



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T Q.1701 Supplement

TELECOMMUNICATION
STANDARDISATION SECTOR
OF ITU

(06/2000)

**SPECIFICATIONS OF
INTERNATIONAL MOBILE TELECOMMUNICATIONS-2000
(IMT-2000)**

**Supplement to ITU-T Recommendation Q.1701 Framework for IMT-2000 Networks –
Roadmap to IMT-2000 Recommendations, Standards and Technical Specifications**

Foreword

ITU (International Telecommunication Union) is the United Nations Specialised Agency in the field of telecommunications. The ITU Telecommunication Standardisation Sector (ITU-T) is a permanent organ of the ITU. Some 179 member countries, 84 telecom operating entities, 145 scientific and industrial organisations and 38 international organisations participate in ITU-T which is the body which sets world telecommunications standards (Recommendations).

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Supplement to ITU-T Recommendation Q.1701 Framework for IMT-2000 Networks – Roadmap to IMT-2000 Recommendations, Standards and Technical Specifications

Summary

This Supplement is an “information” document and is intended as a roadmap and a source of references for documents related to IMT-2000 specifications from ITU-T as well as from sources outside the ITU (e.g., 3GPPs and SDOs.) The list of documents contained in this Supplement should therefore be treated as “bibliographic” references. The scope includes any relevant standards that are targeted toward the specification of IMT-2000 systems.

Note: This version of this Supplement includes information up to February, 2000. Updates will be reflected in the next version.

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1 Scope

ITU-T Recommendation Q.1701 provides the framework for IMT-2000 networks and defines the IMT-2000 Family of Systems concept. This supplement to Recommendation Q.1701 identifies the IMT-2000 standards and specifications being developed by various standards organisations in order to provide a 'roadmap' or 'guide' that may be used by network operators and service providers who may be planning to implement IMT-2000 systems.

2 References

Excerpts from the following ITU-T and ITU-R Recommendations were used in this supplement. The references below contain provisions which, through reference in this text, constitute provisions of this Supplement. Numerous bibliographic references are included in sections 8 and 9. At the time of publication, the editions indicated were valid. All Recommendations and the bibliographic references are subject to revision; all users of this Supplement are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below and throughout the document. Lists of the currently valid ITU-T and ITU-R Recommendations are regularly published by the ITU.

- [1] ITU-T Recommendation Q.1701, March 1999, "Framework for IMT-2000 Networks"
- [2] ITU-T Recommendation Q.1711, March 1999, "Network Functional Model for IMT-2000"
- [3] ITU-T Recommendation Q.1751, June 2000, "Internetwork Signalling Requirements for IMT-2000 Capability Set 1"
- [4] ITU-R Recommendation (IMT.RSPC), May 2000, "Detailed Specifications of the radio Interfaces of IMT-2000"

3 Definitions

There are no definitions specific to this Supplement.

4 Abbreviations and acronyms

2G	Second Generation Wireless Systems
3G	Third Generation Wireless Systems
3GPP	Third Generation Partnership Project
3GPP2	Third Generation Partnership Project 2
ANSI	American National Standards Institute
ARIB	Association of Radio Industries and Businesses
cdma2000	code division multiple access 2000
CN	core network
CS-1	Capability Set 1
CWTS	China Wireless Telecommunications Standards Group
DECT	Digital Enhanced Cordless Telecommunications
EIA	Electronics Industries Alliance (part of ANSI)
ETSI	European Telecommunications Standards Institute
GPRS	General Packet Radio Services
GSM	Global Systems Mobile
IMT-2000	International Mobile Telecommunications - 2000
---IP	Internet Protocol

ITU-R	International Telecommunications Union Radiocommunications Sector
IWF	Interworking Function
MT	Mobile Terminal
NNI	Network-to-Network Interface
RAN	Radio Access Network
RTT	Radio Transmission Technology
SDO	Standards Development Organisation
T1	T1 Standardisation Committee (part of ANSI)
TIA	Telecommunication Industry Association (part of ANSI)
TTA	Telecommunication Technology Association (Korea)
TTC	Telecommunication Technology Council (Japan)
UIM	User Identity Module
UMTS	Universal Mobile Telecommunications System
UTRAN	UMTS Terrestrial Radio Access Network
UWC-136	Universal Wireless Communication-136

5 Introduction

IMT-2000 Family Members are third generation mobile systems that are scheduled to start service around the year 2000 subject to market considerations. They will provide access, by means of one or more radio links, to a wide range of telecommunications services supported by the fixed telecommunication networks, and to other services that are specific to mobile users. A range of mobile terminal types is encompassed, linking to terrestrial and satellite based networks, and the terminals may be designed for mobile or fixed use.

Key features of IMT-2000 are:

- high degree of commonality of design world wide;
- compatibility of services within IMT-2000 and with the fixed networks;
- high quality;
- small terminal for world wide use;
- world wide roaming capability;
- capability for multimedia applications, and a wide range of services and terminals.

The evolution from a mixture of 2G Mobile Networks and Fixed Networks towards 3G Networks will not be a single process. IMT-2000 is an important step in providing a mixture of new emerging wireless mobile access technologies alongside existing wireless and fixed access technologies for both the developed and developing regions of the world to enable a wide range of voice, data and Internet services to be delivered cost effectively.

With the introduction and acceptance of the IMT-2000 Family of Systems concept, the development of IMT-2000 standards and specifications is now distributed over a number of international as well as regional and national standards forums. Whereas ITU-R and ITU-T are addressing the overall framework of IMT-2000 radio and network interface specifications, primarily to facilitate interoperability between IMT-2000 Family Member systems, the 3GPPs and SDOs are addressing the specifications for individual Family Members.

Given these partnership environments, a 'roadmap' or 'guide' to these standards and specifications is needed, especially by network operators and service providers who may wish to implement IMT-2000 systems. This roadmap provides a guide to the key relevant IMT-2000

standards and specifications. This is intended to help service providers and network operators around the world to better understand IMT-2000 as they make critical third generation deployment decisions, and plan their third generation networks. It will also be very valuable for those who have not been directly involved in the development of the IMT-2000 family of standards, especially the developing countries.

This supplement does not reproduce any technical material from the referenced bibliographic specifications.

6 Overview of the IMT-2000 Family of Systems concept

Recommendation Q.1701 defines the framework for IMT-2000 networks based on the IMT-2000 Family of Systems concept. The following extracts from Recommendation Q.1701 provide background information on the IMT-2000 Family of Systems concept.

6.1 Description of IMT-2000 Family of Systems concept

The following text is extracted from Recommendation Q.1701 [1]:

The IMT-2000 Family concept is used to realise a global service offering among IMT-2000 systems.

...

The IMT-2000 Family is a federation of IMT-2000 Systems providing IMT-2000 capabilities to its users as identified in IMT-2000 Capability Sets. The family is characterised by the ability of its member systems to provide service to the subscribers of other family members in a roaming service offering. However, individual family members may have different intra-system specifications (e.g., functionalities in physical entities, signalling protocols, etc.)

...

An IMT-2000 Family Member is an IMT-2000 System. A Family Member integrates and incorporates the IMT-2000 functions into physical entities and associated interfaces as necessary to provide IMT-2000 capabilities. The UIM, MT, RAN, and CN functional subsystems may be specific to each Family Member along with the associated internal processes, internal interactions, and internal communication between functional entities. Support for IMT-2000 capabilities and interfaces will facilitate roaming between family members. The family members' networks interoperate as necessary to accomplish the roaming objectives.

6.2 Application of IMT-2000 Family of Systems Concept

Figure 6.2-1 is based on Figure 4/Q.1701 and identifies the functional subsystems and the associated signalling relationships (or interfaces) for standardisation in CS-1.

