
高通Lab Test技术期刊 – 201611



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Revision History

Revision	Date	Description
A	Nov 2016	Initial release

Note: There is no Rev. I, O, Q, S, X, or Z per Mil. standards.

Contents

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- 中国移动 4G+手机产品白皮书 (20160626) 中主要UI检查点(Update)

GCF: 36.523-1 TC8.6.5.1/8.6.7.1 are failed due to no UTRA measurement information included in the RLF report

■ Issue Description

- According to 3GPP spec, in MDT procedure, while network request UE with RLF report, UE should set the *measResultNeighCells* to include the best measured neighbouring cells, ordered such that the best cell is listed first, and based on measurements collected up to the moment the UE detected handover failure.
- While testing below 3GPP TS 36.523-1 MDT cases, failure is observed that UE is not including UTRA measurement result in the RLF report:
 - TC8.6.5.1 Radio Link Failure logging / Reporting at UTRAN Inter-RAT handover
 - TC8.6.7.1 Handover Failure logging / Reporting of UTRAN Inter-RAT measurements

■ Log Analysis

//TC8.6.7.1 failed UE log:

//the inter-RAT measurement is configured, UE reports the inter-RAT neighboring cell and handover is triggered

09:03:00.200 1609	EVENT_LTE_RRC_DL_MSG	DL Channel Type = DL DCCH, Message Type = RRC
Connection Reconfiguration		
09:03:00.204 1610	EVENT_LTE_RRC_UL_MSG	UL Channel Type = UL DCCH, Message Type = RRC
Connection Reconfiguration Complete		
09:03:00.565 2157	EVENT_LTE_RRC_UL_MSG_MEAS_REPORT	Meas Obj Type = UTRA
09:03:00.565 2481	EVENT_LTE_RRC_UL_MSG_MEAS_REPORT_MEASOBJ_MODE	Meas Obj Type = UTRA,
Measurement Object Mode Type = TDD		
09:03:00.565 1610	EVENT_LTE_RRC_UL_MSG	UL Channel Type = UL DCCH, Message Type =
Measurement Report		

GCF: 36.523-1 TC8.6.5.1/8.6.7.1 are failed due to no UTRA measurement information included in the RLF report

9:03:01.565	1609	EVENT_LTE_RRC_DL_MSG	DL Channel Type = DL DCCH, Message Type = RRC
Connection Reconfiguration			
9:03:01.584	1610	EVENT_LTE_RRC_UL_MSG	UL Channel Type = UL DCCH, Message Type = RRC
Connection Reconfiguration Complete			
9:03:01.584	1501	EVENT_LTE_RACH_ACCESS_START	RACH Cause = Handover, RACH Contention =
Contention Based			

//In UE side, no UTRA cell info is included in SON RLF report

9:03:01.568	lte_ml1_sm_main.c	4098	H	ML1 SRCH rcvd SON RLF RPT REQ
9:03:01.568	lte_ml1_sm_son_rlf_report.c	697	H	SM_SON_RLF: MDB RATs 3 EUTRA size 1 UTRA size
0 GSM size 0 CDMA size 0				
9:03:01.568	lte_ml1_mgr_modules.c	1354	H	L1M: CONN MEAS SON RLF RPT SENT

//per test spec, the inter-RAT UTRA cell is off, so handover failed, UE re-establish to the LTE cell

9:03:02.567	1608	EVENT_LTE_RRC_RADIO_LINK_FAILURE	Counter = 1
9:03:02.567	1995	EVENT_LTE_RRC_RADIO_LINK_FAILURE_STAT	RLF Count since RRC Connected = 1,
RLF Count since LTE Active = 1, RLF Cause = HO FAILURE			

