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Agenda Item: 6.2.3

Source: T2

Title: R99 Change Requests

Document for: Approval

Spec	CR	Rev	Rel	Subject	Cat	Vers Curr	Vers-New	T2 Tdoc	Workitem
21.904	006		R99	Reflection of document structure changes in core specifications and correction of editorial mistakes in the annexes	F	3.1.0	3.2.0	T2-000437	UCR
21.904	007		R99	Reflection of document structure changes in core specifications and correction of editorial mistakes in the main text	F	3.1.0	3.2.0	T2-000543	UCR
23.039	002		R99	Clarification of SC to SME protocol reference information	F	3.1.0	3.2.0	T2-000484	TEI
23.041	005		R99	Defining Assisted GPS Broadcast Identifiers	A	3.2.0	3.3.0	T2-000553	TEI
23.057	010		R99	Storage of user private data in the user profile in the network	F	3.2.0	3.3.0	T2-000401	MExE
23.057	011		R99	Correction of UAProf tags	F	3.2.0	3.3.0	T2-000504	MExE
23.057	012		R99	WAP UAProf URL correction	F	3.2.0	3.3.0	T2-000523	MExE
27.007	041		R99	TE software implementations must take account of extra parameters	F	3.5.0	3.6.0	T2-000548	TEI
27.007	042		R99	APN presentation	F	3.5.0	3.6.0	T2-000448	TEI
27.103	001	1	R99	Introduction of PUSH and TARGET	F	3.0.0	3.1.0	T2-000445	SYNC

3GPP TSG-T2 meeting #10
Galway, Ireland, 28 August-1 Sept 2000

Document *T2- 000437*
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

TR21.904	CR	006	Current Version:	3.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: T#9	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑	for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [ ] Core Network [ ]

Source: T2 **Date:** 9/01/2000

Subject: Reflection of document structure changes in core specifications and correction of editorial mistakes in the annexes

Work item: UE Capability Requirements

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: To reflect changes in document structures made to core specifications which were approved in June '00. Some other editorial changes are also added.

Clauses affected: Annex A, B, C, D, E, F, G, H

Other specs affected:

Other 3G core specifications		→ List of CRs:	
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

3G TR 21.904 V3.21.0 (2000-07)

Technical Report

3rd Generation Partnership Project (3GPP); Technical Specification Group (TSG) Terminals; UE Capability Requirements (Release 1999)

Annex A:
Baseline Implementation Capabilities

The references in this annex are to 3GPP documents agreed for release '99 in June ~~March~~ 2000. The referenced section numbers may change with future versions.

A.1 Baseline implementation capabilities to facilitate conformance testing

UE baseline implementation capabilities:

- The special conformance testing functions and the logical test interface as specified in TS 34.109.
- Up-link reference measurement channel 12.2 kbps (FDD), TS 25.101 clause A.2.1.
- Down-link reference measurement channel 12.2 kbps (FDD), TS 25.101 clause A.3.1.
- Up-link reference measurement channel 12.2. kbps (TDD), TS 25.102 clause A.2.1.
- Down-link reference measurement channel 12.2 kbps (TDD), TS 25.102 clause A.2.2.

A.2 RF Baseline Implementation Capabilities

Table 1: Void

Table 2: RF baseline implementation capabilities for FDD mode
E: Essential Unconditional, C: Essential Conditional, O: Optional

Capability FDD	Specification	Subclause	UE	General Comments
Chiprate 3.84 Mcps	25.101	5.1	E	
Frequency bands —(a) 1920-1980, 2110-2170 MHz (b) 1850-1910, 1930-1990 MHz Combinations of (a), (b) allowed —Other spectrum	25.101	5.2	~~E~~C C O O	Except Region 2 Used in Region 2 FFS, ~~T~~ to allow for regional variations
TX-RX Freq. Sep: ~~-~~ Fixed Separation - 190 MHz - Variable separation – Range - 134.8-245.2 MHz - 80 MHz ~~—~~Variable	25.101	5.3	~~E~~C O C O	For band (a) For band (a) For band (b) FFS, ~~T~~ to allow for regional variations.
Channel ~~raster:~~ arrangement	25.101	5.4	E	
UE maximum output power	25.101	6.2.1, 4.2	~~E~~C	Defined for each UE Power Class. For UE Power Class 3 or 4. UE Power Classes 1,2 are ffs
Output RF spectrum Emissions	25.101	6.6	E	Please see NOTE 1

NOTE 1: Other RF Requirements in 25.101 may also apply as Essential or Esssential-Conditional baseline implementation capabilities or Optional implementation capabilites. Refer to 25.101 Clauses 4-8 for more details.

Table 3: RF baseline implementation capabilities for TDD mode

Capability TDD	Specification	Subclause	UE	General Comments
Chiprate 3.84 Mcps	25.102	5.1	E	
Frequency bands (a) —1900-1920 ~~MHz~~ , —2010-2025 MHz (b) 1850-1910, 1930-1990 MHz (c) 1910-1930 MHz Combinations of a, b, c allowed —Other spectrum	25.102	5.2	~~E~~C ~~E~~C C O O	Except Region 2 For Region 2 For Region 2 FFS, ~~T~~ to allow for regional variations.
Channel ~~raster:~~ arrangement.	25.102	5.4	E	
UE maximum output power	25.102	6.2.1	~~E~~C	Defined for each UE Power Class. For UE Power Class 2 or 3. UE Power Classes 1,4 are ffs
Output RF spectrum Emissions	25.102	6.6	E	Please see NOTE 2

NOTE 2: Other RF Requirements in 25.102 may also apply as Essential or Esssential-Conditional baseline implementation capabilities or Optional implementation capabilites. Refer to 25.102 Clauses 4-8 for more details.

A.3 Physical Layer baseline implementation capabilities

Table 4: FDD mode Physical Layer Baseline implementation capabilities

Baseline Implementation Capability[1]	Specification	Subclause(s)	Comments
Physical Layer UE procedures and measurements:			
Support for network and access node selection	25.214	4.1, 4.2	Cell search and synchronisation
Measurements for Cell selection and reselection	25.215	5.1.1, 5.1.2, 5.1.4, 5.1.6, 5.1.9, 5.1.10	The Measurement in 5.1.2 is essential on the condition that the UE is dual mode FDD-TDD CPICH RSCP measurement
Support for network contact and registration	25.214	6.1	Random access procedure
Power control	25.214 25.215	5.1.1, 5.2.3 5.1	Open Loop PC for PRACH RSCP, SIR measurement
Channel Coding & Multiplexing	25.212	4.1, 4.2	~~Only~~ Ssupport of -Convolutional coding at rates ½ and 1/3 is Essential for all terminals. Support of no coding and Turbo coding is ~~not Essential~~ Optional.
Spreading and Scrambling Code Generation	25.213 25.926	4.1, 4.2.2, 4.3.1, 4.3.2, 4.3.3 5	Code allocation for PRACH Long scrambling code Scrambling code for PRACH message PRACH preamble codes For the uplink, a baseline capable UE is required to support a spreading factor of 256.
Code de-spreading and de-scrambling	25.213 25.926	5.1 5.2 5	
Modulation	25.213	4.4	
De-modulation	25.213	5.3	
Support for downlink Transmit Diversity	25.211	5.3.1, 5.3.3	Open Loop mode Tx diversity is essential to support baseline capability
Transport channels necessary for the above:			
Broadcast channel (BCH)	25.211	4.1.2.14~~.2.1~~	
Paging channel (PCH)	25.211	4.1.2.34~~.2.3~~	PCH is required to transport notification of a change in system information carried on BCCH.
Random access channel (RACH)	25.211	4.1.2.44~~.2.4~~	
Forward access channel (FACH)	25.211	4.1.2.24~~.2.2~~	
Transport Format Combination Indicator (TFCI)	25.212	4.3.2, 4.3.3, 4.3.5.1	
Physical channels necessary for above:			
Timing relation	25.211	7.1, 7.2, 7.3	
Common Pilot Channel (CPICH)	25.211	5.3.3.1	Primary CPICH
Primary Common Control Physical Channel (P-CCPCH)	25.211	5.3.3.2	
Secondary Common Control Physical Channel (S-CCPCH)	25.211	5.3.3.3	
Physical Random Access Channel (PRACH)	25.211	5.2.2.1	

[1] All the baseline implementation capabilities for the FDD mode physical layer should be considered as essential for the terminal.

Synchronisation Channel (SCH)	25.211	5.3.3.4	
Acquisition Indicator Channel (AICH)	25.211	5.3.3.6	

Table 5: TDD mode Physical Layer Baseline Implementation Capabilities

Baseline Implementation Capability[2]	**Specification**	**Subclause(s)**	**Comments**
Physical Layer UE procedures and measurements:			
Support for network and access node selection	25.224	4.4.1~~6.5, 6.6~~	
Cell selection and reselection	25.225	5.1.1, 5.1.4, 5.1.10~~6.1.1, 6.1.3, 6.1.5, 6.1.9, 7.1.1.1~~	
Support for network contact and registration	25.224	4.7~~6.4~~	
Power control	25.224	4.2.2.2~~6.3.3.1~~	
Channel Coding	25.222	4.1, 4.2~~6.1, 6.2~~	Convolutional coding is essential to support the baseline functionality.
Spreading and Scrambling Code Generation	25.223	6, 7	
Code de-spreading and de-scrambling	25.223	6, 7	
Modulation	25.223	5	
Support for downlink Transmit Diversity	25.221	5.4~~6.8~~	
Transport channels necessary for the above:			
Synchronisation channel (SCH)	25.221	5.3.4~~4.1.2~~	SCH exists for TDD mode only
Broadcast channel (BCH)	25.221	4.2.1~~4.1.2~~, 6	
Paging channel (PCH)	25.221	4.2.3~~4.1.2~~, 6	PCH is required to transport notification of a change in system information carried on BCCH.
Random access channel (RACH)	25.221	4.2.4~~4.1.2~~, 6	
Forward access channel (FACH)	25.221	4.2.2~~4.1.2~~, 6	
Physical channels necessary for above:			
Common Control Physical Channel (CCPCH)	25.221	5.3.2~~5.3.1~~, 6	
Physical Random Access Channel (PRACH)	25.221	5.3.3~~5.3.2~~, 6	
Physical Synchronisation Channel (PSCH)	25.221	5.4, 6	

[2] All the baseline implementation capabilities for the TDD mode physical layer should be considered as essential for the terminal.

A.4 Layer 2/3 baseline implementation capabilities (access stratum)

Table 6: Baseline implementation capabilities for Layer 2/3 (access stratum)

Baseline Implementation Capability[3]	Specification	Subclause(s)	Comments
UE procedures:			
The procedures below require support of the RLC protocol described in 25.322, with the exception of RLC header compression.			
Support for PLMN selection Support for location registration	25.304	5.1, 5.4, 10.4, 10.5, 10.6, 10.7	
Cell selection and reselection	25.304	5.2, 10.8	
System information reception	25.304 25.331	6.1, 10.1, 10.2 8.1.1, 10.2.52~~49~~, 10.2.53~~50~~, 10.3.8.1,	The following messages are required: - System information message - BCCH modification info in the Paging type 1 message - System Information Change Indication message
Paging	25.303 25.304 25.331	6.5, 6.6 8, 10.3 8.1.2, 10.2.18~~16~~, 10.2.19~~17~~	The following messages are required: - Paging type 2 message - Paging type 1 message
Idle mode measurements procedure	25.304	7	
RRC connection establishment	25.303 25.331	6.1.1 8.1.3, 10.2.40~~38~~, 10.2.43~~41~~, 10.2.44~~42~~, 10.2.45~~43~~	The following messages are required: - RRC connection request message - RRC connection set up message - RRC connection set-up complete message - RRC connection reject message
RRC Status	25.331	10.2.46~~44~~	The following message is required: - RRC status message
RRC connection release	25.303 25.331	6.1.3 8.1.4, 10.2.41~~39~~, 10.2.42~~40~~	The following messages are required: - RRC connection release message - RRC connection release complete message
Support for higher layer messages on signalling connection	25.303	6.1.2	
Initial Direct transfer	25.331	8.1.8 10.2.12~~10~~	The following message is required: - Initial Direct transfer message
Downlink Direct transfer	25.331	8.1.9 10.2.8~~6~~	The following messages are required: - Downlink Direct transfer message
Uplink Direct transfer	25.331	8.1.10 10.2.62~~59~~	The following message - Uplink Direct transfer message
Cell update	25.303 25.331	6.4.2 10.2.4, 10.2.5, 10.2.34~~33~~ 10.2.35	The following messages are required: - Cell update message - Cell update confirm message - RNTI reallocation message - RNTI reallocation complete message
UE capability	25.303 25.331	6.7.1 8.1.6 10.2.59~~56~~ 10.2.60~~57~~ 10.2.61~~58~~	The following messages are required: - UE capability enquiry message - UE capability information message - UE capability information confirm message
Security mode control	25.331	8.1.12 10.2.47~~45~~ 10.2.48~~46~~	The following messages are required: - Security mode command message - Security mode complete message

[3] All the baseline implementation capabilities for L2/3 should be considered as essential for the terminal.

RNTI reallocation	25.331	8.3.3 10.2.34~~32~~ 10.2.35~~33~~	The following messages are required: - RNTI reallocation message - RNTI reallocation complete message
Measurement control	25.331	8.4.1 8.4.2 10.2.15~~13~~ 10.2.16~~14~~ 10.2.17~~15~~	The following messages are required: - Measurement control message - Measurement control failure message - Measurement report message
Logical channels necessary for the above procedures:			
Synchronisation control channel (SCCH)	25.301	5.3	SCCH exists for TDD mode only
Broadcast control channel (BCCH)	25.301	5.3	BCCH is mapped to BCH. No MAC header is required.
Paging control channel (PCCH)	25.301	5.3	PCCH is needed for notification of the change in system information on BCCH. It may also be needed by the CN MM protocol for reasons other than UE terminated services. There is no Mac header for PCCH.
Common control channel (CCCH)	25.301 25.321	5.3 9.2.1.4	MAC-PDU for mapping CCCH to RACH/FACH
Dedicated control channel (DCCH)	25.301 25.321	5.3 9.2.1.1	MAC-PDU for mapping DCCH to RACH/FACH
Transport channels necessary for the above procedures			
Synchronisation channel (SCH)	25.301	5.2	SCH exists for TDD mode only
Broadcast channel (BCH)	25.301	5.2	
Paging channel (PCH)	25.301	5.2	
Random access channel (RACH)	25.301 25.321	5.2 11.2	RACH transmission procedure
Forward access channel (FACH)	25.301	5.2	

A.5 Layer 3 baseline implementation capabilities (non-access stratum)

Table 7: UE Baseline Implementation Capabilities for NAS E: Essential Unconditional, C: Essential Conditional, O: Optional

Baseline Implementation Capabilities			Ref. Doc	Subclause(s)	Kind of UEs			Comments
					CS-only	PS-only	CS+PS	
UMTS CS mobility management (Optional)	MM common procedures	TMSI reallocation procedure	24.008	4.3.1	E	-	E	
		Authentication procedure	24.008	4.3.2	E	-	E	
		Identification procedure	24.008	4.3.3	E	-	E	
		IMSI detach procedure	24.008	4.3.4	E	-	E	
		Abort procedure	24.008	4.3.5	E	-	E	
		MM information procedure	24.008	4.3.6	O	-	O	
	MM specific procedure	Location updating procedure	24.008	4.4.1	E	-	E	
		Periodic updating	24.008	4.4.2	E	-	E	
		IMSI attach procedure	24.008	4.4.3	E	-	E	
		Generic Location Updating procedure	24.008	4.4.4	E	-	E	
		~~Core Network System Information~~	~~24.008~~	~~4.4.5~~	~~E~~		~~E~~	
		~~Paging response~~	~~24.008~~	~~4.4.6~~	~~E~~		~~E~~	
	MM connection management procedure	MM connection establishment initiated the mobile station	24.008	4.5.1.1	E	-	E	
		MM connection establishment for emergency calls	24.008	4.5.1.5	C	-	C	Essential If speech calls supported.
		MM connection establishment initiated by the network	24.008	4.5.1.3	O	-	O	'Paging response' is Essential ~~included in this chapter~~
		MM connection release	24.008	4.5.3	E	-	E	
UMTS PS mobility management (Optional)	GMM common procedures	P-TMSI reallocation procedure	24.008	4.7.6	-	E	E	
		Authentication and ciphering procedure	24.008	4.7.7	-	E	E	
		Identification procedure	24.008	4.7.8	-	E	E	
		Paging procedure	24.008	4.7.9	-	E	E	
		Receiving a GMM Status message	24.008	4.7.10	-	E	E	
		GMM Information procedure	24.008	4.7.12	-	O	O	
		Service request procedure	24.008	4.7.13	-	E	E	
		~~Core Network System Information~~	~~24.008~~	~~4.7.14~~	~~-~~	~~E~~	~~E~~	
	GMM specific procedure							
		Intersystem change between GSM and UMTS	24.008	4.7.1.7	-	C	C	
		GPRS attach procedure	24.008	4.7.3.1	-	E	E	
		Combined GPRS attach procedure	24.008	4.7.3.2	-	-	C	Essential If class-A or B.

