Global Handset Requirements for CDMA Dual Mode Single SIM Terminal Specification

CDG Document 208

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CDMA Development Group
575 Anton Boulevard, Suite 560
Costa Mesa, California 92626
PHONE +1 888 800-CDMA
+1 714 545-5211
FAX +1 714 545-4601
http://www.cdg.org
cdg@cdg.org

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Revision History

Date	Version	Description
October 2011	1.0	Final Release of document

1. Introduction

1.1 Purpose

The purpose of this document is to specify the detailed technical requirements for a single Universal Integrated Circuit Card (UICC) based CDMA Mobile Terminal supporting Dual Mode Operation. Dual Mode is defined as the ability of the terminal to support more than one radio access technology, specifically CDMA and GSM/WCDMA in this case. The card is defined to be a single module based on the UICC platform supporting multiple profiles (CSIM, RUIM, SIM & USIM).

These requirements are complementary to those specified in documents CDG 109 GHRC Worldmode Specification which contains requirements for non-UICC based World Mode (CDMA/GSM) terminals and CDG 177 which contains requirements for 3GPP/3GPP2 Multi-mode terminals covering CDMA2000, GSM/WCDMA & LTE. Where applicable requirements from CDG 109 and CDG 177 are leveraged as much as possible.

1.2 Scope

This document will focus on the technical requirements needed to implement a Dual Mode Terminal covering Voice & Data Services, Base Radio Access Requirements, System Selection, Interoperability between CDMA & GSM Systems, and UICC Requirements. Functional requirements for service enablers can be found in other GHRC documents. Where applicable, specific GHRC documents will be referenced.

1.3 Reference Documents

Ref	Document Title	Author	Version	Date
1.	3GPP2 : C.S0074-A : UICC Interface for C2K Spread Spectrum Systems	3GPP2		
2.	3GPP2 C.S0065-B: C2K Applications on UICC for C2K Spread Spectrum Systems	3GPP2		
3.	3GPP2 C.S0023-D: RUIM for Spread Spectrum Systems	3GPP2		
4.	3GPP2 C.S0035-A: CDMA Card Application Toolkit	3GPP2		
5.	3GPP2 C.S0072-0: Mobile Station Equipment Identifier (MEID) Support for cdma2000 Spread Spectrum Systems	3GPP2		
6.	3GPP2 C.S0078-0: Secured Packet Structure for CDMA Card Application Toolkit (CCAT) Applications	3GPP2		
7.	3GPP2 C.S0079-0: Remote APDU structure for CCAT Application	3GPP2		
8.	CDG 109 GHRC Requirements for Worldmode Terminals	CDG		
9.	CDG 177: 3GPP2/3GPP Multi Mode Device and Interoperability Requirements	CDG		
10.	CDG 90: CDMA2000 Voice, SMS & Data	CDG		
11.	CDG 155: CDMA2000 Wireless IP	CDG		
12.	CDG 143: Recommended System Selection Requirements for 1X and 1xEV-DO-Capable Terminals	CDG		
13.	CDG 166: Open Market Handsets (OMH) R-UIM Specification	CDG OMH		
14.	CDG 167: Open Market Handsets (OMH) Device Specification	CDG OMH		
15.	CDG 200: CSIM-Capable Device Requirements	CDG		
16.	CDG 76: User Identity Module	CDG		
17.	CDG 92: CDMA Handset Mobile MMS Requirements	CDG		
18.	CDG 187: GHRC Full Mobile Internet Browser Requirements	CDG		
19.	TS 03.90: Unstructured Supplementary Service Data (USSD)	3GPP		
20.	TS 31.101: UICC-terminal interface; Physical and logical characteristics	3GPP		
21.	TS 11.14: SIM Application Toolkit	3GPP		

Ref	Document Title	Author	Version	Date
22.	TS 23.40: Technical realization of the Short Message Service (SMS)	3GPP		
23.	TS 23.122: Non-Access-Stratum (NAS) functions related to Mobile Station (MS) in idle mode	3GPP		
24.	TS 43.022: Functions related to Mobile Station (MS) in idle mode and group receive mode	3GPP		
25.	TS 51.011: Specification of the Subscriber Identity Module - Mobile Equipment (SIM-ME) interface	3GPP		
26.	TS 102.225: Secure Packet Structure for UICC Applications	ETSI		
27.	TS 102.226: Remote APDU Structure for UICC Applications	ETSI		
28.	TS 102.223: Proactive Commands for UICC	ETSI		