9:03:03.376	1610	EVENT_LTE_RRC_UL_MSG	UL Channel Type = UL CCCH, Message Type = RRC
Connection Reestablishment Request			
9:03:03.486	1609	EVENT_LTE_RRC_DL_MSG	DL Channel Type = DL CCCH, Message Type = RRC
Connection Reestablishment			
9:03:03.490	1610	EVENT_LTE_RRC_UL_MSG	UL Channel Type = UL DCCH, Message Type = RRC
Connection Reestablishment Complete			
9:03:03.531	1609	EVENT_LTE_RRC_DL_MSG	DL Channel Type = DL DCCH, Message Type = RRC
Connection Reconfiguration			
9:03:03.535	1610	EVENT_LTE_RRC_UL_MSG	UL Channel Type = UL DCCH, Message Type = RRC
Connection Reconfiguration Complete			

//UE receives UEInformationRequest with rlf-reportReq set to TRUE

9:03:03.574	1609	EVENT_LTE_RRC_DL_MSG	DL Channel Type = DL DCCH, Message Type = 137	
9:03:03.574	lte_rrc_ueinfo.c	2920	H	UEINFO : lte_rrc_ueinfo_sm_request_dlm_handler

GCF: 36.523-1 TC8.6.5.1/8.6.7.1 are failed due to no UTRA measurement information included in the RLF report

```
09:03:03.574 lte_rrc_ueinfo.c      2920      H      UEINFO : lte_rrc_ueinfo_sm_request_dlm_handler
09:03:03.574 lte_rrc_ueinfo.c      2930      H      UEINFO : EUTRAN -- UE_INFORMATION_REQUEST --
> UE
09:03:03.574 lte_rrc_ueinfo.c      2251      H      UEINFO : DLM Trans ID: 0
09:03:03.574 lte_rrc_ueinfo.c      2262      H      UEINFO : RLF report is requested
```

2016 Jun 29 09:03:03.571 [FC] 0xB0C0 LTE RRC OTA Packet -- DL_DCCH / UEInformationRequest-r9

Pkt Version = 8

RRC Release Number.Major.minor = 10.7.2

Radio Bearer ID = 1, Physical Cell ID = 2

Freq = 39150

SysFrameNum = N/A, SubFrameNum = 4

PDU Number = DL_DCCH Message, Msg Length = 2

SIB Mask in SI = 0x00

Interpreted PDU:

value DL-DCCH-Message ::=

```
{
  message c1 : ueInformationRequest-r9 :
  {
    rrc-TransactionIdentifier 0,
    criticalExtensions c1 : ueInformationRequest-r9 :
    {
      rach-ReportReq-r9 FALSE,
      rlf-ReportReq-r9 TRUE
    }
  }
}
```

```
09:03:03.574 lte_rrc_ueinfo.c      1882      H      UEINFO : LOG MEAS report not included in response
09:03:03.574 lte_rrc_ueinfo.c      1904      H      UEINFO : RACH report not included in response
09:03:03.574 lte_rrc_ueinfo.c      1916      H      UEINFO : UE -- UE_INFORMATION_RESPONSE -->
EUTRAN
09:03:03.574 lte_rrc_mh.c    970      L      Received send_ul_msg_reqi
```

GCF: 36.523-1 TC8.6.5.1/8.6.7.1 are failed due to no UTRA measurement information included in the RLF report

//UE reports the RLF information, but no TDS RSCP included, leading to case fail

09:03:03.576 lte_pdcop_ul_protocol.c 2480 H UL SRB RB Cfg idx = 33 Calculated MAC-I = 0xf9f7e066
09:03:03.576 lte_pdcop_ul_protocol.c 2637 H PDCPUL SRB ip param for rb_cfg_idx = 33, bearer_id =
0, ip algo [None:7 SNOW3G:1 AES:2]= 3, ip key index = 6, count_c = 0x2, pdcop_hdr = 2
09:03:03.576 1610 EVENT_LTE_RRC_UL_MSG UL Channel Type = UL DCCH, Message Type = 139
2016 Jun 29 09:03:03.576 [EF] 0xB0C0 LTE RRC OTA Packet -- UL_DCCH / UEInformationResponse-r9

```
.....
    rlf-Report-r9
    {
.....
        measResultNeighCells-r9
        {
            measResultListEUTRA-r9 → only EUTRA cell measurement info is included here
            {
                {
                    carrierFreq-r9 39150,
                    measResultList-r9
                    {
                        {
                            physCellId 2,
                            measResult
                            {
                                rsrpResult 65,
                                rsrqResult 27
                            }
                        }
                    }
                }
            }
        },
        failedPCellId-r10 pci-arfcn-r10 :
.....
```


