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UMTS phase 1 Release 99
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Contents

Foreword

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

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG 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.

1 Scope

The UMTS system will be defined in a phased approach. The present document specifies the requirements for Release '99 of UMTS. Some requirements which are necessary to ensure a smooth transition to later releases are also indicated. The present document should, however, be read in conjunction with the other 22.000 series documents which provide a complete description of the requirements for UMTS Release '99.

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. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

The present document is the starting point of the set of specifications that define the UMTS Service Requirements for UMTS Phase 1 Release '99. The UMTS Service requirements for Release '99 are defined in the following normative specifications. Since these specifications may also address some requirements for later Releases of UMTS phase 1, they explicitly state when a requirement does not apply to Release '99.

[1] 3G TS 22.101: "Universal Mobile Telecommunications System (UMTS): Service aspects; Service principles".

[2] 3G TS 22.105: "Universal Mobile Telecommunications System (UMTS); Services and Service Capabilities".

[3] 3G TS 22.115: "Universal Mobile Telecommunications System (UMTS); Service Aspects: Charging and Billing".

[4] 3G TS 22.121: "Universal Mobile Telecommunications System (UMTS); VHE Stage 1".

[5] 3G TS TS 22.129: "Handover requirements between UMTS and GSM or other Radio System]".

[6] 3G TS 21.133: "Universal Mobile Telecommunications System (UMTS) ; Security threats and requirements".

[7] TS 23.045: "Technical realization of facsimile group 3 service - transparent".

[8] TS 23.046: "Technical realization of facsimile group 3 service - non-transparent".

[9] 3G TS 22.038: "SIM application toolkit, stage 1".

[10] TS 22.071: "Location Services (LCS); Stage 1".

[11] 3G TR 22.945: " Study on provisioning of fax in GSM and UMTS".

These specifications may refer (directly or indirectly) to further specifications which provide detailed descriptions of service requirements incorporated in UMTS. In particular the service requirements of any GSM component of a UMTS system are specified by reference to GSM service requirements specifications.

3 Definitions and abbreviations

3.1 Definitions

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

CAC (Connection Admission Control): is a set of measures taken by the network to balance between the QoS requirements of new connections request and the current network utilisation without affecting the grade of service of existing/already established connections

Capability Class: is a piece of information which indicates general UMTS mobile station characteristics (e.g. supported radio interfaces,...) for the interest of the network

Connection mode: characterizes the type of association between two points as required by the bearer service for the transfer of information. A bearer service is either connection-oriented or connectionless. In a connection oriented mode, a logical association called *connection* needs to be established between the source and the destination entities before information can be exchanged between them. Connection oriented bearer services lifetime is the period of time between the establishment and the release of the connection

In a connectionless mode, no connection is established beforehand between the source and the destination entities ; the source and destination network addresses need to be specified in each message. Transferred information cannot be guaranteed of ordered delivery. Connectionless bearer services lifetime is reduced to the transport of one message.

FC (Flow Control): is a set of mechanisms used to prevent the network from becoming overloaded by regulating the input rate transmissions

GSM BSS: refers in the present document to the GSM/GPRS access network

GSM core network: refers in the present document to the GSM NSS and GPRS backbone infrastructure

Home environment: enables a user to obtain UMTS services in a consistent manner regardless of the user's location or terminal used (within the limitations of the serving network and current terminal)

Performance: is concerned with the ability to track service and resource usage levels and provides feedback on the responsiveness and reliability of the network

Serving network: provides the user with access to the services of home environment

UMTS core network: refers in the present document to an evolved GSM core network infrastructure or any new UMTS core network infrastructures, integrating circuit and packet switched traffic

UMTS mobile termination: part of the UMTS Mobile Station which provides functions specific to the management of the radio interface (Um)

UMTS network: refers to a network operated by a single network operator and consisting of:

- UTRAN access networks (WCDMA and/or TD-CDMA);

- optionally GSM BSS access networks;

- an UMTS core network.

