	Length (bits)
MessageID	8
ChannelIncluded	1
Channel	0 or 24
SectorCount	0 or 4

SectorCount occurrences of the following field:

SectorPilotPN	9
---------------	---

SectorSearchWindowSizeIncluded	0 or 1
--------------------------------	--------

SectorCount occurrences of the following field:

SectorSearchWindowSize	0 or 4
------------------------	--------

SectorSearchWindowOffsetIncluded	0 or 1
----------------------------------	--------

SectorCount occurrences of the following field:

SectorSearchWindowOffset	0 or 3
--------------------------	--------

Reserved	0 – 7 (as needed)
----------	-------------------

10 MessageID The access network shall set this field to 0x07.

1	ChannelIncluded	If SupportRouteUpdateEnhancements is less than 0x02 or if this
2		message is being sent on the Control Channel, the access network shall
3		set this field to '0'. Otherwise, the access network may set this field to '1'
4		to indicate that the Channel field is included or to '0' to indicate that the
5		Channel field is not included.
6	Channel	If ChannelIncluded is set to '0', the access network shall omit this field.
7		Otherwise, the access network shall set this field to a Channel record
8		specification. See 14.1 of [1] for the Channel record format. The access
9		network shall set the SystemType field of this record to 0x00.
10	SectorCount	If ChannelIncluded is set to '0', the access network shall omit this field.
11		Otherwise, the access network shall set this field to the number of
12		records specifying neighboring sectors information included in this
13		message.
14	SectorPilotPN	The access network shall set this field to the PN Offset of a neighboring
15		sector for which the access terminal is to report pilot strength
16		information.
17	SectorSearchWindowSizeIncluded	
18		If ChannelIncluded is set to '0', the access network shall omit this field.
19		Otherwise, the access network shall set this field to '1' if
20		SectorSearchWindowSize field for neighboring sectors is included in this
21		message. Otherwise, the access network shall set this field to '0'.
22	SectorSearchWindowSize	
23		The access network shall omit this field if
24		SectorSearchWindowSizeIncluded is set to '0'. If
25		SectorSearchWindowSizeIncluded is set to '1', the access network shall
26		set this field to the value shown in <del>Table 5.4.6.2.8-1</del> <a href="#">Table 5.4.6.2.8-1</a>
27		corresponding to the search window size to be used by the access
28		terminal for the neighbor pilot. The $n^{\text{th}}$ occurrence of this field
29		corresponds to the $n^{\text{th}}$ occurrence of SectorPilotPN in the record that
30		contains the SectorPilotPN field above.

**Table 5.4.6.2.8-1. Search Window Sizes**

<b>SearchWindowSize Value</b>	<b>Search Window Size (PN chips)</b>
0	4
1	6
2	8
3	10
4	14
5	20
6	28
7	40
8	60
9	80
10	100
11	130
12	160
13	226
14	320
15	452

**SectorSearchWindowOffsetIncluded**

If ChannelIncluded is set to '0', the access network shall omit this field. Otherwise, the access network shall set this field to '1' if SectorSearchWindowOffset field for neighboring sectors is included in this message. Otherwise, the access network shall set this field to '0'.

**SectorSearchWindowOffset**

The access network shall omit this field if SectorSearchWindowOffsetIncluded is set to '0'. If SectorSearchWindowOffsetIncluded is set to '1', the access network shall set this field to the value shown in [Table 5.4.6.2.8-2](#) ~~Table 5.4.6.2.8-2~~ corresponding to the search window offset to be used by the access terminal for the neighbor pilot. The  $n^{\text{th}}$  occurrence of this field corresponds to the  $n^{\text{th}}$  occurrence of SectorPilotPN in the record that contains the SectorPilotPN field above.



**Table 5.4.6.2.8-2 Search Window Offset**

<b>SearchWindowOffset</b>	<b>Offset ( PN chips)</b>
0	0
1	WindowSize <sup>41</sup> /2
2	WindowSize
3	3 × WindowSize /2
4	- WindowSize /2
5	- WindowSize
6	-3 × WindowSize /2
7	Reserved

Reserved The access network shall add reserved bits to make the length of the entire message equal to an integer number of octets. The access network shall set this field to 0. The access terminal shall ignore this field.

<b>Channels</b>	FTC CC	<b>SLP</b>	Best Effort
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.4.6.2.9 AttributeUpdateRequest

The sender sends an AttributeUpdateRequest message to offer an attribute value for a given attribute.

<b>Field</b>	<b>Length (bits)</b>
MessageID	8
TransactionID	8

One or more instances of the following record

AttributeRecord	Attribute dependent
-----------------	---------------------

**MessageID** The sender shall set this field to 0x52.

**TransactionID** The sender shall increment this value for each new AttributeUpdateRequest message sent.

**AttributeRecord** The format of this record is specified in 14.3 of [1].

<b>Channels</b>	FTC RTC	<b>SLP</b>	Reliable
-----------------	---------	------------	----------

<sup>41</sup> WindowSize is pilot's search window size in PN chips.

<b>Addressing</b>	unicast
-------------------	---------

<b>Priority</b>	40
-----------------	----

#### 5.4.6.2.10 AttributeUpdateAccept

The sender sends an AttributeUpdateAccept message in response to an AttributeUpdateRequest message to accept the offered attribute values.

Field	Length (bits)
MessageID	8
TransactionID	8

**MessageID** The sender shall set this field to 0x53.

**TransactionID** The sender shall set this value to the TransactionID field of the corresponding AttributeUpdateRequest message.

<b>Channels</b>	FTC    RTC
-----------------	------------

<b>SLP</b>	Reliable
------------	----------

<b>Addressing</b>	unicast
-------------------	---------

<b>Priority</b>	40
-----------------	----

#### 5.4.6.2.11 AttributeUpdateReject

The access network sends an AttributeUpdateReject message in response to an AttributeUpdateRequest message to reject the offered attribute values.

Field	Length (bits)
MessageID	8
TransactionID	8

**MessageID** The access network shall set this field to 0x54.

**TransactionID** The access network shall set this value to the TransactionID field of the corresponding AttributeUpdateRequest message.

<b>Channels</b>	FTC
-----------------	-----

<b>SLP</b>	Reliable
------------	----------

<b>Addressing</b>	unicast
-------------------	---------

<b>Priority</b>	40
-----------------	----

### 5.4.6.3 Interface to Other Protocols

#### 5.4.6.3.1 Commands Sent

This protocol sends the following commands:

- ReverseTrafficChannelMAC.Activate*
- ReverseTrafficChannelMAC.Deactivate*

- *ForwardTrafficChannelMAC.Activate*
- *ForwardTrafficChannelMAC.Deactivate*
- *AccessChannelMAC.Activate*
- *AccessChannelMAC.Deactivate*

#### 5.4.6.3.2 Indications

This protocol registers to receive the following indications:

- *ReverseTrafficChannelMAC.LinkAcquired*
- *OverheadMessages.Updated*
- *SignalingAdaptation.IdleHandoff* (access terminal only)
- *SignalingAdaptation.ConnectionInitiated*
- *SignalingAdaptation.EnteringTunnelState* (access terminal only)

#### 5.4.7 Configuration Attributes

Unless specified otherwise, the access terminal and the access network shall not use the Generic Attribute Update Protocol to update configurable attributes belonging to the Inter-RAT Route Update Protocol. If the value of the *SupportRouteUpdateEnhancements* attribute is not 0x00, then the access terminal and the access network shall support the use of the Generic Attribute Update Protocol to update values of the following attributes belonging to the Inter-RAT Route Update Protocol:

- *RouteUpdateRadiusMultiply*
- *RouteUpdateRadiusAdd*

If the value of the *SupportRouteUpdateEnhancements* attribute is 0x00, then the access network shall not include the *RouteUpdateRadiusMultiply* and *RouteUpdateRadiusAdd* attributes in an *AttributeUpdateRequest* message.

##### 5.4.7.1 Simple Attributes

The configurable simple attributes for this protocol are listed in [Table 5.4.7.1-1](#). The access terminal shall not include these simple attributes in a *ConfigurationRequest* message or an *AttributeUpdateRequest* message.

The access terminal and access network shall use as defaults the values in [Table 5.4.7.1-1](#) that are typed in ***bold italics***.

**Table 5.4.7.1-1 Configurable Values**

<b>Attribute ID</b>	<b>Attribute</b>	<b>Values</b>	<b>Meaning</b>
0x03	SetManagementOverrideAllowed	<b>0x00</b>	The SetManagementSameChannelParameters and SetManagementDifferentChannelParameters attributes in the AttributeOverride message are discarded.
		0x01	The SetManagementSameChannelParameters and SetManagementDifferentChannelParameters attributes in the AttributeOverride message are acted upon.
		0x02-0xff	Reserved
0xff	RouteUpdateRadiusMultiply	0x00	Distance-based registration is disabled.
		<b>0x0a</b>	Multiplier for the Route update radius is 1.
		0x01 to 0x64	Multiplier for the Route update radius in units of 0.1.
		All other values	Reserved
0xfe	RouteUpdateRadiusAdd	<b>0x0000</b>	Addition to the Route update radius is zero.
		0x0001 to 0x0fff	Addition to the Route update radius expressed as 2's complement value.
		All other values	Reserved
0xfd	SupportRouteUpdateEnhancements	<b>0x00</b>	Use of Generic Attribute Update Protocol to update RouteUpdateRadiusMultiply and RouteUpdateRadiusAdd and processing of RouteUpdateRequest message is not supported.

Attribute ID	Attribute	Values	Meaning
		0x01	Use of Generic Attribute Update Protocol to update RouteUpdateRadiusMultiply and RouteUpdateRadiusAdd and processing of RouteUpdateRequest message without Channel Record is supported.
		0x02	Use of Generic Attribute Update Protocol to update RouteUpdateRadiusMultiply and RouteUpdateRadiusAdd and processing of RouteUpdateRequest message is supported.
		All other values	Reserved

#### 5.4.7.2 Complex Attributes

The following complex attributes and default values are defined (see 14.3 of [1] for attribute record definition). The following complex attributes are to be used only by the access network in a ConfigurationRequest message:

- SearchParameters
- SetManagementSameChannelParameters
- SetManagementDifferentChannelParameters

The following complex attributes are to be used only by the access terminal in a ConfigurationRequest message:

- SupportedCDMAChannels

##### 5.4.7.2.1 SearchParameters Attribute

Field	Length (bits)	Default Value
Length	8	N/A
AttributeID	8	N/A

One or more of the following record:

ValueID	8	N/A
PilotIncrement	4	4
SearchWindowActive	4	8

Field	Length (bits)	Default Value
SearchWindowNeighbor	4	10
SearchWindowRemaining	4	10

**Length** Length of the complex attribute in octets. The access network shall set this field to the length of the complex attribute excluding the Length field.

**AttributeID** The access network shall set this field to 0x00.

**ValueID** This field identifies this particular set of values for the attribute. The access network shall increment this field for each complex attribute-value record for a particular attribute.

**PilotIncrement** The access network shall set this field to the pilot PN sequence increment, in units of 64 PN chips, that access terminals are to use for searching the Remaining Set. The access network should set this field to the largest increment such that the pilot PN sequence offsets of all its neighbor access networks are integer multiples of that increment. The access terminal shall support all the valid values for this field.

**SearchWindowActive** Search window size for the Active Set and Candidate Set. The access network shall set this field to the value shown in Table 5.4.6.2.5-1 ~~Table 5.4.6.2.5-1~~ corresponding to the search window size to be used by the access terminal for the Active Set and Candidate Set. The access terminal shall support all the valid values specified by this field.

**SearchWindowNeighbor** Search window size for the Neighbor Set. The access network shall set this field to the value shown in Table 5.4.6.2.5-1 ~~Table 5.4.6.2.5-1~~ corresponding to the search window size to be used by the access terminal for the Neighbor Set. The access terminal shall support all the valid values specified by this field.

**SearchWindowRemaining** Search window size for the Remaining Set. The access network shall set this field to the value shown in Table 5.4.6.2.5-1 ~~Table 5.4.6.2.5-1~~ corresponding to the search window size to be used by the access terminal for the Remaining Set. The access terminal shall support all the valid values specified by this field.

#### 5.4.7.2.2 SetManagementSameChannelParameters Attribute

The access terminal shall use these attributes if the pilot being compared is on the same channel as the active set pilots' channel.

1

Field	Length (bits)	Default Value
Length	8	N/A
AttributeID	8	N/A

One or more of the following attribute value record:

{		
ValueID	8	N/A
PilotAdd	6	0x0e
PilotCompare	6	0x05
PilotDrop	6	0x12
PilotDropTimer	4	3
DynamicThresholds	1	0
SoftSlope	0 or 6	N/A
AddIntercept	0 or 6	N/A
DropIntercept	0 or 6	N/A
NeighborMaxAge	4	0
Reserved	variable	N/A
}		

- 2    Length                      Length of the complex attribute in octets. The access network shall set  
3                                      this field to the length of the complex attribute excluding the Length  
4                                      field.
- 5    AttributeID                The access network shall set this field to 0x01.
- 6    ValueID                    This field identifies this particular set of values for the attribute. The  
7                                      access network shall increment this field for each complex attribute-  
8                                      value record for a particular attribute.
- 9    PilotAdd                    This value is used by the access terminal to trigger a RouteUpdate in the  
10                                      Connected State. The access network shall set this field to the pilot  
11                                      detection threshold, expressed as an unsigned binary number equal to  $\lfloor -$   
12                                       $2 \times 10 \times \log_{10} E_c/I_0 \rfloor$ . The value used by the access terminal is  $-0.5$  dB  
13                                      times the value of this field. The access terminal shall support all the  
14                                      valid values specified by this field.
- 15   PilotDrop                    This value is used by the access terminal to start a pilot drop timer for a  
16                                      pilot in the Active Set or the Candidate Set. The access network shall set  
17                                      this field to the pilot drop threshold, expressed as an unsigned binary

number equal to  $\lfloor -2 \times 10 \times \log_{10} E_c/I_0 \rfloor$ . The value used by the access terminal is  $-0.5$  dB times the value of this field. The access terminal shall support all the valid values specified by this field.

**PilotCompare** Active Set versus Candidate Set comparison threshold, expressed as a 2's complement number. The access terminal transmits a RouteUpdate message when the strength of a pilot in the Candidate Set exceeds that of a pilot in the Active Set by this margin. The access network shall set this field to the threshold Candidate Set pilot to Active Set pilot ratio, in units of 0.5 dB. The access terminal shall support all the valid values specified by this field.

**PilotDropTimer** Timer value after which an action is taken by the access terminal for a pilot that is a member of the Active Set or Candidate Set, and whose strength has not become greater than the value specified by PilotDrop. If the pilot is a member of the Active Set, a RouteUpdate message is sent in the Connected State. If the pilot is a member of the Candidate Set, it will be moved to the Neighbor Set. The access network shall set this field to the drop timer value shown in [Table 5.4.7.2.2-1](#) ~~Table 5.4.7.2.2-1~~ corresponding to the pilot drop timer value to be used by access terminals. The access terminal shall support all the valid values specified by this field.

**Table 5.4.7.2.2-1 Pilot Drop Timer Values**

PilotDropTimer	Timer Expiration (seconds)	PilotDropTimer	Timer Expiration (seconds)
0	< 0.1	8	27
1	1	9	39
2	2	10	55
3	4	11	79
4	6	12	112
5	9	13	159
6	13	14	225
7	19	15	319

**DynamicThresholds** This field shall be set to '1' if the following three fields are included in this record. Otherwise, this field shall be set to '0'.

**SoftSlope** This field shall be included only if DynamicThresholds is set to '1'. This field shall be set to an unsigned binary number, which is used by the access terminal in the inequality criterion for adding a pilot to the Active



Set or dropping a pilot from the Active Set. The access terminal shall support all the valid values specified by this field.

**AddIntercept** This field shall be included only if DynamicThresholds is set to '1'. This field shall be set to a 2's complement signed binary number in units of dB. The access terminal shall support all the valid values specified by this field.

**DropIntercept** This field shall be included only if DynamicThresholds is set to '1'. This field shall be set to a 2's complement signed binary number in units of dB. The access terminal shall support all the valid values specified by this field.

**NeighborMaxAge** The access network shall set this field to the maximum AGE value beyond which the access terminal is to drop members from the Neighbor Set. The access terminal shall support all the valid values specified by this field.

**Reserved** The access network shall set this field to zero. The access terminal shall ignore this field. The length of this field shall be such that the attribute value record is octet-aligned.

#### 5.4.7.2.3 SetManagementDifferentChannelParameters Attribute

The access terminal shall use these attributes if the pilot being compared is on a channel that is different from the active set pilots' channel.

Field	Length (bits)	Default Value
Length	8	N/A
AttributeID	8	N/A

One or more of the following attribute value record:

{		
ValueID	8	N/A
PilotAdd	6	0x0e
PilotCompare	6	0x05
PilotDrop	6	0x12
PilotDropTimer	4	3
DynamicThresholds	1	0
SoftSlope	0 or 6	N/A
AddIntercept	0 or 6	N/A

Field	Length (bits)	Default Value
DropIntercept	0 or 6	N/A
NeighborMaxAge	4	0
Reserved	variable	N/A

}

1	Length	Length of the complex attribute in octets. The access network shall set
2		this field to the length of the complex attribute excluding the Length
3		field.
4	AttributeID	The access network shall set this field to 0x02.
5	ValueID	This field identifies this particular set of values for the attribute. The
6		access network shall increment this field for each complex attribute-
7		value record for a particular attribute.
8	PilotAdd	This value is used by the access terminal to trigger a RouteUpdate in the
9		Connected State. The access network shall set this field to the pilot
10		detection threshold, expressed as an unsigned binary number equal to $\lfloor -$
11		$2 \times 10 \times \log_{10} E_c/I_0 \rfloor$ . The value used by the access terminal is $-0.5$ dB
12		times the value of this field. The access terminal shall support all the
13		valid values specified by this field.
14	PilotDrop	This value is used by the access terminal to start a pilot drop timer for a
15		pilot in the Active Set or the Candidate Set. The access network shall set
16		this field to the pilot drop threshold, expressed as an unsigned binary
17		number equal to $\lfloor - 2 \times 10 \times \log_{10} E_c/I_0 \rfloor$ . The value used by the access
18		terminal is $-0.5$ dB times the value of this field. The access terminal shall
19		support all the valid values specified by this field.
20	PilotCompare	Active Set versus Candidate Set comparison threshold, expressed as a 2's
21		complement number. The access terminal transmits a RouteUpdate
22		message when the strength of a pilot in the Candidate Set exceeds that of
23		a pilot in the Active Set by this margin. The access network shall set this
24		field to the threshold Candidate Set pilot to Active Set pilot ratio, in units
25		of 0.5 dB. The access terminal shall support all the valid values specified
26		by this field.
27	PilotDropTimer	Timer value after which an action is taken by the access terminal for a
28		pilot that is a member of the Active Set or Candidate Set, and whose
29		strength has not become greater than the value specified by PilotDrop. If
30		the pilot is a member of the Active Set, a RouteUpdate message is sent in
31		the Connected State. If the pilot is a member of the Candidate Set, it will
32		be moved to the Neighbor Set. The access network shall set this field to

the drop timer value shown in [Table 5.4.7.2.2-1](#) ~~Table 5.4.7.2.2-1~~ corresponding to the pilot drop timer value to be used by access terminals. The access terminal shall support all the valid values specified by this field.

**DynamicThresholds** This field shall be set to '1' if the following three fields are included in this record. Otherwise, this field shall be set to '0'.

**SoftSlope** This field shall be included only if DynamicThresholds is set to '1'. This field shall be set to an unsigned binary number, which is used by the access terminal in the inequality criterion for adding a pilot to the Active Set or dropping a pilot from the Active Set. The access terminal shall support all the valid values specified by this field.

**AddIntercept** This field shall be included only if DynamicThresholds is set to '1'. This field shall be set to a 2's complement signed binary number in units of dB. The access terminal shall support all the valid values specified by this field.

**DropIntercept** This field shall be included only if DynamicThresholds is set to '1'. This field shall be set to a 2's complement signed binary number in units of dB. The access terminal shall support all the valid values specified by this field.

**NeighborMaxAge** The access network shall set this field to the maximum AGE value beyond which the access terminal is to drop members from the Neighbor Set. The access terminal shall support all the valid values specified by this field.

**Reserved** The access network shall set this field to zero. The access terminal shall ignore this field. The length of this field shall be such that the attribute value record is octet-aligned.

#### 5.4.7.2.4 SupportedCDMAChannels Attribute

The access terminal uses this attribute to convey to the access network the CDMA Channels supported by the access terminal.

Field	Length (bits)	Default Value
Length	8	N/A
AttributeID	8	N/A

One or more of the following attribute value record:

{		
ValueID	8	N/A

Field	Length (bits)	Default Value
BandClassCount	8	0

BandClassCount occurrences of the following record:

BandClass	5	N/A
BandSubClassCount	8	N/A

BandSubClassCount occurrences of the following field:

BandSubClass	8	N/A
--------------	---	-----

Reserved	0 – 7 (as needed)	N/A
----------	----------------------	-----

- 1    Length                      Length of the complex attribute in octets. The access terminal shall set  
2                                      this field to the length of the complex attribute excluding the Length  
3                                      field.
- 4    AttributeID                  The access terminal shall set this field to 0x04.
- 5    ValueID                      This field identifies this particular set of values for the attribute. The  
6                                      access terminal shall set this field to an identifier assigned to this  
7                                      complex value.
- 8    BandClassCount              The access terminal shall set this field to the number of occurrences of  
9                                      the BandClass field in this complex value.
- 10   BandClass                    The access terminal shall set this field to the band class supported by  
11                                      the access terminal.
- 12   BandSubClassCount          The access terminal shall set this field to the number of band sub-  
13                                      classes supported by the access terminal in this band class.
- 14   BandSubClass                The access terminal shall set this field to the band sub-class supported  
15                                      by the access terminal.
- 16   Reserved                      The access terminal shall add reserved bits to make the length of each  
17                                      attribute value record equal to an integer number of octets. The access  
18                                      terminal shall set this field to zero. The access network shall ignore this  
19                                      field.

#### 5.4.8 Protocol Numeric Constants

Constant	Meaning	Value
N <sub>RUP</sub> Type	Type field for this protocol	Table 2.5.4-1 of [1]
N <sub>RUP</sub> InterRAT	Subtype field for this protocol	0x0002
N <sub>RUP</sub> Active	Maximum size of the Active Set	6
N <sub>RUP</sub> Candidate	Maximum size of the Candidate Set	6
N <sub>RUP</sub> Neighbor	Minimum size of the Neighbor Set	20

#### 5.4.9 Session State Information

The Session State Information record (see 14.8 of [1]) consists of parameter records.

This protocol defines the following parameter record in addition to the configuration attributes for this protocol.

##### 5.4.9.1 RouteUpdate Parameter

The following parameter shall be included in the Session State Information record only if the Session State Information is being transferred while the connection is open.

**Table 5.4.9.1–1 The Format of the Parameter Record for the RouteUpdate Parameter**

Field	Length (bits)
ParameterType	8
Length	8
TCAMessageSequence	8
RUPMessageSequence	8
ChannelIncluded	1
Channel	0 or 24
FrameOffset	4
DRCLength	2
DRCCChannelGainBase	6
ACKChannelGain	6
NumPilots	4

NumPilots occurrences of the following fields{

PilotPN	9
SectorID	128
SofterHandoff	1

MACIndexLSBs	6
DRCCover	3
RABLength	2
RABOffset	3
}	
RChannelGainIncluded	1
NumPilots occurrences of the following fields {	
RChannelGain	0 or 2
}	
Reserved	Variable

1	ParameterType	This field shall be set to 0x01 for this parameter record.
2	Length	This field shall be set to the length of this parameter record in units of
3		octets excluding the Length field.
4	TCAMessageSequence	
5		This field shall be set to the MessageSequence field of the last
6		TrafficChannelAssignment message that was sent by the source access
7		network.
8	RUPMessageSequence	
9		This field shall be set to the MessageSequence field of the last
10		RouteUpdate message that was received by the source access network.
11	ChannelIncluded	This field shall be set to '1' if the Channel field is included. Otherwise,
12		this field shall be set to '0'.
13	Channel	This field shall be included only if the ChannelIncluded field is set to '1'.
14		If included, this field shall be set to the last Channel field of the last
15		TrafficChannelAssignment message that included the Channel field and
16		was sent by the source access network, or the Channel field shall be set
17		by another access network if the RouteUpdate parameter is from the
18		other access network.
19	FrameOffset	This field shall be set to the FrameOffset field in the last
20		TrafficChannelAssignment message that was sent by the source access
21		network, or the FrameOffset field in the next TrafficChannelAssignment
22		message to be sent by the source access network if the RouteUpdate
23		parameter is from another access network.

1	DRCLength	This field shall be set to the DRCLength field in the last
2		TrafficChannelAssignment message that was sent by the source access
3		network , or the DRCLength field in the next TrafficChannelAssignment
4		message to be sent by the source access network if the RouteUpdate
5		parameter is from another access network.
6	DRCChannelGainBase	
7		This field shall be set to the DRCChannelGainBase field in the last
8		TrafficChannelAssignment message that was sent by the source access
9		network, or the DRCChannelGainBase field in the next
10		TrafficChannelAssignment message to be sent by the source access
11		network if the RouteUpdate parameter is from another access network.
12	ACKChannelGain	This field shall be set to the ACKChannelGain field in the last
13		TrafficChannelAssignment message that was sent by the source access
14		network, or the ACKChannelGain field in the next
15		TrafficChannelAssignment message to be sent by the source access
16		network if the RouteUpdate parameter is from another access network.
17	NumPilots	This field shall be set to the NumPilots field in the last
18		TrafficChannelAssignment message that was sent by the source access
19		network, or the NumPilots field in the next TrafficChannelAssignment
20		message to be sent by the source access network if the RouteUpdate
21		parameter is from another access network.
22	PilotPN	This field shall be set to the corresponding PilotPN field in the last
23		TrafficChannelAssignment message that was sent by the source access
24		network, or the corresponding PilotPN field in the next
25		TrafficChannelAssignment message to be sent by the source access
26		network if the RouteUpdate parameter is from another access network.
27	SectorID	This field shall be set to the SectorID corresponding to the sector
28		associated with the PilotPN specified above.
29	SofterHandoff	This field shall be set to the corresponding SofterHandoff field in the last
30		TrafficChannelAssignment message that was sent by the source access
31		network, or the corresponding SofterHandoff field in the next
32		TrafficChannelAssignment message to be sent by the source access
33		network if the RouteUpdate parameter is from another access network.
34	MACIndexLSBs	This field shall be set to the corresponding MACIndexLSBs field in the
35		last TrafficChannelAssignment message that was sent by the source
36		access network, or the corresponding MACIndexLSBs field in the next
37		TrafficChannelAssignment message to be sent by the source access
38		network if the RouteUpdate parameter is from another access network.

DRCCover	This field shall be set to the corresponding DRCCover field in the last TrafficChannelAssignment message that was sent by the source access network, or the corresponding DRCCover field in the next TrafficChannelAssignment message to be sent by the source access network if the RouteUpdate parameter is from another access network.
RABLength	This field shall be set to the corresponding RABLength field in the last TrafficChannelAssignment message that was sent by the source access network, or the corresponding RABLength field in the next TrafficChannelAssignment message to be sent by the source access network if the RouteUpdate parameter is from another access network.
RABOffset	This field shall be set to the corresponding RABOffset field in the last TrafficChannelAssignment message that was sent by the source access network, or the corresponding RABOffset field in the next TrafficChannelAssignment message to be sent by the source access network if the RouteUpdate parameter is from another access network.
RACHannelGainIncluded	This field shall be set to '1' if the RACHannelGain field is included in the RouteUpdate parameter. Otherwise, this field shall be set to '0'.
RACHannelGain	This field shall be included only if the RACHannelGainIncluded field is set to '1'. If included, this field shall be set to the corresponding RACHannelGain field in the last TrafficChannelAssignment message that was sent by the source access network, or the corresponding RACHannelGain field in the next TrafficChannelAssignment message to be sent by the source access network if the RouteUpdate parameter is from another access network.
Reserved	The number of bits in this field is equal to the number needed to make the length of this parameter record length an integer number of octets. This field shall be set to all zeros.

#### 5.4.9.2 ExtendedRouteUpdate Parameter

The following parameter shall be included in the Session State Information record only if the Session State Information is being transferred while the connection is open, and if MACIndexMSB fields were included in the last TrafficChannelAssignment message that was sent by the source access network.

**Table 5.4.9.2-1 The Format of the Parameter Record for the ExtendedRouteUpdate Parameter**

Field	Length (bits)
ParameterType	8



Length	8
NumPilots	4
NumPilots occurrences of the following field:{	
MACIndexMSB	1
}	
DSCChannelGainBase	5
NumCells	4
NumCells occurrences of the following field:{	
DSC	3
}	
Reserved	0 – 7 (as needed)

1	ParameterType	This field shall be set to 0x02 for this parameter record.
2	Length	This field shall be set to the length of this parameter record in units of
3		octets excluding the Length field.
4	NumPilots	This field shall be set to the NumPilots field in the last
5		TrafficChannelAssignment message that was sent by the source access
6		network, or the corresponding NumPilots field in the next
7		TrafficChannelAssignment message to be sent by the source access
8		network if the ExtendedRouteUpdate parameter is from another access
9		network.
10	MACIndexMSB	This field shall be set to the corresponding MACIndexMSB field in the
11		last TrafficChannelAssignment message that was sent by the source
12		access network, or the corresponding MACIndexMSB field in the next
13		TrafficChannelAssignment message to be sent by the source access
14		network if the ExtendedRouteUpdate parameter is from another access
15		network.
16	DSCChannelGainBase	
17		This field shall be set to the DSCChannelGainBase field in the last
18		TrafficChannelAssignment message that was sent by the source access
19		network, or the corresponding DSCChannelGainBase field in the next
20		TrafficChannelAssignment message to be sent by the source access
21		network if the ExtendedRouteUpdate parameter is from another access
22		network.
23	NumCells	This field shall be set to the NumCells field included in the last
24		TrafficChannelAssignment message that was sent by the source access

network, or the corresponding NumCells field in the next TrafficChannelAssignment message to be sent by the source access network if the ExtendedRouteUpdate parameter is from another access network.

DSC This field shall be set to the corresponding DSC field in the last TrafficChannelAssignment message that was sent by the source access network, or the corresponding DSC field in the next TrafficChannelAssignment message to be sent by the source access network if the ExtendedRouteUpdate parameter is from another access network.

Reserved The number of bits in this field is equal to the number needed to make the length of this parameter record length an integer number of octets. This field shall be set to all zeros.

#### 5.4.9.3 AttributeOverrideMessageSequence Parameter

The following parameter shall be included in the Session State Information Record only if the Session State Information is being transferred while the Connection is open and SetManagementOverrideAllowed is set to 0x01.

**Table 5.4.9.3–1 The Format of the Parameter Record for the AttributeOverrideMessageSequence Parameter**

Field	Length (bits)
ParameterType	8
Length	8
AttributeOverrideMessageSequence	8

ParameterType This field shall be set to 0x03 for this parameter record.

Length This field shall be set to the length of this parameter record in units of octets excluding the Length field.

AttributeOverrideMessageSequence This field shall be set to the MessageSequence field of the last AttributeOverride message that was sent by the source access network. If the access network has not sent the AttributeOverride message during this connection, then this field shall be set to 255.

## 5.5 Inter-RAT Overhead Messages Protocol

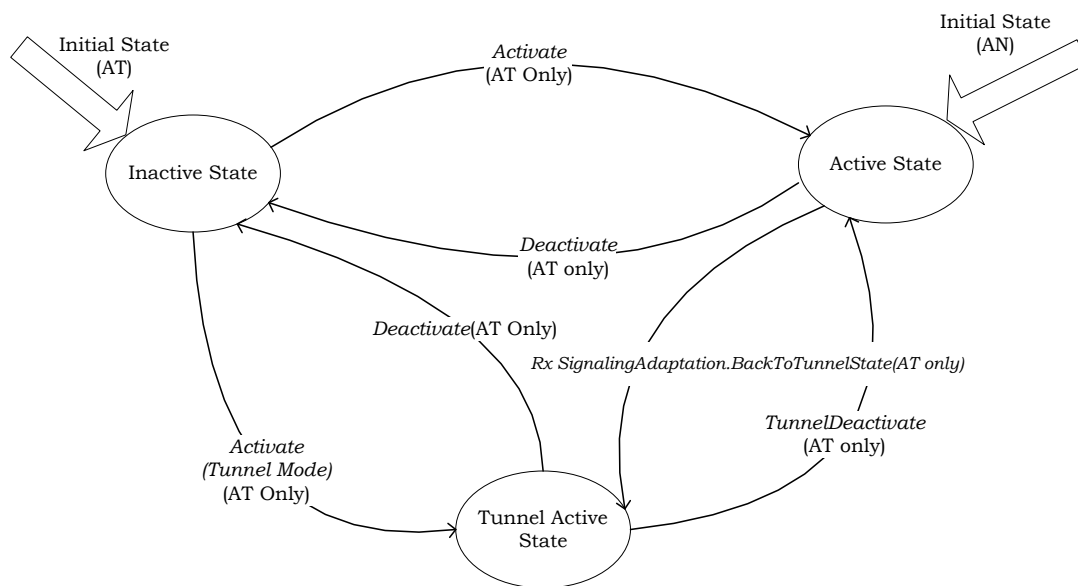
Section 5.12 supersedes this section for the access terminal and the access network that supports inter-RAT Overhead Messages Protocol based on [10].

### 5.5.1 Overview

The QuickConfig message and the SectorParameters message are collectively termed the overhead messages. These messages are broadcast by the access network over the Control Channel. These messages are unique, in that they pertain to multiple protocols and are, therefore, specified separately. The Overhead Messages Protocol provides procedures related to transmission, reception and supervision of these messages. The Inter-RAT Overhead Messages Protocol also defines HRPD Silence Parameters for supporting active handoff from other radio access technologies and the OtherRATNeighborList message that allows the access network to broadcast adjacent other RAT neighbors.

This protocol can be in one of three states:

- **Inactive State:** In this state, the protocol waits for an *Activate* command. This state corresponds only to the access terminal and occurs when the access terminal has not acquired an access network or is not required to receive overhead messages.
- **Active State:** In this state the access network transmits and the access terminal receives overhead messages and OtherRATNeighborList message if it is transmitted by the access network.
- **Tunnel Active State:** In this state the access terminal operates in the Inter-RAT tunnel mode (e.g. E-UTRAN tunnel mode) . The access terminal receives HRPD overhead parameters needed for tunnel mode operation through source RAT (e.g. E-UTRAN).



**Figure 5.5.1–1 Inter-RAT Overhead Messages Protocol State Diagram**

## 5.5.2 Primitives and Public Data

### 5.5.2.1 Commands

This protocol defines the following commands:

- *Activate*
- *Deactivate*
- *TunnelDeactivate*

### 5.5.2.2 Return Indications

This protocol returns the following indications:

- *ANRedirected*
- *SupervisionFailed*
- *Updated*
- *OtherRATUpdated*

### 5.5.2.3 Public Data

This protocol shall make the following data public:

- Subtype for this protocol
- All data in the overhead messages<sup>42</sup>
- OverheadParametersUpToDate
- HRPDPReRegistrationAllowed
- All data in the Neighbor Record of OtherRATNeighborList message

## 5.5.3 Protocol Data Unit

The transmission unit of this protocol is a message. This is a control protocol; and, therefore, it does not carry payload on behalf of other layers or protocols.

This protocol uses the Signaling Application to transmit and receive messages.

---

<sup>42</sup> The HRPD neighbor list parameters received during the Tunnel Active State is stored in the existing neighbor list public data structure as specified by the overhead message. The procedure of storing the HRPD neighbor list parameters received during the Tunnel Active State is specified in section 5.5.6.1.5. The parameters of received HRPDSilenceParameters message during the Tunnel Active State also store as the public data.

## 5.5.4 Protocol Initialization

### 5.5.4.1 Protocol Initialization for the InConfiguration Protocol Instance

Upon creation, the InConfiguration instance of this protocol in the access terminal and the access network shall perform the following in the order specified:

- The fall-back values of the attributes for this protocol instance shall be set to the default values specified for each attribute.
- If the InUse instance of this protocol has the same protocol subtype as this InConfiguration protocol instance, then the fall-back values of the attributes defined by the InConfiguration protocol instance shall be set to the values of the corresponding attributes associated with the InUse protocol instance.
- The value for each attribute for this protocol instance shall be set to the fall-back value for that attribute.

### 5.5.4.2 Protocol Initialization for the InUse Protocol Instance

Upon creation, the InUse instance of this protocol in the access terminal and access network shall perform the following:

- The value of the attributes for this protocol instance shall be set to the default values specified for each attribute.
- The protocol at the access terminal shall enter the Inactive State.
- The protocol at the access network shall enter the Active State.
- The protocol shall set HRPDPReRegistrationAllowed to '0'.

## 5.5.5 Procedures and Messages for the InConfiguration Instance of the Protocol

### 5.5.5.1 Procedures

This protocol uses the Generic Configuration Protocol (see 14.7 of [1]) to define the processing of the configuration messages.

### 5.5.5.2 Commit Procedures

The access terminal and the access network shall perform the procedures specified in this section, in the order specified, when directed by the InUse instance of the Session Configuration Protocol to execute the Commit procedures:

- If the InUse instance of any of the Connection Layer protocols does not have the same subtype as the corresponding InConfiguration protocol instance, then
  - The access terminal shall set the initial state of the InConfiguration and InUse protocol instances of the Overhead Messages protocol to the Inactive State.
  - The access network shall set the initial state of the InConfiguration and InUse protocol instances of the Overhead Messages protocol to the Active State.

- All the public data that are defined by this protocol, but are not defined by the InUse protocol instance shall be added to the public data of the InUse protocol.
- If the InUse instance of this protocol has the same subtype as this protocol instance, then
  - The access terminal and the access network shall set the attribute values associated with the InUse instance of this protocol to the attribute values associated with the InConfiguration instance of this protocol, and
  - The access terminal and the access network shall purge the InConfiguration instance of the protocol.
- If the InUse instance of this protocol does not have the same subtype as this protocol instance, then the access terminal and the access network shall perform the following:
  - The InConfiguration protocol instance shall become the InUse protocol instance for the Overhead Messages Protocol at the access terminal and the access network.
- All the public data not defined by this protocol shall be removed from the public data of the InUse protocol.

### 5.5.5.3 Message Formats

#### 5.5.5.3.1 ConfigurationRequest

The ConfigurationRequest message format is as follows:

Field	Length (bits)
MessageID	8
TransactionID	8
Zero or more instances of the following record	
AttributeRecord	Attribute dependent

- MessageID**      The sender shall set this field to 0x50.
- TransactionID**      The sender shall increment this value for each new ConfigurationRequest message sent.
- AttributeRecord**      The format of this record is specified in 14.3 of [1].

<b>Channels</b>	FTC    RTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.5.5.3.2 ConfigurationResponse

The ConfigurationResponse message format is as follows:

Field	Length (bits)
MessageID	8
TransactionID	8

Zero or more instances of the following record

AttributeRecord	Attribute dependent
-----------------	---------------------

- 1    MessageID            The sender shall set this field to 0x51.
- 2    TransactionID        The sender shall set this value to the TransactionID field of the  
3                            corresponding ConfigurationRequest message.
- 4    AttributeRecord      An attribute record containing a single attribute value. If this message  
5                            selects a complex attribute, only the ValueID field of the complex  
6                            attribute shall be included in the message. The format of the  
7                            AttributeRecord is given in 14.3 of [1]. The sender shall not include more  
8                            than one attribute record with the same attribute identifier.

<b>Channels</b>	FTC    RTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

## 5.5.6 Procedures and Messages for the InUse Instance of the Protocol

### 5.5.6.1 Procedures

#### 5.5.6.1.1 Extensibility Requirements

Further revisions of the access network may add new overhead messages.

The access terminal shall discard overhead messages with a MessageID field it does not recognize.

Further revisions of the access network may add new fields to existing overhead messages. These fields shall be added to the end of the message, prior to the Reserved field if such a field is defined.

The access terminal shall ignore fields it does not recognize.

#### 5.5.6.1.2 Command Processing

The access network shall ignore all commands.

##### 5.5.6.1.2.1 Activate

If this protocol receives an *Activate* command in the Inactive State:

- The access terminal shall transition to the Active State if TunnelModeEnabled, as public data of Signaling Adaptation Protocol, is set to '0'. The access terminal shall transition to the Tunnel Active State if TunnelModeEnabled is set to '1'.

- The access network shall ignore it.

If this protocol receives the command in the Active State, it shall be ignored.

#### 5.5.6.1.2.2 Deactivate

If this protocol receives a *Deactivate* command in the Inactive State, it shall be ignored.

If this protocol receives the command in the Active State or in the Tunnel Active State:

- Access terminal shall set HRPDPReRegistrationAllowed to 0 and transition to the Inactive State.
- Access network shall ignore it.

#### 5.5.6.1.2.3 TunnelDeactivate

If this protocol receives a *TunnelDeactivate* command in the Inactive State or in the Active State, it shall be ignored.

If this protocol receives the command in the Tunnel Active State:

- Set OverheadParametersUpToDate to 0 and HRPDPReRegistrationAllowed to 0.
- The access terminal shall transition to the Active State.
- The access network shall ignore it.

#### 5.5.6.1.3 Inactive State

This state corresponds only to the access terminal and occurs when the access terminal has not acquired an access network or is not required to receive overhead messages. In this state, the protocol waits for an *Activate* command.

#### 5.5.6.1.4 Active State

##### 5.5.6.1.4.1 Access Network Requirements

The access network shall include a QuickConfig message in every Control Channel synchronous Sleep State capsule. The access network should include a SectorParameters message in the synchronous capsule at least once every  $N_{OMP\text{SectorParameters}}$  Control Channel cycles. The access network shall set the SectorSignature field of the QuickConfig message to the SectorSignature field of the next SectorParameters message. The access network shall set the AccessSignature field of the QuickConfig message to the public data AccessSignature (see Access Channel MAC Protocol).

If OtherRATNeighborList message is sent by the access network, the access network shall set the OtherRATSignature field of the QuickConfig message to the OtherRATSignature field of the next OtherRATNeighborList message.

##### 5.5.6.1.4.2 Access Terminal Requirements

When in the Active State, the access terminal shall perform supervision on the QuickConfig and the SectorParameters messages as specified in 5.5.6.1.4.2.1.1 and 5.5.6.1.4.2.1.2, respectively.



If the access terminal does not have any stored value for the overhead parameters or if it receives a *RouteUpdate.IdleHO* indication, or if it receives a *ConnectedState.ConnectionClosed* indication, the access terminal shall set *OverheadParametersUpToDate* to 0.

If the access terminal receives a *SignalingAdaptation.EnteringTunnelState* indication, the access terminal shall:

- Set *OverheadParametersUpToDate* to 0,
- Transition to the Tunnel Active State.

When the access terminal receives the QuickConfig message, it shall perform the following:

- If any of the following conditions are true:
  - *OverheadParametersUpToDate* is equal to 0,
  - the value of the *SectorSignature* field of the new QuickConfig message is different from the last received value for *SectorSignature* corresponding to the same sector<sup>43</sup> from which the QuickConfig message is received, or
  - the sector from which this QuickConfig message is received is different from the sector from which the last QuickConfig message was received,

then the access terminal shall perform the following:

- The access terminal shall set *OverheadParametersUpToDate* to 0.
- If the value of the *SectorSignature* field of the new QuickConfig message is different from the last received value for *SectorSignature* corresponding to the same sector from which the QuickConfig message is received, the access terminal shall monitor every subsequent Control Channel synchronous capsule until it receives the updated *SectorParameters* message. When the access terminal receives the updated *SectorParameters* message, it shall return an *Updated* indication and set *OverheadParametersUpToDate* to 1.
- If the *OverheadParametersUpToDate* is set to '1' and if *OtherRATAvailable* field of the latest received QuickConfig message is set to '1' and if one of the following requirement is met:
  - the value of the *OtherRATSignature* field of the latest received QuickConfig message is different from the last received value for *OtherRATSignature* corresponding to the same sector from which the QuickConfig message is received, or
  - the sector from which the latest received QuickConfig message is received is different from the sector from which the last QuickConfig message was received, or
  - the access terminal does not have any stored value for the *OtherRATNeighborList* message parameters.

then the access terminal shall perform the following:

---

<sup>43</sup> A sector is specified by its *SectorID* and the CDMA channel associated with it (see the definition of *Sector*).

- 1       – The access terminal shall monitor the Control Channel synchronous capsule of the
- 2       Control Channel Cycle in which the OtherRATNeighborList message is expected to be
- 3       transmitted. When the access terminal receives the updated OtherRATNeighborList
- 4       message, it shall return an *OtherRATUpdated* indication.

5       Once the access terminal receives an updated overhead message, it should store the signature  
6       associated with the message for future comparisons. The access terminal may cache overhead  
7       message parameters and signatures to speed up acquisition of parameters from a sector that  
8       was previously monitored.

9       Once the access terminal receives an updated OtherRATNeighborList message, it should store  
10      the signature associated with the message for future comparisons.

11      If the Redirect field of the QuickConfig message is set to '1', the access terminal shall return an  
12      *ANRedirected* indication<sup>44</sup>.

13      The access terminal shall store a list of RouteUpdateTriggerCodes associated with subnets  
14      visited by the access terminal for future comparisons and for future use. This list is called the  
15      RouteUpdateTriggerCodeList. Each entry in the RouteUpdateTriggerCodeList shall include the  
16      subnet and the RouteUpdateTriggerCode. Other protocols may cache information keyed by  
17      (Subnet, RouteUpdateTriggerCode) pairs. If other protocols cache information keyed by  
18      (Subnet, RouteUpdateTriggerCode) pairs, then these protocols shall delete such information  
19      when the (Subnet, RouteUpdateTriggerCode) pair is deleted from the  
20      RouteUpdateTriggerCodeList.

21      If RouteUpdateTriggerCodeListSize is set to 0x00, the access terminal shall delete all entries in  
22      the RouteUpdateTriggerCodeList. Otherwise, the access terminal shall perform the following:

- 23      • The access terminal shall delete any entries in the RouteUpdateTriggerCodeList other than  
24      the current (Subnet, RouteUpdateTriggerCode) received in the most recent  
25      SectorParameters message if the entries have an expiration timer that has been running for  
26      at least  $2^{(\text{RouteUpdateTriggerMaxAge} + 3)} \times 1.28$  seconds.
- 27      • If the expiration timer for the RouteUpdateTriggerCodeList entry corresponding to the  
28      current (Subnet, RouteUpdateTriggerCode) received in the most recent SectorParameters  
29      message has been running for at least  $2^{(\text{RouteUpdateTriggerMaxAge} + 3)} \times 1.28$  seconds,  
30      the access terminal shall reset, initialize to zero, and restart the expiration timer for that  
31      entry.

---

<sup>44</sup> Redirection is commonly used in networks under test.

- If the (Subnet, RouteUpdateTriggerCode) pair from the most recently received SectorParameters message is not included in the RouteUpdateTriggerCodeList, then the access terminal shall add the entry to the RouteUpdateTriggerCodeList and shall reset, initialize to zero, and start the expiration timer for that entry<sup>45</sup>. The access terminal shall generate a RouteUpdate.SendRouteUpdate command when it adds an entry to the RouteUpdateTriggerCodeList. If there are more than the number of entries specified by the RouteUpdateTriggerCodeListSize attribute in the RouteUpdateTriggerCodeList, then the access terminal shall delete entries from the list until there are exactly RouteUpdateTriggerCodeListSize entries in the list according to the following rules:

- The access terminal shall delete the oldest entries in the list first, and
- the access terminal shall not delete the entry in the list that corresponds to the (Subnet, RouteUpdateTriggerCode) received in the most recent SectorParameters message.

#### 5.5.6.1.4.2.1 Supervision Procedures

##### 5.5.6.1.4.2.1.1 Supervision of QuickConfig Message

Upon entering the Active State, the access terminal shall start the following procedure to supervise the QuickConfig message:

The access terminal shall set a QuickConfig supervision timer for  $T_{OMPQCSupervision}$ .

If a QuickConfig message is received while the timer is active, the access terminal shall reset and restart the timer.

If the timer expires, the access terminal shall return a *SupervisionFailed* indication and disable the timer.

##### 5.5.6.1.4.2.1.2 Supervision of SectorParameters Message

Upon entering the Active State, the access terminal shall start the following procedure to supervise the SectorParameters message:

The access terminal shall set a SectorParameters supervision timer for  $T_{OMPSPSupervision}$ .

If a SectorParameters message is received while the timer is active, the access terminal shall reset and restart the timer.

If a QuickConfig message is received while the timer is active and the SectorSignature field of the QuickConfig message matches the last received value for SectorSignature corresponding to the same sector<sup>46</sup> from which the QuickConfig message is received, the access terminal shall reset and restart the timer.

---

<sup>45</sup> The access terminal could choose to wait for confirmation that the RouteUpdate was delivered before updating the RouteUpdateTriggerCode list.

<sup>46</sup> A sector is specified by its SectorID and the CDMA channel associated with it (see the definition of Sector).

If the timer expires, the access terminal shall return a *SupervisionFailed* indication and disable the timer.

#### 5.5.6.1.5 Tunnel Active State

##### 5.5.6.1.5.1 Access Network Requirements

Not applicable to Access Network.

##### 5.5.6.1.5.2 Access Terminal Requirements

If the access terminal does not have the latest<sup>47</sup> value for the serving cell overhead parameters or if it receives an indication that the E-UTRAN protocol within the access terminal selected a new serving cell<sup>48</sup>, the access terminal shall set *OverheadParametersUpToDate* to 0. If the latest overhead parameters of the serving cell allows the access terminal to perform pre-registration, then the access terminal shall set *HRPDPreRegistrationAllowed* to 1; otherwise, the access terminal shall set *HRPDPreRegistrationAllowed* to 0.

When the access terminal receives the HRPD parameters, it shall perform the following:

- If any of the following conditions are true:
    - *OverheadParametersUpToDate* is equal to 0, or
    - *HRPDPreRegistrationAllowed* flag is set to 1 and access terminal determine that HRPD parameters, defined as public data of this application, received from different RAT<sup>49</sup> (e.g. E-UTRAN) is not up-to-date<sup>4747</sup>
- then the access terminal shall perform the following:
- The access terminal shall store the following HRPD parameters received [9]:
    - + Set *ColorCode* to *HRPDPreRegistrationZoneID* received from E-UTRAN.
    - + Set *SecondaryColorCode* to *HRPDSecondaryPreRegistrationZoneID* received from E-UTRAN
    - + If the HRPD neighbor list is also received:
      - HRPD search window size if included. The received HRPD search window size is common for all the neighbor pilot PNs in the received HRPD neighbor list

---

<sup>47</sup> For example, when the primary RAT is E-UTRAN, the access terminal can determine the broadcast information is not up-to-date based on the TAG [9] value, difference in the received SIB8 (e.g. HRPD-NeighborCellList) or based on the HRPD neighbor list difference between the received SIB8 and MeasObjectCDMA2000 IE [9].

<sup>48</sup> The process by which the E-UTRAN protocol within the access terminal communicates this event to the Overhead Messages Protocol is left to the access terminal implementation.

<sup>49</sup> The access terminal may receive HRPD neighbor list information from E-UTRAN [9]. The HRPD neighbor list information may be included in either the received SIB8 or the received MeasObjectCDMA2000 information element.

- HRPD neighbor pilot PNs
- Set SystemType field of the NeighborChannel corresponding to each received HRPD neighbor pilot PN to 0x00 14.1 of [1]
- HRPD neighbor band class information as the BandClass 14.1 of [1] field of the NeighborChannel corresponding to each received HRPD neighbor pilot PN
- HRPD neighbor channel number as the ChannelNumber 14.1 of [1] field of the NeighborChannel corresponding to each received HRPD neighbor pilot PN
- The access terminal return an *Updated* indication
- The access terminal set OverheadParametersUpToDate to 1.

Upon receiving an HRPDSilenceParameters message, the access terminal shall overwrite the stored value of ReverseLinkSilenceDuration and ReverseLinkSilencePeriod with the ReverseLinkSilenceDuration and ReverseLinkSilencePeriod fields of the message.

## 5.5.6.2 Message Formats

### 5.5.6.2.1 QuickConfig

The QuickConfig message is used to indicate a change in the overhead messages' contents, a change in the OtherRATNeighborList message's contents and to provide frequently changing information.

Field	Length (bits)
MessageID	8
ColorCode	8
SectorID24	24
SectorSignature	16
AccessSignature	16
Redirect	1
RPCCount63To0	6

RPCCount63To0 occurrences of the following field

ForwardTrafficValid63To0	1
--------------------------	---

RPCCount127To64Included	0 or 1
RPCCount127To64	0 or 6

RPCCount127To64 occurrences of the following field:

ForwardTrafficValid127To64	0 or 1
----------------------------	--------

ReservedBitsIncluded	0 or 1
NumReservedBits	0 or 8

NumReservedBits occurrences of the following field:

CompatibleReservedBits	0 or 1
------------------------	--------

OtherRATAvailable	0 or 1
OtherRATTXCycle	0 or 3
OtherRATSignature	0 or 6

Reserved	0 – 7 (as needed)
----------	-------------------

- |   |                 |   |
|---|-----------------|---|
| 1 | MessageID       | The access network shall set this field to 0x00.                            |
| 2 | ColorCode       | The access network shall set this field to the color code corresponding to  |
| 3 |                 | this sector.  |
| 4 | SectorID24      | The access network shall set this field to the least significant 24 bits of |
| 5 |                 | the SectorID value corresponding to this sector.                            |
| 6 | SectorSignature | The access network shall set this field to the value of the SectorSignature |
| 7 |                 | field of the next SectorParameters message it will transmit.                |

1	AccessSignature	The access network shall set this field to the value of the
2		AccessSignature parameter from the AccessParameters message that is
3		Public Data of the Access Channel MAC Protocol.
4	Redirect	Access network redirect. The access network shall set this field to '1' if it
5		is redirecting all access terminals away from this access network <sup>50</sup> .
6	RPCCount63To0	The access network shall set this field to the maximum number of RPC
7		channels supported by the sector corresponding to Forward Traffic
8		Channels associated with MAC indices 0 through 63, inclusive.
9	ForwardTrafficValid63To0	
10		The access network shall set occurrence <i>n</i> of this field to '1' if the
11		Forward Traffic Channel associated with MACIndex 64- <i>n</i> is valid. The
12		access terminal uses this field to perform supervision of the Forward
13		Traffic Channel.
14	RPCCount127To64Included	
15		If this field is included, the access network shall set this field to '1' if the
16		RPCCount127To64 field is included in this message. Otherwise, the
17		access network shall set this field to '0'. The access network shall
18		include this field if any of the fields below it and above Reserved field are
19		included in this message.
20	RPCCount127To64	If the RPCCount127To64Included field is omitted, or if
21		RPCCount127To64Included is '0', then the access network shall omit
22		this field. Otherwise, the access network shall set this field to the
23		maximum number of RPC channels supported by the sector
24		corresponding to Forward Traffic Channels associated with MAC indices
25		64 through 127, inclusive.
26	ForwardTrafficValid127To64	
27		If the RPCCount127To64Included field is omitted, or if
28		RPCCount127To64Included is '0', then the access network shall omit
29		this field. Otherwise, the access network shall set occurrence <i>n</i> of this
30		field to '1' if the Forward Traffic Channel associated with MACIndex 128-
31		<i>n</i> is valid. The access terminal uses this field to perform supervision of
32		the Forward Traffic Channel.
33	ReservedBitsIncluded	
34		The access network shall include this field if any of the fields below it

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<sup>50</sup> Network redirect is commonly used during testing.

1		and above Reserved field are included in the message. If this field is
2		included, the access network shall set this field to '1' if the
3		NumReservedBits field is included in this message. Otherwise, the access
4		network shall set this field to '0'.
5	NumReservedBits	
6		If the ReservedBitsIncluded field is omitted, or if ReservedBitsIncluded is
7		'0', then the access network shall omit this field. Otherwise, the access
8		network shall set this field to the number of bits reserved for standard
9		revision compatibility.
10	CompatibleReservedBits	
11		If the ReservedBitsIncluded field is omitted, or if ReservedBitsIncluded is
12		'0', then the access network shall omit this field. Otherwise, the access
13		network shall set this field to '0'.
14	OtherRATAvailable	
15		The access network shall include this field if any of the non-reserved
16		fields that follow this field are to be included in the message. If this field
17		is included, the access network shall set this field to '1' if the
18		OtherRATNeighborList message is sent by the access network.
		Otherwise, the access network shall set this field to '0'.
19	OtherRATTXCycle	
20		If the OtherRATAvailable field is omitted, or if OtherRATAvailable field is
21		set to '0', then the access network shall omit this field. Otherwise, the
22		access network shall set this field to indicate the transmission cycle of
23		the OtherRATNeighborList message as shown in <a href="#">Table 5.5.6.2.1-1</a> <del>Table</del>
24		<del>5.5.6.2.1-1</del> . The access network should transmit the
25		OtherRATNeighborList message in the Synchronous Control Channel
26		Capsule at the Control Channel Cycle C satisfying the following
27		condition:
28		$C \bmod \text{OtherRATTXCycle} = 0$ , where C is the number of Control Channel
29		cycles since the beginning of the CDMA SystemTime.
30		The value mapping of this field is defined in <a href="#">Table 5.5.6.2.1-1</a> <del>Table</del>
31		<del>5.5.6.2.1-1</del> .



**Table 5.5.6.2.1–1 The OtherRATNeighborList transmission cycle**

<b>Field value (binary)</b>	<b>Duration in unit of Control Channel Cycle</b>
'000'	2
'001'	3
'010'	6
'011'	10
'100'	14
'101'	24
'110'	40
'111'	64

**OtherRATSignature**

If the OtherRATAvailable field is omitted, or if OtherRATAvailable field is set to '0', then the access network shall omit this field. Otherwise, the access network shall set this field to the value of the OtherRATSignature field of the next OtherRATNeighborList message it will transmit.

**Reserved**

The number of bits in this field is equal to the number needed to make the message length an integer number of octets. The access network shall set this field to zero. The access terminal shall ignore this field.

<b>Channels</b>	CCsynSS	<b>SLP</b>	Best Effort
<b>Addressing</b>	broadcast	<b>Priority</b>	10

**5.5.6.2.2 SectorParameters**

The SectorParameters message is used to convey sector specific information to the access terminals.

<b>Field</b>	<b>Length (bits)</b>
MessageID	8
CountryCode	12
SectorID	128
SubnetMask	8
SectorSignature	16
Latitude	22
Longitude	23
RouteUpdateRadiusOverhead	11
LeapSeconds	8
LocalTimeOffset	11
ReverseLinkSilenceDuration	2
ReverseLinkSilencePeriod	2
ChannelCount	5

ChannelCount occurrences of the following field:

Channel	24
---------	----

NeighborCount	5
---------------	---

NeighborCount occurrences of the following field:

NeighborPilotPN	9
-----------------	---

NeighborCount occurrences of the following two fields:

NeighborChannelIncluded	1
NeighborChannel	0 or 24

NeighborSearchWindowSizeIncluded	1
----------------------------------	---

NeighborCount occurrences of the following field

NeighborSearchWindowSize	0 or 4
--------------------------	--------

NeighborSearchWindowOffsetIncluded	1
------------------------------------	---

NeighborCount occurrences of the following field

NeighborSearchWindowOffset	0 or 3
----------------------------	--------

ExtendedChannelIncluded	0 or 1
-------------------------	--------

Field	Length (bits)
ExtendedChannelCount	0 or 5

0 or ExtendedChannelCount occurrences of the following field:

ExtendedChannel	24
-----------------	----

AccessHashingChannelMaskIncluded	0 or 1
AccessHashingMaskLength	0 or 4

$n$ , occurrences of the following record, where  $0 \leq n \leq (\text{ChannelCount} + \text{ExtendedChannelCount})$ ,

AccessHashingChannelMaskSameAsPrevious	1
AccessHashingChannelMask	0 or AccessHashingMaskLength + 1

RouteUpdateTriggerCodeIncluded	0 or 1
RouteUpdateTriggerCode	0 or 12
RouteUpdateTriggerMaxAge	0 or 4
PriorSessionGAUP	0 or 1
FPDCHSupportedIncluded	0 or 1

$m$ ,  $0 \leq m \leq \text{NeighborCount}$  occurrences of the following field:

FPDCHSupported	0 or 1
----------------	--------

SecondaryColorCodeIncluded	0 or 1
SecondaryColorCodeCount	0 or 3

Zero or SecondaryColorCodeCount occurrences of the following field:

SecondaryColorCode	8
--------------------	---

Reserved	0 – 7 (as needed)
----------	-------------------

1 MessageID

The access network shall set this field to 0x01.

1	CountryCode	The access network shall set this field to the three-digit BCD (binary coded decimal) encoded representation of the Mobile Country Code (as specified in [8]) associated with this sector.
2		
3		
4	SectorID	Sector Address Identifier. The Access Network shall set the value of the SectorID according to the rules specified in 14.9 of [1]. The access terminal shall not assume anything about the format of the SectorID other than the (SectorID, CDMA Channel) pair uniquely identifies a sector.
5		
6		
7		
8		
9	SubnetMask	Sector Subnet identifier. The access network shall set this field to the number of consecutive 1's in the subnet mask of the subnet to which this sector belongs. The value of this field should be less than or equal to 104 if SecondaryColorCodeIncluded field is included and is set to '1'.
10		
11		
12		
13	SectorSignature	SectorParameters message signature. The access network shall change this field if the contents of the SectorParameters message changes.
14		
15	Latitude	The latitude of the sector. The access network shall set this field to this sector's latitude in units of 0.25 second, expressed as a two's complement signed number with positive numbers signifying North latitudes. The access network shall set this field to a value in the range -1296000 to 1296000 inclusive (corresponding to a range of -90° to +90°).
16		
17		
18		
19		
20		
21	Longitude	The longitude of the sector. The access network shall set this field to this sector's longitude in units of 0.25 second, expressed as a two's complement signed number with positive numbers signifying East longitude. The access network shall set this field to a value in the range -2592000 to 2592000 inclusive (corresponding to a range of -180° to +180°).
22		
23		
24		
25		
26		
27	RouteUpdateRadiusOverhead	
28		If the access terminal is to perform distance based route updates, the access network shall set this field to the non-zero "distance" beyond which the access terminal is to send a new RouteUpdate message (see Inter-RAT Route Update Protocol). If access terminals are not to perform distance based route updates, the access network shall set this field to 0 <sup>51</sup> .
29		
30		
31		
32		
33		

---

<sup>51</sup> The access terminal determines whether to send a distance based RouteUpdate message or not using the RouteUpdateRadiusOverhead value of the serving sector. If the serving sector allows distance based Route Updates, the access terminal uses the RouteUpdateRadiusOverhead value sent by the sector in which the access terminal last registered.

1	LeapSeconds	The number of leap seconds that have occurred since the start of CDMA
2		System Time.
3	LocalTimeOffset	The access network shall set this field to the offset of the local time from
4		CDMA System Time. This value will be in units of minutes, expressed as
5		a two's complement signed number.
6	ReverseLinkSilenceDuration	
7		The access network shall set this field to specify the duration of the
8		Reverse Link Silence Interval in units of frames.
9	ReverseLinkSilencePeriod	
10		The access network shall set this field to specify the period of the Reverse
11		Link Silence Interval. The Reverse Link Silence Interval is defined as the
12		time interval of duration ReverseLinkSilenceDuration frames that starts
13		at times T where T is the CDMA System Time in units of frames and it
14		satisfies the following equation:
15		$T \bmod (2048 \times 2^{\text{ReverseLinkSilencePeriod}} - 1) = 0.$
16	ChannelCount	The access network shall set this field to the number of cdma2000 high
17		rate packet data channels available to the access terminal on this sector.
18	Channel	Channel record specification for each channel. See 14.1 of [1] for the
19		Channel record format. The access network shall set the SystemType
20		field of this record to 0x00.
21	NeighborCount	The access network shall set this field to the number of records
22		specifying neighboring sectors information included in this message.
23	NeighborPilotPN	The access network shall set this field to the PN Offset of a neighboring
24		sector that the access terminal should add to its Neighbor Set.
25	NeighborChannelIncluded	
26		The access network shall set this field to '1' if a Channel record is
27		included for this neighbor, and to '0' otherwise. The $n^{\text{th}}$ occurrence of this
28		field corresponds to the $n^{\text{th}}$ occurrence of NeighborPilotPN in the record
29		that contains the NeighborPilotPN field above.
30	NeighborChannel	Channel record specification for the neighbor channel. See 14.1 of [1] for
31		the Channel record format. The access network shall omit this field if the
32		corresponding NeighborChannelIncluded field is set to '0'. Otherwise, if
33		included, the $n^{\text{th}}$ occurrence of this field corresponds to the $n^{\text{th}}$
34		occurrence of NeighborPilotPN in the record that contains the
35		NeighborPilotPN field above.
36	NeighborSearchWindowSizeIncluded	
37		The access network shall set this field to '1' if

NeighborSearchWindowSize field for neighboring sectors is included in this message. Otherwise, the access network shall set this field to '0'.