GCF: 36.523-1 TC8.6.5.1/8.6.7.1 are failed due to no UTRA measurement information included in the RLF report

- Solution
 - To include inter-RAT measurement information (such as RSSI for GSM, RSCP for UTRA) in the above RLF report, QC raised **CR813919** and **CR955704**. OEM can apply the two CRs once this issue is observed during lab conformance test.

PTCRB: Solution for 34.123-1 TC8.4.1.48 FDD2+GSM1900 band combination

- Issue Description
 - A compliant UE may fail 3GPP TS34.123-1 FDD test case 8.4.1.48 [FDDII-GSM1900] at step 9 in the Expected sequence under section 8.4.1.48.4.
 - In step 9, UE is expected to send Measurement report indicating event 3a at least 640 ms later after changing power setting of Cell 9 as per instant T2 mentioned in Tables 8.4.1.48-1 and table 8.4.1.48-2 shown below as reference.
 - From 3GPP 34.123-1:

Table 8.4.1.48-1

Parameter	Unit	Cell 1			Cell 4		
		T0	T1	T2	T0	T1	T2
UTRA RF Channel Number		Mid Range Test Frequency			High Range Test Frequency		
CPICH Ec (FDD)	dBm/3.84 Mhz	-60	-80	-80	-80	-60	-80
Qrxlevmin	dBm	-115 (Note)					
Note	Qrxlevmin is set to minimum value (-115) to avoid that cell trigger “out of service” condition.						

PTCRB: Solution for 34.123-1 TC8.4.1.48 FDD2+GSM1900 band combination

Table 8.4.1.48-2

Parameter	Unit	Cell 9 (GSM)		
		T0	T1	T2
Test Channel	-	GSM Ch.1		
BCCH ARFCN	-	Value according to the GSM band under test (see 3GPP 34.123-1 table 6.5 for details on the ARFCN)		
CELL identity	-	0		
BSIC	-	BSIC 1		
RF Signal Level	DBm	-90	-90	-70

Table 6.5: GSM/DCS test frequencies and levels

Test Channel:	1	2	3	Unit
RF signal level	+65 / -48	+63 / -50	+61 / -52	dBmVemf() / dBm
GSM 450	259	261	267	BCCH ARFCN
DCS 480	306	308	314	BCCH ARFCN
GSM 710/ GSM 750/ T-GSM 810	441	452	461	BCCH ARFCN
GSM 850	251	224	212	BCCH ARFCN
GSM 900	1	7	39	BCCH ARFCN
DCS 1800	885	830	703	BCCH ARFCN
PCS 1900	800	703	610	BCCH ARFCN
Multiband 450/900	1	261	267	BCCH ARFCN
Multiband 480/900	1	308	314	BCCH ARFCN
Multiband 450/1800	885	261	267	BCCH ARFCN
Multiband 480/1800	885	308	314	BCCH ARFCN
Multiband 900/1800	885	7	39	BCCH ARFCN

PTCRB: Solution for 34.123-1 TC8.4.1.48 FDD2+GSM1900 band combination

- From 3GPP 34.108:

5.1.1.2 FDD reference test frequencies for Operating Band II

Test Frequency ID	UARFCN	Frequency of Uplink	UARFCN	Frequency of Downlink
Low Range	9263	1852.6 MHz	9663	1932.6 MHz
Mid Range	9400	1880.0 MHz	9800	1960.0 MHz
High Range	9537	1907.4 MHz	9937	1987.4 MHz

- In step 6 (i.e. during T0 to T1 transition time period), target GSM cell power should be around -90 dBm but UE may sometimes overestimate the GSM cell power due to UTRA High Range Test Frequency i.e. 1987.4Mhz (UARFCN 9937) overlapping with GSM 1900 (ARFCN 800) frequency as shown in tables 6.5 and 5.1.1.2 above. As soon as BSIC reconfirmation is succeeded Measurement report for event 3A is sent by the UE earlier than expected in step 9.
- Therefore, a conformant UE may fail this test case on FDDII-GSM1900 band combination.