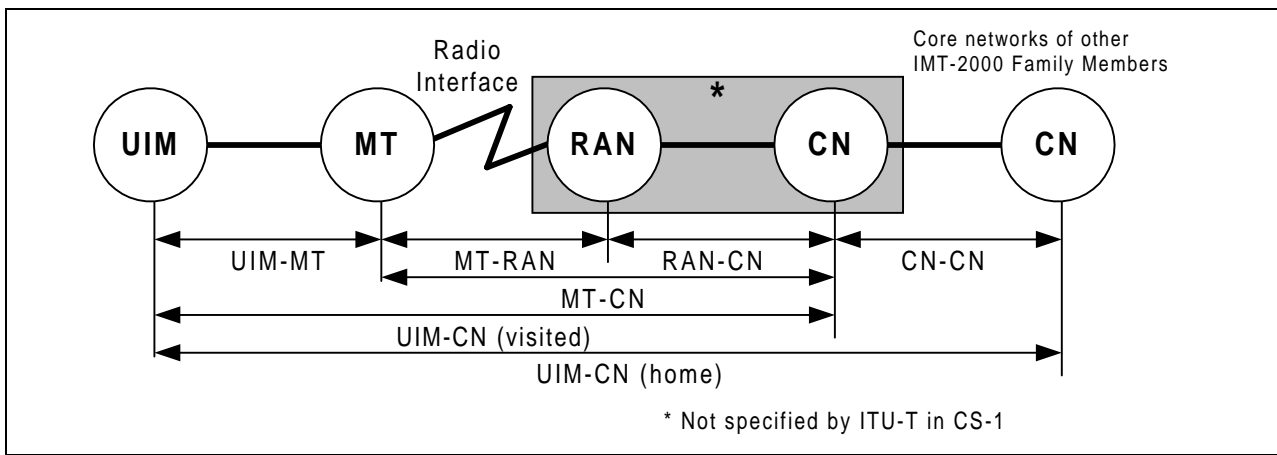


Figure 6.2-1 - IMT-2000 Functional Subsystems

The following inter-subsystem signalling relationships (or interfaces) will be standardised by ITU-T to facilitate global roaming between different IMT-2000 family members:

- UIM-MT
- MT-RAN (radio interface Layers 2 and 3)
- MT-CN (radio interface Layer 3)
- CN-CN (NNI)

The relationships between the UIM and the CN (both visited and home) are logical interactions.

In order to apply the Family of Systems concept to Figure 6.2-1, it is necessary to define four essential terms that are used in IMT-2000 3G systems. These are:

- intra-subsystem
- inter-subsystem
- intra-family
- inter-family

It is important to establish a common understanding on how to apply these terms to various signalling relationships as shown in Figure -6.2-1. This makes it easier to identify the focus of ITU-T and other IMT-2000 Family Member standardisation bodies.

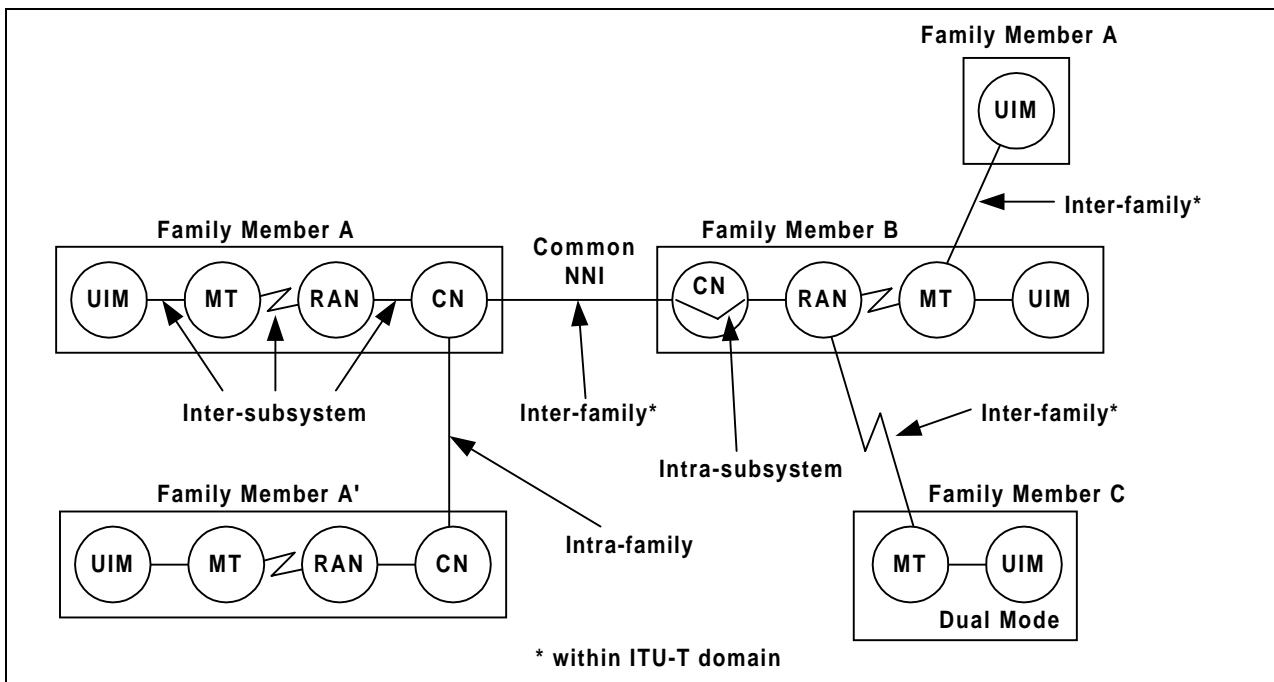


Figure 6.2-2 - Global Roaming Possibilities

By examining Figure 6.2-2, the terms “intra-subsystem,” “inter-subsystem,” “intra-family,” and “inter-family” are easily identifiable. These terms, if used independently, are subject to interpretation. Therefore, it is necessary that these terms be used in combination to avoid ambiguity.

Table 6.2-1 - Key Terminology

Term	Description	Responsible Bodies
Intra-subsystem	Signalling relationship contained within a specific subsystem, e.g., within CN of one Family Member system. An intra-subsystem signalling relationship is outside the scope of ITU-T standardisation.	<ul style="list-style-type: none"> • Family member
Inter-subsystem	Signalling relationship between two subsystems, either contained in the same or different IMT-2000 Family Member systems, e.g., MT-RAN, etc.	<ul style="list-style-type: none"> • Within the same Family: Family Member • Between Family members: ITU-T
Intra-family	Signalling relationship contained within the same IMT-2000 family member system.	<ul style="list-style-type: none"> • Within the same Family: Family Member • ITU-T to provide framework for commonality
Inter-family	Signalling relationship between two subsystems contained in different IMT-2000 family member systems, e.g., CN-CN.	<ul style="list-style-type: none"> • ITU-T (to facilitate commonality and global roaming)

6.3 Core Network to Core Network Interface (NNI)¹

It is generally recognised that there is a need for the Common NNI in a multi-network environment in order to derive benefit from existing (fixed and mobile) investments, and to support -global roaming and seamless service provisioning.

Figure 6.3-1 is based on Figure 6-1/Q.1751 and it shows a schematic view of IWFs and a common NNI in an IMT-2000 Family of Systems environment. The use of a common NNI for global roaming provides a unique open interface developed by ITU-T. It provides an efficient solution for interworking between IMT-2000 core networks, since only one IWF per Family Member is needed to inter-work with all other IMT-2000 Family Members. It provides transparency: changes in one Family Member do not affect other Family Members. It is future-proof by easily accommodating new Family Members.