UPC (Usage Parameter Control): is a set of actions taken by the network to monitor and control the offered traffic and the validity of the connection with respect to the traffic contract negotiated between the user and the network

3.2 Abbreviations

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

BSS	Base Station System
CS	Circuit switched

GPRS	General Packet Radio Service
GSM	Global System for Mobile communications
NSS	Network Sub System
PC	Personal Computer
PS	Packet switched
QoS	Quality of Service
SIM	GSM Subscriber Identity Module
TD-CDMA	Time Division-Code Division Multiple Access
UICC	UMTS IC Card
UMTS	Universal Mobile Telecommunications System
USIM	User Service Identity Module
UTRAN	UMTS Terrestrial Radio Access Network
VHE	Virtual Home Environment
WCDMA	Wideband Code Division Multiple Access

4 UMTS phasing and releases overview

The UMTS system will be defined in a phased approach. The present document addresses the UMTS phase 1 capabilities for Release '99 and it provides pointers to other 22.000 series documents which contain detailed requirements.

The UMTS phase 1 requirements can be met by the capabilities of GSM phase 2+ Release '99 including specific enhancements for UMTS. Additional developments to fully meet the requirements for UMTS phase 1 standardisation are listed in the present document for Release '99 requirements.

The fundamental difference between GSM and UMTS phase 1 resides in the support of high bit rate bearer services with the notion of negotiated traffic and QoS characteristics. UMTS phase 1 shall in particular support bursty and asymmetric traffic in an efficient way. This shall allow UMTS phase 1 to support single- and multi-media N-ISDN applications and single- and multi-media IP applications.

The phase 1 USIM is developed on the basis of the phase 2+ Release '99 SIM. When UMTS specific requirements have not been stated in the present document it is assumed that the GSM phase 2+ Release '99 specifications for the SIM is adopted for the UMTS phase 1 requirements.

No specific requirement is addressed for the mobile termination since it relates to the UMTS access stratum and to the UMTS core network (depending whether peer entities end either in the access or in the core).

A UMTS network is logically divided into a radio access network and a core network, connected via an open interface. The core network is from a functional point of view divided into a Packet Switched Service Domain and a Circuit Switched Service Domain. Networks and terminals may have only the PS domain or only the CS domain or both domains implemented.

Regarding the phase 1 standardisation of UMTS access network, only the UTRAN (including all UTRA modes if several modes are defined) is considered as being part of the UMTS access network. Other types of access networks are for further consideration. UTRAN is a new access network and as such all the UTRAN requirements are defined in the present document. This includes in particular the interoperability requirements put on the UTRAN and GSM BSS access networks to cater with UMTS networks operating the two types of access networks.

UMTS phase 1 shall be developed in such a way that it supports compatibility with an evolved GSM network from the point of view of roaming and handover. This could be achieved by evolving from a GSM phase 2+ network but does not exclude other developments. Therefore, phase 1 specifications shall allow operators to introduce new technologies (such as ATM, IP, ...). An overall UMTS system approach is needed for UMTS phase 1 development as it is more than the addition of a UTRAN to a GSM Phase 2+ architecture. Requirements to the GSM phase 2+ core network for UMTS should be incorporated.

To enable operators to utilize the network resources efficiently, the optimization of the signalling load as well as the reduction of the required overall transmission capacity is a critical success factor. Therefor the standard should aim for an architecture with minimal signalling traffic and optimized transmission infrastructureCommon subscriber data

management for CS and PS traffic should be implemented in all relevant network elements. Furthermore the standard should support an integrated node (MSC/SGSN) for PS and CS traffic as well as separated nodes as in GSM/GPRS.

From the viewpoint of the necessity of providing multi-vendor environments, interfaces within the UTRAN (such as Iub) shall be standardized. However, since operator dependent O&M requirements over these interfaces may exist, specifications should be able to be expanded flexibly according to operator specific requirements

It should be noted that the advanced bearer capabilities of the phase 1 UMTS access network may not be fully supported by the phase 1 UMTS core network. This however guarantees the viability of the UMTS access network to allow the scope within phase 1 to support broadband bearer services.