1.4 Acronyms and Abbreviations

Acronym / Abbreviation	Description
3GPP2	3rd Generation Partnership Project 2
3GPP	3rd Generation Partnership Project
APDU	Application Protocol Data Unit
APN	Access Pojnt Name
BIP	Bearer Independent Protocol
CCAT	CDMA Card Application Toolkit
CDG	CDMA Development Group
CCF	CDMA Certification Forum
CSIM	CDMA Subscriber Identity Module
EUIMID	Expanded User Identity Module Identifier
FCC	Federal Communications Commission
GB	Guo Biao (National Standards of PRC)
GCF	Global Certification Forum
GHRC	Global Handset Requirements for CDMA
HBPCD	Handset Based Plus Code Dialing
IC	Industry Canada

Acronym / Abbreviation	Description
ICC	Integrated Circuit Card
ICCID	Integrated Circuit Card Identifier
ITU	International Telecommunications Union
MCC	Mobile Country Code
MNC	Mobile Network Code
MEID	Mobile Equipment Identifier
MIIT	Ministry of Industry and Information Technology (PRC)
MMS	Multimedia Messaging Service
MO	Mobile Originated
MT	Mobile Terminated
NBPCD	Network Based Plus Code Dialing
OMH	Open Market Handsets
PCD	Plus Code Dialing
PRI	Product Release Instructions
PRL	Preferred Roaming List
RFM	Remote File Management
RUIM	Removable User Identity Module
SMS	Short Messaging Service
STK	SIM Application Toolkit
UICC	Universal Integrated Circuit Card
UL	Underwriters Laboratory
USSD	Unstructured Supplementary Service Data
UTK	User Identity Module Toolkit
Wi-Fi	Wireless Fidelity

1.5 Terms and Definitions

Three categories of requirements are established:

(M) Mandatory — The handset **must** support that characteristic in order to achieve approval.

(HD) Highly Desirable	It is highly desirable and recommended that the handset supports this characteristic. This feature may become Mandatory in subsequent versions of the document. Supporting this characteristic will be valued in the commercial promotion of the device.
(O) Optional	It is left up to the manufacturer whether or not the device supports this characteristic. The handset **may** support this characteristic.

In this document the term CDMA encompasses the respective 3GPP2 2G and 3G based technologies under the CDMA 2000 standard i.e. 1X-RTT, EVDO Rev0/A/B etc. The terms GSM encompasses the respective 3GPP 2G and 3G based technologies including GSM/GPRS/EDGE/WCDMA/UMTS/HSDPA/HSUPA/HSPA+. Where applicable references to the specific air interface technology will be made

1.6 Carrier Acceptance

If required by the operator, the following documents and certifications **SHALL** be provided by the manufacturer for technical evaluation of the device:

1.6.1 Documentation

Req. #	Requirement	Category	Remarks	References	PRI Configurable
1.6.1.1	GHRC compliance report detailing compliance or non-compliance to each of the relevant sections of this document	M			N/A
1.6.1.2	CCF Dual Mode Single SIM Terminal Test Report	M	Indicating Pass/Fail/NA to each of the stated requirements		N/A
1.6.1.3	GCF Certification Requirements	HD			N/A
1.6.1.4	Regulatory Type Approval designated for the region where the terminal is being commercialized	M	This should be discussed with the Operator directly: ex MIIT for China , FCC for USA, IC for Canada, etc		N/A
1.6.1.5	Industry Certification for Battery & Charger	M	This should be discussed with the Operator directly: ex UL Certification in North America & Europe, GB Certification for China Market		N/A
1.6.1.6	Should the Integrated Device utilize any additional wireless radio capabilities such as Bluetooth or Wi-Fi, then certification from the respective industry body responsible for overseeing those particular radio capabilities is required	M			N/A

2. Requirements

This section states requirements for the Dual Mode Single SIM CDMA terminal.