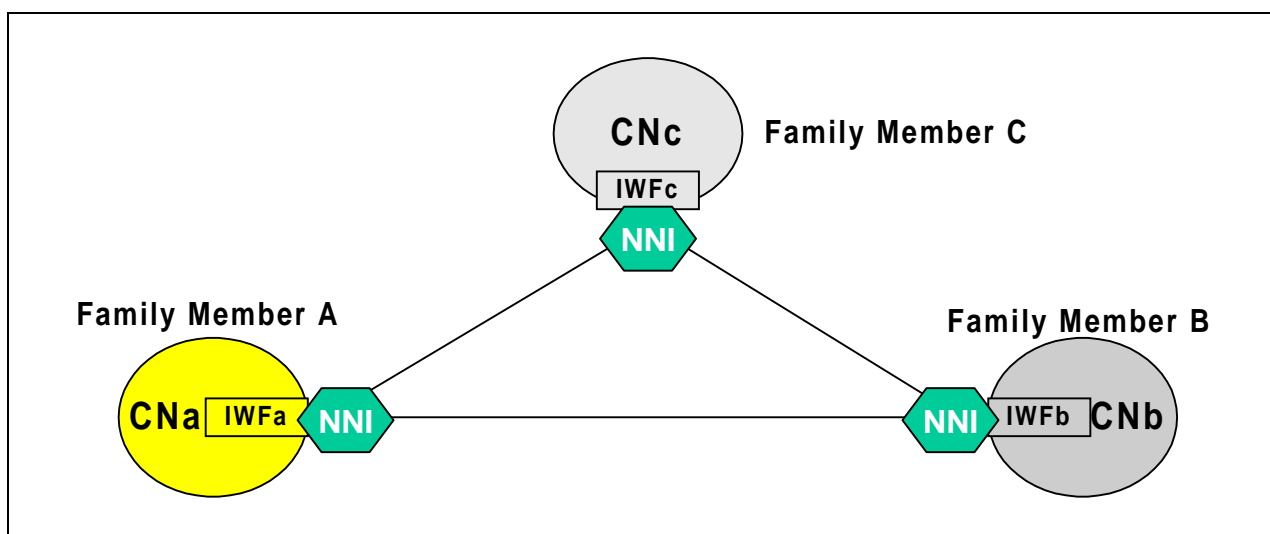


Figure 6.3-1 - Common NNI in the IMT-2000 Family Member interconnection model

Figure 6.3-2 illustrates how the concept indicated by Figure 6.3-1 is applied. It should be noted that each Core Network (e.g., evolved GSM MAP) may contain its own IWF for interworking with the common NNI.

¹ This section reflects views discussed and agreed on the Common NNI during the Global Standards Collaboration 5 and Radio Standards Meeting 8 (GSC-5/RAST-8, Williamsburg, USA, August 26, 1999.)

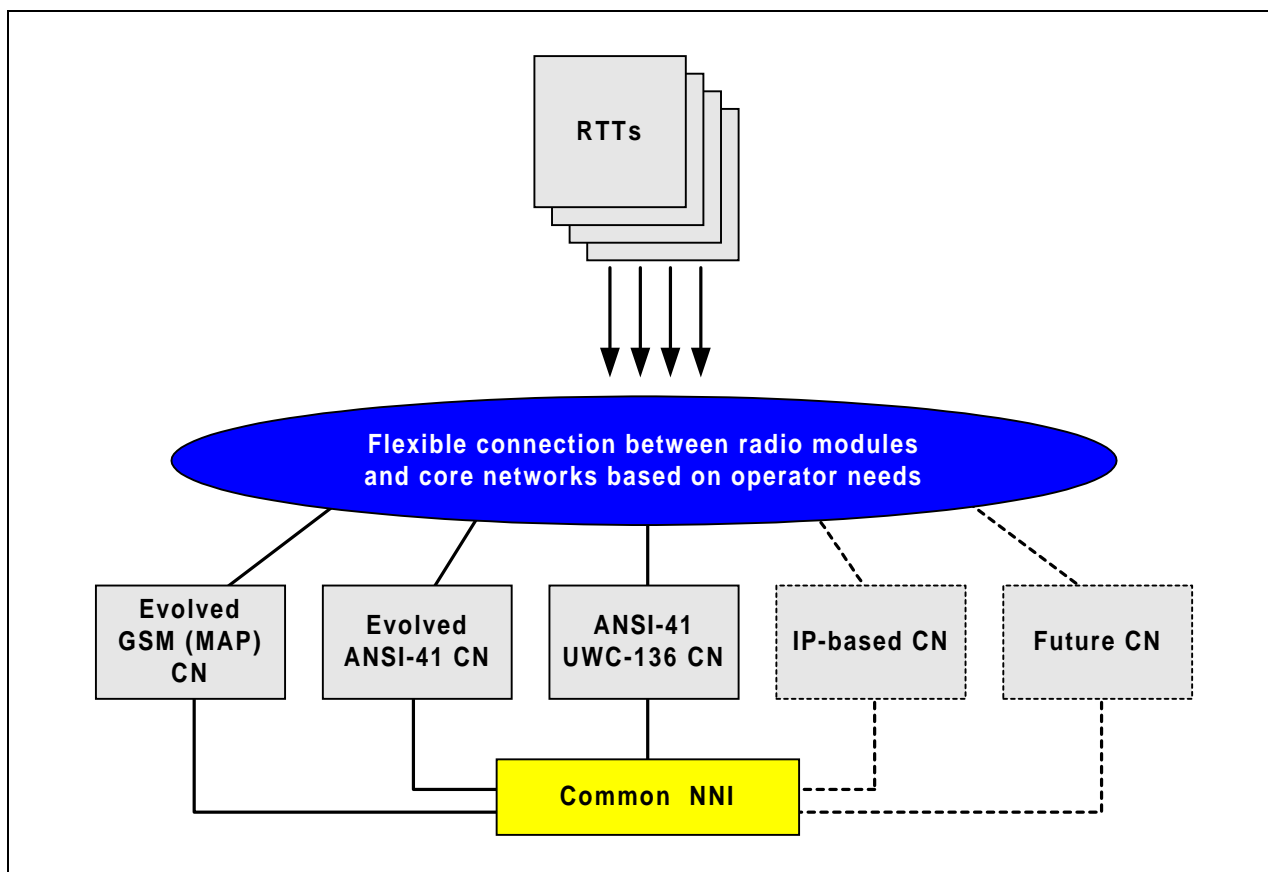


Figure 6.3-2 - Application of IMT-2000 Family Member concept

6.4 Roles of ITU-T and Regional SDOs in defining IMT-2000 Family Member interfaces

The IMT-2000 Family of Systems concept and functional architecture are a valuable framework for planning and organising regional SDOs' work on defining relevant standards for IMT-2000 Family Members and supporting ITU-T standardisation activities. The interfaces and functional relationships identified in ITU-T Recommendation Q.1701 are recognised as the interfaces to be covered by ITU-T Recommendations. Because of their extensive knowledge of 2G mobile systems and the specific needs of individual IMT-2000 Family Member markets, regional SDOs are best equipped to handle intra-Family Member standards matters. They also have the expertise on how to evolve 2G systems toward IMT-2000 and how to inter-work between 2G systems and IMT-2000.

The long-term goal is to evolve toward a common ITU-T standard for IMT-2000.

7 ITU-T Recommendations²

ITU Recommendations and other documents may be obtained through the following web page:

<http://www.itu.int>

² Specifications related to radio specific matters --are described in ITU-R Recommendation (IMT.RSPC)-05/2000-Detailed specifications of the radio interfaces of IMT-2000.

7.1 Overview of ITU-T Recommendations on IMT-2000

ITU-T has developed several IMT-2000 CS-1 framework Recommendations that are applicable to all Family Members and are designed to provide a common framework and to facilitate global roaming.

The following table provides the list of ITU-T IMT-2000 CS-1 Recommendations and related documents pertaining to signalling and protocol requirements.

Table 7.1-1

Table 7.1-1 - ITU-T Specifications

Title	-Document No.	Status
Framework for IMT-2000 Networks	Q.1701	Decided (approved)
Network Functional Model for IMT-2000	Q.1711	Decided (approved)
Information Flows for IMT-2000 Capability Set 1	Q.1721	Determined (completed, pending approval)
Radio Technology Independent Requirements for IMT-2000 Layer 2 Radio Interface	Q.1731	Determined (completed, pending approval)
Internetwork Signalling Requirements for IMT-2000 Capability Set 1	Q.1751	Determined (completed, pending approval)
Supplement to ITU-T Recommendation Q.1701 Framework for IMT-2000 Networks: Roadmap to IMT-2000 Recommendations, standards and technical specifications.	This document	Approved
Technical Report Q.FSU "IMT-2000 functionality and signalling requirements for UIM"	To be assigned	Draft
Technical Report Q.FSR "General requirements for the IMT-2000 radio interface architecture"	To be assigned	Draft

7.2 Summary Descriptions of ITU-T Recommendations on IMT-2000

Sections 7.2.1 through 7.2.6 below provide the summaries of the indicated documents.