### NeighborSearchWindowSize

The access network shall omit this field if NeighborSearchWindowSizeIncluded is set to '0'. If NeighborSearchWindowSizeIncluded is set to '1', the access network shall set this field to the value shown in [Table 5.5.6.2.2-1](#) corresponding to the search window size to be used by the access terminal for the neighbor pilot. The  $n^{\text{th}}$  occurrence of this field corresponds to the  $n^{\text{th}}$  occurrence of NeighborPilotPN in the record that contains the NeighborPilotPN field above.

**Table 5.5.6.2.2-1 Search Window Sizes**

SearchWindowSize Value	Search Window Size (PN chips)
0	4
1	6
2	8
3	10
4	14
5	20
6	28
7	40
8	60
9	80
10	100
11	130
12	160
13	226
14	320
15	452

### NeighborSearchWindowOffsetIncluded

The access network shall set this field to '1' if NeighborSearchWindowOffset field for neighboring sectors is included in this message. Otherwise, the access network shall set this field to '0'.

### NeighborSearchWindowOffset

The access network shall omit this field if NeighborSearchWindowOffsetIncluded is set to '0'. If

NeighborSearchWindowOffsetIncluded is set to '1', the access network shall set this field to the value shown in Table 5.5.6.2.2-2 corresponding to the search window offset to be used by the access terminal for the neighbor pilot. The  $n^{\text{th}}$  occurrence of this field corresponds to the  $n^{\text{th}}$  occurrence of NeighborPilotPN in the record that contains the NeighborPilotPN field above.

**Table 5.5.6.2.2-2 Search Window Offset**

SearchWindowOffset	Offset ( PN chips)
0	0
1	WindowSize <sup>52</sup> / 2
2	WindowSize
3	3 × WindowSize / 2
4	- WindowSize / 2
5	- WindowSize
6	-3 × WindowSize / 2
7	Reserved

#### ExtendedChannelIncluded

If any of the fields after this field except for Reserved are included, the access network shall include this field. Otherwise, the access network shall omit this field. If included, the access network shall set this field as follows:

The access network shall set this field to '0' if the ExtendedChannel fields are omitted. Otherwise, the access network shall set this field to '1'.

#### ExtendedChannelCount

If the ExtendedChannelIncluded field is omitted or is included and set to '0', the access network shall omit this field. Otherwise, the access network shall include this field and shall set this field to the number of cdma2000 high rate packet data extended channels available to the access terminal on this sector. If this field is not included, the access terminal shall assume that the value of this field is '00000'.

#### ExtendedChannel

Channel record specification for each extended channel. If ExtendedChannelCount is not included, the access network shall omit this field. See 14.1 of [1] for the Channel record format. The access network shall set the SystemType field of this record to 0x00.

<sup>52</sup> WindowSize is pilot's search window size in PN chips.

#### AccessHashingChannelMaskIncluded

If any of the fields after this field except for Reserved are included, the access network shall include this field. Otherwise, the access network shall omit this field. If included, the access network shall set this field as follows:

The access network shall set this field to '0' if the AccessHashingChannelMask fields are omitted. Otherwise, the access network shall set this field to '1'.

#### AccessHashingMaskLength

If the AccessHashingChannelMaskIncluded field is omitted or is included and set to '0', the access network shall omit this field. Otherwise, the access network shall set this field one less than the number of bits in the AccessHashingChannelMask field(s).

If the AccessHashingChannelMaskIncluded field is omitted or is included and set to '0', the access network shall omit the following two-field record. Otherwise, the access network shall include  $m$  occurrences of the following two field record, where  $m$  is the total number of Channel and ExtendedChannel records in this message that have SystemType equal to 0x00

#### AccessHashingChannelMaskSameAsPrevious

The access network shall set this field in the  $i^{\text{th}}$  occurrence of this record as follows:

If  $i$  is greater than 1 and the AccessHashingChannelMask for the  $i^{\text{th}}$  Channel or ExtendedChannel record with SystemType equal to 0x00 in this message is the same as the AccessHashingChannelMask for the  $(i-1)^{\text{th}}$  Channel or ExtendedChannel record with SystemType equal to 0x00 in this message, the access network may set this field to '1'. Otherwise, the access network shall set this field to '0'.

#### AccessHashingChannelMask

The access network shall set this field in the  $i^{\text{th}}$  occurrence of this record as follows:

If the AccessHashingChannelMaskSameAsPrevious field in this record is set to '1', the access network shall omit this field. Otherwise, the access network shall set this field to the (AccessHashingMaskLength + 1) bit access hashing class of the  $i^{\text{th}}$  combined channel list entry in this message that has SystemType equal to 0x00, where the combined channel list is defined to be the ordered set of all Channel records in order (if any) with all Extended Channel records appended in order (if any). If this field is not included, the access terminal shall assume that the value of this field is the same as the value for this field in the previous occurrence of this record.

#### RouteUpdateTriggerCodeIncluded

The access network shall include this field if any of the fields other than the Reserved field that follow this field are to be included in the message.



1		If this field is included, the access network shall set it as follows: The
2		access network shall set this field to '1' if RouteUpdateTriggerCode is
3		included in this message. Otherwise, the access network shall set this
4		field to '0'. If this field is not included in the message, that access
5		terminal shall assume a value of '0' for this field.
6	RouteUpdateTriggerCode	
7		If the RouteUpdateTriggerCodeIncluded field is not included in this
8		message, or if the RouteUpdateTriggerCodeIncluded field is included and
9		is set to '0', then the access network shall omit this field. Otherwise, the
10		access network shall set this field to a 12-bit value <sup>53</sup> .
11	RouteUpdateTriggerMaxAge	
12		If the RouteUpdateTriggerCodeIncluded field is not included in this
13		message or if the RouteUpdateTriggerCodeIncluded field is included and
14		set to '0', the access network shall omit this field. Otherwise, the access
15		network shall set this field to indicate the duration of the
16		RouteUpdateTriggerCode timer.
17	PriorSessionGAUP	
18		The access network shall include this field if any of the fields other than
19		the Reserved field that follow this field are to be included in the message.
20		If this field is included, then the access network shall set this field as
21		follows:
22		If the access terminal is not allowed to include the PriorSession attribute
23		in an AttributeUpdateRequest message, then the access network shall
24		set this field to '0'. Otherwise, the access network shall set this field to
25		'1'.
26	FPDCHSupportedIncluded	
27		The access network shall include this field if any of the fields other than
28		the Reserved field that follow this field are to be included in the message.
29		If this field is not included in the message, the access terminal shall
30		assume a value of '0' for this field. If this field is included, the access
31		network shall set this field as follows:
32		The access network shall set this field to '0' if the FPDCHSupported fields
33		are omitted. Otherwise, the access network shall set this field to '1'.
34	FPDCHSupported	
35		If FPDCHSupportedIncluded is not included or is included and is set to
36		'0', then the access network shall omit all occurrences of this field.
		Otherwise, the access network shall include <i>m</i> occurrences of this field,
		where <i>m</i> is the number of NeighborChannel records in this message that

---

<sup>53</sup> The RouteUpdateTriggerCode represents parameters associated with other protocols or applications. A RouteUpdate message is triggered when the RouteUpdateTriggerCode changes. The access network can update parameters associated with other protocols or applications when it determines that the parameters at the access terminal need to be updated.

have SystemType equal to 0x01, and the access network shall set the occurrences of this field as follows:  
 The access network shall set the *i*th occurrence of this field as follows:  
 If the system on the CDMA Channel corresponding to the *i*th NeighborChannel record that has SystemType equal to 0x01 supports the Forward Packet Data Channel (see [7]), the access network shall set the *i*th occurrence of this field to '1'. Otherwise, the access network shall set the *i*th occurrence of this field to '0'.

#### SecondaryColorCodeIncluded

The access network shall include this field if any of the non-reserved fields that follow this field are to be included in the message. If included, the access network shall set this field as follows:  
 The access network shall set this field to '1' if the SecondaryColorCodeCount field is included. Otherwise, the access network shall set this field to '0'.

#### SecondaryColorCodeCount

If SecondaryColorCodeIncluded is omitted or set to '0', then the access network shall omit this field. Otherwise, the access network shall set this field as follows:  
 If SecondaryColorCodeIncluded is included and set to '1', then the access network shall set this field to indicate the number of secondary color codes covering this sector. If the access terminal is to consider all possible values of SecondaryColorCode to be included in this message, then the access network shall set this field to '000'.

#### SecondaryColorCode

If SecondaryColorCodeCount is omitted or included and set to '000', then the access network shall omit this field. Otherwise, the access network shall set this field as follows:  
 The access network shall set this field to a color code that is to be considered to be a member of the set of the SecondaryColorCode values.

#### Reserved

The number of bits in this field is equal to the number needed to make the message length an integer number of octets. The access network shall set this field to zero. The access terminal shall ignore this field.

<b>Channels</b>	CCsyn	<b>SLP</b>	Best Effort
<b>Addressing</b>	broadcast	<b>Priority</b>	30

## 5.5.6.2.3 HRPDSilenceParameters

The access network sends an HRPDSilenceParameters message as part of the preparation for an active handoff from the other radio access technology to HRPD.

Field	Length (bits)
MessageID	8
ReverseLinkSilenceDuration	2
ReverseLinkSilencePeriod	2
Reserved	0 – 7 (as needed)

**MessageID** The access network shall set this field to 0x02.

**ReverseLinkSilenceDuration**

The access network shall set this field to specify the duration of the Reverse Link Silence Interval in units of frames.

**ReverseLinkSilencePeriod**

The access network shall set this field to specify the period of the Reverse Link Silence Interval. The Reverse Link Silence Interval is defined as the time interval of duration ReverseLinkSilenceDuration frames that starts at times T where T is the CDMA System Time in units of frames and it satisfies the following equation:

$$T \bmod (2048 \times 2^{\text{ReverseLinkSilencePeriod}} - 1) = 0.$$

**Reserved** The number of bits in this field is equal to the number needed to make the message length an integer number of octets. The access network shall set this field to zero. The access terminal shall ignore this field.

<b>Channels</b>	CC	<b>SLP</b>	Best Effort
<b>Addressing</b>	unicast	<b>Priority</b>	40

## 5.5.6.2.4 OtherRATNeighborList

The OtherRATNeighborList message is used to convey information corresponding to the neighboring sectors with access technologies other than CDMA to the access terminal.

Field	Length (bits)
MessageID	8
OtherRATSignature	6
NumOtherRAT	4

NumOtherRAT occurrences of the following record:

{

RATType	4
NeighborRATRecordLength	10
NeighborRATRecord	8 * NeighborRATRecordLength

}

Reserved	variable
----------	----------

- 1    MessageID            The access network shall set this field to 0x03.
- 2    OtherRATSignature   OtherRATNeighborList message signature. The access network shall  
3                            change this field if the contents of the OtherRATNeighborList message  
4                            changes.
- 5    NumOtherRAT        The access network shall set this field to the number of other RAT type  
6                            records included in this message.
- 7    RATType             Radio Access Technology (RAT) type. The access network shall set this  
8                            field to a RATType value as defined in [3]:
- 9    NeighborRATRecordLength
- 10                        The access network shall set this field to the number of bytes in  
11                        NeighborRATRecord.
- 12   NeighborRATRecord   The format of NeighborRATRecord corresponding to the RATType of this  
13                            record. If RATType is equal to '0000', it is specified in section 7.1.  
14                            Otherwise, it is specified in the standard associated with RATType, which  
15                            is defined in [3].
- 16   Reserved             The number of bits in this field is equal to the number needed to make  
17                            the message length an integer number of octets. The access network  
18                            shall set this field to zero. The access terminal shall ignore this field.  
19

<b>Channels</b>	CCsyn
<b>Addressing</b>	broadcast

<b>SLP</b>	Best Effort
<b>Priority</b>	30

### 5.5.6.3 Interface to Other Protocols

#### 5.5.6.3.1 Commands Sent

This protocol sends the following command:

- *RouteUpdate.SendRouteUpdate*

#### 5.5.6.3.2 Indications

This protocol registers to receive the following indications:

- *RouteUpdate.IdleHO*
- *ConnectedState.ConnectionClosed*
- *SignalingAdaptation.EnteringTunnelState* (access terminal only)

### 5.5.7 Configuration Attributes

The simple configurable attributes are listed in [Table 5.5.7-1](#)~~Table 5.5.7-1~~. The access network and the access terminal shall use the default values that are typed in ***bold italics***.

**Table 5.5.7-1 Configurable Simple Attributes**

Attribute ID	Attribute	Values	Meaning
0xff	OverheadCachePeriod	<b><i>0x00</i></b>	Value of overhead cache period is zero.
		0x01 to 0xff	Value of overhead cache period in units of 5.12 seconds.
0xfe	RouteUpdateTriggerCodeListSize	<b><i>0x00</i></b>	Sending of RouteUpdate messages based on the RouteUpdateTriggerCodeList is disabled.
		0x01 – 0x05	Size of the RouteUpdateTriggerCodeList
		All other values	Reserved.
0xfd	ReselectionClass	<b><i>0x00</i></b>	Value of ReselectionClass for Inter-RAT Idle mode reselection is zero.
		0x01-0x07	Value of ReselectionClass for Inter-RAT Idle mode reselection.

### 5.5.8 Protocol Numeric Constants

Constant	Meaning	Value
NOMPTType	Type field for this protocol	Table 2.5.4-1 of [1] <del>[4]</del>
NOMPIInterRAT	Subtype field for this protocol	0x0001
TOMPQCSupervision	QuickConfig supervision timer	12 Control Channel cycles
TOMPSPSupervision	SectorParameters supervision timer	12 Control Channel cycles
NOMPSectorParameters	The recommended maximum number of Control Channel cycles between two consecutive SectorParameters message transmissions	4

### 5.5.9 Session State Information

The Session State Information record (see 14.8 of [1]) consists of parameter records. The parameter records for this protocol consists only the configuration attributes of this protocol.

## 5.6 Default Signaling Adaptation Protocol

### 5.6.1 Overview

This protocol does not provide any services.

### 5.6.2 Primitives and Public Data

#### 5.6.2.1 Commands

This protocol does not issue any commands.

#### 5.6.2.2 Return Indications

This protocol does not return any indications.

#### 5.6.2.3 Public Data

This protocol shall make the following data public:

- Subtype for this protocol

### 5.6.3 Protocol Data Unit

This protocol does not define a protocol data unit.

### 5.6.4 Protocol Initialization

#### 5.6.4.1 Protocol Initialization for the InConfiguration Instance of the Protocol

Upon creation, the InConfiguration instance of this protocol in the access terminal and the access network shall perform the following in the order specified:

- The fall-back values of the attributes for this instance of the protocol shall be set to the default values specified for each attribute (See [1] for a description of fall-back values).
- If the InUse instance of this protocol has the same protocol subtype as that of the InConfiguration instance of the protocol, then the fall-back values of the attributes defined by the InConfiguration instance of the protocol shall be set to the values of the corresponding attributes associated with the InUse instance of the protocol.
- The value for each attribute for this instance of the protocol shall be set to the fall-back value for that attribute.

#### 5.6.4.2 Protocol Initialization for the InUse Instance of the Protocol

Upon creation of the InUse instance of this protocol, the access terminal and the access network shall perform the following:

- The value of the attributes for this instance of the protocol shall be set to the default values specified for each attribute.

## 5.6.5 Procedures and Messages for the InConfiguration Instance of the Protocol

### 5.6.5.1 Procedures

This protocol uses the Generic Configuration Protocol (see section 14.7 in [1]) to define the processing of the configuration messages.

### 5.6.5.2 Commit Procedures

The access terminal and the access network shall perform the procedures specified in this section, in the order specified, when directed by the InUse instance of the Session Configuration Protocol to execute the Commit procedures:

- All the public data that are defined by this protocol, but are not defined by the InUse instance of the protocol shall be added to the public data of the InUse instance of the protocol.
- If the InUse instance of this protocol has the same subtype as this instance of the protocol, then
  - The access terminal and the access network shall set the attribute values associated with the InUse instance of this protocol to the attribute values associated with the InConfiguration instance of this protocol, and
  - The access terminal and the access network shall purge the InConfiguration instance of the protocol.
- If the InUse instance of this protocol does not have the same subtype as this instance of the protocol, then the access terminal and the access network shall perform the following:
  - The InConfiguration instance of the protocol shall become the InUse instance of the protocol for the Signaling Adaptation Protocol.
- All the public data not defined by this protocol shall be removed from the public data of the InUse protocol.

### 5.6.5.3 Message Formats

#### 5.6.5.3.1 ConfigurationRequest

The ConfigurationRequest message format is as follows:

Field	Length (bits)
MessageID	8
TransactionID	8
Zero or more instances of the following record	
AttributeRecord	Attribute dependent

**MessageID**                      The sender shall set this field to 0x50.



TransactionID The sender shall increment this value for each new ConfigurationRequest message sent.

AttributeRecord The format of this record is specified in section 14.3 in[1].

<b>Channels</b>	FTC    RTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.6.5.3.2 ConfigurationResponse

The ConfigurationResponse message format is as follows:

Field	Length (bits)
MessageID	8
TransactionID	8
Zero or more instances of the following record	
AttributeRecord	Attribute dependent

MessageID The sender shall set this field to 0x51.

TransactionID The sender shall set this value to the TransactionID field of the corresponding ConfigurationRequest message.

AttributeRecord An attribute record containing a single attribute value. If this message selects a complex attribute, only the ValueID field of the complex attribute shall be included in the message. The format of the AttributeRecord is given in section 14.3 in [1]. The sender shall not include more than one attribute record with the same attribute identifier.

<b>Channels</b>	FTC    RTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

### 5.6.6 Procedures and Messages for the InUse Instance of the Protocol

#### 5.6.6.1 Procedures

This protocol does not define any procedures.

#### 5.6.6.2 Message Formats

No messages are defined for the InUse instance of this protocol.

## 5.6.6.3 Interface to Other Protocols

## 5.6.6.3.1 Indications

This protocol does not register to receive any indications.

## 5.6.7 Configuration Attributes

No configuration attributes are defined for this protocol.

## 5.6.8 Protocol Numeric Constants

Constant	Meaning	Value
N <sub>SAPType</sub>	Type field for this protocol	0x1d
N <sub>SAPDefault</sub>	Subtype field for this protocol	0x0000

## 5.6.9 Session State Information

This protocol does not define any parameter record to be included in a Session State Information record (described in section 14.8 of [1]).

## 5.7 Default Air-Link Management Protocol

### 5.7.1 Overview

This section supersedes section 8.2.1 of [1].

The Default Air-Link Management Protocol provides the following functions:

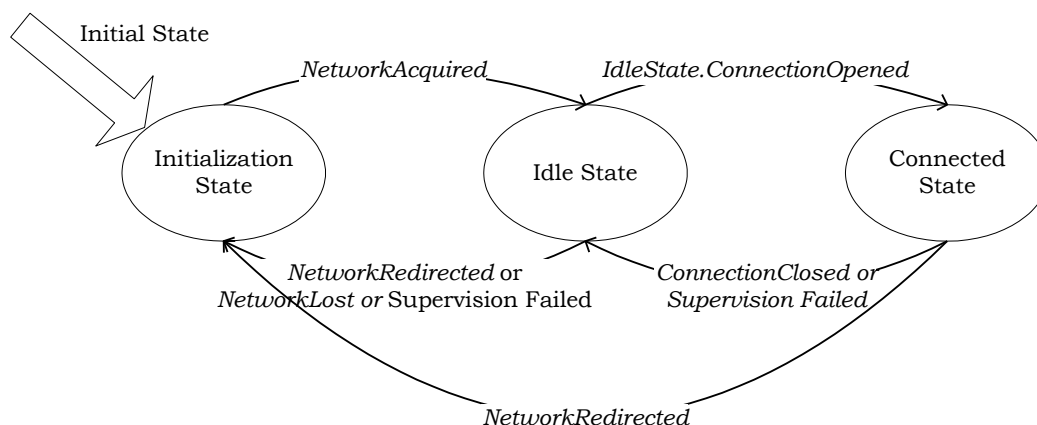
- General state machine and state-transition rules to be followed by an access terminal and an access network for the Connection Layer.
- Activation and deactivation of Connection Layer protocols applicable to each protocol state.
- Mechanism through which access network can redirect access terminal to another network.

The actual behavior and message exchange in each state is mainly governed by protocols that are activated by the Default Air-Link Management Protocol. These protocols return indications which trigger the state transitions of this protocol. These protocols also share data with each other in a controlled fashion, by making that data public.

This protocol can be in one of three states:

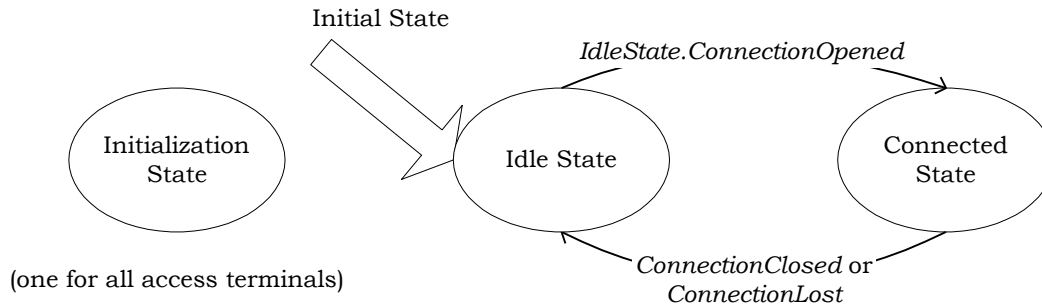
- Initialization State: In this state the access terminal acquires an access network. The protocol activates the Initialization State Protocol to execute the procedures relevant to this state. The access network maintains a single instance of this state and consequently, executes a single instance of the Initialization State Protocol.
- Idle State: In this state the connection is closed. The protocol activates the Idle State Protocol to execute the procedures relevant to this state.
- Connected State: In this state the connection is open. The protocol activates the Connected State Protocol to execute the procedures relevant to this state.

Figure 5.7.1-1 provides an overview of the access terminal states and state transitions. All transitions are caused by indications returned from protocols activated by the Default Air-Link Management Protocol.



**Figure 5.7.1-1 Default Air Link Management Protocol State Diagram (Access Terminal)**

Figure 5.7.1-2 provides an overview of the access network states and state transitions.



**Figure 5.7.1-2 Default Air Link Management Protocol State Diagram (Access Network)**

Table 5.7.1-1 provides a summary of the Connection Layer and MAC Layer protocols that are active in each state.

**Table 5.7.1-1 Active Protocols Per Air Link Management Protocol State where there is no InUse instance of SAP**

Initialization State	Idle State	Connected State
Overhead Messages Protocol	Overhead Messages Protocol	Overhead Messages Protocol
Initialization State Protocol	Idle State Protocol	Connected State Protocol
Control Channel MAC Protocol <sup>54</sup>	Route Update Protocol	Route Update Protocol
	Control Channel MAC Protocol	Control Channel MAC Protocol
	Access Channel MAC Protocol	Forward Traffic Channel MAC Protocol
	Forward Traffic Channel MAC Protocol <sup>55</sup>	Reverse Traffic Channel MAC Protocol
	Reverse Traffic Channel MAC Protocol <sup>56</sup>	

Table 5.7.1-2 provides a summary of the Connection Layer protocol that are active in each state when access terminal TunnelModeEnabled is equal to '1'.

<sup>54</sup> Activated by the Initialization State Protocol

<sup>55</sup> Only during connection setup

<sup>56</sup> Only during connection setup

**Table 5.7.1–2 Active Protocols Per Air Link Management Protocol State when access terminal TunnelModeEnabled is equal to ‘1’**

Initialization State	Idle State
Overhead Messages Protocol	Overhead Messages Protocol
Initialization State Protocol	Idle State Protocol
Signaling Adaptation Protocol	Route Update Protocol
	Signaling Adaptation Protocol

Table 5.7.1–3 provides a summary of the Connection Layer protocol that are active in each state when access terminal TunnelModeEnabled is equal to ‘0’.

**Table 5.7.1–3 Active Protocols Per Air Link Management Protocol State when access terminal TunnelModeEnabled is equal to ‘0’**

Initialization State	Idle State	Connected State
Overhead Messages Protocol	Overhead Messages Protocol	Overhead Messages Protocol
Initialization State Protocol	Idle State Protocol	Connected State Protocol
Control Channel MAC Protocol <sup>57</sup>	Route Update Protocol	Route Update Protocol
Signaling Adaptation Protocol	Control Channel MAC Protocol	Control Channel MAC Protocol
	Access Channel MAC Protocol	Forward Traffic Channel MAC Protocol
	Forward Traffic Channel MAC Protocol <sup>58</sup>	Reverse Traffic Channel MAC Protocol
	Reverse Traffic Channel MAC Protocol <sup>59</sup>	Signaling Adaptation Protocol
	Signaling Adaptation Protocol	

## 5.7.2 OpenConnection

This section supersedes section 8.2.6.1.1.1 of [1].

If the protocol receives the *OpenConnection* command in the Initialization State it shall perform the following:

<sup>57</sup> Activated by the Initialization State Protocol

<sup>58</sup> Only during connection setup

<sup>59</sup> Only during connection setup

- 1 • If the protocol subtype of the Signaling Adaptation Protocol is equal to 0x0000 or if there is  
2 no InUse instance of the Signaling Adaptation Protocol, then the access terminal shall  
3 queue the command and execute it when the access terminal enters the Idle State.
- 4 • If the protocol subtype of the Signaling Adaptation Protocol is not equal to 0x0000 and  
5 TunnelModeEnabled, provided as public data of the Signaling Adaptation Protocol, is not  
6 equal to '1', then the access terminal shall queue the command and execute it when the  
7 access terminal enters the Idle State.
- 8 • If the protocol subtype of the Signaling Adaptation Protocol is not equal to 0x0000 and  
9 TunnelModeEnabled, provided as public data of the Signaling Adaptation Protocol, is equal  
10 to '1', then the access terminal shall issue a *SignalingAdaptation.OpenConnection*  
11 command.

12 The access network shall ignore the command in the Initialization State.

13 If the protocol receives this command in the Idle State and if the protocol subtype of the  
14 Signaling Adaptation Protocol is equal to 0x0000 or if there is no InUse instance of the  
15 Signaling Adaptation Protocol, then:

- 16 • Access terminal shall issue an *IdleState.OpenConnection* command.
- 17 • Access network shall issue an *IdleState.OpenConnection* command.

18 If the protocol receives this command in the Idle State and if the protocol subtype of the  
19 Signaling Adaptation Protocol is not equal to 0x0000, then the protocol shall perform the  
20 following:

- 21 • If TunnelModeEnabled, provided as public data of the Signaling Adaptation Protocol, is  
22 equal to '1', it shall issue a *SignalingAdaptation.OpenConnection* command.
- 23 • Otherwise, it shall issue an *IdleState.OpenConnection* command.

24 If the protocol receives this command in the Connected State the command shall be ignored.

### 25 5.7.3 CloseConnection

26 This section supersedes section 8.2.6.1.1.2 of [1].

27 If the protocol receives the *CloseConnection* command in the Connected State:

- 28 • Access terminal shall issue a *ConnectedState.CloseConnection* command.
- 29 • Access network shall issue a *ConnectedState.CloseConnection* command.

30 If the protocol receives this command in any other state and if the protocol subtype of the  
31 Signaling Adaptation Protocol is equal to 0x0000 or if there is no InUse instance of the  
32 Signaling Adaptation Protocol, then it shall be ignored.

33 If the protocol receives this command in the Initialization or Idle State and if the protocol  
34 subtype of the Signaling Adaptation Protocol is not equal to 0x0000:

- 35 • If TunnelModeEnabled, provided as public data of the Signaling Adaptation Protocol, is  
36 equal to '1', then the access terminal shall issue a *SignalingAdaptation.CloseConnection*  
37 command.

- Otherwise, it shall be ignored.

#### 5.7.4 General Requirements for the Access Terminal in Idle State

This section supersedes section 8.2.6.1.3.1.1 of [1].

The access terminal shall issue the following commands upon entering this state:

- *IdleState.Activate*
- *RouteUpdate.Activate*

If the access terminal had a queued *OpenConnection* command, it shall issue an *IdleState.OpenConnection* command.

If the protocol receives an *IdleState.ConnectionOpened* indication the access terminal shall:

- If the protocol subtype of the Signaling Adaptation Protocol is equal to 0x0000 or if there is no InUse instance of the Signaling Adaptation Protocol, or if the protocol subtype of the Signaling Adaptation Protocol is equal to 0x0001 and TunnelModeEnabled, provided as public data of the Signaling Adaptation Protocol, is equal to '0', the access terminal shall perform the cleanup procedures defined in 8.2.6.1.3.1.2 of [1] and transition to the Connected State.
- Otherwise the access terminal shall ignore this indication.

If the protocol receives an *IdleState.ConnectionFailed*, a *ForwardTrafficChannelMAC.SupervisionFailed*, or a *ReverseTrafficChannelMAC.SupervisionFailed* indication, the access terminal shall:

- Issue an *IdleState.Close* command,
- Issue a *RouteUpdate.Close* command,

If the protocol receives a Redirect message, a *RouteUpdate.NetworkLost*, an *OverheadMessages.SupervisionFailed*, an *OverheadMessages.ANRedirected*, a *ControlChannelMAC.SupervisionFailed*, or an *AccessChannelMAC.SupervisionFailed* indication, the access terminal shall:

- Issue a *RouteUpdate.Deactivate* command,
- Issue an *OverheadMessages.Deactivate* command,
- Issue a *ControlChannelMAC.Deactivate* command,
- Perform the cleanup procedures defined in 8.2.6.1.3.1.2 of [1], and
- Transition to the Initialization State.

#### 5.7.5 General Requirements for the Access Network in Idle State

This section supersedes section 8.2.6.1.3.2.1 of [1].

The access network shall issue the following commands upon entering this state:

- *IdleState.Activate*
- *RouteUpdate.Activate*

If the protocol receives an *IdleState.ConnectionFailed* indication, or a *ReverseTrafficChannelMAC.SupervisionFailed* indication, the access network shall:

- Issue an *IdleState.Close* command,
- Issue a *RouteUpdate.Close* command.

If the protocol receives an *IdleState.ConnectionOpened* indication the access terminal shall:

- If the protocol subtype of the Signaling Adaptation Protocol is equal to 0x0000 or if there is no InUse instance of the Signaling Adaptation Protocol, or if the protocol subtype of the Signaling Adaptation Protocol is equal to 0x0001 and TunnelModeEnabled, provided as public data of the Signaling Adaptation Protocol, is equal to '0', the access network shall perform the cleanup procedures defined in 8.2.6.1.3.2.2 of [1] and transition to the Connected State.
- Otherwise the access network shall ignore this indication.

The access network may send the access terminal a Redirect message to redirect it from the current serving network and optionally, provide it with information directing it to another network. If the access network sends a Redirect message it shall

- Issue a *RouteUpdate.Deactivate* command,
- Perform the cleanup procedures defined in 8.2.6.1.3.2.2 of [1].

#### 5.7.6 General Requirements for the Access Terminal in Connected State

This section supersedes section 8.2.6.1.4.1.1 of [1]~~[4]~~.

The access terminal shall issue the following command upon entering this state:

- *ConnectedState.Activate*

If the access terminal has stored ConnectionFailure records and if the value of the ConnectionFailureReportingEnabled attribute is 0x01, then the access terminal shall send a ConnectionFailureReport message upon entering this state. Upon receiving the corresponding ConnectionFailureReportAck message, the access terminal shall delete the reported ConnectionFailure records.

If the access terminal does not receive a ConnectionFailureReportAck message in response to a ConnectionFailureReport message, then the access terminal may re-transmit the ConnectionFailureReport message an implementation specific number of times. If the protocol receives a ConnectedState.ConnectionClosed, an OverheadMessages.SupervisionFailed, a ControlChannelMAC.SupervisionFailed, a RouteUpdate.AssignmentRejected, or a ForwardTrafficChannelMAC.SupervisionFailed indication, the access terminal shall perform the following:

If this procedure is invoked due to reception of a OverheadMessages.SupervisionFailed, a ControlChannelMAC.SupervisionFailed, or a ForwardTrafficChannelMAC.SupervisionFailed indication and if the value of the ConnectionFailureReportingEnabled attribute is 0x01, then the access terminal shall generate and store a ConnectionFailure record that contains the reason for connection failure, the CDMA System Time when the Connection failure occurred, the SectorID public data of the Overhead Messages Protocol when the Connection failure



occurred, the CDMA Channel on which the Connection failure occurred, and, if available, the Latitude, and Longitude of the location where the Connection Failure occurred. The access terminal shall store at least four Connection failure records corresponding to the last four Connection failures.

- Issue a *RouteUpdate.Close* command,
- Issue a *ControlChannelMAC.Deactivate* command,
- Issue an *OverheadMessages.Deactivate* command,
- Issue a *ConnectedState.Deactivate* command,
- Transition to the Idle State.

If the access terminal receives an OtherRATMeasurementRequest message with RATType set to '0000' and the value of the OtherRATRedirectionSupported attribute is 0x01 or 0x02, the access terminal shall perform the measurement and send an OtherRATMeasurementReport message with E-UTRAN Measurement Report Record to the access network if all of the followings are met<sup>60</sup>:

- The EARFCN(s) is measurable by the access terminal.
- The access terminal decides to perform the measurement on the measurable EARFCN(s) based on the criteria outside the scope of this specification.
- All of the followings shall be met if the value of AutonomousReportEnabled field is set to '1':
  - If the number of OtherRATMeasurementReport message sent is not greater than MaxReportCount.
  - If ServingThresholdTrigger is included, the strength of the reference pilot of the serving HRPD network is lower than ServingThresholdTrigger.
  - If ThreshXQ or ThreshX is included, the Srxlev-value<sup>61</sup> or Squal-value<sup>62</sup> of at least one of the associated EUTRA frequency channel to be measured is equal or greater than ThreshXQ or ThreshX value.
  - If the time interval between the last sent message and the current message is greater than MinOtherRATMeasurementReportInterval.

If the protocol receives a Redirect message or an *OverheadMessages.ANRedirected* indication, the access terminal shall:

- Issue a *ConnectedState.CloseConnection* command,
- Issue a *RouteUpdate.Deactivate* command,
- Issue a *ControlChannelMAC.Deactivate* command,

---

<sup>60</sup> The timing when the access terminal performs EUTRA measurement in HRPD Connected State is not defined here if the value of AutonomousReportEnabled field is not included or is included and set to '0'.

<sup>61</sup> Srxlev is defined in [16]

<sup>62</sup> Squal is defined in [16]

- Issue an *OverheadMessages.Deactivate* command,
- Transition to the Initialization State.

Upon receiving an InterRATRedirect message with RATType set to '0000' and E-UTRAN Redirection Record, and if the value of the OtherRATRedirectionSupported attribute is 0x01 or 0x02, the access terminal shall:

- Issue a *ConnectedState.CloseConnection* command,
- Issue a *RouteUpdate.Deactivate* command,
- Issue a *ControlChannelMAC.Deactivate* command,
- Issue an *OverheadMessages.Deactivate* command,
- Perform the redirection procedures as following:
  - acquire an E-UTRA network identified in the E-UTRAN redirection Record if that E-UTRAN is acceptable to the access terminal. The E-UTRA channel selection procedure is outside the scope of this specification.

If the access terminal fails to attach EUTRAN channels of InterRATRedirect message, the access terminal may search more EUTRAN channels or go back to eHRPD based on MMSS rules as defined in [20].

#### 5.7.7 General Requirements for the Access Network in Connected State

This section supersedes section 8.2.6.1.4.2.1 of [1]~~[4]~~.

The access network shall issue the following command upon entering this state:

- *ConnectedState.Activate*

If the protocol receives a *ConnectedState.ConnectionClosed*, or *RouteUpdate.ConnectionLost* indication, the access network shall:

- Issue a *RouteUpdate.Close* command,
- Perform the cleanup procedures defined in 8.2.6.1.4.2.2 of [1],
- Transition to the Idle State.

If the value of the ConnectionFailureReportingEnabled attribute is 0x01, then the access network shall send a ConnectionFailureReportAck message upon receiving a ConnectionFailureReport message.

If the value of the OtherRATRedirectionSupported attribute is 0x01 or 0x02, then the access network may send an OtherRATMeasurementRequest message with RATType set to '0000'.

Upon receiving OtherRATMeasurementReport message with RATType set to '0000' and EUTRAN Measurement Report Record, and if the value of the OtherRATRedirectionSupported attribute is 0x01 or 0x02, then the access network uses EUTRA signal quality included by the EUTRAN Measurement Report Record of the OtherRATMeasurementReport message and criteria outside the scope of this specification to perform the redirection procedures. If the

access network decides to redirect an access terminal to an E-UTRA network, then the access network shall send InterRATRedirect with E-UTRAN Redirection Record.

The access network may send the access terminal a Redirect message to redirect it from the current serving network and optionally, provide it with information directing it to another network.

If the access network sends a Redirect or an InterRATRedirect message it shall:

- Issue a *RouteUpdate.Deactivate* command,
- Perform the cleanup procedures defined in 8.2.6.1.4.2.2 of [1],
- Transition to the Idle State.

#### 5.7.8 Commands Sent

This section supersedes section 8.2.6.3.1 of [1].

This protocol issues the following commands:

- *InitializationState.Activate*
- *InitializationState.Deactivate*
- *IdleState.Activate*
- *IdleState.Deactivate*
- *IdleState.Close*
- *IdleState.OpenConnection*
- *ConnectedState.Activate*
- *ConnectedState.Deactivate*
- *ConnectedState.CloseConnection*
- *RouteUpdate.Activate*
- *RouteUpdate.Deactivate*
- *RouteUpdate.Close*
- *OverheadMessages.Deactivate*
- *ControlChannelMAC.Deactivate*
- *SignalingAdaptation.OpenConnection*
- *SignalingAdaptation.CloseConnection*

#### 5.7.9 Message Formats

The following sections are subsections under section 8.2.6.2 of [1].

##### 5.7.9.1 InterRATRedirect

The access network sends the InterRATRedirect message to redirect the access terminal from the current network to a set of RAT networks in the order of priority.

1

Field	Length (bits)
MessageID	8
RATType	4
RedirectRATRecordLength	8
RedirectRATRecord	8 * RedirectRATRecordLength
Reserved	4

- 2    MessageID                    The access network shall set this field to 0x03.
- 3    RATType                    Radio Access Technology (RAT) type. The access network shall set this  
4                                   field to E-UTRAN as defined in [3].
- 5    RedirectRATRecordLength
- 6                                   The access network shall set this field to the number of bytes in  
7                                   RedirectRATRecord.
- 8    RedirectRATRecord        The format of RedirectRATRecord corresponding to the RATType of this  
9                                   record. If RATType is equal to '0000', it is specified in Section 5.7.9.1.1.  
10                                  Otherwise, it is specified in the standard associated with RATType, which  
11                                  is defined in [3].
- 12   Reserved                    The access network shall set this field to zero. The access terminal shall  
13                                   ignore this field.

<b>Channels</b>	FTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

14

## 15    5.7.9.1.1 E-UTRAN Redirection Record

16

Field	Length (bits)
NumEUTRAFrequencies	3
NumEUTRAFrequencies occurrences of the following record:	
{0	
EARFCN	16
PLMNIDIncluded	1

NumPLMNID	0 or 3
-----------	--------

NumPLMNIDs+1 occurrences of the following record:

{1

PLMNID	0 or 24
--------	---------

}1

PhysCellIdIncluded	1
--------------------	---

NumPhysCellId	0 or 5
---------------	--------

NumPhysCellIds +1 occurrences of the following record:

{1

PhysCellIdEUTRA	0 or 9
-----------------	--------

}1

}0

ExtendedEARFCNIncluded	1
NumExtendedEARFCNEUTRAFrequencies	0 or 3

NumExtendedEARFCNEUTRAFrequencies occurrences of the following record:

{0

ExtendedEARFCN	18
PLMNIDIncluded	1
NumPLMNID	0 or 3

NumPLMNIDs+1 occurrences of the following record:

{1

PLMNID	0 or 24
--------	---------

}1

PhysCellIdIncluded	1
--------------------	---

NumPhysCellId	0 or 5
---------------	--------

NumPhysCellIds +1 occurrences of the following record:

{1

PhysCellIdEUTRA	0 or 9
-----------------	--------

}1

}0

Reserved	0-7
----------	-----

1	NumEUTRAFrequencies	
2		The access network shall set this field to the number of EUTRA
3		frequencies included in this record.
4	EARFCN	The access network shall set this field to the EUTRA Absolute Radio
5		Frequency Channel Number <b>that is from 0 to 65535</b> which the access
6		terminal should reacquire.
7	PLMNIDIncluded	The access network shall set this field to "1" if PLMNID field is included;
8		otherwise, the access terminal shall set this field to "0".
9	NumPLMNID	The access network shall set this field to the number of the PLMNID
10		included in this message.
11	PLMNID	The access network shall set this field to the PLMNID of the EUTRA
12		system.
13	PhysCellIdIncluded	The access network shall set this field to "1" if PhysCellIdEUTRA field is
14		included; otherwise, the access terminal shall set this field to "0".
15	NumPhysCellId	The access network shall set this field to the number of the Physical Cell
16		Identifier.
17	PhysCellIdEUTRA	The access network shall set this field to Physical Cell Identifier of
18		EUTRA which the access terminal should reacquire.
19	<b>ExtendedEARFCNIncluded</b>	
20		<b>The access network shall set this field to "1" if there are any</b>
21		<b>ExtendedEARFCN frequencies. Otherwise, the access network shall set</b>
22		<b>this field to "0".</b>
23	<b>NumExtendedEARFCNEUTRAFrequencies</b>	
24		<b>The access network shall set this field to the number of EUTRA</b>
25		<b>frequencies, which has the value from 65536 to 262143.</b>
26	<b>ExtendedEARFCN</b>	<b>Extended EUTRA Absolute Radio Frequency Channel Number.</b>
27		<b>The access network shall set this field to the EUTRA Absolute Radio</b>
28		<b>Frequency Channel number that is from 65536 to 262143 which the</b>
29		<b>access terminal should reacquire.</b>
30	<b>PLMNIDIncluded</b>	<b>The access network shall set this field to "1" if PLMNID field is included;</b>
31		<b>otherwise, the access terminal shall set this field to "0", associated with</b>
32		<b>ExtendedEARFCN.</b>
33	<b>NumPLMNID</b>	<b>The access network shall set this field to the number of the PLMNID</b>
34		<b>included in this message, associated with ExtendedEARFCN.</b>

PLMNID	The access network shall set this field to the PLMNID of the EUTRA system, associated with ExtendedEARFCN.
PhysCellIdIncluded	The access network shall set this field to "1" if PhysCellIdEUTRA field is included; otherwise, the access terminal shall set this field to "0", associated with ExtendedEARFCN.
NumPhysCellId	The access network shall set this field to the number of the Physical Cell Identifier, associated with ExtendedEARFCN.
PhysCellIdEUTRA	The access network shall set this field to Physical Cell Identifier of EUTRA which the access terminal should reacquire, associated with ExtendedEARFCN.
Reserved	The access network shall set this field to zero. The access terminal shall ignore this field.

#### 5.7.9.2 OtherRATMeasurementRequest

The access network sends an OtherRATMeasurementRequest message to request the access terminal to send an OtherRATMeasurementReport message. Access network may send multiple OtherRAT records in the order of priority

Field	Length (bits)
MessageID	8
RATType	4
NeighborRATMeasReqRecordLength	8
NeighborRATMeasReqRecord	8 * NeighborRATMeasReqRecordLength
Reserved	4

MessageID	The access network shall set this field to 0x04.
RATType	Radio Access Technology (RAT) type. The access network shall set this field to E-UTRAN as defined in [3].
NeighborRATMeasReqRecordLength	
	The access network shall set this field to the number of bytes in NeighborRATMeasReqRecord.
NeighborRATMeasReqRecord	

The format of NeighborRATMeasReqRecord corresponding to the RATType of this record. If RATType is equal to '0000', it is specified in Section 5.7.9.2.1. Otherwise, it is specified in the standard associated with RATType, which is defined in [3].

Reserved The access network shall set this field to zero. The access terminal shall ignore this field.

<b>Channels</b>	FTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.7.9.2.1 E-UTRAN Measurement Request Record

Field	Length (bits)
NumEUTRAFrequencies	3
NumEUTRAFrequencies occurrences of the following record:	
{	
EARFCN	16
}	
AutonomousReportEnabled	0 or 1
MaxReportCount	0 or 2
ServingThresholdTirggerIncluded	0 or 1
ServingThresholdTrigger	0 or 6
ThreshXQIncluded	0 or 1
ThreshXQ	0 or 5
ThreshXIncluded	0 or 1
ThreshX	0 or 5
ExtendedEARFCNIncluded	1
NumExtendedEARFCNEUTRAFreq uencies	0 or 3

NumExtendedEARFCNEUTRAFrequencies occurrences of the following record:

{	
ExtendedEARFCN	18
}	
Reserved	0-7



1	NumEUTRAFrequencies	
2		The access network shall set this field to the number of EUTRA
3		frequencies included in this record. The access network shall not set this
4		field to 0.
5	EARFCN	EUTRA Absolute Radio Frequency Channel Number.
6		The access network shall set this field to the EARFCN of the neighbor
7		EUTRA system <a href="#">that is from 0 to 65535</a> as defined in [17].
8	AutonomousReportEnabled	
9		The access network shall omit this field if the value of the
10		OtherRATRedirectionSupported attribute is not equal to 0x02. Otherwise
11		the access network shall include this field and set this field as follows:
12		The access network shall set this field to '1' if the access network enable
13		the AT autonomous EUTRA channel measurement reporting capability;
14		otherwise, the access network shall sent this field to '0'.
15	MaxReportCount	
16		If AutonomousReportEnabled is set to '1', the access network shall set
17		this field to (MaxReportCount + 1) numbers of autonomous
18		OtherRATMeasurementReport message Access Terminal can send;
19		otherwise the access network shall omit this field.
20	ServingThresholdTirggerIncluded	
21		If AutonomousReportEnabled is set to '1', the access network shall set
22		this field to '1' if ServingThresholdTrigger field is included and shall set
23		this field to '0' if ServingThresholdTrigger is not included; otherwise the
24		access network shall omit this field.
25	ServingThresholdTrigger	
26		HRPD Serving threshold trigger point that allows AT to send
27		OtherRATMeasurementReport message.
28		If ServingThresholdTirggerIncluded is set to '1', the access network shall
29		set this field to $-2 \times 10 \times \text{Log}_{10} \text{PS}$ , where PS is the strength of the
30		reference pilot of the serving Access network, measured as specified in
31		[10]; otherwise, the access network shall omit this field.
32	ThreshXQIncluded	
33		If AutonomousReportEnabled is set to '1', the access network shall set
34		this field to '1' if ThreshXQ field is included and shall set this field to '0' if

1		ThreshXQ is not included; otherwise the access network shall omit this
2		field.
3	ThreshXQ	
4		Minimum required Squal [16] threshold used on EARFCN for trigger AT
5		to send an OtherRATMeasurementReport message.
6		If ThreshXQIncluded is set to '1', the access network shall set this field in
7		the range 0 to 31; otherwise, the access network shall omit this field.
8		The actual threshold value in dB used to compare against the measured
9		reference signal received quality (RSRQ) is equal to ThreshXQ as
10		specified in [16].
11	ThreshXIncluded	
12		If AutonomousReportEnabled is set to '1', the access network shall set
13		this field to '1' if ThreshX field is included and shall set this field to '0' if
14		ThreshX is not included; otherwise the access network shall omit this
15		field.
16	ThreshX	
17		Minimum required Srxlev [16] threshold used on EARFCN for trigger AT
18		to send an OtherRATMeasurementReport message
19		If ThreshXIncluded is set to '1', the access network shall set this field in
20		the range 0 to 31; otherwise, the access network shall omit this field.
21		The actual threshold value in dB used to compare against the measured
22		reference signal received power (RSRP) is equal to $\text{ThreshX} \times 2$ as
23		specified in [16].
24	ExtendedEARFCNIncluded	
25		The access network shall set this field to "1" if there are any
26		ExtendedEARFCN frequencies. Otherwise, the access network shall set
27		this field to "0".
28		
29	NumExtendedEARFCNEUTRAFrequencies	
30		The access network shall set this field to the number of EUTRA
31		frequencies, which has the value from 65536 to 262143.
32		
33	ExtendedEARFCN	Extended EUTRA Absolute Radio Frequency Channel Number.

The access network shall set this field to the EUTRA Absolute Radio Frequency Channel number that is from 65536 to 262143 which the access terminal should reacquire.

Reserved The access network shall set this field to zero. The access terminal shall ignore this field.

### 5.7.9.3 OtherRATMeasurementReport

The access terminal sends the OtherRATMeasurementReport message to provide the access network with other RAT's radio link conditions.

Field	Length (bits)
MessageID	8
RATType	4
NeighborRATMeasReportRecordLength	8
NeighborRATMeasReportRecord	8 * NeighborRATMeasReportRecordLength
Reserved	4

MessageID The access terminal shall set this field to 0x05.

RATType Radio Access Technology (RAT) type. The access terminal shall set this field to E-UTRAN as defined in [3].

### NeighborRATMeasReportRecordLength

The access terminal shall set this field to the number of bytes in NeighborRATMeasReportRecord.

### NeighborRATMeasReportRecord

The format of NeighborRATReportRecord corresponding to the RATType of this record. If RATType is equal to '0000', it is specified in Section 5.7.9.3.1. Otherwise, it is specified in the standard associated with RATType, which is defined in [3].

Reserved The access network shall set this field to zero. The access terminal shall ignore this field.

<b>Channels</b>	RTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

1

## 2 5.7.9.3.1 E-UTRAN Measurement Report Record

Field	Length (bits)
NumEUTRACell	3

NumEUTRACell occurrences of the following record:

{

PhysCellIdEUTRA	9
EARFCN	16
RSRQIncluded	1
RSRQResult	0 or 6
RSRPIncluded	1
RSRPResult	0 or 7

}

ExtendedEARFCNIncluded	1
NumExtendedEARFCNEUTRACell	0 or 3

NumExtendedEARFCNEUTRACell occurrences of the following record:

{

PhysCellIdEUTRA	9
ExtendedEARFCN	18
RSRQIncluded	1
RSRQResult	0 or 6
RSRPIncluded	1
RSRPResult	0 or 7

}

Reserved	0-7
----------	-----

3

4 NumEUTRACell The access terminal shall set this field to the number of EUTRA Cells  
5 included in this message.

6 PhysCellIdEUTRA The access terminal shall set this field to physical cell identifier of  
7 EUTRA as defined in [9].

1	EARFCN	The access terminal shall set this field to the EUTRA Absolute Radio
2		Frequency Channel Number <b>that is from 0 to 65535.</b>
3	RSRQIncluded	The access terminal shall set this field to "1" if RSRQResult field is
4		included; otherwise, the access terminal shall set this field to "0".
5	RSRQResult	The access terminal shall set this field to RSRQ value of the EUTRA Cell
6		specified by PHysCellIdETURA field as defined in [9].
7	RSRPIncluded	The access terminal shall set this field to "1" if RSRPResult field is
8		included; otherwise, the access terminal shall set this field to "0".
9	RSRPResult	The access terminal shall set this field to RSRP value of the EUTRA Cell
10		specified by PHysCellIdETURA field as defined in [9].
11		
12	<b>ExtendedEARFCNIncluded</b>	
13		The access network shall set this field to "1" if there are any
14		ExtendedEARFCN frequencies. Otherwise, the access network shall set
15		this field to "0".
16		
17	<b>NumExtendedEARFCNEUTRACell</b>	
18		The access network shall set this field to the number of EUTRA cells, for
19		which the EARFCN has the value from 65536 to 262143.
20	<b>PhysCellIdEUTRA</b>	The access terminal shall set this field to physical cell identifier of
21		EUTRA as defined in [9], associated with ExtendedEARFCN.
22		
23	<b>ExtendedEARFCN</b>	Extended EUTRA Absolute Radio Frequency Channel Number.
24		The access network shall set this field to the EUTRA Absolute Radio
25		Frequency Channel number that is from 65536 to 262143 which the
26		access terminal should reacquire.
27	<b>RSRQIncluded</b>	The access terminal shall set this field to "1" if RSRQResult field is
28		included; otherwise, the access terminal shall set this field to "0",
29		associated with ExtendedEARFCN.
30	<b>RSRQResult</b>	The access terminal shall set this field to RSRQ value of the EUTRA Cell
31		specified by PHysCellIdETURA field as defined in [9], associated with
32		ExtendedEARFCN.
33	<b>RSRPIncluded</b>	The access terminal shall set this field to "1" if RSRPResult field is
34		included; otherwise, the access terminal shall set this field to "0",
35		associated with ExtendedEARFCN.

RSRPResult            The access terminal shall set this field to RSRP value of the EUTRA Cell specified by PHysCellIdETURA field as defined in [9], associated with ExtendedEARFCN.

RESERVED            The access terminal shall set this field to zero. The access network shall ignore this field.

#### 5.7.10 Configuration Attributes

Unless specified otherwise, the access terminal and the access network shall not use the Generic Attribute Update Protocol to update configurable attributes belonging to the Default Air-Link Management protocol. The access terminal and the access network shall support the use of the Generic Attribute Update Protocol to update values of the following attributes belonging to the Default Air-Link Management protocol:

- *MinOtherRATMeasurementReportInterval*
- *OtherRATRedirectionSupported*

## 5.7.10.1 Simple Attributes

**Table 5.7.10.1-1 Configurable Values**

<b>Attribute ID</b>	<b>Attribute</b>	<b>Values</b>	<b>Meaning</b>
0xfd	OtherRATRedirectionSupported	<b>0x00</b>	processing of Other RAT measurement and InterRATRedirect are not supported.
		0x01	processing of Other RAT measurement and InterRATRedirect message are supported for E-UTRAN.
		0x02	processing of Other RAT measurement and InterRATRedirect message are supported for E-UTRAN. AT autonomous Other RAT measurement reporting is supported for E-UTRAN.
		All other values	Reserved
0xfe	MinOtherRATMeasurementReportInterval	<b>0x00</b>	Minimum time interval between two consecutive OtherRATMeasurementReport messages is not supported. This is due to OtherRATRedirectionSupported is not equal to 0x02
		<i>0x01 to 0x0f</i>	Minimum time interval between two consecutive OtherRATMeasurementReport messages in unit of minute
		All other values	Reserved

## 5.8 Default Connected State Protocol

### 5.8.1 Inactive State

This section describes the procedures for the Inactive State referred in section 8.6.6.1 of [1].

If the access terminal receives a *SignalingAdaptation.ConnectionClosed* indication in this state, then the access terminal shall return a *ConnectionClosed* indication.

### 5.8.2 Indications

This section supersedes section 8.6.6.3.2 of [1].

- *SignalingAdaptation.ConnectionClosed*



## 5.9 Default Packet Consolidation Protocol

### 5.9.1 Protocol Data Unit

This section supersedes 8.8.3 of [1].

The Protocol Data Unit for this protocol is a Connection Layer packet. Connection Layer packets contain Session Layer packets destined to or from the same access terminal address.

Two types of Connection Layer packets are defined:

- Format A: These packets are maximum length packets (including lower layer headers). Format A packets contain one Session Layer packet and do not have Connection Layer headers or padding.
- Format B: These packets are maximum length packets (including lower layer headers). Format B packets contain one or more Session Layer packets and have a Connection Layer header(s). The protocol places the Connection Layer header defined in 8.8.6.3.2 of [1] in front of each Session Layer packet and enough padding to create a maximum length packet.

Format A provides an extra octet of payload per packet.

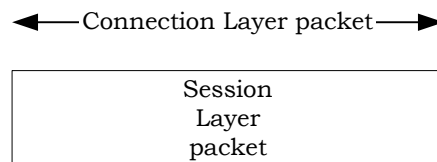
The packet format type is passed with the packet to the lower layers.

The Connection Layer encapsulation is shown in [Figure 5.9.1-1](#) and [Figure 5.9.1-2](#).

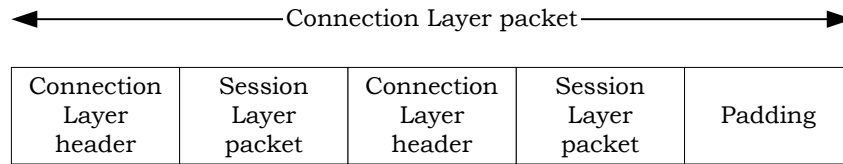
If the protocol subtype of the InUse instance of the Signaling Adaptation Protocol is equal to 0x0000 or if there is no InUse instance of the Signaling Adaptation Protocol, all transmitted packets are forwarded to the Security Layer. Otherwise, all transmitted packets are forwarded to the Signaling Adaptation Protocol.

All received packets are forwarded to the Session Layer after removing the Connection Layer headers.

The maximum size Session Layer packet the protocol can encapsulate depends on the Physical Layer channel on which this packet will be transmitted and on the specific security protocols negotiated.



**Figure 5.9.1-1 Connection Layer Packet Structure (Format A)**



**Figure 5.9.1–2 Connection Layer Packet Structure (Format B)**

### 5.9.2 Access Terminal Requirement of Format A Packets

This section supersedes 8.8.6.1.4.1 of [1].

The access terminal shall create a Format A Connection Layer packet, only if the highest priority pending Session Layer packet will fill the lower layer payload.

If the protocol subtype of the InUse instance of the Signaling Adaptation Protocol is equal to 0x0000 or if there is no InUse instance of the Signaling Adaptation Protocol, the access terminal shall forward the Connection Layer packet for transmission to the Security Layer. Otherwise, the access terminal shall forward the Connection Layer packet for transmission to the Signaling Adaptation Protocol.

### 5.9.3 Access Terminal Requirement of Format B Packets

This section supersedes 8.8.6.1.4.2 of [1].

The access terminal shall create a Format B Connection Layer packet by adding the Connection Layer header, defined in 8.8.6.3.2 of [1] in front of every Session Layer packet, concatenating the result and adding enough padding to fill the lower layer payload. The resulting packet length shall not exceed the maximum payload that can be carried on the Physical Layer Channel, given the transmission rate that will be used to transmit the packet and the headers added by the lower layers. All concatenated Connection Layer packets shall be transmitted on the same Physical Layer Channel<sup>63</sup>.

The protocol shall use the priority order to determine which Session Layer packets shall be included in the Connection Layer packet. The protocol shall concatenate and encapsulate Session Layer packets into a Connection Layer Packet.

If the protocol subtype of the InUse instance of the Signaling Adaptation Protocol is equal to 0x0000 or if there is no InUse instance of the Signaling Adaptation Protocol, the access terminal shall forward the Connection Layer packet for transmission to the Security Layer. Otherwise, the access terminal shall forward the Connection Layer packet for transmission to the Signaling Adaptation Protocol.

### 5.9.4 Access Network Requirement of Control Channel Connection Layer Packets

This section supersedes 8.8.6.1.5.1.1 of [1].

The access network shall not encapsulate Session Layer packets destined to different access terminals in the same Connection Layer packet.

<sup>63</sup> i.e., Access Channel or Reverse Traffic Channel.

1 The access network may encapsulate multiple Session Layer packets destined to a single  
2 access terminal in the same Connection Layer packet.

3 The access network should assign a priority to the Connection Layer packet based on its  
4 component Session Layer packets. If the Connection Layer packet contains a single Session  
5 Layer packet, the priority of the Connection Layer packet should be the priority received with  
6 the Session Layer packet.

7 If any Session Layer packet encapsulated in a Connection Layer packet is marked for  
8 transmission in a synchronous capsule, the Connection Layer packet shall be marked for  
9 transmission in a synchronous capsule. Connection Layer packets may be either Format A or  
10 Format B. When the access network forms a Format A Connection Layer packet, it shall set the  
11 Format A Connection Layer packet to the Session Layer packet. The resulting packet length  
12 shall not exceed the maximum payload that can be carried in a Control Channel MAC Layer  
13 packet given the headers added by the lower layers. When the access network forms a Format  
14 B Connection Layer packet, it shall create the Format B Connection Layer packet by appending  
15 the Connection Layer header defined in 8.8.6.3.2 of [1] in front of every Session Layer packet it  
16 is encapsulating in this Connection Layer packet and then concatenating the result. The  
17 resulting packet length shall not exceed the maximum payload that can be carried in a Control  
18 Channel MAC Layer packet given the headers added by the lower layers.

19 If the protocol subtype of the InUse instance of the Signaling Adaptation Protocol is equal to  
20 0x0000 or if there is no InUse instance of the Signaling Adaptation Protocol, the access  
21 network shall forward the Connection Layer packet for transmission to the Security Layer.  
22 Otherwise, the access network shall forward the Connection Layer packet for transmission to  
23 the Signaling Adaptation Protocol.

#### 24 5.9.5 Access Network Requirement of Format A Packets of Forward Traffic Channel

25 This section supersedes 8.8.6.1.5.2.1 of [1].

26 The access network shall create a Format A Connection Layer packet, only if the length of the  
27 highest priority pending Session Layer packet will fill the lower layer payload.

28 If the protocol subtype of the InUse instance of the Signaling Adaptation Protocol is equal to  
29 0x0000 or if there is no InUse instance of the Signaling Adaptation Protocol, the access  
30 network shall forward the Connection Layer packet for transmission to the Security Layer.  
31 Otherwise, the access network shall forward the Connection Layer packet for transmission to  
32 the Signaling Adaptation Protocol.

#### 33 5.9.6 Access Network Requirement of Format B Packets of Forward Traffic Channel

34 This section supersedes 8.8.6.1.5.2.2 of [1].

35 The access network shall create a Format B Connection Layer packet by adding the Connection  
36 Layer header defined in 8.8.6.3.2 of [1] in front of every Session Layer packet, concatenating  
37 the result and adding padding to fill the lower layer payload. The resulting packet length shall  
38 not exceed the maximum payload that can be carried on the Forward Traffic Channel given the  
39 headers added by the lower layers.

40 The protocol shall encapsulate and concatenate Session Layer packets in priority order.

1 If the protocol subtype of the InUse instance of the Signaling Adaptation Protocol is equal to  
2 0x0000 or if there is no InUse instance of the Signaling Adaptation Protocol, the access  
3 network shall forward the Connection Layer packet for transmission to the Security Layer.  
4 Otherwise, the access network shall forward the Connection Layer packet for transmission to  
5 the Signaling Adaptation Protocol.

6

## 5.10 Inter-RAT Quick Idle State Protocol

### 5.10.1 Overview

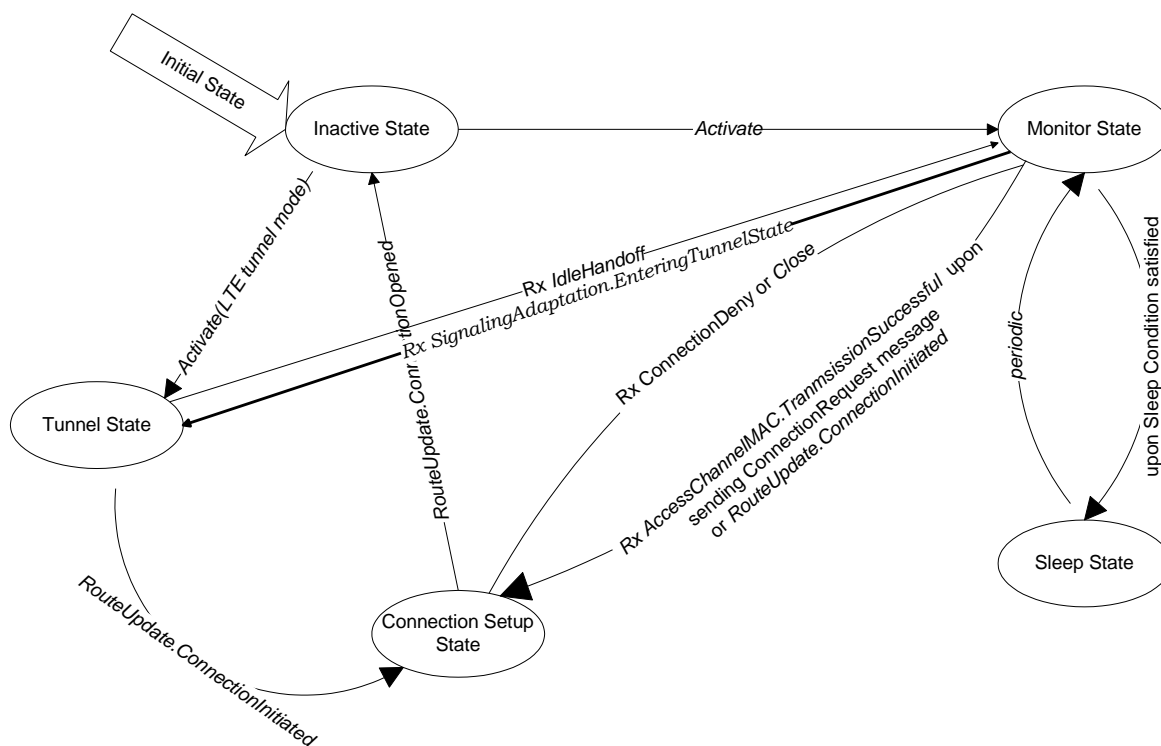
The Inter-RAT Quick Idle State Protocol provides the procedures and messages used by the access terminal and the access network when the access terminal has acquired a network and a connection is not open.