PTCRB: Solution for 34.123-1 TC8.4.1.48 FDD2+GSM1900 band combination

- Solution:
 - PTCRB has accepted a proposal from Qualcomm to change relevant test platform validation status from “V” to “E” for 3GPP TS 34.123-1, FDD test case 8.4.1.48 on FDDII-GSM1900 band combination.
 - If a UE fails FDDII-GSM1900 band combination on PTCRB listed test platforms at exception step 9, final test result should be set to PASS accordingly.

CT: UE sends detach causing cases failed in iRAT and SRLTE Tput test

- Issue Description:
 - Unexpected detach is often observed during the CT SRLTE and LTE-C2K iRAT test. During the test, UE or tethered PC may send some unexpected data which can't receive response from network. When the amount of data packets that UE can't receive response achieve the predefined value, UE will reset data connection from AP side and hence detach is triggered.
 - For iRAT test, IP continuity is expected during LTE<->eHRPD inter-RAT procedure and the PDN connectivity request type is expected to be "handover" after UE do the inter-RAT operation successfully. If data connection is terminated unexpectedly during the test, UE will send "initial attach" instead of "handover", leading to case fail.
- Failed UE log:

//ADB log, the un-responded data packets reach to predefined value (32 in this log), data stalled, cleanup all data connections

```
07-21 14:52:53.262 D/CdmaDCT ( 4336): [0]onReceive: action=com.android.internal.telephony.data-stall
07-21 14:52:53.262 D/CdmaDCT ( 4336): [0]onActionIntentDataStallAlarm: action=com.android.internal.telephony.data-stall
07-21 14:52:53.262 D/CdmaDCT ( 4336): [0]handleMessage msg={ when=0 what=270353 arg1=167713
obj=com.android.internal.telephony.data-stall target=com.android.internal.telephony.dataconnection.DcTracker }
07-21 14:52:53.262 D/CdmaDCT ( 4336): [0]updateDataStallInfo: mDataStallTxRxSum={txSum=32 rxSum=0}
preTxRxSum={txSum=0 rxSum=0}
07-21 14:52:53.262 D/CdmaDCT ( 4336): [0]updateDataStallInfo: OUT sent=32 mSentSinceLastRecv=32
07-21 14:52:53.262 D/CdmaDCT ( 4336): [0]getRecoveryAction: 1
07-21 14:52:53.262 D/CdmaDCT ( 4336): [0]onDataStallAlarm: tag=167713 do recovery action=1
07-21 14:52:53.262 D/CdmaDCT ( 4336): [0]getRecoveryAction: 1
```