Baseline Implementation Capabilities			Ref. Doc	Subclause(s)	Kind of UEs			Comments
					CS-only	PS-only	CS+PS	
		MS initiated GPRS detach procedure	24.008	4.7.4.1	-	E	E	
		MS initiated Combined GPRS detach procedure	24.008	4.7.4.1.3	-	-	C	Essential If class-A or B.
		Network initiated GPRS detach procedure	24.008	4.7.4.2	-	E	E	
		Normal and periodic routing area updating Procedure	24.008	4.7.5.1	-	E	E	
		Combined routing area updating Procedure	24.008	4.7.5.2	-	-	C	Essential If class-A or B.

A.6 Security baseline implementation capabilities

Table 8: UE Baseline Implementation Capabilities in the security domain

Security feature			Essential/optional capabilities	Subclause In TS 33.102
User Identity Confidentiality			-----	5.1.1
	Identification by temporary identities and confidential transport of other USIM information.		<Essential Unconditional>	6.1
	Identification by a permanent identity *Note: This functionality is implemented in the USIM and is transparent to the UE.*	Use of IMUI and other USIM information in cleartext	<Essential Unconditional>	6.2
		~~Transport of an encrypted IMUI and other USIM information.~~	~~<Essential Unconditional>~~ *~~Note: The use of the enhanced mechanism is detemined by the HE.~~*	~~6.2~~
Entity Authentication			-----	5.1.2
	Authentication and key agreement	The authentication and key agreement protocol	<Essential Unconditional>	6.3
		Authentication and key agreement algorithms. *Note: Algorithms are implemented on the USIM.*	<Optional> *Note: The algorithms are determined by the HE.*	
Confidentiality			-----	5.1.3
	Access Link Data confidentiality		<Essential Unconditional>	6.6
	Encryption indication		<Essential Unconditional>	5.5
~~Hooks for network wide encryption~~			~~<Essential Unconditional>~~	~~5.4.2, 6.7~~
Data integrity			-----	5.1.4
	Access link data integrity		<Essential Unconditional>	6.5
Mobile Equipment Identification			<Essential Unconditional> *Note: Includes capability of having IMEI and capability of reporting it to the network.*	5.1.5
User-to-USIM Authentication			<Essential Unconditional>	5.3.1
USIM-Terminal Link			<Optional>	5.3.2
Secure messaging between the USIM and the network			<Optional> *Note: Security features are HE and application specific*	5.4.1, 8.1
Interoperation between 3GPP and GSM systems			<Essential Conditional> UEs that support GSM SIM or a GSM SIM application on the UICC shall include functions that allow conversion of security parameters from GSM to UMTS to access a 3G system. <Essential Conditional> 3G/GSM dual system terminals shall use the GSM security parameters derived through a conversion function in the USIM application with files required for GSM access when they access to GSM system. If this is not available, a GSM SIM application on the UICC or 2G chip card shall be used.	~~6.8.1~~ ~~6.8.2~~ 6.8

A.7 USIM baseline implementation capabilities

Table 9: Baseline Implementation Capabilities in the USIM domain

Baseline Implementation Capability	Specification	Clause(s)	Essential/Optional Comments
Physical Characteristics			
Support for the card sizes; "ID-1 UICC" and/or "Plug-in UICC"	31.101	4.1, 4.2	<Essential Unconditional>
Provisions of Contacts	31.101	4.4	<Essential Unconditional>
Electrical specifications of the UICC – Terminal interface			
Support for electrical specifications; 3V and 1.8V	31.101	5	<Essential Unconditional>
Initial communication establishment procedures			
Initial communication establishment procedures	31.101	6	<Essential Unconditional>
Protocols			
Transmission protocols T=0 and T=1	31.101	7	<Essential Unconditional> T=0 and T=1 are essential for the Terminal. T=0 is essential for the UICC. <Optional> T=1 is optional for the UICC.
Structure of commands and responses	31.101.	10	<Essential Unconditional>
Generic commands	31.101	11.1	<Essential Unconditional>
Transmission oriented commands	31.101	12	<Essential Unconditional>
Application independent protocol	31.101	14	<Essential Unconditional>
Application independent procedures			
Procedures from USIM initialisation to network registration	31.102	5.1, 5.2	<Essential Unconditional> Capabilities to access the related files with network registration (ex. Files which contain IMSI, RACH access control parameters, forbidden PLMNs and location area information)
Subscription related procedures	31.102	5.3	<Essential Conditional>
Security features			
Authentication and Key agreement procedure	31.102	6.1	<Essential Unconditional>
USIM commands	31.102	7	<Essential Unconditional> Except Subclause 7.1.1.2 <Essential Conditional> Subclause 7.1.1.2 GSM security context Capabilities to access 2G network

Annex B:
Speech Service Implementation Capabilities

This annex identifies Service Implementation Capabilities that are required to support the default speech service. The references in this annex are to 3GPP documents agreed for release '99 in June ~~March~~ 2000. The referenced section numbers may change with future versions.

B.1 Physical layer implementation capabilities to support the default speech service

Table 10: FDD mode Physical Layer Service implementation capabilities for support of AMR speech service

Service Implementation Capability	Specification	Subclause(s)	Comments
Physical Layer UE procedures and measurements:			
Support of Handover	25.215 25.212	5.1, 6.1 4.4	Support of soft handover is Essential for all speech capable UE. Support of Inter-Frequency handover is Essential for all speech capable UE. Terminals shall support measurements commensurate with their mode/system capabilities, to facilitate inter-frequency, inter-mode & inter-system handover.
Power control	25.214 25.215	5.1.2, 5.2.1 5.1.7	Support of inner~~closed~~ loop power control is Essential for all speech capable UE.
Error detection	25.212	4.2.1	Support of 0, 8, 12 and 16 bits CRC per transport block is essential for all UE. Support of 24 bits CRC per transport block is optional.
Channel Coding	25.212	4.2.3	Support of ~~no coding and~~ convolutional coding with rates ½ and 1/3 is E~~e~~ssential for all UE. Support of no coding and turbo coding is Optional.
Multiplexing	25.212 25.926	4.2.4 – 4.2.14 5.1	Uplink. In single service case, with only AMR and a dedicated signalling channel, it is Essential for all terminals to support at minimum 4 transport channels in uplink, of which 1-3 is reserved for AMR and 1 for dedicated signalling. Support of TTI=20 ms for all AMR transport channels except dedicated signalling channel is Essential for all terminals. Downlink In single service case, with only AMR and a dedicated signalling channel, it is Essential for all terminals to support at minimum 4 transport channels in downlink, of which 1-3 is reserved for AMR and 1 for dedicated signalling. Support of TTI=20 ms for all AMR transport channels except dedicated signalling channel is Essential for all terminals.

Service Implementation Capability	Specification	Subclause(s)	Comments
Transport format detection	25.212 25.926 26.071	4.3 5.1 5.0	In downlink, the support of transport format detection with TFCI is essential for all terminals both with fixed and flexible TrCH positions. In downlink, when SF=128 and fixed TrCH positions is used in the single service case, with only AMR and dedicated signalling channel, the support of blind transport format detection is essential for all terminals. In the single service case, with only AMR at one rate and dedicated signalling channel, it is essential for all terminals to support at minimum 2*(~~8~~ 1+1+1)=~~20~~ 6 transport format combinations during the connection in uplink and downlink, of which ~~8~~ 1 is reserved for 1 out of 8 AMR modes, 1 for SID frame, 1 for DTX and the multiplication of 2 is due to dedicated signalling channel having two possible rates (e.g. on/off).
Spreading and Scrambling Code Generation	25.213	4.2.1, 4.3	For the single service case, with only AMR and dedicated signalling channel, it is essential for all terminals to support SF=256, SF=128 and SF=64 in uplink.
Code de-spreading and de-scrambling	25.213	5.1, 5.2	It is essential for all terminals to support SF=128 and SF=256 in downlink
Support for downlink Transmit Diversity	25.211 25.214	5.3.1, 5.3.2 7	Support of open loop and closed loop transmit diversity is Essential for all terminals.
Support for Site Selection Diversity Transmission	25.214	5.2.1.4	Support of SSDT is Essential for all terminals.
Transport channels required:			
Dedicated channel (DCH)	25.211	4.1.1, 6	
Physical channels required:			
Dedicated Physical Data Channel (DPDCH)	25.211	5.2.1, 5.3.2, 6	
Dedicated Physical Control Channel (DPCCH)	25.211	5.2.1, 5.3.2, 6	

Table 11: TDD mode Physical Layer Service implementation capabilities for support of the AMR speech service

Service Implementation Capability	Specification	Sub/Clause(s)	Comments
Physical Layer UE procedures and measurements:			
Handover	25.225	5.1~~5~~	Support of Intra and Inter Frequency hard handover is essential for all terminals. Terminals shall support measurements commensurate with their mode/system capabilities, to facilitate inter-frequency, inter-mode & inter-system handover.
Dynamic Channel Allocation	25.225	5.1~~5~~	Terminals shall support measurement of SIR in different timeslots.
Power control	25.224 25.225	4.2~~4.3~~ 5	Support of ~~closed~~ inner loop control for DL power. Support of open loop control for UL power.
Error detection	25.222	4.2.1~~6.2.1~~	Support of 0, 8, 12 and 16 bits CRC per transport block is essential for all terminals
Channel Coding	25.222	4.2.3~~6.2.3~~	Support of ~~no coding and~~ convolutional coding with rates ½ and 1/3 is essential for all terminals.
Multiplexing	25.222 25.926	4.2.4~~6.2.4~~ – 4.2.13~~6.2.13~~ 5.1	Uplink. In single service case, with only AMR and dedicated signalling channel, it is essential for all terminals to support at minimum 4 transport channels in uplink, of which 1-3 is reserved for AMR and 1 for dedicated signalling. Downlink. In single service case, with only AMR and dedicated signalling channel, it is essential for all terminals to support at minimum 4 transport channels in downlink, of which 1-3 is reserved for AMR and 1 for dedicated signalling. <Note: This assumes that fast mode control is required to be signalled in the downlink direction only. >
Transport format detection	25.222 25.926	4.2.13~~6.2.13~~ 5.1	The support of transport format detection with a TFCI length of 0, 4, 8, 16 and 32 bits is essential for all terminals. Support of 1024 transport format combinations is essential for all terminals
Spreading and Scrambling Code Generation	25.223	6	Terminals shall support spreading factors 8 and 16 for uplink transmission. Simultaneous transmission of up to two codes shall be supported.
Code de-spreading and de-scrambling	25.223	6	Terminals shall support simultaneous reception of up to 2 codes using spreading factor 16 for speech.
Support for Downlink Transmit diversity	25.221 25.224	5.4~~5.2.4~~ 4.8	Support channel estimation on different midambles
Timing Advance	25.224	4.3~~4.4~~	Support of TA adjustment according to higher layer signalling
Discontinuous transmission	25.224	4.5~~4.7~~	Each mobile must be capable to switch of transmission in those physical channels which are not needed to transmit the instantaneous TFC.
Transport channels necessary for the above:			
DCH	25.221	4.1.1.1~~4.1.1~~, 6	
Physical channels necessary for above:			
Dedicated Physical Channel (DPCH)	25.221	5.2, 6	

B.2 Layer 2/3 Implementation Capabilities to support the default speech service

Table 12: Speech Service Implementation Capability for Layer 2/3 (access stratum)

Service Implementation Capability	Specification	Subclause(s)	Comments
UE procedures:			
RRC connection re-establishment	25.331	8.1.5 10.2.37~~35,~~ 10.2.38~~36,~~ 10.2.39~~37~~	The following messages are required: - RRC connection re-establishment message - RRC connection re-establishment complete message - RRC connection re-establishment request message
Radio bearer establishment	25.303 25.331	6.2.1.1 8.2.1 10.2.31~~29~~ 10.2.32~~30~~ 10.2.33~~31~~	The following messages are required: - Radio Bearer Setup message - Radio Bearer Setup Complete message - Radio Bearer Setup Failure message
Radio bearer reconfiguration	25.303 25.331	6.2.1.3 8.2.2 10.2.25~~23~~ 10.2.26~~24~~ 10.2.27~~25~~	The following messages are required: - Radio Bearer Reconfiguration message - Radio Bearer Reconfiguration complete message - Radio Bearer Reconfiguration Failure message
Radio bearer release	25.303 25.331	6.2.1.2 8.2.3 10.2.28~~26~~ 10.2.29~~27~~ 10.2.30~~28~~	The following messages are required: - Radio Bearer Release message - Radio Bearer Release Complete message - Radio Bearer Release Failure message
Transport channel reconfiguration	25.303 25.331	6.2.2 8.2.4 10.2.54~~51~~ 10.2.55~~52~~ 10.2.56~~53~~	The following messages are required: - Transport channel reconfiguration message - Transport channel reconfiguration complete message - Transport channel reconfiguration failure message
Transport format combination control	25.303 25.331	6.2.4 8.2.5 10.2.57~~54~~ 10.2.58~~55~~	The following messages are required: - Transport format combination control message - Transport format combination control failure message
Physical channel reconfiguration	25.303 25.331	6.2.3 8.2.6 10.2.20~~18~~ 10.2.21~~19~~ 10.2.22~~20~~	The following messages are required: - Physical channel reconfiguration message - Physical channel reconfiguration complete message - Physical channel reconfiguration failure message
Active set update in soft handover	25.303 25.331	6.4.1 6.4.4 6.4.5 6.4.6 8.3.4 10.2.1 10.2.2 10.2.3	The following messages are required: - Active Set Update message - Active Set Update Complete message - Active Set Update Failure message