2.1 Industry Standards & Specifications Support

The Dual Mode Single SIM Terminal **SHALL** adhere to the following baseline Industry standards & specifications:

Req. #	Requirement	Category	Remarks	References	PRI Configurable
2.1.1	CDG 109: Worldmode	M	Specific requirements based on CDG 109 is highlighted in this document	www.cdg.org	N/A
2.1.2	CDG 177: 3GPP2/3GPP Multi Mode Device and Interoperability Requirements	M	Specific requirements based on CDG 177 is highlighted in this document	www.cdg.org	N/A
2.1.3	CDG 90: CDMA2000 Voice, SMS & Data	M		www.cdg.org	N/A
2.1.4	CDG 155: CDMA2000 Wireless IP	M		www.cdg.org	N/A
2.1.5	CDG 143: Recommended System Selection Requirements for 1X and 1xEV-DO-Capable Terminals	M		www.cdg.org	N/A
2.1.6	CDG 148: CDMA Device Requirements — CDMA2000 1xEV-DO Release 0 & Revision A & B	M	Mandatory only if the terminal supports the corresponding 1XEVDO Releases	www.cdg.org	N/A
2.1.7	CDG 166: Open Market Handsets (OMH) R-UIM Specification	O		www.cdg.org	N/A
2.1.8	CDG 167: Open Market Handsets (OMH) Device Specification	O		www.cdg.org	N/A\
2.1.9	CDG 200: CSIM-Capable Device Requirements	M		www.cdg.org	N/A

Req. #	Requirement	Category	Remarks	References	PRI Configurable
2.1.10	CDG 76 : User Identity Module	M		www.cdg.org	N/A
2.1.11	3GPP2 : C.S0074-A : UICC Interface for C2K Spread Spectrum Systems	M		www.3gpp2.org	N/A
2.1.12	3GPP2 C.S0065-B: C2K Applications on UICC for C2K Spread Spectrum Systems	M		www.3gpp2.org	N/A
2.1.13	3GPP2 C.S0023-D: RUIM for Spread Spectrum Systems	M		www.3gpp2.org	N/A
2.1.14	3GPP2 C.S0035-A: CDMA Card Application Toolkit	M		www.3gpp2.org	N/A
2.1.15	3GPP Release 4	M	Mandatory for terminal supporting GSM/GPRS functionality	www.3gpp.org	N/A
2.1.16	3GPP Release 5	M	Mandatory for terminal supporting HSDPA functionality	www.3gpp.org	N/A
2.1.17	3GPP Release 6	M	Mandatory for terminal supporting HSUPA functionality	www.3gpp.org	N/A
2.1.18	3GPP Release 7	M	Mandatory for terminal supporting HSPA+ functionality	www.3gpp.org	N/A

2.2 Universal Integrated Circuit Card Requirements

Req. #	Requirement	Category	Remarks	References	PRI Configurable
2.2.1	Support a single SIM/UICC Card slot capable of supporting both a single mode & dual mode cards	M			N/A
2.2.2	Support cards based on UICC platform and ICC platform and support all	M		C.S0074 TS 31.101	N/A

Req. #	Requirement	Category	Remarks	References	PRI Configurable
	physical and logical characteristics as defined in the standards			TS 51.011	
2.2.3	Support EUIMID and ICCID for identifying the card	M			N/A
2.2.4	Support reading and writing to C-SIM, R-UIM, USIM & SIM Profiles on the UICC	M			N/A
2.2.5	Support utilizing the user and network credentials as specified in the UICC for the current mode of operation	M	Note: The credentials on the UICC is determined by the Operator. Hence a dual mode card may support a single set of credentials for both CDMA and GSM or different sets of credentials for CDMA and GSM.		N/A
2.2.6	Support STK, UTK & CCAT Application Menus items and display according to the mode the device is in	M			N/A
2.2.7	Support Secure Packet Structure for CCAT Applications	M		C.S0078-0	N/A
2.2.8	Support Secure Packet Structure for UICC Applications	M		TS 102.225	N/A
2.2.9	Support Remote APDU structure for CCAT Application	M		C.S0079-0 / TIA 1107	

Req. #	Requirement	Category	Remarks	References	PRI Configurable
2.2.10	The terminal **SHALL** support Remote APDU structure for UICC Applications			TS 102.226	
2.2.11	The terminal **SHALL** support all Proactive & Envelope commands as supported by the toolkits.	M		CDG 166 CDG167 CDG 200 3GPP2 C.S0035-A: CDMA Card Application Toolkit TS 102.223: Proactive Commands 3GPP TS 11.14 SIM Application Toolkit	N/A
2.2.12	Support Remote File Management (RFM) for RUIM and CSIM based devices	M		C.S0079 TS 102.226	
2.2.13	Support SMS-PP Download for both CDMA and GSM modes	M		TS 23.40 C.S0035 CDG 76	N/A
2.2.14	Support Bearer Independent Protocol (BIP) for both CDMA and GSM modes			C.S0035 TS 23.40	
2.2.15	Support subsidy locking the terminal to a single or a set of UICC cards	M			Yes. Value: Enable/Disable