A standard default speech codec shall be standardised for UMTS phase 1. UMTS should support tandem free operation from day 1 to enable lower transmission costs and for higher speech quality. Crossphase compatibility issues in transcoder location should be considered when moving from Phase 1 UTRAN Release '99 to later releases in which transcoder free operation will be supported.

4.1 Post UMTS Phase 1 Release '99 operation

After phase 1 Release '99, the new capabilities of UMTS shall be defined in annual releases where each release constitutes a coherent set of specifications covering UMTS mobile station, access network and core network.

UMTS phase 1 should facilitate evolution towards a single integrated core network infrastructure.

The introduction of Phase 1 UMTS shall not limit or restrict the evolution to later UMTS releases, however, the different starting points to introduce UMTS need to be taken into account.

Cross Phase compatibility shall be considered from day 1 and should include the following aspects:

1) Terminals (e.g. support of phase1 terminals in later releases of UMTS networks and vice-versa).

2) Signalling and protocols, including UTRAN to Core Network, inter network and terminal to network.

3) Security aspects (e.g. the relationship of GSM and UMTS security mechanisms).

Efficient mechanisms for communicating versions and managing cross phase issues shall be designed into the UMTS system from the very start. The mechanisms should be applicable to any components of the system that are planned to be, or might in the future be, phased. These principles might be applicable to: Hardware, Firmware, Software, APIs.

5 UMTS access arrangements

UMTS will support a number of access arrangements which will enable UMTS users to access UMTS Core Networks and VHE services from a variety of fixed and mobile terminals. In all cases, access to UMTS networks will require the use of the UMTS USIM. The UMTS specifications shall enable the design of UMTS Mobile Terminals that can be used in different radio access environments, including those provided by public and private radio access networks connected to public and private networks using paired and unpaired radio bands in licensed and licence exempt spectrum.

It is not expected that all of the above access arrangements will be fully supported in UMTS Release'99. However, it is important that the above vision is recognized and that short term decisions that may prevent the realization of that vision are not taken.

6 Services

UMTS phase 1 will enable the introduction of a range of new services (e.g. Internet services and Multimedia) and applications with the concept of service capabilities. The service capabilities are bearer services defined by parameters (e.g. QoS attributes) and mechanisms needed to realise services.

6.1 Teleservices and supplementary services

UMTS phase 1 shall at least support the following GSM teleservices currently handled by GSM : speech, emergency call and SMS. UMTS phase 1 shall support these teleservices as stated below:

*Speech***:** A default speech codec shall be specified to provide speech service across the UTRAN and GSM access networks. The selected speech codec shall operate with no discernible loss of speech on handover between the GSM access network and the UTRAN.

*Short Message Service-Point to Point (SMS-PP)***:** A short message service point to point shall be provided seamlessly (as far as the user or the users terminal equipment is concerned) across the UMTS and GSM access network.

*Short Message Service-Cell Broadcast (SMS-CB)***:** A short message service cell broadcast shall be provided seamlessly (as far as the user or the users terminal equipment is concerned) across the UMTS and GSM network.

*Supplementary Services***:** The standard shall support GSM Release '99 supplementary services. The control of such supplementary services shall be the same as for GSM, from the user's perspective.

6.2 Facsimile service (not required for Release '99)

The UMTS standards are not required to support fax services.

However, it should be noted that a fax service can be provided based on external servers without any impact and requirement on UMTS infrastructure as described in 3GPP TR 22.945 [11]. According to 3GPP TR 22.945 [11] two possibilities to provide a fax service as described briefly below may be provided. The operator may then select either none, one or both services depending on the market needs. The fax service shall inter-work with existing fax technology in the PSTN/ISDN.

6.2.1 Store-and-Forward

A UMTS store-and-forward fax service uses a file or message transfer program to transfer text or images from a mobile terminal to a store and forward unit for subsequent delivery to the facsimile machine in the PSTN/ISDN. The user (or the user's PC) may receive notification of successful delivery of the fax. Fax messages from PSTN/ISDN to mobile terminals are stored in a store-and-forward unit. The user retrieves the fax message with a file or message transfer program from the store-and-forward unit. The mobile terminal may be notified that a fax message is available.