This protocol operates in one of the following five states:

- Inactive State: In this state the protocol waits for an *Activate* command.
- Sleep State: In this state the access terminal may shut down part of its subsystems to conserve power. The access terminal does not monitor the Forward Channel, and the access network is not allowed to transmit unicast packets to it.
- Monitor State: In this state the access terminal monitors the Control Channel, listens for Page messages and if necessary, updates the parameters received from the Overhead Messages Protocol. The access network may transmit unicast packets to the access terminal in this state.
- Connection Setup State: In this state the access terminal and the access network set-up a connection.
- Tunnel State: In this state the access terminal does not monitor the Control Channel. All communications to the access network are provided by the other radio access technology tunnel. The access terminal performs pilot measurement in this state. When pilot measurement is no longer required, the access terminal has the option to go into an implementation dependent power saving mode.

Protocol states and events causing the transition between the states are shown in [Figure 5.11.1-1](#) and [Figure 5.11.1-2](#).

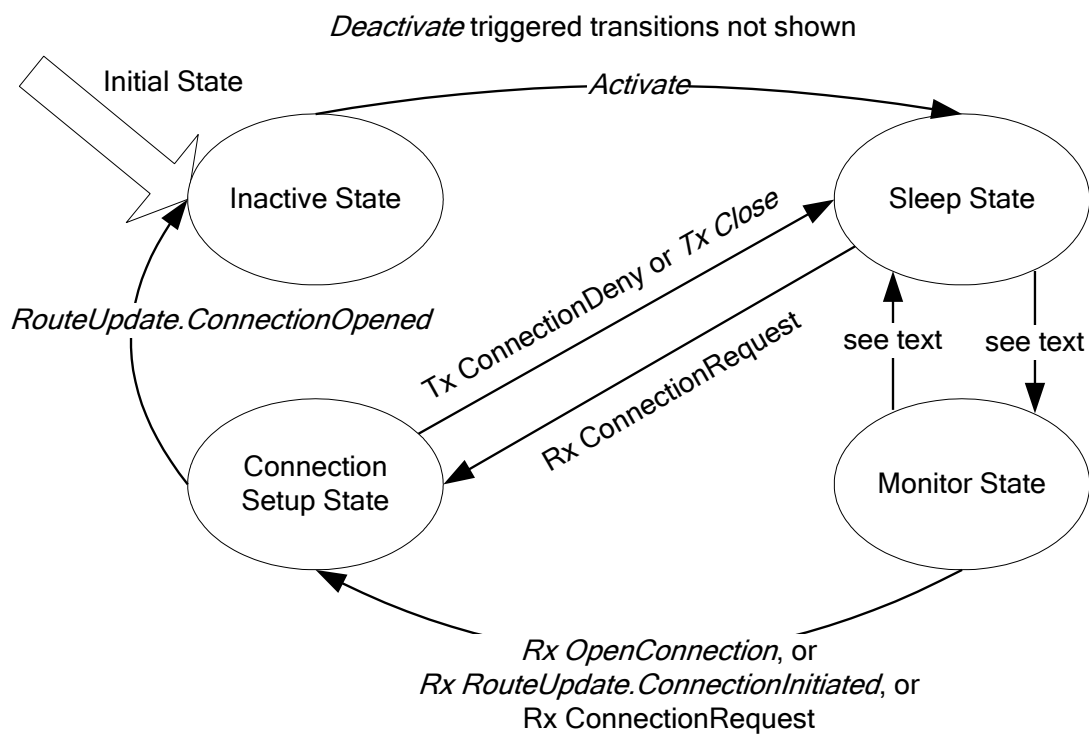
1



2

3

**Figure 5.10.1-1 Inter-RAT Quick Idle State Protocol State Diagram (Access Terminal)**



4

## Figure 5.10.1-2 Inter-RAT Quick Idle State Protocol State Diagram (Access Network)

This protocol supports periodic network monitoring by the access terminal, allowing for significant power savings. The following access terminal operation modes are supported:

- Continuous operation, in which the access terminal continuously monitors the Control Channel.
- Suspended mode operation, in which the access terminal monitors the Control Channel continuously for a period of time and then proceeds to operate in the slotted mode. Suspended mode follows operation in the Air-Link Management Protocol Connected State and allows for quick network-initiated reconnection.
- Slotted mode operation, in which the access terminal monitors only selected slots.

This protocol supports two types of connection set-ups:

- Normal setup: this procedure is always performed at the initiative of the access terminal.<sup>64</sup> It consists of the access terminal sending a *ConnectionRequest* message which in turn causes the lower layers to open the connection. The Connection Setup State contains the requirements for normal setup.
- Fast Connect: this procedure is always performed at the initiative of the access network and consists of the access network opening the connection directly via a *RouteUpdate.Open* command.<sup>65</sup> Fast Connect eliminates the need for the Page / *ConnectionRequest* exchange when the access network has pending data to transmit to an access terminal, and is especially useful when the access terminal is in suspended mode. Support for Fast Connect at the access network is optional. Support for Fast Connect at the access terminal is mandatory. The Monitor State contains the requirements for Fast Connect.

### 5.10.2 Primitives and Public Data

#### 5.10.2.1 Commands

This protocol defines the following commands:

- *Activate*
- *Deactivate*
- *OpenConnection*
- *Close*

#### 5.10.2.2 Return Indications

This protocol returns the following indications:

---

<sup>64</sup> The access network may transmit a Page message to the access terminal directing it to initiate the procedure.

<sup>65</sup> This command triggers a transmission of a *TrafficChannelAssignment* message based on the last *RouteUpdate* message received from the access terminal.

- *ConnectionOpened*
- *ConnectionFailed*

### 5.10.2.3 Public Data

This protocol shall make the following data public:

- Subtype for this protocol
- QuickPaging
- PageResponseAPersistence

### 5.10.3 Protocol Data Unit

The transmission unit of this protocol is a message. This is a control protocol; and, therefore, it does not carry payload on behalf of other layers or protocols.

This protocol uses the Signaling Application to transmit and receive messages.

### 5.10.4 Protocol Initialization

#### 5.10.4.1 Protocol Initialization for the InConfiguration Protocol Instance

Upon creation, the InConfiguration instance of this protocol in the access terminal and the access network shall perform the following in the order specified:

- The fall-back values of the attributes for this protocol instance shall be set to the default values specified for each attribute.
- If the InUse instance of this protocol has the same protocol subtype as this InConfiguration protocol instance, then the fall-back values of the attributes defined by the InConfiguration protocol instance shall be set to the values of the corresponding attributes associated with the InUse protocol instance.
- The value for each attribute for this protocol instance shall be set to the fall-back value for that attribute.

#### 5.10.4.2 Protocol Initialization for the InUse Protocol Instance

Upon creation, the InUse instance of this protocol in the access terminal and access network shall perform the following:

- The value of the attributes for this protocol instance shall be set to the default values specified for each attribute.
- The protocol shall enter the Inactive State.

### 5.10.5 Procedures and Messages for the InConfiguration Instance of the Protocol

#### 5.10.5.1 Procedures

This protocol uses the Generic Configuration Protocol (see [10]) to define the processing of the configuration messages.



### 5.10.5.2 Commit Procedures

The access terminal and the access network shall perform the procedures specified in this section, in the order specified, when directed by the InUse instance of the Session Configuration Protocol to execute the Commit procedures:

- All the public data that are defined by this protocol, but are not defined by the InUse protocol instance shall be added to the public data of the InUse protocol.
- The value of the following public data of the InUse protocol shall be set to the corresponding attribute value of the InConfiguration protocol instance:
  - QuickPaging
- If the InUse instance of any of the Connection Layer protocols does not have the same subtype as the corresponding InConfiguration protocol instance, then
  - the access terminal shall set the initial state of the InConfiguration and InUse protocol instances of the Idle State protocol to the Inactive State.
  - the access network shall set the initial state of the InConfiguration and InUse protocol instances of the Idle State protocol to the Sleep State.
- If the InUse instance of this protocol has the same subtype as this protocol instance, then
  - The access terminal and the access network shall set the attribute values associated with the InUse instance of this protocol to the attribute values associated with the InConfiguration instance of this protocol, and
  - The access terminal and the access network shall purge the InConfiguration instance of the protocol.
- If the InUse instance of this protocol does not have the same subtype as this protocol instance, then the access terminal and the access network shall perform the following:
  - The InConfiguration protocol instance shall become the InUse protocol instance for the Idle State Protocol at the access terminal and the access network.
- All the public data not defined by this protocol shall be removed from the public data of the InUse protocol.

### 5.10.5.3 Message Formats

#### 5.10.5.3.1 ConfigurationRequest

The ConfigurationRequest message format is as follows:

Field	Length (bits)
MessageID	8
TransactionID	8

Zero or more instances of the following record

AttributeRecord	Attribute dependent
-----------------	---------------------

MessageID The sender shall set this field to 0x50.

TransactionID The sender shall increment this value for each new ConfigurationRequest message sent.

AttributeRecord The format of this record is specified in [10].

<b>Channels</b>	FTC    RTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.10.5.3.2 ConfigurationResponse

The ConfigurationResponse message format is as follows:

Field	Length (bits)
MessageID	8
TransactionID	8

Zero or more instances of the following record

AttributeRecord	Attribute dependent
-----------------	---------------------

MessageID The sender shall set this field to 0x51.

TransactionID The sender shall set this value to the TransactionID field of the corresponding ConfigurationRequest message.

AttributeRecord An attribute record containing a single attribute value. If this message selects a complex attribute, only the ValueID field of the complex attribute shall be included in the message. The format of the AttributeRecord is given in [10]. The sender shall not include more than one attribute record with the same attribute identifier.

<b>Channels</b>	FTC    RTC	<b>SLP</b>	Reliable
-----------------	------------	------------	----------

<b>Addressing</b>	unicast	<b>Priority</b>	40
-------------------	---------	-----------------	----

## 5.10.6 Procedures and Messages for the InUse Instance of the Protocol

### 5.10.6.1 Procedures

#### 5.10.6.1.1 Command Processing

##### 5.10.6.1.1.1 Activate

When the protocol receives an *Activate* command in the Inactive State and the TunnelModeEnabled public data of Signaling Adaptation Protocol is set to '0':

- The access terminal shall transition to the Monitor State.
- The access network shall transition to the Sleep State.<sup>66</sup>

When the protocol receives an *Activate* command in the Inactive State and TunnelModeEnabled, provided as public data of the Signaling Adaptation Protocol, is equal to '1':

- The access terminal shall transition to the Tunnel State.
- The access network shall transition to the Sleep State.

If the protocol receives this command in any other state it shall be ignored.

##### 5.10.6.1.1.2 Deactivate

When the protocol receives a *Deactivate* command in the Inactive State it shall be ignored.

When the protocol receives this command in any other state:

- The access terminal shall transition to the Inactive State.
- The access network shall transition to the Inactive State.

##### 5.10.6.1.1.3 OpenConnection

When the protocol receives an *OpenConnection* command in the Inactive State or the Connection Setup State, the command shall be ignored.

When the protocol receives this command in the Sleep State:

- The access terminal shall transition to the Monitor state and perform the procedures in 5.10.6.1.2 for sending a ConnectionRequest message.
- The access network shall queue the command and execute it when it is in the Monitor State.

---

<sup>66</sup> Since the transitions happen asynchronously, this requirement guarantees that the access network will not transmit unicast packets to the access terminal over the Control Channel when the access terminal is not monitoring the channel.

When the protocol receives this command in the Monitor State:

- The access terminal shall perform the procedures in 5.10.6.1.2 for sending a ConnectionRequest message.
- The access network shall send a Page message to the access terminal and transition to the Connection Setup State.

When the protocol receives this command in the Tunnel State:

- The access terminal shall set a TunnelConnection timer for  $T_{ConnReq}$  seconds, and send a ConnectionRequest message.

#### 5.10.6.1.1.4 Close

When the protocol receives a *Close* command in the Inactive State or Tunnel State it shall be ignored.

When the protocol receives a *Close* command in any other state:

- The access terminal shall transition to the Monitor State.
- The access network shall transition to the Sleep State.

#### 5.10.6.1.2 Access Terminal Procedures for Sending a ConnectionRequest Message

When procedures in this section are invoked, the access terminal shall perform the following:

- If the access terminal invokes these procedures in response to an access terminal-initiated event and the ConnectionDenyBackoff attribute is set to a value in the range 0x00 to 0x78, then the access terminal should perform the following:
  - If the access terminal determines that the number of control channel cycles that have passed since receiving a ConnectionDeny message with DenyReason set to 0x01 is less than the value of the ConnectionDenyBackoff attribute, then the access terminal shall postpone sending the ConnectionRequest message until the number of control channel cycles since receiving the ConnectionDeny message is greater than or equal to the value specified by the ConnectionDenyBackoff attribute.
- Send a ConnectionRequest message,
- If an *AccessChannelMAC.TransmissionSuccessful* indication is received, it shall transition to the Connection Setup State,
- If an *AccessChannelMAC.TransmissionFailed* indication is received, it shall return a *ConnectionFailed* indication.

#### 5.10.6.1.3 $T_{12}$ and $T_{23}$ Computation

The access terminal shall compute  $T_{12}$  and  $T_{23}$  when an *AccessChannelMAC.TransmissionSuccessful* indication or a *ConnectedState.ConnectionClosed* indication is received. The access network shall compute  $T_{12}$  and  $T_{23}$  when an *AccessChannelMAC.MACLayerCapsuleReceived* indication, a *ConnectedState.ConnectionClosed*, or a *RouteUpdate.ConnectionLost* indication is received. The access terminal and the access network shall compute  $T_{12}$  and  $T_{23}$  as follows:

$$T_{12} = T_c + \text{PagePeriod1} - [(T_c + 256 \times R) \bmod \text{PagePeriod1}] + \text{PagePeriod1} \times [24 \times (\text{WakeCount1} + 1) - 1]$$

$$T_{23} = T_{12} + \text{PagePeriod2} - [(T_{12} + 256 \times R) \bmod \text{PagePeriod2}] + \text{PagePeriod2} \times [24 \times (\text{WakeCount2} + 1) - 1]$$

where PagePeriod1 and PagePeriod2 are specified in units of slots,  $T_c$  is the current CDMA system time.

#### 5.10.6.1.4 Inactive State

When the protocol is in the Inactive State it waits for an *Activate* command.

If at the access terminal receives an *OverheadMessages.Updated* indication in this state, then the access terminal shall queue the latest *OverheadMessages.Updated* indication for processing in the Monitor state.

If the access terminal receives a *SignalingAdaptation.ConnectionOpened* indication in this state, then the access terminal shall return a *ConnectionOpened* indication.

If the access terminal receives a *SignalingAdaptation.ConnectionFailed* indication in this state, then the access terminal shall return a *ConnectionFailed* indication.

#### 5.10.6.1.5 Sleep State

When the access terminal is in the Sleep State it may stop monitoring the Control Channel by issuing the following commands:

- *OverheadMessages.Deactivate*
- *ControlChannelMAC.Deactivate*

The access terminal may shut down processing resources to reduce power consumption.

In order to transmit on the Access Channel in this state, the access terminal shall first transition from the Sleep State to the Monitor State. If the access terminal requires opening a connection, it shall transition to the Monitor state and perform the procedures in 5.10.6.1.2 for sending a *ConnectionRequest* message.

When the access network is in the Sleep State, it is prohibited from sending unicast packets to the access terminal.

If the access network receives a *ConnectionRequest* message, it shall transition to the Connection Setup State.

If the access terminal advertised a suspend period that is current, the access network may transition to the Monitor State.

If the access terminal has determined that it does not have up to date parameters from OtherRATNeighborList message, the access terminal shall transition from the Sleep State to the Monitor State in time to receive next OtherRATNeighborList message at Control Channel cycle  $C$  satisfying the following condition:

$$C \bmod \text{OtherRATTXCycle} = 0,$$

Where  $C$  is the number of Control Channel cycles since the beginning of the CDMA System Time.

If QuickPagingEnabled is '0', then the access network and the access terminal shall transition from the Sleep State to the Monitor State in time to send and receive, respectively, the sub-synchronous capsule or the synchronous capsule sent at time T satisfying the following condition:

$$[T+256 \times R] \bmod \text{PagePeriod} = \text{Offset},$$

where T is the CDMA System Time in slots, and Offset is public data of the Control Channel MAC protocol.

If QuickPagingEnabled is '1' and SubSyncQuickPaging is '1', then the access network shall transition from the Sleep State to the Monitor State in time to send the quick synchronous capsule sent at time T satisfying the following condition:

$$[T+1+256 \times R] \bmod \text{PagePeriod} = \text{Offset},$$

where T is the CDMA System Time in slots, and Offset is public data of the Control Channel MAC protocol.

If QuickPagingEnabled is '1' and SubSyncQuickPaging is '0', then the access network shall transition from the Sleep State to the Monitor State in time to send the quick synchronous capsule sent at time T satisfying the following condition:

$$[T+1+256 \times R] \bmod (\max[\text{PagePeriod}, 256]) = \text{Offset},$$

where T is the CDMA System Time in slots, and Offset is public data of the Control Channel MAC protocol.

If QuickPagingEnabled is '1', then the access network shall transition from the Sleep State to the Monitor State (if it is not already in the Monitor State) in time to send the sub-synchronous capsule or the synchronous capsule sent at time T satisfying the following condition:

$$[T+256 \times R] \bmod \text{PagePeriod} = \text{Offset},$$

where T is the CDMA System Time in slots, and Offset is public data of the Control Channel MAC protocol.

If QuickPagingEnabled is '1' and SubSyncQuickPaging is '1', then the access terminal should transition from the Sleep State to the Monitor State in time to receive the quick synchronous capsule sent at time T satisfying the following condition:

$$[T+1+256 \times R] \bmod \text{PagePeriod} = \text{Offset},$$

where T is the CDMA System Time in slots, and Offset is public data of the Control Channel MAC protocol.

If QuickPagingEnabled is '1' and SubSyncQuickPaging is '0', then the access terminal should transition from the Sleep State to the Monitor State in time to receive the quick synchronous capsule sent at time T satisfying the following condition:

$$[T+1+256 \times R] \bmod (\max[\text{PagePeriod}, 256]) = \text{Offset},$$

where T is the CDMA System Time in slots, and Offset is public data of the Control Channel MAC protocol.

If QuickPagingEnabled is '1' and the access terminal did not transition from the Sleep State to the Monitor State to receive a quick synchronous capsule sent at time  $T$  satisfying  $[T+1+256 \times R] \bmod \text{PagePeriod} = \text{Offset}$ , then the access terminal shall transition from the Sleep State to the Monitor State to receive the sub-synchronous or synchronous capsule sent at time  $T+1$ , where  $T$  is the CDMA System Time in slots, and Offset is public data of the Control Channel MAC protocol.

$R$  shall be obtained as follows:

- If PreferredControlChannelCycleEnabled is equal to '0', then  $R$  is the result of applying the hash function (see [10]) using the following parameters:
  - Key = SessionSeed
  - Decorrelate =  $6 \times \text{SessionSeed}[11:0]$
  - $N = \text{Max}(\text{PagePeriod}3/256, 1)$
  - where SessionSeed is given as public data of the Address Management Protocol.
- If PreferredControlChannelCycleEnabled is equal to '1', then  $R$  is set to PreferredControlChannelCycle.

PagePeriod shall be computed as follows:

$$\text{PagePeriod} = \begin{cases} \text{PagePeriod 1,} & \text{CDMA System Time in slots} < T_{12} \\ \text{PagePeriod 2,} & T_{12} \leq \text{CDMA System Time in slots} < T_{23}, \\ \text{PagePeriod 3,} & \text{Otherwise} \end{cases}$$

The access network and the access terminal shall compute PagePeriod $i$  according to [Table 5.10.6.1.5-1](#).

**Table 5.10.6.1.5-1 Computation of PagePeriod $i$  from SlotCycle $i$**

SlotCycle $i$	PagePeriod $i$
0x00 to 0x06	$2^{\text{SlotCycle}i} \times 4$ slots
0x07 to 0x1c	$2^{(\text{SlotCycle}i - 0x7)} \times 768$ slots

If the access network receives a *SignalingAdaptation.ConnectionOpened* indication in this state, then the access network shall return a *ConnectionOpened* indication.

If the access network receives a *SignalingAdaptation.ConnectionFailed* indication in this state, then the access network shall return a *ConnectionFailed* indication.

#### 5.10.6.1.6 Monitor State

A paging mask is defined as a periodic interval with period and duty cycle defined by three associated fields PreMaskDuration, MaskDuration, and PostMaskDuration in the PagingMask attribute (see 5.10.7.2.3).

##### 5.10.6.1.6.1 Access Terminal Requirements

Upon entering the Monitor State, the access terminal shall issue the following commands:

- *OverheadMessages.Activate*
- *ControlChannelMAC.Activate*

The access terminal shall comply with the following requirements when in the Monitor State:

- If a QuickPage message is received, then the access terminal shall generate a *ControlChannelMAC.ResetSupervisionTimer* command.
- If the access terminal has queued an *OverheadMessages.Updated* indication or upon receiving an *OverheadMessages.Updated* indication, the access terminal shall tune to the CDMA Channel selected as specified in 5.10.6.1.6.1.1.
- If the access terminal entered Monitor State (or stayed in the Monitor State) to receive the synchronous capsule, it shall monitor the overhead messages as specified in the Inter-RAT Overhead Messages Protocol (see 5.12.6.1.4.2).
- If the access terminal receives a Page message, it shall perform the procedures in 5.10.6.1.2 for sending a ConnectionRequest message.
- If the access terminal requires opening a connection, it shall perform the procedures in 5.10.6.1.2 for sending a ConnectionRequest message.
- If the access terminal receives a *RouteUpdate.ConnectionInitiated* indication it shall transition to the Connection Setup State.<sup>67</sup>
- If the access terminal receives a QuickPage message with ConfigurationChange field set to '11', then the access terminal shall generate an *OverheadMessages.ANRedirect* command.
- If the access terminal receives a QuickPage message with ConfigurationChange field not set to '11', then the access terminal shall generate an *OverheadMessages.CheckConfiguration* command, along with the following arguments:
  - (PN Offset, CDMA Channel) associated with the sector on which the QuickPage message was received.
  - ConfigurationChange field of the QuickPage message.
- The access terminal may transition to the Sleep State if the requirements specified in 5.10.6.1.6.1.2 are satisfied.

When the access terminal is in the Monitor State, it shall continuously monitor the Control Channel if MaskCount is equal to 0x00 or one of the following conditions is true for all MaskCount paging masks specified by the PagingMask attribute:

$$T \bmod [(PreMaskDuration + MaskDuration + PostMaskDuration) \times 4] < PreMaskDuration \times 4, \text{ or}$$

$$T \bmod [(PreMaskDuration + MaskDuration + PostMaskDuration) \times 4] \geq (PreMaskDuration + MaskDuration) \times 4,$$

where T is the CDMA System Time in slots, and PreMaskDuration, MaskDuration, and PostMaskDuration are parameters of the PagingMask complex attribute.

---

<sup>67</sup> This requirement provides Fast Connect on the access terminal side.



If the access terminal receives a *SignalingAdaptation.EnteringTunnelState* indication it shall transition to the Tunnel State.

#### 5.10.6.1.6.1.1 CDMA Channel Selection

The access terminal shall select a CDMA Channel from the list of channels or extended channels in the SectorParameters message. If no channels or extended channels are listed, the access terminal shall use the channel it is currently monitoring. If one or more channels are available, the access terminal shall use a hash function (see [10]) to compute an index into the subset of a subset of advertised CDMA Channels according to the following procedures.

The access terminal shall create a combined channel list as follows:

- If the extended channel list is included in the SectorParameters message, the access terminal shall create a combined channel list by appending each CDMA Channel in the extended channel list (in order) to the set of CDMA Channels in the channel list (in order). Otherwise, the access terminal shall set the combined channel list to the set of CDMA Channels in the channel list.
- If the SupportedCDMAChannels public data of the Route Update Protocol lists any channels, then the access terminal shall remove from the combined channel list the following CDMA Channels:
  - All forward CDMA Channels that are not supported by the access terminal as indicated by the SupportedCDMAChannels public data of the Route Update Protocol.
  - All the forward CDMA Channels whose associated reverse CDMA Channel is not supported by the access terminal as indicated by the SupportedCDMAChannels public data of the Route Update Protocol.

The set,  $S$ , of CDMA Channels is determined as follows:

- If the AccessHashingChannelMaskIncluded field in the SectorParameters message is not included or is included and set to '0', the access terminal shall set  $S$  to the subset of CDMA Channels in the combined channel list.
- If the AccessHashingChannelMaskIncluded field in the SectorParameters message is included and is set to '1', the access terminal shall set  $S$  to the subset of CDMA Channels in the combined channel list for which:
  - $N_i$  is equal to  $N_{\max}$ , where  $i$  is the index of the CDMA Channel in the combined channel list,
 

where  $N_j = \text{bitcount}(\text{AccessHashingClassMask} [\text{AccessHashingMaskLength:0}] \otimes M_j)$ , where  $M_j$  is the AccessHashingChannelMask field in the SectorParameters message corresponding to the  $j^{\text{th}}$  CDMA Channel in the combined channel list;

$N_{\max}$  is the maximum value of  $N_k$  for all  $k$ , where  $k$  is the index of the CDMA Channel in the combined channel list; and

$\text{bitcount}(x)$  is the number of '1' bits in the binary representation of  $x$ .

The CDMA Channels supported by the access terminal are public data of the Route Update Protocol. The access terminal shall use the following hash function parameters to obtain the index into set *S*:

- *Key* = SessionSeed
- Decorrelate = 0
- *N* = Number of CDMA Channels in set *S*

where SessionSeed is provided as public data by the Address Management Protocol.

If the SystemType field of the channel record which is the result of the above hash function computation is set to 0x00, then both the forward and reverse CDMA channels are specified by that channel record. If the SystemType field of the channel record which is the result of the hash function is set to 0x02, then the reverse CDMA channel which the access terminal shall use in order to access the system is specified by the ReverseBandclass and ReverseChannelNumber fields of SectorParameters message associated with the forward CDMA channel as specified in the field description of ReverseChannelNumber field in the SectorParameters message.

#### 5.10.6.1.6.1.2 Transition to Sleep State

The access terminal may transition to the Sleep State if all of the following requirements are met:

- One of the following requirements is met:
  - The access terminal entered the Monitor State to receive a quick synchronous capsule and received a QuickPage message with the *W*th, *X*th, *Y*th, or *Z*th QuickPageIndicator field set to '0' and the ConfigurationChange field is not set to '11', and has determined that the SectorParameters message is up to date (see 8.10.6.1.6). The access terminal shall set *W*, *X*, *Y*, and *Z* equal to the sum of the output of the hash function (see [10]) and the product of (1 + QuickPIPerGroupCountMinusOne) and 0, 1, 2, and 3, respectively. When applying the hash function in order to calculate *W*, *X*, *Y*, and *Z*, the access terminal shall use *Decorrelate* values of  $2 \times \text{SessionSeed}[11:0]$ ,  $6 \times \text{SessionSeed}[11:0]$ ,  $14 \times \text{SessionSeed}[11:0]$ , and  $30 \times \text{SessionSeed}[11:0]$ , respectively. The access terminal shall use *Key* and *N* values as follows:
    - + *Key* = SessionSeed, which is provided as public data of the Address Management Protocol,
    - + *N* = 1 + QuickPIPerGroupCountMinusOne field of the QuickPage message, and
  - The access terminal entered the Monitor State or stayed in the Monitor State to receive the synchronous capsule and has received a Control Channel synchronous Sleep State capsule in the current Control Channel Cycle and has determined that the SectorParameters message is up to date (see 8.10.6.1.6). The current Control Channel Cycle is defined to be the Control Channel Cycle that started at slot  $\lfloor T/256 \rfloor$ , where *T* is the current CDMA System Time in slots.

- 1       – The access terminal entered the Monitor State or stayed in the Monitor State to receive
- 2       a sub-synchronous capsule, and has received the sub-synchronous capsule, or did not
- 3       receive the sub-synchronous capsule in the expected slots.
- 4       – The access terminal entered the Monitor State to receive an OtherRATNeighborList
- 5       message, and has received the OtherRATNeighborList message, or did not receive the
- 6       OtherRATNeighborList message in the expected Control Channel Cycle.
- 7       • Access terminal received an *AccessChannelMAC.TxEnded* indication for every
- 8       *AccessChannelMAC.TxStarted* indication it received since entering the Monitor State.<sup>68</sup>
- 9       • Access terminal has not advertised a suspend period that is current (see 7.7.6.1.2.1.1 of
- 10      [10]). The suspend period is current if the time advertised in the associated
- 11      ConnectionClose message is greater than the current CDMA System Time.<sup>69</sup>

#### 12 5.10.6.1.6.2 Access Network Requirements

13 When the access network is in the Monitor State, it may send unicast packets to the access  
 14 terminal. When the access network is in the Monitor State, it should not send unicast packets  
 15 to the access terminal unless one of the following conditions is true for all MaskCount paging  
 16 masks specified by the PagingMask attribute:

$$17 \quad T \bmod [(PreMaskDuration + MaskDuration + PostMaskDuration) \times 4] < \\ 18 \quad PreMaskDuration \times 4, \text{ or}$$

$$19 \quad T \bmod [(PreMaskDuration + MaskDuration + PostMaskDuration) \times 4] \geq \\ 20 \quad (PreMaskDuration + MaskDuration) \times 4.$$

21 where T is the CDMA System Time in slots, and PreMaskDuration, MaskDuration, and  
 22 PostMaskDuration are parameters of the PagingMask complex attribute.

23 When the access network is in the Monitor State and if QuickPagingEnabled is '1', then the  
 24 access network shall not send unicast packets to the access terminal at time T satisfying the  
 25 following condition:

$$26 \quad [T+1+256 \times R] \bmod PagePeriod = Offset,$$

27 where T is the CDMA System Time in slots, and Offset is public data of the Control Channel  
 28 MAC protocol, and R is computed as defined in 5.10.6.1.5.

29 If QuickPagingEnabled is '1', then the access network should send a QuickPage message in the  
 30 quick synchronous capsule that occurs at time T satisfying the following condition:

$$31 \quad [T+1+256 \times R] \bmod PagePeriod = Offset,$$

32 where T is the CDMA System Time in slots, and Offset is public data of the Control Channel  
 33 MAC protocol, and R is computed as defined in 5.10.6.1.5.

---

<sup>68</sup>This pairing ensures that the access terminal does not have any outstanding messages waiting for an answer.

<sup>69</sup> The access terminal monitors the Control Channel continuously during a suspend period thus avoiding the delay in opening access network initiated connections due to the sleep period.

Access network shall select the CDMA Channel following the same specifications as the access terminal, see 5.10.6.1.6.1.1.

If the access network receives a *ConnectionRequest* message, it shall transition to the *Connection Setup State*.

If the access network requires opening a connection with the access terminal and does not use an accelerated procedure to set-up a connection, the access network shall send a *Page* message to the access terminal over the *Control Channel*.

Access network may use an accelerated procedure to set-up a connection with the access terminal by bypassing the paging process. The access network should only use this procedure if it has a reasonable estimate of the access terminal's current location. To set-up a connection in an accelerated fashion (*Fast Connect*) the access network shall:

- Issue a *RouteUpdate.Open* command.
- Transition to the *Connection Setup State*, when the protocol receives a *RouteUpdate.ConnectionInitiated* indication.

Access network shall transition to the *Sleep State* if the access terminal did not advertise a suspend period that is current.

If the access network receives a *SignalingAdaptation.ConnectionOpened* indication in this state, then the access network shall return a *ConnectionOpened* indication.

If the access network receives a *SignalingAdaptation.ConnectionFailed* indication in this state, then the access network shall return a *ConnectionFailed* indication.

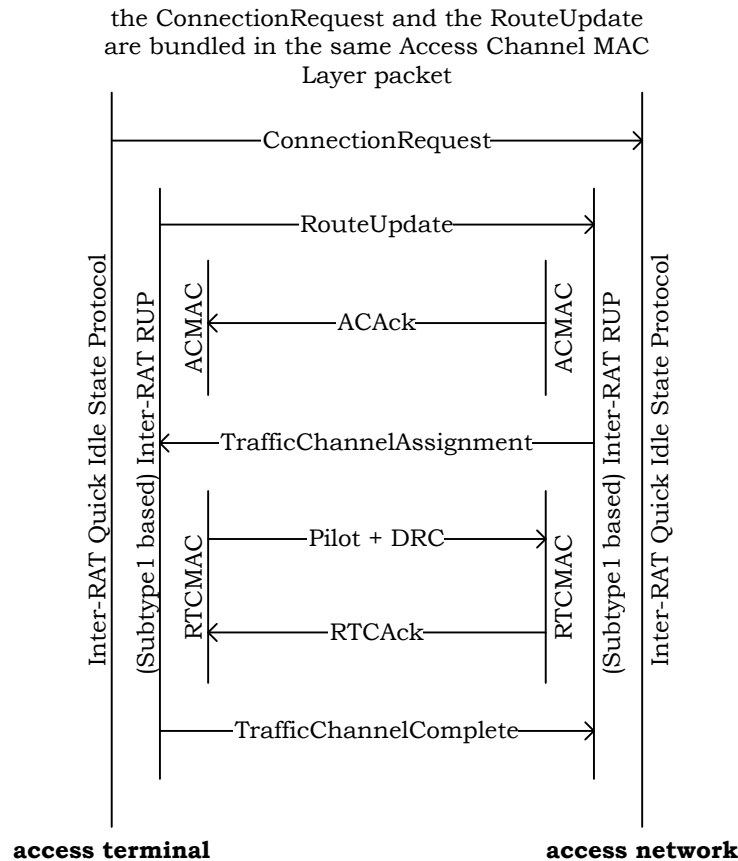
#### 5.10.6.1.7 Connection Setup State

The access terminal and the access network use the *Connection Setup State* to perform a normal connection set-up.

Figure 5.10.6.1.7-1 illustrates the process of opening a connection between the access terminal and the access network when this protocol is used along with the default *Route Update* and the default *Reverse Traffic Channel MAC* protocols.<sup>70</sup>

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<sup>70</sup> The *Fast Connect* message exchange is identical except for not having the *Idle State Protocol ConnectionRequest* message and the *Route Update Protocol RouteUpdate* message.



**Figure 5.10.6.1.7-1 Connection Setup Exchange**

#### 5.10.6.1.7.1 Access Terminal Requirements

The access terminal shall comply with the following requirements.

- Upon entering the Connection Setup State the access terminal shall:
  - Issue an *OverheadMessages.Activate* command,
  - Issue a *ControlChannelMAC.Activate* command,
  - Set a state timer for  $T_{IDPATSetup}$  seconds,
- If the access terminal receives a ConnectionDeny message, the access terminal shall return a *ConnectionFailed* indication,
- If the state timer expires, the access terminal shall return a *ConnectionFailed* indication,
- If the access terminal receives a *RouteUpdate.ConnectionOpened* indication, it shall return a *ConnectionOpened* indication and transition to the Inactive State.

#### 5.10.6.1.7.2 Access Network Requirements

If the ConnectionRequest message contains one or more preferred CDMA channels, then the access network should assign a Traffic Channel on one of the preferred CDMA channels.

The access network should deny the connection request if all of the following conditions are true:

- the ConnectionRequest message from the access terminal contains one or more preferred CDMA channels, and
- none of the preferred CDMA channels in the ConnectionRequest message can be used to assign a Traffic Channel.

If the access network entered this state due to receiving a *RouteUpdate.ConnectionInitiated* indication, it shall perform the following:

- Set state timer for  $T_{IDPANSetup}$  seconds.
- If the protocol receives a *RouteUpdate.ConnectionOpened* indication, the access network shall return a *ConnectionOpened* indication and transition to the Inactive State.
- If the state timer expires, the access network shall return a *ConnectionFailed* indication and shall transition to the Sleep State.

Otherwise, the access network shall perform the following:

- Upon reception of a ConnectionRequest message while in this state or if the access network entered this state due to reception of a ConnectionRequest message, the access network shall perform the following:
  - If the access network denies the connection request, it should send the access terminal a ConnectionDeny message, shall return a *ConnectionFailed* indication, and shall transition to the Sleep State.
  - Otherwise, the access network shall perform the following:
    - + Set state timer for  $T_{IDPANSetup}$  seconds.
    - + Issue a *RouteUpdate.Open* command.
    - + If the protocol receives a *RouteUpdate.ConnectionOpened* indication, the access network shall return a *ConnectionOpened* indication and transition to the Inactive State.
    - + If the state timer expires, the access network shall return a *ConnectionFailed* indication and shall transition to the Sleep State.
- If the access network did not enter this state as a result of receiving a ConnectionRequest message, and if the access network does not receive a ConnectionRequest message within an implementation dependent time interval, then the access network shall return a *ConnectionFailed* indication, and shall transition to the Sleep State.

#### 5.10.6.1.8 Tunnel State

Upon entering the Tunnel State, the access terminal should enable its pilot measurement entity if HRPDMeasEnabled is set to '1', otherwise the access terminal should disable its pilot measurement entity.

When the access terminal is in the Tunnel State it shall stop monitoring the Control Channel by issuing the following commands:

- 1 • *OverheadMessages.Activate*
- 2 • *ControlChannelMAC.Deactivate*

3 When the access terminal receives a *RouteUpdate.ConnectionInitiated* indication and  
 4 TunnelModeEnabled, provided as public data of the Signaling Adaptation Protocol, is equal to  
 5 '2':

- 6 • stop the TunnelConnection timer if it is running
- 7 • send an *OverheadMessages.TunnelDeactivate* command
- 8 • transition to the Connection Setup state

9 When the access terminal receives a *SignalingAdaptation.IdleHandoff* indication it shall  
 10 transition to the Monitor State.

11 If the TunnelConnection timer expired or access terminal receives a ConnectionDeny message,  
 12 then the access terminal shall return a *ConnectionFailed* indication.

13 When the access terminal receives an *InitializationState.HRPDMeasActivated* indication, the  
 14 access terminal should enable its pilot measurement entity.

15 When the access terminal receives an *InitializationState.HRPDMeasDeactivated*, the access  
 16 terminal should disable its pilot measurement entity.

17 The access terminal may shut down processing resources to reduce power consumption when  
 18 it is not required to provide power measurement for report purposes.<sup>71</sup>

19 The access terminal shall start monitoring the other radio access technology when  
 20 "Measurement Gap" ends. The access terminal shall perform measurement when requested by  
 21 the other radio technology.<sup>72</sup>

22 If the access terminal receives a *SignalingAdaptation.ConnectionOpened* indication in this state,  
 23 then the access terminal shall return a *ConnectionOpened* indication.

24 If the access terminal receives a *SignalingAdaptation.ConnectionFailed* indication in this state,  
 25 then the access terminal shall return a *ConnectionFailed* indication.

## 26 5.10.6.2 Message Formats

### 27 5.10.6.2.1 Page

28 The access network sends the Page message to direct the access terminal to request a  
 29 connection.  
 30

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<sup>71</sup> The access terminal provide measurement report based on other radio access technology measurement configuration as defined in [9]

<sup>72</sup> Definition of Measurement Gap is defined in [9]

Field	Length (bits)
MessageID	8
PageResponseAPersistenceIncluded	0 or 1
PageResponseAPersistence	0 or 6
Reserved	0 – 7 (as needed)

**MessageID** The access network shall set this field to 0x00.

**PageResponseAPersistenceIncluded**

The access network shall include this field if any of the non-reserved fields that follow this field are included in the message. If included, the access network shall set this field as follows:

The access network shall set this field to '0' if the PageResponseAPersistenceSupported attribute is set to 0x00. Otherwise, the access network shall set this field as follows:  
The access network shall set this field to '1' if the PageResponseAPersistence field is included in this message. Otherwise, the access network shall set this field to '0'.

**PageResponseAPersistence**

The access network shall omit this field if the PageResponseAPersistenceIncluded is not included, or if the PageResponseAPersistenceIncluded field is included and set to '0'. Otherwise, the access network shall include this field and set it as follows:

The access network shall set this field  $n$  such that  $2^{-n/4}$  is the access persistence probability that the access terminal is to use when responding to this Page message. The access network shall not set this field to 0x3f.

**Reserved** The access network shall include Reserved bits to make the length of the entire message equal to an integer number of octets. The access network shall set these bits to '0'.

<b>Channels</b>	CCsynSS CCsubsyn
<b>Addressing</b>	unicast

<b>SLP</b>	Best Effort
<b>Priority</b>	20

#### 5.10.6.2.2 ConnectionRequest

The access terminal sends the ConnectionRequest message to request a connection.



Field	Length (bits)
MessageID	8
TransactionID	8
RequestReason	4
PreferredChannelCount	5

PreferredChannelCount occurrences of the following field:

PreferredChannel	24
------------------	----

EmergencyIndication	0 or 1
Reserved	0-7 (as needed)

- 1 MessageID The access terminal shall set this field to 0x01.
- 2 TransactionID The access terminal shall increment this value for each new  
3 ConnectionRequest message sent.
- 4 RequestReason The access terminal shall set this field to one of the request reasons as  
5 shown in [Table 5.10.6.2.2-1](#)~~Table 5.10.6.2.2-1~~.

6 **Table 5.10.6.2.2-1 Encoding of the RequestReason Field**

Field value	Description
0x0	Access Terminal Initiated
0x1	Access Network Initiated
All other values are invalid	

- 7 PreferredChannelCount
- 8 The access terminal shall set this field to the number of occurrences of  
9 the PreferredChannel field in this message.
- 10 PreferredChannel The access terminal shall set this field to the Channel record  
11 specification for the CDMA channel on which the access terminal prefers  
12 to be assigned a Traffic Channel (see [10]).
- 13 EmergencyIndication<sup>73</sup>

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<sup>73</sup> EmergencyIndication field is also supported in ReservationOnRequest message of Radio Link Protocol of Multi-flow Packet Application.

If included, the access terminal shall set this field as follows: If this is an emergency ConnectionRequest, then the access terminal shall set this field to '1'. Otherwise, the access terminal shall set this field to '0'.

#### Reserved

The access terminal shall add reserved bits to make the length of the entire message an integer number of octets. The access terminal shall set these bits to '0'. The access network shall ignore this field.

<b>Channels</b>	AC	<b>SLP</b>	Best Effort
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.10.6.2.3 ConnectionDeny

The access network sends the ConnectionDeny message to deny a connection.

Field	Length (bits)
MessageID	8
TransactionID	8
DenyReason	4
Reserved	4

**MessageID** The access network shall set this field to 0x02.

**TransactionID** The access network shall set this value to the TransactionID field of the corresponding ConnectionRequest message.

**DenyReason** The access network shall set this field to indicate the reason it is denying the connection, as shown in Table 5.10.6.2.3-1.

**Table 5.10.6.2.3-1 Encoding of the DenyReason Field**

Field value	Description
0x0	General
0x1	Network Busy
0x2	Authentication or billing failure
0x3	Preferred channel not available
All other values are reserved	

**Reserved** The access network shall set this field to zero. The access terminal shall ignore this field.

<b>Channels</b>	CC	<b>SLP</b>	Best Effort
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.10.6.2.4 QuickPage

The access network sends the QuickPage message to inform the access terminal of the likelihood of a Page message directed to the access terminal.

Field	Length (bits)
MessageID	8
ConfigurationChange	2
QuickPIPerGroupCountMinusOne	6
4 × (QuickPIPerGroupCountMinusOne + 1) occurrences of the following field:	
QuickPageIndicator	1
Reserved	0 – 7 (as needed)

**MessageID** The access network shall set this field to 0x03.

#### ConfigurationChange

If the Redirect public data of the Overhead Message Protocol is '1', then the access network shall set this field to '11'. Otherwise, the access network shall set this field as follows:

Every time an *OverheadMessages.ConfigurationChanged* indication is received, the access network shall set this field in subsequent QuickPage messages to one more (modulo '11') than the last value of this field before the indication was received and when the Redirect public data of the Overhead Message Protocol was '0'.

#### QuickPIPerGroupCountMinusOne

The access network shall set this field to one less than the number of paging indicators contained in each of the four hashing groups within the QuickPageIndicator fields in this message.

#### QuickPageIndicator

The access network shall set the Wth, Xth, Yth, and Zth occurrences of this field to '1' if the synchronous or sub-synchronous capsule that follows the quick synchronous capsule in which this message is sent carries a unicast message directed to the access terminal. The access network shall set W, X, Y, and Z equal to the sum of the output of the hash function (see [10]) and the product of (1 + QuickPIPerGroupCountMinusOne) and 0, 1, 2, and 3, respectively. When applying the hash function in order to calculate W, X, Y, and Z, the

access network shall use *Decorrelate* values of  $2 \times \text{SessionSeed}[11:0]$ ,  $6 \times \text{SessionSeed}[11:0]$ ,  $14 \times \text{SessionSeed}[11:0]$ , and  $30 \times \text{SessionSeed}[11:0]$ , respectively. The access network shall use *Key* and *N* values as follows:

*Key* = SessionSeed, which is provided as public data of the Address

Management Protocol, and

$N = 1 + \text{QuickPIPerGroupCountMinusOne}$ .

Reserved The access network shall add reserved bits to make the length of the entire message equal to an integer number of octets. The access network shall set this field to zero. The access terminal shall ignore this field.

<b>Channels</b>	CCsynQ	<b>SLP</b>	Best Effort
<b>Addressing</b>	broadcast	<b>Priority</b>	20

#### 5.10.6.2.5 AttributeUpdateRequest

The sender sends an AttributeUpdateRequest message to offer a set of attribute values for a given attribute.

Field	Length (bits)
MessageID	Protocol dependent
TransactionID	8
One or more instances of the following record	
AttributeRecord	Attribute dependent

MessageID The sender shall set this field to 0x52.

TransactionID The sender shall increment this value for each new AttributeUpdateRequest message sent.

AttributeRecord The format of this record is specified in [10].

<b>Channels</b>	FTC RTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.10.6.2.6 AttributeUpdateAccept

The sender sends an AttributeUpdateAccept message in response to an AttributeUpdateRequest message to accept the offered attribute values.

Field	Length (bits)
MessageID	Protocol dependent
TransactionID	8

MessageID The sender shall set this field to 0x53.

TransactionID The sender shall set this value to the TransactionID field of the corresponding AttributeUpdateRequest message.

<b>Channels</b>	FTC    RTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.10.6.2.7 AttributeUpdateReject

The access network sends an AttributeUpdateReject message in response to an AttributeUpdateRequest message to reject the offered attribute values.

Field	Length (bits)
MessageID	Protocol dependent
TransactionID	8

MessageID The access network shall set this field to 0x54.

TransactionID The access network shall set this value to the TransactionID field of the corresponding AttributeUpdateRequest message.

<b>Channels</b>	FTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.10.6.3 Interface to Other Protocols

##### 5.10.6.3.1 Commands Sent

This protocol issues the following commands:

- *RouteUpdate.Open* (access network only)
- *OverheadMessages.Activate*
- *OverheadMessages.Deactivate*
- *OverheadMessages.TunnelDeactivate*
- *ControlChannelMAC.Activate*
- *ControlChannelMAC.Deactivate*

- 1 • *ControlChannelMAC.ResetSupervisionTimer* (access terminal only)
- 2 • *OverheadMessages.ANRedirect*
- 3 • *OverheadMessages.CheckConfiguration*

#### 4 5.10.6.3.2 Indications

5 This protocol registers to receive the following indications:

- 6 • *RouteUpdate.ConnectionOpened*
- 7 • *RouteUpdate.ConnectionInitiated*
- 8 • *AccessChannelMAC.TxStarted*
- 9 • *AccessChannelMAC.TxEnded*
- 10 • *AccessChannelMAC.TransmissionSuccessful*
- 11 • *AccessChannelMAC.MACLayerCapsuleReceived*
- 12 • *AccessChannelMAC.TransmissionFailed*
- 13 • *OverheadMessages.Updated*
- 14 • *ConnectedState.ConnectionClosed*
- 15 • *RouteUpdate.ConnectionLost*
- 16 • *OverheadMessages.ConfigurationChanged*
- 17 • *InitializationState.HRPDMeasActivated*
- 18 • *InitializationState.HRPDMeasDeactivated*
- 19 • *SignalingAdaptation.IdleHandoff*
- 20 • *SignalingAdaptation.ConnectionOpened*
- 21 • *SignalingAdaptation.ConnectionFailed*
- 22 • *SignalingAdaptation.EnteringTunnelState* (access terminal only)

#### 23 5.10.7 Configuration Attributes

24 Unless specified otherwise, the access terminal and the access network shall not use the  
 25 Generic Attribute Update Protocol to update configurable attributes belonging to the Inter-RAT  
 26 Quick Idle State Protocol. The access terminal and the access network shall support the use of  
 27 the Generic Attribute Update Protocol to update values of the following attributes belonging to  
 28 the Inter-RAT Quick Idle State Protocol:

- 29 • *PreferredControlChannelCycle*
- 30 • *SlottedMode*
- 31 • *PagingMask*
- 32 • *AccessHashingClassMask*
- 33 • *QuickPaging*

1 The access terminal shall not include the AccessHashingClassMask in an  
2 AttributeUpdateRequest message.

3 The access network shall not send an AttributeUpdateRequest message containing the  
4 PreferredControlChannelCycle or the PagingMask attribute.

5 If the SmallSlotCycleAllowed attribute is set to 0x00, then the access network and the access  
6 terminal shall not send an AttributeUpdateRequest message proposing a value of the  
7 SlotCycle1 field of the SlottedMode attribute that is less than 0x06.

#### 8 5.10.7.1 Simple Attributes

9 The simple configurable attributes are listed in [Table 5.10.7.1-1](#)~~Table 5.10.7.1-1~~. The access  
10 network and the access terminal shall use the default values that are typed in ***bold italics***.

1

**Table 5.10.7.1–1 Configurable Simple Attributes**

<b>Attribute ID</b>	<b>Attribute</b>	<b>Values</b>	<b>Meaning</b>
0xff	SmallSlotCycleAllowed	0x00	Access terminal and access network will not propose a value of SlotCycle1 that is less than 0x06.
		<b>0x01</b>	Access terminal and access network can propose a value of SlotCycle1 that is less than 0x06.
		0x02 to 0xff	Reserved
0xfe	AccessHashingClassMask	<b>0x0000</b>	Access terminal and access network will hash to channels with any access hashing class.
		0x0001 to 0xffff	Access terminal and access network will hash to channels with designated access hashing classes (see 5.10.6.1.6.1.1).
0xfd	ConnectionDenyBackoff	0x00-0x78	Access terminal is to observe a back off period specified by this attribute (in units of control channel cycles) after receiving a ConnectionDeny message with DenyReason field set to 0x01 before sending an access terminal-initiated ConnectionRequest message.
		0x79-0xfe	Reserved
		<b>0xff</b>	Access terminal is to observe an implementation-specific back off period after receiving a ConnectionDeny message with DenyReason field set to 0x01 before sending an access terminal-initiated ConnectionRequest message.
0xfc	PageResponseAPersistenceSupported	<b>0x00</b>	Access terminal does not support PageResponseAPersistence.
		0x01	Access terminal supports PageResponseAPersistence.
		All other values	Reserved

## 2 5.10.7.2 Complex Attributes

## 3 5.10.7.2.1 PreferredControlChannelCycle Attribute

4



Field	Length (bits)	Default
Length	8	N/A
AttributeID	8	N/A

One or more of the following attribute value record:

{

ValueID	8	N/A
PreferredControlChannelCycleEnabled	1	'0'
PreferredControlChannelCycle	0 or 15	N/A
Reserved	7 or 0	N/A

}

- 1    Length                      Length of the complex attribute in octets. The sender shall set this field  
2                                      to the length of the complex attribute excluding the Length field.
- 3    AttributeID                The sender shall set this field to 0x00.
- 4    ValueID                    The sender shall set this field to an identifier assigned to this complex  
5                                      value.
- 6    PreferredControlChannelCycleEnabled  
7                                      The sender shall set this field to '1' if PreferredControlChannelCycle field  
8                                      is included in this attribute; otherwise, the sender shall set this field to  
9                                      '0'.
- 10   PreferredControlChannelCycle  
11                                      If PreferredControlChannelCycleEnabled is set to '1', the sender shall  
12                                      include this field and set it to specify the Control Channel Cycle in which  
13                                      the access terminal transitions out of the Sleep State (see  
14                                      [5.3.6.1.55.3.6.1.5](#)) in order to monitor the Control Channel. The sender  
15                                      shall omit this field if PreferredControlChannelCycleEnabled is set to '0'.
- 16   Reserved                    The length of this field shall be such that the attribute value record is  
17                                      octet-aligned. The sender shall set this field to zero. The receiver shall  
18                                      ignore this field.

#### 19    5.10.7.2.2 SlottedMode Attribute

20

Field	Length (bits)	Default
Length	8	N/A
AttributeID	8	N/A

One or more of the following attribute value record:

{

ValueID	8	N/A
SlotCycle1	5	0x9
SlotCycle2	5	0x9
SlotCycle3	5	0x9
WakeCount1	4	0x0
WakeCount2	4	0x0
Reserved	1	N/A

}

- |    |             |   |
|----|-------------|---|
| 1  | Length      | Length of the complex attribute in octets. The sender shall set this field    |
| 2  |             | to the length of the complex attribute excluding the Length field.            |
| 3  | AttributeID | The sender shall set this field to 0x01.                                      |
| 4  | ValueID     | The sender shall set this field to an identifier assigned to this complex     |
| 5  |             | value.  |
| 6  | SlotCycle1  | The sender shall set this field to SlotCycle1. The sender shall not set this  |
| 7  |             | field to more than 0x1c.  |
| 8  | SlotCycle2  | The sender shall set this field to SlotCycle2. SlotCycle2 shall be greater    |
| 9  |             | than or equal to SlotCycle1. The sender shall not set this field to more      |
| 10 |             | than 0x1c.  |
| 11 | SlotCycle3  | The sender shall set this field to SlotCycle3. SlotCycle3 shall be greater    |
| 12 |             | than or equal to SlotCycle2. The sender shall not set this field to more      |
| 13 |             | than 0x1c.  |
| 14 | WakeCount1  | The sender shall set this field to WakeCount1.                                |
| 15 | WakeCount2  | The sender shall set this field to WakeCount2. WakeCount2 shall be            |
| 16 |             | greater or equal to than WakeCount1.  |
| 17 | Reserved    | The sender shall set this field to '0'. The receiver shall ignore this field. |

#### 18 5.10.7.2.3 PagingMask Attribute

19

Field	Length (bits)	Default
Length	8	N/A
AttributeID	8	N/A

One or more of the following record:

ValueID	8	N/A
MaskCount	8	0x00

MaskCount occurrences of the following four fields:

MaskPurpose	8	N/A
PreMaskDuration	16	N/A
MaskDuration	16	N/A
PostMaskDuration	16	N/A

- 1    Length                      Length of the complex attribute in octets. The sender shall set this field  
2                                      to the length of the complex attribute excluding the Length field.
- 3    AttributeID                The sender shall set this field to 0x02.
- 4    ValueID                    The sender shall set this field to an identifier assigned to this complex  
5                                      value.
- 6    MaskCount                The sender shall set this field to the number of paging masks specified in  
7                                      this complex attribute.
- 8    MaskPurpose              The sender shall set this field to indicate the purpose of the mask  
9                                      according to [Table 5.10.7.2.3-1](#)~~Table 5.10.7.2.3-1~~.

**Table 5.10.7.2.3-1 Definition of MaskPurpose Field of a Paging Mask**

MaskPurpose Value	Meaning
0x00	Unspecified purpose.
0x01	The paging mask is associated with monitoring the cdma2000 1x system (see <a href="#">[7]</a> <del>[7]</del> ).
0x02-0xff	Specified by <a href="#">[3]</a> <del>[3]</del> .

- 11   PreMaskDuration        The sender shall set this field to the length of the pre-mask duration in  
12                                      units of four slots.
- 13   MaskDuration            The sender shall set this field to the length of the masked duration in  
14                                      units of four slots.
- 15   PostMaskDuration        The sender shall set this field to the length of the post-mask duration in  
16                                      units of four slots.

## 5.10.7.3 QuickPaging Attribute

Field	Length (bits)	Default
Length	8	N/A
AttributeID	8	N/A

One or more of the following record:

ValueID	8	N/A
QuickPagingEnabled	1	0x00
SubSyncQuickPaging	1	N/A
Reserved	6	N/A

**Length** Length of the complex attribute in octets. The sender shall set this field to the length of the complex attribute excluding the Length field.

**AttributeID** The sender shall set this field to 0x03.

**ValueID** The sender shall set this field to an identifier assigned to this complex value.

**QuickPagingEnabled** The sender shall set this field to '1' if the access network is to transmit QuickPage messages. Otherwise, the sender shall set this field to '0'.

**SubSyncQuickPaging**  
If QuickPagingEnabled is set to '0', then the sender shall set this field to '0'. Otherwise, the sender shall set this field as follows:  
The sender shall set this field to '1' if the access network is to send QuickPage messages in quick synchronous capsules that immediately precede sub-synchronous capsules. Otherwise, the sender shall set this field to '0'.

**Reserved** The sender shall set this field to '000000'. The receiver shall ignore this field.

## 5.10.8 Protocol Numeric Constants

Constant	Meaning	Value	Comments
N <sub>IDPType</sub>	Type field for this protocol	Table 2.5.4-1 of [10] <del>[10]</del>	
N <sub>QIDPInterRAT</sub>	Subtype field for this protocol	0x0004	
T <sub>IDPATSetup</sub>	Maximum access terminal time in the Connection Setup State	2.5 seconds	
T <sub>IDPANSetup</sub>	Maximum access network time in the Connection Setup State	1 second	
T <sub>ConnReq</sub>	Maximum time to wait for transition to Connection Setup State when Connection Request is tunneled through the other radio access technology	2 seconds	

#### 5.10.9 Session State Information

The Session State Information record (see [10]) consists of parameter records.

The parameter records for this protocol consist of only the configuration attributes of this protocol.

## 5.11 Subtype1 based Inter-RAT Route Update Protocol

### 5.11.1 Overview

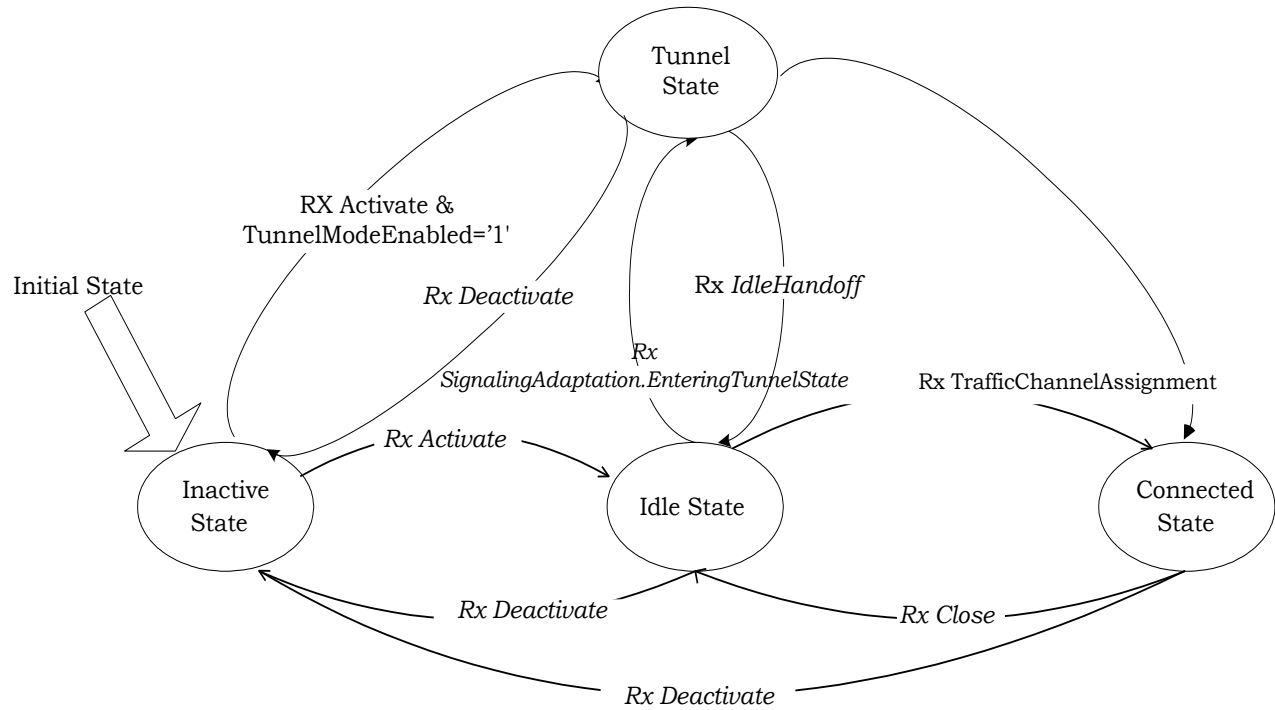
The Subtype1 based Inter-RAT Route Update Protocol provides the procedures and messages used by the access terminal and the access network to keep track of the access terminal's approximate location and to maintain the radio link as the access terminal moves between the coverage areas of different sectors. This protocol is not designed to operate with subtype 0, 1, and 2 of the Reverse Traffic Channel MAC Protocol. The Subtype1 based Inter-RAT Route Update Protocol also provides procedures used by the access terminal when it moves from a different radio access technology to HRPD.

This protocol can be in one of four states:

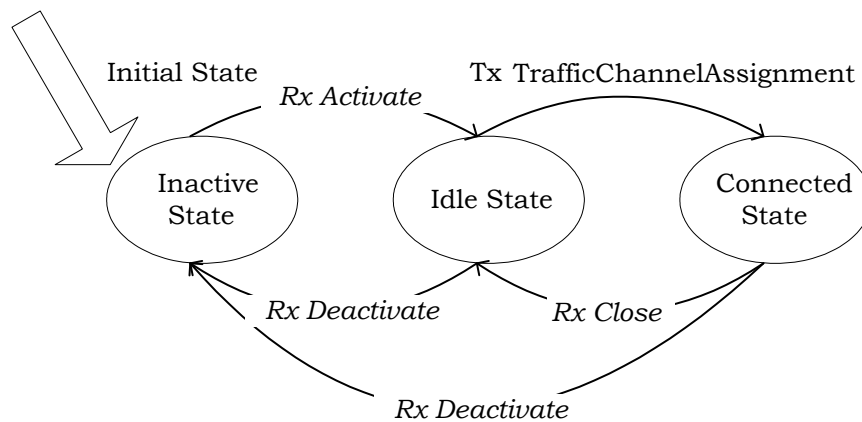
- **Inactive State:** In this state the protocol waits for an *Activate* command.
- **Idle State:** In this state, the access terminal autonomously maintains the Active Set. RouteUpdate messages from the access terminal to the access network are based on the distance between the access terminal's current serving sector and the serving sector at the time the access terminal last sent an update.
- **Connected State:** In this state the access network dictates the access terminal's Active Set. Route update messages from the access terminal to the access network are based on changing radio link conditions.
- **Tunnel State:** This state is associated only with the access terminal. In this state, the access terminal autonomously maintains the pilot sets the same manner as in the Idle State. The pilot measurement results of all the pilots in the neighbor list from the public data are made public to the other radio access technology. The access terminal only reports the RouteUpdate message when it sends ConnectionRequest message or is requested by the access network.

Transitions between states are driven by commands received from Connection Layer protocols and the transmission and reception of the TrafficChannelAssignment message.

The protocol states, messages and commands causing the transition between the states are shown in [Figure 5.11.1-1](#) and [Figure 5.11.1-2](#) for the access terminal and the access network respectively.



**Figure 5.11.1-1 Subtype1 based Inter-RAT Route Update Protocol State Diagram (Access Terminal)**



**Figure 5.11.1-2 Subtype1 based Inter-RAT Route Update Protocol State Diagram (Access Network)**

Throughout this protocol a pilot is defined to be specified by a <Pilot PN, CDMA Channel> pair.