7.2.1 Q.1701: Framework for IMT-2000 Networks

This Recommendation sets out the family of systems concept which provides the basis for the development of IMT-2000 standards including the set of signalling requirements for IMT-2000. It also contains a description of the interfaces in the system which may need to be standardised by the ITU. It has been agreed that the development of IMT-2000 requirements will be performed in Capability Sets and this document sets out the contents of Capability Set 1 and the vision for subsequent Capability Sets.

7.2.2 Q.1711: Network Functional Model for IMT-2000

This Recommendation identifies network and terminal functions that are specific for the support of IMT-2000 services, as specified in the Recommendation on the Framework for IMT-2000 Networks (ITU-T Recommendation Q.1701). These functions together with other, more conventional network functions are then grouped into functional entities in a generic functional model. In the functional model, the relationships among functional entities and groups are shown. The functional model is mapped onto a generic network reference model to illustrate possible groupings of functional entities into physical collections of entities. Based on the functional model, global roaming requirements and network interconnection scenarios are described. This Recommendation forms the basis for the development of information flows and the definition of functional entity actions and the development of signalling requirements for the various interfaces identified in ITU-T Recommendation Q.1701.

7.2.3 - Q.1721: Information Flows for IMT-2000 CSet-1

This recommendation specifies Stage 2 information flow procedures for the support of end-to-end inter-family and inter-system IMT-2000 Capability Set 1 (CS-1) services and network capabilities. The areas covered are mobility management, call and bearer control, services control, and over-the-air authorisation services.

7.2.4 Q.1731: Radio Technology Independent Requirements for IMT-2000 Layer 2 Radio Interface

This Recommendation defines requirements for common services, functions and primitives for the radio technology independent parts of the Layer 2 of the IMT-2000 radio interface, to ensure maximum commonality between IMT-2000 family members.

7.2.5 Q.1751: Internetwork Signalling Requirements for IMT-2000 Capability Set 1

This recommendation document contains signalling requirements for the Network to Network Interface (NNI) protocol. The requirements are to support the capabilities that are recommended in the IMT2000 Framework document and specified as Capability Set 1 (CS-1). This document covers requirements for five communication groups of the NNI: Call and Bearer Control; Mobility Management; Virtual Home Environment (VHE) and Intelligent Network (IN) Services Control; Packet Data Services and Internet Access Control; and Inter-network Security. The requirements specified in this document are non-information flow related, and they should be viewed as complementary to the information flows of Recommendation Q.1721. They include general NNI protocol requirements, NNI functional models, NNI reference points, state models for selective functional entities, and the choice of various protocol suites.

7.2.6 Supplement to ITU-T Recommendation Q.1701 Framework for IMT-2000 Networks: Roadmap to IMT-2000 Recommendations, Standards and Technical Specifications.

This Supplement is an “information” document and is intended as a roadmap and a source of references for documents related to IMT-2000 specifications from ITU-T as well as from sources outside the ITU (e.g., 3GPPs and SDOs.) The list of documents contained in this Supplement should therefore be treated as “bibliographic” references. The scope includes any relevant standards that are targeted toward the specification of IMT-2000 systems.

7.2.7 Technical Report Q.FSU “IMT-2000 Functionality and Signalling Requirements for UIM”³

This Technical Report describes the functionality and requirements of the UIM (User Identity Module) used within IMT-2000 mobile terminals, and the UIM-MT signalling requirements. This includes functional communications (e.g., UIM-CNv and UIM-CNh) across the UIM-MT interface. Only the requirements necessary to support global roaming and inter-operability between different family members of IMT-2000 are specified.

UIM, provides functions to support user security and services. These functions may either reside in a removable physical device for a mobile terminal or be integrated into the physical mobile terminal. A non-removable UIM is functionally equivalent to a removable UIM.

7.2.8 Technical Report Q.FSR “General requirements for the IMT-2000 radio interface architecture”⁴

This Technical Report describes the layered model of the radio interface and the general aspects of each layer and sub-layer. The layers are: layer 1 (the physical layer), layer 2 (the MAC and LAC sub-layers), and layer 3 (the network layer). The general aspects include identifying which parts of the radio interface are radio technology dependent and which ones are radio technology independent, in addition to the modular signalling architecture of layer 3.

8 Family member standards and specifications

This section provides a non exhaustive list of IMT-2000 Family Members standards and specifications. This list is strictly informative and IMT-2000 Family Members are not restricted to implementing the following systems. This list does not prevent inclusion of new Family Members specifications and standards in the future.

Specifications may be found at the following SDO web pages:

<u>3GPP</u>	http://www.3gpp.org/
<u>3GPP2:</u>	http://www.3gpp2.org/
<u>ARIB:</u>	http://www.arib.or.jp/IMT-2000/
<u>ETSI:</u>	http://www.etsi.org/smg/imtrefs/
<u>T1:</u>	http://www.t1.org/imtrefs/
<u>TIA:</u>	http://www.tiaonline.org/
<u>TTC</u>	http://www.ttc.or.jp/
<u>TTA:</u>	http://www.tta.or.kr/imt2000/3gppspec/

8.1 Family member: GSM evolved UMTS Core Network with UTRAN Access Network

This section provides an overview of the specifications for this IMT-2000 Family member. Details for these specification may be found in section 9.1.

The following text describes the numbering scheme for the specifications and reports for the 3GPP 3rd Generation Mobile System.

³ This Technical Report is still in preparation. This summary uses the Summary (with minor edits) taken from SG 11 TD3/11- 34, Geneva, Nov. 22 - Dec.10, 1999.

⁴ This Technical Report is still in preparation. This summary is based on the Scope (with some edits) taken from SG 11 TD3/11- 33, Geneva, Nov. 22 - Dec.10, 1999.

Specifications for Release 1999 of the 3rd Generation mobile system are identified by the "ab.cde" numbering scheme.

Where existing GSM Specifications are enhanced or modified by the TSGs for the 3rd Generation Mobile System, the specification title and version should change (title reflecting 3rd Generation Mobile System). The GSM number (ab) should be increased by 20 and a "c" digit equal to zero added (e.g., GSM 07.07 becomes 3GTS 27.007) indicating the GSM heritage of the Specification.

For newly created 3GPP Specifications the "c" digit should not be equal to zero.

Existing 3rd Generation specifications transferred from ETSI SMG should have a "c" digit equal to one, e.g., SMG UMTS TS 22.00 becomes 3G TS 22.100.

For newly created 3GPP Technical reports, the "c" digit should normally be equal to nine, e.g., A report in the 23 series will have a number 23.9de. The "c" digit equal to eight may be used for overflow of the ab.9de range, or allocated to reports not intended for external circulation.

Specification numbers will be allocated on request by a centralised point within the 3GPP support group (see section 4.1 of TR 21.900). A particular Series will not necessarily remain within, or be the sole responsibility of a particular TSG or WG.

The following Series titles and descriptions should be used for guidance only and may be further developed with experience.

The Specification series are:

- 21-series Requirements specifications
- 22-series Service aspects
- 23-series Technical realisation
- 24-series Signalling protocols (UE - CN network)
- 25-series UTRA aspects
- 26-series Codecs (speech, video, etc.)
- 27-series Data
- 28-series Reserved for future use
- 29-series Signalling protocols (NSS)
- 30-series Programme management
- 31-series UIM User Identity Module
- 32-series Operation and maintenance
- 33-series Security aspects
- 34-series Test specifications

Table 8.1-1 - Specifications for GSM-evolved UMTS Core Network with UTRAN Access Network

Title	Document No.	Status
USIM and IC card requirements	TS 21.111	Approved
Security Threats and Requirements	TS 21.113	Approved
Bearer Services (BS) supported by a Public Land Mobile Network (PLMN)	TS 22.002	Approved
General on supplementary services	TS 22.004	Approved
Service accessibility	TS 22.011	Approved