6.2.2 End-to-End

A UMTS fax service uses an end-to-end fax session between a PSTN/ISDN fax machine and a mobile terminal. This service works end-to-end such that a sender on the PSTN is aware of whether or not the fax has succeeded, and such that a mobile sender is aware of whether or not the fax has succeeded. From the user perspective the end-to-end fax service has the same look and feel as a T.30 based fax service although the PLMN internal transmission is not according to T.30. The end-to-end service may work with ordinary T.30 based fax machines at the mobile end using a mobile fax adapter [7][8] with a modem that terminates the analogue 2-wire connection from the fax machine. The conversion between the PLMN internal protocol and the T.30 protocol towards the facsimile machine is performed in a separate server and in a mobile fax adapter towards the T.30 based fax machine at the mobile end.

6.3 Bearer services

UMTS phase 1 shall support GSM phase 2+ Release '99 data bearer services:

*Circuit switched data***:** Circuit switched data services and "real time" data services shall be provided for interworking with the PSTN/ISDN so that the user is unaware of the access network used (UMTS and GSM access network or handover between access networks). Both transparent (constant delay) and non-transparent (zero error with flow control) services shall be supported. These data services shall operate with minimum loss of data on handover between the GSM access network and the UTRAN.

Packet switched data: Packet switched data services shall be provided for interworking with packet networks such as IP-networks and LANs. The standard shall provide mechanisms which ensure the continuity of packet based services upon handover e.g. between GSM and UMTS.

6.4 Emergency Call

UMTS Phase 1 Release '99 shall support an emergency call teleservice as defined in [1].

7 UTRAN capabilities

NOTE: The term performance refers in this clause to the realisation of the QoS objectives inside the UTRAN.

UTRAN capabilities for UMTS are the complete set of radio access bearer capabilities and radio access bearer control specified in UMTS 22.105. The UTRAN shall have the following capabilities:

1) A UTRAN shall be contained within only one UMTS network.

2) The UTRAN shall support the set-up, re-negotiation and clearing of connections with a range of traffic and performance characteristics. The re-negotiation of QoS attributes/bearer attributes may result from an upper layer request or a change in the radio conditions (handover, cell load modification,...) and may be mobile station (e.g. by an application or the user via an application) or network initiated. It shall be possible for the UTRAN to apply the following traffic policing mechanisms such as:

   • connection admission control (CAC) during connection set-up and re-negotiation;

   • flow control (FC) on a connection during its lifetime;

   • usage parameter control (UPC) on a connection during its lifetime.

3) The UTRAN shall support radio access bearers for broadcast and multicast applications.

4) The range of traffic and performance characteristics that shall be supported by are indicated in TS 22.105.

5) The UTRAN shall allow one mobile termination to handle more than one radio access bearer service simultaneously. It is nevertheless expected that the terminal and network capabilities will put some limitations on the number of radio access bearer services that can be handled simultaneously. It shall be possible for each radio access to have independent traffic and performance characteristics.

6) Seamless handover of active radio access bearer service(s) from a single mobile termination, between cells of one UTRAN shall be supported. This shall result in an imperceptible loss of speech (if any) for the user of telephony services and without incurring degradation of QoS for data services.

7) At least one Capability Class shall be standardised for mobile terminals supporting more than one UTRA mode (e.g. UTRA FDD and TDD modes). It shall support monitoring of the different types of cells in idle mode (cell reselection procedure) and active mode (handover preparation procedure).

8) For UMTS networks composed of UTRANs with different UTRA modes, the cell selection and the paging procedures shall accommodate to the fact that service areas may be covered by cells supporting one specific mode (e.g. FDD or TDD mode), and cells supporting more than one mode (e.g. FDD and TDD modes).