Service Implementation Capability	Specification	Subclause(s)	Comments
UE procedures:			
Inter-system handover	25.303 25.331	6.4.9 6.4.10 8.3.6 8.3.7 8.3.8 8.3.9 9.4 9.5 9.6 10.2.13~~11~~ 10.2.14~~12~~	The following messages are required: - Inter-system handover command message - Inter-system handover failure message Note: support of Inter-system handover is required for multi-mode terminals only.
Hard handover	25.303 25.331	6.4.7 8.3.5	
Downlink outer loop control	25.331	8.2.9 10.2.9~~7~~	The following message is required: - Downlink Outer Loop Control message
Logical channels required in addition to those required for the baseline functionality, for the above procedures:			
Dedicated traffic channel (DTCH)	25.301	5.3	
Transport channels required in addition to those required for the baseline functionality, for the above procedures			
Dedicated channel (DCH)	25.301	5.2	

B.3 Layer 3 (non-access stratum) implementation capabilities to support the default speech service

Table 12: UE Speech Service Implementation Capability for Layer 3 Non-Access Stratum
E: Essential Unconditional, C: Essential Conditional, O: Optional

		Service Implementation Capabilities			Ref. Doc	**Subclause(s)**	Tele-service for Terminals	Comments
							Speech (w/ E. call)	
	Layer 3 specification	UMTS Call Control (Optional)	Mobile originating call Establishment		24.008	5.2.1	C	Essential for speech service
			Mobile terminating call Establishment		24.008	5.2.2	C	Essential for speech service
			Call clearing	Exception conditions	24.008	5.4.2	C	Essential for speech service
				Clearing initiated by the mobile station	24.008	5.4.3	C	Essential for speech service
				Clearing initiated by the network	24.008	5.4.4	C	Essential for speech service
			In-band tones and announcements		24.008	5.5.1	C	Essential for speech service
			Status procedure		24.008	5.5.3	C	Essential for speech service
			Call re-establishment, mobile station side		24.008	5.5.4	C	Essential for speech service
			Progress		24.008	5.5.6	C	Essential for speech service
			DTMF protocol control procedure (send DTMF to PLMN direction)		24.008	5.5.7	C	Essential for speech service

Annex C:
SMS Service Implementation Capabilities

This annex identifies Service Implementation Capabilities that are required to support SMS. The references in this annex are to 3GPP documents agreed for release '99 in June ~~March~~ 2000. The referenced section numbers may change with future versions.

C.1 Physical layer implementation capabilities to support the SMS service

Table 13: FDD mode Physical Layer Service implementation capabilities for support of SMS service

Service Implementation Capability	Specification	Subclause(s)	Comments
Physical Layer UE procedures and measurements:			
Support of Handover	25.215 25.212	5.1, 6.1 4.4	Support of handover may be required depending on how SMS is implemented.
Power control	25.214 25.215	5.1.2, 5.2.1 5.1.7	Support of inner~~closed~~ loop power control may be required depending on how SMS is implemented.
Error detection	25.212	4.2.1	Support of 0, 8, 12, and 16 bits CRC per transport block is essential for all terminals.
Channel Coding	25.212	4.2.3	
Multiplexing	25.212	4.2.4 – 4.2.14	In SMS service case, it is Essential for all terminals to support at minimum 1 transport channels in uplink, of which is reserved dedicated signalling. In SMS service case, it is Essential for all terminals to support at minimum 1 transport channels in downlink, of which is reserved for dedicated signalling.
Transport format detection	25.212	4.3	In downlink, the support of transport format detection with TFCI is essential for all terminals both with fixed and flexible TrCH positions.
Spreading and Scrambling Code Generation	25.213	4.2.1, 4.3	
Code de-spreading and de-scrambling	25.213	5.1, 5.2	
Support for downlink Transmit Diversity	25.211 25.214	5.3.1, 5.3.2 7	Support of closed loop transmit diversity may be required depending on implementation.
Support for Site Selection Diversity Transmission	25.214	5.2.1.4	Support of SSDT may be required depending on implementation.
Transport channels required in addition to those required for the baseline functionality, for the above procedures:			
Downlink Shared Channel (DSCH)	25.211	4.1.2.6~~4.2.6~~, 6	Conditional on Implementation
Common Packet Channel (CPCH)	25.211	4.1.2.5~~4.2.5~~, 6	Conditional on Implementation
Dedicated Channel (DCH)	25.211	4.1.1.1~~4.1.1~~, 6	Conditional on Implementation
Physical channels required in addition to those required for the baseline functionality, for the above procedures:			
Physical Common Packet Channel (PCPCH)	25.211	5.2.2.2.6	Conditional on Implementation
Physical Downlink Shared Channel (PDSCH)	25.211	5.3.3.5.6	Conditional on implementation
Dedicated Physical Data Channel (DPDCH)	25.211	5.2.1, 5.3.2, 6	Conditional on implementation
Dedicated Physical Control Channel (DPCCH)	25.211	5.2.1, 5.3.2, 6	Conditional on implementation

C.2 Layer 2/3 Implementation Capabilities to support SMS Service

Table14: SMS Service Implementation Capabilities Layer 2/3 (access stratum)

SMS Service Implementation Capabilities	Specification	Subclause(s) [i]	Comments
UE procedures:			
RRC connection re-establishment	25.331	8.1.5 10.2.37~~35~~ 10.2.38~~36~~ 10.2.39~~37~~	The following messages are required: - RRC connection re-establishment message - RRC connection re-establishment complete message - RRC connection re-establishment request message
Active set update in soft handover	25.303 25.331	6.4.1 6.4.4 6.4.5 6.4.6 8.3.4 10.2.1 10.2.2 10.2.3	If handover is supported, the following are required: - Active Set Update message - Active Set Update Complete message - Active Set Update Failure message
Inter-system handover	25.303 25.331	6.4.9 6.4.10 8.3.6 8.3.7 8.3.8 8.3.9 9.4 9.5 9.6 10.2.13~~11~~ 10.2.14~~12~~	If handover is supported, the following are required: - Inter-system handover command message - Inter-system handover failure message Note: support of Inter-system handover is required for multi-mode terminals only.
Hard handover	25.303 25.331	6.4.7 8.3.5	Dependent on whether handover is supported.
Downlink outer loop control	25.331	8.2.9 10.2.9~~7~~	Supported of the Downlink Outer Loop Control message may be required depending on how SMS is implemented.
Logical channels required in addition to those required for the baseline functionality, for the above procedures:			
Dedicated Traffic Channel (DTCH)	25.301	5.3	DTCH is conditional on implementation.
Transport channels required in addition to those required for the baseline functionality, for the above procedures			
Dedicated Channel (DCH)	25.301	5.2	DCH is conditional on implementation.

C.3 SMS-PP Layer 3 (non access stratum)

Table 15: UE Service Implementation Capability for SMS-PP Layer3 (non access stratum)
E: Essential unconditional, C: essential Conditional, O: Optional, N/A: Not Applicable

	Service Implementation Capabilities			Ref. Doc	Subclause(s)	Service for UE		Comments
						SMS-PP		
						CS	PS	
Layer 3 specification (procedures)	CM-procedure	Connection establishment procedures		24.011	5.3.1	C	N/A	
		RP Data Unit (RPDU) transfer procedures	RPDU transfer for CS	24.011	5.3.2.1	C	N/A	
			RPDU transfer for GPRS	24.011	5.3.2.2	N/A	C	
		Connection release procedures		24.011	5.3.3	C	N/A	
		Procedures for abnormal cases		24.011	5.3.4	C	C	
	hort Message ely Procedure	TP Data Unit(TPDU) Relay Procedure		24.011	6.3.1	C	C	
		Notification relay procedures		24.011	6.3.3	C	C	
		Procedures for abnormal cases		24.011	6.3.4	C	C	

Annex D:
CBS Service Implementation Capabilities

This annex identifies Service Implementation Capabilities that are required to support CBS. The references in this annex are to 3GPP documents agreed for release '99 in June ~~March~~ 2000. The referenced section numbers may change with future versions.

D.1 Physical layer implementation capabilities to support the CBS service

Table 16: FDD mode Physical Layer Service implementation capabilities for support of CBS service

Service Implementation Capability	Specification	Subclause(s)	Comments
Physical Layer UE procedures and measurements:			
Error detection	25.212	4.2.1	Support of 0, 8, 12 and 16 bits CRC per transport block is essential for all terminals.
Channel Coding	25.212	4.2.3.	
Multiplexing	25.212	4.2.4 – 4.2.14	

D.2 Layer 2/3 Implementation Capabilities to support CBS Service

Table 17: CBS Service Implementation Capability for Layer 2/3 (access stratum)

Service Implementation Capability	Specification	Subclause(s)	Comments
UE procedures:			
BMC message reception	25.324	9.4 10.2 10.3	The following messages are required: - BMC CBC Message - BMC Schedule Message
Logical channels required in addition to those required for the baseline functionality, for the above procedures:			
Common traffic channel (CTCH)	25.301	5.3	

Annex E:
Bearer Services Service Implementation Capabilities

This annex identifies Service Implementation Capabilities that are required to support Bearer Services. The references in this annex are to 3GPP documents agreed for release '99 in June ~~March~~ 2000. The referenced section numbers may change with future versions.

E.1 Service implementation capabilities to facilitate conformance testing of Bearer Services capabilities

NOTE: Support of the following reference measurement channels is essential depending on the Bearer Services supported by a given terminal.

Terminal service implementation capabilities:

- Down-link reference measurement channel 64 kbps (FDD), TS 25.101 clause A.3.2.
- Down-link reference measurement channel 144 kbps (FDD), TS 25.101 clause A.3.3.
- Down-link reference measurement channel 384 kbps, 20ms TTI (FDD), TS 25.101 clause A.3.4.
- Down-link reference measurement channel 384 kbps (FDD), TS 25.101 clause A.3.5
- Down-link reference measurement channel 64 kbps (TDD), TS 25.102 clause A.2.3.
- Down-link reference measurement channel 144 kbps (TDD), TS 25.102 clause A.2.4.
- Down-link reference measurement channel 384 kbps (TDD), TS 25.102 clause A.2.5.

E.2 Physical layer implementation capabilities to support Bearer service

Table 18: FDD mode Physical Layer Service implementation capabilities for support of Bearer service

Service Implementation Capability	Specification	Subclause(s)	Comments
Physical Layer UE procedures and measurements:			
Handover	25.215 25.212	5.1, 6.1 4.4	Support of soft handover is Essential for all UE. Support of Inter-Frequency handover is Essential for all UE. Terminals shall support measurements commensurate with their mode/system capabilities, to facilitate inter-frequency, inter-mode & inter-system handover.
Power control	25.214 25.215	5.1.2, 5.2.1 5.1.7	Support of inner~~closed~~ loop power control is Essential for all UE.
Error detection	25.212	4.2.1	Support of 0, 8, 12 and 16 bits CRC per transport block is essential for all terminals.
Channel coding & Multiplexing	25.212 25.926	4.2.3, 4.2.4-4.2.14 4.5.1, 4.5.2, 5.1	Support of Convolutional coding at rates ½ and 1/3 is Essential. Support of no coding and Turbo coding is ~~essential only for block sizes of greater than 320 bits.~~ Optional
Spreading and Scrambling Code Generation	25.213	4.2.1, 4.3	
Code de-spreading and de-scrambling	25.213	5.1, 5.2	
Support for downlink Transmit Diversity	25.211 25.214	5.3.1, 5.3.2 7	Support of open loop and closed loop transmit diversity is Essential for all terminals.
Support for Site Selection Diversity Transmission	25.214	5.2.1.4	Support of SSDT is Essential for all terminals.
Transport channels required in addition to those required for the baseline functionality, for the above procedures:			
Downlink Shared Channel (DSCH)	25.211	4.1.2.6~~4.2.6~~, 6	Conditional on Implementation
Common Packet Channel (CPCH)	25.211	4.1.2.5~~4.2.5~~, 6	Conditional on Implementation
Dedicated channel (DCH)	25.211	4.1.1.1~~4.1.1~~, 6	Conditional on Implementation
Physical channels required in addition to those required for the baseline functionality, for the above procedures:			
Physical Common Packet Channel (PCPCH)	25.211	5.2.2.2.6	Conditional on Implementation
Physical Downlink Shared Channel (PDSCH)	25.211	5.3.3.5.6	Conditional on implementation
Dedicated Physical Data Channel (DPDCH)	25.211	5.2.1 5.3.2, 6	Conditional on Implementation
Dedicated Physical Control Channel (DPCCH)	25.211	5.2.1 5.3.2, 6	Conditional on Implementation

E.3 Layer 2/3 Implementation Capabilities to support Bearer Services

Table 19: Bearer Services Service Implementation Capabilities Layer 2/3 (access stratum)

Bearer Services Service Implementation Capabilities	Specification	Subclause(s) [ii]	Comments
UE procedures:			
RRC connection re-establishment	25.331	8.1.5 10.2.3735 10.2.3836 10.2.3937	The following messages are required: - RRC connection re-establishment message - RRC connection re-establishment complete message - RRC connection re-establishment request message
Radio bearer establishment	25.303 25.331	6.2.1.1 8.2.1 10.2.3129 10.2.3230 10.2.3331	The following messages are required: - Radio Bearer Setup message - Radio Bearer Setup Complete message - Radio Bearer Setup Failure message
Radio bearer reconfiguration	25.303 25.331	6.2.1.3 8.2.2 10.2.2523 10.2.2624 10.2.2725	The following messages are required: - Radio Bearer Reconfiguration message - Radio Bearer Reconfiguration complete message - Radio Bearer Reconfiguration Failure message
Radio bearer release	25.303 25.331	6.2.1.2 8.2.3 10.2.2826 10.2.2927 10.2.3028	The following messages are required: - Radio Bearer Release message - Radio Bearer Release Complete message - Radio Bearer Release Failure message
Transport channel reconfiguration	25.303 25.331	6.2.2 8.2.4 10.2.5451 10.2.5552 10.2.5653	The following messages are required: - Transport channel reconfiguration message - Transport channel reconfiguration complete message - Transport channel reconfiguration failure message
Transport format combination control	25.303 25.331	6.2.4 8.2.5 10.2.5754 10.2.5855	The following messages are required: - Transport format combination control message - Transport format combination control failure message
Physical channel reconfiguration	25.303 25.331	6.2.3 8.2.6 10.2.2018 10.2.2119 10.2.2220	The following messages are required: - Physical channel reconfiguration message - Physical channel reconfiguration complete message - Physical channel reconfiguration failure message
URA update	25.303 25.331	6.4.3 8.3.2 10.2.6461 10.2.6562	The following messages are required: - URA update message - URA update confirm message