This protocol uses parameters that are provided, as public data by the Overhead Messages Protocol, configured attributes, or protocol constants.

Table 5.11.1-1 ~~Table 5.11.1-1~~ lists all of the protocol parameters obtained from the public data of the Overhead Messages Protocol.

**Table 5.11.1–1 Route Update Protocol Parameters that are Public Data of the Overhead Messages Protocol**

RU Parameter	Comment
Latitude	Latitude of sector in units of 0.25 second
Longitude	Longitude of sector in units of 0.25 second
RouteUpdateRadiusOverhead	Distance (unless modified by the RouteUpdateRadiusMultiply and/or RouteUpdateRadiusAdd attributes) between the serving sector and the sector in which location was last reported which triggers a new report. If this field is set to zero, then distance triggered reporting is disabled
NumNeighbors	Number of neighbors specified in the message
NeighborPN	PN Offset of each neighbor in units of 64 PN chips
NeighborChannelIncluded	Set to '1' if a Channel Record is included for the neighbor
NeighborChannel	Neighbor Channel Record specifying network type and frequency

### 5.11.2 Primitives and Public Data

#### 5.11.2.1 Commands

This protocol defines the following commands:

- *Activate*
- *Deactivate*
- *Open*
- *Close*
- *SendRouteUpdate*

#### 5.11.2.2 Return Indications

This protocol returns the following indications:

- *ConnectionLost* (access network only)
- *NetworkLost*
- *IdleHO*
- *ActiveSetUpdated*
- *AssignmentRejected*
- *ConnectionInitiated*
- *ConnectionOpened*



### 5.11.2.3 Public Data

This protocol shall make the following data public:

- Subtype for this protocol
- All <Pilot PN, CDMA Channel> pairs in the Active Set
- The reverse link CDMA channels assigned to the access terminal.
- The FeedbackEnabled field associated with each sub-Active Set.
- If the FeedbackEnabled field associated with the sub-Active Set is set to '1', the reverse link CDMA channel that is used to send the MAC channel information (e.g., DRC, DSC, ACK) associated with each sub-Active Set and the corresponding FeedbackMultiplexingIndex for transmission of DRC, DSC, and ACK channels. If the FeedbackEnabled field associated with the sub-Active Set is set to '0', the above information is not made public.
- The DSCForThisSubActiveSetEnabled associated with each of the assigned sub-Active Sets
- The pilots in the Active Set that carry Control Channel.
- Information provided by the SofterHandoff field in the TrafficChannelAssignment message for every pilot in the Active Set
- ForwardTrafficMACIndex and the associated interlaces for every pilot in the Active Set
- For each of the reverse CDMA channels assigned to the access terminal, the Active Set member and the corresponding ReverseLinkMACIndex associated with the reverse link CDMA channel.
- For each of the reverse CDMA channels assigned to the access terminal, the Active Set member and the corresponding RABMACIndex associated with the reverse link CDMA channel.
- Scheduler Group associated with each of the pilots in the Active Set.
- The sub-Active Set associated with each DRC Cover channel (see 5.11.6.1.2.5).
- The ReverseChannelDroppingRank associated with each of the assigned reverse link CDMA channels.
- The MAC Index associated with each of the pilots in a sub-Active Set that is used to carry the DRCLock channel for each of the reverse link CDMA channels<sup>74</sup>.
- SupportedCDMAChannels attribute
- Pilot strength of all pilots in the Active Set
- FrameOffset specified in the TrafficChannelAssignment message
- Current RouteUpdate message
- DeltaT2P for all pilots in the Active Set that carry RAB for a Reverse CDMA Channel

---

<sup>74</sup> In this protocol subtype, the MAC Index and the forward CDMA channel that carry the RPC and DRCLock are the same.

### 5.11.3 Protocol Data Unit

The transmission unit of this protocol is a message. This is a control protocol and, therefore, it does not carry payload on behalf of other layers or protocols.

This protocol uses the Signaling Application to transmit and receive messages.

### 5.11.4 Protocol Initialization

#### 5.11.4.1 Protocol Initialization for the InConfiguration Protocol Instance

Upon creation, the InConfiguration instance of this protocol in the access terminal and the access network shall perform the following in the order specified:

- The fall-back values of the attributes for this protocol instance shall be set to the default values specified for each attribute.
- If the InUse instance of this protocol has the same protocol subtype as this InConfiguration protocol instance, then the fall-back values of the attributes defined by the InConfiguration protocol instance shall be set to the values of the corresponding attributes associated with the InUse protocol instance.
- The value for each attribute for this protocol instance shall be set to the fall-back value for that attribute.

### 5.11.5 Procedures and Messages for the InConfiguration Instance of the Protocol

#### 5.11.5.1 Procedures

This protocol uses the Generic Configuration Protocol (see [10]) to define the processing of the configuration messages. The access terminal should send a ConfigurationRequest message containing the SupportedCDMAChannels attribute. If the access terminal sends a ConfigurationRequest message containing the SupportedCDMAChannels attribute, then the access terminal shall include in the attribute all Band Classes and Band Sub-classes supported by the access terminal.

#### 5.11.5.2 Commit Procedures

The access terminal and the access network shall perform the procedures specified in this section, in the order specified, when directed by the InUse instance of the Session Configuration Protocol to execute the Commit procedures:

- All the public data that are defined by this protocol, but are not defined by the InUse protocol instance shall be added to the public data of the InUse protocol.
- The value of the following public data of the InUse instance of the protocol shall be set to the corresponding attribute value of the InConfiguration protocol instance:
  - SupportedCDMAChannels
- If the InUse instance of the Route Update Protocol has the same subtype as this protocol instance, but the InUse instance of any other protocol in the Connection Layer does not have the same subtype as the corresponding InConfiguration protocol instance, then

- 1       – The access terminal and the access network shall set the attribute values associated
- 2       with the InUse instance of this protocol to the attribute values associated with the
- 3       InConfiguration instance of this protocol, and
- 4       – The access terminal shall set the initial state of the InConfiguration and InUse protocol
- 5       instances of the Route Update protocol to the Inactive State.
- 6       – The access network shall set the initial state of the InConfiguration and InUse protocol
- 7       instances of the Route Update protocol to the Idle State.
- 8       – The access terminal and the access network shall purge the InConfiguration instance of
- 9       the protocol.
- 10      • If the InUse instance of all protocols in the Connection Layer have the same subtype as the
- 11      corresponding InConfiguration protocol instance, then
  - 12       – The access terminal and the access network shall set the attribute values associated
  - 13       with the InUse instance of this protocol to the attribute values associated with the
  - 14       InConfiguration instance of this protocol, and
  - 15       – The InUse protocol instance at the access terminal shall perform the procedures
  - 16       specified in 5.11.6.1.2.1.
  - 17       – The access terminal and the access network shall purge the InConfiguration instance of
  - 18       the protocol.
- 19      • If the InUse instance of the Route Update Protocol does not have the same subtype as this
- 20      protocol instance, then the access terminal and the access network shall perform the
- 21      following:
  - 22       – The access terminal shall set the initial state of the InConfiguration and InUse protocol
  - 23       instances of the Route Update protocol to the Inactive State.
  - 24       – The access network shall set the initial state of the InConfiguration and InUse protocol
  - 25       instances of the Route Update protocol to the Idle State.
  - 26       – The InConfiguration protocol instance shall become the InUse protocol instance for the
  - 27       Route Update Protocol at the access terminal and the access network.
- 28      • All the public data that are not defined by this protocol shall be removed from the list of
- 29      public data for the InUse protocol instance.

### 30   5.11.5.3 Message Formats

#### 31   5.11.5.3.1 ConfigurationRequest

32   The ConfigurationRequest message format is as follows:

Field	Length (bits)
MessageID	8
TransactionID	8
Zero or more instances of the following record	
AttributeRecord	Attribute dependent

- 1    MessageID            The sender shall set this field to 0x50.
- 2    TransactionID        The sender shall increment this value for each new ConfigurationRequest  
3                            message sent.
- 4    AttributeRecord      The format of this record is specified in [10].

5

<b>Channels</b>	FTC    RTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 6    5.11.5.3.2 ConfigurationResponse

7    The ConfigurationResponse message format is as follows:

8

Field	Length (bits)
MessageID	8
TransactionID	8
Zero or more instances of the following record	
AttributeRecord	Attribute dependent

- 9    MessageID            The sender shall set this field to 0x51.
- 10   TransactionID        The sender shall set this value to the TransactionID field of the  
11                            corresponding ConfigurationRequest message.
- 12   AttributeRecord      An attribute record containing a single attribute value. If this message  
13                            selects a complex attribute, only the ValueID field of the complex  
14                            attribute shall be included in the message. The format of the  
15                            AttributeRecord is given in [10]. The sender shall not include more than  
16                            one attribute record with the same attribute identifier.
- 17

<b>Channels</b>	FTC    RTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

# 5.11.6 Procedures and Messages for the InUse Instance of the Protocol

## 5.11.6.1 Procedures

### 5.11.6.1.1 Command Processing

#### 5.11.6.1.1.1 Activate

If the protocol receives an *Activate* command in the Inactive State and the TunnelModeEnabled public data being set to '0', the access terminal shall perform the following:

- Issue an *AccessChannelMAC.Activate* command,
- Transition to the Idle State.

If the protocol receives an *Activate* command in the Inactive State and the TunnelModeEnabled, provided as public data of the Signaling Adaptation Protocol, is set to '1', the access terminal shall perform the following:

- Transition to the Tunnel State.

If the protocol receives an *Activate* command in the Inactive State, the access network shall perform the following:

- Issue an *AccessChannelMAC.Activate* command,
- Transition to the Idle State.

#### 5.11.6.1.1.2 Deactivate

If the protocol receives a *Deactivate* command in the Inactive State, it shall be ignored.

If the protocol receives this command in any other state, the access terminal and the access network shall:

- Issue a *ReverseTrafficChannelMAC.Deactivate* command,
- Issue a *ForwardTrafficChannelMAC.Deactivate* command,
- Issue an *AccessChannelMAC.Deactivate* command,
- Transition to the Inactive State.

#### 5.11.6.1.1.3 Open

If the protocol receives an *Open* command in the Idle State,

- The access terminal shall ignore it.
- The access network shall:
  - Transmit a TrafficChannelAssignment message as follows:

- 1       + The access network should base the TrafficChannelAssignment message on the last
- 2       RouteUpdate message it received from the access terminal,
- 3       + If the SupportedCDMAChannels attribute contains one or more band classes, then
- 4       the access network shall assign a Traffic Channel on CDMA Channel(s) supported
- 5       by the access terminal as indicated by the value of the SupportedCDMAChannels
- 6       attribute.
- 7       + Channel(s) assigned to the access terminal shall be subject to the constraints
- 8       specified by the attributes of this protocol and the restrictions made public by the
- 9       physical layer protocol.
- 10      + The forward interlaces assigned to the access terminal shall be subject to the
- 11      supported DRX pattern(s) as specified by the SupportedDRXPatterns attribute.
- 12      + The access network shall set the SubActiveSetCarriesControlChannel field of the
- 13      TrafficChannelAssignment for exactly one sub-Active Set in the access terminal's
- 14      Active Set. The access network shall not set the
- 15      SubActiveSetCarriesControlChannel field associated with a sub-Active Set to '1'
- 16      unless the sub-Active Set carries power control commands for at least one reverse
- 17      CDMA channel.<sup>75</sup>
- 18      + The access network shall set the FeedbackEnabled field for the sub-Active Sets that
- 19      carry power control commands for a reverse CDMA channel to '1'.
- 20      + DRC covers associated with members of the sub-Active Set shall be unique within
- 21      the sub-active set
- 22      + No two pilots in the sub-Active Set shall be in the same Pilot Group
- 23      – Return a *ConnectionInitiated* indication,
- 24      – Issue a *ReverseTrafficChannelMAC.Activate* command including the list of Reverse
- 25      CDMA Channels that are assigned in the TrafficChannelAssignment message,
- 26      – Issue a *ForwardTrafficChannelMAC.Activate* command,
- 27      – Issue an *AccessChannelMAC.Deactivate* command,
- 28      – Transition to the Connected State.

29 If this command is received in any other state it shall be ignored.

#### 30 5.11.6.1.1.4 Close

31 If the protocol receives a *Close* command in the Connected State the access terminal and the

32 access network shall:

- 33 • Issue a *ReverseTrafficChannelMAC.Deactivate* command,
- 34 • Issue a *ForwardTrafficChannelMAC.Deactivate* command,

---

<sup>75</sup> This is to ensure that there is a ForwardTrafficValid bit in the QuickConfig message associated with the access terminal.

- Issue an *AccessChannelMAC.Activate* command,
- Transition to the Idle State.

If this command is received in any other state it shall be ignored.

#### 5.11.6.1.2 Pilots and Pilot Sets

The access terminal estimates the strength of the Forward Channel transmitted by each sector in its neighborhood. This estimate is based on measuring the strength of the Forward Pilot Channel, henceforth referred to as the pilot.

When this protocol is in the Connected State, the access terminal uses pilot strengths to decide when to generate RouteUpdate messages.

When this protocol is in the Idle State, the access terminal uses pilot strengths to decide which sector's Control Channel it monitors.

When this protocol is in the Tunnel State, the access terminal maintains the pilot sets and reports to the other radio access technology the PilotPN and strengths of all the pilots in the neighbor list from the Overhead Messages Protocol public data.

The following pilot sets are defined to support the Route Update process:

- **Active Set:** The set of pilots associated with the sectors currently serving the access terminal. When a connection is open, a sector is considered to be serving an access terminal when there is a Forward Traffic Channel assigned to the access terminal. When a connection is not open, a sector is considered to be serving the access terminal when the access terminal is monitoring that sector's control channel.
- **Candidate Set:** The pilots that are not in the Active Set, but are received by the access terminal with sufficient strength to indicate that the sectors transmitting them are good candidates for inclusion in the Active Set.
- **Neighbor Set:** The set of pilots that are not in either one of the two previous sets, but are likely candidates for inclusion in the Active Set.
- **Remaining Set:** The set of all possible pilots excluding the pilots that are in any of the three previous sets.

At any given instant a pilot is a member of exactly one set.

The access terminal maintains all four sets. The access network maintains only the Active Set.

The access terminal complies with the following rules when searching for pilots, estimating the strength of a given pilot, and moving pilots between sets.

#### 5.11.6.1.2.1 Neighbor Set Search Window Parameters Update

The access terminal shall maintain RouteUpdateNeighborList which is a list of structures of type Neighbor (defined below). For each pilot in the Neighbor Set, the access terminal shall maintain a structure in the RouteUpdateNeighborList.

A Neighbor structure consists of four fields: PilotPN, CDMA Channel, SearchWindowSize, and SearchWindowOffset.

The RouteUpdateNeighborList is used by the access terminal to perform pilot search on a pilot in the Neighbor Set.

When this set of procedures is invoked, the access terminal shall perform the following steps in the order specified:

- For each pilot in the Neighbor Set, the access terminal shall first initialize the corresponding Neighbor structure in RouteUpdateNeighborList as follows:
  - Set the structure's PilotPN field to the neighbor pilot's PN.
  - Set the structure's Channel field to the neighbor pilot's channel record.
  - Set the structure's SearchWindowSize field to the configurable attribute SearchWindowNeighbor.
  - Set the structure's SearchWindowOffset to zero.
- For each pilot listed in the OverheadMessagesNeighborList, the access terminal shall set the non-NULL fields of the corresponding Neighbor structure in the RouteUpdateNeighborList to the fields of the Neighbor structure in the OverheadMessagesNeighborList for this pilot.
- For each pilot listed in the NeighborListMessageNeighborList, the access terminal shall set the non-NULL fields of the corresponding Neighbor structure in the RouteUpdateNeighborList to the fields of the Neighbor structure in the NeighborListMessageNeighborList for this pilot.

#### 5.11.6.1.2.2 Pilot Search

The access terminal shall continually search for pilots in the Connected State and whenever it is monitoring the Control Channel in the Idle State. The access terminal shall search for pilots in all pilot sets in the Connected State and Idle State.

The access terminal shall continually search for pilots in the Tunnel State. In the Tunnel State, the access terminal shall search for pilots in the Active Set, the Candidate Set and the Neighbor Set, and may search for the pilots in the Remaining Set..

This pilot search shall be governed by the following rules:

**Search Priority:** The access terminal should use the same search priority for pilots in the Active Set and Candidate Set. In descending order of search rate, the access terminal shall search, most often, the pilots in the Active Set and Candidate Set, then shall search the pilots in the Neighbor Set, and lastly shall search the pilots in the Remaining Set.

**Search Window Size:** The access terminal shall use the search window size specified by the configurable attribute SearchWindowActive for pilots in the Active Set and Candidate Set. For each pilot in the Neighbor Set, the access terminal shall use the search window size specified by Table 5.11.6.2.5–1 and SearchWindowSize field of the corresponding Neighbor structure in the RouteUpdateNeighborList. The access terminal shall use search window size specified by configurable attribute SearchWindowRemaining for pilots in the Remaining Set.



Search Window Center: The access terminal should center the search window around the earliest usable multipath component for pilots in the Active Set. The access terminal should center the search window for each pilot in the Neighbor Set around the pilot's PN sequence offset plus the search window offset specified by Table 5.11.6.2.5-2 and SearchWindowOffset field of the corresponding Neighbor structure in the RouteUpdateNeighborList using timing defined by the access terminal's time reference (see [10]). The access terminal should center the search window around the pilot's PN sequence offset using timing defined by the access terminal's time reference (see [10]) for the Remaining Set.

#### 5.11.6.1.2.3 Pilot Strength Measurement

The access terminal shall measure the strength of every pilot it searches. The strength estimate formed by the access terminal shall be computed as the sum of the ratios of received pilot energy per chip,  $E_c$ , to total received spectral density,  $I_0$  (signal and noise) for at most  $k$  multipath components, where  $k$  is the maximum number of multipath components that can be demodulated simultaneously by the access terminal.

#### 5.11.6.1.2.4 Pilot Drop Timer Maintenance

For each pilot, the access terminal shall maintain a pilot drop timer.

If DynamicThresholds is equal to '0', the access terminal shall perform the following:

- The access terminal shall start a pilot drop timer for each pilot in the Candidate Set or the Active Set whenever the strength becomes less than the value specified by PilotDrop. The access terminal shall consider the timer to be expired after the time specified by PilotDropTimer.
- The access terminal shall reset and disable the timer whenever the strength of the pilot becomes greater than the value specified by PilotDrop.

If DynamicThresholds is equal to '1', the access terminal shall perform the following:

- The access terminal shall start a pilot drop timer for each pilot in the Candidate Set whenever the strength of the pilot becomes less than the value specified by PilotDrop. The access terminal shall consider the timer value to be expired after the time specified by PilotDropTimer. The access terminal shall reset and disable the timer if the strength of the pilot becomes greater than the value specified by PilotDrop.
- The access terminal shall sort pilots in each Sub-Active Set in order of increasing strengths, i.e.,  $PS_1 < PS_2 < PS_3 < \dots < PS_{N_A}$ , where  $N_A$  is the number of the pilots in the sub-Active Set. The access terminal shall start the timer whenever the strength  $PS_i$  satisfies the following inequality:

$$10 \times \log_{10} PS_i < \max \left( \frac{\text{SoftSlope}}{8} \times 10 \times \log_{10} \sum_{j>i} PS_j + \frac{\text{DropIntercept}}{2}, -\frac{\text{PilotDrop}}{2} \right)$$

$$i = 1, 2, \dots, N_A - 1$$

The access terminal shall reset and disable the timer whenever the above inequality is not satisfied for the corresponding pilot.

Sections 5.11.6.1.2.8 and 5.11.6.1.2.9 specify the actions the access terminal takes when the pilot drop timer expires.

#### 5.11.6.1.2.5 Sub-Active Sets

The sub-Active Set associated with a DRC Cover channel is defined to be the set of pilots in the Active Set to which the access terminal can point using the DRC Cover channel. A DRC Cover Channel is specified in the TrafficChannelAssignment message by the Reverse CDMA Channel on which the DRC Cover is transmitted and the FeedbackMultiplexingIndex associated with that DRC channel. Each pilot in the Active Set belongs to exactly one sub-Active Set.

#### 5.11.6.1.2.6 Pilot Groups

Two pilots are defined to belong to the same Pilot Group if both the PN offset and the PilotGroupID associated with the two pilots are the same<sup>76</sup>. Overhead Messages, the Neighbor List message or the TrafficChannelAssignment message may specify the PilotGroupID either explicitly or implicitly. The implicit specification refers to including the pilot in the message and not including PilotGroupID in the message. The implicit specification of the PilotGroupID value is equivalent to explicit specification with a value of zero. The PilotGroupID for a pilot is determined as follows:

- While in the Connected State:
  - If the PilotGroupID associated with a pilot in the Active Set is specified in the most recently received TrafficChannelAssignment message, then that value is the PilotGroupID for that pilot.
  - Otherwise, if public data of the Overhead Messages protocol or the NeighborList message specifies (explicitly or implicitly) the PilotGroupID for a pilot, then that value is the PilotGroupID for that pilot.
- While in the Idle State, if public data of the Overhead Messages protocol specifies (explicitly or implicitly) the PilotGroupID for a pilot, then that value is the PilotGroupID for that pilot.
- The access terminal shall associate a PilotGroupID with each pilot in the Remaining Set that is different from any other PilotGroupID associated with any other pilot.

#### 5.11.6.1.2.7 Scheduler Groups

Each pilot in the Active Set belongs to a Scheduler Group<sup>77</sup>. Two pilots are defined to belong to the same Scheduler Group if either of the following conditions is satisfied:

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<sup>76</sup> If an additional CDMA channel is added to a sector and has the same coverage as an existing CDMA channel it can be assigned the same PN offset and PilotGroupID and be part of the same Pilot Group. If an additional CDMA channel is added to a sector and has different coverage than an existing CDMA channel then it can be assigned a different PilotGroupID or a different PN offset or both.

<sup>77</sup> For example, pilots in the same Scheduler Group share the same QNSequence space as specified by the Multi-Link Multi-Flow Packet Application defined in[2].

- 1 • The SchedulerTagIncluded field of the TrafficChannelAssignment message that assigned the  
2 current Active Set is set to '1' and the SchedulerTag associated with the two pilots are the  
3 same.
- 4 • The SchedulerTagIncluded field of the TrafficChannelAssignment message that assigned the  
5 current Active Set is set to '0', and the two pilots are in the same sub-Active Set, and the  
6 two pilots are in softer handoff with each other (as identified in the  
7 TrafficChannelAssignment message).

8 If the TrafficChannelAssignment message does not specify the SchedulerTag for a pilot in the  
9 Active Set, then the SchedulerTag associated with that pilot is assumed to be a number that is  
10 different from all other SchedulerTag specified in the message.

#### 11 5.11.6.1.2.8 Active Set Management

12 The access terminal shall support a maximum Active Set size of  $N_{RUPActive}$  pilots per sub-Active  
13 Set.

14 Rules for maintaining the Active Set are specific to each protocol state (see 5.11.6.1.5.1 and  
15 5.11.6.1.6).

#### 16 5.11.6.1.2.9 Candidate Set Management

17 The access terminal shall support a maximum Candidate Set size of  $N_{RUPCandidate}$  pilots. The  
18 Candidate Set shall not include multiple pilots in the same Pilot Group. When adding a pilot to  
19 the Candidate Set from a certain Pilot Group, the access terminal may choose to add any pilot  
20 that belongs to the same Pilot Group. Also, the access terminal may replace at any time a pilot  
21 in the Candidate Set with another pilot that belongs to the same Pilot Group.

22 The access terminal shall add a pilot to the Candidate Set if one of the following conditions is  
23 met:

- 24 • The pilot does not belong to the same Pilot Group as one of the pilots that is already in the  
25 Active Set or Candidate Set and the strength of the pilot exceeds the value specified by  
26 PilotAdd.
- 27 • Pilot is deleted from the Active Set, the Active Set does not include a pilot in the same Pilot  
28 Group as the deleted pilot, its pilot drop timer has expired, DynamicThresholds is equal to  
29 '1', and the pilot strength is above the threshold specified by PilotDrop, and the  
30 ThisSubActiveSetNotReportable field corresponding to the sub-Active Set to which the pilot  
31 belonged was not set to '1' in the TrafficChannelAssignment message that assigned the  
32 previous Active Set (i.e., prior to deleting this pilot).
- 33 • Pilot is deleted from the Active Set, the Active Set does not include a pilot in the same Pilot  
34 Group as the deleted pilot, and the pilot's drop timer has not expired, and the  
35 ThisSubActiveSetNotReportable field corresponding to the sub-Active Set to which the pilot  
36 belonged was not set to '1' in the TrafficChannelAssignment message that assigned the  
37 previous Active Set (i.e., prior to deleting this pilot).

38 The access terminal shall delete a pilot from the Candidate Set if one of the following conditions  
39 is met:

- 1 • A pilot in the same Pilot Group is added to the Active Set.
- 2 • Pilot's drop timer has expired.
- 3 • Pilot is added to the Candidate Set; and, as a consequence, the size of the Candidate Set
- 4 exceeds  $N_{RUPCandidate}$ . In this case, the access terminal shall delete the weakest pilot in the
- 5 set. Pilot A is considered weaker than pilot B:
  - 6 – If pilot A has an active drop timer but pilot B does not,
  - 7 – If both pilots have an active drop timer and pilot A's drop timer is closer to expiration
  - 8 than pilot B's, or
  - 9 – If neither of the pilots has an active drop timer and pilot A's strength is less than pilot
  - 10 B's.

#### 11 5.11.6.1.2.10 Neighbor Set Management

12 The access terminal shall support a minimum Neighbor Set size of  $N_{RUPNeighbor}$  pilots. The

13 Neighbor Set shall not include multiple pilots in the same Pilot Group. When adding a pilot to

14 the Neighbor Set from a certain Pilot Group, the access terminal may choose to add any pilot

15 that belongs to the same Pilot Group. Also, the access terminal may replace at any time a pilot

16 in the Neighbor Set with another pilot that belongs to the same Pilot Group. The access

17 terminal shall maintain a counter, AGE, for each pilot in the Neighbor Set as follows.

- 18 • If a pilot is added to the Active Set or Candidate Set, then all the pilots in the Neighbor Set
- 19 that belong to the same Pilot Group as the pilot added to the Active Set or Candidate Set
- 20 shall be deleted from the Neighbor Set.
- 21 • If a pilot in the Neighbor Set is replaced by another pilot belonging to the same Pilot Group,
- 22 then the same value for the AGE shall be associated with the newly added pilot.
- 23 • If a pilot is deleted from the Active Set, but a pilot that belongs to the same Pilot Group is
- 24 not added to the Candidate Set and the Active Set does not include a pilot that belongs to
- 25 the same Pilot Group as the deleted pilot and the ThisSubActiveSetNotReportable field
- 26 corresponding to the sub-Active Set to which the pilot belonged was not set to '1' in the
- 27 TrafficChannelAssignment message that assigned the previous Active Set (i.e., prior to
- 28 deleting this pilot), then it shall be added to the Neighbor Set with the AGE of 0.
- 29 • If a pilot is deleted from the Candidate Set, but a pilot that belongs to the same Pilot Group
- 30 is not added to the Active Set and the Active Set does not include a pilot that belongs to the
- 31 same Pilot Group as the deleted pilot, then it shall be added to the Neighbor Set with the
- 32 AGE of 0.
- 33 • If the size of the Neighbor Set is greater than the maximum Neighbor Set supported by the
- 34 access terminal, the access terminal shall delete enough pilots from the Neighbor Set such
- 35 that the size of the Neighbor Set is the maximum size supported by the access terminal and
- 36 pilots with higher AGE are deleted first.
- 37 • If the access terminal receives an *OverheadMessages.Updated* indication, then:
  - 38 – The access terminal shall increment the AGE for every pilot in the Neighbor Set.

- 1       – For each pilot in the neighbor list given as public data by the Overhead Messages  
2       Protocol that is a member of the Neighbor Set, the access terminal shall perform the  
3       following:
  - 4           + The access terminal shall set the AGE of this neighbor list pilot to the minimum of  
5           its current AGE and NeighborMaxAge.
- 6       – For each pilot in the neighbor list given as public data by the Overhead Messages  
7       Protocol (in the order specified in the neighbor list) that is a member of the Remaining  
8       Set, the access terminal shall perform the following:
  - 9           + If the addition of this neighbor list pilot to the Neighbor Set would not cause the size  
10          of the Neighbor Set to increase beyond the maximum Neighbor Set size supported  
11          by the access terminal, then the access terminal shall add this neighbor list pilot to  
12          the Neighbor Set with its AGE set to NeighborMaxAge.
  - 13          + If the addition of this neighbor list pilot would cause the size of the Neighbor Set to  
14          increase beyond the maximum Neighbor Set size supported by the access terminal  
15          and the Neighbor Set contains at least one pilot with AGE greater than  
16          NeighborMaxAge associated with the pilot's channel, then the access terminal shall  
17          delete the pilot in the Neighbor Set for which the difference between its AGE and the  
18          NeighborMaxAge associated with that pilot's channel (i.e., AGE - NeighborMaxAge) is  
19          the greatest and shall add this neighbor list pilot to the Neighbor Set with its AGE  
20          set to NeighborMaxAge associated with the pilot's channel.
  - 21          + If the addition of this neighbor list pilot would cause the size of the Neighbor Set to  
22          increase beyond the maximum Neighbor Set size supported by the access terminal  
23          and the Neighbor Set does not contain a pilot with AGE greater than  
24          NeighborMaxAge associated with the pilot's channel, the access terminal shall not  
25          add this neighbor list pilot to the Neighbor Set.
- 26   • If the access terminal receives a NeighborList message, then:
  - 27          – The access terminal shall increment the AGE for every pilot in the Neighbor Set.
  - 28          – For each pilot in the neighbor list given in the NeighborList message that is a member of  
29          the Neighbor Set, the access terminal shall perform the following:
    - 30               + The access terminal shall set the AGE of this neighbor list pilot to the minimum of  
31               its current AGE and NeighborMaxAge.
  - 32          – For each pilot in the neighbor list given in the NeighborList message (in the order  
33          specified in the message) that is a member of the Remaining Set, the access terminal  
34          shall perform the following:
    - 35               + If the addition of this neighbor list pilot to the Neighbor Set would not cause the size  
36               of the Neighbor Set to increase beyond the maximum Neighbor Set size supported  
37               by the access terminal, then the access terminal shall add this neighbor list pilot to  
38               the Neighbor Set with its AGE set to NeighborMaxAge.

- 1           + If the addition of this neighbor list pilot would cause the size of the Neighbor Set to  
2           increase beyond the maximum Neighbor Set size supported by the access terminal  
3           and the Neighbor Set contains at least one pilot with AGE greater than  
4           NeighborMaxAge associated with the pilot's channel, then the access terminal shall  
5           delete the pilot in the Neighbor Set for which the difference between its AGE and the  
6           NeighborMaxAge associated with that pilot's channel (i.e., AGE - NeighborMaxAge) is  
7           the greatest and shall add this neighbor list pilot to the Neighbor Set with its AGE  
8           set to NeighborMaxAge associated with the pilot's channel.
- 9           + If the addition of this neighbor list pilot would cause the Neighbor Set size to  
10          increase beyond the maximum Neighbor Set size supported by the access terminal  
11          and the Neighbor Set does not contain a pilot with AGE greater than  
12          NeighborMaxAge associated with the pilot's channel, the access terminal shall not  
13          add this neighbor list pilot to the Neighbor Set.

14   The access terminal shall perform the procedures specified in 5.11.6.1.2.1 if a pilot is added to  
15   or deleted from the Neighbor Set.

#### 16   5.11.6.1.2.11 Remaining Set Management

17   The access terminal shall initialize the Remaining Set to contain all the pilots whose PN offset  
18   index is an integer multiple of PilotIncrement and are not already members of any other set.

19   The access terminal shall add a pilot to the Remaining Set if it deletes the pilot from the  
20   Neighbor Set and if a pilot belonging to the same Pilot Group was not added to the Active Set or  
21   Candidate Set.

22   The access terminal shall delete the pilot from the Remaining Set if it adds the pilot or another  
23   pilot belonging to the same Pilot Group to another set.

#### 24   5.11.6.1.2.12 Pilot PN Phase Measurement

25   The access terminal shall measure the arrival time, PILOT\_ARRIVAL, for each pilot reported to  
26   the access network. The pilot arrival time shall be the time of occurrence, as measured at the  
27   access terminal antenna connector, of the earliest arriving usable multipath component of the  
28   pilot. The arrival time shall be measured relative to the access terminal's time reference in  
29   units of PN chips. The access terminal shall compute the reported pilot PN phase,  
30   PILOT\_PN\_PHASE, as:

$$31 \quad \text{PILOT\_PN\_PHASE} = (\text{PILOT\_ARRIVAL} + (64 \times \text{PILOT\_PN})) \bmod 2^{15},$$

32   where PILOT\_PN is the PN sequence offset index of the pilot.

#### 33   5.11.6.1.3 Message Sequence Numbers

34   The access network shall validate all received RouteUpdate messages as specified in  
35   5.11.6.1.3.1.

36   The access terminal shall validate all received TrafficChannelAssignment messages as specified  
37   in 5.11.6.1.3.2.

38   The RouteUpdate message and the TrafficChannelAssignment message carry a  
39   MessageSequence field that serves to flag duplicate or stale messages.

The MessageSequence field of the RouteUpdate message is independent of the MessageSequence field of the TrafficChannelAssignment message.

#### 5.11.6.1.3.1 RouteUpdate Message Validation

When the access terminal first sends a RouteUpdate message, it shall set the MessageSequence field of the message to zero. Subsequently, the access terminal shall increment this field each time it sends a RouteUpdate message.

The access network shall consider all RouteUpdate messages it receives in the Idle State as valid.

The access network shall initialize the receive pointer,  $V(R)$  to the MessageSequence field of the first RouteUpdate message it received in the Idle State, and the access network shall subsequently set it to the MessageSequence field of each received RouteUpdate message.

When the access network receives a RouteUpdate message in the Connected State, it shall validate the message using the procedure defined in [10]. The access network shall discard the message if it is invalid.

#### 5.11.6.1.3.2 TrafficChannelAssignment Message Validation

The access network shall set the MessageSequence field of the TrafficChannelAssignment message it sends in the Idle State to zero. Subsequently, each time the access network sends a new TrafficChannelAssignment message in the Connected State, it shall increment this field. If the access network is sending the same message multiple times, it shall not change the value of this field between transmissions.<sup>78</sup>

The access terminal shall initialize the receive pointer,  $V(R)$ , to the MessageSequence field of the TrafficChannelAssignment message that it receives in the Idle State, or in the Tunnel State.

When the access terminal receives a TrafficChannelAssignment message in the Connected State, it shall validate the message using the procedure defined in [10]. The access terminal shall discard the message if it is invalid.

#### 5.11.6.1.4 Inactive State

Upon entering this state, the access terminal shall perform the following:

- The access terminal shall set the Active Set, the Candidate Set, and the Neighbor Set to NULL.
- The access terminal shall initialize the Remaining Set to contain all the pilots whose PN offset index is an integer multiple of PilotIncrement and are not already members of any other set.
- The access terminal shall perform the following in the order specified:
  - Remove all Neighbor structures from OverheadMessagesNeighborList.
  - Remove all Neighbor structures from NeighborListMessageNeighborList.

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<sup>78</sup> The access network may send a message multiple times to increase its delivery probability.

– Perform the procedures specified in 5.11.6.1.2.1.

- The access terminal shall set  $(x_L, y_L)$ , the longitude and latitude of the sector in whose coverage area the access terminal last sent a RouteUpdate message, to (NULL, NULL).

If the access terminal receives a *SignalingAdaptation.ConnectionInitiated* indication in this state, then the access terminal shall return a *ConnectionInitiated* indication.

#### 5.11.6.1.5 Idle State

In this state, RouteUpdate messages from the access terminal are based on the distance between the sector where the access terminal last sent a RouteUpdate message and the sector currently in its active set.

The access network sends the TrafficChannelAssignment message to open a connection in this state. If the access network sends a TrafficChannelAssignment message when the protocol subtype of the Signaling Adaptation Protocol is not equal to 0x0000 and TunnelModeEnabled, provided as public data of the Signaling Adaptation Protocol, is not equal to '0', then the order of sending related messages with TrafficChannelAssignment is specified in illustrated in Figure 5.11.6.1.5-1.

Upon entering this state, the access terminal shall perform the following:

- Remove all Neighbor structures from NeighborListMessageNeighborList and perform the procedures specified in 5.11.6.1.2.1.

If the access terminal receives a *SignalingAdaptation.ConnectionInitiated* indication in this state, then the access terminal shall return a *ConnectionInitiated* indication.

If the access terminal receives a *SignalingAdaptation.EnteringTunnelState* indication, the access terminal shall:

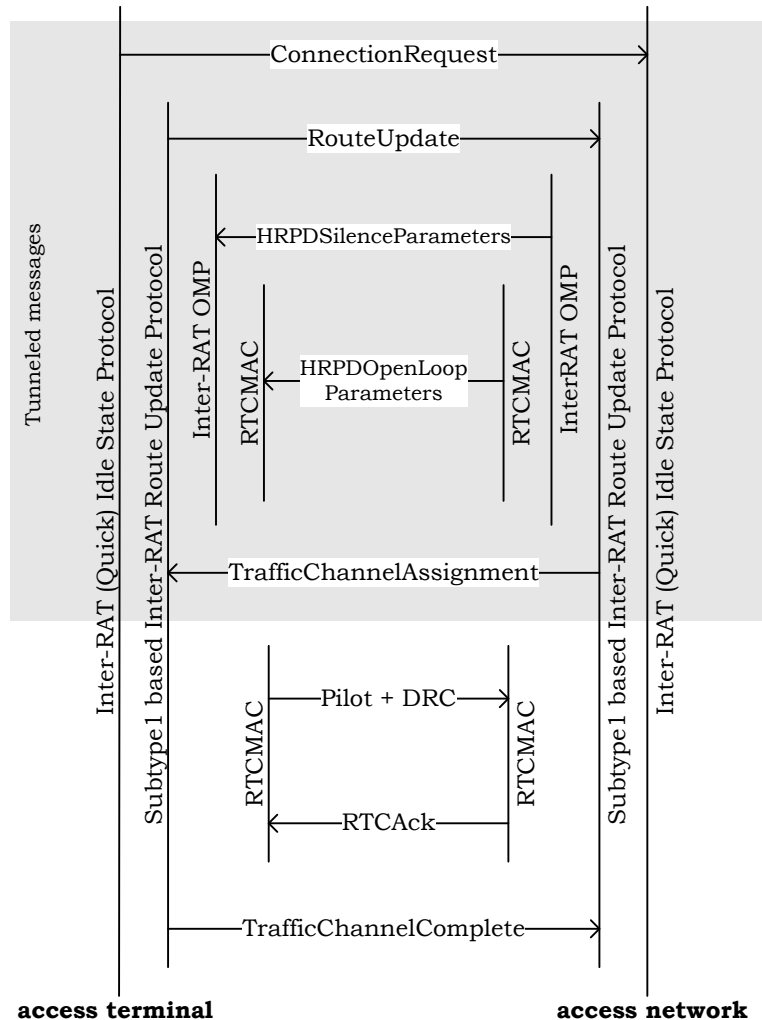
- Transition to the Tunnel State.

Figure 5.11.6.1.5-1 illustrates the connection setup exchange process<sup>79</sup> between the access terminal and the access network when the protocol subtype of the Signaling Adaptation Protocol is not equal to 0x0000 and TunnelModeEnabled, provided as public data of the Signaling Adaptation Protocol, is not equal to '0'.

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<sup>79</sup> It is suggested that the access terminal sends RouteUpdate message with ConnectionRequest message in 3GPP E-UTRA "Handoff-Preperation Message". It is suggested that the access network sends HRPDSilenceParameters message and HRPDOpenLoopParameters message before access network sends TrafficChannelAssignment message.





**Figure 5.11.6.1.5–1 Connection Setup Exchange for Inter-RAT tunneling mode**

#### 5.11.6.1.5.1 Active Set Maintenance

The access network shall not initially maintain an Active Set for the access terminal in this state.

If the access network receives an *Open* command, prior to sending a *TrafficChannelAssignment* message, the access network shall initialize the Active Set to the set of pilots in the *TrafficChannelAssignment* message that it sends in response to command (see 5.11.6.1.1.3).

The access terminal shall initially keep an Active Set of size one when it is in the Idle State. The Active Set pilot shall be the pilot associated with the Control Channel the access terminal is currently monitoring. The access terminal shall return an *IdleHO* indication when the Active Set changes in the Idle State.

The access terminal shall not change its Active Set pilot at a time that causes it to miss a synchronous Control Channel capsule. Other rules governing when to replace this Active Set pilot are beyond the scope of this specification.

If the access terminal receives a TrafficChannelAssignment message, it shall set its Active Set to the list of pilots specified in the message if the TrafficChannelAssignment message does not contain an AssignedChannel Record, or if the TrafficChannelAssignment message contains an AssignedChannel Record and the access terminal supports the CDMA Channel specified by the AssignedChannel Record.

#### 5.11.6.1.5.2 Pilot Channel Supervision in the Idle State

The access terminal shall perform pilot channel supervision in the Idle State as follows:

- Access terminal shall monitor the pilot strength of the pilot in its active set, all the pilots in the Candidate Set and all the pilots in the neighbor set that are on the same frequency.
- If the strength of all the pilots that the access terminal is monitoring goes below the value specified by PilotDrop, the access terminal shall start a pilot supervision timer. The access terminal shall consider the timer to be expired after the time specified by PilotDropTimer.
- If the strength of at least one of the pilots goes above the value specified by PilotDrop while the pilot supervision timer is counting down, the access terminal shall reset and disable the timer.
- If the pilot supervision timer expires, the access terminal shall return a *NetworkLost* indication.

#### 5.11.6.1.5.3 Processing the TrafficChannelAssignment Message in the Idle State

If the access terminal receives a TrafficChannelAssignment message in this state, it shall, perform the following if the TrafficChannelAssignment message does not contain an AssignedChannel Record, or if the TrafficChannelAssignment message contains an AssignedChannel Record and the access terminal supports the CDMA Channel specified by the AssignedChannel Record:

- Update its Active Set as described in 5.11.6.1.2.8
- Set the following public data of the Forward Traffic Channel MAC Protocol to the corresponding fields of the TrafficChannelAssignment message:
  - DRCLength for each of the assigned sub-Active Sets
  - ACKChannelGain for each of the assigned sub-Active Sets
  - DRCCover for every pilot in the Active Set
  - AuxDRCCover (if assigned) for every pilot in the Active Set
  - DSC for every cell in the Active Set
- If the Forward Traffic Channel MAC protocol defines the DRCCChannelGainBase as a public data, then set that public data to the DRCCChannelGainBase field of the TrafficChannelAssignment message. Otherwise, set the DRCCChannelGain public data of the Forward Traffic Channel MAC protocol to the DRCCChannelGainBase field of the TrafficChannelAssignment message.

- 1 • If the Forward Traffic Channel MAC protocol defines the DSCChannelGainBase as a public  
2 data, then set that public data to the DSCChannelGainBase field of the  
3 TrafficChannelAssignment message.
- 4 • Set the following public data of the Reverse Traffic Channel MAC Protocol to the  
5 corresponding fields of the TrafficChannelAssignment message:
  - 6 – RACHannelGain for every pilot in the Active Set
- 7 • Return a *ConnectionInitiated* Indication,
- 8 • If the AssignedChannel Record is included in the message, the access terminal shall tune to  
9 the CDMA Channels specified by the CDMA AssignedChannel Records associated with each  
10 pilot included in the message.
- 11 • Issue the following commands:
  - 12 – *ReverseTrafficChannelMAC.Activate* with a parameter that indicates the reverse CDMA  
13 channel(s) that are assigned by the TrafficChannelAssignment message.
  - 14 – *ForwardTrafficChannelMAC.Activate*
  - 15 – *AccessChannelMAC.Deactivate*
- 16 • Transition to the Connected State.

#### 17 5.11.6.1.5.4 Route Update Report Rules

18 The access terminal shall send RouteUpdate messages to update its location with the access  
19 network.

20 The access terminal shall not send a RouteUpdate message if the state timer of the Connection  
21 Setup State in the Idle State Protocol is active.

22 The access terminal shall comply with the following rules regarding RouteUpdate messages:

- 23 • The access terminal shall send a *RouteUpdate* message upon receiving a *SendRouteUpdate*  
24 command.
- 25 • If the value of the SupportRouteUpdateEnhancements attribute is not 0x00, then the  
26 access terminal shall send a RouteUpdate message whenever it receives a  
27 RouteUpdateRequest message.
- 28 • The access terminal shall send a RouteUpdate message with every access channel capsule  
29 transmitted by the access terminal.
- 30 • The access terminal shall include in the RouteUpdate message the pilot PN phase, pilot  
31 strength, and drop timer status for exactly one pilot in each Pilot Group in the Active Set  
32 and Candidate Set.
- 33 • The access terminal shall send a RouteUpdate message if all of the following conditions are  
34 true:
  - 35 – the RouteUpdateRadiusOverhead field of the SectorParameters message is not set to  
36 zero, and
  - 37 – the value of the RouteUpdateRadiusMultiply attribute is not 0x00, and

- the computed value  $r$  is greater than  $\max(0, r_m \times r_o + r_a)$ , where  $r_o$  is the value provided in the RouteUpdateRadiusOverhead field of the SectorParameters message transmitted by the sector in which the access terminal last sent a RouteUpdate message,  $r_m$  is the value of the RouteUpdateRadiusMultiply attribute, and  $r_a$  is the value of the RouteUpdateRadiusAdd attribute.

- The access terminal shall set the ReferencePilotChannelIncluded field of the RouteUpdate message to '0'

If  $(x_L, y_L)$  are the longitude and latitude of the sector to which the access terminal last sent a RouteUpdate, and  $(x_C, y_C)$  are the longitude and latitude of the sector currently providing coverage to the access terminal, then  $r$  is given by<sup>80</sup>

$$r = \left\lfloor \frac{\sqrt{\left[ D_{\text{longitude}} \times \cos\left(\frac{\pi}{180} \times \frac{y_L}{14400}\right) \right]^2 + [y_C - y_L]^2}}{16} \right\rfloor$$

$$D_{\text{longitude}} = x_C - x_L \text{ if } \left| \frac{x_C - x_L}{14400} \right| < 180$$

$$D_{\text{longitude}} = 360 \times 14400 - |x_C - x_L| \text{ if } \left| \frac{x_C - x_L}{14400} \right| \geq 180$$

The access terminal shall compute  $r$  with an error of no more than  $\pm 5\%$  of its true value when  $|y_L/14400|$  is less than 60 and with an error of no more than  $\pm 7\%$  of its true value when  $|y_L/14400|$  is between 60 and 70.<sup>81</sup>

If the value of the SupportRouteUpdateEnhancements attribute is 0x00, then the access network shall not send a RouteUpdateRequest message. If the value of the SupportRouteUpdateEnhancements attribute is not 0x00, then the access network may send a RouteUpdateRequest message.

#### 5.11.6.1.6 Connected State

In this state, RouteUpdate messages from the access terminal are based on changes in the radio link between the access terminal and the access network, obtained through pilot strength measurements at the access terminal.

The access network determines the contents of the Active Set through TrafficChannelAssignment messages.

<sup>80</sup> The  $x$ 's denote longitude and the  $y$ 's denote latitude.

<sup>81</sup>  $x_L$  and  $y_L$  are given in units of 1/4 seconds.  $x_L/14400$  and  $y_L/14400$  are in units of degrees.

#### 5.11.6.1.6.1 Access Terminal Requirements

In the Connected State, the access terminal shall perform the following:

- If the protocol receives a *ReverseTrafficChannelMAC.LinkAcquired* indication the access terminal shall:
  - Send a *TrafficChannelComplete* message with the *MessageSequence* field of the message set to the *MessageSequence* field of the *TrafficChannelAssignment* message,
  - Return a *ConnectionOpened* indication.

#### 5.11.6.1.6.2 Access Network Requirements

In the Connected State, the access network shall perform the following:

- If the protocol receives a *ReverseTrafficChannelMAC.LinkAcquired* indication the access network shall return a *ConnectionOpened* indication.

#### 5.11.6.1.6.3 Active Set Maintenance

##### 5.11.6.1.6.3.1 Access Network

Whenever the access network sends a *TrafficChannelAssignment* message to the access terminal, it shall add to the Active Set any pilots listed in the message that are not currently in the Active Set.

Upon sending a *TrafficChannelAssignment* message to the access terminal the access network shall issue the following command:

- A *ReverseTrafficChannelMAC.Activate* command including the list of reverse CDMA channels that this *TrafficChannelAssignment* message has added.

Upon receiving the *TrafficChannelComplete* message, the access network shall perform the following:

- A *ReverseTrafficChannelMAC.Deactivate* command including the list of reverse CDMA channels that the corresponding *TrafficChannelAssignment* message has removed.

Upon sending a *TrafficChannelAssignment* message, the access network shall set the following public data of the Forward Traffic Channel MAC Protocol to the corresponding fields of the *TrafficChannelAssignment* message:

- *DRCLength* for each of the assigned sub-Active Sets
- *ACKChannelGain* for each of the assigned sub-Active Sets
- *DRCCover* for every pilot in the Active Set
- *AuxDRCCover* (if assigned) for every pilot in the Active Set
- *DSC* for every cell in the Active Set

- If the Forward Traffic Channel MAC protocol defines the DRCChannelGainBase as a public data, then set that public data to the DRCChannelGainBase field of the TrafficChannelAssignment message. Otherwise, set the DRCChannelGain public data of the Forward Traffic Channel MAC protocol to the DRCChannelGainBase field of the TrafficChannelAssignment message.
- If the Forward Traffic Channel MAC protocol defines the DSCChannelGainBase as a public data, then set that public data to the DSCChannelGainBase field of the TrafficChannelAssignment message.

Upon sending a TrafficChannelAssignment message, the access network shall set the following public data of the Reverse Traffic Channel MAC Protocol to the corresponding fields of the TrafficChannelAssignment message:

- RACHannelGain for every pilot in the Active Set

The access network shall delete a pilot from the Active Set if the pilot was not listed in a TrafficChannelAssignment message and if the access network received the TrafficChannelComplete message, acknowledging that TrafficChannelAssignment message.

The access network should send a TrafficChannelAssignment message to the access terminal in response to changing radio link conditions, as reported in the access terminal's RouteUpdate messages.

The access network should only specify a pilot in the TrafficChannelAssignment message if it has allocated the required resources in the associated sector.

If the SupportedCDMAChannels attribute contains one or more band classes, then the access network shall assign a Traffic Channel on a CDMA Channel supported by the access terminal as indicated by the value of the SupportedCDMAChannels attribute.

If the access network adds or deletes a pilot in the Active Set, it shall send an *ActiveSetUpdated* indication.

If the access network adds a pilot that belongs to the same Pilot Group as a pilot specified in a RouteUpdate message to the Active Set, the access network may use the PilotPNPhase field provided in the message to obtain a round trip delay estimate from the access terminal to the sector associated with this pilot. The access network may use this estimate to accelerate the acquisition of the access terminal's Reverse Traffic Channel in that sector.

The access network shall not set DRC Length associated with any sub-Active Set in the TrafficChannelAssignment message to less than 4 slots if the Physical Layer Protocol defines the DTXMode as public data, and it is set to '1'.

#### 5.11.6.1.6.3.2 Access Terminal

If the access terminal receives a valid TrafficChannelAssignment message (see 5.11.6.1.3.2), it shall replace the contents of its current Active Set with the pilots specified in the message. The access terminal shall process the message as defined in 5.11.6.1.6.6.

Upon receiving a valid TrafficChannelAssignment message, the access terminal shall issue the following commands:

- A *ReverseTrafficChannelMAC.Activate* command including the list of reverse CDMA channels that this TrafficChannelAssignment message has added.
- A *ReverseTrafficChannelMAC.Deactivate* command including the list of reverse CDMA channels that this TrafficChannelAssignment message has removed.

#### 5.11.6.1.6.4 ResetReport Message

The access network may send a ResetReport message to reset the conditions under which RouteUpdate messages are sent from the access terminal. Access terminal usage of the ResetReport message is specified in the following section.

#### 5.11.6.1.6.5 Route Update Report Rules

The access terminal sends a RouteUpdate message to the access network in this state to request addition or deletion of pilots from its Active Set.

If the access terminal is sending the RouteUpdate message in response to a RouteUpdateRequest message that contains a Channel record, the access terminal shall include in a RouteUpdate message the pilot PN phase, pilot strength, and drop status for pilots whose strength is above the value specified by PilotAdd and subject to the following conditions:

- If the RouteUpdateRequest message contains one or more SectorPilotPN fields, the access terminal shall include pilots in the CDMA channel indicated by the Channel record and that are indicated by the SectorPilotPN fields. Otherwise, the access terminal shall include pilots which are in the CDMA channel indicated by the Channel record.

If the access terminal is not sending the RouteUpdate message in response to a RouteUpdateRequest message that contains a Channel record, the access terminal shall determine which pilots to include in the RouteUpdate message as follows:

If DynamicThresholds is equal to '0', the access terminal shall include in the RouteUpdate message the pilot PN phase, pilot strength, and drop timer status for exactly one pilot in each Pilot Group in the Reportable subset of the Active Set and Candidate Set. The Reportable subset of the Active Set consist of pilots in the Active Set that belong to a sub-Active set that is designated as Reportable in the TrafficChannelAssignment message (i.e., ThisSubActiveSetNotReportable equal to '0'). If DynamicThresholds is equal to '1', then the access terminal shall include in the RouteUpdate message the pilot PN phase, pilot strength, and drop timer status for exactly one pilot in each Pilot Group in the Reportable subset of the Active Set, for each pilot in the Candidate Set whose strength is above the values specified by PilotAdd, and for each pilot in the Candidate set whose strength, PS, satisfies the following inequality for any sub-Active Set currently in the Active Set:

$$10 \times \log_{10} PS > \frac{\text{SoftSlope}}{8} \times 10 \times \log_{10} \sum_{i \in A} PS_i + \frac{\text{AddIntercept}}{2},$$

where the summation is performed over all pilots belonging to the sub-Active Set.

The access terminal shall send a RouteUpdate message if any one of the following occurs:

- The value of the SupportRouteUpdateEnhancements attribute is not 0x00 and the access terminal receives a RouteUpdateRequest message.

- The Subtype1 based Inter-RAT Route Update Protocol receives a *SendRouteUpdate* command.

- If DynamicThresholds is equal to '0' and the strength of a Neighbor Set or Remaining Set pilot is greater than the value specified by PilotAdd.

- If DynamicThresholds is equal to '1' and the strength of a Neighbor Set or Remaining Set pilot, PS, satisfies the following inequality for any sub-Active Set currently in the Active Set:

$$10 \times \log_{10} PS > \max \left( \frac{\text{SoftSlope}}{8} \times 10 \times \log_{10} \sum_{i \in A} PS_i + \frac{\text{AddIntercept}}{2}, -\frac{\text{PilotAdd}}{2} \right)$$

where the summation is performed over all pilots belonging to the sub-Active Set.

- If DynamicThresholds is equal to '0' and the strength of a Candidate Set pilot is greater than the value specified by PilotCompare above an Active Set pilot, and a RouteUpdate message carrying this information has not been sent since the last ResetReport message was received.

- If DynamicThresholds is equal to '0' and the strength of a Candidate Set pilot is above PilotAdd, and a RouteUpdate message carrying this information has not been sent since the last ResetReport message was received.

- If DynamicThresholds is equal to '1' and

- the strength of a Candidate Set pilot, PS, satisfies the following inequality for any sub-Active Set currently in the Active Set:

$$10 \times \log_{10} PS > \frac{\text{SoftSlope}}{8} \times 10 \times \log_{10} \sum_{i \in A} PS_i + \frac{\text{AddIntercept}}{2}$$

where the summation is performed over all pilots belonging to the sub-Active Set, and

- a RouteUpdate message carrying this information has not been sent since the last ResetReport message was received.

- If DynamicThresholds is equal to '1' and

- the strength of a Candidate Set pilot is greater than the value specified by PilotCompare above an Active Set pilot, and

- the strength of a Candidate Set pilot, PS, satisfies the following inequality for any sub-Active Set currently in the Active Set::

$$10 \times \log_{10} PS > \frac{\text{SoftSlope}}{8} \times 10 \times \log_{10} \sum_{i \in A} PS_i + \frac{\text{AddIntercept}}{2}$$

where the summation is performed over all pilots belonging to the sub-Active Set, and

- a RouteUpdate message carrying this information has not been sent since the last ResetReport message was received.

- The pilot drop timer of an Active Set pilot has expired, and a RouteUpdate message carrying this information has not been sent since the last ResetReport message was received.



1 The access terminal shall set the ReferencePilotChannelIncluded field of the RouteUpdate  
2 message to '0',

3 If the value of the SupportRouteUpdateEnhancements attribute is 0x00, then the access  
4 network shall not send a RouteUpdateRequest message. If the value of the  
5 SupportRouteUpdateEnhancements attribute is not 0x00, then the access network may send a  
6 RouteUpdateRequest message.

#### 7 5.11.6.1.6.6 Processing the TrafficChannelAssignment Message in the Connected State

8 If a valid TrafficChannelAssignment (see 5.11.6.1.3.2) message does not contain an  
9 AssignedChannel Record, or if a valid TrafficChannelAssignment message contains an  
10 AssignedChannel Record and the access terminal supports the CDMA Channel specified by the  
11 Channel Record, then the access terminal shall process the message as follows:

- 12 • The access terminal shall set the following public data of the Forward Traffic Channel MAC  
13 Protocol to the corresponding fields of the TrafficChannelAssignment message:
  - 14 – DRCLength for each of the assigned sub-Active Sets
  - 15 – ACKChannelGain for each of the assigned sub-Active Sets
  - 16 – DRCCover for every pilot in the Active Set
  - 17 – AuxDRCCover (if assigned) for every pilot in the Active Set
  - 18 – DSC for every cell in the Active Set
- 19 • If the Forward Traffic Channel MAC protocol defines the DRCCChannelGainBase as a public  
20 data, then set that public data to the DRCCChannelGainBase field of the  
21 TrafficChannelAssignment message. Otherwise, set the DRCCChannelGain public data of the  
22 Forward Traffic Channel MAC protocol to the DRCCChannelGainBase field of the  
23 TrafficChannelAssignment message.
- 24 • If the Forward Traffic Channel MAC protocol defines the DSCChannelGainBase as a public  
25 data, then set that public data to the DSCChannelGainBase field of the  
26 TrafficChannelAssignment message.
- 27 • The access terminal shall set the following public data of the Reverse Traffic Channel MAC  
28 Protocol to the corresponding fields of the TrafficChannelAssignment message:
  - 29 – RChannelGain for every pilot in the Active Set
- 30 • If the TrafficChannelAssignment message contains a value for the FrameOffset that is  
31 different from the value of the FrameOffset received in the last TrafficChannelAssignment  
32 message that was received in the Idle state, then the access terminal shall return a  
33 *RouteUpdate.AssignmentRejected* indication and shall discard the message.
- 34 • The access terminal shall update its Active Set as defined in 5.11.6.1.6.3.2.
- 35 • The access terminal shall issue the following command:
  - 36 – *ReverseTrafficChannelMAC.Activate* with a parameter that indicates the reverse CDMA  
37 channel(s) that are assigned by the TrafficChannelAssignment message.

- 1 • The access terminal shall tune to the CDMA channels specified in the  
2 TrafficChannelAssignment messages associated with each pilot.
- 3 • For each reverse link CDMA channel, the access terminal shall start monitoring and  
4 responding to the Power Control Channels sent from the forward link CDMA channel  
5 associated with that reverse link CDMA channel as specified in the  
6 TrafficChannelAssignment message and defined by the ReverseLinkMACIndex fields  
7 provided in the message. The access terminal should use the SofterHandoff fields to identify  
8 the Power Control Channels that are carrying identical information and can, therefore, be  
9 soft-combined.
- 10 • The access terminal shall send the access network a TrafficChannelComplete message  
11 specifying the MessageSequence value received in the TrafficChannelAssignment message.

#### 12 5.11.6.1.6.7 Processing the TrafficChannelComplete Message

13 The access network should set a transaction timer when it sends a TrafficChannelAssignment  
14 message. If the access network sets a transaction timer, it shall reset the timer when it receives  
15 a TrafficChannelComplete message containing a MessageSequence field equal to the one sent  
16 in the TrafficChannelAssignment message.

17 If the timer expires, the access network should return a *ConnectionLost* indication.

#### 18 5.11.6.1.6.8 Transmission and Processing of the NeighborList Message

19 The access network may send the NeighborList message to the access terminal when the  
20 protocol is in the Connected State to override the search window size and/or search window  
21 offset corresponding to a pilot in the Neighbor Set.

22 Upon receiving a NeighborList message, the access terminal shall perform the following in the  
23 order specified:

- 24 • The access terminal shall remove all Neighbor structures from  
25 NeighborListMessageNeighborList.
- 26 • For each pilot listed in the received NeighborList message, the access terminal shall add a  
27 Neighbor structure to NeighborListMessageNeighborList and populate it as follows:
  - 28 – Set the structure's PilotPN field to the message's corresponding PilotPN field.
  - 29 – If the message's ChannelIncluded field is set to '1', set the structure's Channel field to  
30 the message's corresponding Channel field. Otherwise, set the structure's Channel field  
31 to the current channel.
  - 32 – If the message's SearchWindowSizeIncluded field is set to '1', then set the structure's  
33 SearchWindowSize field to the message's corresponding SearchWindowSize field.  
34 Otherwise, set the structure's SearchWindowSize field to NULL.
  - 35 – If the SearchWindowOffsetIncluded field is set to '1', then set the structure's  
36 SearchWindowOffset field to the message's corresponding SearchWindowOffset field.  
37 Otherwise, set the structure's SearchWindowOffset field to NULL.
- 38 • Perform the procedures specified in 5.11.6.1.2.1.

#### 5.11.6.1.6.9 Processing of OverheadMessages.Updated Indication

Upon receiving *OverheadMessages.Updated* indication, the access terminal shall perform the OverheadMessagesNeighborList Initialization procedures as specified in 5.11.6.1.6.10 and then perform the procedures specified in 5.11.6.1.2.1.

#### 5.11.6.1.6.10 OverheadMessagesNeighborList Initialization

When the OverheadMessagesNeighborList initialization procedures are invoked by the access terminal, it shall perform the following:

- The access terminal shall remove all Neighbor structures from the OverheadMessagesNeighborList list.
- For each pilot in the neighbor list given as public data of Overhead Messages Protocol, the access terminal shall add a Neighbor structure to the OverheadMessagesNeighborList list and populate it as follows:
  - Set the structure's PilotPN field to the corresponding NeighborPilotPN field given as public data of the Overhead Messages Protocol.
  - If the Overhead Messages Protocol's NeighborChannelIncluded field is set to '1', set the structure's Channel field to the Overhead Messages Protocol's corresponding NeighborChannel. Otherwise, set the structure's Channel field to the current channel.
  - If the Overhead Messages Protocol's SearchWindowSizeIncluded field is set to '1', then set the structure's SearchWindowSize field to the Overhead Messages Protocol's corresponding SearchWindowSize field. Otherwise, set the structure's SearchWindowSize field to NULL.
  - If the Overhead Messages Protocol's SearchWindowOffsetIncluded field is set to '1', then set the structure's SearchWindowOffset field to the Overhead Messages Protocol's corresponding SearchWindowOffset field. Otherwise, set the structure's SearchWindowOffset field to NULL.

#### 5.11.6.1.7 Tunnel State

Upon entering this state, the access terminal shall perform the following:

- Remove all Neighbor structures from NeighborListMessageNeighborList and perform the procedures specified in 5.11.6.1.2.1.
- Stop using the parameters specified in the AttributeOverride message in the set management procedures and start using values specified by the SetManagementSameChannelParameters and the SetManagementDifferentChannelParameters attributes whichever applicable, in the set management procedures.

If the protocol receives a *SignalingAdaptation.IdleHandoff* indication, the access terminal shall:

- Issue an *AccessChannelMAC.Activate* command,
- Transition to the Idle State.

If the access terminal receives a *SignalingAdaptation.ConnectionInitiated* indication in this state, then the access terminal shall return a *ConnectionInitiated* indication.

#### 5.11.6.1.7.1 Pilot Sets Maintenance

In the Tunnel State, the access terminal shall maintain the Candidate Set and Neighbor Set, and may maintain the Remaining Set following the same procedures specified in sections 5.11.6.1.2.9, 5.11.6.1.2.10 and 5.11.6.1.2.11 respectively.

##### 5.11.6.1.7.1.1 Active Set Maintenance

The access network shall not initially maintain an Active Set for the access terminal in this state.