Title	Document No.	Status
International Mobile station Equipment Identities (IMEI)	TS 22.016	Approved
Personalisation of GSM ME Mobile functionality specification	TS 22.022	Approved
Description of Charge Advice Information (CAI)	TS 22.024	Approved
Man-Machine Interface (MMI) of the Mobile Station (MS)	TS 22.030	Approved
High Speed Circuit Switched Data (HSCSD) - Stage 1	TS 22.034	Approved
SIM application Toolkit SAT	TS 22.038	Approved
Operator Determined Barring (ODB)	TS 22.041	Approved
Network Identity and Time Zone (NITZ); Service description, Stage 1	TS 22.042	Approved
Support of Localised Service Area (SoLSA);Service description; Stage 1	TS 22.043	Approved
Mobile Station Application Execution Environment (MExE);Service description, Stage 1	TS 22.057	Approved
General Packet Radio Service (GPRS); Service description, Stage 1	TS 22.060	Approved
Support of Mobile Number Portability (MNP); Service description - Stage 1	TS 22.066	Approved
enhanced Multi-Level Precedence and Pre-emption service (eMLPP) - Stage 1	TS 22.067	Approved
Location Services (LCS); Service description, Stage 1	TS 22.071	Approved
Call Deflection Service description - Stage 1	TS 22.072	Approved
Customised Applications for Mobile network Enhanced Logic CAMEL)	TS 22.078	Approved
Support of Optimal Routing (SOR); Service definition - Stage 1	TS 22.079	Approved
Line identification Supplementary Services; Stage 1	TS 22.081	Approved
Call Forwarding (CF) supplementary services - Stage 1	TS 22.082	Approved
Call Waiting (CW) and Call Holding (HOLD); Supplementary Services - Stage 1	TS 22.083	Approved
MultiParty (PTY) Supplementary Services - Stage 1	TS 22.084	Approved
Closed User Group (CUG) Supplementary Services - Stage 1	TS 22.085	Approved
Advice of Charge (AoC) Supplementary Services; Stage 1	TS 22.086	Approved
User-to-User Signalling (UUS); Service description - Stage 1	TS 22.087	Approved
Call Barring (CB) Supplementary Services - Stage 1	TS 22.088	Approved
Unstructured Supplementary Service Data (USSD) - Stage 1	TS 22.090	Approved
Explicit Call Transfer (ECT)	TS 22.091	Approved
Completion of Calls to Busy Subscriber (CCBS); Service description, Stage 1	TS 22.093	Approved
Name identification supplementary services; Stage 1	TS 22.096	Approved
Multiple Subscriber Profile (MSP) Phase 1; Service description - Stage 1	TS 22.097	Approved
UMTS phase 1 Release 99	TS 22.100	Approved
Service aspects; Service principles	TS 22.101	Approved
Service aspects; Services and Service Capabilities	TS 22.105	Approved
Service aspects; Charging and Billing	TS 22.115	Approved
Service aspects; The Virtual Home Environment	TS 22.121	Approved
Service aspects; Handover Requirements between UMTS and GSM	TS 22.129	Approved
Multicall Service description; Stage 1	TS 22.135	Approved
Network architecture	TS 23.002	Approved
Numbering, addressing and identification	TS 23.003	Approved
Organization of subscriber data	TS 23.008	Approved
Handover procedures	TS 23.009	Approved
Technical realization of Supplementary Services	TS 23.011	Approved
Location registration procedures	TS 23.012	Approved
Support of Dual Tone Multi-Frequency (DTMF) signalling	TS 23.014	Approved
Technical realization of Operator Determined Barring (ODB)	TS 23.015	Approved
Subscriber data management - Stage 2	TS 23.016	Approved
Functions related to Mobile Stations (MS) in idle mode and group receive mode	TS 23.022	Approved
Universal Geographical Area Description (GAD)	TS 23.032	Approved
High Speed Circuit Switched Data (HSCSD) - Stage 2	TS 23.034	Approved
Alphabets and language-specific information	TS 23.038	Approved

Title	Document No.	Status
Interface protocols for the connection of Short Message Service Centres (SMSCs) to Short Message Entities (SMEs)	TS 23.039	Approved
Technical realization of the Short Message Service (SMS); Point-to-Point (PP)	TS 23.040	Approved
Technical realization of Cell Broadcast Service (CBS)	TS 23.041	Approved
Compression algorithm for text messaging services	TS 23.042	Approved
Technical realization of facsimile group 3 non-transparent	TS 23.046	Approved
Description for the use of a Shared Inter Working Function (SIWF) in a GSM PLMN - Stage 2	TS 23.054	Approved
Mobile Station Application Execution Environment (MExE); Functional description; Stage 2	TS 23.057	Approved
General Packet Radio Service (GPRS); Service description; Stage 2	TS 23.060	Approved
Support of Mobile Number Portability (MNP); Technical Realisation; Stage 2	TS 23.066	Approved
enhanced Multi-Level Precedence and Pre-emption service (eMLPP) - Stage 2	TS 23.067	Approved
Call Deflection (CD) Supplementary Service - Stage 2	TS 23.072	Approved
Support of Localised Service Area (SoLSA); Stage 2	TS 23.073	Approved
(CAMEL) Phase 3 - Stage 2	TS 23.078	Approved
Line identification supplementary services - Stage 2	TS 23.081	Approved
082 Call Forwarding (CF) supplementary services - Stage 2	TS 23.082	Approved
Call Waiting (CW) and Call Hold (HOLD) supplementary services - Stage 2	TS 23.083	Approved
Multi Party (MPTY) supplementary service - Stage 2	TS 23.084	Approved
Closed User Group (CUG) supplementary service - Stage 2	TS 23.085	Approved
Advice of Charge (AoC) supplementary services - Stage 2	TS 23.086	Approved
087 User-to-User Signalling (UUS) Supplementary Service - Stage 2	TS 23.087	Approved
Call Barring (CB) Supplementary Services - Stage 2	TS 23.088	Approved
090 Unstructured Supplementary Service Data (USSD) - Stage 2	TS 23.090	Approved
Explicit Call Transfer (ECT) supplementary service - Stage 2	TS 23.091	Approved
Completion of Calls to Busy Subscriber (CCBS) - Stage 2	TS 23.093	Approved
Architectural Requirements for Release 1999	TS 23.121	Approved
Multimedia Messaging Service (MMS); Functional description; Stage 2	TS 23.140	To be approved in March 2000
Mobile Radio Interface Signalling Layer 3 General Aspects	TS 24.007	Approved
Mobile Radio Interface Layer 3 specification; Core Network Protocols-Stage 3	TS 24.008	Approved
Mobile Radio Interface Layer 3 Supplementary Services Specification-General Aspects	TS 24.010	Approved
Point-to-Point (pp) Short Message Service (SMS); Support on Mobile Radio Interface	TS 24.011	Approved
Short Message Cell Broadcast; Support on Mobile Radio Interface	TS 24.012	Approved
Radio Link Protocol (RLP) for Data and Telematic Services on the (MS-BSS) Interface and the Base Station System Mobile-services Switching Centre (BSS-MSC) Interface	TS 24.022	Approved
Mobile Station (MS) - Serving GPRS Support Node (SGSN); Subnetwork Dependent Convergence Protocol (SNDP)	TS 24.065	Approved
enhanced Multi-Level Precedence and Pre-emption service (eMLPP) - Stage 3	TS 24.067	Approved
Call Deflection (CD) Supplementary Service - Stage 3	TS 24.072	Approved
Mobile radio Layer 3 Supplementary Service specification - Formats and coding	TS 24.080	Approved
Line identification supplementary services - Stage 3	TS 24.081	Approved
Call Forwarding (CF) supplementary services - Stage 3	TS 24.082	Approved
Call Waiting (CW) and Call Hold (HOLD) supplementary services - Stage 3	TS 24.083	Approved
Multi Party (MPTY) supplementary service - Stage 3	TS 24.084	Approved