Bearer Services Service Implementation Capabilities	Specification	Subclause(s) [ii]	Comments
UE procedures:			
Active set update in soft handover	25.303 25.331	6.4.1 6.4.4 6.4.5 6.4.6 8.3.4 10.2.1 10.2.2 10.2.3	The following messages are required: - Active Set Update message - Active Set Update Complete message - Active Set Update Failure message
Inter-system handover	25.303 25.331	6.4.9 6.4.10 8.3.6 8.3.7 8.3.8 8.3.9 9.4 9.5 9.6 10.2.13~~11~~ 10.2.14~~12~~	The following messages are required: - Inter-system handover command message - Inter-system handover failure message is required. Note: support of Inter-system handover is required for multi-mode terminals only.
Hard handover	25.303 25.331	6.4.7 8.3.5	
Downlink outer loop control	25.331	8.2.9 10.2.9~~7~~	The following message is required: - Downlink Outer Loop Control message
PDCP – PDU transfer	25.323	5.4	PDCP-PDU is Essential for UE which have packet switched data service
Logical channels required in addition to those required for the baseline functionality, for the above procedures:			
Common Traffic Channel (CTCH)	25.301	5.3	Conditional on Implementation
Dedicated traffic channel (DTCH)	25.301	5.3	Conditional on Implementation
Transport channels required in addition to those required for the baseline functionality, for the above procedures			
Downlink Shared Channel (DSCH)	25.301	5.2	Conditional on Implementation
Common Packet Channel (CPCH)	25.301	5.2	Conditional on Implementation
Dedicated channel(DCH)	25.301	5.2	Conditional on Implementation

E.4 Layer 3 (non access stratum)

Table 20: UE Service Implementation Capability for Layer3 (non access stratum)

E: Essential unconditional, C: essential Conditional, O: Optional

	Service Implementation Capabilities			Ref. Doc	Subclause(s)	Bearer service for Terminals		Comments
						Circuit SW data	Packet SW data	
Layer 3 specification	UMTS Call Control	Mobile originating call Establishment		24.008	5.2.1	C	-	
		Mobile terminating call Establishment		24.008	5.2.2	C	-	
		Network initiated MO call (CCBS)		24.008	5.2.3	O	-	
		Call clearing	Exception conditions	24.008	5.4.2	C	-	
			Clearing initiated by the mobile station	24.008	5.4.3	C	-	
			Clearing initiated by the network	24.008	5.4.4	C	-	
		In-band tones and announcements		24.008	5.5.1	C	-	
		Status procedure		24.008	5.5.3	C	-	
		DTMF protocol control procedure		24.008	5.5.7	O	-	
	MTS Session anagement	PDP context activation		24.008	6.1.3.1	-	C	
		Secondary PDP context activation procedure		24.008	6.1.3.2		O	
		PDP context modification procedure		24.008	6.1.3.3	-	C	
		PDP context deactivation procedure		24.008	6.1.3.4	-	C	
		Receiving a SM STATUS message by a SM entity		24.008	6.1.3.6	-	C	

Annex F: Supplementary Services Service Implementation Capabilities

This annex identifies Service Implementation Capabilities that are required to support Supplementary Services. The references in this annex are to 3GPP documents agreed for release '99 in June ~~March~~ 2000. The referenced section numbers may change with future versions.

F.1 Supplementary Service Layer 3 (non access stratum)

Table 21: UE Service Implementation Capability for Supplementary Service Layer3 (non access stratum)

E: Essential unconditional, C: essential Conditional, O: Optional

	Service Implementation Capabilities			Ref. Doc	Subclause(s)	SS for UE	Comments
						Call Forward, Advise of Change, USSD, Explicit Call transfer, and others	
Layer 3 specification	UMTS Call Control	Mobile originating call Establishment		24.008	5.2.1	C	CC is related upon each SS operations. *: Conditional, If CCBS is supported.
		Mobile terminating call Establishment		24.008	5.2.2	C	
		Network initiated MO call (CCBS)		24.008	5.2.3	C*	
		Call clearing	Exception conditions	24.008	5.4.2	C	
			Clearing initiated by the mobile station	24.008	5.4.3	C	
			Clearing initiated by the network	24.008	5.4.4	C	
		In-band tones and announcements		24.008	5.5.1	C	
		Status procedure		24.008	5.5.3	C	
		DTMF protocol control procedure		24.008	5.5.7	C	
	Supplementary Service	Generic Procedure for the control of SS (CALL RELATED)		24.010	2.2.4	O	SA defines support items. See each specific procedure depending on supporting services. The procedures are defined in the TS24.072, 24.08x-series, 24.09x-series CC is Related upon each SS operation.
					2.2.6.1	O	
					2.2.7.1	O	
					2.2.8.1	O	
		Generic Procedure for the control of SS (CALL INDEPENDENT)		24.010	2.2.5	C	
					2.2.6.2	C	
					2.2.7.2	C	
					2.2.8.2	C	
		SS Support procedure		24.010	3	C	
		Password management		24.010	4	C (depending on supporting services)	
		Supplementary service cross phase compatibility		24.010	5	C (depending on supporting services)	

Annex G:
USAT Service Implementation Capabilities

This annex identifies Service Implementation Capabilities that are required to support Supplementary Services. The references in this annex are to 3GPP documents agreed for release '99 in June ~~March~~ 2000. The referenced section numbers may change with future versions.

G.1 USIM implementation to support USAT

Table 22: USIM Implementation Capabilities to support USAT

Service Implementation Capability	Specification	Sub/Subclauses	Essential/Optional Comments
USIM Application Toolkit			
USAT commands	31.101	11.2	<Essential Conditional>
Support for USAT feature	31.111	5	<Essential Conditional>
Proactive/Envelope commands	31.111	6, 7	<Essential Conditional>

Annex H:
LCS Service Implementation Capabilities

This annex identifies Service Implementation Capabilities that are required to support the LCS Service Capability. The references in this annex are to 3GPP documents agreed for release '99 in June ~~March~~ 2000. The referenced section numbers may change with future versions.

H.1 Physical layer implementation capabilities to support LCS

Table 23: FDD mode physical layer implementation capabilities to support LCS

Measurements and Procedures	Specification	Subclause	Comment
Idle Periods for IDPL location method	25.214 25.215	8 5.1.10	General IPDL procedure SFN-SFN Observed Time Difference
UE GPS Timing of Cell Frames for LCS	25.215	~~5~~5.1.13	

H.2 Layer 2/3 access stratum implementation capabilities to support LCS

Table 24: FDD mode layer 2/3 non-access stratum implementation capabilities to support LCS

Measurements and Procedures	Specification	Subclause	Comment
SFN-SFN Observed time difference	25.302	9.2.15	Essential only for support of ODTOA based mechanisms

H.3 Layer 3 non-access stratum implementation capabilities to support LCS

Table 25: FDD mode layer 3 non-access stratum implementation capabilities to support LCS

Measurements and Procedures	Specification	Subclause	Status	Comment
Mobile station Classmark 2	24.008	10.5.1.6	C	Essential if LCS is supported

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Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*
(U)SIM [ ] ME [X] UTRAN / Radio [ ] Core Network [ ]

Source: T2 **Date:** 9/01/2000

Subject: Reflection of document structure changes in core specifications and correction of editorial mistakes in the main text

Work item: UE Capability Requirements

Category: *(only one category shall be marked with an X)*

F	Correction	[X]
A	Corresponds to a correction in an earlier release	[ ]
B	Addition of feature	[ ]
C	Functional modification of feature	[ ]
D	Editorial modification	[ ]

Release:

Phase 2	[ ]
Release 96	[ ]
Release 97	[ ]
Release 98	[ ]
Release 99	[X]
Release 00	[ ]

Reason for change: To reflect changes in document structures made to core specifications which were approved in June '00. Some other editorial changes are also added.

Clauses affected: All of Main text except Annexes A, B, C, D, E, F, G, H

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

Foreword

This Technical Report (TR) has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document may be subject to continuing work within the 3GPP and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

Introduction

The 3GPP System consists of UEs and Network Infrastructure. The System is designed to support a wide variety of services and UE types. Due to this diversity of applications there are many options within the 3GPP specifications. The present document identifies the implementation requirements for the sub-set of options (referred to as **baseline capabilities**) that are required in 3GPP UEs to allow world-wide roaming of UEs within all 3GPP networks. The present document also identifies the implementation requirements for specific UE Service Capabilities, in order to help ensure end to end interworking for UEs claiming to support compatible services.

1 Scope

The present document defines a baseline set of capability requirements that enable all UEs to "register" with all applicable 3GPP networks (depending on the availability of a appropriate subscription). It describes all the functions that a UE has to perform in order to "exist" within a 3GPP network. These functions are used to derive requirements for all aspects of UE baseline capability. The present document also identifies different UE Service Capabilities and the functions that a UE must perform in order to access a service. The actual capabilities that a UE must posses to meet these requirements are identified in the report and in some instances listed in the Annexes to the present document, as well as being described in the referenced implementation specifications.

The present document introduces the concept of "**service-less UE**" which can exist in the network but provides no user service. Although this is not a marketable UE type it describes from the standardisation viewpoint a baseline set of capabilities to which specific service-related UE capabilities can then be added.

The present document should not be used as the sole basis for UE design, only as an informative indication of capabilities required to support a given functionality, and as a pointer to the location of text describing said functionality, in the core specifications.

UE capability requirements may include some regulatory requirements (mandatory requirements). However, it is not intended to identify them as such in this report. Some of the requirements identified in this document as essential, may therefore also be “mandatory” according to the definition of that term appearing herein.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

[1] 3G TS 25.304: "3GPP; UE Procedures in idle mode".

[2] 3G TS 25.303: "3GPP; UE Functions and Inter-Layer Procedures in Connected Mode".

[3] 3G TS 22.101: "3GPP; Service Principles".

[4] 3G TS 22.100: "3GPP; UMTS Phase 1 Release 99".

[5] 3G TS 22.105: "3GPP; Service Aspects, Services and Service Capabilities".

[6] 3G TS 22.121: "3GPP; Service Aspects, Virtual Home Environment".

[7] 3G TS 22.129: "3GPP; Handover between UMTS and GSM or other Radio systems".

[8] GSM 02.04: "Digital cellular telecommunications system (Phase2+); General on supplementary services".

[9] GSM 02.81: "Digital cellular telecommunication system (Phase 2+); Line identification supplementary services - Stage 1".

[10] GSM 02.82: "Digital cellular telecommunication system (Phase 2+); Call Forwarding (CF) supplementary services - Stage 1".

[11] GSM 02.83: "Digital cellular telecommunication system (Phase 2+); Call Waiting (CW) and Call Hold (HOLD) supplementary services - Stage 1".

[12] GSM 02.84: "Digital cellular telecommunication system (Phase 2+); MultiParty (MPTY) supplementary services - Stage 1".

[13] GSM 02.85: "Digital cellular telecommunication system (Phase 2+); Closed User Group (CUG) supplementary services - Stage 1".

[14] GSM 02.86: "Digital cellular telecommunication system (Phase 2+); Advice of Charge (AoC) supplementary services - Stage 1".

[15] GSM 02.88: "Digital cellular telecommunication system (Phase 2+); Call Barring (CB) supplementary services - Stage 1".

[16] GSM 02.91: "Digital cellular telecommunication system (Phase 2+); Explicit Call Transfer (ECT)".

[17] 3G TS 24.008: "3GPP; Layer 3 specification".

[18] 3G TR 21.910: "3GPP; ~~Multi-system~~ Multi-mode UE issues - Categories, principles and procedures (Release 1999)".

[19] 3G TS 26.071: "3GPP; Mandatory Speech Codec speech processing functions AMR Speech Codec; General Description".

[20] 3G TS 26.073: "3GPP; ANSI-C code for the Adaptive Multi Rate speech codec".

[21] 3G TS 26.074: "3GPP; Mandatory Speech Codec speech processing functions; AMR Speech Codec Test Sequences".

[22] 3G TS 26.071: "3GPP; Mandatory Speech Codec speech processing functions AMR speech codec; Transcoding functions".

[23] 3G TS 26.0091: "3GPP; Mandatory Speech Codec speech processing functions AMR speech codec; Error concealment of lost frames".

[24] 3G TS 26.093: "3GPP; Mandatory Speech Codec speech processing functions AMR Speech Codec; Source Controlled Rate operation".

[25] 3G TS 26.071: "3GPP; Mandatory Speech Codec speech processing functions Voice Activity Detector (VAD)".

[26] 3G TS 26.110: "Codec for Circuit Switched Multimedia Telephony Service:General Description".

[27] 3G TS 26.111: "Modifications to H.324".

[28] 3G TS 26.112: "Call Set Up Requirements".

[29] 3G TR 26.911: "Terminal Implementor’s Guide".

[30] 3G TR 25.926: "3GPP; UE Radio Access Capabilities".

[31] 3G TS 23.146: "Technical realisation of facsimile group 3 non-transparent".

[32] 3G TS 27.002: "Terminal Adaptation Functions (TAF) for services using asynchronous bearer capabilities".

[33] 3G TS 27.001: "General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)".

[34] 3G TS 22.071: "Locations Service (LCS); Service description, Stage 1".

[35] 3G TS 25.305: "Stage 2 Functional Specification of Location Services in UTRAN".

[36] 3G TS 23.040: "Technical realisation of Short Message Service (SMS)".

[37] 3G TS 24.011: "Short Message Service Support on Mobile Radio Interface".

[38] 3G TS 23.041: "Technical realisation of Cell Broadcast Service (CBS)".

[39] 3G TS 22.042: "Network and Identity Timezone (NITZ); Service description, Stage 1".

[40] 3G TS 22.090: "Unstructured Supplementary Service Data (USSD) – Stage 1".

[41] 3G TS 24.080: "Mobile Radio Interface Layer 3 supplementary services specification; Formats and Coding".

[42] 3G TS 31.101: "UICC – Terminal Interface; Logical and Physical Characteristics".

[43] 3G TS 31.111: "USIM Application Toolkit (USAT)".

[44] 3G TS 23.057: "Mobile Station Application Execution Environment (MExE); Functional Description; Stage 2".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply.

Baseline capabilities: capabilities that are required for a service-less UE to operate within a network. The baseline capabilities for a UE include the capabilities to search for, synchronise with and register (with authentication) to a network. The negotiation of the UE and the network capabilities, as well as the maintenance and termination of the registration are also part of the required baseline capabilities

Baseline Implementation Capabilities (BIC): set of Implementation capabilities, in each technical domain, required to enable a UE to support the required Baseline capabilities

Essential UE Requirement (Conditional): Requirement which has to be implemented under certain Service conditions. e.g. AMR codec in UE which supports speech service

Essential UE Requirement (Unconditional): Requirement which has to be implemented in any 3G UE in order to exist in and communicate with 3G network. e.g. Chiprate of 3.84Mcps

Implementation capability: a capability that relates to a particular technical domain. Examples: a spreading factor of 128 (in the domain of the physical layer); the A5 algorithm; a 64 bit key length (in the domain of security); a power output of 21 dBm (in the domain of transmitter performance); support of AMR Codec (in the domain of the Codec); support of PIN (in the domain of the USIM)

Mandatory UE Requirement: Regulatory requirement which is applicable to 3G UEs. It is determined by each country/region and beyond the scope of 3GPP specification. e.g. Spurious emission in UK

Optional UE Requirement: Any other requirements than 3 requirements listed above. It is totally up to individual manufacturer to decide whether it should be implemented or not. e.g. Network Initiated MM connection establishment

Service Implementation Capabilities (SIC): set of Implementation capabilities, in each technical domain, required to enable a UE to support a set of UE Service Capabilities

service relationship: the association between two or more entities engaged in the provision of services

service-less UE: a UE that has only the Baseline capabilities

UE Service Capabilities (USC): capabilities that can be used either singly or in combination to deliver services to the user. The characteristic of UE Service Capabilities is that their logical function can be defined in a way that is independent of the implementation of the UMTS system (although all UE Service Capabilities are of course constrained by the implementation of UMTS). Examples: a data bearer of 144 kbps; a high quality speech teleservice; an IP teleservice; a capability to forward a speech call

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

BIC	Baseline Implementation Capability
SIC	Service Implementation Capability
USC	UE Service Capability

4 Baseline Definition

The requirements for the baseline implementation capabilities can be defined by the functions required of a UE to power on and attempt registration with a network. Note that successful completion of the registration procedure depends on the subscription and UE Service Capabilities of the UE and user, and is therefore outside the scope of the baseline requirements. The basic Essential MS requirements are further explained in clauses ~~15~~ 13 of 22.101 Service Principles [3]. The corresponding baseline implementation capabilities are referenced in Annex A. The registration attempt and maintenance is illustrated in the state diagram of figure 1.