2.3 Hardware Identifier

Req. #	Requirement	Category	Remarks	References	PRI Configurable
2.3.1	Support a decimal MEID as the hardware identifier	M	MEID value can be used in place of IMEI for GSM Mode operation since both	C.S0072 CDG 109	N/A

Req. #	Requirement	Category	Remarks	References	PRI Configurable
			are 56 bits or 16 decimal digits		

2.4 Frequency Banding Requirements

Req. #	Requirement	Category	Remarks	References	PRI Configurable
2.4.1	Support CDMA Band Class 0, 800 MHz	M			N/A
2.4.2	Support CDMA Band Class 1, 1900 MHz	M			N/A
2.4.3	Support CDMA Band Class 10, Secondary 800 MHz	HD			N/A
2.4.4	Support CDMA Band Class 5, 450 MHz NMT	O			N/A
2.4.5	Support GSM Band 850 MHz	M			N/A
2.4.6	Support GSM Band 900 MHz	M			N/A
2.4.7	Support GSM Band 1800 MHz	M			N/A
2.4.8	Support GSM Band 1900 MHz	M			N/A
2.4.9	Support WCDMA Band 2100 MHz	M			N/A
2.4.10					
2.4.11	Support the ability to enable or disable frequency bands via the PRI	M			N/A

2.5 System Selection Requirements

Req. #	Requirement	Category	Remarks	References	PRI Configurable
2.5.1	Support Constrained Mode of Operation i.e. the terminal is locked to CDMA in Operator's home region, and open to select either CDMA or GSM while roaming	M	This is applicable to both Voice and Data service	CDG 109 CDG 177	N/A
2.5.2	Support Global Mode of Operation i.e. the terminal open to select either CDMA or GSM while in the operators home region or while roaming	M	This allows for the use of different radio access modes for voice and data service	CDG 109 CDG 177	N/A
2.5.3	Support the Operator setting the terminal to operate in either Constrained or Global Mode	M	This **SHALL** be a PRI item which can be set by the Operator		Yes. Value: Constrained, Global
2.5.4	Support the ability of the terminal to operate in Single Radio Standby or Dual Radio Standby Mode	M	Single Radio Standby is defined as only one radio being enabled and/or active at one time. Dual Radio Standby is defined as both radios being enabled, but only one radio being active at any given time. In Constrained Mode, the terminal **SHALL**be operating in Single Radio Standby Mode. In Global Mode the terminal can be in either Single Standby or Dual Standby Mode. This **SHALL** be a PRI item which can be set by the Operator		Yes. Value: Single, Dual
2.5.5	Support the ability to operate Voice services in a different radio access mode than Data services while in both the Home region and Roaming region	M	Voice Services include Voice and SMS Data services include those services requiring establishment of a data IP channel To be made available		N/A

Req. #	Requirement	Category	Remarks	References	PRI Configurable
			only if the device is set to Dual Radio Standby Mode.		
2.5.6	Support allowing the Operator to define which radio access mode Voice Services will be operating over while in the home region	M	To be made available only if the device is set to Dual Radio Standby Mode.This applies to MO calls only, as radio access mode for MT calls will be determined by network and SIM subscription support		Yes. Value: CDMA, GSM
2.5.7	Supporting allowing the Operator to define which radio access mode Data Services will be operating in the home region	M	To be made available only if the device is set to Dual Radio Standby Mode.. This applies to MO calls only, as radio access mode for MT calls will be determined by network and SIM subscription support		Yes. Value: CDMA, GSM
2.5.8	Support allowing the Operator to define which radio access mode Voice Services will be operating over while in roaming	M	To be made available only if the device is set to Dual Radio Standby Mode. This applies to MO calls only, as radio access mode for MT calls will be determined by network and SIM subscription support		Yes. Value: CDMA, GSM
2.5.9	Supporting allowing the Operator to define which radio access mode Data Services will be operating in while roaming	M	To be made available only if the device is set to Dual Radio Standby Mode.. This applies to MO calls only, as radio access mode for MT calls will be determined by network and SIM subscription support		Yes. Value: CDMA, GSM
2.5.10	While in CDMA Mode, comply with System Selection algorithms as defined in CDG 143	M		CDG 143	N/A
2.5.11	While in GSM Mode, comply with 3GPP System Selection requirements in TS 23.122 & TS 43.022	M		TS 23.122 TS 43.022	N/A
2.5.12	Support the CDMA Network Selection Modes as defined in CDG 109 and CDG 177:	M		CDG 109 CDG 177	N/A