Title	Document No.	Status
Closed User Group (CUG) supplementary service - Stage 3	TS 24.085	Approved
Advice of Charge (AoC) supplementary services - Stage 3	TS 24.086	To be approved in March 2000
User-to-User Signalling (UUS) Supplementary Service - Stage 3	TS 24.087	Approved
Call Barring (CB) Supplementary Service - Stage 3	TS 24.088	Approved
Unstructured Supplementary Service Data (USSD) - Stage 3	TS 24.090	Approved
Explicit Call Transfer (ECT) supplementary service - Stage 3	TS 24.091	Approved
Completion of Calls to Busy Subscriber (CCBS) - Stage 3	TS 24.093	Approved
Name identification supplementary services - Stage 3	TS 24.096	Approved
Mandatory Speech Codec speech processing functions AMR Speech Codec; General Description	TS 26.071	Approved
ANSI-C code for the Adaptive Multi Rate speech codec	TS 26.073	Approved
Mandatory Speech Codec speech processing functions; AMR Speech Codec Test Sequence	TS 26.074	Approved
Mandatory Speech Codec speech processing functions AMR speech codec; Transcoding functions	TS 26.090	Approved
Mandatory Speech Codec speech processing functions AMR speech codec; Error concealment of lost frames	TS 26.091	Approved
Mandatory Speech Codec speech processing functions AMR Speech Codec; Comfort noise aspects	TS 26.092	Approved
Mandatory Speech Codec speech processing functions AMR Speech Codec; Source Controlled Rate operation	TS 26.093	Approved
Mandatory Speech Codec speech processing functions AMR speech codec; Voice Activity Detector (VAD)	TS 26.094	Approved
Mandatory Speech Codec speech processing functions; AMR Speech Codec Frame Structure General description	TS 26.101	Approved
Mandatory speech codec; AMR speech codec; Interface to Iu and Uu Adaptive Multi-Rate (AMR) speech code.	TS 26.102	Approved
Codec for Circuit Switched Multimedia Telephony Service; General Description	TS 26.110	Approved
Codec for Circuit Switched Multimedia Telephony Service; Modifications to H.324	TS 26.111	Approved
Codec(s) for Circuit Switched Multimedia Telephony Service Call Set-up Requirements	TS 26.112	Approved
General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)	TS 27.001	Approved
Terminal Adaptation Functions (TAF) for services using asynchronous bearer capabilities	TS 27.002	Approved
Terminal Adaptation Functions (TAF) for services using synchronous bearer capabilities	TS 27.003	Approved
Use of Data Terminal Equipment - Data Circuit terminating; Equipment (DTE - DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)	TS 27.005	Approved
AT command set for 3GPP User Equipment (UE)	TS 27.007	Approved
Terminal Equipment to Mobile Station (TE-MS) multiplexer protocol	TS 27.010	Approved
Wide Area Network Synchronisation Standard	TS 27.103	Approved
Mobile Application Part (MAP)	TS 29.002	Approved
General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN)	TS 29.007	Approved
Information element mapping between Mobile Station - Base Station System (MS - BSS) and Base Station System - Mobile-services Switching Centre (BSS - MSC); Signalling procedures and the Mobile Application Part (MAP)	TS 29.010	Approved
Signalling interworking for supplementary services	TS 29.011	Approved

Title	Document No.	Status
Signalling interworking between ISDN supplementary services; Application Service Element (ASE) and Mobile Application Part (MAP) protocols	TS 29.013	Approved
General Packet Radio Service (GPRS); Serving GPRS Support Node (SGSN) - Visitors Location Register (VLR)	TS 29.016	Approved
General Packet Radio Service (GPRS); Serving GPRS Support Node (SGSN) - Visitors Location Register (VLR)	TS 29.018	Approved
General Packet Radio Service (GPRS); GPRS Tunnelling Protocol (GTP)	TS 29.060	Approved
Interworking between the Public Land Mobile Network (PLMN) supporting GPRS and Packet Data Networks (PDN)	TS 29.061	Approved
UICC-Terminal Interface; Physical and Logical Characteristics	TS 31.101	Approved
3G Telecom Management principles and high level requirements	TS 32.101	To be approved in March 2000
3G Telecom Management architecture	TS 32.102	To be approved in March 2000
3G Performance Management	TS 32.104	To be approved in March 2000
3G Configuration Management	TS 32.106	To be approved in March 2000
3G Fault Management	TS 32.111	To be approved in June 2000
Security Architecture	TS 33.102	Approved
Security Integration Guidelines	TS 33.103	Approved
Cryptographic Algorithm Requirements	TS 33.105	Approved
Lawful Interception Requirements	TS 33.106	Approved
Security Principles and Objectives	TS 33.120	Approved

8.2 Family member: ANSI-41 evolved Core Network with cdma2000 Access Network

This section provides an overview of the specifications for this IMT-2000 Family member. Details for these specification may be found in section 9.2.

The following numbering scheme is used for identifying 3GPP2 Specifications, Reports and Projects:

A.Bxxxx[-1]-C[-2]

Where:

- A the identifying letter of the TSG who developed the document.
- B the document type designator (S = Specification, R = Report, P = Project)
- xxxx the 4 digit number of the project and/or document
- [-1] the volume number (optional).
- C the revision level where the first version is the number '0' with subsequent revisions indicated by A,B,C...
- [-2] used to designate an addendum (optional).

Example: S.R0002-1-A-1: first Addendum to the System Capabilities Description, Revision A.

The 3GPP2 TSGs are:

- TSG-A A Interface
- TSG-C cdma2000
- TSG-N Network
- TSG-P Packet Data
- TSG-S Services and Systems Aspects

**Table 8.2-1 - Family Member: ANSI-41 evolved Core Network with
cdma2000**

Title	Document No.	Status
Radio Access Interface		
3G-IOS	A.S0001	Approved
Abis interface specification	A.S0003	Approved
Tandem Free Operation	A.S0004	Approved
cdma2000		
Removable User Identity Module	C.S0023	Approved
SMV (Selectable Mode Vocoder)	C.P9001	Approved
Intersystem Interface		
User Selective Call Forwarding	N.S0001	Approved
Answer Hold	N.S0002	Approved
User Identity Module	N.S0003	Approved
WIN Phase 2	N.S0004	Approved
Cellular Radiotelecommunications Intersystem Operations	N.S0005	Approved
PCS Multi-band-Based on IS-41-C	N.S0006	Approved
DCCH Based on IS-41-C	N.S0007	Approved
Circuit Modes Services-Data-Based on IS-41-C	N.S0008	Approved
IMSI	N.S0009	Approved
Advanced Features in Wideband Spread Spectrum Systems	N.S0010	Approved
OTASP and OTAPA	N.S0011	Approved
CNAP/CNAR	N.S0012	Approved
WIN	N.S0013	Approved
Authentication Enhancements	N.S0014	Approved
ANSI-41-D Miscellaneous Enhancements	N.S0015	Approved
TIA/EIA-41-D Enhancements for Internationalization	N.S0016	Approved
International Implementation of Wireless Telecommunication Systems Compliant with TIA/EIA-41	N.S0017	Approved
TIA/EIA-41-D Prepaid Charging	N.S0018	Approved
Intersystem Link Protocol	N.S0019	Approved
Packet Data Services		
Wireless IP Network Architecture based on IETF Protocols	P.S0001	Approved
Wireless IP Network Standard	P.S0002	Approved
Services and Systems Aspects		
System Capability Guide	S.R0003	Approved
System Implementation Guide	S.R0004	Approved
3GPP2 Network Reference Model	S.R0005	Approved
Cellular Features Description	S.R0006	Approved
User Selective Call Forwarding	S.R0007	Approved
Answer Hold	S.R0008	Approved
User Identity Module	S.R0009	Approved
Preferred Language Enhancement	S.R0010	Approved
Advice of Charge	S.R0011	Approved
Rejection of Undesired Annoying Calls	S.R0012	Approved
Global Emergency Call Origination	S.R0013	Approved
Tandem Free Operation	S.R0014	Approved
ISDN Interworking	S.R0015	Approved
Automatic Code Gapping	S.R0016	Approved
3G Wireless Network Management System High Level Requirements	S.R0017	Approved

8.3 Family member: ANSI-41/GPRS evolved Core Network with UWC-136 Access Network

The following standards apply to this family member. All specifications and standards are available at the following address: <http://www.tiaonline.org/standards/sfg/imt2k/>

Table 8.3-1 - Family Member: ANSI-41/GPRS evolved Core Network with UWC-136 Access Network