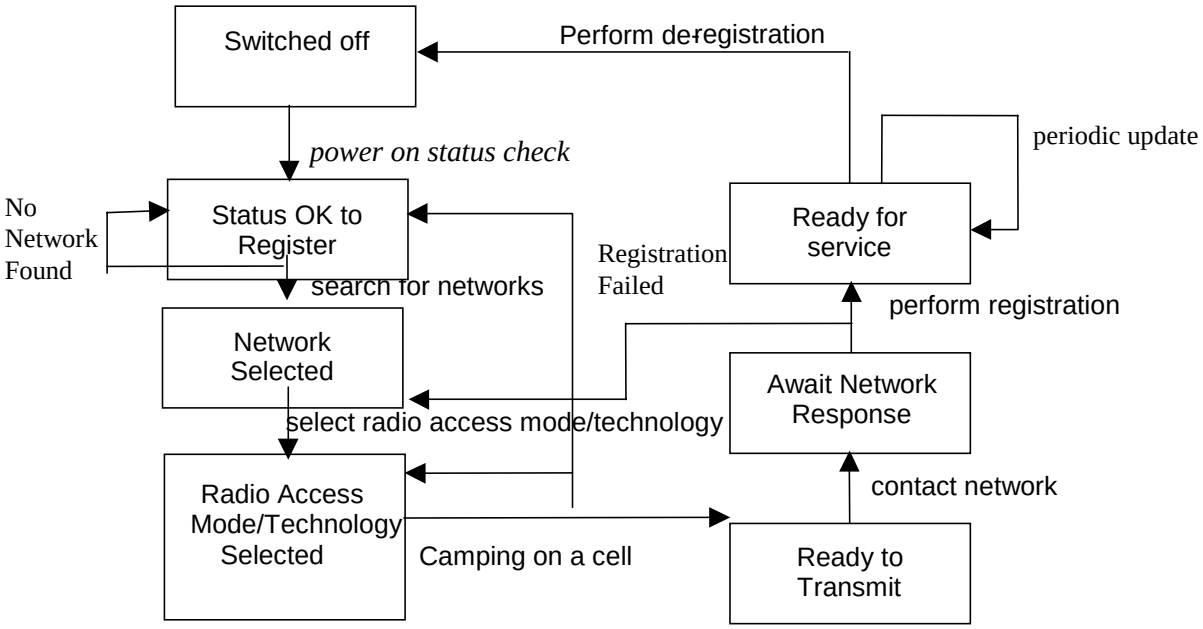

Figure 1: states required for baseline capability

The actions and states given in figure 1are defined below.

4.1 Switched off

The state "switched off" describes the UE when no 3GPP system functions are operational.

4.2 Power-on status check

The action "power-on status check" describes starting the 3GPP functions within the UE and checking that the UE meets the 3GPP system requirements needed to start the registration procedure (e.g. an appropriate subscription). If no subscription is available, the UE may still select an access node and enter an limited service state in which only emergency calls can be attempted.

4.3 Status OK to register

The state "status OK to register" describes the UE when all checks have been performed and the UE is ready to start 3GPP reception.

4.4 Search for networks

The action "search for networks" describes the UE's attempt to detect and decode the information for all networks in its immediate environment. The UE will initially search for the network to which it was last connected, and then its home network, before undertaking any further search. The result of any subsequent search should produce a list of available networks from which one can be selected on which to attempt registration. If no suitable networks can be found, the UE can revert to its "OK to register" state.

4.5 Network selected

The state "network selected" describes the UE~~UE~~ when a 3GPP network has been selected for a registration attempt. The particular network to be selected may be chosen either manually or automatically.

4.6 Select radio access mode/technology

The action "select radio access mode" describes the UE's selection of an available radio access mode e.g. UTRA FDD/TDD mode or GSM/GPRS. The decision may be made manually or automatically.

4.7 Radio access mode/technology selected

The state "radio access mode" describes the UE when it has selected a radio access mode to use in attempt to contact the network.

4.8 Camping on a cell

The action "camping on a cell" describes the UE's selection of one cell in which to attempt registration. This action is further described in 25.304 [1], and enables the UE to receive system information. More detailed descriptions of the procedures for selecting PLMN (including radio access mode selection), and cell selection/re-selection, are also given in 25.304[1].

4.9 Ready to Transmit

The state "ready to transmit" describes the condition in which the UE has regulatory permission to start transmitting at the 3GPP frequencies.

4.10 Contact network

The action "contact network" describes the UE's act of transmitting a first signal to the network to indicate its desire to register.

4.11 Await network response

The state "await network response" describes the condition in which the UE is waiting for the network to respond to its first contact signal.

4.12 Perform registration

The action "perform registration" describes the MM and GMM procedures for authentication, capability negotiation and location/routing area updating. A list of required MM and GMM procedures are given in Annex A section 5. Those procedures are further defined in 24.008 [17]. Note that in order to "perform registration" the UE briefly enters a connected state as defined in 25.303 [2]. If registration fails the UE can return to either the Status OK to register, Network selected, or Radio Access Mode/Technology selected state, depending on the reason for registration failure.

4.13 Ready for service

The state "Ready for service" describes the condition in which the UE has successfully completed the registration procedures. If registration is unsuccessful the mobile can revert to the "radio access mode selected" state and try searching for another available network. At this point the UE is ready to initiate or receive data for a specific service. Note that in order to maintain the "ready for service" state, the UE will have to periodically update the location/routing area information, as described in 24.008 [17].

4.14 Perform De-registration

The action "perform de-registration" describes the procedures for de-registering the UE prior to power-off. After de-registration the UE returns to the power-off state.

5 UE Implementation Types

Although the baseline capability requirements define what is needed for service-less UEs there are a few basic service-less UE types can be used to meet these requirements. Examples of these are as follows:

- UTRA FDD and/or TDD mode
- GSM mode

~~- single-mode FDD;~~

~~- single-mode TDD;~~

~~- dual-mode FDD/TDD;~~

~~- dual-mode FDD/GSM;~~

~~- dual-mode TDD/GSM;~~

~~- tri-modeFDD/TDD/GSM.~~

Further information on UE implementation types can be found in 21.910 [18].

6 UE Service Definition

The requirements for the Service Implementation Capabilities can be defined by the functions required of a UE to request and access a service from the network, as well as enter into and maintain a connected state for the purposes of receiving that, or other service(s). Note that it is not always necessary to enter into a connected state in order to receive a service. In order to simplify the service definition, only two UE states for service access are shown in figure 2. More details of the UE Service Capabilities are given in section 7. UE Functions and Inter-Layer Procedures in Connected Mode are clearly defined in ~~defined in~~ 25.303 [2].

Figure 2: states required for service capability

The actions and states given in figure 2 are defined below.

6.1 Ready for service

The "Ready for service" state is described in subclause 4.13 above.

6.2 Select appropriate service Radio Access Mode/Technology

The UE may change its Radio Access Mode/Technology prior to a service initiation attempt, depending on the service to be accessed.

6.3 Appropriate Radio Service Access Mode/Technology selected

The state “Appropriate Radio Service Access Mode/Technology selected” describes the UE when it has changed its Radio Access Mode/Technology for the purposes of attempting to initiate a specific service.

6.4 Service initiation attempt

The action "Service initiation attempt" describes the act of attempting to a access a service. The action is initiated in the UE, either in response to a page from the network, or as a result of higher layer activity in the UE. If it is not possible to access the required service (e.g. due to failure of the radio link, absence of an appropriate subscription) then the UE will return to the "Ready for service" state.

6.5 Receive service

The state "Receive Service" describes the UE when a service relationship has been established with the network, and the UE is in the process of accessing the requested service. It is also possible that the UE will request/terminate additional services whilst in the "Receive service" state. The many service possibilities/combinations that exist for this state are discussed in section 7 below. The corresponding Service Implementation Capabilities are referenced in Annex B. This state encompasses any handovers that might take place within the network and with other 3G networks & 2G networks, depending on the UE's modes of operation.

6.6 Terminate service

The action "Terminate service" describes the act of the ending all current service relationships and re-entering the "ready for service" state. The action can be initiated by either the UE, or the Network. Note that if more than one service is being accessed simultaneously, a service can be terminated without ending the service relationship.

7 UE Service Capabilities

UE Service Capabilities are required in addition to Baseline Capabilities in order that the UE can support a given service. In the 3GPP documentation unless otherwise stated, none of the identified UE Service Capabilities are Essential for the UE and the support of one service in a UE does not imply a requirement to support any other service (unless otherwise stated).

Details of negotiable implementation capabilities for the radio access domain are contained in [30]. However, the intention of that document is to identify the capabilities parameters that have to be notified by the UE to the UTRAN, rather than to explicitly identify the implementation capabilities required to support a given service.

7.1 3GPP Standardised UE Service Capabilities

The 3GPP release '99 requirements for the UE Service Capabilities listed below are listed in TS 22.100 UMTS Phase 1 Release 99 [4]. UMTS R99 will standardise the technical means by which a UE may implement the following UE Service Capabilities. The UE Service Capabilities can be divided into five main categories as follows:

1. **Tele-services (defined in [5])**
   - Speech.
   - Emergency Call (essential for all UE supporting the default speech service).
   - —Short Message Service.
   - Cell Broadcast Service - CBS.
2. **Bearer Services**
   - Circuit-switched data
   - Packet-switched data
   - Defined by their attributes as described in [5].
     - Information transfer attributes (e.g. ~~Connection mode,~~ Information transfer rate, Information Transfer Characteristics, etc.).
     - —Information quality attributes (e.g. Bit Error Ratio, Maximum transfer delay, Delay variation, etc.).
3. **Supplementary services**

- Defined in GSM R'99[1]. Examples:
  - Call Forwarding as defined in [10].
  - Advice of Charge as defined in [14].
  - Explicit Call transfer as defined in [16].

4. **Service capabilities (described in [6])**
   - Mobile station Execution Environment (MExE).
   - Location Services (LCS).
   - SIM Application Toolkit (SAT).
5. **GSM system features (defined in [5])**
   - Network Identity and Time Zone (NITZ).
   - Unstructured Supplementary Service Data (USSD).

7.1.1 Support of 3GPP standardised UE Service Capabilities

7.1.1.1 Teleservices

7.1.1.1.1 Default Speech Service

The default speech service that is provided using the Adaptive MultiRate (AMR) codec, is unusual UMTS in that it is a standardised service, rather than a service which can be supported by standardised capabilities, i.e. the implementation of the service itself is specified. The AMR codec for implementation in UMTS UE equipment is defined in [19] to [25]. Support of the AMR in the UE has implications for the UE physical layer and layers 2/3 (Access Stratum). Annex B contains the Service Implementation Capabilities required for UEs supporting the default speech service.

7.1.1.1.2 Emergency Speech Call

It is essential that all speech capable UE support Emergency Call procedures. Emergency Speech Call is defined in [3].

7.1.1.1.3 Short Message Service

The Short Message Service provides a means to transfer short messages between a UE and an SME via an SC. The SMS is defined in [36]. The use of radio resources for the transfer of short messages between the UE and the MSC or the SGSN is described in [37].

Details of the UE service implementation capabilities to support SMS, can be found in Annex C.

7.1.1.1.4 Cell Broadcast Service

The CBS service permits a number of unacknowledged general CBS messages to be broadcast to all receivers within a particular region. The Cell Broadcast Service is defined in [38].

Details of the UE service implementation capabilities to support CBS, can be found in Annex D.

7.1.1.2 Bearer services

Bearer services are described in [5] as providing the capability for information transfer between access points, involving only low layer functions. 3GPP has identified a requirement to support real time and non-real time applications in

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[1] Note that Supplementary Services are used to complement and personalise the usage of basic telecommunication services (bearer services and teleservices). The capabilities standardised in UMTS shall enable provision of all the supplementary services specified in GSM 02.04 [8] and the 02.8x/02.9xseries [9] –[16].

release ’99 of the UMTS specification. An example of a real time application is given as a real time data stream or conversational service , having a guaranteed bit rate, end to end delay and delay variation. A non – real time transfer of information, such as file transfer, should permit differentiation as regards the QoS between different users. In addition 3GPP has agreed the requirement to support Multi-Media applications requiring the ability to support several information flows to/from users, with each information flows having a different traffic types e.g. real/non- real time.

The quality of the information is described in terms of:

- Maximum transfer delay.
- Delay variation.
- Bit error ratio.
- Data rate.

Since the maximum transfer delay and transfer delay is mainly a function of the network and not the UE it is not proposed to consider those issues further in this document other than in their impact on the required connection mode. The Bit Error Rate (BER) and Data rate are however, parameters that are dependent on the UEs capabilities, so they will be considered hereafter. The required end user Quality of Service (QoS) is specified in subclause 5.4 and 5.5 of [5] where services are further divided into those that are error tolerant (e.g. conversational speech) and those that are error intolerant (e.g. www browsing). ~~QoS issues are further discussed in [25].~~

Details of the UE service implementation capabilities to support bearer services, can be found in Annex E.

7.1.1.3 Supplementary Service

The standardised Supplementary Services are defined in GSM R’99, and are specified in [8], and [9] to [16]. Details of the UE service implementation capabilities to support Supplementary Services, can be found in Annex F.

7.1.1.4 Service Capabilities

7.1.1.4.1 MExE

The MExE standard uses a client/server approach to services creation provision and delivery to handsets. It is one of the 3 toolkits (the other two are CAMEL and SAT) specified in 3GPP to create virtually all new services for 3GPP.

A MExE handset may download services in the form of applications and content from servers. The services may then be configured, personalised and run on the MExE handset by the user, and do not necessarily rely on any intrinsic service support from the network. A MExE handset may support a diverse range of services, providing a dynamic and evolutionary set of facilities to users. The support of this unlimited range of new services, will convert a mobile handset from being a device which simply makes and receives calls and messages, into a commodity which may become the wireless equivalent of a portable hi-fi, games console, PDA and more, all combined into one device.

The Stage 2 functional description of MExE can be found in [44]. A MExE supporting UE does not require any MExE specific implementation capabilities in the other technical domains specified in the Annexes of this document.

7.1.1.4.2 USIM Application Toolkit

The USIM Application Toolkit (USAT) is a set of commands and procedures for use during the network operation phase of UMTS, in addition to those defined in [42]. The interface between the Universal ICC (UICC) and the Mobile Equipment (ME), including the USAT specific ME procedures, is defined in [43].