Req. #	Requirement	Category	Remarks	References	PRI Configurable
	Automatic Home Only Roaming Only				
2.5.13	Support GSM Network Selection Modes as defined in CDG 109 and CDG 177: Automatic Manual	M	This should be accessible by the user only when roaming outside of the Operator Home Network, unless Constrained mode is disabled by the Operator	CDG 109 CDG 177	N/A
2.5.14	Upon terminal boot up, support reading the UICC card user parameters to determine which modes the terminal shall operate in	M	This **SHALL** be done once the device is in either Constrained or Global Mode of operation and as per Oprator PRI configurations		N/A
2.5.15	If a dual set of user parameters are present (CDMA & GSM) on the card, support launching the terminal by default in the mode specified by the Operator.	M	This **SHALL** be a PRI Item that can be set by the Operator for devices in Single Standby Mode		yes. Value: CDMA, GSM
2.5.16	If a single set of user parameters are present (CDMA or GSM) while roaming outside the Operator's home network, support launching the terminal in the mode as specified by the card	M	This **SHALL** be applicable for devices operating in Single Standby Mode		N/A
2.5.17	If no UICC card is present in the terminal, notify the user that a UICC card needs to be inserted in the terminal	M	The user should still be able to access all local functionality on the terminal even if no UICC is present.		N/A
2.5.18	For Dual Mode cards that have not changed since the last power down, upon power up of the terminal if the last detected network was CDMA, the terminal shall power-up in CDMA mode	M	This **SHALL** be applicable for devices operating in Single Standby Mode		N/A
2.5.19	For Dual mode cards that have not changed since the last power down, upon	M	Note: GSM mode shall be automatically highlighted and		N/A

Req. #	Requirement	Category	Remarks	References	PRI Configurable
	power up of the terminal, if the last detected network was GSM, the terminal shall notify the user to confirm whether to launch in GSM or CDMA mode		selected if no user input within 5 seconds This **SHALL** be applicable for devices operating in Single Standby Mode		
2.5.20	For Single Mode cards that have not changed since the last power down, upon power up of the terminal, support launching the terminal in the mode it was in prior to the last power down.	M	This **SHALL** be applicable for devices operating in Single Standby Mode		N/A
2.5.21	In the event of failure to acquire a valid system using a Dual Mode Card, support automatically switching to the other mode in order to select the network	HD	This **SHALL** be applicable for devices operating in Single Standby Mode		N/A
2.5.22	While in Standby Mode, if the user chooses to change network mode via the Network Selection menu, terminal **SHALL** first deregister from the actively selected mode and perform network scanning on the newly selected mode	M	This **SHALL** be applicable for devices operating in Single Standby Mode		N/A
2.5.23	The terminal **SHALL NOT** require to reboot when changing network modes	M	This **SHALL** be applicable for devices operating in Single Standby Mode		N/A

2.6 Functional Requirements

2.6.1 Voice Calling Requirements

Req. #	Requirement	Category	Remarks	References	PRI Configurable

Req. #	Requirement	Category	Remarks	References	PRI Configurable
2.6.1.1	Support CDMA Voice Services while in CDMA Mode	M		CDG 90	N/A
2.6.1.2	Support GSM Voice Services while in GSM Mode	M		3GPP Release 99	N/A
2.6.1.3	Support interacting with Network Based Plus Code Dialing Systems from the terminal in both CDMA & GSM Mode	M		CDG 145	N/A
2.6.1.4	Support Handset Based Plus Code Dialing when in CDMA mode and NBPCD is not available	M		CDG 198	N/A
2.6.1.5	Support entering, storing displaying, matching to Phonebook and translating of “+” character for incoming and outgoing Voice Calls, Dialer Screen, UICC & Terminal Phonebook & Call History	M		CDG 198	N/A
2.6.1.6	Support storing the latest + code conversion table for all international regions, when using Handset Based Plus Code Dialing while in CDMA Mode	M		CDG 198	N/A
2.6.1.7	The terminal **SHALL NOT** use Handset Based Plus Code Dialing when in GSM mode, but **SHALL** send the “+” code to the network for processing	M			N/A
2.6.1.8	Support indicating in the Call History which network the call was made or received on	M		CDG 109	N/A