9) Handover of one mobile termination handling one or more radio access bearer services between cells of two UTRANs using different UTRA modes and operated by one single UMTS network operator shall be supported in both directions. Furthermore, handover between cells using two different UTRA modes should be supported similarly to handover within one mode.

10) The UTRAN shall facilitate determination of the location of a UMTS mobile termination. The realisation of a positioning service can be determined by several methodologies, namely *mobile-based positioning*, *network-based positioning*, or a *hybrid position* architecture. It shall be possible for the location precision to be a UMTS network operator choice, with the precision of the location varying from one part of the service area to another. It

shall be possible to achieve a minimum precision of around 50 meters in all types of terrestrial radio environments. Location requirements are detailed in TS 22.071 and in UMTS 22.105 subclause 8.5.

11) The optimisation of the UTRAN radio interface shall be based upon the objectives expressed in UMTS 22.105 clause 5.

12) Standardised protocols shall be defined for the operation, administration and maintenance of each of the UTRAN components in UMTS phase 1 in cooperation with ETSI TMN.

13) The USIM requirements defined for later releases of UMTS should be taken into account in the design of UTRAN (for any impact).

8   UTRAN and GSM BSS relationship

There is a special relationship between the UTRAN and GSM access networks as it is expected that UTRANs will start as islands in a sea of GSM BSS. GSM BSS access networks will be a key element for service continuity in UMTS networks. The requirements are the following for UMTS phase 1:

1) UMTS phase 1 shall support dual system UMTS/GSM terminals. At least one Capability Class shall be standardised for mobile terminals supporting the GSM and UTRA system. It shall support monitoring of cells belonging to the two types of access networks in idle mode (cell reselection procedure) and active mode (handover preparation procedure).

2) Cell selection and paging procedures shall be designed to accommodate to the fact that networks may consist of GSM BSS cells, UTRAN cells or a combination of both.

3) For UMTS networks composed of both GSM BSS and UTRAN access networks, handover of radio access bearer services shall be supported between GSM BSS and UTRAN cells, in both directions (i.e. UTRAN to GSM BSS and GSM BSS to UTRAN). Some traffic flows may be re-negotiated, temporarily released or re-established during these handover procedures because of the different radio access bearer capabilities of the GSM BSS and UTRAN access networks.

9   UMTS Core Network

NOTE 1: The term performance refers in this clause to the resource level usage and reliability of the UMTS core network.

NOTE 2: It is not required for phase 1 UMTS core networks to support calls with multiple connections. Multiple connections for a single mobile could be realised through several calls.

In the first phase of UMTS, the UMTS core network capabilities are a superset of the phase 2+ Release '99 GSM core network capabilities. The additional requirements for the phase 1 UMTS core network are the following:

1) The phase 1 UMTS core network shall support circuit switched data service capability of at least 64 kbit/s per user. This shall not limit the user from choosing lower data rates.

2) The phase 1 UMTS core network shall support packet switched data service capabilities of at least 2 Mbit/s peak bit rate per user. This shall not limit the user from choosing lower data rates.

3) The phase 1 UMTS core network shall enable set-up, re-negotiation and clearing of connections (i.e. CS calls or PS sessions) with a range of traffic and performance characteristics. The re-negotiation of QoS attributes/bearer may be caused by an application or the user via an application (see UTRAN capability section). It shall be possible to apply traffic policing (e.g. connection admission control, flow control, usage parameter control...) on a connection during its set-up and lifetime.

4) The phase 1 UMTS core network shall support a range of traffic and performance characteristics for connectionless (e.g. unicast, broadcast, and multicast) traffic.

5) The range of traffic and performance characteristics that shall be supported by the phase 1 UMTS core network shall be at least those of GPRS phase 2+ Release '99. This means that the support of the full set of bearer services defined in TS 22.105 is not required for the phase 1 UMTS core network.

6) Established bearers shall not prevent the set-up of a new bearer. These new bearers can be of any type (e.g. PS, CS). It is nevertheless expected that the terminal and network capabilities will put some limitations on the number of bearer services that can be handled simultaneously. It shall be possible for each bearer to have independent traffic and performance characteristics.