Title	Document No. TIA/EIA...	Status
List of Parts	-136-000B	Balloting
Introduction, Identification and Semi-permanent Memory	-136-005A	Balloting
Optional Mobile Station Facilities	-136-010B	Balloting
SOC, BSMC, and Other Code Assignment	-136-020B	Balloting
Introduction to Channels	-136-100B	Balloting
Digital Control Channel Layer 1	-136-121A	Approved
Digital Control Channel Layer 2	-136-122B	Balloting
Digital Control Channel Layer 3	-136-123B	Balloting
Digital Traffic Channel Layer 2	-136-132	Approved
Digital Traffic Channel Layer 3	-136-133B	Balloting
Analog Control Channel	-136-140B	Balloting
Analog Voice Channel	-136-150B	Balloting
Packet-data Service - Overview	-136-330	Balloting
Packet-Data Service Logical-Link Control	-136-333	Balloting
Packet-Data Service Subnetwork Dependent Convergence Protocol	-136-334	Balloting
Packet-Data Service Mobility Management	-136-336	Balloting
Packet-Data Service Tunneling of Signalling Messages	-136-337	Balloting
Packet-Data Service 136HS Outdoor Overview	-136-340	Balloting
Data-Service Control	-136-350A	Balloting
Packet Data Service 136HS Indoor Overview	-136-360	Balloting
Authentication, Encryption of Signalling Information/User Data, and Privacy	-136-510B	Balloting
Messages Subject to Encryption	-136-511A	Balloting
R-DATA/SMDPP Transport	-136-610	Balloting
Teleservice Segmentation and Reassembly (TSAR)	-136-620	Approved
Broadcast Teleservice Transport Broadcast Air-Interface Transport Service	-136-630	Approved
Introduction to Teleservices	-136-700B	Balloting
Short Message Service Cellular Messaging Teleservice	-136-710B	Balloting
Over-the-Air Activation Teleservice (OATS)	-136-720B	Balloting
Over-the Air Programming Teleservice (OPTS)	-136-730	Approved
General UDP Transport Service (GUTS)	-136-750	Approved
Charge Indication Teleservice (CIT)	-136-760	Balloting
Introduction to Annexes and Appendices	-136-900	Balloting
Normative Information	-136-905	Balloting
Informative Information	-136-910B	Balloting
Packet-Data Service Stage 2 Description	-136-932	Balloting
Packet-Data Service Fixed Coding Mode MAC	-136-933	Balloting
Capacity and Performance Characteristics of UWC-136	-136-940	Balloting

8.4 Family Member: DECT - Digital Enhanced Cordless Telecommunications

DECT specifications are related to radio matters. These are under the responsibility of ITU-R and are available as ITU Recommendation (IMT.RSPC) 05/2000: Detailed specifications of the radio interfaces of IMT-2000.

9 Detailed description of family member standards and specifications

This section provides details for the set of standards and specifications identified in Section 8. A brief description is provided for each standard or specification listed. When a recognized external organization has completed its standardization and publication process, appropriate information is provided via a table as illustrated below with entries as applicable. Future versions of this document will contain additional entries in these tables as standards are ratified.

SDO	Document No.	Status
ARIB/TTC		
CWTS		
ETSI		
TTA		
TIA		

9.1 Family member: GSM evolved UMTS Core Network with UTRAN Access Network

The standards and specifications listed in this section apply to Release 99.

9.1.1 TS 21.111 USIM and IC card requirements

This document defines the requirements of the USIM (Universal Subscriber Identity Module) and the IC card for 3GPP (UICC).

9.1.2 TS 21.113 Security Threats and Requirements

This document describes the Security Principles and Objectives. It contains an evaluation of perceived threats and produces subsequently a list of security requirements to address these threats.

9.1.3 TS 22.002 Bearer Services (BS) supported by a Public Land Mobile Network (PLMN)

This document defines a set of Bearer Services to be provided to PLMN subscribers by a PLMN itself and in connection with other networks. This document should also be used as a reference for defining the corresponding required mobile network capabilities.

9.1.4 TS 22.004 General on supplementary services

The purpose of this document is to define a recommended set of supplementary services to the Teleservices and Bearer services which will be supported by a PLMN in connection with other networks as a basis for the definition of the network capabilities required.

9.1.5 TS 22.011 Service accessibility

The purpose of this document is to describe the service access procedures as presented to the user.

9.1.6 TS 22.016 International Mobile station Equipment Identities (IMEI)

This document defines the principal purpose and use of International Mobile station Equipment Identities (IMEI).

9.1.7 TS 22.022 Personalisation of GSM ME Mobile functionality specification

This document provides functional specifications of five features to personalise Mobile Equipment (ME).

9.1.8 TS 22.024 Description of Charge Advice Information (CAI)

This document describes charging supplementary service that are designed to supply to a mobile user sufficient information to allow a real-time estimate to be made of the bill which will eventually be levied in the home PLMN on the Mobile Station (MS) subscriber.

9.1.9 TS 22.030 Man-Machine Interface (MMI) of the Mobile Station (MS)

This document defines the requirements for and gives guidelines on the MMI for calls on the Mobile Station (MS).

9.1.10 TS 22.034 High Speed Circuit Switched Data (HSCSD)

This document specifies the Stage 1 description of High Speed Circuit Switched Data (HSCSD).

9.1.11 TS 22.038 SIM application toolkit (SAT) Stage 1

This document describes Stage 1 description of SIM application Toolkit SAT.

9.1.12 TS 22.041 Operator Determined Barring (ODB)

This document describes the network feature Operator Determined Barring (ODB).

9.1.13 TS 22.042 Network Identity and Time Zone (NITZ) Service description

This document describes the feature Network Identity and Time Zone (NITZ).

9.1.14 TS 22.043 Support of Localised Service Area (SoLSA) Service description

This document specifies a mechanism which can be used as a platform for providing special tariffs and/or special set of service features for certain subscribers within a regionally restricted area or areas.

9.1.15 TS 22.057 Mobile Station Application Execution Environment (MExE) Service description

This document defines the Stage 1 description of the Mobile Station Application Execution Environment (MExE).

9.1.16 TS 22.060 General Packet Radio Service (GPRS) Service description

This document defines the Stage 1 description of the General Packet Radio Service (GPRS).

9.1.17 TS 22.066 Support of Mobile Number Portability (MNP) Service description

This document defines the Stage 1 description of the Support of Mobile Number Portability between networks in the same country.

9.1.18 TS 22.067 enhanced Multi-Level Precedence and Pre-emption service (eMLPP)

This document specifies the Stage 1 description of the enhanced Multi-Level Precedence and Pre-emption Service (eMLPP). This service has two parts: precedence and pre-emption.

9.1.19 TS 22.071 Location Services (LCS); Service description

This document provides the Stage 1 description of Location Services (LCS) networks.

9.1.20 TS 22.072 Call Deflection Service description

This document describes the Stage 1 description of Call Deflection (CD) that enables the served mobile subscriber to respond to an incoming call offered by the network by requesting redirection of this call to another number specified in the response

9.1.21 TS 22.078 Customised Applications for Mobile network Enhanced Logic (CAMEL)

This document specifies the Stage 1 description for CAMEL feature (Customised Applications for Mobile network Enhanced Logic) which provides the mechanisms to support services consistently independently of the serving networks.

9.1.22 TS 22.079 Support of Optimal Routing (SOR) Service definition

This document describes Stage 1 description of the first phase of Support of Optimal Routing (SOR).

9.1.23 TS 22.081 Line identification Supplementary Services

This document describes the Supplementary Services belonging to the group Line Identification Supplementary Services.

9.1.24 TS 22.082 Call Forwarding (CF) supplementary services

This document describes the supplementary services belonging to the group Call Offering Supplementary Services.

9.1.25 TS 22.083 Call Waiting (CW) and Call Holding (HOLD) Supplementary Services

This document describes the Supplementary Services belonging to the group Call Completion Supplementary Services.

9.1.26 TS 22.084 MultiParty (MPTY) Supplementary Services

This document describes the Supplementary Services belonging to the group MultiParty Supplementary Services.

9.1.27 TS 22.085 Closed User Group (CUG) Supplementary Services

This document describes the Supplementary Services belonging to the group Community Of Interest Supplementary Services.

9.1.28 TS 22.086 Advice of Charge (AoC) Supplementary Services

This document describes the Supplementary Services belonging to the group Charging Supplementary Services.