2.6.2 Emergency Calling

Req. #	Requirement	Category	Remarks	References	PRI Configurable
2.6.2.1	Support emergency calling on the first available network either in CDMA or GSM mode	M			N/A
2.6.2.2	Should an emergency call fail to establish due to traffic channel failures or OTA network connection errors, automatically retry the call on the current network, without prompting the user	M	This **SHALL** be a PRI item specifying the number of retries		yes. Value: Number of retries
2.6.2.3	Should retries fail to establish the emergency call, automatically retry the call on the next available network without prompting the user	M	The retry algorithm shall be used for each new network the terminal is registering with		N/A
2.6.2.4	Support making an emergency call even if no UICC card is inserted in the device based on the last available mode the terminal was in	M			N/A
2.6.2.5	Support making an emergency call even if no UICC card is inserted in the device based on the last available mode the terminal was in	M			N/A
2.6.2.6	If the last available mode is indeterminate, use the System Selection PRI settings to determine the available mode to be used and place the emergency call on the first available network in that mode	M			N/A

2.6.3 Short Messaging Service Requirements

The following requirements relating to Short Message Service (SMS) pertains specifically to Dual Profile Single SIM terminals. For the full baseline set of requirements for SMS, please refer to CDG 90.

Req. #	Requirement	Category	Remarks	References	PRI Configurable
2.6.3.1	Support Mobile Originated & Mobile Terminated SMS, as defined in CDG Doc 90	M		CDG 90	N/A
2.6.3.2	Support defining the SMS Service Center Number for both CDMA & GSM	M			Yes. Value: CDMA Number, GSM Number
2.6.3.3	Support unified folder for all SMS messages	M	This single folder should contain Received, Sent, Draft and Pending messages		N/A
2.6.3.4	Support storing of SMS messages in a unified Inbox & Outbox on the UICC Card	M			N/A
2.6.3.5	Support indicating with an icon which mode the messages were send from or received on.	M		CDG 109	N/A
2.6.3.6	Support indicating with an icon where the SMS is stored i.e. terminal or UICC	M			N/A
2.6.3.7	Support indicating with an icon what type of message is present in the folder, i.e. MO, MT, draft etc	M			N/A
2.6.3.8	Support a default setting where to store SMS messages	M			Yes. Value: Card, Terminal
2.6.3.9	Support composing, saving, accessing, reviewing & deleting SMS messages in either CDMA or GSM mode and when service is either active or inactive	M			N/A
2.6.3.10	Support sending the SMS message using the current active service of the terminal (CDMA or GSM)	M			N/A
2.6.3.11	Support sending, receiving, storing, matching to Phonebook entries and translating, the				N/A

Req. #	Requirement	Category	Remarks	References	PRI Configurable
	"+" code in SMS messages while in GSM mode				
2.6.3.12	Support sending, receiving, storing, matching to Phonebook entries and translating, the "+" code in SMS messages while in CDMA mode as per the CDG's Handset Based Plus Code Dialing Requirements			CDG 198	N/A

2.6.4 Data Services Requirements

Req. #	Requirement	Category	Remarks	References	PRI Configurable
2.6.4.1	Support CDMA 2000 1X-RTT Data Services while in CDMA Mode in 1X coverage area	M		CDG 90	N/A
2.6.4.2	Support CDMA 2000 EVDO Data Service while in CDMA Mode in 1XEVDO coverage area	M	EVDO Data Service can refer to Release 0, A or B depending on the support provided by the terminal and network	CDG 148	N/A
2.6.4.3	Support CDMA 2000 Wireless IP Requirements for data session establishment while in CDMA Mode	M		CDG 155	N/A
2.6.4.4	Support GPRS Service Type: Class A and Transmission Type Class 12 while in GSM Mode and in GPRS coverage area	M	Class A allows for simultaneous voice and data. Class 12 allows for maximum speeds of 32-48 kbps upload and download	3GPP Release 4	N/A
2.6.4.5	Support EDGE Service Type: Class B and Transmission Type Class 32 while in GSM Mode and in EDGE coverage	M	Class 32 allows for maximum speeds of 296 kbps download and 177.6 kbps upload	3GPP Release 4	N/A