7) In order to facilitate the development of new applications, it shall be possible to address applications to/from a phase 1 UMTS mobile termination (e.g. the notion of Internet port).

8) Operator specific services based on the VHE concept shall be supported by the phase 1 UMTS core network. This functionality could be provided through available toolkits (such as CAMEL, MExE, WAP and SIM Toolkit).

9) If UMTS authentication is invoked while a user has services active, the authentication shall not degrade the user services.

10) The phase 1 UMTS core network shall support the generation of standardised charging records based upon parameters such as the dialled number, call duration, traffic (volume, bit rate) and perceived Quality of Service provided to the user.

11) The phase 1 UMTS core network shall support on-line billing. Billing of 3rd party value added services with the concept of one-stop-billing shall be supported by the phase 1 UMTS core network through standardised procedures.

12) The phase 1 UMTS core network shall support both bilateral and (possibly via 3rd party) automatic roaming procedures to UMTS networks with improved security as defined by SMG10.

13) The phase 1 UMTS core network shall support interworking with PSTN, N-ISDN, GSM, X.25 and IP networks with their respective numbering schemes.

14) It shall be possible for the standardised classes of phase 1 UMTS mobile terminals supporting the GSM BSS and UTRAN radio interfaces to roam in GSM networks and receive GSM services.

15) Standardised protocols shall be defined for the operation, administration and maintenance of the UMTS phase 1 core network in cooperation with ETSI TMN.

16) The USIM requirements defined for later releases of UMTS should be taken into account in the design of the phase 1 UMTS core network.

17) Phase 1 UMTS core network shall provide an effective solution of inter-network traffic and signalling in case of global roaming.

18) Phase 1 UMTS core network shall support facilities for monitoring and measurement of traffic flows and characteristics within the network eg for congestion control.

19) Phase 1 UMTS core network shall support single and multiple numbering schemes described in 22.101

20) The phase 1 UMTS core network shall, as an option, support IP mobility between different environments such as fixed and mobile, public and private and between different public systems

10 USIM

In the first phase of UMTS, the USIM shall be developed on the basis of the phase 2+ Release '99 GSM SIM including SAT as described in 3G TS 22.038 [9]. The additional requirements for the phase 1 UMTS USIM are as follows:

1) USIM shall provide new and enhanced security features (e.g. mutual authentication...) as defined by SMG10.

2) The UMTS mobile terminal shall support phase 2 and phase 2+ GSM SIMs as access modules to UMTS networks. The services that can be provided in this case may be limited to GSM like services provided by that

UMTS network. UMTS mobile terminals shall not support 5V SIMs. It shall be up to the UMTS network operator to accept or reject the use of GSM SIM as access modules in its network.

3) It shall be possible to have multiple applications on the UMTS IC Card (UICC). There shall be a secured and easy mechanism for application selection. An authorised access for each application is mandatory, however it shall be possible to have shared directories between applications where appropriate. The UICC shall be capable of supporting SIM and USIM applications.

4) Simultaneous activation of several USIMs on one mobile terminal need not be supported in UMTS phase 1.

5) A standardised mechanism allowing highly secure transfer of applications and/or associated data to/from the UICC shall be supported in UMTS phase 1.

11 Security Features

Security requirements for UMTS Phase 1 Release '99 are defined in the UMTS 21.133 specification [6].