The access terminal shall initially keep an Active Set of size one when it is in the Tunnel State.

If the access terminal is currently monitoring the Control Channel:

- The Active Set pilot shall be the pilot associated with the Control Channel the access terminal is currently monitoring. The access terminal shall return an *IdleHO* indication when the Active Set changes in the Idle State.
- The access terminal shall not change its Active Set pilot at a time that causes it to miss a synchronous Control Channel capsule. Other rules governing when to replace this Active Set pilot are beyond the scope of this specification.

Otherwise:

- The Active Set pilot shall be the pilot the access terminal uses as reference pilot.

If the access terminal receives a *TrafficChannelAssignment* message, it shall set its Active Set to the list of pilots specified in the message if the *TrafficChannelAssignment* message does not contain an *AssignedChannel* Record, or if the *TrafficChannelAssignment* message contains an *AssignedChannel* Record and the access terminal supports the CDMA Channel specified by the *AssignedChannel* Record.

#### 5.11.6.1.7.2 Pilot Channel Supervision in the Tunnel State

The access terminal shall perform pilot channel supervision in the Tunnel State following the procedures specified in section 5.11.6.1.5.2.

#### 5.11.6.1.7.3 Processing the TrafficChannelAssignment Message in the Tunnel State

If the access terminal receives a *TrafficChannelAssignment* message in this state, it shall process the *TrafficChannelAssignment* message following the procedures specified in section 5.11.6.1.5.3.

#### 5.11.6.1.7.4 Route Update Report Rules in the Tunnel State

The access terminal shall comply with the following rules regarding *RouteUpdate* messages:

- The access terminal shall send a *RouteUpdate* message together with the *ConnectionRequest* message when the active handoff from the other radio access technology to HRPD occurs.

- 1 • The Inter-RAT Route Update Protocol shall send a RouteUpdate message upon receiving a  
2 *SendRouteUpdate* command.
- 3 • If the value of the SupportRouteUpdateEnhancements attribute is not 0x00, then the  
4 access terminal shall send a RouteUpdate message whenever it receives a  
5 RouteUpdateRequest message.
- 6 • The access terminal shall set the ReferencePilotChannelIncluded field, and the  
7 ReferencePilotChannel field to the channel record (see [1][14]) of the reference pilot if this  
8 field is included in the message.
- 9 • The access terminal shall include in the RouteUpdate message the pilot PN phase, pilot  
10 strength, and drop timer status for exactly one pilot in each Pilot Group in the Active Set  
11 and Candidate Set.
- 12 • The access terminal shall send a RouteUpdate<sup>82</sup> message if all of the following conditions  
13 are true:
  - 14 – the RouteUpdateRadiusOverhead field of the SectorParameters message is not set to  
15 zero, and
  - 16 – the value of the RouteUpdateRadiusMultiply attribute is not 0x00, and
  - 17 – the computed value  $r$  is greater than  $\max(0, r_m \times r_o + r_a)$ , where  $r_o$  is the value  
18 provided in the RouteUpdateRadiusOverhead field of the SectorParameters message  
19 transmitted by the sector in which the access terminal used as ReferencePilotChannel  
20 when it last sent a RouteUpdate message,  $r_m$  is the value of the  
21 RouteUpdateRadiusMultiply attribute, and  $r_a$  is the value of the  
22 RouteUpdateRadiusAdd attribute.

23 If  $(x_L, y_L)$  are the longitude and latitude of the sector to which the access terminal last sent a  
24 RouteUpdate, and  $(x_C, y_C)$  are the longitude and latitude of the sector currently providing  
25 coverage to the access terminal, then  $r$  is given by<sup>83</sup>

$$r = \left[ \frac{\sqrt{\left[ D_{\text{longitude}} \times \cos\left(\frac{\pi}{180} \times \frac{y_L}{14400}\right) \right]^2 + [y_C - y_L]^2}}{16} \right]$$

$$D_{\text{longitude}} = x_C - x_L \text{ if } \left| \frac{x_C - x_L}{14400} \right| < 180$$

$$D_{\text{longitude}} = 360 \times 14400 - |x_C - x_L| \text{ if } \left| \frac{x_C - x_L}{14400} \right| \geq 180$$

<sup>82</sup> This applies when the access terminal is currently monitoring the Control Channel.

<sup>83</sup> The  $x$ 's denote longitude and the  $y$ 's denote latitude.

The access terminal shall compute  $r$  with an error of no more than  $\pm 5\%$  of its true value when  $|y_L/14400|$  is less than 60 and with an error of no more than  $\pm 7\%$  of its true value when  $|y_L/14400|$  is between 60 and 70<sup>84</sup>.

#### 5.11.6.2 Message Formats

##### 5.11.6.2.1 RouteUpdate

The access terminal sends the RouteUpdate message to notify the access network of its current location and provide it with an estimate of its surrounding radio link conditions.

Field	Length (bits)
MessageID	8
MessageSequence	8
ReferencePilotPN	9
ReferencePilotStrength	6
ReferenceKeep	1
NumPilots	4

NumPilots occurrences of the following fields:

{

PilotPNPhase	15
ChannelIncluded	1
Channel	0 or 24
PilotStrength	6
Keep	1

}

ATTTotalPilotTransmissionIncluded	1
ATTTotalPilotTransmission	0 or 8
ReferencePilotChannelIncluded	1
ReferencePilotChannel	0 or 24
ReferencePilotArrivalIncluded	1
ReferencePilotArrival	0 or 15
Reserved	Variable

**MessageID** The access terminal shall set this field to 0x00.

<sup>84</sup>  $x_L$  and  $y_L$  are given in units of 1/4 seconds.  $x_L/14400$  and  $y_L/14400$  are in units of degrees.

1	MessageSequence	The access terminal shall set this field to the sequence number of this
2		message. The sequence number of this message is 1 more than the
3		sequence number of the last RouteUpdate message (modulo $2^8$ ) sent by
4		this access terminal. If this is the first RouteUpdate message sent by the
5		access terminal, it shall set this field to 0x00.
6	ReferencePilotPN	The access terminal shall set this field to the access terminal's time
7		reference (the reference pilot), relative to the zero offset pilot PN sequence
8		in units of 64 PN chips.
9	ReferencePilotStrength	
10		The access terminal shall set this field to $\lfloor -2 \times 10 \times \log_{10} PS \rfloor$ , where PS
11		is the strength of the reference pilot, measured as specified in
12		5.11.6.1.2.3. If this value is less than 0, the access terminal shall set this
13		field to '000000'. If this value is greater than '111111', the access
14		terminal shall set this field to '111111'.
15	ReferenceKeep	If the pilot drop timer corresponding to the reference pilot has expired,
16		the access terminal shall set this field to '0'; otherwise, the access
17		terminal shall set this field to '1'.
18	NumPilots	The access terminal shall set this field to the number of pilots that follow
19		this field in the message.
20	PilotPNPhase	The PN offset in resolution of 1 chip of a pilot in the Active Set or
21		Candidate Set of the access terminal that is not the reference pilot.
22	ChannelIncluded	The access terminal shall set this field to '1' if the following Channel
23		record is included in this message. Otherwise, the access terminal shall
24		set this field to '0' to indicate that the channel associated with this pilot
25		is the FDD-paired forward CDMA channel associated with the reverse
26		CDMA channel on which this message is being sent.
27	Channel	The access terminal shall include this field if the ChannelIncluded field is
28		set to '1'. The access terminal shall set this to the channel record
29		corresponding to this pilot (see [10]). Otherwise, the access terminal shall
30		omit this field for this pilot offset.
31	PilotStrength	The access terminal shall set this field to $\lfloor -2 \times 10 \times \log_{10} PS \rfloor$ , where PS
32		is the strength of the pilot in the above field, measured as specified in
33		5.11.6.1.2.3. If this value is less than 0, the access terminal shall set this
34		field to '000000'. If this value is greater than '111111', the access
35		terminal shall set this field to '111111'.
36	Keep	If the pilot drop timer corresponding to the pilot in the above field has
37		expired, the access terminal shall set this field to '0'; otherwise, the
38		access terminal shall set this field to '1'.

ATTTotalPilotTransmissionIncluded

The access terminal shall set this field to '0' if this message is sent on the access channel. Otherwise, the access terminal shall set this field to '1'.

ATTTotalPilotTransmission

The access terminal shall include this field only if the ATTTotalPilotTransmissionIncluded is set to '1'. If included, the access terminal shall set this field to the current total average transmission power of pilot(s) when the transmitter is enabled in units of 0.5 dBm. This field is expressed as a two's complement signed number.

ReferencePilotChannelIncluded

The access terminal shall set this field as follows: If the ReferencePilotChannel is the FDD-paired forward CDMA channel associated with the reverse CDMA channel on which this message is being sent, the access terminal shall include and set this field to '0'; otherwise the access terminal shall include and set this field to '1'.

ReferencePilotChannel

The access terminal shall include this field only if ReferencePilotChannelIncluded is set to '1'. If included, the access terminal shall set this to the channel record corresponding to the reference pilot (see [10]).

ReferencePilotArrivalIncluded

The access terminal shall set this field to '1' if the relative arrival time of the reference pilot to its current timing reference<sup>85</sup> is supported<sup>86</sup> in this message. Otherwise, the access terminal shall set this field to '0'.

ReferencePilotArrival

If the ReferencePilotArrivalIncluded field is set to '1', the access terminal shall include this field. The access terminal shall set this field to the difference between the expected arrival time calculated from its current timing reference and the actual arrival time of the HRPD reference pilot. The access terminal shall set this field as a 15-bit 2's complement in units of 1 chip.

If the ReferencePilotArrivalIncluded field is set to '0', the access terminal shall omit this field.

<sup>85</sup> The timing reference of the access terminal can be set by a different air interface technology.

<sup>86</sup> If the access terminal support E-UTRAN release 9, the access terminal will include this field.



Reserved The number of bits in this field is equal to the number needed to make the message length an integer number of octets. This field shall be set to all zeros.

<b>Channels</b>	AC	RTC	<b>SLP</b>	Reliable <sup>87</sup>	Best Effort
<b>Addressing</b>	unicast			<b>Priority</b>	20

#### 5.11.6.2.2 TrafficChannelAssignment

The access network sends the TrafficChannelAssignment message to manage the access terminal's Active Set.

---

<sup>87</sup> This message is sent reliably when it is sent over the Reverse Traffic Channel.

Field	Length (bits)
MessageID	8
MessageSequence	8
DSCChannelGainBase	5
FrameOffset	4
NumSectors	5
NumSubActiveSets	4
AssignedChannelIncluded	1
SchedulerTagIncluded	1
FeedbackMultiplexingEnabled	1

NumSectors occurrences of the following SectorInformation record:

{0

RChannelGain	2
PilotPN	9
DRCCover	3
SofterHandoff	1

}0

N occurrences of the following field, where N is the number of SofterHandoff fields set to '0' in this message

DSC	3
-----	---

NumSubActiveSets occurrences of the following SubActiveSetParameters record (starting from NumFwdChannelsThisSubActiveSet and ending at DeltaT2P, inclusive):

{0

NumFwdChannelsThisSubActiveSet	0 or 4
--------------------------------	--------

NumFwdChannelsThisSubActiveSet occurrences of the following field:

{1

AssignedChannel	0 or 24
-----------------	---------

}1

FeedbackEnabled	1
FeedbackMultiplexingIndex	0 or 9
FeedbackReverseChannelIndex	0 or 4
SubActiveSetCarriesControlChannel	1
ThisSubActiveSetNotReportable	1
DSCForThisSubActiveSetEnabled	0 or 1
Next3FieldsSameAsBefore	0 or 1

DRCLength	0 or 2
DRCCChannelGainBase	0 or 6
ACKChannelGain	0 or 6
NumReverseChannelsIncluded	1
NumReverseChannels	0 or 4

NumReverseChannels occurrences of the following record:

{1

ReverseChannelConfiguration	0 or 2
ReverseBandClass	0 or 5
ReverseChannelNumber	0 or 11
ReverseChannelDroppingRank	0 or 3

}1

NumSectors occurrences of the following record:

{1

PilotInThisSectorIncluded	1
ForwardChannelIndexThisPilot	0 or 4
PilotGroupID	0 or 3
NumUniqueForwardTrafficMACIndices	0 or 3
SchedulerTag	0 or 7
AuxDRCCoverIncluded	0 or 1
AuxDRCCover	0 or 3
ForwardTrafficMACIndexPerInterlaceEnabled	0 or 1

NumUniqueForwardTrafficMACIndices (if included) or zero occurrences of the following record:

{2

ForwardTrafficMACIndex	0 or 10
AssignedInterlaces	0 or 4

}2

NumReverseChannels occurrences of the following record:

{2

ReverseLinkMACIndex	0 or 9
RABMACIndex	0 or 7
DeltaT2P	0 or 6

}2

}1

}0

Reserved	Variable
----------	----------

1		
2	MessageID	The access network shall set this field to 0x01.
3	MessageSequence	The access network shall set this to 1 higher than the MessageSequence
4		field of the last TrafficChannelAssignment message (modulo $2^S$ , $S=8$ ) sent
5		to this access terminal.
6	DSCChannelGainBase	
7		The access network shall set this field to the power of the DSC channel
8		relative to the pilot channel in units of $-0.5$ dB, in the range from zero to
9		$-15.5$ dB, inclusive.
10	FrameOffset	The access network shall set this field to the frame offset the access
11		terminal is to use when transmitting the Reverse Traffic Channel, in
12		units of slots.
13	NumSectors	The access network shall set this field to the number of
14		SectorInformationRecords included in this message.
15	NumSubActiveSets	The access network shall set this field to the number of sub-Active Set
16		assigned to the access terminal.
17	AssignedChannelIncluded	
18		The access network shall set this field to '1' if an AssignedChannel field
19		is included in this message.
20	SchedulerTagIncluded	
21		The access network shall set this field to '1' if the SchedulerTag field is
22		included in this message.
23	FeedbackMultiplexingEnabled	
24		The access network shall set this field to '1' if there is at least one reverse
25		link CDMA channel that carries DRC/DSC/ACK for more than one sub-
26		Active Sets. Otherwise, the access network shall set this field to '0'.
27	RACHannelGain	The access network shall set this field to the RA Channel Gain for this
28		pilot. The encoding of this field is as specified in Table 5.11.6.2.2-1.
29		

**Table 5.11.6.2.2-1 Reverse Activity Channel Encoding**

<b>Field value (binary)</b>	<b>RA Channel Gain (dB)</b>
'00'	-6
'01'	-9
'10'	-12
'11'	-15

**PilotPN** The access network shall set this field to the PN Offset associated with this sector.

**DRCCover** The access network shall set this field to the index of the DRC cover associated with the sector specified in this record.

**SofterHandoff** If the Forward Traffic Channel associated with this sector will carry the same closed-loop power control bits as that of the previous sector in this message, the access network shall set this field to '1'; otherwise, the access network shall set this field to '0'. The access network shall set the first instance of this field to '0'. If the SofterHandoff field associated with a sector is equal to '1', then the sector is defined to belong to the same cell as the previous sector in this record.

**DSC** The access network shall set this field as follows: The access network shall set the  $i^{\text{th}}$  occurrence of this field to the DSC associated with the  $i^{\text{th}}$  cell specified by the SofterHandoff field in this message.

**NumSubActiveSets** occurrences of the following SubActiveSetParameters record (starting from NumFwdChannelsThisSubActiveSet and ending at DeltaT2P, inclusive) are included in this message. The fields in the SubActiveSetParameters record are associated with a single sub-Active Set.

**NumFwdChannelsThisSubActiveSet**

The access network shall omit this field if the AssignedChannelIncluded is set to '0'. If included, the access network shall set this field to the number of forward link CDMA channels associated with this sub-Active Set. The valid range for this field is from 1 to 7, inclusive. All other values are reserved. If not included, then the value of this field is assumed to be one.

**AssignedChannel** The access network shall omit this field if the AssignedChannelIncluded is set to '0'. If this field is omitted, then the channel that carries this message is the channel that the access network is assigning to the access terminal. If included, the access network shall set this record to the channel record that specifies each of the forward link CDMA

1	channels in this sub-Active Set. The access network shall set the
2	SystemType field of the Channel record to 0x00 or 0x02 (see [10]). The
3	multiplexing rules associated with transmission of the DRC, DSC, and
4	ACK channels corresponding to this sub-Active Set is specified by the
5	following field.
6	<b>FeedbackEnabled</b> The access network shall set this field to '0' to indicate that the access
7	terminal is not to send DRC/DSC/ACK channels associated with this
8	sub-Active Set. Otherwise, the access network shall set this field to '1'.
9	<b>FeedbackMultiplexingIndex</b>
10	The access network shall include this field only if the FeedbackEnabled
11	is set to '1' and FeedbackMultiplexingEnabled field is set to '1'. If
12	included, the access network shall set this field to specify how the MAC
13	channels (DRC, DSC, and ACK) in support of the forward link channel
14	specified by the Channel record above are to be multiplexed on the same
15	reverse CDMA channel for this sub-Active Set. The Physical Layer
16	Protocol specifies multiplexing rules based on the value of this field. If
17	not included, the value of this field is assumed to be zero.
18	<b>FeedbackReverseChannelIndex</b>
19	The access network shall include this field only if the FeedbackEnabled
20	field is set to '1'. If included, the access network shall set this field to
21	indicate the reverse link CDMA channel on which the DSC (if applicable),
22	DRC, and ACK channels are sent associated with the sub-Active Set. A
23	value of 'n' for this field refers to the $n^{th}$ reverse link CDMA channel in
24	the ascending order of frequency that is assigned to the access terminal
25	in this message.
26	<b>SubActiveSetCarriesControlChannel</b>
27	The access network shall set this field to '1' if pilots in this Sub-Active
28	Set carry Control Channel. Otherwise the access network shall set this
29	field to '0'.
30	<b>ThisSubActiveSetNotReportable</b>
31	The access network shall set this field to '1' if the access terminal is not
32	to report pilots in this sub-Active Set.
33	<b>DSCForThisSubActiveSetEnabled</b>
34	The access network shall include this field only if the FeedbackEnabled
35	field is set to '1'. If included, the access network shall set this field to '1'
36	to indicate that the access terminal shall transmit a DSC channel for this
37	Sub-Active Set. The DSC channel is to be transmitted on the same
38	reverse link CDMA channel that carries the DRC and ACK for this Sub-
39	Active Set.

# Next3FieldsSameAsBefore

The access network shall include this field only if the FeedbackEnabled field is set to '1'. If included, the access network shall set this field to '1' if the value of the next three fields for this sub-Active Set is the same as the value of these three fields associated with the previous sub-Active Set in this message. Otherwise, the access network shall set this field to '0'. The access network shall set the value of the first instance of this field in this message to '0'.

# DRCLength

The access network shall include this field only if the Next3FieldsSameAsBefore field is included and is set to '0'. If included, the access network shall set this field to the number of slots the access terminal shall use to transmit a single DRC value, as shown in Table 5.11.6.2.2-2.

**Table 5.11.6.2.2-2 DRCLength Encoding**

Field value (binary)	DRCLength (slots)
'00'	1
'01'	2
'10'	4
'11'	8

# DRCCChannelGainBase

The access network shall include this field only if the Next3FieldsSameAsBefore field is included and is set to '0'. If included, the access network shall set this field to the ratio of the power level of the DRC Channel (when it is transmitted) to the power level of the Reverse Traffic Pilot Channel expressed as 2's complement value in units of 0.5 dB. The valid range for this field is from -9 dB to +6 dB, inclusive. The access terminal shall support all the values in the valid range for this field.

# ACKChannelGain

The access network shall include this field only if the Next3FieldsSameAsBefore field is included and is set to '0'. If included, the access network shall set this field to the ratio of the power level of the ACK Channel (when it is transmitted) to the power level of the Reverse Traffic Pilot Channel expressed as 2's complement value in units of 0.5 dB. The valid range for this field is from -3 dB to +6 dB, inclusive. The access terminal shall support all the values in valid range for this field.

# NumReverseChannelsIncluded

The access network shall set this field to '1' if the next field is included in this message. Otherwise, the access network shall set this field to '0'. If

this field is set to '0' and then the value of the number of reverse CDMA channels associated with this sub-active set is zero.

### NumReverseChannels

If NumReverseChannelsIncluded is set to '0', then the access network shall omit this field. Otherwise, the access network shall include this field and shall set this field to the number of reverse CDMA channels associated with this sub-Active Set. If this field is omitted, the number of occurrences of the following record is zero.

### ReverseChannelConfiguration

The access network shall set this field according to the table below to specify the configuration of the CDMA reverse channel associated with this sub-Active Set. If NumFwdChannelsThisSubActiveSet associated with this sub-Active set is included and set to more than one, the access network shall not set this field to '01'.

**Table 5.11.6.2.2-3 ReverseChannelConfiguration Encoding**

Value	Meaning
'00'	There is no reverse link CDMA channel associated with the sub-Active Set.
'01'	The paired CDMA reverse link channel associated with this sub-Active Set is enabled. The power control bits, RAB, DRC Lock, and ARQ channel associated with the paired reverse link CDMA channel are sent on the pilots in this sub-Active Set.
'10'	The reverse link CDMA channel associated with this sub-Active Set is specified using the ReverseBandclass and ReverseChannelNumber fields. The power control bits, RAB, DRC Lock, and ARQ channel associated with the reverse link CDMA channel specified by the ReverseBandclass and ReverseChannelNumber fields is carried by the pilots in this sub-Active Set.
'11'	Reserved

**ReverseBandClass** The access network shall include this field only if the ReverseChannelConfiguration field is included and is set to '10'. The access network shall set this field to the band class number for the reverse CDMA channel associated with this sub-Active Set.

### ReverseChannelNumber

The access network shall include this field only if the ReverseChannelConfiguration field is included and is set to '10'. The access network shall set this field to the channel number that identifies the reverse CDMA channel associated with this sub-Active Set.



# ReverseChannelDroppingRank

The access network shall omit this field if the ReverseChannelConfiguration field is included and is set to '00'. If included this field shall be set to the rank that specifies the order in which the access terminal is to drop the reverse CDMA channels if it decides to do so (e.g., due to power-headroom limitation). A reverse CDMA channel with a lower value of this field is to be dropped before a reverse CDMA channel with a higher value for this field.

The  $n^{th}$  occurrence of the following record corresponds to the  $n^{th}$  occurrence of the SectorInformation record above.

# PilotInThisSectorIncluded

The access network shall set the  $n^{th}$  occurrence of this field to '1', if the Active Set is to include a pilot in this sector (specified by the  $n^{th}$  occurrence of the SectorInformation record) associated with the sub-Active Set Specified by this SubActiveSetParameter record. Otherwise, the access network shall set this field to '0'.

# ForwardChannelIndexThisPilot

The access network shall only include this field if the PilotInThisSectorIncluded field is set to '1'. If included, the access network shall set this field to indicate the forward CDMA channel associated with this pilot. A value of ' $n$ ' for this field refers to the  $n^{th}$  forward CDMA channel in the ascending order of frequency in this sub-Active Set.

# PilotGroupID

The access network shall only include this field if the PilotInThisSectorIncluded field is set to '1'. If included, the access network shall set this field to the Pilot Group ID associated with this member of the active set.

# NumUniqueForwardTrafficMACIndices

The access network shall include this field only if the PilotInThisSectorIncluded field is set to '1' and if the FeedbackEnabled field is set to '1'. If included, the access network shall set this field to the number of unique ForwardTrafficMACIndex fields that are assigned to the access terminal. A value greater than one indicates that the ForwardTrafficMACIndex assignment is made per interlace.

# SchedulerTag

The access network shall only include this field if the NumUniqueForwardTrafficMACIndices field is included and is set to a value other than zero, and the SchedulerTagIncluded field is set to '1'. If included, the access network shall set this field to a number that indicate the Scheduler Group to which this pilot belongs.

## AuxDRCCoverIncluded

The access network shall include this field only if the NumUniqueForwardTrafficMACIndices field is included and is set to a value other than zero. If included, the access network shall set this field to '1' if the following AuxDRCCover field is included.

## AuxDRCCover

The access network shall include this field only if the AuxDRCCoverIncluded field is included and is set to '1'. If included, the access network shall set this field to the auxiliary DRC Cover associated with the sector specified in this record.

## ForwardTrafficMACIndexPerInterlaceEnabled

The access network shall include this field only if the NumUniqueForwardTrafficMACIndices field is included and is set to one. If included, the access network shall set this field to indicate whether the ForwardTrafficMACIndex assignment is made per interlace or not for this member of the Active Set. A '1' indicates that the ForwardTrafficMACIndex assignment is performed per interlace. A '0' indicates that the ForwardTrafficMACIndex assignment is valid for all interlaces for this member of the Active Set.

## ForwardTrafficMACIndex

If the ForwardTrafficMACIndexPerInterlaceEnabled is included and set to one or if NumUniqueForwardTrafficMACIndices is included and set to a value greater than one, then the access network shall set this field to the MAC Index assigned to the access terminal corresponding to this pilot on the interlace(s) specified by AssignedInterlaces.

If ForwardTrafficMACIndexPerInterlaceEnabled is included and set to zero, then the access network shall set this field to the MAC Index assigned to the access terminal corresponding to this pilot on all of the forward link interlaces.

If the NumUniqueForwardTrafficMACIndices is not included or is included and set to '0', then there are no Traffic MAC Indices assigned to the access terminal for this pilot and the access network shall omit this field.

This MAC Index identifies packets that are destined for this access terminal.

## AssignedInterlaces

The access network shall include this field only if ForwardTrafficMACIndexPerInterlaceEnabled is included and is set to '1', or if NumUniqueForwardTrafficMACIndices is set to a value greater than one. If included, the access network shall set this field to indicate

interlaces associated with the assigned ForwardTrafficMACIndex field below. A '1' in the  $k^{th}$  position of this bitmap field indicates that the corresponding ForwardTrafficMACIndex (specified in the next field) is valid on the interlace  $k-1$ . A '0' in the  $k^{th}$  position of this bitmap field indicates that the access terminal will not be served in the interlace  $k-1$  with the ForwardTrafficMACIndex specified in the following field. The 1<sup>st</sup> position refers to the LSB of this field and the 4<sup>th</sup> position refers to the MSB of this field. The access network shall set this field so that at most one ForwardTrafficMACIndex is valid on each interlace.

**ReverseLinkMACIndex** If the PilotInThisSectorIncluded field is set to '0' or if ReverseChannelConfiguration is set to '00', the access network shall omit this field. Otherwise, the  $n^{th}$  occurrence of this field shall indicate the MAC Index that is used to send the power control commands for  $n^{th}$  reverse CDMA channel from this sector of this sub-Active Set.

**RABMACIndex** If the PilotInThisSectorIncluded field is set to '0' or if the preceding ReverseChannelConfiguration is set to '00', the access network shall omit this field. Otherwise, the  $n^{th}$  occurrence of this field shall indicate the MAC Index that is used to send the RAB commands for  $n^{th}$  reverse CDMA channel from this sector of this sub-Active Set.

**DeltaT2P** If the PilotInThisSectorIncluded field is set to '0' or if the preceding ReverseChannelConfiguration is set to '00', the access network shall omit this field. Otherwise, the  $n^{th}$  occurrence of this field shall indicate the sector TxT2P offset value for the  $n^{th}$  Reverse CDMA Channel from this sector of this sub-Active Set. This field is specified as a signed 6-bit value in the range of -8.0 to 7.75 dB in units of 0.25 dB. The access terminal shall support all valid values of this field.

**Reserved** The number of bits in this field is equal to the number needed to make the message length an integer number of octets. This field shall be set to all zeros.

<b>Channels</b>	CC	FTC	<b>SLP</b>	Reliable	Best Effort <sup>88</sup>
<b>Addressing</b>	unicast		<b>Priority</b>	20	

#### 5.11.6.2.3 TrafficChannelComplete

The access terminal sends the TrafficChannelComplete message to provide an acknowledgment for the TrafficChannelAssignment message.

---

<sup>88</sup> The TrafficChannelAssignment message sent in response to the Open command is sent using best effort SLP. All subsequent TrafficChannelAssignment messages are sent using reliable delivery SLP.

Field	Length (bits)
MessageID	8
MessageSequence	8

MessageID      The access terminal shall set this field to 0x02.

MessageSequence      The access terminal shall set this field to the MessageSequence field of the TrafficChannelAssignment message whose receipt this message is acknowledging.

<b>Channels</b>	RTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.11.6.2.4 ResetReport

The access network sends the ResetReport message to reset the RouteUpdate transmission rules at the access terminal.

Field	Length (bits)
MessageID	8

MessageID      The access network shall set this field to 0x03.

<b>Channels</b>	FTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.11.6.2.5 NeighborList

The NeighborList message is used to convey information corresponding to the neighboring sectors to the access terminals when the access terminal is in the Connected State.

Field	Length (bits)
MessageID	8
Count	5

Count occurrences of the following field:

PilotPN	9
---------	---

Count occurrences of the following two fields:

ChannelIncluded	1
Channel	0 or 24

SearchWindowSizeIncluded	1
--------------------------	---

Count occurrences of the following field

SearchWindowSize	0 or 4
------------------	--------

SearchWindowOffsetIncluded	1
----------------------------	---

Count occurrences of the following field

SearchWindowOffset	0 or 3
--------------------	--------

FPDCHSupportedIncluded	0 or 1
------------------------	--------

$m$ ,  $0 \leq m \leq \text{Count}$ , occurrences of the following field:

FPDCHSupported	0 or 1
----------------	--------

Count -  $m$  occurrences of the following two fields:

PilotGroupIDIncluded	1
PilotGroupID	0 or 3

Reserved	Variable
----------	----------

- |   |                 |   |
|---|-----------------|---|
| 1 | MessageID       | The access network shall set this field to 0x04.  |
| 2 | Count           | The access network shall set this field to the number of records specifying neighboring sectors information included in this message.                                 |
| 3 |                 |   |
| 4 | PilotPN         | The access network shall set this field to the PN Offset of a neighboring sector for which the access network is providing search window information in this message. |
| 5 |                 |   |
| 6 |                 |   |
| 7 | ChannelIncluded | The access network shall set this field to '1' if a Channel record is included for this neighbor, and to '0' otherwise. The access network may                        |
| 8 |                 |   |

1		set this field to '0' if the channel associated with this pilot is the same as
2		the channel that is used to carry this message. If this field is set to '0',
3		the access terminal shall assume that the channel associated with this
4		pilot is the same as the channel on which this message is received. The
5		$n^{\text{th}}$ occurrence of this field corresponds to the $n^{\text{th}}$ occurrence of PilotPN in
6		the record that contains the PilotPN field above.
7	Channel	Channel record specification for the neighbor pilot. See [10] for the
8		Channel record format. The $n^{\text{th}}$ occurrence of this field corresponds to
9		the $n^{\text{th}}$ occurrence of PilotPN in the record that contains the PilotPN field
10		above.
11	SearchWindowSizeIncluded	
12		The access network shall set this field to '1' if SearchWindowSize field for
13		neighboring sectors is included in this message. Otherwise, the access
14		network shall set this field to '0'.
15	SearchWindowSize	The access network shall omit this field if SearchWindowSizeIncluded is
16		set to '0'. If SearchWindowSizeIncluded is set to '1', the access network
17		shall set this field to the value shown in Table 5.11.6.2.5-1
18		corresponding to the search window size to be used by the access
19		terminal for the neighbor pilot. The $n^{\text{th}}$ occurrence of this field
20		corresponds to the $n^{\text{th}}$ occurrence of PilotPN in the record that contains
21		the PilotPN field above.

**Table 5.11.6.2.5–1 Search Window Sizes**

<b>SearchWindowSize Value</b>	<b>Search Window Size (PN chips)</b>
0	4
1	6
2	8
3	10
4	14
5	20
6	28
7	40
8	60
9	80
10	100
11	130
12	160
13	226
14	320
15	452

**SearchWindowOffsetIncluded**

The access network shall set this field to '1' if SearchWindowOffset field for neighboring sectors is included in this message. Otherwise, the access network shall set this field to '0'.

**SearchWindowOffset**

The access network shall omit this field if SearchWindowOffsetIncluded is set to '0'. If SearchWindowOffsetIncluded is set to '1', the access network shall set this field to the value shown in Table 5.11.6.2.5–2 corresponding to the search window offset to be used by the access terminal for the neighbor pilot. The  $n^{\text{th}}$  occurrence of this field corresponds to the  $n^{\text{th}}$  occurrence of PilotPN in the record that contains the PilotPN field above.

**Table 5.11.6.2.5-2 Search Window Offset**

<b>SearchWindowOffset</b>	<b>Offset ( PN chips)</b>
0	0
1	WindowSize <sup>89</sup> / 2
2	WindowSize
3	3 × WindowSize / 2
4	- WindowSize / 2
5	- WindowSize
6	-3 × WindowSize / 2
7	Reserved

**FPDCHSupportedIncluded**

The access network shall include this field if any of the fields other than the Reserved field that follow this field are to be included in the message. If this field is included, the access network shall set this field as follows:

The access network shall set this field to '0' if the FPDCHSupported fields are omitted. Otherwise, the access network shall set this field to '1'.

**FPDCHSupported**

If FPDCHSupportedIncluded is not included or is included and is set to '0', the access network shall omit all occurrences of this field. Otherwise, the access network shall include  $m$  occurrences of this field, where  $m$  is the number of Channel records in this message that have SystemType equal to 0x01, and the access network shall set the occurrences of this field as follows:

The access network shall set the  $i$ th occurrence of this field as follows:

If the system on the CDMA Channel corresponding to the  $i$ th Channel record that has SystemType equal to 0x01 supports the Forward Packet Data Channel (see [7]), the access terminal shall set the  $i$ th occurrence of this field to '1'. Otherwise, the access network shall set the  $i$ th occurrence of this field to '0'.

**PilotGroupIDIncluded** The access network shall set this field to '1' if PilotGroupID field for neighboring sectors is included in this message. Otherwise, the access network shall set this field to '0'.

**PilotGroupID** The access network shall omit this field if PilotGroupIDIncluded is set to '0'. If PilotGroupIDIncluded is set to '1', the access network shall set this

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<sup>89</sup> WindowSize is pilot's search window size in PN chips.



field to the PilotGroupID associated with the neighbor pilot. The field associated with the  $n^{\text{th}}$  occurrence of the PilotGroupIDIncluded field corresponds to the  $n^{\text{th}}$  occurrence of PilotPN in the record with corresponding SystemType equal to 0x00 or 0x02. The PilotPN together with the PilotGroupID identify a Pilot Group (see 5.11.6.1.2.5).

**Reserved** The number of bits in this field is equal to the number needed to make the message length an integer number of octets. The access network shall set this field to zero. The access terminal shall ignore this field.

<b>Channels</b>	FTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.11.6.2.6 RouteUpdateRequest

The access network sends a RouteUpdateRequest message to request the access terminal to send a RouteUpdate message.

Field	Length (bits)
MessageID	8
ChannelIncluded	1
Channel	0 or 24
SectorCount	0 or 4

SectorCount occurrences of the following field:

SectorPilotPN	9
---------------	---

SectorSearchWindowSizeIncluded

SectorSearchWindowSizeIncluded	0 or 1
--------------------------------	--------

SectorCount occurrences of the following field:

SectorSearchWindowSize	0 or 4
------------------------	--------

SectorSearchWindowOffsetIncluded

SectorSearchWindowOffsetIncluded	0 or 1
----------------------------------	--------

SectorCount occurrences of the following field:

SectorSearchWindowOffset	0 or 3
--------------------------	--------

Reserved	0 – 7 (as needed)
----------	-------------------

**MessageID** The access network shall set this field to 0x07.

1	ChannelIncluded	If SupportRouteUpdateEnhancements is less than 0x02 or if this
2		message is being sent on the Control Channel, the access network shall
3		set this field to '0'. Otherwise, the access network may set this field to '1'
4		to indicate that the Channel field is included or to '0' to indicate that the
5		Channel field is not included.
6	Channel	If ChannelIncluded is set to '0', the access network shall omit this field.
7		Otherwise, the access network shall set this field to a Channel record
8		specification. See [10] for the Channel record format. The access network
9		shall set the SystemType field of this record to 0x00 if
10		SupportRouteUpdateEnhancements is equal to 0x02. The access
11		network shall set the SystemType field of this record to 0x00 or 0x01 if
12		SupportRouteUpdateEnhancements is equal to 0x03..
13	SectorCount	If ChannelIncluded is set to '0', the access network shall omit this field.
14		Otherwise, the access network shall set this field to the number of
15		records specifying neighboring sectors information included in this
16		message.
17	SectorPilotPN	The access network shall set this field to the PN Offset of a neighboring
18		sector for which the access terminal is to report pilot strength
19		information.
20	SectorSearchWindowSizeIncluded	
21		If ChannelIncluded is set to '0', the access network shall omit this field.
22		Otherwise, the access network shall set this field to '1' if
23		SectorSearchWindowSize field for neighboring sectors is included in this
24		message. Otherwise, the access network shall set this field to '0'.
25	SectorSearchWindowSize	
26		The access network shall omit this field if
27		SectorSearchWindowSizeIncluded is set to '0'. If
28		SectorSearchWindowSizeIncluded is set to '1', the access network shall
29		set this field to the value shown in Table 5.11.6.2.6-1 corresponding to
30		the search window size to be used by the access terminal for the
31		neighbor pilot. The $n^{\text{th}}$ occurrence of this field corresponds to the $n^{\text{th}}$
32		occurrence of SectorPilotPN in the record that contains the SectorPilotPN
33		field above.

**Table 5.11.6.2.6–1 Search Window Sizes**

<b>SearchWindowSize Value</b>	<b>Search Window Size (PN chips)</b>
0	4
1	6
2	8
3	10
4	14
5	20
6	28
7	40
8	60
9	80
10	100
11	130
12	160
13	226
14	320
15	452

**SectorSearchWindowOffsetIncluded**

If ChannelIncluded is set to '0', the access network shall omit this field. Otherwise, the access network shall set this field to '1' if SectorSearchWindowOffset field for neighboring sectors is included in this message. Otherwise, the access network shall set this field to '0'.

**SectorSearchWindowOffset**

The access network shall omit this field if SectorSearchWindowOffsetIncluded is set to '0'. If SectorSearchWindowOffsetIncluded is set to '1', the access network shall set this field to the value shown in Table 5.11.6.2.6–2 corresponding to the search window offset to be used by the access terminal for the neighbor pilot. The  $n^{\text{th}}$  occurrence of this field corresponds to the  $n^{\text{th}}$  occurrence of SectorPilotPN in the record that contains the SectorPilotPN field above.

**Table 5.11.6.2.6–2 Search Window Offset**

<b>SearchWindowOffset</b>	<b>Offset ( PN chips)</b>
0	0
1	WindowSize <sup>90</sup> / 2
2	WindowSize
3	3 × WindowSize / 2
4	- WindowSize / 2
5	- WindowSize
6	-3 × WindowSize / 2
7	Reserved

Reserved The access network shall add reserved bits to make the length of the entire message equal to an integer number of octets. The access network shall set this field to 0. The access terminal shall ignore this field.

<b>Channels</b>	FTC CC	<b>SLP</b>	Best Effort
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.11.6.2.7 AttributeUpdateRequest

The sender sends an AttributeUpdateRequest message to offer an attribute value for a given attribute.

<b>Field</b>	<b>Length (bits)</b>
MessageID	8
TransactionID	8

One or more instances of the following record

AttributeRecord	Attribute dependent
-----------------	---------------------

**MessageID** The sender shall set this field to 0x52.

**TransactionID** The sender shall increment this value for each new AttributeUpdateRequest message sent.

**AttributeRecord** The format of this record is specified in [10].

<b>Channels</b>	FTC RTC	<b>SLP</b>	Reliable
-----------------	---------	------------	----------

<sup>90</sup> WindowSize is pilot's search window size in PN chips.

<b>Addressing</b>	unicast	<b>Priority</b>	40
-------------------	---------	-----------------	----

#### 5.11.6.2.8 AttributeUpdateAccept

The sender sends an AttributeUpdateAccept message in response to an AttributeUpdateRequest message to accept the offered attribute values.

Field	Length (bits)
MessageID	8
TransactionID	8

**MessageID** The sender shall set this field to 0x53.

**TransactionID** The sender shall set this value to the TransactionID field of the corresponding AttributeUpdateRequest message.

<b>Channels</b>	FTC    RTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.11.6.2.9 AttributeUpdateReject

The access network sends an AttributeUpdateReject message in response to an AttributeUpdateRequest message to reject the offered attribute values.

Field	Length (bits)
MessageID	8
TransactionID	8

**MessageID** The access network shall set this field to 0x54.

**TransactionID** The access network shall set this value to the TransactionID field of the corresponding AttributeUpdateRequest message.

<b>Channels</b>	FTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

### 5.11.6.3 Interface to Other Protocols

#### 5.11.6.3.1 Commands Sent

This protocol sends the following commands:

- ReverseTrafficChannelMAC.Activate*
- ReverseTrafficChannelMAC.Deactivate*

- *ForwardTrafficChannelMAC.Activate*
- *ForwardTrafficChannelMAC.Deactivate*
- *AccessChannelMAC.Activate*
- *AccessChannelMAC.Deactivate*

#### 5.11.6.3.2 Indications

This protocol registers to receive the following indications:

- *ReverseTrafficChannelMAC.LinkAcquired*
- *OverheadMessages.Updated*
- *SignalingAdaptation.IdleHandoff* (access terminal only)
- *SignalingAdaptation.EnteringTunnelState* (access terminal only)

#### 5.11.7 Configuration Attributes

Unless specified otherwise, the access terminal and the access network shall not use the Generic Attribute Update Protocol to update configurable attributes belonging to the Subtype1 based Inter-RAT Route Update Protocol. The access terminal and the access network shall support the use of the Generic Attribute Update Protocol to update values of the following attributes belonging to the Subtype1 based Inter-RAT Route Update Protocol:

- *RouteUpdateRadiusMultiply*
- *RouteUpdateRadiusAdd*
- *SetManagementParameters*

If the value of the *SupportRouteUpdateEnhancements* attribute is 0x00, then the access network shall not include the *RouteUpdateRadiusMultiply* and *RouteUpdateRadiusAdd* attributes in an *AttributeUpdateRequest* message.

#### 5.11.7.1 Simple Attributes

The configurable simple attributes for this protocol are listed in Table 5.11.7.1-1

The access terminal and access network shall use as defaults the values in [Table 5.11.7.1-1 Configurable Values](#)

~~Table 5.11.7.1-1 Configurable Values~~

that are typed in ***bold italics***.

1

**Table 5.11.7.1–1 Configurable Values**

<b>Attribute ID</b>	<b>Attribute</b>	<b>Values</b>	<b>Meaning</b>
0xff	RouteUpdateRadiusMultiply	0x00	Distance-based registration is disabled.
		<b>0x0A</b>	Multiplier for the Route update radius is 1.
		0x01 to 0x64	Multiplier for the Route update radius in units of 0.1.
		All other values	Reserved
0xfe	RouteUpdateRadiusAdd	<b>0x0000</b>	Addition to the Route update radius is zero.
		0x0001 to 0x0fff	Addition to the Route update radius expressed as 2's complement value.
		All other values	Reserved

Attribute ID	Attribute	Values	Meaning
0xfd	SupportRouteUpdateEnhancements	<b>0x00</b>	Use of Generic Attribute Update Protocol to update RouteUpdateRadiusMultiply and RouteUpdateRadiusAdd and processing of RouteUpdateRequest message is not supported.
		0x01	Use of Generic Attribute Update Protocol to update RouteUpdateRadiusMultiply and RouteUpdateRadiusAdd and processing of RouteUpdateRequest message without Channel Record is supported.
		0x02	Use of Generic Attribute Update Protocol to update RouteUpdateRadiusMultiply and RouteUpdateRadiusAdd and processing of RouteUpdateRequest message with Channel Record whose System Type is equal to 0x00 is supported.
		0x03	Use of Generic Attribute Update Protocol to update RouteUpdateRadiusMultiply and RouteUpdateRadiusAdd and processing of RouteUpdateRequest message with Channel Record whose System Type is equal to 0x00 and 0x01 is supported.
		All other values	Reserved
0xfc	MaxNumberofFLSupported	<b>0x01</b>	The access terminal supports a maximum of one forward link CDMA channels for pilots in the Active Set
		0x02 to 0x10	The value of the attribute indicates the maximum number of forward link CDMA channels for pilots in the Active Set
		All other values	Reserved



Attribute ID	Attribute	Values	Meaning
0xfb	MaxNumberOfRLSupported	<b>0x01</b>	The access terminal supports a maximum of one reverse link CDMA channels for pilots in the Active Set
		0x02 to 0x10	The value of the attribute indicates the maximum number of assigned reverse link CDMA channels that the access terminal supports
		All other values	Reserved
0xfa	MaxForwardLinkBandwidthNoJammer	<b>0x0000</b>	The access terminal supports only a single forward link CDMA channel.
		0xNNNN	The maximum separation between the highest and lowest forward link CDMA channels within a Bandclass that can be assigned to the access terminal assuming that there is no jammer signal <sup>91</sup> in between. The unit of this attribute is 2.5 KHz.
0xf9	MaxForwardLinkBandwidthWithJammer	<b>0x0000</b>	The access terminal supports only a single forward link CDMA channel.
		0xNNNN	The maximum separation between the highest and lowest forward link CDMA channels within a Bandclass that can be assigned to the access terminal assuming that there can be a jammer signal in between. The unit of this attribute is 2.5 KHz.
0xf8	MaxReverseLinkBandwidth	<b>0x0000</b>	The access terminal supports only a single reverse link CDMA channel.

<sup>91</sup> The jammer signal refers to a non-HRPD signal.

Attribute ID	Attribute	Values	Meaning
		0xNNNN	The maximum separation between the highest and lowest reverse link CDMA channels within a Bandclass that can be assigned to the access terminal in units of 2.5 KHz.
0xf7	MaxNumberOfSub-ActiveSets	<b>0x01</b>	The access terminal supports a single sub-Active Set only.
		0x02 to 0x10	The maximum number of sub-Active Sets that the access terminal can support.
		All the other values	Reserved
0xf6	ForwardFeedbackMultiplexingSupported	<b>0x00</b>	The access terminal does not support reception of more than one RPC/RAB/ARQ/DRCLock channel from a single sub-Active Set.
		0x01	The access terminal does support reception of more than one RPC/RAB/ARQ/DRCLock channel from a single sub-Active Set.
		All other values	Reserved

#### 1 5.11.7.2 Complex Attributes

The following complex attributes and default values are defined (see [10] for attribute record definition). The following complex attributes are to be used only by the access network in a ConfigurationRequest message or an AttributeUpdateRequest message.

- SearchParameters
- SetManagementParameters

The following complex attributes are to be used only by the access terminal in a ConfigurationRequest message:

- SupportedCDMAChannels
- SupportedDRXPatterns

#### 5.11.7.2.1 SearchParameters Attribute

Field	Length (bits)	Default Value
Length	8	N/A
AttributeID	8	N/A

One or more of the following record:

ValueID	8	N/A
PilotIncrement	4	4
SearchWindowActive	4	8
SearchWindowNeighbor	4	10
SearchWindowRemaining	4	10

**Length** Length of the complex attribute in octets. The access network shall set this field to the length of the complex attribute excluding the Length field.

**AttributeID** The access network shall set this field to 0x00.

**ValueID** This field identifies this particular set of values for the attribute. The access network shall increment this field for each complex attribute-value record for a particular attribute.

**PilotIncrement** The access network shall set this field to the pilot PN sequence increment, in units of 64 PN chips, that access terminals are to use for searching the Remaining Set. The access network should set this field to the largest increment such that the pilot PN sequence offsets of all its neighbor access networks are integer multiples of that increment. The access terminal shall support all the valid values for this field.

**SearchWindowActive** Search window size for the Active Set and Candidate Set. The access network shall set this field to the value shown in Table 5.11.6.2.5-1

corresponding to the search window size to be used by the access terminal for the Active Set and Candidate Set. The access terminal shall support all the valid values specified by this field.

#### SearchWindowNeighbor

Search window size for the Neighbor Set. The access network shall set this field to the value shown in Table 5.11.6.2.5–1 corresponding to the search window size to be used by the access terminal for the Neighbor Set. The access terminal shall support all the valid values specified by this field.

#### SearchWindowRemaining

Search window size for the Remaining Set. The access network shall set this field to the value shown in Table 5.11.6.2.5–1 corresponding to the search window size to be used by the access terminal for the Remaining Set. The access terminal shall support all the valid values specified by this field.

#### 5.11.7.2.2 SetManagementParameters Attribute

Field	Length (bits)	Default Value
Length	8	N/A
AttributeID	8	N/A

One or more of the following record:

ValueID	8	N/A
PilotAdd	6	0x0e
PilotCompare	6	0x05
PilotDrop	6	0x12
PilotDropTimer	4	3
DynamicThresholds	1	0
SoftSlope	0 or 6	N/A
AddIntercept	0 or 6	N/A
DropIntercept	0 or 6	N/A
NeighborMaxAge	4	0
Reserved	variable	N/A

**Length** Length of the complex attribute in octets. The access network shall set this field to the length of the complex attribute excluding the Length field.

**AttributeID** The access network shall set this field to 0x01.

1	ValueID	This field identifies this particular set of values for the attribute. The
2		access network shall increment this field for each complex attribute-
3		value record for a particular attribute.
4	PilotAdd	This value is used by the access terminal to trigger a RouteUpdate in the
5		Connected State. The access network shall set this field to the pilot
6		detection threshold, expressed as an unsigned binary number equal to $\lfloor -$
7		$2 \times 10 \times \log_{10} E_c/I_0 \rfloor$ . The value used by the access terminal is $-0.5$ dB
8		times the value of this field. The access terminal shall support all the
9		valid values specified by this field.
10	PilotDrop	This value is used by the access terminal to start a pilot drop timer for a
11		pilot in the Active Set or the Candidate Set. The access network shall set
12		this field to the pilot drop threshold, expressed as an unsigned binary
13		number equal to $\lfloor - 2 \times 10 \times \log_{10} E_c/I_0 \rfloor$ . The value used by the access
14		terminal is $-0.5$ dB times the value of this field. The access terminal shall
15		support all the valid values specified by this field.
16	PilotCompare	Active Set versus Candidate Set comparison threshold, expressed as a 2's
17		complement number. The access terminal transmits a RouteUpdate
18		message when the strength of a pilot in the Candidate Set exceeds that of
19		a pilot in the Active Set by this margin. The access network shall set this
20		field to the threshold Candidate Set pilot to Active Set pilot ratio, in units
21		of 0.5 dB. The access terminal shall support all the valid values specified
22		by this field.
23	PilotDropTimer	Timer value after which an action is taken by the access terminal for a
24		pilot that is a member of the Active Set or Candidate Set, and whose
25		strength has not become greater than the value specified by PilotDrop. If
26		the pilot is a member of the Active Set, a RouteUpdate message is sent in
27		the Connected State. If the pilot is a member of the Candidate Set, it will
28		be moved to the Neighbor Set. The access network shall set this field to
29		the drop timer value shown in <a href="#">Table 5.11.7.2.2-1</a> <del>Table 5.11.7.2.2-1</del>
30		corresponding to the pilot drop timer value to be used by access
31		terminals. The access terminal shall support all the valid values specified
32		by this field.

**Table 5.11.7.2.2-1 Pilot Drop Timer Values**

<b>PilotDropTimer</b>	<b>Timer Expiration (seconds)</b>	<b>PilotDropTimer</b>	<b>Timer Expiration (seconds)</b>
0	< 0.1	8	27
1	1	9	39
2	2	10	55
3	4	11	79
4	6	12	112
5	9	13	159
6	13	14	225
7	19	15	319

**DynamicThresholds** This field shall be set to '1' if the following three fields are included in this record. Otherwise, this field shall be set to '0'.

**SoftSlope** This field shall be included only if DynamicThresholds is set to '1'. This field shall be set to an unsigned binary number, which is used by the access terminal in the inequality criterion for adding a pilot to the Active Set or dropping a pilot from the Active Set. The access terminal shall support all the valid values specified by this field.

**AddIntercept** This field shall be included only if DynamicThresholds is set to '1'. This field shall be set to a 2's complement signed binary number in units of dB. The access terminal shall support all the valid values specified by this field.

**DropIntercept** This field shall be included only if DynamicThresholds is set to '1'. This field shall be set to a 2's complement signed binary number in units of dB. The access terminal shall support all the valid values specified by this field.

**NeighborMaxAge** The access network shall set this field to the maximum AGE value beyond which the access terminal is to drop members from the Neighbor Set. The access terminal shall support all the valid values specified by this field.

**Reserved** The access network shall set this field to zero. The access terminal shall ignore this field. The length of this field shall be such that the entire record is octet-aligned.

## 5.11.7.2.3 SupportedCDMAChannels Attribute

The access terminal uses this attribute to convey to the access network the CDMA Channels supported by the access terminal.

Field	Length (bits)	Default Value
Length	8	N/A
AttributeID	8	N/A

One or more of the following attribute value record:

{

ValueID	8	N/A
BandClassCount	8	0

BandClassCount occurrences of the following record:

{

BandClass	5	N/A
InterFlexDuplexTag	8	N/A
IntraFlexDuplexFlag	1	N/A
BandSubClassCount	8	N/A

BandSubClassCount occurrences of the following field:

BandSubClass	8	N/A
--------------	---	-----

}

MultiBandCount	0 or 4	1
MultiBandBitMapCount	0 or 8	0

MultiBandBitMapCount occurrences of the following record:

{

MultiBandBitMap	BandClassCount	N/A
-----------------	----------------	-----

}

Reserved	0 – 7 (as needed)	N/A
----------	-------------------	-----

}

**Length** Length of the complex attribute in octets. The access terminal shall set this field to the length of the complex attribute excluding the Length field.

**AttributeID** The access terminal shall set this field to 0x04.

1	ValueID	This field identifies this particular set of values for the attribute. The
2		access terminal shall set this field to an identifier assigned to this
3		complex value.
4	BandClassCount	The access terminal shall set this field to the number of occurrences of
5		the BandClass field in this complex value.
6	BandClass	The access terminal shall set this field to the band class supported by
7		the access terminal.
8	InterFlexDuplexTag	The access terminal shall set this field to indicate the forward and
9		reverse CDMA channels across Band Classes that can be assigned to it
10		simultaneously as follows: If the value of the InterFlexDuplexTag field
11		associated with a set of Band Class records are the same, then the
12		access terminal supports the reception from a forward CDMA channel(s)
13		that belong to one of the Band Classes in that set, in combination with
14		transmission on a reverse CDMA channel(s) that belong to a different
15		Band Class in that set.
16		For example, if the value of the InterFlexDuplexTag associated with
17		Bandclass X and Band Class Y are the same, then the access terminal
18		supports assignment of a forward CDMA channel from Band Class X and
19		assignment of a reverse CDMA channel from Band Class Y.
20	IntraFlexDuplexFlag	The access terminal shall set this field to '1' to indicate that the access
21		terminal supports reception from any forward CDMA channel and
22		transmission on any reverse CDMA channels within this Band Class.
23		The access terminal shall set this field to '0' to indicate that the access
24		terminal supports reception and transmission only on FDD-paired
25		forward and reverse CDMA channels, respectively for this Band Class
26		(i.e., with the nominal frequency separation specified for the Band Class).
27	BandSubClassCount	The access terminal shall set this field to the number of band sub-
28		classes supported by the access terminal in this band class.
29	BandSubClass	The access terminal shall set this field to the band sub-class supported
30		by the access terminal.
31	MultiBandCount	The access terminal shall include this field if any of the fields other than
32		the Reserved field that follow this field are to be included. If this field is
33		included, the access terminal shall set this field to the number of band
34		classes across which the forward CDMA channels can be assigned to it
35		simultaneously.
36	MultiBandBitMapCount	The access terminal shall include this field if the MultiBandCount
37		field is included, else the access terminal shall omit this field. If this field
38		is included, the access terminal shall set this field to the number of
39		MultiBandBitMap fields included by the access terminal.



**MultiBandBitMap** The  $i^{\text{th}}$  bit of this bitmap corresponds to  $i^{\text{th}}$  BandClass field included in this attribute. The access terminal shall set this field to a bitmap indicating the forward CDMA channels across Band Classes that can be assigned to it simultaneously as follows: The access terminal supports the reception from forward CDMA channel(s) that belong to any of the Band Classes for which the field in this bitmap is set to '1'.

For example, if the value of the bits in this bitmap associated with Bandclass X and Band Class Y are set to '1', then the access terminal supports assignment of a forward CDMA channel from Band Class X and assignment of a forward CDMA channel from Band Class Y.

**Reserved** The access terminal shall add reserved bits to make the length of each attribute value record equal to an integer number of octets. The access terminal shall set this field to zero. The access network shall ignore this field.

#### 5.11.7.2.4 SupportedDRXPatterns Attribute

The access terminal uses this attribute to convey to the access network the supported DRX pattern(s).

Field	Length (bits)	Default Value
Length	8	N/A
AttributeID	8	N/A

One or more of the following attribute value record:

{

ValueID	8	N/A
NumberofDRXPatterns	4	1

NumberofDRXPatterns occurrences of the following field:

{

SupportedDRXPattern	8	0x00
---------------------	---	------

}

Reserved	0 – 7 (as needed)	N/A
----------	----------------------	-----

}

**Length** Length of the complex attribute in octets. The access terminal shall set this field to the length of the complex attribute excluding the Length field.

**AttributeID** The access terminal shall set this field to 0x05.

**ValueID** This field identifies this particular set of values for the attribute. The access terminal shall set this field to an identifier assigned to this complex value.

**NumberofDRXPatterns** The access terminal shall set this field to the number of occurrences of the SupportedDRXPattern field in this complex value.

**SupportedDRXPattern** This field identifies the forward link interlaces for which the access terminal supports assignment of ForwardTrafficMACIndex. The encoding of this field is as shown in [Table 5.11.7.2.4-1](#)~~Table 5.11.7.2.4-1~~. The access terminal shall list the SupportedDRXPattern in the order of preference.

**Table 5.11.7.2.4-1 Encoding of the SupportedDRXPattern Field**

Field Value	Meaning
0x00	The access terminal supports assignment of Forward Traffic Channel MAC Index on all four forward interlaces.
0x01	A DRX pattern is supported in which two consecutive interlaces out of four forward link interlaces have assigned ForwardTrafficMACIndices and the next two consecutive forward link interlaces do not have assigned ForwardTrafficMACIndices.
0x02	A DRX pattern is supported in which three consecutive interlaces out of four forward link interlaces have assigned ForwardTrafficMACIndices and the next forward link interlaces does not have an assigned ForwardTrafficMACIndex.
0x03	A DRX pattern is supported in which three consecutive interlaces out of four forward link interlaces do not have assigned ForwardTrafficMACIndices and the next forward link interlaces does have an assigned ForwardTrafficMACIndex.
0x04	A DRX pattern is supported in which alternating interlaces are assigned a ForwardTrafficMACIndex.
All the other values	Reserved

#### 5.11.8 Protocol Numeric Constants

<b>Constant</b>	<b>Meaning</b>	<b>Value</b>
$N_{RUPT\text{ype}}$	Type field for this protocol	Table 2.5.4-1 of [10]
$N_{RUP\text{ Subtype1 based Inter-RAT}}$	Subtype field for this protocol	0x0003
$N_{RUP\text{Active}}$	Maximum number of the Active Set pilots per sub-Active Set	6
$N_{RUP\text{Candidate}}$	Maximum number of Pilot Groups in the Candidate Set	6
$N_{RUP\text{Neighbor}}$	Minimum size of Pilot Groups in the Neighbor Set	20

#### 5.11.9 Session State Information

The Session State Information record (see [10]) consists of parameter records.

This protocol defines the following parameter record in addition to the configuration attributes for this protocol.

##### 5.11.9.1 RouteUpdate Parameter

The following parameter shall be included in the Session State Information record only if the Session State Information is being transferred while the connection is open.

1 **Table 5.11.9.1-1 The Format of the Parameter Record for the RouteUpdate Parameter**

Field	Length (bits)
ParameterType	8
Length	8
TCAMessageSequence	8
RUPMessageSequence	8
DSCChannelGainBase	5
FrameOffset	4
NumSectors	5
NumSubActiveSets	4
AssignedChannelIncluded	1
SchedulerTagIncluded	1
FeedbackMultiplexingEnabled	1

NumSectors occurrences of the following SectorInformation record:

{0

RChannelGain	2
PilotPN	9
DRCCover	3
SofterHandoff	1

}0

N occurrences of the following field, where N is the number of SofterHandoff fields set to '0' in this message

DSC	3
-----	---

NumSubActiveSets occurrences of the following SubActiveSetParameters record (starting from NumFwdChannelsThisSubActiveSet and ending at DeltaT2P, inclusive):

{0

NumFwdChannelsThisSubActiveSet	0 or 4
--------------------------------	--------

NumFwdChannelsThisSubActiveSet occurrences of the following field:

{1

AssignedChannel	0 or 24
-----------------	---------

}1

FeedbackEnabled	1
FeedbackMultiplexingIndex	0 or 9

FeedbackReverseChannelIndex	0 or 4
SubActiveSetCarriesControlChannel	1
ThisSubActiveSetNotReportable	1
DSCForThisSubActiveSetEnabled	0 or 1
Next3FieldsSameAsBefore	0 or 1
DRCLength	0 or 2
DRCCChannelGainBase	0 or 6
ACKChannelGain	0 or 6
NumReverseChannelsIncluded	1
NumReverseChannels	0 or 4

NumReverseChannels occurrences of the following record:

{1

ReverseChannelConfiguration	0 or 2
ReverseBandClass	0 or 5
ReverseChannelNumber	0 or 11
ReverseChannelDroppingRank	0 or 3

}1

NumSectors occurrences of the following record:

{1

PilotInThisSectorIncluded	1
ForwardChannelIndexThisPilot	0 or 4
PilotGroupID	0 or 3
NumUniqueForwardTrafficMACIndices	0 or 3
SchedulerTag	0 or 7
AuxDRCCoverIncluded	0 or 1
AuxDRCCover	0 or 3
ForwardTrafficMACIndexPerInterlaceEnabled	0 or 1

NumUniqueForwardTrafficMACIndices (if included) or zero occurrences of the following record:

{2

ForwardTrafficMACIndex	0 or 10
AssignedInterlaces	0 or 4

}2

NumReverseChannels occurrences of the following record:

{2

ReverseLinkMACIndex	0 or 9
RABMACIndex	0 or 7
DeltaT2P	0 or 6
}2	
}1	
}0	
Reserved	0 – 7 (as needed)

- 1    **ParameterType**            This field shall be set to 0x01 for this parameter record.
- 2    **Length**                    This field shall be set to the length of this parameter record in units of  
3                                    octets excluding the Length field.
- 4    **TCAMessageSequence**  
5                                  This field shall be set to the MessageSequence field of the last  
6                                  TrafficChannelAssignment message that was sent by the source access  
7                                  network.
- 8    **RUPMessageSequence**  
9                                  This field shall be set to the MessageSequence field of the last  
10                                  RouteUpdate message that was received by the source access network.
- 11   The source access network shall set the remaining fields in this Parameter Record to the values  
12   of the corresponding fields in the last TrafficChannelAssignment message that was sent by the  
13   source access network. If this Parameter Record is sent from another access network, the other  
14   access network shall set the remaining fields in this Parameter Record to the corresponding  
15   fields to be included in the next TrafficChannelAssignment message sent by the source access  
16   network.
- 17   **Reserved**                    The number of bits in this field is equal to the number needed to make  
18                                    the length of this parameter record length an integer number of octets.  
19                                    This field shall be set to all zeros.

20  
21

## 5.12 Inter-RAT Overhead Messages Protocol based on C.S0024-B

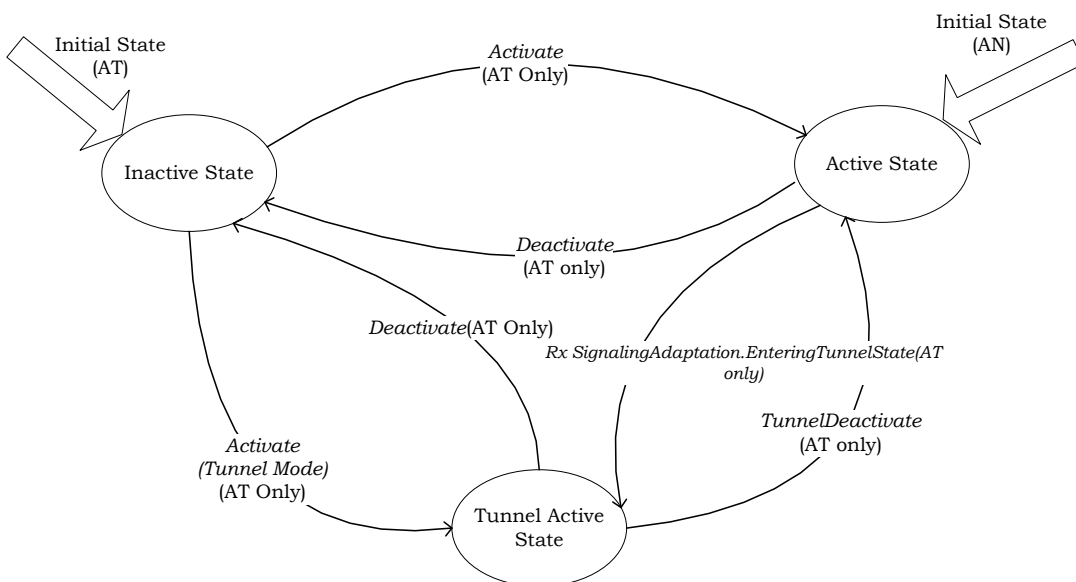
This section supersedes section 5.5 for the access terminal and the access network that supports inter-RAT Overhead Messages Protocol based on [10].