Brief details of the UE service implementation capabilities to support USAT, can be found in Annex G.

7.1.1.4.3 LCS

It has been agreed that 3GPP standards will support location service features, to allow new and innovative location based services to be developed. As such it is a requirement that the current location of the user’s terminal can be identified and reported in a standard format (e.g. geographical co-ordinates), so that such information can be made available to the user, UE, network operator, service provider, value added service providers and for network internal operations.

A Stage 1 description for LCS can be found in [34]. A Stage Two description for LCS in the UTRAN can be found in [35]. ~~That~~ These documents ~~define~~ the LCS service requirements and architecture, functional entities and operations to support location methods, from the UTRAN viewpoint.

Some details of the UE service implementation capabilities to support LCS, can be found in Annex H.

7.1.1.5 GSM System Features

7.1.1.5.1 Network Identities Time Zone (NITZ)

The feature Network Identities and Timezone (NITZ) is defined in [39]. NITZ enables a serving PLMN to transfer its current identity, universal time, DST and LTZ to UE, so that the UE can store and use this information if required. Support of NITZ is optional in both UE and Network. There are no specific UE implementation capabilities required to support the service other than those necessary for the baseline functionality.

7.1.1.5.2 USSD

Two modes of USSD (MMI-mode and application mode) are described in [40]. Information relating to the formats and coding of supplementary services for layer 3 can be found in [41].

7.2 Other UE Service Capabilities

The nature of the UMTS standard is such that it facilitates the implementation of UE Service Capabilities such as Fax, Video telephony, Audio and Video Streaming, that are not themselves specified within the UMTS standard. Such UE Service Capabilities are instead realised using standards that have been defined outside of 3GPP, and the defined Bearer Services in subclause 7.1. The intention is that the UMTS standard shall not limit the implementation of such non-standardised USCs. However, it is important to ensure that non-standardised services can be delivered to UEs with an appropriate Quality of Service. Example mappings of services to UE Service Capabilities are therefore required, in order to try to identify the USC requirements to support the more commonly envisaged services. Further details of QoS requirements for envisaged services can be found in [5].

7.2.1 Multimedia Services

For release ’99, 3G-324M (modified from ITU H.324) has been agreed as the default standard for UEs supporting Multimedia capabilities. Details of the Service Implementation Capabilities in the codec domain for the support of that standard are contained in [25] to [27] inclusive. A terminal implementor’s guide has also been produced in [28]. The core capabilities identified in the above documents are listed below.

- Support of H.223 with Annex A and B multiplex, and H.245 version 3 or later versions for system control protocol is essential. Support of H.223 with Annex C and D is optional.

- Support of the AMR audio codec is essential for 3G-324M terminals offering audio communication. Support for G.723.1 is optional, but recommended.

- Support of the H.263 video codec is essential for 3G-324M terminals offering video communication. Support of H.263 with Annexes and for MPEG-4 simple profile, is optional. 3G-324M terminals can also support H.261.

- Support of bit rates of at least 32 kbit/s at the mux to wireless network interface, is essential.

7.2.2 Fax Service

The support of Fax in UMTS for release '99, is defined in [4], [31], [32] and [33]. The basic requirements of the terminal supporting alternate speech/facsimile group 3 service and automatic facsimile group 3 service, are as follows:

- Establishment of a connection with the following connection element attributes: non transparent, full duplex, asynchronous, 14,4 kbps or 9,6 kbps fixed network user rate, 28,8 kbps wanted air user rate.
- TAF Terminal Adaptation functions are required for conversion of electrical, mechanical, functional and procedural characteristics of the V series to those required by the PLMN. They are classified in:
  - General TAFs: performing synchronisation of traffic channel, terminal compatibility decision, interfacing with V. 24, (V.25bis V.25 ter).
  - TAFs for asynchronous bearers capabilities and non-transparent services: including L2R (RLP), flow control and buffering functions.
  - Specific TAFs for facsimile: for adaptation to T.30, T.4, interface V 24, (V.25bis V.25 ter).
- Asynchronous bearer capabilities.
- Procedures for Mobile Originated call, Mobile Terminated call, generate MODIFY message (if Speech/facsimile service).

3GPP TSG-T2 #10
Galway, IRELAND
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for approval [X] for information [ ]

strategic [ ] Non-strategic [ ] *(for SMG use only)*

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [ ]

Source: T2 **Date:** 30.08.2000

Subject: Clarification of SC to SME protocol reference information.

Work item: TEI

Category: *(only one category shall be marked with an X)*

F	Correction	[X]
A	Corresponds to a correction in an earlier release	[ ]
B	Addition of feature	[ ]
C	Functional modification of feature	[ ]
D	Editorial modification	[ ]

Release:

Phase 2	[ ]
Release 96	[ ]
Release 97	[ ]
Release 98	[ ]
Release 99	[X]
Release 00	[ ]

Reason for change: SC to SME Interface Specification contact information updated.

Clauses affected:

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

3 SC to SME interface protocols

The proprietary SC to SME interface protocols specifications are listed as follows:

3.1 **Short Message Peer to Peer (SMPP) Interface Specification (~~Logica~~SMPP Forum)**

Specification available from :- www.smpp.org~~/docs~~

3.2 **Short Message Service Centre external machine interface (Computer Management Group)**

Specification available from:- www.cmgtelecom.com

3.3 **SMSC to SME Interface Specification (Nokia Networks~~Cellular Systems~~)**

Specification available from:- ~~No details available~~cimd.support@nokia.com

3.4 **SMSC Open Interface Specification (SEMA Group)**

Specification available from:- www.semagroup.com/m&t/telecoms.htm

3.5 **SMSC Computer Access Service And Protocol Manual (Ericsson)**

Specification available from:- Ericsson Compitex AB, Telephone number +46 31 7099000

NOTE: 3GPP takes no responsibility for the viability of any of the optional SC to SME interface protocols referred to. Enquiries relating to their technical content should be made directly to the editing authority for each specification.

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***Document* T2-000553**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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23.041	CR	005	Current Version:	V3.2.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: T #9 *list expected approval meeting # here ↑*

for approval [X] for information [ ]

strategic [ ] non-strategic [ ] *(for SMG use only)*

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [ ] Core Network [ ]

Source: T2 **Date:** August 29, 2000

Subject: Proposed CR to TS 23.041 for Defining Assisted GPS Broadcast Identifiers.

Work item: TEI

Category: *(only one category shall be marked with an X)*

F	Correction	[ ]
A	Corresponds to a correction in an earlier release	[X]
B	Addition of feature	[ ]
C	Functional modification of feature	[ ]
D	Editorial modification	[ ]

Release:

Phase 2	[ ]
Release 96	[ ]
Release 97	[ ]
Release 98	[ ]
Release 99	[X]
Release 00	[ ]

Reason for change:

There is a misalignment between the recently completed GSM 04.35 (Broadcast Network Assistance for Enhanced Observed Time Difference (E-OTD) and Global Positioning System (GPS) Positioning Methods) and 03.41/23.041.

One of the aims of the LCS work within 3GPP has been to align the assisted GPS method with that used in GSM, as defined by ETSI and T1P1.5.

This CR proposes to make corresponding changes to the 3GPP specifications in order to maintain alignment with the GSM specifications.

Clauses affected: 9.4.1.2.2

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

As 04.35 has only just been completed, it is unlikely any implementation exists that utilises 03.41/23.041 in its current form.

There are no known implementations to the knowledge of T2 SWG3 delegates.


help.doc

<--------- double-click here for help and instructions on how to create a CR.

***** NEXT MODIFIED SECTION******

9.4.1.2.2 Message Identifier

This parameter identifies the source and type of the CBS message. For example, "Automotive Association" (= source), " Traffic Reports" (= type) could correspond to one value. A number of CBS messages may originate from the same source and/or be of the same type. These will be distinguished by the Serial Number. The Message Identifier is coded in binary.

The ME shall attempt to receive the CBS messages whose Message Identifiers are in the "search list". This "search list" shall contain the Message Identifiers stored in the EF_{CBMI}, EF_{CBMID} and EF_{CBMIR} files on the SIM (see GSM 11.11) and any Message Identifiers stored in the ME in a "list of CBS messages to be received". If the ME has restricted capabilities with respect to the number of Message Identifiers it can search for, the Message Identifiers stored in the SIM shall take priority over any stored in the ME.

The use/application of the Message Identifier is shown in the following list, with octet 3 of the Message Identifier shown first, followed by octet 4. Thus "1234" (hex) represents octet 3 = 0001 0010 and octet 4 = 0011 0100.

0000 - 03E7 (hex): To be allocated by PLMN operator associations. If a Message Identifier from this range is in the "search list", the ME shall attempt to receive such CBS message.

This version of GSM 03.41 does not prohibit networks from using Message Identifiers in the range 0000 - 03E7 (hex) for Cell Broadcast Data Download to the SIM.

03E8 (hex): LCS CBS Message Identifier for E-OTD Assistance Data message.

03E9 (hex): LCS CBS Message Identifier for DGPS Correction~~Assistance~~ Data message.

03EA (hex): LCS CBS Message Identifier for GPS Ephemeris and Clock Correction~~GPS Navigation Message Bits~~ Data message.

03EB (hex): LCS CBS Message Identifier for GPS Almanac and Other Data message.

03EC~~B~~ - 0FFF (hex): Intended for standardization in future versions of GSM 03.41. These values shall not be transmitted by networks that are compliant to this version of GSM 03.41. If a Message Identifier from this range is in the "search list", the ME shall attempt to receive this CBS message.

1000 - 107F (hex): Networks shall only use Message Identifiers from this range for Cell Broadcast Data Download in "clear" (i.e. unsecured) to the SIM (see GSM 11.14). If a message Identifier from this range is in the "search list", the ME shall attempt to receive this CBS message.

1080 – 10FF (hex): Networks shall only use Message Identifiers from this range for Cell Broadcast Data Download secured according to GSM 03.48 [15] to the SIM (see GSM 11.14). If a message Identifier from this range is in the "search list", the ME shall attempt to receive this CBS message.

1100 - 9FFF (hex): intended for standardization in future versions of GSM 03.41. These values shall not be transmitted by networks that are compliant to this version of GSM 03.41. If a Message Identifier from this range is in the "search list", the ME shall attempt to receive this CBS message.

A000 - AFFF (hex): PLMN operator specific range. The type of information provided by PLMN operators using these Message Identifiers is not guaranteed to be the same across different PLMNs. If a Message Identifier from this range is in the "search list", the ME shall attempt to receive this CBS message.

B000 - FFFE (hex): intended as PLMN operator specific range in future versions of GSM 03.41. These values shall not be transmitted by networks that are compliant to this version of GSM 03.41. If a Message Identifier from this range is in the "search list", then the ME shall attempt to receive this CBS message.

FFFF (hex): Reserved, and should not be used for new services, as this value is used on the SIM to indicate that no Message Identifier is stored in those two octets of the SIM. If this Message Identifier is in the "search list", the ME shall attempt to receive this CBS message.

Generally, the MMI for entering these codes in the ME is left to the manufacturers' discretion. However, the 1000 lowest codes shall be capable of being specified via their decimal representation i.e.:

Octet 3	Octet 4.	
0000 0000	0000 0000	(decimal '000').
0000 0000	0000 0001	(decimal '001').
0000 0000	0000 0010	(decimal '002').
0000 0000	0000 0011	(decimal '003').
	:	: :
	:	: :
0000 0011	1110 0111	(decimal '999').

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Galway, Ireland, 28-31 August 2000

T2-000401
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

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23.057	CR	010	Current Version:	3.2.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	T#9	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [ ] Core Network [ ]

Source: T2 **Date:** 07.08.2000

Subject: Storage of user private data in the user profile in the network

Work item: MExE

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: This will remove an unnecessary constrain from the specifications and enable MExE to support network based private data storage such as a user phone book.

Clauses affected: 4.5.1

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

4.5 User profile

The user profile (which may consist of sub user profiles for a user) contains the characterisation of the MExE MS as defined by the user and service provider. Further, it is also possible for multiple users of a MExE MS to each have their own user profiles. The user profile is not unique to the MExE MS, and this clause identifies the usage and content of the user profile from a MExE perspective only, and does not identify the generic support of user profiles in general. Refer to UMTS 22.101 [14] for further details on the user profile.

4.5.1 Location of, access to, and security of, the user profile

As multiple user profiles may be defined, the user is able to set up or receive calls/connections associated with different user profiles simultaneously by securely activating a user profile (with each user profile being associated with at least one unique identifier). Refer to the Security clause for further details on user profile activation.

The user's characterisation of the MExE MS in the user profile may be modified at any time by the user and the service provider, and changes affected at the earliest possible opportunity.

The security clause shall apply to all user profiles at all times, whether activated or not

The user profile is securely managed by the MExE MS, and stored in a secure area of the MExE MS (either SIM or ME). The service provider may also retain the user profile in the network for service optimisation. User private data in the user profile ~~should not~~ may also be stored in the network, however only with the user permission.

The support of more than one user profile is not mandatory.

4.5.2 User profile and capability negotiation relationship

The user profile contains the user's preferences. Support of the user's preferences will depend on the capabilities of the device. If the capabilities change, then the degree of support of the user's preferences may change too.
The capability negotiation between the MExE terminal and the MSE, as shown in figure 2, contains those user preferences which the device is able to support.
In this way the MSE will serve a MExE terminal with the lowest common denominator of the users preferences, the terminal capabilities and the provided service characteristics and support the user's preferences to the maximum degree.

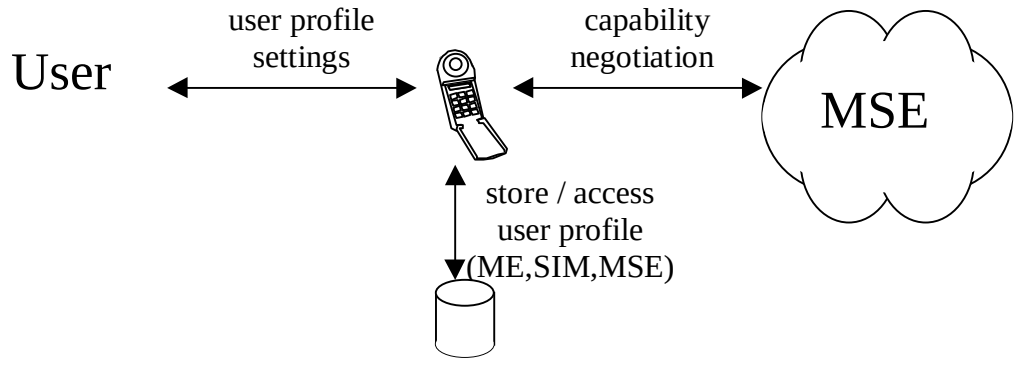

Figure 2: Model of user profile and capability relationship

4.5.3 Support of the user profile

The user profile acts as a repository (which is always available in the MExE MS) defining the MExE MS behaviour.

MExE preferences and personalisation are supported in the user profile (e.g. UMTS portability and support of VHE defined in [12] and other 22-series specifications), which in turn is based on the Composite Capability/Preference Profile (CC/PP) specification from W3C [16].