Annex A (informative):
Change history

Change history					
SMG No./ TSG SA#	**TDoc. No.**	**CR. No.**	**Section affected**	**New version**	**Subject/Comments**
SMG#28				Version 3.0.0	Approved
SA#2 Florida	SP-99015	001	5	Version 3.1.0	Cell Broadcast Service in UMTS
SA#2 Florida	SP-99015	002	4	Version 3.1.0	Addition and clarification of general Operator requirement for 3G System
SA#2 Florida	SP-99015	007	4.1	Version 3.1.0	UMTS and Cross Phase Compatibility
SA#3 Japan	SP-99103	005r2	8. UMTS Core Network	Version 3.2.0	UMTS phase 1 shall support «Global Roaming» as basic capability. It is expected that the number of inter-network roaming will increase, therefore the reduction of inter-network signal traffic will be important. It is required to support the optimisation of inter-network signalling.
SA#3 Japan	SP-99103	010	Adding a new Section 5 (Affects References to Sections in this column)	Version 3.2.0	Proposed new section on UMTS access arrangements: To complete the specification with Fixed and Mobile Convergence issues
SA#3 Japan	SP-99103	014	8 UMTS Core Network	Version 3.2.0	GSM evolved core network requirements to 3GPP from TTC: The description of «account for user traffic and signalling traffic» is nothing in core network requirements. This requirement is supported in TTC. It is required to support the traffic monitoring and measurement in phase 1 UMTS core network.
SA#3 Japan	SP-99103	008	5 Services	Version 3.3.0 Draft	From the view point of market requirement in Japan, real time non-transparent FAX service should be supported in UMTS.
SA#4 Miami, Florida, USA	SP-99231	015	7 UTRAN Capabilities, 9 UMTS Core Network (Adjusted the Section numbers to match the source specification)	Version 3.3.0	The re-negotiation during call/session is the feature of UMTS/IMT2000. This feature shall be possible for the user to modify QoS parameters. Therefore, the user can modify the bearer by application during call/session. It provides more flexible service capability to the users.
SA#4 Miami, Florida, USA	SP-99234	016	6.1 Teleservices and Supplementary Services	Version 3.3.0	To reflect the view of TSG T WG2 which is that for Release '99 SMS specifications are based on the current GSM SMS specifications.
SA#4 Miami, Florida, USA	SP-99233	017	2.1 Normative References 11 Security Features	Version 3.3.0	To align the specification with the fact that S3 defines security requirements for UMTS Phase 1 Release '99.

SA#4 Miami, Florida, USA	SP-99232	018	Title, scope and section 2.1.	Version 3.3.0	Modifications to 3G TS 22.100 to reflect clearly the status of the specification and its relationship with other 22.xxx series of document.
SA#4 Miami, Florida, USA	SP-99226	019	Section 6	Version 3.3.0	Adds a requirement to support an emergency call teleservice as defined in TS22.101
SA#4 Miami, Florida, USA	SP-99229	020r1	Section 4	Version 3.3.0	To make Numbering schemes described in 22.101 part of UMTS Phase 1 R' 99 requirements
SA#4 Miami, Florida, USA	SP-99227	021r3	Fax section in 6.1	Version 3.3.0	Clarification of the fax requirements and including a definition of the real-time fax requirements.
SA#5, Kyongju, Korea	439	026			Support of SAT by USIM
SA#5, Kyongju, Korea	479	023			Editorial changes related to terminology
SA#5, Kyongju, Korea	479	022			Editorial Changes to account for the new specification numbering scheme
SA#5, Kyongju, Korea	479	027			Editorial update of references for GSM/3GPP use.
SA#5, Kyongju, Korea	452	025			Vocabulary and rel 99 alignment
SA#5, Kyongju, Korea	452	024			To propose the organisation of standardisation for future releases.
SA#6, Nice, France	528	028	Clause 9	3.5.0	Support of Mobile IP in Release '99

Change history										
TSG SA#	SA Doc.	SA1 Doc	Spec	CR	Rev	Rel	Cat	Subject/Comment	Old	New
SMG#28			22.100					Version 3.0.0		3.0.0
SP-03	SP-99103	S1-99196	22.100	A008		R99	C	Added support of real time non-transparent fax service as an option.Alternatively, a store and forward service can be envisaged for sub-sequent delivery to FAX Machine in PSTN/ISDN.	3.1.0	3.2.0
SP-03	SP-99103	S1-99221	22.100	A010		R99	B	Mobiles to operate in different access arrangements	3.1.0	3.2.0
SP-03	SP-99103	S1-99195	22.100	A014		R99	B	UMTS Phase 1 core network to support facilities for monitoring and measurement of traffic flows and characteristics within the network eg for congestion control.	3.1.0	3.2.0
SP-03	SP-99103	S1-99193	22.100	A005	2	R99	B	Addition of new phrase for optimisation of inter-network signalling: UMTS Phase 1 network shall provide an effective solution of inter-network traffic and signalling in case of global roaming.	3.1.0	3.2.0
SP-04	SP-99231	S1-99378	22.100	015		R99	B	Re-negotiation during Call/Session - Modify QoS Parameters	3.3.0	3.4.0
SP-04	SP-99234	S1-99355	22.100	016		R99	D	Reflect the view of TSG T WG2 which is that for Release '99 SMS specifications are	3.3.0	3.4.0