### 5.12.1 Overview

The QuickConfig message and the SectorParameters message are collectively termed the overhead messages. These messages are broadcast by the access network over the Control Channel. These messages are unique, in that they pertain to multiple protocols and are, therefore, specified separately. The Overhead Messages Protocol provides procedures related to transmission, reception and supervision of these messages. The Inter-RAT Overhead Messages Protocol also defines HRPD Silence Parameters for supporting active handoff from other radio access technologies and OtherRATNeighborList message that allow the access network broadcast adjacent other RAT neighbors.

This protocol can be in one of three states:

- **Inactive State:** In this state, the protocol waits for an *Activate* command. This state corresponds only to the access terminal and occurs when the access terminal has not acquired an access network or is not required to receive overhead messages.
- **Active State:** In this state the access network transmits and the access terminal receives overhead messages and OtherRATNeighborList message if it is transmitted by the access network.
- **Tunnel Active State:** In this state the access terminal operates in the Inter-RAT tunnel mode (e.g. E-UTRAN tunnel mode) . The access terminal receives HRPD overhead parameters needed for tunnel mode operation through source RAT (e.g. E-UTRAN).



**Figure 5.12.1–1 Inter-RAT Overhead Messages Protocol State Diagram**

## 5.12.2 Primitives and Public Data

### 5.12.2.1 Commands

This protocol defines the following commands:

- *Activate*
- *Deactivate*
- *ANRedirect* (access terminal only)
- *CheckConfiguration* (access terminal only)
- *TunnelDeactivate*

### 5.12.2.2 Return Indications

This protocol returns the following indications:

- *ANRedirected*
- *SupervisionFailed*
- *Updated*
- *ConfigurationChanged* (access network only)
- *OtherRATUpdated*

### 5.12.2.3 Public Data

This protocol shall make the following data public:

- Subtype for this protocol
- All data in the overhead messages<sup>92</sup>
- *OverheadParametersUpToDate*
- *HRPDPreRegistrationAllowed*
- All data in the Neighbor Record of the *OtherRATNeighborList* message

### 5.12.3 Protocol Data Unit

The transmission unit of this protocol is a message. This is a control protocol; and, therefore, it does not carry payload on behalf of other layers or protocols.

This protocol uses the Signaling Application to transmit and receive messages.

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<sup>92</sup> The HRPD neighbor list parameters received during the Tunnel Active State is stored in the existing neighbor list public data structure as specified by the overhead message. The procedure of storing the HRPD neighbor list parameters received during the Tunnel Active State is specified in section 5.12.6.1.5. The parameters of received *HRPDSilenceParameters* message during the Tunnel Active State also store as the public data.



## 5.12.4 Protocol Initialization

### 5.12.4.1 Protocol Initialization for the InConfiguration Protocol Instance

Upon creation, the InConfiguration instance of this protocol in the access terminal and the access network shall perform the following in the order specified:

- The fall-back values of the attributes for this protocol instance shall be set to the default values specified for each attribute.
- If the InUse instance of this protocol has the same protocol subtype as this InConfiguration protocol instance, then the fall-back values of the attributes defined by the InConfiguration protocol instance shall be set to the values of the corresponding attributes associated with the InUse protocol instance.
- The value for each attribute for this protocol instance shall be set to the fall-back value for that attribute.

### 5.12.4.2 Protocol Initialization for the InUse Protocol Instance

Upon creation, the InUse instance of this protocol in the access terminal and access network shall perform the following:

- The value of the attributes for this protocol instance shall be set to the default values specified for each attribute.
- The protocol at the access terminal shall enter the Inactive State.
- The protocol at the access network shall enter the Active State.
- The protocol shall set HRPDPReRegistrationAllowed to '0'.

## 5.12.5 Procedures and Messages for the InConfiguration Instance of the Protocol

### 5.12.5.1 Procedures

This protocol uses the Generic Configuration Protocol (see 13.7 of [10]) to define the processing of the configuration messages.

### 5.12.5.2 Commit Procedures

The access terminal and the access network shall perform the procedures specified in this section, in the order specified, when directed by the InUse instance of the Session Configuration Protocol to execute the Commit procedures:

- If the InUse instance of any of the Connection Layer protocols does not have the same subtype as the corresponding InConfiguration protocol instance, then
  - The access terminal shall set the initial state of the InConfiguration and InUse protocol instances of the Overhead Messages protocol to the Inactive State.
  - The access network shall set the initial state of the InConfiguration and InUse protocol instances of the Overhead Messages protocol to the Active State.

- All the public data that are defined by this protocol, but are not defined by the InUse protocol instance shall be added to the public data of the InUse protocol.
- If the InUse instance of this protocol has the same subtype as this protocol instance, then
  - The access terminal and the access network shall set the attribute values associated with the InUse instance of this protocol to the attribute values associated with the InConfiguration instance of this protocol, and
  - The access terminal and the access network shall purge the InConfiguration instance of the protocol.
- If the InUse instance of this protocol does not have the same subtype as this protocol instance, then the access terminal and the access network shall perform the following:
  - The InConfiguration protocol instance shall become the InUse protocol instance for the Overhead Messages Protocol at the access terminal and the access network.
- All the public data not defined by this protocol shall be removed from the public data of the InUse protocol.

### 5.12.5.3 Message Formats

#### 5.12.5.3.1 ConfigurationRequest

The ConfigurationRequest message format is as follows:

Field	Length (bits)
MessageID	8
TransactionID	8
Zero or more instances of the following record	
AttributeRecord	Attribute dependent

- MessageID**      The sender shall set this field to 0x50.
- TransactionID**      The sender shall increment this value for each new ConfigurationRequest message sent.
- AttributeRecord**      The format of this record is specified in 13.3 of [1].

<b>Channels</b>	FTC    RTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.12.5.3.2 ConfigurationResponse

The ConfigurationResponse message format is as follows:

Field	Length (bits)
MessageID	8
TransactionID	8

Zero or more instances of the following record

AttributeRecord	Attribute dependent
-----------------	---------------------

- 1 MessageID The sender shall set this field to 0x51.
- 2 TransactionID The sender shall set this value to the TransactionID field of the  
3 corresponding ConfigurationRequest message.
- 4 AttributeRecord An attribute record containing a single attribute value. If this message  
5 selects a complex attribute, only the ValueID field of the complex  
6 attribute shall be included in the message. The format of the  
7 AttributeRecord is given in 13.3 [1]. The sender shall not include more  
8 than one attribute record with the same attribute identifier.  
9

<b>Channels</b>	FTC RTC	<b>SLP</b>	Reliable
<b>Addressing</b>	unicast	<b>Priority</b>	40

## 10 5.12.6 Procedures and Messages for the InUse Instance of the Protocol

### 11 5.12.6.1 Procedures

#### 12 5.12.6.1.1 Extensibility Requirements

13 Further revisions of the access network may add new overhead messages.

14 The access terminal shall discard overhead messages with a MessageID field it does not  
15 recognize.

16 Further revisions of the access network may add new fields to existing overhead messages.  
17 These fields shall be added to the end of the message, prior to the Reserved field if such a field  
18 is defined.

19 The access terminal shall ignore fields it does not recognize.

#### 20 5.12.6.1.2 Command Processing

21 The access network shall ignore all commands.

##### 22 5.12.6.1.2.1 Activate

23 If this protocol receives an *Activate* command in the Inactive State:

- 24 • The access terminal shall transition to the Active State if TunnelModeEnabled, as public  
25 data of Signaling Adaptation Protocol, is set to '0'. The access terminal shall transition to  
26 the Tunnel Active State if TunnelModeEnabled is set to '1'.

- The access network shall ignore it.

If this protocol receives the command in the Active State, it shall be ignored.

#### 5.12.6.1.2.2 Deactivate

If this protocol receives a *Deactivate* command in the Inactive State, it shall be ignored.

If this protocol receives the command in the Active State or in the Tunnel Active State:

- Access terminal shall set HRPDPReRegistrationAllowed to 0 and transition to the Inactive State.
- Access network shall ignore it.

#### 5.12.6.1.2.3 TunnelDeactivate

If this protocol receives a *TunnelDeactivate* command in the Inactive State or in the Active State, it shall be ignored.

If this protocol receives the command in the Tunnel Active State:

- Set OverheadParametersUpToDate to 0 and HRPDPReRegistrationAllowed to 0.
- The access terminal shall transition to the Active State.
- The access network shall ignore it.

#### 5.12.6.1.3 Inactive State

This state corresponds only to the access terminal and occurs when the access terminal has not acquired an access network or is not required to receive overhead messages. In this state, the protocol waits for an *Activate* command.

#### 5.12.6.1.4 Active State

##### 5.12.6.1.4.1 Access Network Requirements

The access network shall include a QuickConfig message in every Control Channel synchronous Sleep State capsule. The access network should include a SectorParameters message in the synchronous capsule at least once every  $N_{OMP\text{SectorParameters}}$  Control Channel cycles. The access network shall set the SectorSignature field of the QuickConfig message to the SectorSignature field of the next SectorParameters message. The access network shall set the AccessSignature field of the QuickConfig message to the public data AccessSignature (see Access Channel MAC Protocol). If the values of the SectorSignature, OtherRATAvailable, OtherRATSignature fields of the QuickConfig message are different from that of the last QuickConfig message, then the access network shall generate a *ConfigurationChanged* indication. The access network shall not generate more than two *ConfigurationChanged* indications in any OverheadCachePeriod interval.

If the access network supports emergency services for conversational rate set 1 or rate set 2 for interactive speech without bundling (see [3]) the Access Network shall set the third LSB of the

AccessHashingChannelMask for that CDMA channel to '1'<sup>93</sup>. Otherwise, the Access Network shall set this bit to '0'.

If the access network supports emergency call on eHRPD network, then the access network shall include (e)HRPDEmergencySupportInd field in the SectorParameters message to indicate whether the third LSB of the AccessHashingChannelMask corresponds to the support of emergency call on HRPD network only ('01'), or eHRPD network only ('10') or both eHRPD network and HRPD network ('11'). If the (e)HRPDEmergencySupportInd field is not included in the SectorParameters message, then the third LSB of the AccessHashingChannelMask corresponds to the support of emergency call on HRPD network only. The access network shall not set the value of (e)HRPDEmergencySupportInd field to '00' if the third LSB of the AccessHashingChannelMask is set to '1' for at least a channel.

If OtherRATNeighborList message is sent by the access network, the access network shall set the OtherRATSignature field of the QuickConfig message to the OtherRATSignature field of the next OtherRATNeighborList message.

If the AccessPointIdentification message is sent by the access network, the access network shall set the APIDMIncluded field of the QuickConfig message to '1' and the access network should include the message in the synchronous capsule at least once every  $N_{OMP\text{SectorParameters}}$  Control Channel cycles.

If the AccessPointIdentificationText message is sent by the access network, the access network shall set the APIDTMIncluded field of the QuickConfig message to '1' and the access network should include the message in the synchronous capsule at least once every  $N_{OMP\text{SectorParameters}}$  Control Channel cycles.

If the AccessPointPilotInformation message is sent by the access network, the access network shall set the APPIMIncluded field of the QuickConfig message to '1' and the access network should include the message according to the value of the APPIMTXCycle field in the QuickConfig message.

#### 5.12.6.1.4.2 Access Terminal Requirements

When in the Active State, the access terminal shall perform supervision on the QuickConfig and the SectorParameters messages as specified in 5.12.6.1.4.2.1.1 and 5.12.6.1.4.2.1.2, respectively.

The access terminal shall set the IsConnected variable to '1' when it receives an *IdleState.ConnectionOpened* indication. The access terminal shall set the IsConnected variable to '0' when it receives any of the following indications:

- *ConnectedState.ConnectionClosed*
- *OverheadMessages.SupervisionFailed*,
- *ControlChannelMAC.SupervisionFailed*,

---

<sup>93</sup> The access terminal can use this bit to determine whether to originate an emergency VoIP call on this channel or tune to another system.

- *RouteUpdate.AssignmentRejected*, or
- *ForwardTrafficChannelMAC.SupervisionFailed*

The access terminal shall purge the contents of the ShortTermOverheadCache and LongTermOverheadCache when it receives an *IdleState.ConnectionOpened* indication.

If the access terminal does not have any stored value for the overhead parameters or if it receives a *RouteUpdate.IdleHO* indication and the access terminal does not have the overhead information associated with the new active set pilot (PN Offset, CDMA Channel) stored in the ShortTermOverheadCache list, or if it receives a *ConnectedState.ConnectionClosed* indication, the access terminal shall set OverheadParametersUpToDate to 0.

If the access terminal receives a *RouteUpdate.IdleHO* indication and the access terminal has the overhead information associated with the new active set pilot stored in the ShortTermOverheadCache list, the access terminal shall set OverheadParametersUpToDate to '1' and return an *Updated* indication.

If the access terminal receives a *SignalingAdaptation.EnteringTunnelState* indication, the access terminal shall:

- Set OverheadParametersUpToDate to 0,
- Transition to the Tunnel Active State.

When the access terminal receives the QuickConfig message, it shall perform the following:

- If any of the following conditions are true:
  - OverheadParametersUpToDate is equal to '0',
  - the value of the SectorSignature field of the new QuickConfig message is different from the last received value for SectorSignature corresponding to the same sector<sup>94</sup> from which the QuickConfig message is received, or
  - the sector from which this QuickConfig message is received is different from the sector from which the last QuickConfig message was received and the access terminal does not have the QuickConfig information associated with the sector stored in the ShortTermOverheadCache list,

then the access terminal shall perform the following:

- The access terminal shall set OverheadParametersUpToDate to '0'.
- If the value of the SectorSignature field of the new QuickConfig message is different from the last received value for SectorSignature corresponding to the same sector from which the QuickConfig message is received, the access terminal shall monitor every subsequent Control Channel synchronous capsule until it receives the updated SectorParameters message. When the access terminal receives the updated SectorParameters message, it shall return an *Updated* indication and set OverheadParametersUpToDate to '1'.

---

<sup>94</sup> A sector is specified by its SectorID and the CDMA channel associated with it (see the definition of Sector).

- 1 • If the OverheadParametersUpToDate is set to '1' and if OtherRATAvailable field of the latest  
2 received QuickConfig message from the serving pilot of the Control Channel is set to '1' and  
3 if one of the following requirement is met:
  - 4 – the value of the OtherRATSignature field of the latest received QuickConfig message  
5 from the serving pilot of the Control Channel is different from the last received value for  
6 OtherRATSignature corresponding to the same sector from which the QuickConfig  
7 message is received, or
  - 8 – the access terminal does not have any stored value for the OtherRATNeighborList  
9 message parameters corresponding to the serving pilot of the Control Channel.

10 then the access terminal shall perform the following:

- 11 – The access terminal shall monitor the Control Channel synchronous capsule of Control  
12 Channel Cycle which OtherRATNeighborList message is expected to be transmitted.  
13 When the access terminal receives the updated OtherRATNeighborList message, it shall  
14 return an *OtherRATUpdated* indication. If the IsConnected is set to '0', the access  
15 terminal shall store the signature associated with the message, the  
16 OtherRATNeighborList message parameters, and the (PN Offset, CDMA Channel)  
17 associated with the sector for at most OverheadCachePeriod interval in the  
18 LongTermOverheadCache list and for at most ShortTermOverheadCachePeriod in the  
19 ShortTermOverheadCache list.
- 20 • If at least one of the APIDMIncluded field, the APIDTMIncluded field, or the APPIMIncluded  
21 field of the latest received QuickConfig message from the serving pilot of the Control  
22 Channel are set to '1' and if one of the following requirements is met:
  - 23 – the sector from which the latest received QuickConfig message is received is different  
24 from the sector from which the last QuickConfig message was received, or
  - 25 – the access terminal does not have any stored value for the message corresponding to  
26 the included field for the sector that the latest QuickConfig message is received.

27 then the access terminal shall perform the following:

- 28 – If the APPIMIncluded field is set to '1', the access terminal shall monitor the Control  
29 Channel synchronous capsule in which the AccessPointPilotInformation message is  
30 expected to be transmitted. When the access terminal receives the  
31 AccessPointPilotInformation message, it shall store the information associated with the  
32 message for at most the duration of the LifeTime field in the message.
- 33 – If the APIDMIncluded field is set to '1', the access terminal should monitor the Control  
34 Channel capsule for the AccessPointIdentification message until the message is received  
35 or the duration of  $N_{OMP\text{SectorParameters}}$  Control Channel cycles.
- 36 – If the APIDTMIncluded field is set to '1', the access terminal should monitor the Control  
37 Channel capsule for the AccessPointIdentificationText message until the message is  
38 received or the duration of  $N_{OMP\text{SectorParameters}}$  Control Channel cycles.

39 If the access terminal receives a *RouteUpdate.IdleHO* indication and the access terminal has  
40 the OtherRATNeighborList message parameters associated with the new active set pilot (PN

Offset, CDMA Channel) stored in the ShortTermOverheadCache list, it shall return an *OtherRATUpdated* indication.

Upon receiving an updated overhead message, if the IsConnected is set to '0', the access terminal shall store the signature associated with the message, the overhead message parameters, and the (PN Offset, CDMA Channel) associated with the sector for at most OverheadCachePeriod interval in the LongTermOverheadCache list and for at most ShortTermOverheadCachePeriod in the ShortTermOverheadCache list. The access terminal shall not cache the QuickConfig information in either of the ShortTermOverheadCache list or LongTermOverheadCache list when the IsConnected is set to '1'.

Once the access terminal receives an updated OtherRATNeighborList message, it should store the signature associated with the message for future comparisons.

Upon receiving a *CheckConfiguration* command, the access terminal shall perform the following:

- If any of the following conditions is true, then the access terminal shall set OverheadParametersUpToDate to '0', purge the entry associated with the Active Set Pilot in ShortTermOverheadCache list and LongTermOverheadCache list, and monitor every subsequent Control Channel synchronous capsule until it receives a SectorParameters message or a QuickConfig message whose SectorSignature field is the same as the last received value for SectorSignature from the same sector.
  - OverheadParametersUpToDate is '0', or
  - the ConfigurationChange argument received with the command is different than that received with the last *CheckConfiguration* command whose (PN Offset, CDMA Channel) argument was the same as that of this command, or
  - the access terminal does not have an entry associated with the (PN Offset, CDMA Channel) argument received with the command in the LongTermOverheadCache list.

When the access terminal receives the above SectorParameters message or QuickConfig message, it shall return an *Updated* indication and set OverheadParametersUpToDate to '1'. If the Redirect field of the QuickConfig message is set to '1', the access terminal shall return an *ANRedirected* indication.<sup>95</sup> Upon receiving an *ANRedirect* command, the access terminal shall generate an *ANRedirected* indication.

The access terminal shall store a list of RouteUpdateTriggerCodes associated with subnets visited by the access terminal for future comparisons and for future use. This list is called the RouteUpdateTriggerCodeList. Each entry in the RouteUpdateTriggerCodeList shall include the subnet and the RouteUpdateTriggerCode. Other protocols may cache information keyed by (Subnet, RouteUpdateTriggerCode) pairs. If other protocols cache information keyed by (Subnet, RouteUpdateTriggerCode) pairs, then these protocols shall delete such information when the (Subnet, RouteUpdateTriggerCode) pair is deleted from the RouteUpdateTriggerCodeList.

---

<sup>95</sup> Redirection is commonly used in networks under test.



If RouteUpdateTriggerCodeListSize is set to 0x00, the access terminal shall delete all entries in the RouteUpdateTriggerCodeList. Otherwise, the access terminal shall perform the following:

- The access terminal shall delete any entries in the RouteUpdateTriggerCodeList other than the current (Subnet, RouteUpdateTriggerCode) received in the most recent SectorParameters message if the entries have an expiration timer that has been running for at least  $2^{(\text{RouteUpdateTriggerMaxAge} + 3)} \times 1.28$  seconds.
- If the expiration timer for the RouteUpdateTriggerCodeList entry corresponding to the current (Subnet, RouteUpdateTriggerCode) received in the most recent SectorParameters message has been running for at least  $2^{(\text{RouteUpdateTriggerMaxAge} + 3)} \times 1.28$  seconds, the access terminal shall reset, initialize to zero, and restart the expiration timer for that entry.
- If the (Subnet, RouteUpdateTriggerCode) pair from the most recently received SectorParameters message is not included in the RouteUpdateTriggerCodeList, then the access terminal shall add the entry to the RouteUpdateTriggerCodeList and shall reset, initialize to zero, and start the expiration timer for that entry<sup>96</sup>. The access terminal shall generate a *RouteUpdate.SendRouteUpdate* command when it adds an entry to the RouteUpdateTriggerCodeList. If there are more than the number of entries specified by the RouteUpdateTriggerCodeListSize attribute in the RouteUpdateTriggerCodeList, then the access terminal shall delete entries from the list until there are exactly RouteUpdateTriggerCodeListSize entries in the list according to the following rules:
  - The access terminal shall delete the oldest entries in the list first, and the access terminal shall not delete the entry in the list that corresponds to the (Subnet, RouteUpdateTriggerCode) received in the most recent SectorParameters message.

#### 5.12.6.1.4.2.1 Supervision Procedures

##### 5.12.6.1.4.2.1.1 Supervision of QuickConfig Message

Upon entering the Active State, the access terminal shall start the following procedure to supervise the QuickConfig message:

If the configured value of IsSupervisionDisablingWhileIdlewithCacheSupported is 0x01, then the access terminal shall set a QuickConfig supervision timer for  $T_{\text{OMPQCSupervision}}$  when the access terminal receives an *IdleState.ConnectionOpened* indication. Otherwise the access terminal shall start the timer upon entering the Active State.

If a QuickConfig message is received while the timer is active, the access terminal shall reset and restart the timer.

If the configured value of IsSupervisionDisablingWhileIdlewithCacheSupported is 0x01 and IsConnected is set to '0', then the access terminal shall perform the following:

---

<sup>96</sup> The AT could wait for confirmation that the RouteUpdate was delivered before updating the RouteUpdateTriggerCode list.

- Disable the QuickConfig supervision timer if the QuickConfig information associated with the Active Set pilot is in the LongTermOverheadCache.

- Reset and restart the supervision timer upon the QuickConfig information associated with the Active Set pilot not in the LongTermOverheadCache.

If the timer expires, the access terminal shall return a *SupervisionFailed* indication and disable the timer.

#### 5.12.6.1.4.2.1.2 Supervision of SectorParameters Message

Upon entering the Active State, the access terminal shall start the following procedure to supervise the SectorParameters message:

If the configured value of IsSupervisionDisablingWhileIdlewithCacheSupported is 0x01, then the access terminal shall set a SectorParameters supervision timer for  $T_{OMPSPSupervision}$  when the access terminal receives an *IdleState.ConnectionOpened* indication. Otherwise, the access terminal shall start the timer upon entering the Active State.

If a SectorParameters message is received while the timer is active, the access terminal shall reset and restart the timer.

If the configured value of the IsSupervisionDisablingWhileIdlewithCacheSupported is 0x01 and IsConnected is set to '0', then the access terminal shall perform the following:

- Disable the SectorParameters supervision timer if the SectorParameters information associated with the Active Set pilot is in the LongTermOverheadCache.
- Reset and restart the supervision timer upon the SectorParameters information associated with the Active Set pilot not in the LongTermOverheadCache.

If a QuickConfig message is received while the timer is active and the SectorSignature field of the QuickConfig message matches the last received value for SectorSignature corresponding to the same sector<sup>97</sup> from which the QuickConfig message is received, the access terminal shall reset and restart the timer.

If the timer expires, the access terminal shall return a *SupervisionFailed* indication and disable the timer.

#### 5.12.6.1.5 Tunnel Active State

##### 5.12.6.1.5.1 Access Network Requirements

Not applicable to Access Network.

##### 5.12.6.1.5.2 Access Terminal Requirements

If the access terminal does not have any stored value for the overhead parameters or if it receives an indication that the E-UTRAN protocol within the access terminal selected a

---

<sup>97</sup> A sector is specified by its SectorID and the CDMA channel associated with it (see the definition of Sector).

new serving cell<sup>98</sup>, the access terminal shall set OverheadParametersUpToDate to 0. If the new serving cell allows the access terminal to perform pre-registration, then the access terminal shall set HRPDPReRegistrationAllowed to 1; otherwise, the access terminal shall set HRPDPReRegistrationAllowed to 0.

When the access terminal receives the HRPD parameters, it shall perform the following:

- If any of the following conditions are true:
    - OverheadParametersUpToDate is equal to 0,
    - Access terminal determine that HRPD parameters, defined as public data of this application, received from different RAT<sup>99</sup> (e.g. E-UTRAN) is not up-to-date<sup>100</sup>
- then the access terminal shall perform the following:
- The access terminal shall store the following HRPD parameters received [9][9]:
    - + Set ColorCode to HRPDPReRegistrationZoneID received from E-UTRAN.
    - + Set SecondaryColorCode to HRPDSecondaryPreRegistrationZoneID received from E-UTRAN
    - + If the HRPD neighbor list is also received:
      - HRPD search window size if included. The received HRPD search window size is common for all the neighbor pilot PNs in the received HRPD neighbor list
      - HRPD neighbor pilot PNs
      - Set SystemType field of the NeighborChannel corresponding to each received HRPD neighbor pilot PN to 0x00 14.1 of [1][4]
      - HRPD neighbor band class information as the BandClass 14.1 of [1][4] field of the NeighborChannel corresponding to each received HRPD neighbor pilot PN
      - HRPD neighbor channel number as the ChannelNumber 14.1 of [1][4] field of the NeighborChannel corresponding to each received HRPD neighbor pilot PN
  - The access terminal return an *Updated* indication
  - The access terminal set OverheadParametersUpToDate to 1.

<sup>98</sup> The process by which the E-UTRAN protocol within the access terminal communicates this event to the Overhead Messages Protocol is left to the access terminal implementation.

<sup>99</sup> The access terminal may receive HRPD neighbor list information from E-UTRAN [9][9]. The HRPD neighbor list information may be included in either the received SIB8 or the received MeasObjectCDMA2000 information element.

<sup>100</sup> For example, when the primary RAT is E-UTRAN, the access terminal can determine the broadcast information is not up-to-date based on the TAG [9][9] value, difference in the received SIB8 (e.g. HRPD-NeighborCellList) or based on the HRPD neighbor list difference between the received SIB8 and MeasObjectCDMA2000 IE [9][9].

1 Upon receiving an HRPDSilenceParameters message, the access terminal shall overwrite the  
2 stored value of ReverseLinkSilenceDuration and ReverseLinkSilencePeriod with the  
3 ReverseLinkSilenceDuration and ReverseLinkSilencePeriod fields of the message.

#### 4 5.12.6.2 Message Formats

##### 5 5.12.6.2.1 QuickConfig

6 The QuickConfig message is used to indicate a change in the overhead messages' contents, a  
7 change in the OtherRATNeighborList message's contents and to provide frequently changing  
8 information.  
9

Field	Length (bits)
MessageID	8
ColorCode	8
SectorID24	24
SectorSignature	16
AccessSignature	16
Redirect	1
RPCCount63To0	6

RPCCount63To0 occurrences of the following field

ForwardTrafficValid63To0	1
--------------------------	---

RPCCount127To64Included	0 or 1
RPCCount127To64	0 or 6

RPCCount127To64 occurrences of the following field:

ForwardTrafficValid127To64	0 or 1
----------------------------	--------

RPCCount130To383Included	0 or 1
RPCCount130To383	0 or 8

RPCCount130To383 occurrences of the following field:

ForwardTrafficValid130To383	0 or 1
-----------------------------	--------

OtherRATAvailable	0 or 1
OtherRATTXCycle	0 or 3
OtherRATSignature	0 or 6

APIDMIncluded	0 or 1
APIDTMIncluded	0 or 1
APPIMIncluded	0 or 1
APPIMTXCycle	0 or 3

Reserved	0 – 7 (as needed)
----------	-------------------

- |   |   |
|---|---|
| 1    MessageID<br><br>2    ColorCode<br>3 | The access network shall set this field to 0x00.<br><br>The access network shall set this field to the color code corresponding to this sector. |
|---|---|

1	SectorID24	The access network shall set this field to the least significant 24 bits of
2		the SectorID value corresponding to this sector.
3	SectorSignature	The access network shall set this field to the value of the SectorSignature
4		field of the next SectorParameters message it will transmit.
5	AccessSignature	The access network shall set this field to the value of the
6		AccessSignature parameter from the AccessParameters message that is
7		Public Data of the Access Channel MAC Protocol.
8	Redirect	Access network redirect. The access network shall set this field to '1' if it
9		is redirecting all access terminals away from this access network. <sup>101</sup>
10	RPCCount63To0	The access network shall set this field to the maximum number of RPC
11		channels supported by the sector corresponding to Forward Traffic
12		Channels associated with MAC indices 0 through 63, inclusive.
13	ForwardTrafficValid63To0	
14		The access network shall set occurrence $n$ of this field to '1' if the
15		Forward Traffic Channel associated with MACIndex $64-n$ is valid. The
16		access terminal uses this field to perform supervision of the Forward
17		Traffic Channel.
18	RPCCount127To64Included	
19		If this field is included, the access network shall set this field to '1' if the
20		RPCCount127To64 field is included in this message. Otherwise, the
21		access network shall set this field to '0'. The access network shall include
22		this field if any of the fields below it are included in this message.
23	RPCCount127To64	If the RPCCount127To64Included field is omitted, or if
24		RPCCount127To64Included is '0', then the access network shall omit
25		this field. Otherwise, the access network shall set this field to the
26		maximum number of RPC channels supported by the sector
27		corresponding to Forward Traffic Channels associated with MAC indices
28		64 through 127, inclusive.
29	ForwardTrafficValid127To64	
30		If the RPCCount127To64Included field is omitted, or if
31		RPCCount127To64Included is '0', then the access network shall omit
32		this field. Otherwise, the access network shall set occurrence $n$ of this
33		field to '1' if the Forward Traffic Channel associated with MACIndex 128-

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<sup>101</sup> Network redirect is commonly used during testing.

$n$  is valid. The access terminal uses this field to perform supervision of the Forward Traffic Channel.

#### RPCCount130To383Included

The access network shall include this field if any of the non-reserved fields that follow this field are to be included in the message. If this field is included, the access network shall set this field to '1' if the RPCCount130To383 field is included in this message. Otherwise, the access network shall set this field to '0'.

#### RPCCount130To383

If the RPCCount130To383Included field is omitted, or if RPCCount130To383Included is '0', then the access network shall omit this field. Otherwise, the access network shall set this field to the maximum number of RPC channels supported by the sector corresponding to Forward Traffic Channels associated with MAC indices 128 through 383, inclusive.

#### ForwardTrafficValid130To383

If the RPCCount130To383Included field is omitted, or if RPCCount130To383Included is '0', then the access network shall omit this field. The access network shall set this field to '1' if the corresponding ReverseLinkMACIndex is valid. Otherwise, the access network shall set this field to '0'. The  $n^{\text{th}}$  occurrence of this field corresponds to the ReverseLinkMACIndex  $130+(n-1)/2$  if  $n$  is odd and to  $257+n/2$  if  $n$  is even.

#### OtherRATAvailable

The access network shall include this field if any of the non-reserved fields that follow this field are to be included in the message. If this field is included, the access network shall set this field to '1' if the OtherRATNeighborList message is sent by the access network. Otherwise, the access network shall set this field to '0'.

#### OtherRATTXCycle

If the OtherRATAvailable field is omitted, or if OtherRATAvailable field is set to '0', then the access network shall omit this field. Otherwise, the access network shall set this field to the value of the transmission cycle of the OtherRATNeighborList in unit of Control Channel Cycle. The access network should transmit the OtherRATNeighborList message in the Synchronous Control Channel Capsule at the Control Channel Cycle  $C$  satisfying the following condition:

$C \bmod \text{OtherRATTXCycle} = 0$ , where  $C$  is the number of Control Channel cycles since the beginning of the CDMA SystemTime. The value mapping of this field is defined in [Table 5.12.6.2.1-1](#).

**Table 5.12.6.2.1-1 The OtherRATNeighborList transmission cycle**

Field value (binary)	Duration in unit of Control Channel Cycle
'000'	2
'001'	3
'010'	6
'011'	10
'100'	14
'101'	24
'110'	40
'111'	64

**OtherRATSignature**

If the OtherRATAvailable field is omitted, or if OtherRATAvailable field is set to '0', then the access network shall omit this field. Otherwise, the access network shall set this field to the value of the OtherRATSignature field of the next OtherRATNeighborList message it will transmit.

**APIDMIncluded**

The access network shall include this field if any of the non-reserved fields that follow this field are to be included in the message. If this field is included, the access network shall set this field to '1' if the AccessPointIdentification message is sent by the access network. Otherwise, the access network shall set this field to '0'.

**APIDTMIncluded**

The access network shall include this field if any of the non-reserved fields that follow this field are to be included in the message. If this field is included, the access network shall set this field to '1' if the AccessPointIdentificationText message is sent by the access network. Otherwise, the access network shall set this field to '0'.

**APPIMIncluded**

The access network shall include this field if any of the non-reserved fields that follow this field are to be included in the message. If this field is included, the access network shall set this field to '1' if the AccessPointPilotInformation message is sent by the access network. Otherwise, the access network shall set this field to '0'.

**APPIMTXCycle**

If the APPIMIncluded field is omitted, or if APPIMIncluded field is set to '0', then the access network shall omit this field. Otherwise, the access network shall set this field to the value of the transmission cycle of the AccessPointPilotInformation message in unit of Control Channel Cycle. The access network should transmit the AccessPointPilotInformation message in the Synchronous Control Channel Capsule at the Control Channel Cycle C satisfying the following condition:



C mod APPIMTXCycle = 0, where C is the number of Control Channel cycles since the beginning of the CDMA SystemTime. The value mapping of this field is defined in [Table 5.12.6.2.1-2](#).

**Table 5.12.6.2.1-2 The AccessPointPilotInformation transmission cycle**

Field value (binary)	Duration in unit of Control Channel Cycle
'000'	2
'001'	3
'010'	6
'011'	10
'100'	14
'101'	24
'110'	40
'111'	64

Reserved The number of bits in this field is equal to the number needed to make the message length an integer number of octets. The access network shall set this field to zero. The access terminal shall ignore this field.

<b>Channels</b>	CCsynSS	<b>SLP</b>	Best Effort
<b>Addressing</b>	broadcast	<b>Priority</b>	10

#### 5.12.6.2.2 SectorParameters

The SectorParameters message is used to convey sector specific information to the access terminals.

<b>Field</b>	<b>Length (bits)</b>
MessageID	8
CountryCode	12
SectorID	128
SubnetMask	8
SectorSignature	16
Latitude	22
Longitude	23
RouteUpdateRadiusOverhead	11
LeapSeconds	8
LocalTimeOffset	11
ReverseLinkSilenceDuration	2
ReverseLinkSilencePeriod	2
ChannelCount	5

ChannelCount occurrences of the following field:

Channel	24
---------	----

NeighborCount	5
---------------	---

NeighborCount occurrences of the following field:

NeighborPilotPN	9
-----------------	---

NeighborCount occurrences of the following two fields:

NeighborChannelIncluded	1
NeighborChannel	0 or 24

NeighborSearchWindowSizeIncluded	1
----------------------------------	---

NeighborCount occurrences of the following field

NeighborSearchWindowSize	0 or 4
--------------------------	--------

NeighborSearchWindowOffsetIncluded	1
------------------------------------	---

NeighborCount occurrences of the following field

NeighborSearchWindowOffset	0 or 3
----------------------------	--------

ExtendedChannelIncluded	0 or 1
-------------------------	--------

Field	Length (bits)
ExtendedChannelCount	0 or 5

0 or ExtendedChannelCount occurrences of the following field:

ExtendedChannel	24
-----------------	----

AccessHashingChannelMaskIncluded	0 or 1
AccessHashingMaskLength	0 or 4

$n$ , occurrences of the following record, where  $0 \leq n \leq (\text{ChannelCount} + \text{ExtendedChannelCount})$ ,

AccessHashingChannelMaskSameAsPrevious	1
AccessHashingChannelMask	0 or AccessHashingMaskLength + 1

RouteUpdateTriggerCodeIncluded	0 or 1
RouteUpdateTriggerCode	0 or 12
RouteUpdateTriggerMaxAge	0 or 4
PriorSessionGAUP	0 or 1
FPDCHSupportedIncluded	0 or 1

$m$ ,  $0 \leq m \leq \text{NeighborCount}$  occurrences of the following field:

FPDCHSupported	0 or 1
----------------	--------

SecondaryColorCodeIncluded	0 or 1
SecondaryColorCodeCount	0 or 3

Zero or SecondaryColorCodeCount occurrences of the following field:

SecondaryColorCode	8
--------------------	---

PilotGroupIDLoopIncluded	0 or 1
--------------------------	--------

Zero or NeighborCount + 1 -  $m$  occurrences of the following two fields:

PilotGroupIDIncluded	0 or 1
PilotGroupID	0 or 3

Field	Length (bits)
IsSectorMultiCarrierCapable	0 or 1

$n$ , occurrences of the following two fields, where  $n$  is the total number of Channel and ExtendedChannel records in this message that have SystemType equal to 0x02

ReverseBandClass	0 or 5
ReverseChannelNumber	0 or 11

ReservedBitsIncluded	0 or 1
CompatibleReservedBits	0 or 16

(e)HRPDEmergencySupportInd	0 or 2
----------------------------	--------

Reserved	0 – 7 (as needed)
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1	MessageID	The access network shall set this field to 0x01.
2	CountryCode	The access network shall set this field to the three-digit BCD (binary coded decimal) encoded representation of the Mobile Country Code (as specified in [8]) associated with this sector.
3		
4		
5	SectorID	Sector Address Identifier. The Access Network shall set the value of the SectorID according to the rules specified in [10]. The access terminal shall not assume anything about the format of the SectorID other than the (SectorID, CDMA Channel) pair uniquely identifies a sector.
6		
7		
8		
9	SubnetMask	Sector Subnet identifier. The access network shall set this field to the number of consecutive 1's in the subnet mask of the subnet to which this sector belongs. The value of this field should be less than or equal to 104 if SecondaryColorCodeIncluded field is included and is set to '1'.
10		
11		
12		
13	SectorSignature	SectorParameters message signature. The access network shall change this field if the contents of the SectorParameters message changes.
14		
15	Latitude	The latitude of the sector. The access network shall set this field to this sector's latitude in units of 0.25 second, expressed as a two's complement signed number with positive numbers signifying North latitudes. The access network shall set this field to a value in the range -1296000 to 1296000 inclusive (corresponding to a range of -90° to +90°).
16		
17		
18		
19		
20		

1	Longitude	The longitude of the sector. The access network shall set this field to this
2		sector's longitude in units of 0.25 second, expressed as a two's
3		complement signed number with positive numbers signifying East
4		longitude. The access network shall set this field to a value in the
5		range -2592000 to 2592000 inclusive (corresponding to a range of -180°
6		to +180°).
7	RouteUpdateRadiusOverhead	
8		If the access terminal is to perform distance based route updates, the
9		access network shall set this field to the non-zero "distance" beyond
10		which the access terminal is to send a new RouteUpdate message (see
11		Inter-RAT Route Update Protocol). If access terminals are not to perform
12		distance based route updates, the access network shall set this field to
13		0. <sup>102</sup>
14	LeapSeconds	The number of leap seconds that have occurred since the start of CDMA
15		System Time.
16	LocalTimeOffset	The access network shall set this field to the offset of the local time from
17		CDMA System Time. This value will be in units of minutes, expressed as
18		a two's complement signed number.
19	ReverseLinkSilenceDuration	
20		The access network shall set this field to specify the duration of the
21		Reverse Link Silence Interval in units of frames.
22	ReverseLinkSilencePeriod	
23		The access network shall set this field to specify the period of the Reverse
24		Link Silence Interval. The Reverse Link Silence Interval is defined as the
25		time interval of duration ReverseLinkSilenceDuration frames that starts
26		at times T where T is the CDMA System Time in units of frames and it
27		satisfies the following equation:
28		$T \bmod (2048 \times 2^{\text{ReverseLinkSilencePeriod} - 1}) = 0.$
29	ChannelCount	The access network shall set this field to the number of cdma2000 high
30		rate packet data channels available to the access terminal on this sector.
31	Channel	Channel record specification for each channel. See 13.1 of [10] for the
32		Channel record format. The access network shall set the SystemType
33		field of this record to 0x00 or 0x02.

---

<sup>102</sup> The access terminal determines whether to send a distance based RouteUpdate message or not using the RouteUpdateRadiusOverhead value of the serving sector. If the serving sector allows distance based Route Updates, the access terminal uses the RouteUpdateRadiusOverhead value sent by the sector in which the access terminal last registered.

1	NeighborCount	The access network shall set this field to the number of records
2		specifying neighboring sectors information included in this message.
3	NeighborPilotPN	The access network shall set this field to the PN Offset of a neighboring
4		sector that the access terminal should add to its Neighbor Set.
5	NeighborChannelIncluded	
6		The access network shall set this field to '1' if a Channel record is
7		included for this neighbor, and to '0' otherwise. The $n^{\text{th}}$ occurrence of this
8		field corresponds to the $n^{\text{th}}$ occurrence of NeighborPilotPN in the record
9		that contains the NeighborPilotPN field above.
10	NeighborChannel	Channel record specification for the neighbor channel. See 13.1 of [10]
11		for the Channel record format. The access network shall omit this field if
12		the corresponding NeighborChannelIncluded field is set to '0'. Otherwise,
13		if included, the $n^{\text{th}}$ occurrence of this field corresponds to the $n^{\text{th}}$
14		occurrence of NeighborPilotPN in the record that contains the
15		NeighborPilotPN field above.
16	NeighborSearchWindowSizeIncluded	
17		The access network shall set this field to '1' if
18		NeighborSearchWindowSize field for neighboring sectors is included in
19		this message. Otherwise, the access network shall set this field to '0'.
20	NeighborSearchWindowSize	
21		The access network shall omit this field if
22		NeighborSearchWindowSizeIncluded is set to '0'. If
23		NeighborSearchWindowSizeIncluded is set to '1', the access network
24		shall set this field to the value shown in <a href="#">Table 5.12.6.2.2-1</a> <del>Table</del>
25		<del>5.12.6.2.2-1</del> corresponding to the search window size to be used by the
26		access terminal for the neighbor pilot. The $n^{\text{th}}$ occurrence of this field
27		corresponds to the $n^{\text{th}}$ occurrence of NeighborPilotPN in the record that
28		contains the NeighborPilotPN field above.

**Table 5.12.6.2.2-1 Search Window Sizes**

<b>SearchWindowSize Value</b>	<b>Search Window Size (PN chips)</b>
0	4
1	6
2	8
3	10
4	14
5	20
6	28
7	40
8	60
9	80
10	100
11	130
12	160
13	226
14	320
15	452

**NeighborSearchWindowOffsetIncluded**

The access network shall set this field to '1' if NeighborSearchWindowOffset field for neighboring sectors is included in this message. Otherwise, the access network shall set this field to '0'.

**NeighborSearchWindowOffset**

The access network shall omit this field if NeighborSearchWindowOffsetIncluded is set to '0'. If NeighborSearchWindowOffsetIncluded is set to '1', the access network shall set this field to the value shown in [Table 5.12.6.2.2-2](#) corresponding to the search window offset to be used by the access terminal for the neighbor pilot. The  $n^{\text{th}}$  occurrence of this field corresponds to the  $n^{\text{th}}$  occurrence of NeighborPilotPN in the record that contains the NeighborPilotPN field above.

**Table 5.12.6.2.2-2 Search Window Offset**

<b>SearchWindowOffset</b>	<b>Offset ( PN chips)</b>
0	0
1	$\text{WindowSize}^{103} / 2$
2	WindowSize
3	$3 \times \text{WindowSize} / 2$
4	$- \text{WindowSize} / 2$
5	$- \text{WindowSize}$
6	$-3 \times \text{WindowSize} / 2$
7	Reserved

**ExtendedChannelIncluded**

If any of the fields after this field except for Reserved are included, the access network shall include this field. Otherwise, the access network shall omit this field. If included, the access network shall set this field as follows:

The access network shall set this field to '0' if the ExtendedChannel fields are omitted. Otherwise, the access network shall set this field to '1'.

**ExtendedChannelCount**

If the ExtendedChannelIncluded field is omitted or is included and set to '0', the access network shall omit this field. Otherwise, the access network shall include this field and shall set this field to the number of cdma2000 high rate packet data extended channels available to the access terminal on this sector. If this field is not included, the access terminal shall assume that the value of this field is '00000'.

**ExtendedChannel**

Channel record specification for each extended channel. If ExtendedChannelCount is not included, the access network shall omit this field. See [10] for the Channel record format. The access network shall set the SystemType field of this record to 0x00 or 0x02.

**AccessHashingChannelMaskIncluded**

If any of the fields after this field except for Reserved are included, the access network shall include this field. Otherwise, the access network shall omit this field. If included, the access network shall set this field as follows:

The access network shall set this field to '0' if the AccessHashingChannelMask fields are omitted. Otherwise, the access network shall set this field to '1'.

---

<sup>103</sup> WindowSize is pilot's search window size in PN chips.



#### AccessHashingMaskLength

If the AccessHashingChannelMaskIncluded field is omitted or is included and set to '0', the access network shall omit this field. Otherwise, the access network shall set this field one less than the number of bits in the AccessHashingChannelMask field(s).

If the AccessHashingChannelMaskIncluded field is omitted or is included and set to '0', the access network shall omit the following two-field record. Otherwise, the access network shall include  $m$  occurrences of the following two field record, where  $m$  is the total number of Channel and ExtendedChannel records in this message that have SystemType equal to 0x00 or 0x02.

#### AccessHashingChannelMaskSameAsPrevious

The access network shall set this field in the  $i^{\text{th}}$  occurrence of this record as follows:

If  $i$  is greater than 1 and the AccessHashingChannelMask for the  $i^{\text{th}}$  Channel or ExtendedChannel record with SystemType equal to 0x00 or 0x02 in this message is the same as the AccessHashingChannelMask for the  $(i-1)^{\text{th}}$  Channel or ExtendedChannel record with SystemType equal to 0x00 or 0x02 in this message, the access network may set this field to '1'. Otherwise, the access network shall set this field to '0'.

#### AccessHashingChannelMask

The access network shall set this field in the  $i^{\text{th}}$  occurrence of this record as follows:

If the AccessHashingChannelMaskSameAsPrevious field in this record is set to '1', the access network shall omit this field. Otherwise, the access network shall set this field to the (AccessHashingMaskLength + 1) bit access hashing class of the  $i^{\text{th}}$  combined channel list entry in this message that has SystemType equal to 0x00 or 0x02, where the combined channel list is defined to be the ordered set of all Channel records in order (if any) with all Extended Channel records appended in order (if any). If this field is not included, the access terminal shall assume that the value of this field is the same as the value for this field in the previous occurrence of this record.

#### RouteUpdateTriggerCodeIncluded

The access network shall include this field if any of the fields other than the Reserved field that follow this field are to be included in the message.

If this field is included, the access network shall set it as follows: The access network shall set this field to '1' if RouteUpdateTriggerCode is included in this message. Otherwise, the access network shall set this field to '0'. If this field is not included in the message, that access terminal shall assume a value of '0' for this field.

#### RouteUpdateTriggerCode

If the RouteUpdateTriggerCodeIncluded field is not included in this message, or if the RouteUpdateTriggerCodeIncluded field is included and

1	is set to '0', then the access network shall omit this field. Otherwise, the
2	access network shall set this field to a 12-bit value <sup>104</sup> .
3	<b>RouteUpdateTriggerMaxAge</b>
4	If the RouteUpdateTriggerCodeIncluded field is not included in this
5	message or if the RouteUpdateTriggerCodeIncluded field is included and
6	set to '0', the access network shall omit this field. Otherwise, the access
7	network shall set this field to indicate the duration of the
8	RouteUpdateTriggerCode timer.
9	<b>PriorSessionGAUP</b>
10	The access network shall include this field if any of the fields other than
11	the Reserved field that follow this field are to be included in the message.
12	If this field is included, then the access network shall set this field as
13	follows:
14	If the access terminal is not allowed to include the PriorSession attribute
15	in an AttributeUpdateRequest message, then the access network shall
16	set this field to '0'. Otherwise, the access network shall set this field to
17	'1'.
17	<b>FPDCHSupportedIncluded</b>
18	The access network shall include this field if any of the fields other than
19	the Reserved field that follow this field are to be included in the message.
20	If this field is not included in the message, the access terminal shall
21	assume a value of '0' for this field. If this field is included, the access
22	network shall set this field as follows:
23	The access network shall set this field to '0' if the FPDCHSupported fields
24	are omitted. Otherwise, the access network shall set this field to '1'.
25	<b>FPDCHSupported</b>
26	If FPDCHSupportedIncluded is not included or is included and is set to
27	'0', then the access network shall omit all occurrences of this field.
28	Otherwise, the access network shall include <i>m</i> occurrences of this field,
29	where <i>m</i> is the number of NeighborChannel records in this message that
30	have SystemType equal to 0x01, and the access network shall set the
31	occurrences of this field as follows:
32	The access network shall set the <i>i</i> <sup>th</sup> occurrence of this field as follows:
33	If the system on the CDMA Channel corresponding to the <i>i</i> <sup>th</sup>
34	NeighborChannel record that has SystemType equal to 0x01 supports
35	the Forward Packet Data Channel (see [7]), the access network shall set
36	the <i>i</i> <sup>th</sup> occurrence of this field to '1'. Otherwise, the access network shall
	set the <i>i</i> <sup>th</sup> occurrence of this field to '0'.

---

<sup>104</sup> The RouteUpdateTriggerCode represents parameters associated with other protocols or applications. A RouteUpdate message is triggered when the RouteUpdateTriggerCode changes. The access network can update parameters associated with other protocols or applications when it determines that the parameters at the access terminal need to be updated.

## SecondaryColorCodeIncluded

The access network shall include this field if any of the non-reserved fields that follow this field are to be included in the message. If included, the access network shall set this field as follows:

The access network shall set this field to '1' if the SecondaryColorCodeCount field is included. Otherwise, the access network shall set this field to '0'.

## SecondaryColorCodeCount

If SecondaryColorCodeIncluded is omitted or set to '0', then the access network shall omit this field. Otherwise, the access network shall set this field as follows:

If SecondaryColorCodeIncluded is included and set to '1', then the access network shall set this field to indicate the number of secondary color codes covering this sector. If the access terminal is to consider all possible values of SecondaryColorCode to be included in this message, then the access network shall set this field to '000'.

## SecondaryColorCode

If SecondaryColorCodeCount is omitted or included and set to '000', then the access network shall omit this field. Otherwise, the access network shall set this field as follows:

The access network shall set this field to a color code that is to be considered to be a member of the set of the SecondaryColorCode values.

## PilotGroupIDLoopIncluded

The access network shall include this field if any of the non-reserved fields that follow this field are to be included in the message. If included, the access network shall set this field as follows:

The access network shall set this field to '1' if one or more PilotGroupIDIncluded fields are included in this message. Otherwise, the access network shall set this field to '0'.

## PilotGroupIDIncluded

The access network shall omit this field if PilotGroupIDLoopIncluded field is omitted or set to '0'. Otherwise, the access network shall include this field and set it as follows: The access network shall set the first occurrence of this field to '1' if the PilotGroupID field corresponding to the pilot transmitting this message is included in this message. The access network shall set the  $n+1$ th occurrence of this field to '1' if PilotGroupID field corresponding to the  $n^{\text{th}}$  occurrence of NeighborPilotPN field, with corresponding SystemType equal to 0x00 or 0x02, is included in this message. Otherwise, the access network shall set this field to '0'. If this field is not included in the message, the access terminal shall assume a value of '0' for this field.

**PilotGroupID** The access network shall omit this field if PilotGroupIDIncluded field is omitted or set to '0'. Otherwise, the access network shall include this field and set it as follows:  
The access network shall set this field to the PilotGroupID associated with the neighbor pilot or the pilot transmitting this message. The PilotPN of a neighbor pilot or the pilot transmitting this message, together with the PilotGroupID identify a Pilot Group (see 5.11.6.1.2.5).

**IsSectorMultiCarrierCapable** The access network shall include this field if any of the non-reserved fields that follow this field are to be included in the message. If this field is not included in the message, the access terminal shall assume a value of '0' for this field. If included, the access network shall set this field to '1' if the access network is capable of assigning more than one channel to the access terminal while connected. Otherwise, the access network shall set this field to '0'.

The access network shall include  $n$  occurrences of the following two field record, where  $n$  is the total number of Channel and ExtendedChannel records in this message that have SystemType equal to 0x02.

**ReverseBandClass** The access network shall include this field if any of the non-reserved fields that follow this field are to be included in the message. The access network shall set the  $i^{\text{th}}$  occurrence of this field to the band class number for the reverse CDMA channel associated with the  $i^{\text{th}}$  combined channel list entry in this message that has SystemType equal to 0x02. The combined channel list is defined to be the ordered set of all Channel records in order (if any) with all Extended Channel records appended in order (if any).

**ReverseChannelNumber** The access network shall include this field if any of the non-reserved fields that follow this field are to be included in the message. The access network shall set the  $i^{\text{th}}$  occurrence of this field to the channel number that identifies the reverse CDMA channel associated with the  $i^{\text{th}}$  combined channel list entry in this message that has SystemType equal to 0x02. The combined channel list is defined to be the ordered set of all Channel records in order (if any) with all Extended Channel records appended in order (if any).

**ReservedBitsIncluded** The access network shall include this field if any of the fields below it and above Reserved field are included in the message. If this field is included, the access network shall set this field to '1' if the

NumReservedBits field is included in this message. Otherwise, the access network shall set this field to '0'.<sup>105</sup>

### CompatibleReservedBits

If the ReservedBitsIncluded field is omitted, or if ReservedBitsIncluded is '0', then the access network shall omit this field. Otherwise, the access network shall set this field to '0' for standard revision compatibility.

### (e)HRPDEmergencySupportInd

The access network shall include this field if any of the non-reserved fields that follow this field are to be included in the message. If included, The access network shall set this field as follows:

**Table 5.12.6.2.2–3 (e)HRPD Emergency Support Ind**

<b>(e)HRPDEmergencySupportInd</b>	<b>Network Supported</b>
'00'	Not supported in either HRPD network or eHRPD network
'01'	Only HRPD network
'10'	Only eHRPD network
'11'	Both HRPD and eHRPD network

**Reserved** The number of bits in this field is equal to the number needed to make the message length an integer number of octets. The access network shall set this field to zero. The access terminal shall ignore this field.

<b>Channels</b>	CCsyn	<b>SLP</b>	Best Effort
<b>Addressing</b>	broadcast	<b>Priority</b>	30

### 5.12.6.2.3 HRPDSilenceParameters

The access network sends an HRPDSilenceParameters message as part of the preparation for an active handoff from the other radio access technology to HRPD.

<sup>105</sup> This is included to match with the standards revision compatibility for MIMOOFDMCapable and associated fields included in C.S0024-C

Field	Length (bits)
MessageID	8
ReverseLinkSilenceDuration	2
ReverseLinkSilencePeriod	2
Reserved	0 – 7 (as needed)

MessageID The access network shall set this field to 0x02.

ReverseLinkSilenceDuration

The access network shall set this field to specify the duration of the Reverse Link Silence Interval in units of frames.

ReverseLinkSilencePeriod

The access network shall set this field to specify the period of the Reverse Link Silence Interval. The Reverse Link Silence Interval is defined as the time interval of duration ReverseLinkSilenceDuration frames that starts at times T where T is the CDMA System Time in units of frames and it satisfies the following equation:

$$T \bmod (2048 \times 2^{\text{ReverseLinkSilencePeriod}} - 1) = 0.$$

Reserved

The number of bits in this field is equal to the number needed to make the message length an integer number of octets. The access network shall set this field to zero. The access terminal shall ignore this field.

<b>Channels</b>	CC	<b>SLP</b>	Best Effort
<b>Addressing</b>	unicast	<b>Priority</b>	40

#### 5.12.6.2.4 OtherRATNeighborList

The OtherRATNeighborList message is used to convey information corresponding to the neighboring sectors with access technologies other than CDMA to the access terminal.

Field	Length (bits)
MessageID	8
OtherRATSignature	6
NumOtherRAT	4

NumOtherRAT occurrences of the following record:

{

RATType	4
NeighborRATRecordLength	10
NeighborRATRecord	8 * NeighborRATRecordLength

}

Reserved	variable
----------	----------

- 1    MessageID            The access network shall set this field to 0x03.
- 2    OtherRATSignature   OtherRATNeighborList message signature. The access network shall  
3                            change this field if the contents of the OtherRATNeighborList message  
4                            changes.
- 5    NumOtherRAT        The access network shall set this field to the number of other RAT type  
6                            records included in this message.
- 7    RATType             Radio Access Technology (RAT) type. The access network shall set this  
8                            field to a RATType value as defined in [3].
- 9    NeighborRATRecordLength
- 10                        The access network shall set this field to the number of bytes in  
11                        NeighborRATRecord.
- 12   NeighborRATRecord   The format of NeighborRATRecord corresponding to the RATType of this  
13                            record is specified in 5.12.6.2.4.1.
- 14   Reserved             The number of bits in this field is equal to the number needed to make  
15                            the message length an integer number of octets. The access network  
16                            shall set this field to zero. The access terminal shall ignore this field.  
17

<b>Channels</b>	CCsyn
-----------------	-------

<b>SLP</b>	Best Effort
------------	-------------

<b>Addressing</b>	broadcast
-------------------	-----------

<b>Priority</b>	30
-----------------	----

5.12.6.2.4.1 NeighborRATRecord format

If RATType is equal to '0000', the content of the E-UTRAN neighbor record is specified in section 7.1. If RATType is not equal to '0000', see [3].

5.12.6.2.5 AccessPointPilotInformation

The AccessPointPilotInformation message is used to convey pilot information of neighboring access points to the access terminals.

Field	Length (bits)
MessageID	8
LifeTime	5
NumAPPIRec	8

NumAPPIRec occurrences of the following field:

APPIRecord	Variable
------------	----------

Reserved	0 – 7 (as needed)
----------	-------------------

MessageID	The access network shall set this field to 0x04.
LifeTime	Lifetime of the access point pilot information. The information in this message remains valid at the access terminal for $2^{\text{LifeTime}} - 1$ minutes if the access terminal does not receive another AccessPointPilotInformation message. If the field is set to the maximum value, the information in this message does not expire.
NumAPPIRec	Number of access point pilot information record. The access network shall set this field based on the number of access point pilot information record included in this message.
APPIRecord	Access point pilot information record. The access network shall include NumAPPIRec occurrences of this record. The access network shall set this record as shown in Table 5.12.6.2.5-1 <del>Table 5.12.6.2.5-1</del> corresponding to the neighboring access point pilots.



**Table 5.12.6.2.5–1 Access Point Pilot Information Record**

Field	Length
APAssociationType	3
APSubnetSameAsPrevious	1
APBandSameAsPrevious	1
APChannelSameAsPrevious	1
APPNRecordSameAsPrevious	1
APSubnetLength	0 or 7
APSubnet	0 or APSubnetLength
APBand	0 or 5
APChannel	0 or 11
APPNRecordType	0 or 3
APPNRecordLength	0 or 8
APPNRecord	0 or (8 x APPNRecordLength)

APAssociationType Access point association type. The access network shall set this field to association type of the access points listed in APPIRecord according to Table 5.12.6.2.5–2

**Table 5.12.6.2.5–2 Access Point Association Type Field**

Value (binary)	Access Point Association Type
000	The access network allows any access terminals to negotiate HRPD sessions and receive any services available at the access network.
001	The access network allows any access terminals to negotiate HRPD sessions and receives page at the access network. The access network may provide services to only selected access terminals.
010	The access network negotiates HRPD sessions and provides services only to selected access terminals.
011-110	Reserved.
111	There is no designated association type corresponding to access points in this APPIRecord.

1	APSubnetSameAsPrevious	The access network shall set this field to '1' if the HRPD subnet
2		associated with this record is identical to the HRPD subnet in the
3		previous record. Otherwise, the access network shall set this field
4		to '0'.
5	APBandSameAsPrevious	The access network shall set this field to '1' if the band class
6		value associated with this record is identical to the band class
7		value in the previous record. Otherwise, the access network shall
8		set this field to '0'.
9	APChannelSameAsPrevious	The access network shall set this field to '1' if the CDMA Channel
10		number associated with this record is identical to the CDMA
11		Channel number in the previous record. Otherwise, the base
12		station shall set this field to '0'.
13	APPNRecordSameAsPrevious	The access network shall set this field to '1' if the list of PN
14		Offsets associated with this record is identical to the list of PN
15		Offsets associated with the previous record. Otherwise, the access
16		network shall set this field to '0'.
17	APSubnetLength	Access Point subnet length. The access network shall omit this
18		field if the APSubnetSameAsPrevious field is set to '1'. Otherwise,
19		the access network shall set this field to the length of the
20		following APSubnet field.
21	APSubnet	Access Point subnet. The access network shall omit this field if
22		the APSubnetSameAsPrevious field is set to '1'. Otherwise, the
23		access network shall set this field to the Sector Subnet
24		identification of the access networks which the access point pilot
25		information in this record are neighbor of.
26	APBand	Access Point Band class. The access network shall omit this field
27		if the APBand field is set to '1'. Otherwise, the access network
28		shall set this field according to the band class, as defined in [18],
29		of the access points listed in this record.
30	APChannel	Access Point Channel assignment. The access network shall omit
31		this field if the APChannelSameAsPrevious field is set to '1'.
32		Otherwise, the access network shall set this field to the CDMA
33		Channel number corresponding to the CDMA frequency
34		assignment of the access points listed in this record.
35	APPNRecordType	Access Point PN Record Type. The access network shall omit this
36		field if the APPNRecordSameAsPrevious field is set to '1'.
37		Otherwise, the access network shall set this field according to the
38		APPNRecord field including in this record.
39	APPNRecordLength	Access Point PN Record Length. The access network shall omit
40		this field if the APPNRecordSameAsPrevious field is set to '1'.
41		Otherwise, the access network shall set this field to the number of
42		octets in the APPNRecord field following this field.

## APPNRecord

Access Point PN Record. The access network shall omit this field if the APPNRecordSameAsPrevious field is set to '1'. Otherwise, the access network shall set this field as follow.

If the APPNRecordType field is set to '000', then this field shall be set as

APPNCount	7
-----------	---

APPNCount occurrences of the following field:

APPN	9
------	---

## APPNCount

Access Point PN Count. The access network shall set this field to the number of APPN fields in this record following this field.

## APPN

Access point pilot PN sequence offset index. The access network shall set this field to the pilot PN sequence offset allocated for access points in this area, in units of 64 PN chips.

If the APPNRecordType field is set to '001', then this field shall be set as

APPNCount	8
APPNStart	9
APPNInc	4

## APPNCount

Access Point PN Count. The access network shall set this field to the number of pilot PN sequence offset in the series listed in this record.

## APPNStart

Access point pilot PN sequence offset index start. The access network shall set this field to the smallest pilot PN sequence offset, in units of 64 PN chips, in the series listed in this record allocated for access points in this area.

## APPNInc

Access Point pilot PN sequence offset index increment. The access network shall set this field to the pilot PN sequence increment, in units of 64 PN chips, that such that the pilot PN sequence offsets in the series allocated to the access points in this area are:  $APPNStart + (k \times APPNInc)$  where  $k = 0, \dots, APPNCount - 1$ .

## Reserved

The number of bits in this field is equal to the number needed to make the message length an integer number of octets. The access network shall set this field to zero. The access terminal shall ignore this field.

<b>Channels</b>	CCsyn	<b>SLP</b>	Best Effort
<b>Addressing</b>	Broadcast	<b>Priority</b>	30

#### 5.12.6.2.6 AccessPointIdentification

The AccessPointIdentification message is used to convey the identity and other information of the access point transmitting this message to the access terminals.