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T2-000504
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

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23.057	CR	011	Current Version:	3.2.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: T#9	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑	for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [ ] Core Network [ ]

Source: T2 **Date:** 10.07.2000

Subject: Correction of UAPROF tags

Work item: MExE

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: The MExE specification incorrectly uses tags DownloadableSoftwareSupport, CcppAcceptLanguage and PushMsgPriority. The correct tags should be AcceptDownloadableSoftware, CcppAccept-Language and WapPushMsgPriority.

Clauses affected: 4.5.3 4.6 and 4.7.3

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

4.5.3 Support of the user profile

The user profile acts as a repository (which is always available in the MExE MS) defining the MExE MS behaviour.

MExE preferences and personalisation are supported in the user profile (e.g. UMTS portability and support of VHE defined in [12] and other 22-series specifications), which in turn is based on the Composite Capability/Preference Profile (CC/PP) specification from W3C [16].

MExE preferences and personalisation may not only be recorded directly in the user profile as supported by CC/PP (the direct referencing mechanism), but may also be retrieved from a URL (the indirect referencing mechanism).

Generally, the user profile's CC/PP framework provides the mechanism for the standardised format of preferences, and its use of Resource Description Framework (RDF) permits the interoperable encoding of MExE preferences and personalisation. Future extensions will be supported by the W3C mechanism, allowing for evolution and development of MExE preferences and personalisation.

The set of preferences which are supported in the user profile consists of the following:

- user interface personalisation

  the user's personalisation of the user interface.

- service personalisation and management

  the user's generic service management information.

The coding and presentation of the above characteristics in the user profile is defined by the Composite Capability/Preference Profile (CC/PP) specification from W3C [16], and referenced by the MExE capability negotiation in subclause 4.4.

The following user preference information is supported by UAProf [17]. A MExE terminal shall support (but not be limited to) the following properties in the UAProf schema for user preference information:

- CcppAccept-Language — User's preference for document language
- AcceptDownloadableSoftware~~Support~~ — User's preference for accepting downloadable software
- PreferenceForFrames — User's preference for displaying frames
- WapPushMsgPriority — User's settings for WAP Push message priorities

Also, there is support for indicating terminal's capabilities related to UI features, e.g. capability for displaying images or frames, as well as capability information about input and output methods.

E.g. the following preference information is for future consideration:

- Maximum size and time of transfer and other preferences related to transferring the content.
- User's preferences for input/output methods and other preference parameters related to user interface management.
- User's preferences for memory usage.
- Service-related parameters (eg. voice mail numbers, etc.).

4.6 User interface personalisation

The MS interface consists of the buttons, menus, screens and MMI as designed and provided by the MS manufacturer; the nature of this MS interface is naturally evolving, MS specific and proprietary to the individual manufacturers of the industry. This interface is the one normally seen by the user in normal operation of his MS. This specification does not place any requirements or limitations on the individual manufacturers' MS interface.

The MExE MMI, in turn, is the interface available to the user to support MExE services and functionality on the MS. The nature of the MExE MMI interface, like the normal MS interface described above, is not standardised in any way, to allow for manufacturer innovation, cater for evolving market needs, and permit manufacturer differentiation. The MExE MMI, depending on different manufacturer implementations, may consist of the normal MS interface, the normal MS interface with modifications, a different interface to the normal MS interface, or some combinations thereof etc. MExE services operate within, and using the capabilities of, the MExE MMI.

User interface personalisation consists of two parts. The first part refers to the user's ability to request, and verify, the preferred changes to the user interface; thus the user's preferences, as supported by the specific MS, require to be recorded. The second part refers to the MExE MS's support of the user's preferences for the interface, within the capabilities of an MS. By defining the user interface personalisation to consist of two stages, the preferences which have been recorded by the user may be transferred (as part of the user profile, eg. CcppAccept-Language and/or PreferenceForFrames), and thereby provide portability of the user's preferences.

4.7.3 Service management

- The MExE MS shall support the ability to determine which services are transferred to, resident, configured or executing on the MS. The information relating to the services includes (as a minimum) the name and version.

- The user controls which services are permitted or denied to be transferred , resident, configured or executing on the MExE MS via the user profile, eg. AcceptDownloadableSoftware~~Support~~. The user profile permits characteristics such as security level, identification of specific services etc. to manage services on the MExE MS.

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Galway, Ireland, 28 August-1 September 2000

***Document* T2-000523**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

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23.057	CR	012	Current Version:	3.2.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: T#9	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑	for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*

(U)SIM		ME	X	UTRAN / Radio		Core Network	

Source: T2 **Date:** 31.08.2000

Subject: WAP UAProf URL correction

Work item: MExE

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: The current reference to the UAProf specification points to a URL with limited access rights.

Clauses affected: 2

Other specs affected:

Other 3G core specifications		→ List of CRs:	
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

2 References

References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.

For a specific reference, subsequent revisions do not apply.

For a non-specific reference, the latest version applies.

[1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[2] 3G TS 22.057: "MExE Stage 1 Description".

[3] Personal Java 1.1.1, Sun Microsystems http://java.sun.com/products/personaljava/spec-1-1-1/index.html

[4] JavaPhone API version 0.9, http://java.sun.com/products/javaphone/.

[5] JTAPI 1.2, Sun Microsystems http://www.java.sun.com.

[6] Wireless Application Protocol (WAP) version 1.1 http://www.wapforum.org.

[7] vCard – The Electronic Business Card Exchange Format – Version 2.1, The Internet Mail Consortium (IMC), September 1996, http://www.imc.org/pdi/vcard-21.doc.

[8] vCalendar – The Electronic Calendaring and Scheduling Exchange Format – Version 1.0, The Internet Mail Consortium (IMC), September 1996, http://www.imc.org/pdi/

[9] Hypertext Transfer Protocol – HTTP/1.1, IETF document RFC2068, http://www.w3.org/Protocols/rfc2068/rfc2068

[10] Java Mail API version 1.0.2, http://www.java.sun.com

[11] 3G TR 22.170: "Universal Mobile Telecommunications System (UMTS); Service aspects; Provision of Services in UMTS - The Virtual Home Environment".

[12] 3G TS 22.121: "Universal Mobile Telecommunications System (UMTS); Provision of Services in UMTS - The Virtual Home Environment: Stage 1".

[13] ISO 639 International Standard - codes for the representation of language names.

[14] 3G TS 22.101: "Universal Mobile Telecommunications System (UMTS); Service Aspects; Service Principles".

[15] CC/PP Exchange Protocol based on HTTP Extension Framework; W3C http://www.w3.org/TR/NOTE-CCPPexchange

[16] Composite Capability/Preference Profiles (CC/PP):A user side framework for content negotiation; Available at W3C web pages.

[17] UAProf Specification http://www.wapforum.org/what/technical.htm ~~http://www1.wapforum.org/member/wg/wag/Activities/ActivityUAPROF/index.htm~~

[18] JDK 1.1 security http://www.javasoft.com/products/jdk/1.1/docs/guide/security/index.html

[19] Java 2 security http://www.javasoft.com/products/jdk/1.2/docs/guide/security/index.html

[20] Java security tutorial http://java.sun.com/docs/books/tutorial/security1.2/overview/index.html

[21] OCF 1.1.: "Smartcard API specified by OpenCard Consortium http://www.opencard.org

[22] RFC 1738 Uniform Resource Locators (URL) http://www.w3.org/pub/WWW/Addressing/rfc1738.txt

[23] The MD5 Message Digest Algorithm", Rivest, R., RFC 1321, April 1992. URL: ftp://ftp.isi.edu/in-notes/rfc1321.txt

[24] ISO/IEC 10118-3 1996: "Information technology - Security techniques - Hash-functions - Part 3: Dedicated hash-functions".

[25] IETF RFC 2368: "The mailto URL scheme".

[26] ITU-T Recommendation X.509: "Information technology – Open Systems Interconnection – The Directory: Authentication framework".

[27] GSM 11.11: "Digital cellular telecommunications system (Phase 2+); Specification of the Subscriber Identity Module – Mobile Equipment (SIM-ME) interface".

[28] 3G TS 23.107: "3rd Generation Partnership Project; Technical Specification Group Services and system Aspects QoS Concept and Architecture (3G TS 23.107)".

[29] 3GPP TS 24.007: "3rd Generation Partnership Project; Technical Specification Group Core Network; Mobile radio interface signalling layer 3; General Aspects (3G TS 24.007)".

[30] 3GPP TS 24.008: "3rd Generation Partnership Project; Universal Mobile Telecommunications System; Mobile radio interface layer 3 specification, Core Network Protocols – Stage 3 (TS 24.008)".

[31] 3GPP TS 23.060: "3rd Generation Partnership Project; Technical Specification Group Core Network; Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Service Description; Stage 2 (3G TS 23.060)".

[32] PKCS #15 "Cryptographic Token Information Standard" version 1.0, RSA Laboratories, April 1999
URL: ftp://ftp.rsa.com/pub/pkcs/pkcs-15/pkcs15v1.doc

[33] RFC 2510 Internet X.509 Public Key Infrastructure January 1999.

3GPP TSG-T2 #10
Galway, IRELAND
August 28th - September 1th 2000

T2-000548

CHANGE REQUEST

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27.007	CR	041	Current Version:	3.5.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: TSG-T#9 *list expected approval meeting # here ↑*

for approval [X] for information [ ]

strategic [ ] non-strategic [ ] *(for SMG use only)*

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [ ]

Source: T2 **Date:** 30th August 2000

Subject: TE software implementations must take account of extra parameters

Work item: TEI

Category: *(only one category shall be marked with an X)*

F	Correction	[X]	**Release:**	Phase 2	[ ]
A	Corresponds to a correction in an earlier release	[ ]		Release 96	[ ]
B	Addition of feature	[ ]		Release 97	[ ]
C	Functional modification of feature	[ ]		Release 98	[ ]
D	Editorial modification	[ ]		Release 99	[X]
				Release 00	[ ]

Reason for change: During development of the Release 99 AT commands it has become apparent that TE software needs to take into account the potential addition of parameters into AT commands. This added text clarifies the requirements on TE software implementations

Clauses affected:

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments: Without this change there is a risk that TE software applications will cease to work when the specification is upgraded in future releases.

help.doc

<--------- double-click here for help and instructions on how to create a CR.

4 AT command syntax

This clause summarizes general aspects on AT commands and issues related to them.

TE software implementors must take account that future versions of this specification may include additional parameters beyond what is expected in any response to an AT Set Command, Read Command, Test Command, or unsolicited result code. Implementations must therefore analyse all parameters provided from the TA and discard (ignore) any parameters received following the parameters expected by the TE software.

For further information refer ITU-T Recommendation V.25ter [14].

3GPP TSG-T2 meeting #10
Galway, Ireland, 28 August - 1 September 2000

Document *T2- 000448*
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

27.007	**CR**	**042**	Current Version:	3.5.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	T#9	for approval	X	strategic		*(for SMG use only)*
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [ ] Core Network [ ]

Source:	T2			**Date:**	30/08/2000		
Subject:	APN presentation						
Work item:	TEI						
Category:	F	Correction	X	**Release:**	Phase 2		
	A	Corresponds to a correction in an earlier release			Release 96		
(only one category shall be marked with an X)	B	Addition of feature			Release 97		
	C	Functional modification of feature			Release 98		
	D	Editorial modification			Release 99	X	
					Release 00		

Reason for change:

(This CR is based on LS T2-000385. This CR is submitted to change the AT command in a more appropriate way. It was found that the previous CR in T2-000337 had a problem in infringing the rule for extension described in V.25 ter. To cure this problem, this CR is proposed.)

In order to indicate the Access Point Name (APN) to the user, the IE of APN had been already added to the air-message ”REQUEST PDP CONTEXT ACTIVATION”, as specified in TS 24.008 for Release 99, which is sent by the network to the MS to initiate the activation of a PDP context.

In order to indicate APN to the user when NW requests PDP context activation, it is necessary to add a new parameter “<APN>” to the result code. This CR enables to indicate <APN> from TA to TE and APN is indicated to the user by the use of the result code “+CRC:GPRS <PDP_type>, <PDP_addr>[, [<L2P>][,<APN>]]”.

Clauses affected: 6.11, ANNEX B

Other specs affected:			
	Other 3G core specifications	[ ]	→ List of CRs:
	Other GSM core specifications	[ ]	→ List of CRs:
	MS test specifications	[ ]	→ List of CRs:
	BSS test specifications	[ ]	→ List of CRs:
	O&M specifications	[ ]	→ List of CRs:

Other comments:


help.doc

<--------- double-click here for help and instructions on how to create a CR.

6.11 Cellular result codes +CRC

Table 1: +CRC parameter command syntax

Command	Possible response(s)
+CRC=[<mode>]	
+CRC?	+CRC: <mode>
+CRC=?	+CRC: (list of supported <mode>s)

Description

Set command controls whether or not the extended format of incoming call indication or GPRS network request for PDP context activation or notification for VBS/VGCS calls is used. When enabled, an incoming call is indicated to the TE with unsolicited result code +CRING: <type> ~~(<mode>=1) or +CRING: <text>(<mode>=2)~~ instead of the normal RING.

Test command returns values supported by the TA as a compound value.

NOTE: Similar command may be found in TIA IS-99 [15] and TIA IS-135 [16].

Defined values

<mode>:

0 disables extended format

1 enables extended format ~~(+CRING: <type>)~~

~~2 enables extended format (+CRING: <text>)~~

<type>:

ASYNC [,<priority>[,<subaddr>,<satype>]]	asynchronous transparent
SYNC [,<priority>[,<subaddr>,<satype>]]	synchronous transparent
REL ASYNC [,<priority>[,<subaddr>,<satype>]]	asynchronous non-transparent
REL SYNC [,<priority>[,<subaddr>,<satype>]]	synchronous non-transparent
FAX [,<priority>[,<subaddr>,<satype>]]	facsimile (TS 62)
VOICE [,<priority>[,<subaddr>,<satype>]]	normal voice (TS 11)
VOICE/*XXX* [,<priority>[,<subaddr>,<satype>]] ASYNC, SYNC, REL ASYNC or REL SYNC)	voice followed by data (BS 81) (*XXX* is
ALT VOICE/*XXX* [,<priority>[,<subaddr>,<satype>]]	alternating voice/data, voice first (BS 61)
ALT *XXX*/VOICE [,<priority>[,<subaddr>,<satype>]]	alternating voice/data, data first (BS 61)
ALT VOICE/FAX [,<priority>[,<subaddr>,<satype>]]	alternating voice/fax, voice first (TS 61)
ALT FAX/VOICE [,<priority>[,<subaddr>,<satype>]]	alternating voice/fax, fax first (TS 61)
GPRS <PDP_type>, <PDP_addr>[, [<L2P>][,<APN>]] activation	GPRS network request for PDP context
VGC <GCA>, <GId>, <ackflag> [,<priority>]	voice group call (TS 91)
VBC <GCA>, <GId>, <ackflag> [,<priority>]	voice broadcast call (TS 92)

The optional <priority> indicates the eMLPP priority level of the incoming call by paging, notification or setup message. The priority level values are as defined in eMLPP specification 3G TS 22.067 [57].