CT: UE sends detach causing cases failed in iRAT and SRLTE Tput test

```
07-21 14:52:53.262 D/CdmaDCT ( 4336): [0]overall state is CONNECTED
07-21 14:52:53.262 D/CdmaDCT ( 4336): [0]startDataStallAlarm: tag=167714 delay=60s
07-21 14:52:53.272 D/CdmaDCT ( 4336): [0]handleMessage msg={ when=-4ms what=270354
target=com.android.internal.telephony.dataconnection.DcTracker }
07-21 14:52:53.272 D/CdmaDCT ( 4336): [0]overall state is CONNECTED
07-21 14:52:53.272 I/data_stall_recovery_cleanup( 4336): 32
07-21 14:52:53.272 D/CdmaDCT ( 4336): [0]getRecoveryAction: 1
07-21 14:52:53.272 D/CdmaDCT ( 4336): [0]doRecovery() cleanup all connections
07-21 14:52:53.272 D/CdmaDCT ( 4336): [0]cleanUpAllConnections

07-21 14:52:53.302 D/CdmaDCT ( 4336): [0]putRecoveryAction: 2
07-21 14:52:53.302 D/CdmaDCT ( 4336): [0]handleMessage msg={ when=-31ms what=270365 obj=pdpReset
target=com.android.internal.telephony.dataconnection.DcTracker }
07-21 14:52:53.302 D/CdmaDCT ( 4336): [0]cleanUpAllConnections: tearDown=true reason=pdpReset
07-21 14:52:53.302 D/CdmaDCT ( 4336): [0]cleanUpConnection: E tearDown=true reason=pdpReset
apnContext={mApnType=default mState=CONNECTED mWaitingApns=[[ApnSettingV3] CTNET, 24, 46011, ctnet, , , , , 3, default
| supl | ia, IPV4V6, IPV4V6, true, 0, 0, false, 0, 0, 0, 0, , } mWaitingApnsPermanentFailureCountDown=1
mApnSetting=[[ApnSettingV3] CTNET, 24, 46011, ctnet, , , , , 3, default | supl | ia, IPV4V6, IPV4V6, true, 0, 0, false, 0, 0, 0, 0, , }
mReason=pdpReset mDataEnabled=true mDependencyMet=true}
07-21 14:52:53.302 D/CdmaDCT ( 4336): [0]cleanUpConnection: tearing down
```

//UE modem log, network never respond to the unexpected background data, so lots of retransmission observed in wireshark log

10618	143.905687	192.168.0.3	120.198.203.156	TCP	60 [TCP Retransmission]	46269-443 [SYN]	Seq=0 win=65535 Len=0 MSS=1360 SACK_PERM=1 TSval=26026421 TSecr=0 WS=256
10619	143.935000	192.168.0.3	58.251.139.221	TCP	60 [TCP Retransmission]	47826-443 [SYN]	Seq=0 win=65535 Len=0 MSS=1360 SACK_PERM=1 TSval=26026424 TSecr=0 WS=256
10620	145.905375	192.168.0.3	120.198.203.156	TCP	60 [TCP Retransmission]	46269-443 [SYN]	Seq=0 win=65535 Len=0 MSS=1360 SACK_PERM=1 TSval=26026621 TSecr=0 WS=256
10621	145.935250	192.168.0.3	58.251.139.221	TCP	60 [TCP Retransmission]	47826-443 [SYN]	Seq=0 win=65535 Len=0 MSS=1360 SACK_PERM=1 TSval=26026624 TSecr=0 WS=256
10622	149.915312	192.168.0.3	120.198.203.156	TCP	60 [TCP Retransmission]	46269-443 [SYN]	Seq=0 win=65535 Len=0 MSS=1360 SACK_PERM=1 TSval=26027022 TSecr=0 WS=256
10623	149.945469	192.168.0.3	58.251.139.221	TCP	60 [TCP Retransmission]	47826-443 [SYN]	Seq=0 win=65535 Len=0 MSS=1360 SACK_PERM=1 TSval=26027025 TSecr=0 WS=256
10624	157.935594	192.168.0.3	120.198.203.156	TCP	60 [TCP Retransmission]	46269-443 [SYN]	Seq=0 win=65535 Len=0 MSS=1360 SACK_PERM=1 TSval=26027824 TSecr=0 WS=256
10625	157.975656	192.168.0.3	58.251.139.221	TCP	60 [TCP Retransmission]	47826-443 [SYN]	Seq=0 win=65535 Len=0 MSS=1360 SACK_PERM=1 TSval=26027828 TSecr=0 WS=256

CT: UE sends detach causing cases failed in iRAT and SRLTE Tput test

//modem receives stop network interface request, respond to this request with success, and detach triggered by UE

1980 Jan 6 00:05:52.980 [9F] 0x1544 QMI_MCS_QCSI_PKT

packetVersion = 2

MsgType = Response

Counter = 8

ServiceId = 1

MajorRev = 1

MinorRev = 105

ConHandle = 0x00000000

MsgId = 0x00000021

QmiLength = 7

Service_WDS {

ServiceWDSV1 {

wds_stop_network_interface {

wds_stop_network_interface_respTlvs[0] {

Type = 0x02

Length = 4

resp {

result = QMI_RESULT_SUCCESS

error = QMI_ERR_NONE

...