Field	Length (bits)
MessageID	8
AssociationType	3
SubnetLength	7
Subnet	SubnetLength+1
APIDLength	4
APID	16 x APIDLength
APIDMask	8
1xAcquisitionIncluded	1
1xSID	0 or 15
1xNID	0 or 16
1xBandClass	0 or 5
1xChannel	0 or 11
1xPNOffset	0 or 9
LocationRecordType	3
LocationRecordLength	5
LocationRecord	8 x LocationRecordLength
HandoffInformationCount	3

HandoffInformationCount occurrences of the following record

HandoffInformationRecord	Variable
--------------------------	----------

Reserved	0 – 7 (as needed)
----------	-------------------

**MessageID** The access network shall set this field to 0x05.

**Association Type** Access point association type. The access network shall set this field to association type of the access network according to [Table 5.12.6.2.5-2](#).

1	SubnetLength	The access network shall set this field to the length of the following
2		Subnet field minus one.
3	Subnet	The access network shall set this field to the Sector Subnet identification
4		of the access network.
5	APIDLength	Access Point identification length. The access network shall set this field
6		to the length of the access point identification in units of 16 bits.
7	APID	Access Point identification. The access network shall set this field to its
8		access point identification number.
9	APIDMask	Access Point identification mask. The access network shall set this field
10		to the number of consecutive bits (starting from the most significant bit)
11		of APID which identifies the group of access points.
12	1xAcquisitionIncluded	1x acquisition information included. The access network shall set
13		this field to '1' if the 1x acquisition information associated with this
14		access network is included in this message. Otherwise, this field shall be
15		set to '0'.
16	1xSID	System identification. The access network shall omit this field if the
17		1xAcquisitionIncluded field is set to '0'. Otherwise, the access network
18		shall set this field to the system identification number of the cdma2000
19		1x base station associated with the access network.
20	1xNID	Network identification. This field serves as a sub-identifier of a system as
21		defined by the owner of the SID. The access network shall omit this field
22		if the 1xAcquisitionIncluded field is set to '0'. Otherwise, the access
23		network shall set this field to the network identification number of the
24		cdma2000 1x base station associated with this access network.
25	1xBandClass	The access network shall omit this field if the 1xAcquisitionIncluded field
26		is set to '0'. Otherwise, the access network shall set this field according
27		to the band class, as defined in [18], of the cdma2000 1x base station
28		associated with this access network.
29	1xChannel	The access network shall omit this field if the 1xAcquisitionIncluded field
30		is set to '0'. Otherwise, the access network shall set this field according
31		to the CDMA Channel number corresponding to the CDMA frequency
32		assignment, as defined in [18], of the cdma2000 1x base station
33		associated with this access network.
34	1xPNOffset	The access network shall omit this field if the 1xAcquisitionIncluded field
35		is set to '0'. Otherwise, the access network shall set this field to the pilot
36		PN sequence offset, in units of 64 PN chips, of the cdma2000 1x base
37		station associated with this access network.

LocationRecordType The access network shall set this field based on the type of the LocationRecord field included in this message.

LocationRecordLength The access network shall set this field to the number of octets in the fields included in LocationRecord field. If LocationRecordType field is set to '000', then this field shall be set to zero.

LocationRecord The Location record fields are determined by the value of LocationRecordType, as described below.

If LocationRecordType = '000', the LocationRecord field shall be omitted.

If LocationRecordType = '001', the LocationRecord field shall be:

Latitude	22
Longitude	23
LocationUncHorizontal	4
Height	14
LocationUncVertical	4
Reserved	0-7

Latitude Base station latitude. The access network shall set this field to its latitude in units of 0.25 second, expressed as a two's complement signed number with positive numbers signifying North latitudes. The access network shall set this field to a value in the range -1296000 to 1296000 inclusive (corresponding to a range of -90° to +90°). The base station shall set this field to all zeros if its latitude is not known.

Longitude Base station longitude. The access network shall set this field to its longitude in units of 0.25 second, expressed as a two's complement signed number with positive numbers signifying East longitude. The access network shall set this field to a value in the range -2592000 to 2592000 inclusive (corresponding to a range of -180° to +180°). The base station shall set this field to all zeros if its longitude is not known.

LocationUncHorizontal Horizontal location uncertainty. The access network shall set this field to the circular horizontal location uncertainty, as specified in [Table 5.12.6.2.6-1](#). The value of this field indicates the radius of a circular 95% confidence coverage area.

**Table 5.12.6.2.6-1 Horizontal Position Uncertainty**

'0000'	LocationUncHorizontal < 20 m
'0001'	20 m <= LocationUncHorizontal < 40 m

'0010'	40 m <= LocationUncHorizontal < 70 m
'0011'	70 m <= LocationUncHorizontal < 100 m
'0100'	100 m <= LocationUncHorizontal < 200 m
'0101'	200 m <= LocationUncHorizontal < 400 m
'0110'	400 m <= LocationUncHorizontal < 700 m
'0111'	700 m <= LocationUncHorizontal < 1,000 m
'1000'	1,000 m <= LocationUncHorizontal < 2,000 m
'1001'	2,000 m <= LocationUncHorizontal < 4,000 m
'1010'	4,000 m <= LocationUncHorizontal < 7,000 m
'1011'	7,000 m <= LocationUncHorizontal < 10,000 m
'1100'	10,000 m <= LocationUncHorizontal < 20,000 m
'1101'	20,000 m <= LocationUncHorizontal < 40,000 m
'1110'	40,000 m <= LocationUncHorizontal < 70,000 m
'1111'	70,000 m <= LocationUncHorizontal

**Height** Base station height. The access network shall set this field to the height, above the WGS-84 reference ellipsoid, in units of 1 meter, in the range from -500 m to 15,882 m, where the binary value of the field conveys the height plus 500 m. The access network shall set this field to all ones if its height is not known.

**LocationUncVertical** Vertical location uncertainty. The access network shall set this field to the vertical location uncertainty, as specified in [Table 5.12.6.2.6-2](#) ~~Table 5.12.6.2.6-2~~. The value of this field indicates the one-sigma uncertainty of HEIGHT within the corresponding horizontal coverage area.

**Table 5.12.6.2.6-2 Vertical Position Uncertainty**

'0000'	0 < LocationUncVertical < 1 m
'0001'	1 m <= LocationUncVertical < 2 m
'0010'	2 m <= LocationUncVertical < 4 m
'0011'	4 m <= LocationUncVertical < 7 m
'0100'	7 m <= LocationUncVertical < 10 m
'0101'	10 m <= LocationUncVertical < 20 m
'0110'	20 m <= LocationUncVertical < 40 m
'0111'	40 m <= LocationUncVertical < 70 m

'1000'	70 m <= LocationUncVertical < 100 m
'1001'	100 m <= LocationUncVertical < 200 m
'1010'	200 m <= LocationUncVertical < 400 m
'1011'	400 m <= LocationUncVertical < 700 m
'1100'	700 m <= LocationUncVertical < 1,000 m
'1101'	1,000 m <= LocationUncVertical < 2,000 m
'1110'	2,000 m <= LocationUncVertical < 4,000 m
'1111'	4,000 m <= LocationUncVertical

**HandoffInformationCount** The access network shall set this field to the number of handoff information record following this field.

**HandoffInformationRecord** The access network shall include HandoffInformationCount occurrences of this record. The access network shall set this record as shown in [Table 5.12.6.2.6-3](#) corresponding to the information to assist handoff into the access point.

**Table 5.12.6.2.6-3 Handoff Information Record**

Field	Length
HandoffInfoType	3
HandoffInfoLength	8
HandoffInfoValue	HandoffInfoLength

**HandoffInfoType** The access network shall set this field according to the HandoffInfoValue field in this record.

**HandoffInfoLength** The access network shall set this field to the length of the following HandoffInfoValue field.

**HandoffInfoValue** The access network shall set this field as follows:

If the HandoffInfoType field is set to '000', then this field shall be set as

IOSMSCID	24
IOSCELLID	16

**IOSMSCID** MSC ID of the base station. The access network shall set this field to the MSC ID value that the other base station uses in the network (see [19]) for handoff into the cdma2000 1x base station associated with this access network.



IOSCELLID CELL ID of the base station. The access network shall set this field to the CELL ID value that the other base station uses in the network (see [19]) for handoff into the cdma2000 1x base station associated with this access network.

If the HandoffInfoType field is set to '001', then this field shall be set as

PSMMSignatureCount	3
--------------------	---

PSMMSignatureCount occurrences of the following field:

PSMMSignature	21
---------------	----

PSMMSignatureCount The access network shall set this field to the number of occurrences of the PSMMSignature field in this HandoffInformationRecord.

PSMMSignature The access network shall set this field to the signature of the associated cdma2000 1x base station to be included in 1x Pilot Strength Measurement Message during handoff to the 1x base station. The 15 MSBs are used in PILOT\_PN\_PHASE field and the 6 LSBs are used in PILOT\_STRENGTH field.

If the HandoffInfoType field is set to '010', then this field shall be set as

RUPSignatureCount	3
-------------------	---

RUPSignatureCount occurrences of the following field:

RUPSignature	21
--------------	----

RUPSignatureCount The access network shall set this field to the number of occurrences of the RUPSignature field in this HandoffInformationRecord.

RUPSignature The access network shall set this field to the signature to be included in the Route Update message during handoff from another access network to the access network. The 15 MSBs are used in PilotPNPhase field and the 6 LSBs are used in PilotStrength field.

All other values of the HandoffInfoType field are reserved.

Reserved The number of bits in this field is equal to the number needed to make the message length an integer number of octets. The access network shall set this field to zero. The access terminal shall ignore this field.

<b>Channels</b>	CC	<b>SLP</b>	Best Effort
<b>Addressing</b>	Broadcast	<b>Priority</b>	30

#### 5.12.6.2.7 AccessPointIdentificationText

The AccessPointIdentificationText message is used to convey the human-readable identifier of the access point transmitting this message to the access terminals.

Field	Length (bits)
MessageID	8
Reserved	3
MsgEncoding	5
NumFields	8

NumFields occurrences of the following field

CHARi	Variable – see [3]
-------	--------------------

Reserved	0 – 7 (as needed)
----------	-------------------

- MessageID** The access network shall set this field to 0x06.
- Reserved** The access network shall set this field to zero. The access terminal shall ignore this field.
- MsgEncoding** Message encoding. See [3].
- Support of an encoding method does not imply that the entire encodable character set needs to be supported. In general, once the supported character set is determined, various subsets of the character set can be supported. If a message is comprised entirely of characters from a supported subset of a character set, it can be displayed. If a message contains an unsupported character of a character set, it can be discarded.
- NumFields** If the MsgEncoding field is set to '00101' (Shift-JIS) or '00110' (Korean), this field indicates the total length in bytes of the CHARi field; otherwise this field shall be set to the number of characters included in this occurrence of the encoding-specific-fields.
- CHARi** Character. NumFields occurrences of this field shall be included. The access network shall set each occurrence of this field to represent the character string that identifies this access network. The character string shall be included in the order of appearance.
- Reserved** The number of bits in this field is equal to the number needed to make the message length an integer number of octets. The access network shall set this field to zero. The access terminal shall ignore this field.

<b>Channels</b>	CC	<b>SLP</b>	Best Effort
<b>Addressing</b>	Broadcast	<b>Priority</b>	40

### 5.12.6.3 Interface to Other Protocols

#### 5.12.6.3.1 Commands Sent

This protocol sends the following command:

- *RouteUpdate.SendRouteUpdate*

#### 5.12.6.3.2 Indications

This protocol registers to receive the following indications:

- *RouteUpdate.IdleHO*
- *ConnectedState.ConnectionClosed*
- *SignalingAdaptation.EnteringTunnelState* (access terminal only)

### 5.12.7 Configuration Attributes

The simple configurable attributes are listed in [Table 5.12.7-1](#)~~Table 5.12.7-1~~. The access network and the access terminal shall use the default values that are typed in ***bold italics***.

**Table 5.12.7-1 Configurable Simple Attributes**

Attribute ID	Attribute	Values	Meaning
0xff	OverheadCachePeriod	<b><i>0x00</i></b>	Value of the long-term overhead cache period is zero.
		0x01 to 0xff	Value of the long-term overhead cache period in units of 5.12 seconds. The access network shall set the configured value of this attribute such that it is greater than or equal to the configured value of the ShortTermOverheadCachePeriod.
0xfe	RouteUpdateTriggerCodeListSize	<b><i>0x00</i></b>	Sending of RouteUpdate messages based on the RouteUpdateTriggerCodeList is disabled.
		0x01 – 0x05	Size of the RouteUpdateTriggerCodeList
		All other values	Reserved.

Attribute ID	Attribute	Values	Meaning
0xfd	ShortTermOverheadCachePeriod <sup>106</sup>	0x00	Value of the short-term overhead cache period is zero.
		0x01 to 0xff	Value of the short-term overhead cache period in units of 5.12 seconds.
0xfc	IsSupervisionDisablingWhileIdlewithCacheSupported	0x00	Suspending the overhead supervision timers while idle if the overhead information is cached is not supported.
		0x01	Suspending the overhead supervision timers while idle if the overhead information is cached is supported.
		All other values	Reserved.
0xfb	ReselectionClass	0x00	Value of ReselectionClass for Inter-RAT Idle mode reselection is zero.
		0x01-0x07	Value of ReselectionClass for Inter-RAT Idle mode reselection.

### 5.12.8 Protocol Numeric Constants

Constant	Meaning	Value
N <sub>OMPT</sub> Type	Type field for this protocol	Table 2.5.4-1 of [10]
N <sub>OMPI</sub> InterRAT	Subtype field for this protocol	0x0001
T <sub>OMPQ</sub> CSupervision	QuickConfig supervision timer	12 Control Channel cycles
T <sub>OMPSP</sub> Supervision	SectorParameters supervision timer	12 Control Channel cycles
N <sub>OMPS</sub> SectorParameters	The recommended maximum number of Control Channel cycles between two consecutive SectorParameters message transmissions	4

### 5.12.9 Session State Information

The Session State Information record (see 13.8 of [10]) consists of parameter records. The parameter records for this protocol consist of only the configuration attributes of this protocol.

<sup>106</sup> The access network needs to set this attribute such that the information which identifies the pilot in the cache does not repeat within this period.

## 6 INITIAL MEAN OUTPUT POWER REQUIREMENT FOR ACTIVE INTER-RAT HANDOFF

### 6.1 Access Terminal Subtype 3 Reverse Traffic Channel MAC Protocol Requirement

This section provides the initial mean output power calculation requirement for an access terminal when it performs the inter-RAT active handoff. The access terminal shall follow the subtype 3 Reverse Traffic Channel MAC protocol procedures as defined in [1] and the inter-RAT interworking requirement specified in this section.

#### 6.1.1 Return Indications

This section supersedes to section 10.11.2.2 of [1].

This protocol returns the following indications:

- *LinkAcquired*
- *SupervisionFailed*
- *OpenLoopParametersIssued*

#### 6.1.2 Public Data

This section supersedes 10.11.2.3 of [1].

This protocol shall make the following data public:

- Subtype for this protocol
- ARQMode
- AuxiliaryPilotChannelGain
- AuxiliaryPilotChannelMinPayload
- Rate1M8Supported
- RRI (Payload Index and sub-packet Index)
- RRChannelGain
- TxT2P
- RPCStep
- $MI_{\text{RTCMAC}}$
- $MQ_{\text{RTCMAC}}$
- RACHannelGain for each pilot in the Active Set
- $X_0$

#### 6.1.3 Inactive State

This section supersedes 10.11.6.1.4 of [1].

When the protocol is in the Inactive State the access terminal and the access network wait for an *Activate* command.

1 Upon entering the state, the access terminal shall set  $X_0$  public data to NULL.

2 Upon entering the state, and if the access terminal has queued HRPDOpenLoopParameters  
3 message, the access terminal shall discard the queued HRPDOpenLoopParameters message.

4 If the access terminal receives an HRPDOpenLoopParameters message in this state, then the  
5 access terminal shall queue the latest HRPDOpenLoopParameters message for processing in  
6 the Setup State.

7 If the access terminal or the access network receives a *SignalingAdaptation.LinkAcquired*  
8 indication in this state, then the protocol shall return a *LinkAcquired* indication.

9 When the access network sends a HRPDOpenLoopParameters message it shall return a  
10 *OpenLoopParametersIssued* indication.

#### 11 6.1.4 Setup State

12 This section refers to section 10.11.6.1.5 of [1].

##### 13 6.1.4.1 Access Terminal Requirements For Calculating Initial Mean Output Power

14 This section is under the Access Terminal Requirements section referring to 10.11.6.1.5.1 of  
15 [1].

16 Upon entering the Setup State, if the access terminal has queued an  
17 HRPDOpenLoopParameters message, the access terminal shall calculate the initial mean  
18 output power,  $X_0$ , of the Pilot Channel of the Reverse Traffic Channel as follows:

$$19 \quad X_0 = - \text{Mean } R_X \text{ Power (dBm)} + \text{OpenLoopAdjust} + \text{PilotInitialAdjust}$$

20 where

$$21 \quad \text{PilotInitialAdjust} = \text{InitialAdjust} + \min(\text{PilotStrengthCorrectionMax}, \max(\text{PilotStrengthNominal} \\ 22 \quad - \text{PilotStrength}, \text{PilotStrengthCorrectionMin})),$$

23 PilotStrength is the pilot strength of the sector to which the access terminal is initiating the  
24 Reverse Traffic Channel transmission and the Mean  $R_X$  Power is estimated throughout the  
25 initial Pilot Channel transmission. If the open loop parameters in the  
26 HRPDOpenLoopParameters message are indicated common for all the pilots in the  
27 TrafficChannelAssignment message, the parameters PilotStrengthNominal,  
28 PilotStrengthCorrectionMin, PilotStrengthCorrectionMax, InitialAdjust and OpenLoopAdjust are  
29 set to values common to all the PilotPNs in the received TrafficChannelAssignment<sup>107</sup> message.  
30 If the open loop parameters in the HRPDOpenLoopParameters message are grouped at a per  
31 pilot basis, the parameters in the above equation shall be corresponding to the forward link  
32 pilot in the TrafficChannelAssignment message selected by the access terminal. The strength  
33 of this pilot shall be used by the access terminal as the PilotStrength in above equation.

---

<sup>107</sup> TrafficChannelAssignment message is sent right after the HRPDOpenLoopParameters message is sent.

## 6.1.5 Message Format

This section refers to section 10.11.6.2 of [1].

### 6.1.5.1 HRPDOpenLoopParameters

The access network shall send an HRPDOpenLoopParameters message as part of the preparation for an active handoff from the other radio access technology to HRPD.

Field	Length (bits)
Message ID	8
NumPilots	4

If NumPilots is set to '0000', one occurrence of the following record; If NumPilots is not set to '0000', NumPilots occurrences of the following record:

PilotPN	0 or 9
OpenLoopAdjust	8
InitialAdjust	5
PilotStrengthIncluded	1
PilotStrengthNominal	0 or 3
PilotStrengthCorrectionMin	0 or 3
PilotStrengthCorrectionMax	0 or 3

Reserved	Variable
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**MessageID** The access network shall set this field to 0x07.

**NumPilots** The access network shall set this field to either a zero or a non-zero value. If this field is set to zero, it indicates that the values in the following fields of the occurrence are common to all the PilotPNs in the TrafficChannelAssignment message. Otherwise, the same value as the NumPilots field of the appended TrafficChannelAssignment message shall be set to the field, and the following fields are associated with the PilotPN in the occurrence.

**PilotPN** If NumPilots field is not set to zero, the access network shall set this field to same value as the PilotPN field of the appended TrafficChannelAssignment message. Otherwise, this field shall be omitted.

**OpenLoopAdjust** The access network shall set this field to the negative of the nominal power to be used by access terminals in the open loop power estimate, expressed as an unsigned value in units of 1 dB. The value used by the access terminal is -1 times the value of this field.

**InitialAdjust** The access network shall set this field to the correction factor to be used by access terminals in the open loop power estimate for the initial transmission on the Reverse Traffic Channel, expressed as a two's complement value in units of 1 dB.

**PilotStrengthIncluded** The access network shall set this field to '0' if the PilotStrengthNominal, PilotStrengthCorrectionMin and PilotStrengthCorrectionMax fields are omitted in the HRPDOpenLoopParameters message. Otherwise it shall set this field to '1'.

**PilotStrengthNominal** If the PilotStrengthIncluded field is set to '0' the access network shall omit this field. Otherwise, the access network shall include this field and set it according to [Table 6.1.5.1-1](#)~~Table 6.1.5.1-1~~.

**Table 6.1.5.1-1 PilotStrengthNominal Encoding**

Field value (binary)	Meaning
'000'	0 dB
'001'	- 1 dB
'010'	- 2 dB
'011'	- 3 dB
'100'	- 4 dB
'101'	1 dB
'110'	2 dB
'111'	3 dB

**PilotStrengthCorrectionMin** If the PilotStrengthIncluded field is set to '0' the access network omit this field. Otherwise, the access network shall include this field and set it according to [Table 6.1.5.1-2](#)~~Table 6.1.5.1-2~~.



**Table 6.1.5.1-2 PilotStrengthCorrectionMin Encoding**

<b>Field value (binary)</b>	<b>Meaning</b>
'000'	0 dB
'001'	- 1 dB
'010'	- 2 dB
'011'	- 3 dB
'100'	- 4 dB
'101'	- 5 dB
'110'	Reserved
'111'	Reserved

PilotStrengthCorrectionMax

If the PilotStrengthIncluded field is set to '0' the access network shall omit this field. Otherwise, the access network shall include this field and set it according to [Table 6.1.5.1-3](#) ~~Table 6.1.5.1-3~~.

**Table 6.1.5.1-3 PilotStrengthCorrectionMax Encoding**

<b>Field value (binary)</b>	<b>Meaning</b>
'000'	0 dB
'001'	1 dB
'010'	2 dB
'011'	3 dB
'100'	4 dB
'101'	5 dB
'110'	Reserved
'111'	Reserved

Reserved

The access network shall set this field to zero, The access terminal shall ignore this field.

<b>Channels</b>	CC
<b>Addressing</b>	unicast

<b>SLP</b>	Best Effort
<b>Priority</b>	40

## 6.2 Subtype 2 Physical Layer Protocol Requirements

This section supersedes 13.2.1.2.4.1 of [1].

Open-loop operation shall be based on the power of the received Forward Pilot Channel (see 13.3.1.3.2.1 of [1]).

The nominal access probe structure and its transmit power requirements are defined as part of the Access Channel MAC Protocol. The power of the Access Data Channel relative to that of the Pilot Channel shall be as specified in [Table 6.2-1](#)~~Table 6.2-1~~ in which DataOffsetNom, DataOffset9k6, DataOffset19k2, and DataOffset38k4 are public data of the Access Channel MAC Protocol. The output power of the Pilot Channel during the preamble portion of an access probe shall be increased relative to the nominal Pilot Channel power during the data portion of the probe by an amount such that the total output power of the preamble and data portion of the access probe, if transmitted at 9.6 kbps, are the same.

Once instructed by the Reverse Traffic Channel MAC Protocol, the access terminal initiates Reverse Traffic Channel transmission.

If the initial mean output power of the Pilot Channel of the Reverse Traffic Channel is calculated by the Reverse Traffic Channel MAC Protocol (see 6.1), then

- The initial mean output power of the Pilot Channel of the Reverse Traffic Channel shall be set to  $X_0$ , which is public data of the Reverse Traffic Channel MAC Protocol.
- The subsequent mean output power of the Pilot Channel of the total reverse link transmission shall be the mean output power of the Pilot Channel at the initial Reverse Traffic Channel transmission minus the difference in the forward link mean received signal power from the initial Pilot Channel transmission to the current Reverse Traffic Channel transmission, plus closed loop corrections as specified in 13.2.1.2.4.2 of [1].

Otherwise,

- The initial mean output power of the Pilot Channel of the Reverse Traffic Channel shall be equal to the mean output power of the Pilot Channel at the end of the last Access Channel probe minus the difference in the forward link mean received signal power from the end of the last Access Channel probe to the start of the Reverse Traffic Channel transmission.
- The subsequent mean output power of the Pilot Channel of the total reverse link transmission shall be the mean output power of the Pilot Channel at the end of the last Access Channel probe minus the difference in the forward link mean received signal power from the end of the last Access Channel probe to the current Reverse Traffic Channel transmission, plus closed loop corrections as specified in 13.2.1.2.4.2 of [1].

The accuracy of the incremental adjustment to the mean output power, as dictated by the Access Channel MAC Protocol and the Reverse Traffic Channel MAC Protocol, shall be  $\pm 0.5$  dB or 20% of the change in dB, whichever is greater.

- When the access terminal is transmitting the Access Channel, the power of the Data Channel relative to that of the Pilot Channel during the data portion of the Access Channel transmission shall be as specified in [Table 6.2-1](#)~~Table 6.2-1~~ the Reverse Traffic Channel transmission.

- The subsequent mean output power of the Pilot Channel of the total reverse link transmission shall be the mean output power of the Pilot Channel at the end of the last Access Channel probe minus the difference in the forward link mean received signal power from the end of the last Access Channel probe to the current Reverse Traffic Channel transmission, plus closed loop corrections as specified in 13.2.1.2.4.2 of [1].

The accuracy of the incremental adjustment to the mean output power, as dictated by the Access Channel MAC Protocol and the Reverse Traffic Channel MAC Protocol, shall be  $\pm 0.5$  dB or 20% of the change in dB, whichever is greater.

When the access terminal is transmitting the Access Channel, the power of the Data Channel relative to that of the Pilot Channel during the data portion of the Access Channel transmission shall be as specified in [Table 6.2-1](#) in which DataOffsetNom, DataOffset9k6, DataOffset19k2, and DataOffset38k4 are public data of the Access Channel MAC Protocol. When the access terminal is transmitting the Access Channel, the power of the Pilot Channel during the preamble portion of the Access Channel transmission shall be equal to the total power transmitted during the data portion of the Access Channel transmission when the Data Channel is transmitted at 9.6 kbps.

**Table 6.2-1 Relative Power Levels vs. Data Rate for Access Channel Transmissions**

Data Rate (kbps)	Data Channel Gain Relative to Pilot (dB)
0	$-\infty$ (Data Channel Is Not Transmitted)
9.6	DataOffsetNom + DataOffset9k6 + 3.75
19.2	DataOffsetNom + DataOffset19k2 + 6.75
38.4	DataOffsetNom + DataOffset38k4 + 9.75

During the transmission of the RRI Channel, the power of the RRI Channel relative to that of the Pilot Channel shall be as specified by RRIChannelGain, where RRIChannelGain is public data of the Reverse Traffic Channel MAC Protocol.

During the transmission of the DSC Channel, the power of the DSC Channel relative to that of the Pilot Channel shall be as specified by DSCChannelGain, where DSCChannelGain is public data of the Forward Traffic Channel MAC Protocol.

During the transmission of the DRC Channel, the power of the DRC Channel relative to that of the Pilot Channel shall be as specified by DRCChannelGain, where DRCChannelGain is public data of the Forward Traffic Channel MAC Protocol.

During the transmission of the ACK Channel, the power of the ACK Channel relative to that of the Pilot Channel shall be as specified by ACKChannelGain, where ACKChannelGain is public data of the Forward Traffic Channel MAC Protocol if the access terminal is transmitting an ACK in response to a Single User packet.

During the transmission of the ACK Channel, the power of the ACK Channel relative to that of the Pilot Channel shall be as specified by ACKChannelGain + DeltaACKChannelGainMUP if the access terminal is transmitting an ACK in response to a Multi-User packet, where

ACKChannelGain and DeltaACKChannelGainMUP are public data of the Forward Traffic Channel MAC Protocol.

During the transmission of the Data Channel, the power of the Data Channel relative to that of the Pilot Channel shall be as specified by TxT2P, where TxT2P is public data of the Reverse Traffic Channel MAC Protocol.

The Auxiliary Pilot Channel shall be transmitted during the  $n^{\text{th}}$  half slot if the Reverse Traffic Channel transmit payload is greater than or equal to AuxiliaryPilotChannelMinPayload during half slots  $n-1$  or  $n+1$ , where AuxiliaryPilotChannelMinPayload is public data of the Reverse Traffic Channel MAC Protocol.

If the Auxiliary Pilot Channel is transmitted during the  $n^{\text{th}}$  half slot, its power shall be specified relative to the maximum of the Data Channel Gains during half-slots  $n-1$  and  $n+1$  by AuxiliaryPilotChannelGain, where AuxiliaryPilotChannelGain is public data of the Reverse Traffic Channel MAC Protocol.

The access terminal shall maintain the power of the RRI Channel, DSC Channel, DRC Channel, ACK Channel, and Data Channel relative to that of the Pilot Channel, to within  $\pm 0.25$  dB of the specified values.

The access terminal shall maintain the power of the Auxiliary Pilot Channel during the  $n^{\text{th}}$  half slot relative to that of the maximum of the Data Channel Gains during half slots  $n-1$  and  $n+1$  to within  $\pm 0.25$  dB of the specified values.

If TxT2P is less than or equal to TxT2P<sub>min</sub> (both public data of the Reverse Traffic Channel MAC Protocol) and the access terminal is unable to transmit the Reverse Traffic Channel at the required output power level, the access terminal shall reduce the power of the DRC Channel and the ACK Channel accordingly. The maximum power reduction for the DRC Channel corresponds to gating off the DRC Channel. The maximum power reduction for the ACK Channel corresponds to gating off the ACK Channel. If the ACK Channel is active, the ACK Channel power reduction shall occur only after the DRC Channel has been gated off. The access terminal shall perform the power reduction within one slot of determining that the access terminal is unable to transmit at the requested output power level.

### 6.3 Access Terminal Subtype 4 Reverse Traffic Channel MAC Protocol Requirement

This section provides the initial mean output power calculation requirement for an access terminal when it performs the inter-RAT active handoff. The access terminal shall follow the subtype 4 Reverse Traffic Channel MAC protocol procedures as defined in [10] and the inter-RAT interworking requirement specified in this section.

#### 6.3.1 Return Indications

This section supersedes to section 9.13.2.2 of [10].

This protocol returns the following indications:

- *LinkAcquired*
- *SupervisionFailed*
- *ReverseCDMAChannelDropped*
- *OpenLoopParametersIssued*

#### 6.3.2 Public Data

This section supersedes 9.13.2.3 of [10].

This protocol shall make the following data public:

- Subtype for this protocol
- ARQMode for each assigned Reverse CDMA Channel
- AuxiliaryPilotChannelGain
- AuxiliaryPilotChannelMinPayload
- RRI (Payload Index and sub-packet Index for each assigned Reverse CDMA Channel)
- RRChannelGain for each assigned Reverse CDMA Channel
- TxT2P for each assigned Reverse CDMA Channel
- RPCStep
- $MI_{\text{RTCMAC}}$
- $MQ_{\text{RTCMAC}}$
- RChannelGain for each pilot in the Active Set
- $X_0$  for each assigned Reverse CDMA Channel

#### 6.3.3 Inactive State

This section supersedes 9.13.6.1.4 of [10].

When the protocol is in the Inactive State the access terminal and the access network wait for an *Activate* command.

Upon entering the state, the access terminal shall set  $X_0$  public data to NULL for each assigned Reverse CDMA Channel.

Upon entering the state, and if the access terminal has queued HRPDOpenLoopParameters message, the access terminal shall discard the queued HRPDOpenLoopParameters message.

If the access terminal receives an HRPDOpenLoopParameters message in this state, then the access terminal shall queue the latest HRPDOpenLoopParameters message for processing in the Setup State.

If the access terminal or the access network receives a *SignalingAdaptation.LinkAcquired* indication in this state, then the protocol shall return a *LinkAcquired* indication.

When the access network sends a HRPDOpenLoopParameters message it shall return a *OpenLoopParametersIssued* indication.

#### 6.3.4 Setup State

This section refers to section 9.13.6.1.5 of [10].

##### 6.3.4.1 Access Terminal Requirements For Calculating Initial Mean Output Power

This section is under the Access Terminal Requirements section referring to 9.13.6.1.5.1 of [10].

Upon entering the Setup State, if the access terminal has queued an HRPDOpenLoopParameters message, the access terminal shall calculate the initial mean output power,  $X_0$ , of the Pilot Channel of the Reverse Traffic Channel for each of the reverse CDMA channel assigned to the access terminal as follows:

$$X_0 = -\text{Mean } R_X \text{ Power (dBm)} + \text{OpenLoopAdjust} + \text{PilotInitialAdjust}$$

where  $\text{PilotInitialAdjust} = \text{InitialAdjust} + \min(\text{PilotStrengthCorrectionMax}, \text{max}(\text{PilotStrengthNominal} - \text{PilotStrength}, \text{PilotStrengthCorrectionMin}))$ ,

PilotStrength is the pilot strength of the sector to which the access terminal is initiating the Reverse Traffic Channel transmission and the Mean  $R_X$  Power is estimated throughout the initial Pilot Channel transmission. If the open loop parameters in the HRPDOpenLoopParameters message are indicated common for all the pilots in the TrafficChannelAssignment message, the parameters PilotStrengthNominal, PilotStrengthCorrectionMin, PilotStrengthCorrectionMax, InitialAdjust and OpenLoopAdjust are set to values common to all the PilotPNs in the received TrafficChannelAssignment<sup>108</sup> message. If the open loop parameters in the HRPDOpenLoopParameters message are grouped at a per pilot basis, the parameters in the above equation shall be corresponding to the forward link pilot in the TrafficChannelAssignment message selected by the access terminal. The strength of this pilot shall be used by the access terminal as the PilotStrength in above equation.

#### 6.3.5 Message Format

This section refers to section 9.13.6.2 of [10].

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<sup>108</sup> TrafficChannelAssignment message is sent right after the HRPDOpenLoopParameters message is sent.

## 6.3.5.1 HRPDOpenLoopParameters

The access network shall send an HRPDOpenLoopParameters message as part of the preparation for an active handoff from the other radio access technology to HRPD.

Field	Length (bits)
Message ID	8
NumPilots	4

NumPilots occurrences of the following record:

PilotPN	9
---------	---

NumReverseCDMAChannels	4
------------------------	---

If NumReverseCDMAChannels is set to '0000', one occurrence of the following record; If NumReverseCDMAChannels is not set to '0000', NumReverseCDMAChannels occurrences of the following record:

{0

ReverseCDMAChannel	0 or 24
--------------------	---------

If NumPilots is set to '0000', one occurrence of the following record; If NumPilots is not set to '0000', NumPilots occurrences of the following record:

{1

PilotIncluded	0 to 1
OpenLoopAdjust	0 or 8
InitialAdjust	0 or 5
PilotStrengthIncluded	0 or 1
PilotStrengthNominal	0 or 3
PilotStrengthCorrectionMin	0 or 3
PilotStrengthCorrectionMax	0 or 3

}1

}0

Reserved	Variable
----------	----------

MessageID

The access network shall set this field to 0x07.

1	NumPilots	The access network shall set this field to either a zero or a non-zero
2		value. If this field is set to zero, it indicates that the values of the fields
3		from PilotIncluded to PilotStrengthCorrectionMax are common to all the
4		PilotPNs in the TrafficChannelAssignment message. Otherwise, the same
5		value as the NumPilots field of the appended TrafficChannelAssignment
6		message shall be set to the field, and the fields from OpenLoopAdjust to
7		PilotStrengthCorrectionMax of the ith occurrence with respect to
8		NumPilots are associated with the PilotPN of the ith occurrence with
9		respect to NumPilots.
10	PilotPN	If NumPilots field is not set to zero, the access network shall set this field
11		to same value as the PilotPN field of the appended
12		TrafficChannelAssignment message. Otherwise, this field shall be
13		omitted.
14	NumReverseCDMAChannels	
15		The access network shall set this field to either a zero or a non-zero
16		value. If this field is set to zero, it indicates that the values in the
17		following fields of the occurrence are common to all the reverse CDMA
18		channels in the TrafficChannelAssignment message. Otherwise, the same
19		value as the NumReverseCDMAChannels field of the appended
20		TrafficChannelAssignment message shall be set to the field.
21	ReverseCDMAChannel	
22		If NumReverseCDMAChannels field is not set to zero, the access network
23		shall set this field to the reverse CDMA channel for this the following
24		fields are included. Otherwise, this field shall be omitted.
25	PilotIncluded	If NumPilots field is set to zero, this field shall be omitted. Otherwise:
26		the access network shall set the nth occurrence of this field to '1' if the
27		sector which includes the pilot specified by the nth occurrence of the
28		field PilotPN is to assign the reverse CDMA channel specified by the field
29		ReverseCDMAChannel to the access terminal. Otherwise, the access
30		network shall set this field to '0'.
31	OpenLoopAdjust	If the PilotIncluded field is included and is equal to '0' , this field shall be
32		omitted. Otherwise:
33		The access network shall set this field to the negative of the nominal
34		power to be used by access terminals in the open loop power estimate,
35		expressed as an unsigned value in units of 1 dB. The value used by the
36		access terminal is -1 times the value of this field.



**InitialAdjust** If the PilotIncluded field is included and is equal to '0', this field shall be omitted. Otherwise:

The access network shall set this field to the correction factor to be used by access terminals in the open loop power estimate for the initial transmission on the Reverse Traffic Channel, expressed as a two's complement value in units of 1 dB.

**PilotStrengthIncluded**

If the PilotIncluded field is included and is equal to '0', this field shall be omitted:

The access network shall set this field to '0' if the PilotStrengthNominal, PilotStrengthCorrectionMin and PilotStrengthCorrectionMax fields are omitted in the HRPDOpenLoopParameters message. Otherwise it shall set this field to '1'.

**PilotStrengthNominal**

If the PilotIncluded field is included and is equal to '0' or if the PilotStrengthIncluded field is included and is set to '0', this field shall be omitted. Otherwise, the access network shall set this field according to [Table 6.3.5.1-1](#) ~~Table 6.3.5.1-1~~.

**Table 6.3.5.1-1 PilotStrengthNominal Encoding**

Field value (binary)	Meaning
'000'	0 dB
'001'	- 1 dB
'010'	- 2 dB
'011'	- 3 dB
'100'	- 4 dB
'101'	1 dB
'110'	2 dB
'111'	3 dB

**PilotStrengthCorrectionMin**

If the PilotIncluded field is included and is equal to '0' or if the PilotStrengthIncluded field is included and is set to '0', this field shall be omitted. Otherwise, the access network shall set this field according to [Table 6.3.5.1-2](#) ~~Table 6.3.5.1-2~~.

**Table 6.3.5.1-2 PilotStrengthCorrectionMin Encoding**

Field value (binary)	Meaning
'000'	0 dB
'001'	– 1 dB
'010'	– 2 dB
'011'	– 3 dB
'100'	– 4 dB
'101'	– 5 dB
'110'	Reserved
'111'	Reserved

PilotStrengthCorrectionMax

If the PilotIncluded field is included and is equal to '0' or if the PilotStrengthIncluded field is included and is set to '0', this field shall be omitted. Otherwise, the access network shall set this field according to [Table 6.3.5.1-3](#).

**Table 6.3.5.1-3 PilotStrengthCorrectionMax Encoding**

Field value (binary)	Meaning
'000'	0 dB
'001'	1 dB
'010'	2 dB
'011'	3 dB
'100'	4 dB
'101'	5 dB
'110'	Reserved
'111'	Reserved

Reserved The access network shall set this field to zero, The access terminal shall ignore this field.

<b>Channels</b>	CC	<b>SLP</b>	Best Effort
<b>Addressing</b>	unicast	<b>Priority</b>	40

## 6.4 Subtype 3 Physical Layer Protocol Requirements

This section supersedes 12.3.1.2.4.1 of [10].

Open-loop operation for each assigned reverse CDMA channel shall be based on the sum of the powers of the received Forward Pilot Channels (see 12.4.1.3.2.1 of [10]) associated with that assigned reverse CDMA channel. The nominal access probe structure and its transmit power requirements are defined as part of the Access Channel MAC Protocol. The power of the Access Data Channel relative to that of the Pilot Channel shall be as specified in [Table 6.4–1](#) ~~Table 6.4–1~~ in which DataOffsetNom, DataOffset9k6, DataOffset19k2, and DataOffset38k4 are public data of the Access Channel MAC Protocol. The output power of the Pilot Channel during the preamble portion of an access probe shall be increased relative to the nominal Pilot Channel power during the data portion of the probe by an amount such that the total output power of the preamble and data portion of the access probe, if transmitted at 9.6 kbps, are the same.

**Table 6.4–1 Relative Power Levels vs. Data Rate for Access Channel Transmissions**

Data Rate (kbps)	Data Channel Gain Relative to Pilot (dB)
0	$-\infty$ (Data Channel Is Not Transmitted)
9.6	DataOffsetNom + DataOffset9k6 + 3.75
19.2	DataOffsetNom + DataOffset19k2 + 6.75
38.4	DataOffsetNom + DataOffset38k4 + 9.75

Once instructed by the Reverse Traffic Channel MAC Protocol, the access terminal initiates Reverse Traffic Channel transmission.

If the initial mean output power of the Pilot Channel of the Reverse Traffic Channel is calculated by the Reverse Traffic Channel MAC Protocol (see 6.3), then, for each of the reverse CDMA channel assigned to the access terminal,

- The initial mean output power of the Pilot Channel of the Reverse Traffic Channel for each of the reverse CDMA channel assigned to the access terminal shall be set to  $X_0$  of that reverse CDMA channel, which is public data of the Reverse Traffic Channel MAC Protocol.
- The subsequent mean output power of the Pilot Channel for each of the reverse CDMA channel assigned to the access terminal shall be the mean output power of the Pilot Channel at the initial Reverse Traffic Channel transmission minus the difference in the forward link mean received signal power from the initial Pilot Channel transmission to the current Reverse Traffic Channel transmission, plus closed loop corrections as specified in 12.3.1.2.4.2 of [10]. The accuracy of the incremental adjustment to the mean output power for an active reverse CDMA channel, as dictated by the Access Channel MAC Protocol and the Reverse Traffic Channel MAC Protocol, shall be  $\pm 0.5$  dB or 20% of the change in dB, whichever is greater.

Otherwise,

- If the access terminal has transmitted an access probe on that carrier, the initial mean output power of the Pilot Channel of the Reverse Traffic Channel shall be equal to the mean output power of the Pilot Channel at the end of the last Access Channel probe minus the difference in the forward link mean received signal power from the end of the last Access Channel probe to the start of the Reverse Traffic Channel transmission. If the access terminal has not transmitted an access probe on that carrier, the initial mean output power of the Pilot Channel of that Reverse Traffic Channel shall be set to TxPilotInitPwr given by

$$\text{TxPilotInitPwr} = \text{TxPilotPwrRefCarrier (dBm)} - \text{OpenLoopPwrRefCarrier (dBm)} + \text{OpenLoopPwr (dBm)} + \text{TxInitAdjustServingSector (dB)}$$

where

- TxPilotPwrRefCarrier is the transmit power of the reverse link Pilot Channel on the ReferenceCDMAChannel
  - OpenLoopPwrRefCarrier is the open loop mean output power of the reverse link Pilot Channel of the ReferenceCDMAChannel
  - OpenLoopPwr is the open loop mean output power of the reverse link Pilot Channel on the reverse CDMA channel assigned to the access terminal
  - TxInitAdjustServingSector is the TxInitAdjustRelativeToReferenceCDMAChannel that corresponds to the forward link serving sector if it is included in the AdditionalCarriersInitTxPower attribute. If it is not included in the attribute, the access terminal shall set its value to 0 dB.
- The subsequent mean output power of the Pilot Channel of the reverse CDMA channel for which the access terminal has transmitted an access probe shall be the mean output power of the Pilot Channel at the end of the last Access Channel probe minus the difference in the forward link mean received signal power from the end of the last Access Channel probe to the current Reverse Traffic Channel transmission, plus closed loop corrections as specified in 12.3.1.2.4.2 of [10]. The subsequent mean output power of the Pilot Channel of the reverse CDMA channel for which the access terminal has not transmitted an access probe shall be the initial mean output power of the Pilot Channel minus the difference in the forward link mean received signal power of the associated forward link from the time of first transmission on the reverse CDMA channel to the current Reverse Traffic Channel transmission, plus closed loop corrections as specified in 12.3.1.2.4.2 of [10]. The accuracy of the incremental adjustment to the mean output power for an active reverse CDMA channel, as dictated by the Access Channel MAC Protocol and the Reverse Traffic Channel MAC Protocol, shall be  $\pm 0.5$  dB or 20% of the change in dB, whichever is greater.

When the access terminal is transmitting the Access Channel, the power of the Data Channel relative to that of the Pilot Channel during the data portion of the Access Channel transmission shall be as specified in [Table 6.4-1](#) ~~Table 6.4-1~~ in which DataOffsetNom, DataOffset9k6, DataOffset19k2, and DataOffset38k4 are public data of the Access Channel MAC Protocol. When the access terminal is transmitting the Access Channel, the power of the Pilot Channel during the preamble portion of the Access Channel transmission shall be equal to the total power transmitted during the data portion of the Access Channel transmission when the Data Channel is transmitted at 9.6 kbps.

During the transmission of the RRI Channel on each active reverse CDMA channel, the power of the RRI Channel relative to that of the Pilot Channel shall be as specified by RRIChannelGain, where RRIChannelGain is public data of the Reverse Traffic Channel MAC Protocol.

If the DSC Channel is transmitted for a forward CDMA channel, the power of the DSC Channel relative to that of the Pilot Channel of the associated reverse CDMA channel during the transmission of the DSC Channel shall be specified by DSCChannelGain, where DSCChannelGain is public data of the Forward Traffic Channel MAC Protocol. Each assigned forward CDMA channel and the reverse CDMA channel that is used to transmit the DSC Channel associated with each forward CDMA channel are public data of the Route Update Protocol.

During the transmission of the DRC Channel for each forward CDMA channel, the power of the DRC Channel relative to that of the Pilot Channel of the associated reverse CDMA channel, shall be as specified by DRCChannelGain, where DRCChannelGain is public data of the Forward Traffic Channel MAC Protocol.

During the transmission of the ACK Channel for each forward CDMA channel, the power of the ACK Channel relative to that of the Pilot Channel of the associated reverse CDMA channel, shall be as specified by ACKChannelGain if the access terminal is transmitting an ACK in response to a Single User packet, where ACKChannelGain is public data of the Forward Traffic Channel MAC Protocol.

During the transmission of the ACK Channel for each forward CDMA channel, the power of the ACK Channel relative to that of the Pilot Channel of the associated reverse CDMA channel, shall be as specified by ACKChannelGain + DeltaACKChannelGainMUP if the access terminal is transmitting an ACK in response to a Multi-User packet, where ACKChannelGain and DeltaACKChannelGainMUP are public data of the Forward Traffic Channel MAC Protocol.

During the transmission of the Data Channel on each active reverse CDMA channel, the power of the Data Channel relative to that of the Pilot Channel shall be as specified by TxT2P, where TxT2P is public data of the Reverse Traffic Channel MAC Protocol.

The Auxiliary Pilot Channel shall be transmitted on each active reverse CDMA channel during the  $n^{\text{th}}$  half slot if the Reverse Traffic Channel transmit payload is greater than or equal to AuxiliaryPilotChannelMinPayload during half slots  $n-1$  or  $n+1$ , where AuxiliaryPilotChannelMinPayload is public data of the Reverse Traffic Channel MAC Protocol.

If the Auxiliary Pilot Channel is transmitted on each active reverse CDMA channel during the  $n^{\text{th}}$  half slot, its power shall be specified relative to the maximum of the Data Channel Gains during half-slots  $n-1$  and  $n+1$  by AuxiliaryPilotChannelGain, where AuxiliaryPilotChannelGain is public data of the Reverse Traffic Channel MAC Protocol.

The access terminal shall maintain the power of the RRI Channel, and Data Channel for each active reverse CDMA channel relative to that of the Pilot Channel, to within  $\pm 0.6$  dB of the specified values.

The access terminal shall maintain the power of the DSC Channel, DRC Channel and ACK Channel, for each forward CDMA channel relative to that of the Pilot Channel of the associated reverse CDMA channel, to within  $\pm 0.6$  dB of the specified values.

The access terminal shall maintain the power of the Auxiliary Pilot Channel for each active reverse CDMA channel during the  $n^{\text{th}}$  half slot relative to that of the maximum of the Data Channel Gains during half slots  $n-1$  and  $n+1$  to within  $\pm 0.6$  dB of the specified values.

If the number of active reverse CDMA channels<sup>109</sup> for an access terminal is equal to one and if  $\text{TxT2P}$  is less than or equal to  $\text{TxT2P}_{\text{min}}$  (both public data of the Reverse Traffic Channel MAC Protocol) and the access terminal is unable to transmit the Reverse Traffic Channel at the required output power level, the access terminal shall reduce the power of the DSC Channel, the DRC Channel and the ACK Channel accordingly. The maximum power reduction for the DSC Channel shall correspond to transmitting the DSC Channel with gain equal to  $\text{DSCChannelGainBase}$ , where  $\text{DSCChannelGainBase}$  is public data of the Forward Traffic Channel MAC Protocol. The maximum power reduction for the DRC Channel shall correspond to gating off the DRC Channel. If the DRC Channel is active, the DRC Channel power reduction shall occur only after the DSC Channel transmit power is reduced to a level corresponding to  $\text{DSCChannelGainBase}$ . The maximum power reduction for the ACK Channel shall correspond to gating off the ACK Channel. If the ACK Channel is active, the ACK Channel power reduction shall occur only after the DRC Channel has been gated off.

If the number of active reverse CDMA channels for an access terminal exceeds one and if the  $\text{TxT2P}$  on all active reverse CDMA channels is less than or equal to  $\text{TxT2P}_{\text{min}}$  and the access terminal is unable to transmit the Reverse Traffic Channel at the required output power level, the access terminal shall reduce the power of the active reverse CDMA channels that carry only data, active reverse CDMA channels carrying overhead and data, and the active reverse CDMA channels accordingly.

The maximum power reduction for the active reverse CDMA channels carrying only data is gating off the Data Channels, RRI Channels, and Pilot Channels. Power reduction of the Pilot Channels shall occur only after the Data and RRI Channels have been gated off. The power reduction shall be performed sequentially for each active reverse CDMA channel carrying only data in order of increasing  $\text{ReverseChannelDroppingRank}$  starting with the active reverse CDMA channel with lowest  $\text{ReverseChannelDroppingRank}$ , where  $\text{ReverseChannelDroppingRank}$  is public data of the Route Update Protocol.

The maximum power reduction for the active reverse CDMA channels carrying overhead and data is gating off the Data and RRI Channels, DSC Channels, DRC Channels, ACK Channels, and the Pilot Channels accordingly. The maximum power reduction of the Data and RRI Channels corresponds to gating off the Data and RRI Channels. The maximum power reduction of the DSC Channels shall correspond to transmitting the corresponding DSC Channels with gain equal to  $\text{DSCChannelGainBase}$ , where  $\text{DSCChannelGainBase}$  is public data of the Forward Traffic Channel MAC Protocol. If the DRC Channels are active, power reduction of the DRC Channels shall occur only after the Data and RRI Channels have been gated off and the DSC Channels are transmitted at a power level corresponding to  $\text{DSCChannelGain}$  of  $\text{DSCChannelGainBase}$ . If the ACK Channels are active, power reduction of the ACK Channels shall occur only after all the DRC Channels have been gated off. Further power reduction of

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<sup>109</sup> An active reverse CDMA channel is a reverse CDMA channel transmitting Pilot Channel on the reverse link.

1 DSC Channels corresponds to gating off the DSC Channels. If the DSC Channels are  
2 transmitted at DSCChannelGainBase, then power reduction of the DSC Channels shall occur  
3 only after the ACK Channels have been gated off. Power reduction of the Pilot Channels shall  
4 occur only after the DSC Channels have been gated off. The power reduction shall be  
5 performed sequentially for each active reverse CDMA channel carrying overhead and data in  
6 order of increasing ReverseChannelDroppingRank starting with the active reverse CDMA  
7 channel with lowest ReverseChannelDroppingRank.

8 For the active reverse CDMA channel with the highest value of ReverseChannelDroppingRank,  
9 the maximum power reduction for the DSC Channels shall correspond to transmitting the DSC  
10 Channels with gain equal to DSCChannelGainBase, where DSCChannelGainBase is public  
11 data of the Forward Traffic Channel MAC Protocol. The maximum power reduction for the DRC  
12 Channels corresponds to gating off the DRC Channels. The maximum power reduction for the  
13 ACK Channels corresponds to gating off the ACK Channels. If the DRC Channels are active,  
14 DRC Channel power reduction shall occur only after the transmit power of the DSC Channels  
15 is reduced to a level corresponding to DSCChannelGainBase. If the ACK Channels are active,  
16 ACK Channel Power reduction shall occur only after the DRC Channels have been gated off.

17 The access terminal shall perform the power reduction within one slot of determining that the  
18 access terminal is unable to transmit at the requested output power level.1.

19  
20

- 1 No text.



## 7 E-UTRAN NEIGHBOR RECORDS FORMAT

This section contains other RAT neighbor records format associates with OtherRATNeighborList message defined in this document.

### 7.1 E-UTRAN Neighbor List Record

Field	Length (bits)
PriorityIncluded	1
ServingPriority	0 or 3
ThreshServing	6
PerEARFCNParamsIncluded	1
RxLevMinEUTRACommon	0 or 7
PEMaxCommon	0 or 6
RxLevMinEUTRAOffsetCommonIncl	0 or 1
RxLevMinEUTRAOffsetCommon	0 or 3
MaxReselectionTimerIncluded	1
MaxReselectionTimer	0 or 4
SearchBackOffTimerIncluded	1
MinMeasurementBackoff	0 or 4
MaxMeasurementBackoff	0 or 4
PLMNIDIncluded	1
NumEUTRAFrequencies	3

NumEUTRAFrequencies occurrences of the following record:  
{0

EARFCN	16
EARFCNPriority	0 or 3
ThreshX	5
RxLevMinEUTRA	0 or 7
PEMax	0 or 6
RxLevMinEUTRAOffset Incl	0 or 1
RxLevMinEUTRAOffset	0 or 3
MeasurementBandwidth	3
PLMNSameAsPreviousChannel	0 or 1
NumPLMNIDs	0 or 3

If NumPLMNIDs field is included, the NumPLMNIDs+1 occurrences of the following record; Otherwise, 0 occurrences of the following record.

{1

PLMNID	24
--------	----

}1

}0

ServingNetworkPLMNIncl	0 or 1
NumServingPLMNIDs	0 or 3

If NumServingPLMNIDs field is included, the NumServingPLMNIDs+1 occurrences of the following record; Otherwise, 0 occurrences of the following record.

{0

S_PLMNID	24
----------	----

}0

RSRQParametersIncluded	0 or 1
QualMinEUTRACommon	0 or 5
QualMinEUTRAOffsetCommonInc	0 or 1
QualMinEUTRAOffsetCommon	0 or 3

NumEUTRAFrequencies occurrences of the following record:

{0

ThreshXQ	0 or 5
QualMinEUTRA	0 or 5
QualMinEUTRAOffsetInc	0 or 1
QualMinEUTRAOffset	0 or 3

}0

ReselectionClassParamsIncl	1
EUTRA_Congestion_Ind	0 or 1
ReselectionClassFormat	0 or 1
ReselectionClassBitmap	0 or 8
ReselectionClassThreshold	0 or 4
ReselectionProbabilityIncl	0 or 1

0 or a maximum 8 occurrences of the following record:

{0

PerClassReselectionProbability	0 or 3
--------------------------------	--------

0}

RepeatProbabilityTestInd	0 or 1
--------------------------	--------

ExtendedEARFCNIncluded	1
NumExtendedEARFCNEUTRAFrequencies	0 or 3

NumExtendedEARFCNEUTRAFrequencies occurrences of the following record:

{0

ExtendedEARFCN	18
EARFCNPriority	0 or 3
ThreshX	5
RxLevMinEUTRA	0 or 7
PEMax	0 or 6
RxLevMinEUTRAOffset Incl	0 or 1
RxLevMinEUTRAOffset	0 or 3
MeasurementBandwidth	3
PLMNSameAsPreviousChannel	0 or 1
NumPLMNIDs	0 or 3

If NumPLMNIDs field is included, the NumPLMNIDs+1 occurrences of the following record; Otherwise, 0 occurrences of the following record.

{1

PLMNID	24
--------	----

}1

ThreshXQ	0 or 5
QualMinEUTRA	0 or 5
QualMinEUTRAOffsetInc	0 or 1
QualMinEUTRAOffset	0 or 3

}0

Reserved

0-7 (as needed)

**PriorityIncluded** If the access network includes priority and priority related fields in this record, then the access network shall set this field to '1'. Otherwise the access network shall set this field to '0'.

**ServingPriority** If the PriorityIncluded is set to '0', then the access network shall omit this field. Otherwise, the access network shall set this field to the value of the priority which is used by the access terminal as the priority of its current serving CDMA channel.

**ThreshServing** Serving threshold trigger point for E-UTRAN neighbor selection associate with ThreshX.

The access network shall set this field to  $\lfloor -2 \times 10 \times \log_{10} PS \rfloor$ , where PS is the strength of the reference pilot of the serving Access network, measured as specified in [10].

**PerEARFCNParamsIncluded**

If the access network includes parameters for each of the EARFCN, then the access network shall set this field to '1'. Otherwise the access network shall set this field to '0'.

**RxLevMinEUTRACommon**

Minimum received RSRP level from the EUTRA cell. It is a common value for all the neighboring EUTRA frequencies.

If the PerEARFCNParamsIncluded is set to '1', then the access network shall omit this field. Otherwise, the access network shall set this field in the range 0 to 96, where  $-44 - RxLevMinEUTRACommon$  in dBm is equal to the minimum reference signal received power (RSRP) level of a EUTRA cell as specified in [16]

**PEMaxCommon** Maximum TX power level an UE may use when transmitting on the uplink in E-UTRA.

If the PerEARFCNParamsIncluded is set to '1', then the access network shall omit this field. Otherwise, the access network shall set this field to the maximum TX power level the UE can transmit in dBm, +30, on the uplink in the cell (dBm) as defined in [16].

**RxLevMinEUTRAOffsetCommonIncl**

Offset to Minimum reference power level to select EUTRA Included.

If the PerEARFCNParamsIncluded is set to '1', then the access network shall omit this field. Otherwise, if the access network includes RxLevMinEUTRAOffsetCommon in this record, then the access network shall set this field to '1'.

#### RxLevMinEUTRAOffsetCommon

Offset to Minimum reference power level to select EUTRA. It is a common value for all the neighboring EUTRA frequencies.

If the RxLevMinEUTRAOffsetCommonIncl is set to '0', then the access network shall omit this field. Otherwise, the access network shall set this field to one less than the value specified in [16]. The range of values allowed is 1 through 8. The actual value of the offset in dB is  $(\text{RxLevMinEUTRAOffsetCommon} + 1) * 2$ .

#### MaxReselectionTimerIncluded

Maximum value of Reselection Timer Included.

If the access network includes Reselection Timer value in this record, then the access network shall set this field to '1'. Otherwise the access network shall set this field to '0'.

#### MaxReselectionTimer

The maximum value of the Reselection Timer.

If the MaxReselectionTimerIncluded is set to '0', then the access network shall omit this field. Otherwise, the access network shall set this field such that the upper limit of the random reselection timer that the access terminal selects is set to  $2^{\text{MaxReselectionTimer}}$  seconds.

Note: The access terminal will start a reselection timer, which is set to a random value with an upper limit set to  $2^{\text{MaxReselectionTimer}}$  seconds when the access terminal determines that the other conditions to perform a reselection from HRPD to E-UTRAN are met.

#### SearchBackOffTimerIncluded Search Back-off Timer Included.

If the access network includes the value for Search Back-off Timer in this message, then the access network shall set this field to '1'. Otherwise the access network shall set this field to '0'.

#### MinMeasurementBackoff

Minimum value of the measurement Back-off Timer.

If the SearchBackOffTimerIncluded is set to '0', then the access network shall omit this field. Otherwise, the access network shall set this field such that the lower limit of the backoff timer that the access terminal should select is set to  $2^{\text{MinMeasurementBackoff}}$  seconds.

#### MaxMeasurementBackoff

1		Maximum value of the measurement Back-off Timer.
2		If the SearchBackOffTimerIncluded is set to '0', then the access network
3		shall omit this field. Otherwise, the access network shall set this field
4		such that the upper limit of the backoff timer that the access terminal
5		should select is set to $2^{\text{MaxMeasurementBackoff}}$ seconds.
6	PLMNIDIncluded	PLMN Identifier Included.
7		If the access network includes PLMN Identifier values in this record, then
8		the access network shall set this field to '1'. Otherwise the access
9		network shall set this field to '0'.
10	NumEUTRAFrequencies	
11		The access network shall set this field to the number of EUTRA
12		frequencies included in this record.
13	EARFCN	EUTRA Absolute Radio Frequency Channel Number.
14		The access network shall set this field to the EARFCN of the neighbor
15		EUTRA system <a href="#">that is from 0 to 65535</a> as defined in [17].
16	EARFCNPRIORITY	Priority of the EARFCN of the neighboring EUTRA system
17		If the PriorityIncluded is set to '0', then the access network shall omit
18		this field. Otherwise, the access network shall set this field to the priority
19		of the EARFCN of the neighbor EUTRA system as the cell reselection
20		priority defined in [9].
21	ThreshX	Minimum required Srxlev [16] threshold used for selecting an EARFCN
22		The access network shall set this field in the range 0 to 31. The actual
23		threshold value in dB used to compare against the measured reference
24		signal received power (RSRP) is equal to ThreshX * 2 as specified in [16].
25	RxLevMinEUTRA	Minimum received RSRP level from the EUTRA cell
26		If the PerEARFCNParamsIncluded is set to '0', then the access network
27		shall omit this field. Otherwise, the access network shall set this field in
28		the range 0 to 96, where $-44 - \text{RxLevMinEUTRA}$ in dBm is equal to the
29		minimum reference signal received power (RSRP) level of a EUTRA cell
30		required for the UE to reselect EUTRA, as specified in [16].
31	PEMax	Maximum TX power level an UE may use when transmitting on the
32		uplink in E-UTRA.
33		If the PerEARFCNParamsIncluded is set to '0', then the access network
34		shall omit this field. Otherwise, the access network shall set this field to
35		the maximum TX power level the UE can transmit in dBm, +30, on the
36		uplink in the cell (dBm) as defined in [16].
37	RxLevMinEUTRAOffsetIncl	

Offset to Minimum reference power level to select EUTRA Included.

If the PerEARFCNParamsIncluded is set to '0', then the access network shall omit this field. Otherwise, if the access network includes RxLevMinEUTRAOffset in this record, then the access network shall set this field to '1'.

#### RxLevMinEUTRAOffset

Offset to Minimum reference power level to select EUTRA.

If the RxLevMinEUTRAOffsetIncl is set to '0', then the access network shall omit this field. Otherwise, the access network shall set this field to one less than the value specified in [16]. The range of values allowed is 1 through 8. The actual value of the offset in dB is  $(\text{RxLevMinEUTRAOffset} + 1) \times 2$ .

#### MeasurementBandwidth

Measurement bandwidth information is common for all neighbouring cells on the carrier frequency. It is defined by the parameter Transmission Bandwidth Configuration,  $N_{\text{RB}}$  [16]. The values indicate the number of resource blocks over which the UE could measure.

The access network shall set this field to the binary value corresponding to the transmission bandwidth configuration,  $N_{\text{RB}}$ , value in the table below.

**Table 7.1-1 Measurement Bandwidth**

Field value (binary)	Transmission bandwidth configuration $N_{\text{RB}}$
'000'	6
'001'	15
'010'	25
'011'	50
'100'	75
'101'	100
'110' ~ '111'	Reserved

#### PLMNSameAsPreviousChannel

PLMN ID of this channel is same as the previous EARFCN.

1		If the PLMNIDIncluded is set to '0', then the access network shall omit
2		this field. Otherwise, if the number of PLMNIDs of this EARFCN is same
3		as the previous EARFCN, and all the PLMNIDs of this EARFCN are
4		identical to the previous EARFCN, then the access network shall set this
5		field to '1'. Otherwise the access network shall set this field to '0'. If this
6		is the first occurrence of PLMNID in this record, the access network shall
7		set this field to '0'.
8	NumPLMNIDs	Number of PLMN IDs that are associated with this EARFCN
9		If the PLMNIDIncluded is set to '0', or if the
10		PLMNSameAsPreviousChannel is included and set to '1', then the access
11		network shall omit this field. Otherwise the access network shall set this
12		field to one less than the number of PLMN IDs that are associated with
13		this EARFCN.
14	PLMNID	PLMNID of the neighboring EUTRA system.
15		The access network shall set this field to the PLMN-ID. The 12 most
16		significant bits of the field are the 3-digit MCC in BCD format. The next
17		12 bits are defined for the MNC. For a 3-digit MNC, it takes all 12 bits in
18		3-digit BCD format. For 2-digit MNC, it is encoded as the 1 <sup>st</sup> 2 digits in
19		the first 8 bits, and then the last 4 bit shall be set to 0xF. <sup>110</sup>
20	ServingNetworkPLMNIncl	
21		Serving Network PLMN Identifier Included.
22		The access network shall include this field if any of the fields other than
23		the Reserved field that follow this field are to be included in the message.
24		If the access network includes one or more Serving PLMN Identifier
25		values in this record, then the access network shall set this field to '1'.
26		Otherwise the access network shall set this field to '0'.
27	NumServingPLMNIDs	
28		Number of PLMN IDs that are associated with this Serving Network.
29		If the ServingNetworkPLMNIncl is not included, or is set to '0', then the
30		access network shall omit this field. Otherwise the access network shall
31		set this field to one less than the number of PLMN IDs that are
32		associated with this Serving Network.
33	S_PLMNID	PLMNID of the serving system.