								based on the current GSM SMS specifications see 309		
SP-04	SP-99233	S1-99366	22.100	017		R99	C	CR on security requirements for UMTS Phase 1 Release '99: To align the specification with the fact that S3 defines security requirements for UMTS Phase 1 Release '99.	3.3.0	3.4.0
SP-04	SP-99232	S1-99369	22.100	018		R99	F	Relationship between UMTS 22.00 and other 22.xx document series	3.3.0	3.4.0
SP-04	SP-99226	S1-99373	22.100	019		R99	B	Handling of Emergency Numbers:Adds a requirement to support an emergency call teleservice as defined in TS22.101	3.3.0	3.4.0
SP-04	SP-99229	S1-99377	22.100	020	1	R99	B	Clarify the numbering scheme in UMTS/IMT2000:The phase 1 UMTS core network shall support single and multiple numbering schemes described in 22.101	3.3.0	3.4.0
SP-04	SP-99227	S1-99394	22.100	021	3	R99	F	Clarification of the fax requirements and including a definition of the real-time fax requirements. Replaces 388	3.3.0	3.4.0
SP-05	SP-99479	S1-99382	22.100	022		R99	D	Editorial changes for new spec numbering scheme	3.3.0	3.4.0
SP-05	SP-99479	S1-99544	22.100	023		R99	D	Editorial changes for terminology	3.3.0	3.4.0
SP-05	SP-99452	S1-99538	22.100	024		R99	F	UMTS Phase 1 future releases	3.3.0	3.4.0
SP-05	SP-99452	S1-99856	22.100	025		R99	F	Release '99 alignments and corrections	3.3.0	3.4.0
SP-05	SP-99439	S1-99736	22.100	026		R99	F	Support of SAT by USIM (was #023)	3.3.0	3.4.0
SP-05	SP-99479	S1-99641	22.100	027		R99	D	Editorial changes for references (was #024)	3.3.0	3.4.0
SP-06	SP-99528	S1-991047	22.100	028		R99	B	Support of Mobile IP in Release '99	3.4.0	3.5.0
SP-07	SP-000064	S1-000125	22.100	029		R99	F	SoLSA not applicable for UMTS Release '99	3.5.0	3.6.0
SP-13	SP-010428	S1-010862	22.100	030	2	R99	F	Correction of support of facsimile teleservice for UMTS R99 specifications	3.6.0	3.7.0

History

Document history		
october 1998	v1.0.0	presented to SMG #27
5th of november 1998	v1.1.0	updated during Rome meeting according to comments expressed in Tdocs 646, 662
6th of november 1998	v.1.2.0	section 5 completed during Rome meeting
16th of november 1998	v.1.2.1	updated
23rd of november 1998	v.1.3.0	updated according to the comments of the 1st week after the Rome meeting
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11th of december 1998	v.1.5.0	updated
25th of december 1998	v.1.6.0	updated
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February 1999	v3.0.0	Version 3.0.0 approved by SMG#28
March 1999	V3.1.0	Version 3.1.0 (Applied in anticipation of approval at SA#2 in Florida)
March 1999	V3.1.0	Version 3.1.1 Editorial format change for 3GPP
May 1999	V3.2.0	Version 3.2.0 Updated with Approved CRs at SA#3, Yokohama, Japan
May 1999	V3.3.0d	Version 3.3.0 Draft Updated with missed CR 22100A008
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