00:05:53.850 1967 EVENT_LTE_EMM_OTA_OUTGOING_MSG

Message ID = DETACH REQUEST

1980 Jan 6 00:05:53.849 [E5] 0xB0ED LTE NAS EMM Plain OTA Outgoing Message -- Detach request Msg

pkt_version = 1 (0x1)

rel_number = 9 (0x9)

rel_version_major = 5 (0x5)

rel_version_minor = 0 (0x0)

security_header_or_skip_ind = 0 (0x0)

prot_disc = 7 (0x7) (EPS mobility management messages)

msg_type = 69 (0x45) (Detach request)

...

CT: UE sends detach causing cases failed in iRAT and SRLTE Tput test

- Solution:
 - For the above detach issue caused by unexpected data stall, OEM can check the predefined value setting by using ADB command “adb shell settings get Global PDP_WATCHDOG_TRIGGER_PACKET_COUNT”, and change it to bigger value.

CT: Checking points for international roaming (IR) test

To make sure no IR issues during CT PA testing, OEMs need make sure below configurations correctly:

- MBN
- APN
- UI
- device_config.xml
- Supplementary Service
- DDS (Default Data Subscription)
- AP
- MBN:
 - use the correct MBN in slot1 :
 - 1. Class C devices:
\\modem_proc\mcfg\configs\mcfg_sw\generic\China\CT\Commercial\OpenMkt
 - 2. Class A devices:
\\modem_proc\mcfg\configs\mcfg_sw\generic\China\CT\Commercial\Subsidized
 - use the correct MBN in slot2:
 - \\modem_proc\mcfg\configs\mcfg_sw\generic\China\CMCC\Commercial\Volte_OpenMkt
 - if OEMs use auto MBN active, this two MBNs need be pre-load in DUT:
 - 1. \\modem_proc\mcfg\configs\mcfg_sw\generic\China\CT\Commercial\OpenMkt
 - 2. \\modem_proc\mcfg\configs\mcfg_sw\generic\China\CMCC\Commercial\Volte_OpenMkt

CT: Checking points for international roaming (IR) test

- OEMs try in CT /CMCC commercial NW:
 - 1. in slot1, insert CT card;
 - 2. in Slot 2, insert CMCC card;
 - 3. power up the UE, check if CT open market and CMCC MBN are active correctly.
- APN:
 - check if OEMs use Qualcomm design, if yes, need check APN information that is from Android path (/system/etc/apns-conf.xml) is correct.
 - in CT commercial NW, APN name is "CTNET".
 - in Roaming NW, APN name should be "live.vodafone.com".
- UI
 - in Roaming, UI should have roaming NW name indication and "R" icon.
- carrier_policy.xml:
 - Need check the head of the file, make sure the path is correct:

```
<!-- Carrier Policy file for SRLTE in open market with GWL roaming (class C)
$Header: //components/rel/mmcp.mps/7.3/policyman/configurations/Carrier/OpenMarket/7+5_mode/CT/1xSRLTE/openMarket/carrier_policy.xml#2 $
-->
<policy name      = "generic"
    changelist    = "$change: 9324375 $"
    enabled       = "true"
    schema_ver    = "1"
    policy_ver     = "74.2.21"
```