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<sup>110</sup> The details about PLMN-ID is specified in [9].



The access network shall set this field to the serving PLMN-ID. The 12 most significant bits of the field are the 3-digit MCC in BCD format. The next 12 bits are defined for the MNC. For a 3-digit MNC, it takes all 12 bits in 3-digit BCD format. For 2-digit MNC, it is encoded as the 1<sup>st</sup> 2 digits in the first 8 bits, and then the last 4 bit shall be set to 0xF.<sup>111</sup>

#### RSRQParametersIncluded

The access network shall include this field if any of the fields other than the Reserved field that follow this field are to be included in the message. If this field is included, the access network shall set it as follows: The access network shall set this field to '1' if the EUTRA RSRQ associated fields are included in this message. Otherwise, the access network shall set this field to '0'. If this field is not included in the message, the access terminal shall assume a value of '0' for this field.

#### QualMinEUTRACommon

Minimum received RSRQ level from the EUTRA cell. It is a common value for all the neighboring EUTRA frequencies.

If the RSRQParametersIncluded is set to '1' and the PerEARFCNParamsIncluded is set to '0', the access network shall set this field in the range 0 to 31, where  $-3 - \text{QualMinEUTRACommon}$  in dB is equal to the minimum reference signal received quality (RSRQ) level of a EUTRA cell as specified in [16]. Otherwise, the access network shall omit this field.

#### QualMinEUTRAOffsetCommonIncl

Offset to minimum reference quality level to select EUTRA Included.

If the RSRQParametersIncluded is set to '1' and the PerEARFCNParamsIncluded is set to '0', then if the access network includes QualMinEUTRAOffsetCommon in this record, the access network shall set this field to '1'; else the access network shall set this field to '0'. Otherwise, the access network shall omit this field.

#### QualMinEUTRAOffsetCommon

Offset to minimum reference quality level to select EUTRA. It is a common value for all the neighboring EUTRA frequencies.

If the QualMinEUTRAOffsetCommonIncl is set to '1', then the access network shall set this field to one less than the value specified in [16]. Otherwise, the access network shall omit this field. The range of the common offset values allowed is 1 through 8.

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<sup>111</sup> The details about PLMN-ID is specified in [9].

1	ThreshXQ	Minimum required Squal [16] threshold used for selecting an EARFCN.
2		If the RSRQParametersIncluded is set to '1', access network shall set this
3		field in the range 0 to 31. Otherwise, the access network shall omit this
4		field.
5		The actual threshold value in dB used to compare against the measured
6		reference signal received quality (RSRQ) is equal to ThreshXQ as
7		specified in[16].
8	QualMinEUTRA	
9		Minimum received RSRQ level from the EUTRA cell.
10		If the RSRQParametersIncluded is set to '1' and the
11		PerEARFCNParamsIncluded is set to '1', the access network shall set this
12		field in the range 0 to 31, where -3 – QualMinEUTRA in dB is equal to
13		the minimum reference signal received quality (RSRQ) level of a EUTRA
14		cell as specified in [16]. Otherwise, the access network shall omit this
15		field.
16	QualMinEUTRAOffsetIncl	
17		Offset to minimum reference quality level to select EUTRA Included.
18		If the RSRQParametersIncluded is set to '1' and the
19		PerEARFCNParamsIncluded is set to '1', then if the access network
20		includes QualMinEUTRAOffset in this record, the access network shall
21		set this field to '1'; else the access network shall set this field to '0'.
22		Otherwise, the access network shall omit this field.
23	QualMinEUTRAOffset	
24		Offset to minimum reference quality level to select EUTRA.
25		If the QualMinEUTRAOffsetIncl is set to '1', then the access network
26		shall set this field to one less than the QualMinEUTRAOffset. Otherwise,
27		the access network shall omit this field. The range of the offset values
28		allowed is 1 through 8.
29	ReselectionClassParamsIncl	
30		Reselection Class Related Parameters Included.
31		If the value of this parameter is set to '0', EUTRA_Congestion_Ind is
32		included and reselection class related parameters are omitted. If the
33		value of this parameter is set to '1', EUTRA_Congestion_Ind is omitted
34		and reselection class related parameters are included.
35	EUTRA_Congestion_Ind	

1 EUTRA RAN congestion indication

2 If the value of this parameter is set to '1', it means that EUTRA is  
3 congested, the access terminal should remain in HRPD as described in  
4 section 8.1.2.

5 ReselectionClassFormat

6 Reselection Class Format Indicating whether a Bitmap or a Threshold  
7 Indicator is included by the access network in the message to direct  
8 access terminals with specific reselection classes to reselect to  
9 neighboring EUTRA carriers.

10 If ReselectionClassFormat is set '0', the access network uses the  
11 ReselectionClassBitmap parameter to indicate the reselection classes  
12 that are directed to do reselection to EUTRA.

13 If ReselectionClassFormat is set '1', the access network uses the  
14 ReselectionClassThreshold parameter to indicate the reselection classes  
15 that are directed to do reselection to EUTRA.

16 ReselectionClassBitmap

17 Each bit in the 8 bit ReselectionClassBitmap field represents a  
18 Reselection Class. LSB bit corresponds to Reselection Class '0' and in  
19 that order where MSB bit corresponds to Reselection Class '7'.

20 The bit corresponding to a reselection class set '0' means that the  
21 reselection class is directed to stay in eHRPD. The bit corresponding to a  
22 reselection class set to '1' means that the reselection class is directed to  
23 reselect to E-UTRAN.

24 ReselectionClassThreshold

25 The access network shall set this field to a value in the range of 0-8.

26 ReselectionProbabilityIncl

27 Randomization based probability parameters Included.

28 If the value of this parameter is omitted or set to '0', the access network  
29 shall not include the probability of reselection in the message.

30 If the value of this parameter is set to '1', the access network shall  
31 include the probability of reselection in the message.

32 PerClassReselectionProbability

Probability of reselection to EUTRA for the reselection class indicated to reselect to EUTRA using the ReselectionClassBitmap or the ReselectionClassThreshold parameter.

The number of occurrences of this field is equal to the number of classes indicated to reselect to EUTRA.

If value of ReselectionClassFormat is '0', then the number of classes selected for reselection is the number of bits set to '1' in the ReselectionClassBitmap. If value of ReselectionClassFormat is '1', then the number of classes selected for reselection is (8 – ReselectionClassThreshold).

The value of the PerClassReselectionProbability is mapped to the percentage of reselection as indicated in the [Table 7.1-2](#)~~Table 7.1-2~~.

**Table 7.1-2 Percentage of Reselection**

Field value (binary)	Meaning
'000'	100%
'001'	85%
'010'	70%
'011'	55%
'100'	40%
'101'	25%
'110'	10%
'111'	0

#### RepeatProbabilityTestInd

Repeat Probability Test Indicator is used by the access network to control execution of the randomization based probability test by the UEs.

RepeatProbabilityTestInd is included if ReselectionProbabilityIncl is included and set to '1'.

If the access terminal is receiving the OtherRATNeighborList for the first time after powering up or handoff into the current sector, then it shall ignore this parameter.

If the access terminal has received the OtherRATNeighborList at least once previously after powering up or handoff into the current sector, it shall not repeat the randomization based probability test until RepeatProbabilityTestInd is set to the value '1' and the OtherRATSignature is different from the OtherRATSignature included in the previous OtherRATNeighborList message.

#### ExtendedEARFCNIncluded

The access network shall set this field to "1" if there are any ExtendedEARFCN frequencies. Otherwise, the access network shall set this field to "0".

#### NumExtendedEARFCNEUTRAFrequencies

The access network shall set this field to the number of EUTRA frequencies, which has the value from 65536 to 262143.

#### ExtendedEARFCN

Extended EUTRA Absolute Radio Frequency Channel Number.

The access network shall set this field to the EUTRA Absolute Radio Frequency Channel number that is from 65536 to 262143 which the access terminal should reacquire.

#### EARFCNPriority

Priority of the EARFCN of the neighboring EUTRA system

If the PriorityIncluded is set to '0', then the access network shall omit this field. Otherwise, the access network shall set this field to the priority of the ExtendedEARFCN of the neighbor EUTRA system as the cell reselection priority defined in [9].

#### ThreshX

Minimum required Srxlev [16] threshold used for selecting an ExtendedEARFCN

The access network shall set this field in the range 0 to 31. The actual threshold value in dB used to compare against the measured reference signal received power (RSRP) is equal to ThreshX \* 2 as specified in [16].

#### RxLevMinEUTRA

Minimum received RSRP level from the EUTRA cell

If the PerEARFCNParamsIncluded is set to '0', then the access network shall omit this field. Otherwise, the access network shall set this field in the range 0 to 96, where  $-44 - \text{RxLevMinEUTRA}$  in dBm is equal to the minimum reference signal received power (RSRP) level of a EUTRA cell required for the UE to reselect EUTRA, as specified in [16], associated with ExtendedEARFCN.

#### PEMax

Maximum TX power level an UE may use when transmitting on the uplink in E-UTRA.

If the PerEARFCNParamsIncluded is set to '0', then the access network shall omit this field. Otherwise, the access network shall set this field to the maximum TX power level the UE can transmit in dBm, +30, on the uplink in the cell (dBm) as defined in [16], associated with ExtendedEARFCN.

#### RxLevMinEUTRAOffsetIncl

Offset to Minimum reference power level to select EUTRA Included.

If the PerEARFCNParamsIncluded is set to '0', then the access network shall omit this field. Otherwise, if the access network includes RxLevMinEUTRAOffset in this record, then the access network shall set this field to '1, associated with ExtendedEARFCN'.

#### RxLevMinEUTRAOffset

Offset to Minimum reference power level to select EUTRA.

If the RxLevMinEUTRAOffsetIncl is set to '0', then the access network shall omit this field. Otherwise, the access network shall set this field to one less than the value specified in [16]. The range of values allowed is 1 through 8. The actual value of the offset in dB is  $(\text{RxLevMinEUTRAOffset} + 1) * 2$ , associated with ExtendedEARFCN.

#### MeasurementBandwidth

Measurement bandwidth information is common for all neighbouring cells on the carrier frequency. It is defined by the parameter Transmission Bandwidth Configuration,  $N_{RB}$  [16]. The values indicate the number of resource blocks over which the UE could measure, associated with ExtendedEARFCN.

The access network shall set this field to the binary value corresponding to the transmission bandwidth configuration,  $N_{RB}$ , value in the table below.

**Table 7.1–3 Measurement Bandwidth**

8 Field value (binary)	9 Transmission bandwidth configuration $N_{RB}$
10 '000'	11 6
12 '001'	13 15
14 '010'	15 25
16 '011'	17 50
18 '100'	19 75
20 '101'	21 100
	R e s e r v e d

PLMNSameAsPreviousChannel

PLMN ID of this channel is same as the previous EARFCN.

If the PLMNIDIncluded is set to '0', then the access network shall omit this field. Otherwise, if the number of PLMNIDs of this ExtendedEARFCN is same as the previous ExtendedEARFCN, and all the PLMNIDs of this ExtendedEARFCN are identical to the previous ExtendedEARFCN, then the access network shall set this field to '1'. Otherwise the access network shall set this field to '0'. If this is the first occurrence of PLMNID in this record, the access network shall set this field to '0'.

NumPLMNIDs

Number of PLMN IDs that are associated with this ExtendedEARFCN

1		If the PLMNIDIncluded is set to '0', or if the
2		PLMNSameAsPreviousChannel is included and set to '1', then the access
3		network shall omit this field. Otherwise the access network shall set this
4		field to one less than the number of PLMN IDs that are associated with
5		this ExtendedEARFCN.
6	PLMNID	PLMNID of the neighboring EUTRA system.
7		The access network shall set this field to the PLMN-ID, associated with
8		ExtendedEARFCN. The 12 most significant bits of the field are the 3-digit
9		MCC in BCD format. The next 12 bits are defined for the MNC. For a 3-
10		digit MNC, it takes all 12 bits in 3-digit BCD format. For 2-digit MNC, it
11		is encoded as the 1 <sup>st</sup> 2 digits in the first 8 bits, and then the last 4 bit
12		shall be set to 0xF. <sup>112</sup>
13		
14		
15	ThreshXQ	Minimum required Squal [16] threshold used for selecting an
16		ExtendedEARFCN.
17		If the RSRQParametersIncluded is set to '1', access network shall set this
18		field in the range 0 to 31. Otherwise, the access network shall omit this
19		field.
20		The actual threshold value in dB used to compare against the measured
21		reference signal received quality (RSRQ) is equal to ThreshXQ as
22		specified in[16].
23	QualMinEUTRA	
24		Minimum received RSRQ level from the EUTRA cell.
25		If the RSRQParametersIncluded is set to '1' and the
26		PerEARFCNParamsIncluded is set to '1', the access network shall set this
27		field in the range 0 to 31, where -3 – QualMinEUTRA in dB is equal to
28		the minimum reference signal received quality (RSRQ) level of a EUTRA
29		cell as specified in [16], associated with ExtendedEARFCN. Otherwise,
30		the access network shall omit this field.
31	QualMinEUTRAOffsetIncl	
32		Offset to minimum reference quality level to select EUTRA Included.
33		If the RSRQParametersIncluded is set to '1' and the
34		PerEARFCNParamsIncluded is set to '1', then if the access network
35		includes QualMinEUTRAOffset in this record, the access network shall
36		set this field to '1'; else the access network shall set this field to '0'.

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<sup>112</sup> The details about PLMN-ID is specified in [9].



1		Otherwise, the access network shall omit this field, associated with
2		ExtendedEARFCN.
3	QualMinEUTRAOffset	
4		Offset to minimum reference quality level to select EUTRA.
5		If the QualMinEUTRAOffsetIncl is set to '1', then the access network
6		shall set this field to one less than the QualMinEUTRAOffset. Otherwise,
7		the access network shall omit this field. The range of the offset values
8		allowed is 1 through 8, associated with ExtendedEARFCN.
9		
10	Reserved	The sender shall set this field to '0'. The receiver shall ignore this field.
11		This field can include 0-7 bits as needed.
12		



## 822 E-UTRAN NEIGHBOR RECORD PROCESSING FOR HRPD

### 8.1.22.1 EUTRA Neighbor Channels Management and EUTRA Idle Channel Reselection Procedures

#### 8.1.122.1.1 Overview

This section provides the procedures used by the access terminal to process received OtherRATNeighborList message with RATType is set to '0000' and the requirements to perform idle EUTRA frequency channel reselection. The access terminal uses the information received from OtherRATNeighborList message to perform EUTRA frequency channel measurements and reselection to EUTRA channel.

This section uses the E-UTRAN Neighbor List Record of the OtherRATNeighborList message parameters that are provided, as public data by the Overhead Messages Protocol.

#### 8.1.22.1.2 EUTRA Neighbor List Management and EUTRA Frequency Channel Measurement

If *OverheadMessages.OtherRATUpdated* indication is received, the access terminal shall perform the following in the order specified:

- The access terminal shall delete the existing EUTRA neighbor cell list constructed based on the information provided by previously received OtherRATNeighborList message in the same cell.
- If PLMNID(s) is included in the E-UTRAN Neighbor List Record of the OtherRATNeighborList message, the access terminal shall remove the EUTRA Frequency Channels associates with the PLMNID not selected by the access terminal from the EUTRA frequency channel list included in the OtherRATNeighborList message<sup>113</sup>.
- The access terminal shall construct EUTRA neighbor cell list based on the EUTRA neighbor cell list specified in [9] and [15] and the information provided by the latest OtherRATNeighborList message received from the serving pilot of the Control Channel, or by the stored OtherRATNeighborList message parameters stored in either the ShortTermOverheadCache list or the LongTermOverheadCache list.

If one of the following conditions is true,

- The ReselectionClassParamsIncl field received in the OtherRATNeighborList is set to '0', or
- The ReselectionClassParamsIncl field received in the OtherRATNeighborList is set to '1' and Reselection Class of the access terminal is indicated to reselect to the EUTRA, by using the ReselectionClassBitmap or ReselectionClassThreshold parameter.

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<sup>113</sup> If the access terminal is on a home HRPD serving network, and if the PLMNID is included in the OtherRATNeighborList message, then the access terminal removes any EUTRA frequency channel(s) of non-home networks unless all the frequency channels of current EUTRA home network cannot meet the reselection criteria and if the HRPD serving network does not meet the quality requirements for maintaining the HRPD connection.

Then, execute the following procedure:

- If the strength of the reference pilot of the serving HRPD network is higher than the ThreshServing, the access terminal shall not measure the EUTRA frequency channels whose EARFCNPriority value is lower than the ServingPriority in the EUTRA neighbor list set. Otherwise, the access terminal shall perform measurement on all the EUTRA frequency channels in the Neighbor list set.

If the ReselectionClassParamsIncl field received in the OtherRATNeighborList is set to '1' and Reselection Class of the access terminal is indicated to stay in HRPD, by using the ReselectionClassBitmap or ReselectionClassThreshold parameter, then the access terminal should not measure any of the EUTRA frequency channels in the Neighbor list set unless the strength of the reference pilot of the serving HRPD network is lower than the ThreshServing parameter in the OtherRATNeighborList. If the strength of the reference pilot of the serving HRPD network is lower than the ThreshServing parameter in the OtherRATNeighborList, then the UE shall perform EUTRA frequency channel reselection procedures specified in section 22.1.3.4.

If the ReselectionClassParamsIncl field received in the OtherRATNeighborList is set to '0' and EUTRA\_Congestion\_Ind is set to '1', then the access terminal should not measure any of the EUTRA frequency channels in the Neighbor list set unless the strength of the reference pilot of the serving HRPD network is lower than the ThreshServing parameter in the OtherRATNeighborList. If the strength of the reference pilot of the serving HRPD network is lower than the ThreshServing parameter in the OtherRATNeighborList, then the UE shall perform EUTRA frequency channel reselection procedures specified in section 22.1.3.4.

If the access terminal has determined to perform EUTRA neighbor channel measurement, the access terminal shall perform EUTRA neighbor cell measurements according to the procedures and rules specified in [15] and [16].

If none of the EUTRA frequency channels met the reselection criteria, then:

- If the access terminal received the OtherRATNeighborList message with the MinMeasurementBackoff and MaxMeasurementBackoff fields included, the access terminal should retry the measurement procedures T seconds after the access terminal determined the failure, where the T should meet:  $2^{\text{MinMeasurementBackoff}} \leq T \leq 2^{\text{MaxMeasurementBackoff}}$  seconds.
- Otherwise, the access terminal may retry the measurement procedures after an implementation specific time period.

### ~~8.1.3~~ 22.1.3 EUTRA Cell Reselection Procedures in the Idle State

When the access terminal is in the Idle State of the Air-Link Management protocol, the access terminal uses EUTRA signal quality threshold, serving sector threshold trigger point and other criteria specified in this section and criteria outside the scope of this specification to decide whether the access terminal performs idle reselection to the qualified EUTRA neighbor channel.

If OtherRATNeighborList message is received and the access terminal decided to perform the reselection procedures, the access terminal in the Idle State of the Air-Link Management

protocol shall perform EUTRA frequency channel reselection procedures specified in section 22.1.3.1, if one of the following conditions are met:

- If the ReselectionClassParamsIncl field is set to '0'
- If the ReselectionClassParamsIncl field is set to '1' and all of the following conditions are met:
  - If the access terminal is directed to reselect to the EUTRA based on the procedures specified in section 22.1.3.3, and,
  - If one of the following conditions are true:
    - + The ReselectionProbabilityIncl is set to '0', or,
    - + If the access terminal determines to execute the probability test based on the conditions specified in section 22.1.3.2 and the reselection probability,  $x$ , of the access terminal is less than  $(p/100)$ , where  $x$  is a random number between 0 and 1 generated using the procedure specified in Section 14.5[1] and  $p$  is the value of PerClassReselectionProbability for the ReselectionClass of the access terminal.

#### ~~8.1.3.1~~ 22.1.3.1 Evaluation of target EUTRA carriers for reselection

The access terminal executes the following procedures for determining the target EUTRA carriers for reselection:

- If the ServingPriority and EARFCNPriority fields are included in the OtherRATNeighborList message, and if the access terminal is required to give precedence to the ServingPriority and EARFCNPriority set by the serving network based on the operator's policy, the access terminal shall perform priority based reselection procedures defined by the current serving access network as follows:
  - The access terminal shall sort the EUTRA frequency channels in the order of EARFCNPriority from highest priority to the lowest priority.
  - The access terminal shall switch to the first EUTRA frequency channel in the sorted list that meets all of the following criteria:
    - + One of the following conditions are met:
      - EARFCNPriority of the EUTRA frequency channel is greater than the Serving Priority, or
      - EARFCNPriority of the EUTRA frequency channel is less than or equal to the Serving Priority and the strength of the reference pilot of the serving HRPD network is less than the ThreshServing
    - + One of the following conditions are met:
      - The Squal-value<sup>114</sup> of the associated EUTRA frequency channel is equal to or greater than its corresponding ThreshXQ value when RSRQParametersIncluded is included and set to '1', or

---

<sup>114</sup> Squal is defined in [16]

- The  $S_{rxlev}$ -value<sup>115</sup> of the associated EUTRA frequency channel is equal to or greater than its corresponding  $ThreshX$  value when  $RSRQParametersIncluded$  is not included or is included and set to '0'.
- The  $EUTRAReselectTimer$  is started with a value that is set as described in section 22.1.3.5
- Upon the expiry of the  $EUTRAReselectTimer$ , one of the following conditions are met depending on the setting of  $RSRQParametersIncluded$ :
  - the  $S_{qual}$ -value of the associated EUTRA frequency channel is equal to or greater than its corresponding  $ThreshXQ$  value when  $RSRQParametersIncluded$  is set to '1', or
  - the  $S_{rxlev}$ -value of the associated EUTRA frequency channel is equal to or greater than its corresponding  $ThreshX$  value when  $RSRQParametersIncluded$  is set to '0'.
- Otherwise, if the access terminal has determined to switch to an EUTRA frequency channel, then the access terminal shall perform the following procedure:
  - If  $RSRQParametersIncluded$  is set to '1', the access terminal shall switch to an EUTRA frequency channel that meets all of the following criteria:
    - + the  $S_{qual}$ -value of the associated EUTRA frequency channel is equal to or greater than its corresponding  $ThreshXQ$ .
    - + The  $EUTRAReselectTimer$  is started with a value that is set as described in section 22.1.3.5.
    - + Upon the expiry of the  $EUTRAReselectTimer$ , the  $S_{qual}$ -value of the associated EUTRA frequency channel is equal to or greater than its corresponding  $ThreshXQ$ .
  - If  $RSRQParametersIncluded$  is set to '0', the access terminal shall switch to an EUTRA frequency channel that meets all of the following criteria:
    - + the  $S_{rxlev}$ -value of the associated EUTRA frequency channel is equal to or greater than its corresponding  $ThreshX$ .
    - + The  $EUTRAReselectTimer$  is started with a value that is set as described in section 22.1.3.5.
    - + Upon the expiry of the  $EUTRAReselectTimer$ , the  $S_{rxlev}$ -value of the associated EUTRA frequency channel is equal to or greater than its corresponding  $ThreshX$ .

Where the  $RxLevMinEUTRAInUse$  is defined as:

- If  $PerEARFCNParamsIncluded$  is set to '1',  $RxLevMinEUTRAInUse$  is the  $RxLevMinEUTRA$  of the associated channel.
- If  $PerEARFCNParamsIncluded$  is set to '0',  $RxLevMinEUTRAInUse$  is the  $RxLevMinEUTRACommon$ .

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<sup>115</sup>  $S_{rxlev}$  is defined in [16]

### ~~8.1.3.2~~ 22.1.3.2 Procedures for Execution of Probability Test

If the ReselectionProbabilityIncl is set to '1', the access terminal determines that it needs to execute the probability test if one of the following conditions are true:

- the access terminal receives the OtherRATNeighborList for the first time after powering up or handoff into the current sector or,
- If the access terminal has previously received the OtherRATNeighborList message at least once after powering up or handoff into the current sector and in the current OtherRATNeighborList message the RepeatProbabilityTestInd is set to '1' and the access terminal has not received an OtherRATNeighborList with the same otherRATSignature previously.

### ~~8.1.3.3~~ 22.1.3.3 Procedures to Determine Whether the Access Terminal Attempts Reselection to EUTRA

An access terminal shall attempt reselection to the EUTRA, if one of the following conditions is true:

- If ReselectionClassFormat is set to '0' in the OtherRATNeighborList message and the Reselection Class bit of the access terminal in the ReselectionClassBitmap is set to '1'.
- If ReselectionClassFormat is set to '1' in the OtherRATNeighborList message and the ReselectionClass for the access terminal is greater than or equal to the ReselectionClassThreshold.

### ~~8.1.3.4~~ 22.1.3.4 Evaluation of target EUTRA carriers for reselection when Reselection Class is directed to stay

The access terminal executes the following procedures for determining the target EUTRA carriers for reselection:

- If the EARFCNPriority field(s) are included in the OtherRATNeighborList message, and if the access terminal is required to give precedence to the EARFCNPriority set by the serving network based on the operator's policy, the access terminal shall perform priority based reselection procedures defined by the current serving access network as follows:
  - The access terminal shall sort the EUTRA frequency channels in the order of EARFCNPriority from highest priority to the lowest priority.
  - The access terminal shall switch to the first EUTRA frequency channel in the sorted list that meets all of the following criteria:
  - One of the following conditions are met:
    - + The Squal-value of the associated EUTRA frequency channel is equal to or greater than its corresponding ThreshXQ value when RSRQParametersIncluded is included and set to '1', or
    - + The Srxlev-value of the associated EUTRA frequency channel is equal to or greater than its corresponding ThreshX value when RSRQParametersIncluded is not included or is included and set to '0'.

- 1       – The EUTRAReselectTimer is started with a value that is set as described in section  
2       22.1.3.5
- 3       – Upon the expiry of the EUTRAReselectTimer, one of the following conditions are met  
4       depending on the setting of RSRQParametersIncluded:
  - 5           + the Squal-value of the associated EUTRA frequency channel is equal to or greater  
6           than its corresponding ThreshXQ value when RSRQParametersIncluded is set to '1',  
7           or
  - 8           + the Srxlev-value of the associated EUTRA frequency channel is equal to or greater  
9           than its corresponding ThreshX value when RSRQParametersIncluded is set to '0'.
- 10      • Otherwise, if the access terminal has determined to switch to an EUTRA frequency  
11      channel, then the access terminal shall perform the following procedure:
  - 12          – If RSRQParametersIncluded is set to '1', the access terminal shall switch to an EUTRA  
13          frequency channel that meets all of the following criteria:
    - 14              + the Squal-value of the associated EUTRA frequency channel is equal to or greater  
15              than its corresponding ThreshXQ.
    - 16              + The EUTRAReselectTimer is started with a value that is set as described in section  
17              8.1.3.1
    - 18              + Upon the expiry of the EUTRAReselectTimer, the Squal-value of the associated  
19              EUTRA frequency channel is equal to or greater than its corresponding ThreshXQ.
  - 20          – If RSRQParametersIncluded is set to '0', the access terminal shall switch to an EUTRA  
21          frequency channel that meets all of the following criteria:
    - 22              + the Srxlev-value of the associated EUTRA frequency channel is equal to or greater  
23              than its corresponding ThreshX.
    - 24              + The EUTRAReselectTimer is started with a value that is set as described in section  
25              8.1.3.1
    - 26              + Upon the expiry of the EUTRAReselectTimer, the Srxlev-value of the associated  
27              EUTRA frequency channel is equal to or greater than its corresponding ThreshX .

28      Where the RxLevMinEUTRAInUse is defined as:

- 29      • If PerEARFCNParamsIncluded is set to '1', RxLevMinEUTRAInUse is the RxLevMinEUTRA  
30      of the associated channel.
- 31      • If PerEARFCNParamsIncluded is set to '0', RxLevMinEUTRAInUse is the  
32      RxLevMinEUTRACommon.

### 33      ~~8.1.3.5~~22.1.3.5 EUTRAReselectTimer value

34      The access terminal shall select the value of the EUTRAReselectTimer as follows:

- 35      • If MaxReselectionTimer is not included, the access terminal shall set the value of  
36      EUTRAReselectTimer to an implementation specific duration of time.



- Otherwise, the access terminal shall set the value of EUTRAReselectTimer to a uniformly distributed random value between 0 to  $2^{\text{MaxReselectionTimer}}$  seconds.

#### ~~8.1.4~~22.1.4 EUTRA CSG Cell Reselection

- If Closed Subscriber Group (CSG) cell reselection is supported by an access terminal and at least one EUTRA CSG ID is included in the access terminal's CSG whitelist, the access terminal shall use an autonomous search function to detect allowed CSG cells on the EUTRA frequencies [16]. The search function should be based on the access terminal's stored information.

#### ~~8.1.5~~22.1.5 Indications

This section registers to receive the following indications:

- OverheadMessages.OtherRATUpdated*

- 1 No text.
- 2

**1 ANNEX A E-UTRAN-HRPD CALL FLOW EXAMPLES**

2 This is an informative annex which contains examples of call flow.

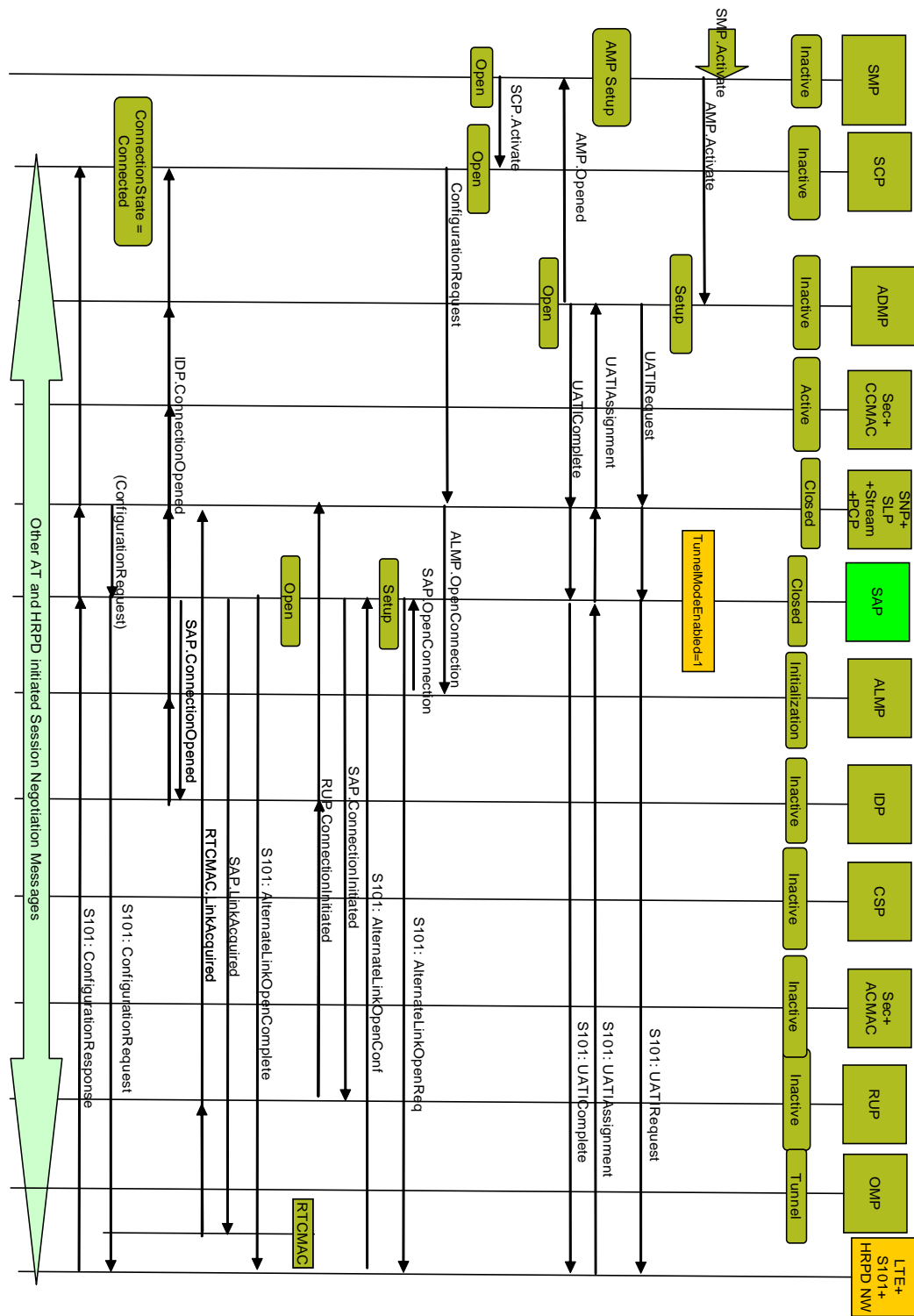


Figure A-1 Access Terminal, UATI Assignment and Session Configuration over E-UTRAN

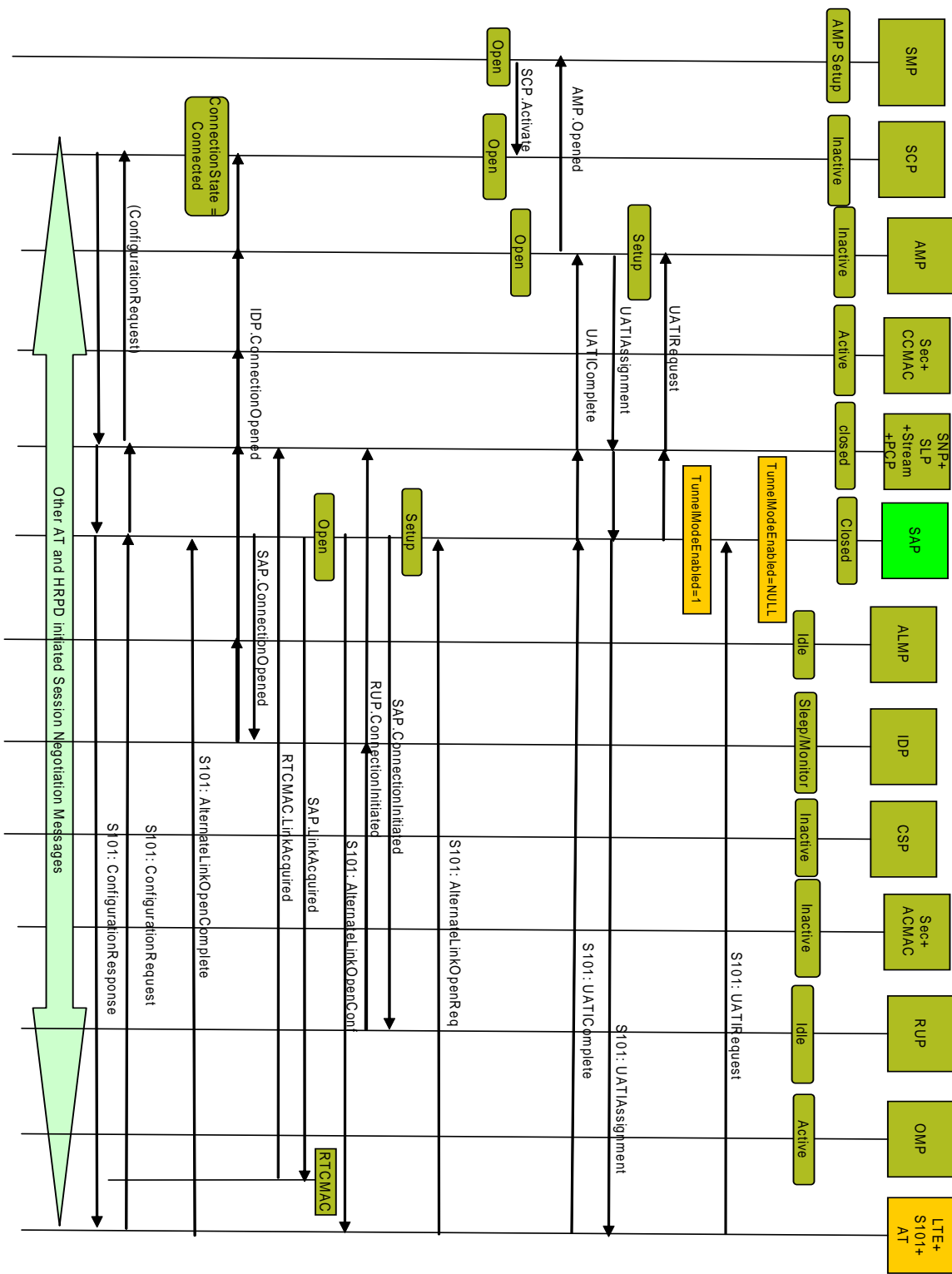


Figure A-2 Access Network, UATI Assignment and Session Configuration over E-UTRAN

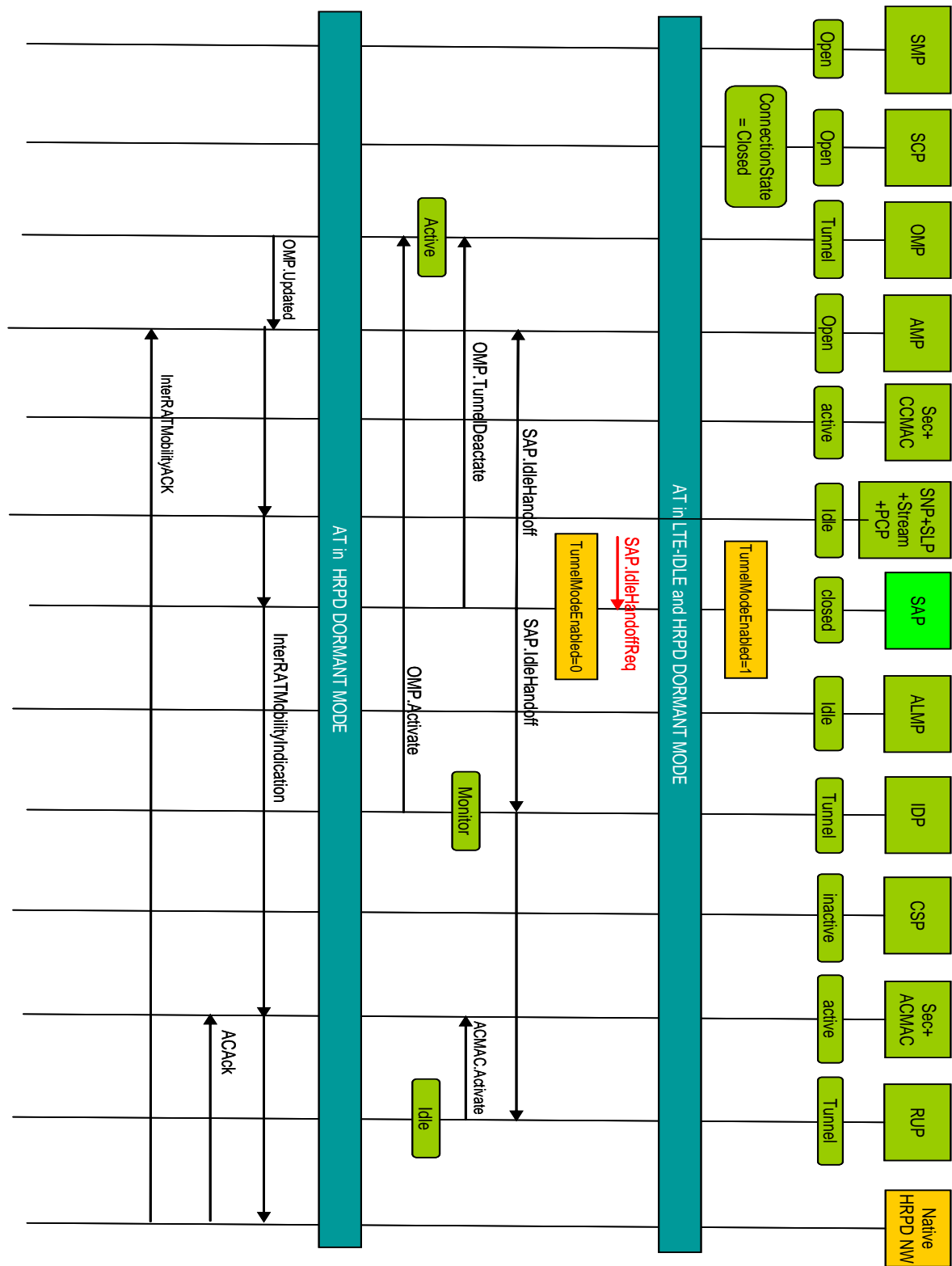


Figure A-3 Access Terminal, E-UTRAN to HRPD Idle Handoff

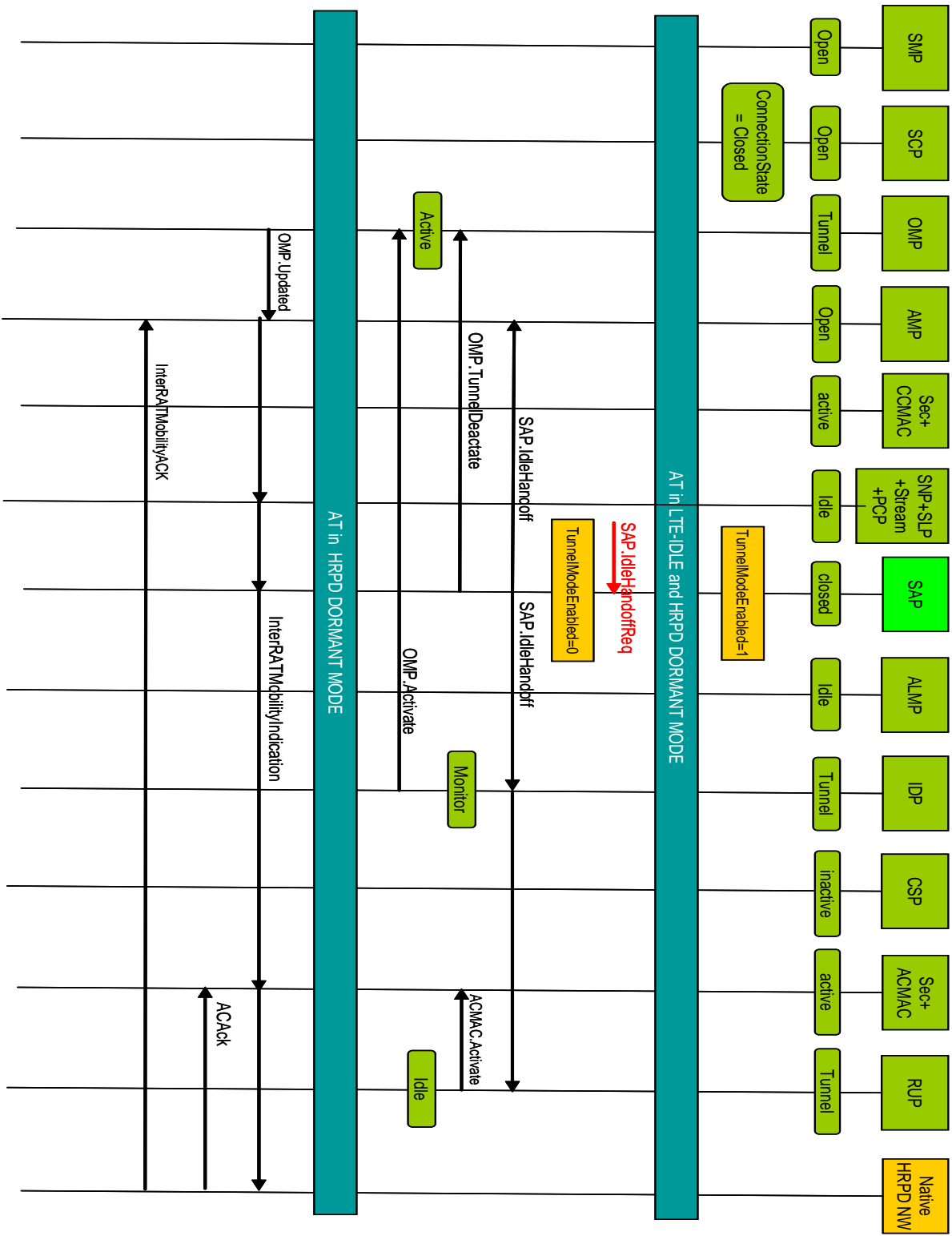


Figure A-4 Access Network, E-UTRAN to HRPD Idle Handoff

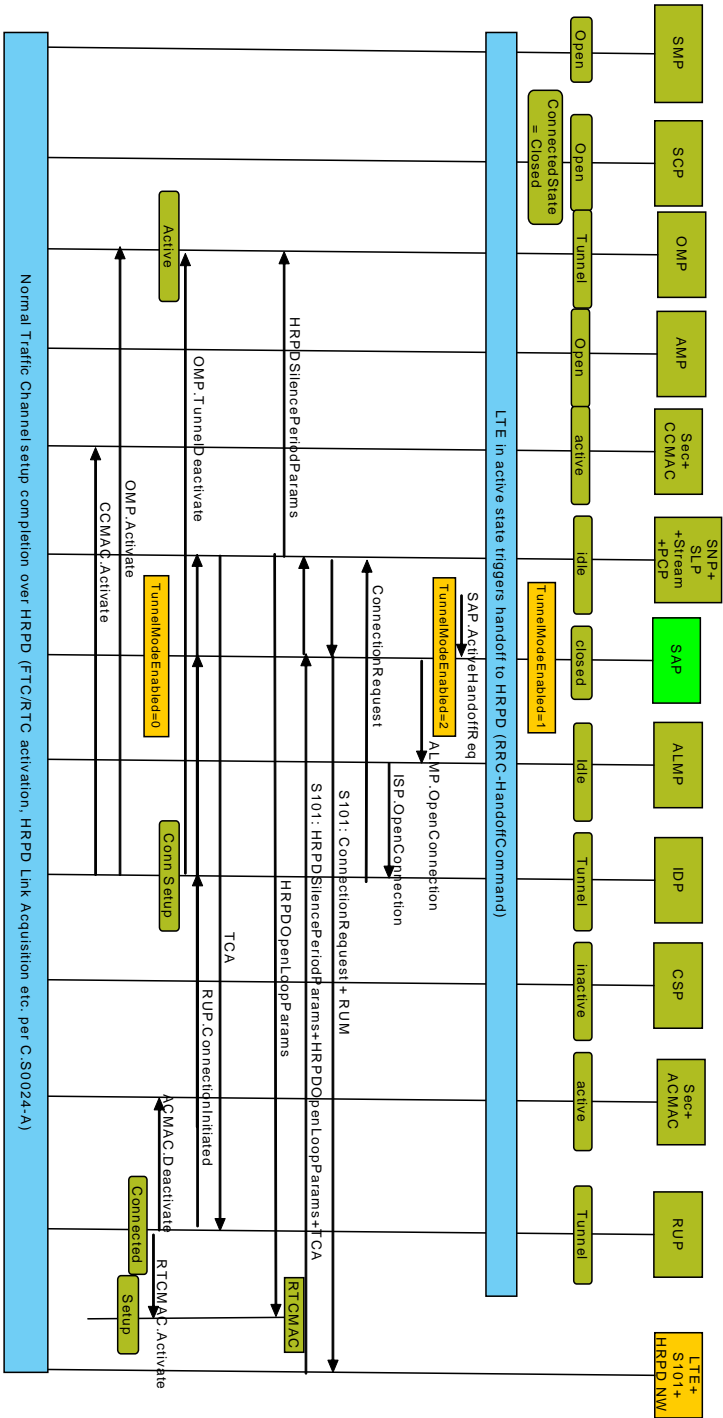


Figure A-5 Access Terminal, E-UTRAN to HRPD Active Handoff



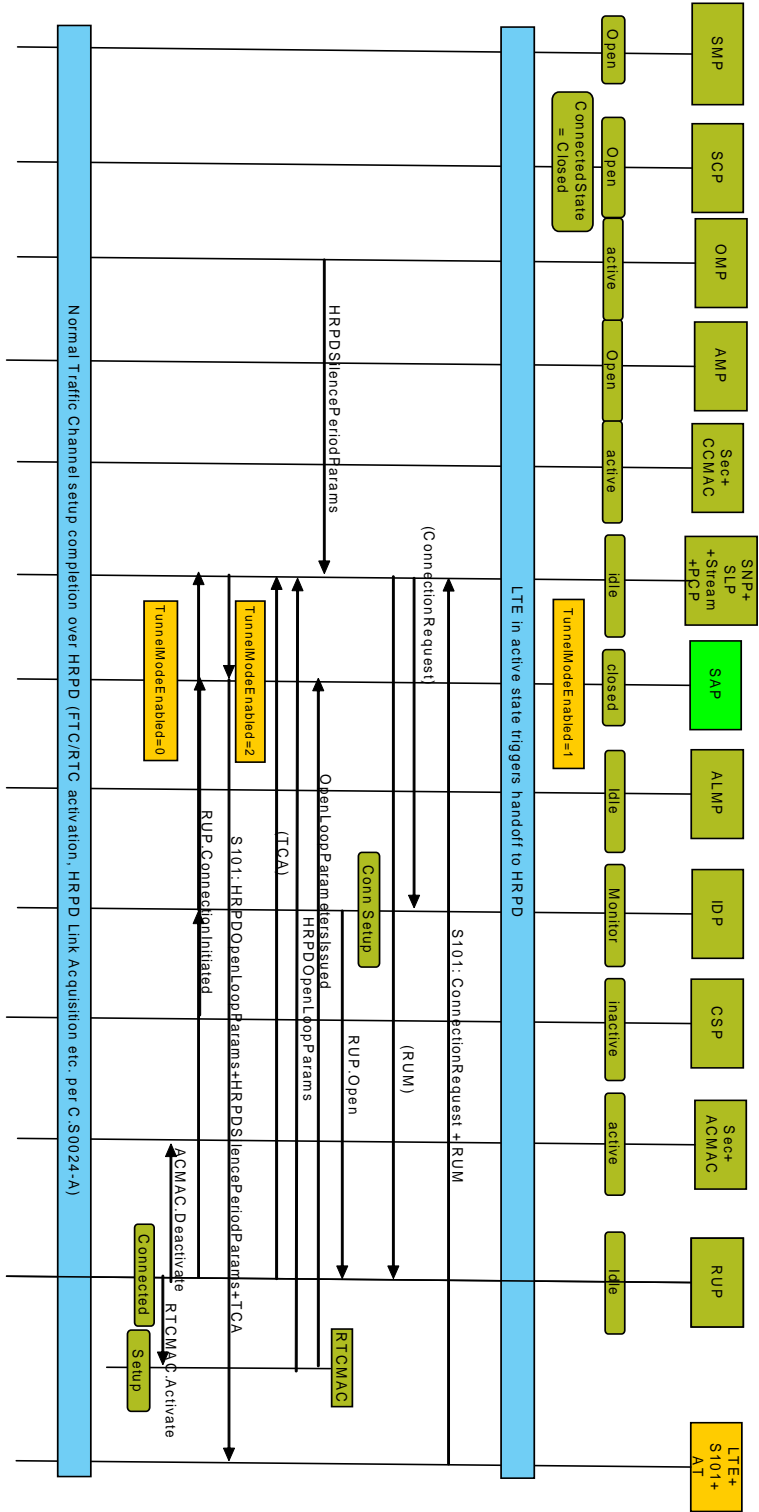
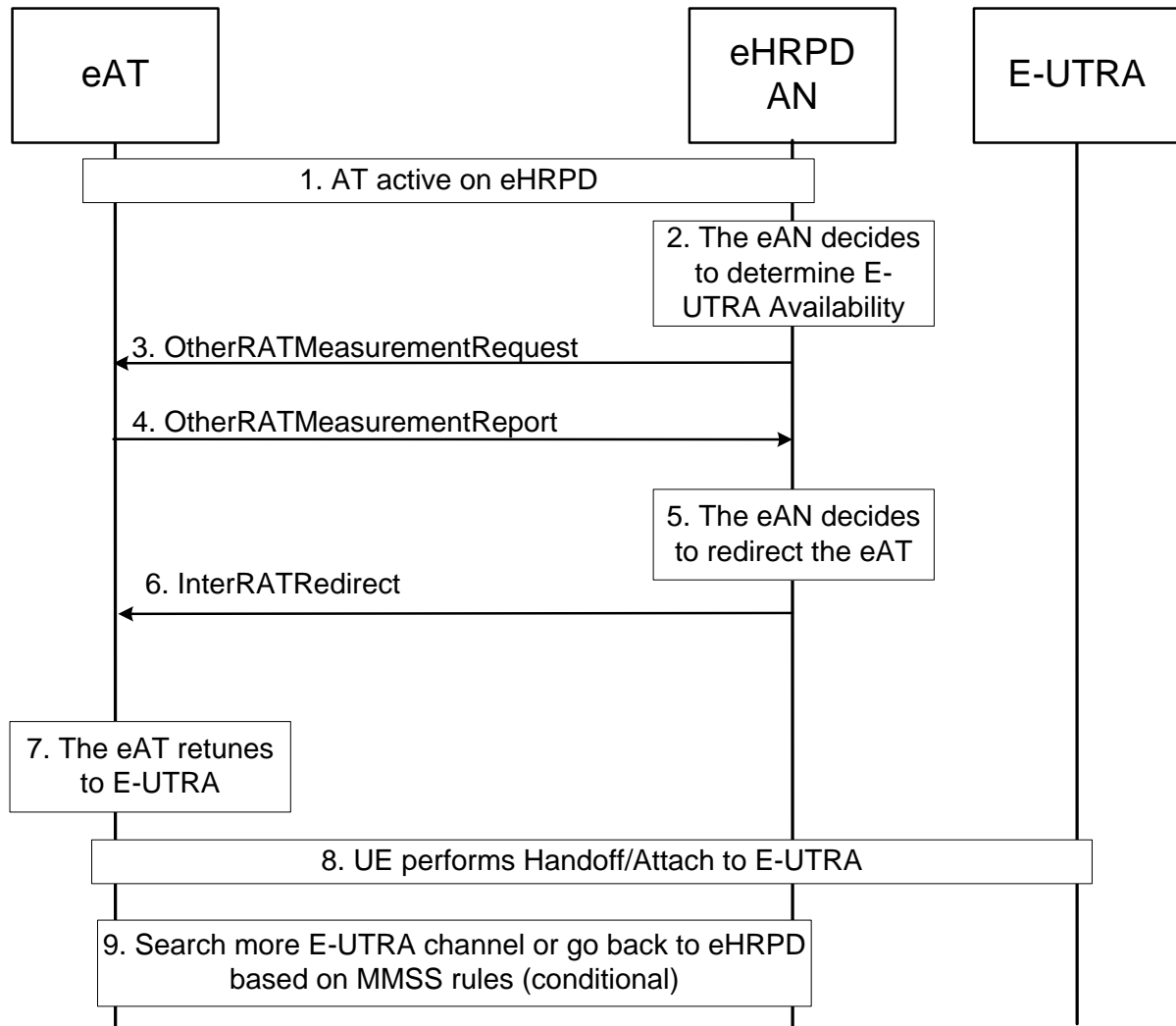


Figure A-6 Access Network, E-UTRAN to HRPD Active Handoff

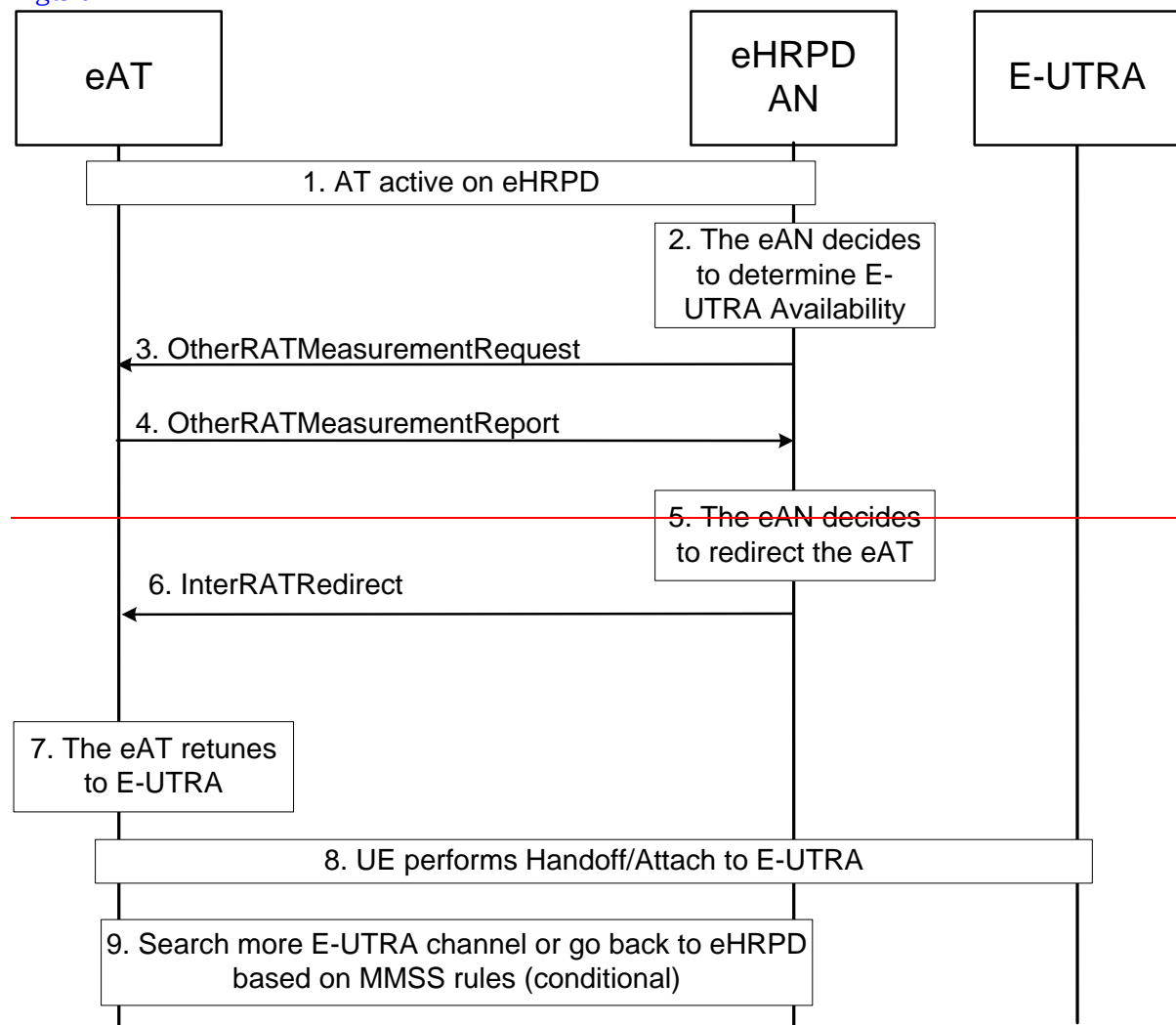
- 1
- 2 No text.

1 **ANNEX B HRPD- E-UTRAN CALL FLOW EXAMPLE**

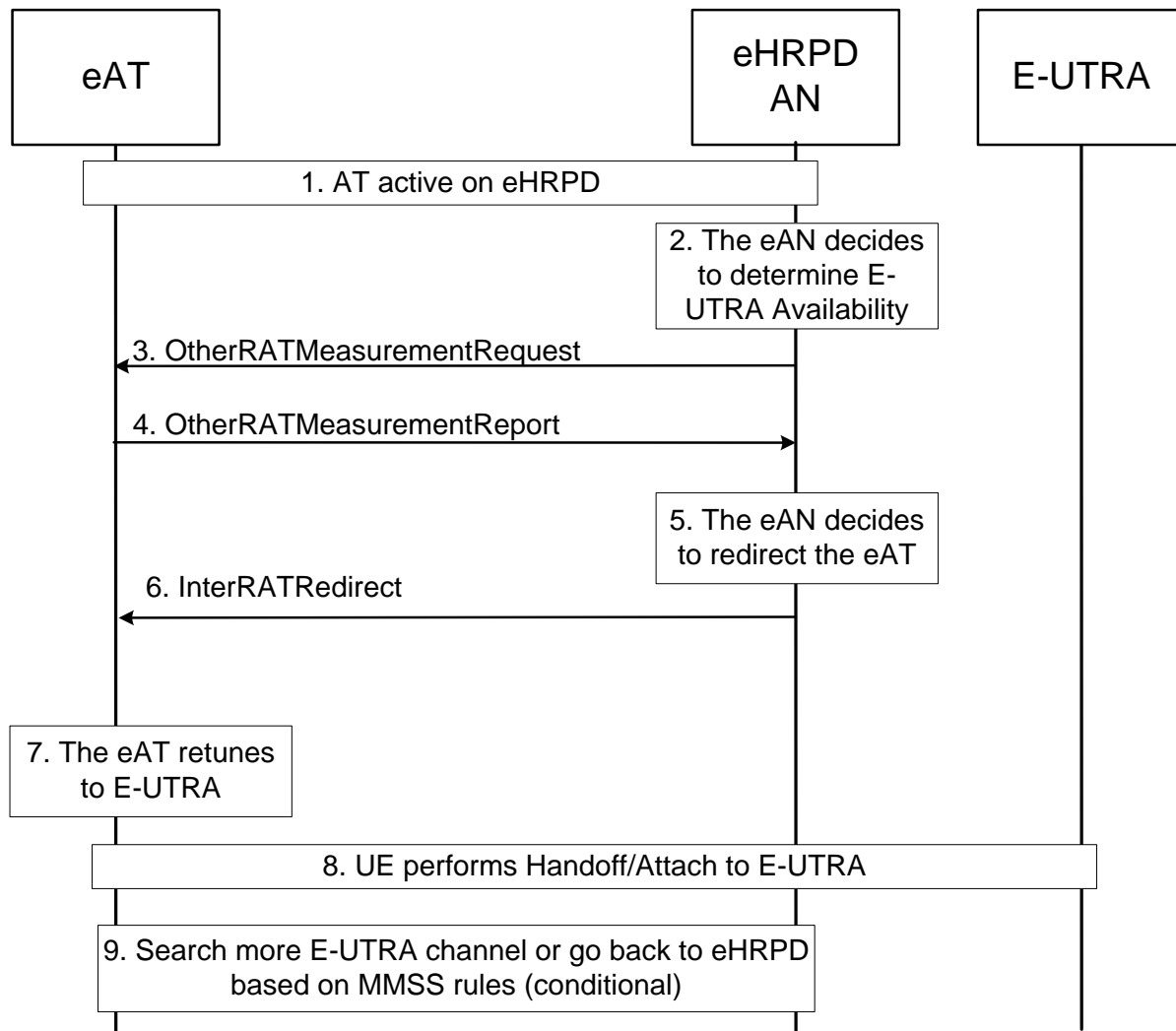
2

Figure

B-1



~~Figure B-1~~ shows an example flow diagram in which the access network redirects the AT from eHRPD to E-UTRA. The call flow supports, for example, step 2 of [6](3GPP TS 23.402) clause 8.2.1.1.



**Figure B-1 Example Call Flow: AN redirects the AT from eHRPD to E-UTRA.**

1. The eAT is active on eHRPD.
2. The eAN decides to determine E-UTRA availability
3. The eAN sends an *OtherRATMeasurementRequest* message containing the E-UTRA EARFCN to the eAT.
4. The eAT sends an *OtherRATMeasurementReport* message to the eAN.
5. If handoff criteria is met, the eAN decides to redirect the eAT to E-UTRA.
6. The eAN decides to redirect the eAT to E-UTRA and send an *InterRATRedirect* message to the eAT.
7. The eAT retunes to E-UTRA.
8. The eAT performs handoff/Attach to E-UTRA. See, for example, TS 23.402 Clause 8.2.1.1,

- 1        9.        If the handoff fails, redirect to other E-UTRA channel, if available, or go back to  
2                    eHRPD based on Multi-Mode System Selection (MMSS) rules per [20] and by  
3                    sending a *Connection Request* message.

4  
5

1

No text