Req. #	Requirement	Category	Remarks	References	PRI Configurable
	area				
2.6.4.6	Support HSPA Service: HSDPA HSUPA HSPA+	HD	This **SHALL** be a PRI item that can be enabled or disabled by the Operator. Ex: Some operators may choose to limit GSM service to 2G		Yes. Value: Enable /Disable

2.6.5 Value Added Services Requirements

The following requirements are for support of various Value Added Services. Since terminals can vary based on device tiers and functionality, it is left to the Operator and OEM to discuss which of these services should be supported on the terminal.

Req. #	Requirement	Category	Remarks	References	PRI Configurable
2.6.5.1	Support Multimedia Messaging Service (MMS) as defined in CDG 92	M		CDG 92 Mobile MMS Requirements	N/A
2.6.5.2	Support Mobile Browser Services as defined in CDG 187	M		CDG 187 Full Internet Browser	N/A

2.6.6 Phonebook Requirements

Req. #	Requirement	Category	Remarks	References	PRI Configurable
2.6.6.1	Support a Unified Phonebook that conforms to the requirements in CDG 90	M		CDG 90	N/A
2.6.6.2	The Unified Phonebook **SHALL** support at minimum 250 contacts	M			N/A

Req. #	Requirement	Category	Remarks	References	PRI Configurable
2.6.6.3	Support reading and writing to a Phonebook that is residing on the UICC	M			N/A
2.6.6.4	When displaying Phonebook information, support identifying where the contact is being stored, i.e. terminal or UICC	M			N/A
2.6.6.5	Support the ability to edit and copy contacts to and from the phonebook on the UICC and the phonebook on the terminal	M		CDG 109	N/A

2.6.7 Call History Requirements

Req. #	Requirement	Category	Remarks	References	PRI Configurable
2.6.7.1	Support displaying for all call records within Call History whether the call was processed on the CDMA or GSM network	M	This includes all types of calls such as dialed calls, received calls, missed calls etc	CDG 109	N/A

2.6.8 Clock Requirements

Req. #	Requirement	Category	Remarks	References	PRI Configurable
2.6.8.1	Support an internal clock that can operate independently of the network	M		CDG 109	N/A
2.6.8.2	Support synchronization of the local clock with the CDMA system time when operating in CDMA mode	M		CDG109	N/A

Req. #	Requirement	Category	Remarks	References	PRI Configurable
2.6.8.3	Support user settable Time & Date when operating in GSM mode	M		CDG 109	N/A
2.6.8.4	Support basic clock functions such as alarm, stop watch etc	M			N/A

2.6.9 GSM Specific Service Requirements

The following requirements apply to the terminal while operating in GSM Mode.

Req. #	Requirement	Category	Remarks	References	PRI Configurable
2.6.9.1	Support GSM Supplementary Services including: Call Forwarding Call Barring Call Hold Call Waiting Multiparty Calling Calling Line ID Advice of Charge Explicit Call Transfer	M		CDG 109 3GPP Release 4	N/A
2.6.9.2	Support invoking the SIM Application Toolkit (STK) menu when the user accesses the SIM Card menu item from the UI	M			N/A
2.6.9.3	Support Unstructured Supplementary Service Data (USSD)	M		3GPP TS 03.90	N/A

2.6.10 Security Requirements

Req. #	Requirement	Category	Remarks	References	PRI Configurable
2.6.11	Support deleting Card	HD			N/A

Req. #	Requirement	Category	Remarks	References	PRI Configurable
	Profile data from the terminal in the following events: Card is removed from the terminal Card Profile is switched when selecting the alternate mode network Resetting of the Card				
2.6.12	Support deleting the Card PIN and Unblock PIN from the terminal when the card is removed from the terminal	M			N/A
2.6.13	Support PIN Code processing when inserting a new card into the terminal	M	This **SHALL** be a PRI item that can be configured by the Operator		Yes. Value: Enable/Disable