CT: Checking points for international roaming (IR) test

- Check the international roaming rule in this file:
 - CDMA roaming need be removed as CT requirement, in roaming, only GWL need be enabled.

```
<!-- RULE #5 -->
<!-- Otherwise we're in a GWL configuration
-->
<rule precondition="none">
  <conditions>
    <true />
  </conditions>
  <actions>
    <rat_capability base="none">
      <include> GSM WCDMA LTE </include>
    </rat_capability>
    <rf_bands />
    <ue_mode> CSFB </ue_mode>
    <scan_optimization tgpp="no_auto_camp_only" tgpp2="wrlf" />
    <freq_list list="default" />
  </actions>
</rule>
```

- device_config.xml :
 - Need OEMs provide below information for slot2:
 - 1.Device only support GSM
 - 2.Device support WCDMA in slot 2
- Supplementary Service:
 - SMS auto registration should be disabled.
 - Supplement Service should be disabled.

CT: Checking points for international roaming (IR) test

- DDS (Default Data Subscription):
 - once slot 1 in flight mode, slot 2 still keep on CS only, DDS will not switch to slot 2.
- AP:
 - once DUT use CT sim, check if any mechanism that AP will change preferred network mode in UE side:
 - check if NV10 will change from global mode to others, the common issue is OEMs change this to LTGW, so UE can't register in CDMA.

中国移动 4G+手机产品白皮书（20160626）中主要UI检查点(Update)

在2016年8月Lab test期刊中我们给出了中国移动4G+手机产品白皮书中关于UI的10个主要检查点，除了上述10项以外，请各厂商另外关注以下两个方面：

11. 泛安全要求

- 内存管理：移动智能终端应当提供垃圾清理功能。移动智能终端应当提供垃圾清理功能，该功能应支持智能扫描SD卡或内卡（模拟SD卡）上的应用缓存、系统垃圾文件、临时文件等，并能够对其进行清理。
- 省电管理：支持省电模式，省电模式下需关闭无线数据连接、GPS、WIFI、WIFI热点、蓝牙和NFC功能，休眠时间设置为30秒内，屏幕亮度设置为不超过30%。
- 流量管理：精确统计和区分显示流量功能要求，移动智能终端应当能够显示总历史流量，并以图形化（柱状图、饼状图或曲线图等）的形式进行展示，总流量应能够统计移动数据网；移动智能终端应当能够分别显示每个应用的单独消耗流量情况，可按天、周和月进行流量排行，并对各应用分别统计移动数据网络和WIFI的流量数据；移动智能终端应当能够显示当前实时网速；支持管理具有联网行为的软件，可单独或批量网设置是否允许其使用移动数据或者WIFI上网功能；移动智能终端应当能够记录在其锁屏期间各应用所消耗的流量信息，在用户解锁屏幕后，应当能够查看用户该终端在锁屏时间内各应用所消耗的流量信息。

中国移动 4G+手机产品白皮书（20160626）中主要UI检查点(Update)

- 支持显示各硬件和应用的耗电排行（从上次停止充电时开始），可停止或卸载应用。
- 辅助功能安全：对于具有辅助功能的产品，要求辅助功能默认关闭，开启辅助功能能够提示用户相应的风险。

12. 4G+手机产品标识要求

- 4G+手机背面印制China Mobile标识、“4G+”标识；包装盒、说明书及POP等宣传材料印制China Mobile标识、“4G+”等标识（详见相关VI规范要求），且China Mobile标识、“4G+”等标识印刷方案与终端厂家LOGO印刷方案一致。4G+手机产品外观不能带有除了中国移动和终端厂家LOGO以外、未经中国移动许可的任何其它第三方的LOGO或功能标识。

References

Documents	
Title	DCN
<i>Lab Conformance Test Configuration and Execution Guide</i>	80-P5399-1 A
高通Lab Test技术期刊--201509	/
高通Lab Test技术期刊--201510	/
高通Lab Test技术期刊--201511	/
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高通Lab Test技术期刊--201609	/
高通Lab Test技术期刊--201610	/

Questions?

<https://support.cdmatech.com>