<subaddr>: string type subaddress of format specified by <satype>

<satype>: type of subaddress octet in integer format (refer 3G TS 24.008 [57] subclause 10.5.4.8)

<PDP_type> ~~and,~~ <PDP_addr> and <APN> are as defined in the Define PDP Context (+CGDCONT) command. The optional <L2P> proposes a layer 2 protocol to use between the MT and the TE. It is defined in the Enter GPRS Data Mode (+CGDATA) command. If the MT is unable to announce to the TE the network's request (for example it is in V.25ter online data state) the MT shall reject the request. No corresponding unsolicited result code shall be issued when the MT returns to a command state.

<GCA> is a part of the group call reference as specified in 3G TS 23.003 [7] and indicates group call area.

<GId> is a part of the group call reference as specified in 3G TS 23.003 [7] and indicates group call identification.The <ackflag>=1 proposes that a predefined confirmation procedure is to be used after the call is ended. For <ackflag>=0 no confirmation procedure is required.

~~<text>: string type field which is manufacturer specific and gives additional information; character set as specified by command Select TE Character Set +CSCS~~

Implementation

Mandatory when data or fax circuit mode calls implemented or for a ME supporting AT commands only and eMLPP or VGCS or VBS is implemented.

Annex B (normative): Summary of result codes

V.25ter [14] result codes which can be used in GSM/UMTS and codes defined in the present document:

Table B.1: Result codes

Verbose result code (V.25ter command V1 set)	Numeric (V0 set)	Type	Description
+CALV	as verbose	unsolicited	refer subclause 8.16
+CCCM: <ccm>	as verbose	unsolicited	refer subclause 7.16
+CCWA: <number>,<type> ,<class> [,<alpha>]	as verbose	unsolicited	refer subclause 7.12
+CCWV	as verbose	unsolicited	refer subclause 8.28
+CDEV: <elem>,<text>	as verbose	unsolicited	refer subclause 8.10
+CDIP:<number>,<type>[,<subaddr>,<satype>]	as verbose	unsolicited	refer subclause 7.9
+CIEV: <ind>,<value>	as verbose	unsolicited	refer subclause 8.10
+CKEV: <key>,<press>	as verbose	unsolicited	refer subclause 8.10
+CLAV: <code>	as verbose	unsolicited	refer subclause 8.
+CLIP: <number> ,<type>[,<subaddr> ,<satype>[,<alpha>]]	as verbose	unsolicited	refer subclause 7.6
+CME ERROR: <err>	as verbose	final	refer subclause 9.2
+COLP: <number> ,<type>[,<subaddr> ,<satype>[,<alpha>]]	as verbose	intermediate	refer subclause 7.8
+CR: <type>	as verbose	intermediate	refer subclause 6.9
+CREG: <stat>[,<lac> ,<ci>]	as verbose	unsolicited	refer subclause 7.2
+CRING: <type>	as verbose	unsolicited	refer subclause 6.11
~~+CRING: <text>~~	~~as verbose~~	~~unsolicited~~	~~refer subclause 6.11~~
+CSSI: <code1> [,<index>]	as verbose	intermediate	refer subclause 7.17
+CSSU: <code2>	as verbose	unsolicited	refer subclause 7.17

[,<index>[,<number>, <type>[,<subaddr>, <satype>]]]			
+CTZV: <tz>	as verbose	unsolicited	refer subclause 8.40
+CUSD: <m>[,<str>,<dcs>]	as verbose	unsolicited	refer subclause 7.15
+DR: <type>	as verbose	intermediate	refer subclause 6.13
+ILRR: <rate>	as verbose	intermediate	refer subclause 4.3
BUSY	6	final	busy signal detected
CONNECT	1	intermediate	connection has been established
CONNECT <text>	manufacturer specific	intermediate	as CONNECT but manufacturer specific <text> gives additional information (e.g. connection data rate)
ERROR	4	final	command not accepted
NO ANSWER	7	final	connection completion timeout
NO CARRIER	3	final	connection terminated
NO DIALTONE	5	final	no dialtone detected
OK	0	final	acknowledges execution of a command line
RING	2	unsolicited	incoming call signal from network

3GPP TSG-2 meeting #10
Galway, Ireland,
28 August- 1 September 2000

Document ***T2-000445***

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

27.103	CR	001r1	Current Version:	3.0.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-T#9	for approval	X	strategic		*(for SMG use only)*
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio		Core Network	

Source: T2 **Date:** 20 August 2000

Subject: Introduction of PUSH and TARGET

Work item: SYNC

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change:

Improvements of the functionality, partially due to improvements in the OBEX protocol, have been made.

- Name of request parameters removed, i.e. no “”OBEX=...”
- Use Base64 instead of URL-encoding for encoding the binary data
- User ID sent in response to the connect request instead of being sent at start of sync. Sync is now initialised using OBEX PUSH.
- Making use of the OBEX Connection ID in order to enable simultaneous sessions.
- TARGET includes request to sync. with e.g. the calendar.
- WHO contains assigned session ID

Clauses affected: Chapter 6 and 7(Tunnelling of OBEX)

Other specs affected:

Other 3G core specifications		→ List of CRs:	
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

6.2 Client/Server

In the case of synchronizing a mobile device with a server's data, it is preferable to put the synchronization logic on the server side, as the mobile device has limited resources of memory and processing capacity. The synchronization process should thus be controlled by the server. The connection however should be initiated by the client. As the Internet Request/Response model contradicts this, we have to define a way to get around this.

The approach is to let the client (the mobile device) consecutively query the server for what operation it wants to perform on the client. The client will then perform the action and query the server for a new task. This is repeated until the server has no more tasks to perform.

The client will always call the server with OBEX headers as http POST data. The reason for using POST is that there is a size limit for sending data in the URL, using the GET method. Using the POST method also avoids problems with special characters, using binary POST (binary POST is not supported in Wap1.1, however. Another solution is provided below). Every client request implies permission for the server to request a client task in it's response.

~~The client will always call the server with two parameters, except for the initial connect request, using the POST method. The reason for using post is that there is a size limit for sending data in the URL, using the GET method. Using the POST method also avoids problems with special characters. The two parameters should be named **sid** and **obex**. The connect request calls the server with one parameter, **userid**, which contains the user name. Every client request implies permission for the server to request a client task in its response.~~

~~**Name**~~	~~**Size**~~	~~**Description**~~
~~sid~~	~~16 bytes~~	~~This is the GUID assigned by the sever. The GUID should be coded as an array of 16 bytes, each byte representing a byte in the GUID. The first byte in the array is MSB.~~
~~obex~~	~~-~~	~~This parameter contains the obex headers sent from the client to the server. The format is pure binary.~~
~~userid~~	~~-~~	~~This parameter contains the user name. The format is plain text.~~

~~6.2.1 Overview~~

~~6.3 Authentication~~

~~For the server to authenticate the client (and vice versa) the OBEX Authenticate Challenge/Response procedure, with a few changes, is used.~~

~~The client and the server share a secret, i.e. a password. The password is used to generate the message digests, passed between the client and the server in the authentication process. This password is set during a registration process that has taken place before the first synchronisation, for instance on a sign-up web page. The password is then never sent over the internet again, only message digests generated with the password is sent. The hashing algorithm used for the digestion is the MD5 algorithm.~~

~~This means that the mobile device must have access to the user name and password, either in memory or from user interaction.~~

~~The authentication process is defined by the OBEX Connect procedure, including the OBEX Authenticate Challenge/Response procedure.~~

6.3 Binary Post

As binary POST is not supported in WAP1.1, the OBEX headers are base64-encoded and sent as plain text.

This could result in sending 33% more than the ammount of data neccesary.. The solution is however only temporary, awaiting WAP binary POST.

6.4 The secure connection

The authentication process only guaranties that the client and the server can rely on each others identity during the connection process. The connection that is established is not secure and could easily be tapped for information. It is therefore desired to encrypt all data that is sent between the client and the server. 3GPP currently does not guarantee strong enough encryption so we will ensure data is secure and untampered.

In the case of a synchronization of a mobile calendar over 3GPP, there are actually two different transports that has to be considered. First it is the transport from the mobile device to the 3GPP gateway. Then there is the transport from the gateway to the web server. The transport from the mobile device to the gateway is sent over GSM, which is fairly well encrypted. The transport from the gateway to the web server is not protected in any way though. To solve this problem we will use a third party product, e.g. “Wireless Jalda”, to establish a protected connection from the gateway to the web server. This should be transparent from the mobile device and set up the required SSL connection.

6.5 Connect

The connect sequence sets up the connection from the mobile device to the web server. The session id has to be assigned in the first response from the server, as more request/response pairs are needed to complete the authentication procedure. The Connect procedure is always invoked by the client.

	~~Data~~	~~Description~~
~~Request →~~	~~userid=<user name>~~	~~The mobile device calls the web server, using the POST method to send the user name.~~
~~Response ←~~	~~<session id> <obex connect with authenticate challenge>~~	~~The web server responds with a 16 byte session id and the obex headers for connect with authenticate challenge.~~
~~Request →~~	~~sid=<session id> obex=<obex unauthorised with authenticate challenge>~~	~~The mobile device responds to the connect request by sending an unauthorised response with authenticate challenge, forcing the web server to authenticate itself.~~
~~Response ←~~	~~<obex connect with authenticate challenge and authentication response>~~	~~The web server verifies the mobile device and authenticates itself.~~
~~Request~~	~~sid=<session id>~~	~~The mobile device verifies the web server and~~

~~→~~	~~obex=<obex success with authenticate response>~~	~~sends an obex success.~~
~~Response ←~~	~~…~~	~~The web server now starts acting like the a client to the mobile device, sending PUT and GET operations to the mobile device.~~
	Data	**Description**
Request →	<OBEX push>	The mobile device alerts the web server, sending an empty obex push.
Response ←	<obex connect with authenticate challenge, WAN UUID and target >	The web server responds with a 16 byte session id and the obex headers for connect with authenticate challange. The server also sends an obex target header, indicating calendar synchronisation.
Request →	<obex unauthorized with authenticate challenge containg user name in realm, WAN UUID and who header >	The mobile device responds to the connect request by sending an unauthorized response with authernticate challenge, forcing the web server to authenticate itself. Username is sent as realm. Who header with assigned connection id.
Response ←	<obex connect with authenticate challenge and authentication response , and connectionid>	The web server verifies the mobile device and authenticates itself.
Request →	<obex success with authenticate response, WAN UUID and connectionid>	The mobile device verifies the web server and sends an obex success.
Response ←	…	The web server now starts acting like the a client to the mobile device, sending PUT and GET operations to the mobile device.

6.6 Disconnect

Disconnection can either be invoked by the client or be invoked by the server as a last response. The client's session is then destroyed in the server. A third case is that the connection is lost for other reasons, e.g. power failure by the client. In this case, the session should be timed out automatically.

6.6.1 Client disconnection

The client normally should not invoke the disconnection. Should the client however need to disconnect, the following sequence should be used:

	Data	Description
Response ←	…	The web server asks the mobile device to perform some operation.
Request →	<obex disconnect, WAN UUID > ~~sid=<session id> obex=<obex disconnect>~~	The mobile device send an obex disconnect to the web server.
Response ←	-	The web server destroys the session and responds with an empty response.

6.6.2 Server disconnection

When the server is done synchronizing its content, it should disconnect the client. The following sequence should be used:

	Data	Description
Response ←	<obex disconnect> <obex connectionid>	The web server send an obex disconnect to the mobile device and destroys the session.
	-	The mobile device disconnects and sends no more requests to the web server.

6.7 Put

The PUT operation sends a named vCalendar object from the server to the mobile device. The PUT operation can only be invoked by the web server.

	Data	Description
Response ←	<obex put, connectionid>>	The web server sends a put request to the mobile device.
Request →	<obex put response, WAN UUID >sid=<session id> obex=<obex put response>	The mobile device performs the put operation and responds with the resulting obex data.

6.8 Get

The GET operation retrieves a named vCalendar object from the mobile device. The GET operation can only be invoked by the web server.

	Data	Description
Response ←	<obex get><obex target>	The web server sends a get request to the mobile device.
Request →	<WAN UUID ><obex get response>sid=<session id> obex=<obex get response>	The mobile device performs the get operation and responds with the resulting obex data.

6.9 Timeouts

The operation will wait for N seconds before retry. The timeout will be similar to one used on browsers and implementation dependent.

7 The server side

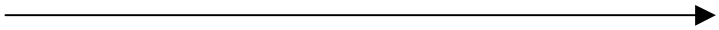
The server, which is a web server, has to act as described in chapter 6. The functionality should be implemented as a standard web application, with the difference that the delivered content will not be HTML or WML, but OBEX frames to be parsed by the mobile device. There will be no new MIME type for this contents as the information will not be displayed in a browser.

The server also has to maintain state for the application. As 3GPP, at present, does not support cookies, the usual session concept, using cookies, cannot be used. This is solved by letting the server generate and pass a GUID to the client during the authentication procedure. This GUID is stored by the client and passed from the client to the server in every request for the whole session. It is the servers responsibility to map the GUID to the correct client. This is the main discrepancy to the OBEX specification. See chapter 6.

7 Use Case

The user chose “remote sync” and is prompted for the URL, for example www.somesite.com, userid and password. The userid will be sent to the server. The userid and the password will be saved in the local storage oif the mobile device.

www.somesite.com
OBEX PUSH

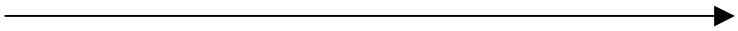


When the WAP server receives this, it will try to establish an OBEX connection with the mobile device, acting as a primary from an OBEX point of view. An OBEX Connect request with a WAN UUID header and an Authentication challenge header will be sent. The WAN UUID header will contain a unique16 byte UUID that will be used to identify this session. The server also sends a obex target header, indicating that a syncronization is in progress.

OBEX Connect With Authenticate
Challenge header + WAN UUID + target

When the phone receives the OBEX connect, it will respond with an OBEX Unauthorized response and an Authenticate Challenge of it’s own.The user id is sent in the realm field in the obex authorize header. From now on, the given UUID must be present when a request is sent from the phone to the WAP server. This is the only way that the server can recognize the phone. The UUID will be identified with the WAN UUID header, which means that the phone identifies itself with the given UUID. The client also assigns a connection id that is sent in an obex who header in every request.

OBEX Unauthorized + WAN UUID header
+ Authenticate Challenge header + Who

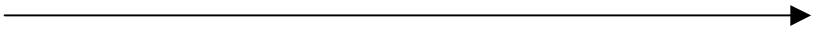


Receiving this, the WAP server resends the same command as last time but this time also adds the Authenticate Response header. The server always sends an obex target header, containg the connection id.

OBEX Connect + Authenticate Challenge header +
Authenticate Response header + connectionid

If the OBEX secondary at this stage verifies the received request-digest with the one generated by itself, the client is authenticated and the response will be an OBEX Success with an Authenticate Response header.

OBEX Success + WAN UUID header +
Authenticate Response header



At this stage the OBEX connection is up and the actual synchronization can start. We are now in the middle of a WAP request/response pair and the WAP server response will now contain a OBEX Get command, asking for the mobile's Change Log. The steps following are identical to the ones in a local synchronization from an OBEX and IrMC point of view, the only real difference is the use of the WAN UUID header when sending from the mobile. Worth mentioning is that this form of remoted synchronization is not suited for a slow sync [see reference 2]. The user is supposed to do the first synchronization locally, using for example cable or IR.