2.7 User Interface Requirements

2.7.1 Idle Screen Operations

Req. #	Requirement	Category	Remarks	References	PRI Configurable
2.7.1.1	Upon terminal boot up, if no UICC is present, display a message to the user to insert the UICC card and a message indicating only Emergency Calls being allowed	M			N/A
2.7.1.2	Support displaying whether the terminal is in CDMA or GSM mode when in standby operation	M	This can be displayed adjacent to the Signal Bar Icon		N/A
2.7.1.3	Support pre-loading in the device the latest MCC/MNC to Operator	M		http://www.itu.int/ITU-T/inr/forms/mnc.html	

Req. #	Requirement	Category	Remarks	References	PRI Configurable
	Name mapping list based on the ITU				
2.7.1.4	Support displaying the Current Operator's Name on the idle screen based on the MCC/MNC to Operator name mapping list	M	For Android based devices this shall be displayed in the Screen Lock interface & drop down box of message notification.		N/A
2.7.1.5	The Operator Name **SHALL** be displayed in the language as set by the language setting on the terminal	M			N/A
2.7.1.6	If the Operator Name cannot be determined, then support displaying the MCC & MNC values directly	M			N/A
2.7.1.7	If the MCC & MNC values cannot be obtained, then support displaying the message "Unknown Network"	M			N/A
2.7.1.8	When Roaming outside of the Home Operators network, support displaying the Roaming Icon on the idle screen	M			N/A

2.7.2 User Interface Menu

Req. #	Requirement	Category	Remarks	References	PRI Configurable
2.7.2.1	Support a unified Menu Tree which contains both CDMA centric and GSM centric menu items	M			
2.7.2.2	Support disabling or making inactive any menu items specific to the radio access technology that is not currently in use	M	For example, GSM Settings can be disabled or greyed out when the device is operating in CDMA Mode		N/A

Req. #	Requirement	Category	Remarks	References	PRI Configurable
2.7.2.3	Support the ability to create and edit new Access Point Nodes (APN) for GSM Data Services under the Settings Menu	M			N/A
2.7.2.4	Ensuring the GPRS APN settings are pre-configured as per Operator PRI	M	The Operator may choose to pre-configure any number of APNs for various data services such as MMS, WAP Browsing, Location Based Services etc.		Yes. Value: APN Name Username Password IP Address Port
2.7.2.5	Prevent the deletion of any Operator created APN settings	M			N/A
2.7.2.6	Support accessing the Network Selection Menu via the UICC Menu	M	Network Selection Menu provides access to select either CDMA or GSM Mode of operation		N/A
2.7.2.7	Support allowing the user to set which radio access mode to use for Voice Services while in the home region	M	To be made available only if the device is set to Dual Radio Standby Mode. This **SHALL** be a PRI item that can be enabled or disabled by the Operator		Yes. Value: Enable/Disable
2.7.2.8	Support allowing the user to set which radio access mode to use for Data Services while in the home region	M	To be made available only if the device is set to Dual Radio Standby Mode. This **SHALL** be a PRI item that can be enabled or disabled by the Operator		Yes. Value: Enable/Disable
2.7.2.9	Support allowing the user to set which radio access mode to use for Voice Services while roaming	M	To be made available only if the device is set to Dual Radio Standby Mode. This **SHALL** be a PRI item that can be enabled or disabled by the Operator		Yes. Value: Enable/Disable
2.7.2.10	Support allowing the user to set which radio access	M	To be made available only if the device is set		Yes. Value:

Req. #	Requirement	Category	Remarks	References	PRI Configurable
	mode to use for Data Services while roaming		to Dual Radio Standby Mode. This **SHALL** be a PRI item that can be enabled or disabled by the Operator		Enable/Disable
2.7.2.11	Support displaying the Menu Items and relevant network parameters as read from the UICC when accessing the UICC menu	M			N/A
2.7.2.12	Support accessing the Network Selection Modes menu items from the UI	M	Network Selection Modes Menu provides access to the CDMA, and GSM System Selection Modes, depending on the mode the terminal is in		N/A
2.7.2.13	For menu options or parameters not supported by the card, the terminal UI **SHALL** grey out or make that specific menu item or parameter unelectable	M			N/A
2.7.2.14	Support displaying the Network Mode Option names as per the Operator PRI	M			Yes. Value: specific display wording for CDMA Network & GSM Network
2.7.2.15	Support having access to Airplane Mode from the Network Selection Menu	M			N/A
2.7.2.16	While disabling all RF Channels in Airplane mode, access to the local terminal functionality **SHALL** still be available to the user	M			N/A

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