9.1.29 TS 22.087 User-to-User Signalling (UUS) Service description

This document describes the User-to-User Signalling (UUS) supplementary service that allows a mobile subscriber to send/receive a limited amount of information to/from another PLMN or ISDN subscriber over the signalling channel in association with a call to the other subscriber.

9.1.30 TS 22.088 Call Barring (CB) Supplementary Services

This document describes the supplementary services belonging to the group Call Restriction Supplementary Services.

9.1.31 TS 22.090 Unstructured Supplementary Service Data (USSD)

This document defines the Stage 1 description of Unstructured Supplementary Service Data (USSD) for use in one or a number of Public Land Mobile Networks (PLMNs).

9.1.32 TS 22.091 Explicit Call Transfer (ECT)

This document specifies the Stage 1 description of Explicit Call Transfer (ECT) from the service subscriber's and user's points of view.

9.1.33 TS 22.093 Completion of Calls to Busy Subscriber (CCBS) Service description

This document specifies the Stage 1 description of Completion of Calls to Busy Subscriber (CCBS) from the subscriber's and user's points of view.

9.1.34 TS 22.096 Name identification supplementary services

This document describes the supplementary services belonging to the group Name Identification.

9.1.35 TS 22.097 Multiple Subscriber Profile (MSP) Phase 1 Service description

This document gives an overall view of how this service shall operate both in the PLMN and within the Mobile Station (MS).

9.1.36 TS 22.100 UMTS phase 1 Release 99

The UMTS system will be defined in a phased approach. This 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. This 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.

9.1.37 TS 22.101 Service aspects; Service principles

This Technical Specification (TS) describes the Service Principles of the Universal Mobile Telecommunications System (UMTS).

Note: The European initiative to develop UMTS should be seen as part of the policy to provide more advanced capabilities than can be anticipated for pre-UMTS systems. UMTS provides integrated personal communications services. UMTS operates in parallel with pre-UMTS technologies (e.g. GSM, DCS 1800, DECT, TETRA etc.) which must be allowed to achieve their full potential. UMTS is a system that will support different applications ranging from narrow-band to wide-band communications capability with integrated personal and terminal mobility to meet the user and service requirements of the 21st century.

9.1.38 TS 22.105 Service aspects; Services and Service Capabilities

Pre-UMTS systems have largely standardised the complete sets of bearer services, teleservices and supplementary services which they provide. One major difference between UMTS and pre-UMTS systems is that service capabilities rather than services are standardised for UMTS, allowing service differentiation and system continuity. This Technical Specification (TS) describes how and what kind of services the UMTS user has access to.

9.1.39 TS 22.115 Service aspects; Charging and Billing

This document describes the Service Aspects of charging and billing of the Universal Mobile Telecommunications System (UMTS).

9.1.40 TS 22.121 Service aspects; The Virtual Home Environment

This document specifies the content of the Stage 1 requirement for realisation of VHE. Virtual Home Environment (VHE) is defined as a concept for personal service environment (PSE) portability across network boundaries and between terminals. The concept of the VHE is such that users are consistently presented with the same personalised features, user interface customisation and services in whatever network and whatever terminal (within the capabilities of the terminal and the network), wherever the user may be located.

9.1.41 TS 22.129 Service aspects; Handover Requirements between UMTS and GSM

The scope of this document includes service requirements for handover within UMTS systems and between UMTS, other IMT-2000 family members and 2nd second generation systems. Particular emphasis has been placed on the description of requirements for handover between UMTS and GSM but requirements specific to other systems are incorporated as required.

9.1.42 TS 22.135 Multicall Service description

This document describes multicall scenarios and requirements for UMTS release 99.

9.1.43 TS 23.002 Network architecture

The purpose of this Technical Specification is to present the possible architectures of the mobile system. Clause 3 of this specification contains a definition of the different functional entities needed to support the mobile service. In clause 4, the configuration of a PLMN is described as well as the organisation of the functional entities; the configuration presented is the most general in order to cope with all the possible implementations which can be imagined in the different countries. To illustrate that purpose, some examples of possible configurations are presented. Clause 5 of this specification contains a brief description of the interfaces involved which shows the principle of the organisation considered.

9.1.44 TS 23.003 Numbering, addressing and identification

This document describes numbering, addressing and identification for UMTS.

9.1.45 TS 23.008 Organization of subscriber data

The scope of this specification is to provide details concerning information to be stored in home location registers, visitor location registers and GPRS Support Nodes concerning mobile subscriber.

9.1.46 TS 23.009 Handover procedures

This document describes handover procedures.

9.1.47 TS 23.011 Technical realization of Supplementary Services

This document describes technical realization of supplementary services.

9.1.48 TS 23.012 Location registration procedures

This document describes the procedures in the network related to location registration. They include: location updating; location cancellation; periodic location updating; IMSI attach/detach.

9.1.49 TS 23.014 Support of Dual Tone Multi-Frequency (DTMF) signalling

This document describes how Dual Tone Multi Frequency (DTMF) signals are supported.

9.1.50 TS 23.015 Technical realization of Operator Determined Barring (ODB)

The network feature Operator Determined Barring (ODB) allows a network operator or service provider to regulate access by subscribers to services, by the barring of certain categories of incoming or outgoing traffic or of roaming. Operator Determined Barring applies to all bearer services and teleservices except the Emergency Call teleservice; the teleservice Short Message Point-to-Point is therefore subject to Operator Determined Barring in the same way as circuit-switched calls.

9.1.51 TS 23.016 Subscriber data management

This document gives the Stage 2 description of the subscriber data management handling.

9.1.52 TS 23.022 Functions related to Mobile Stations (MS) in idle mode and group receive mode

This document gives an overview of the tasks undertaken by a Mobile Station (MS) when in idle mode, that is, switched on but not having a dedicated channel allocated, e.g. not making or receiving a call, or when in group receive mode, that is, receiving a group call or broadcast call but not having a dedicated connection.

9.1.53 TS 23.032 Universal Geographical Area Description (GAD)

This document defines an intermediate universal Geographical Area Description which subscriber applications or services can use and the network can convert into an equivalent radio coverage map.

9.1.54 TS 23.034 High Speed Circuit Switched Data (HSCSD) - Stage 2

This document contains the stage 2 service description for a High Speed Circuit Switched Data (HSCSD).

9.1.55 TS 23.038 Alphabets and language-specific information

This document defines the language-specific requirements.

9.1.56 TS 23.039 Interface protocols for the connection of Short Message Service Centres (SMSCs) to Short Message Entities (SMEs)

This document describes a range of alternative interfaces which may be utilised by Short Message Service Centre (SMSC), and Short Message Entity (SME), developers for the connection of SMEs to SMSCs.

9.1.57 TS 23.040 Technical realization of the Short Message Service (SMS); Point-to-Point (PP)

This document describes the point-to-point Short Message Service (SMS)..

9.1.58 TS 23.041 Technical realization of Cell Broadcast Service (CBS)

This document describes the Cell Broadcast short message service (CBS).

9.1.59 TS 23.042 Compression algorithm for text messaging services

This document introduces the concepts and mechanisms involved in the compression and decompression of a stream of data.

9.1.60 TS 23.046 Technical realization of facsimile group 3 non-transparent

This document deals with the procedures allowing the technical realization of the real time end-to-end facsimile group 3 service.

9.1.61 TS 23.054 Description for the use of a Shared Inter Working Function (SIWF) in a GSM PLMN

This document defines the Stage 2 description of the Shared Inter Working Function (SIWF).

9.1.62 TS 23.057 Mobile Station Application Execution Environment (MExE) Functional description

This document defines the Stage 2 and Stage 3 description of the Mobile Station Application Execution Environment (MExE). Stage 2 identifies the functional capabilities and information flows needed to support the service described in Stage 1

9.1.63 TS 23.060 General Packet Radio Service (GPRS) Service description

This document defines the Stage 2 service description for the packet domain, which includes the General Packet Radio Service (GPRS) in GSM, and the packet side of UMTS.

9.1.64 TS 23.066 Support of Mobile Number Portability (MNP) Technical Realisation

This document describes several alternatives for the realisation of Mobile Number Portability. This document includes information applicable to network operators, service providers, switch and database manufacturers and national regulators.

9.1.65 TS 23.067 enhanced Multi-Level Precedence and Pre-emption service (eMLPP)

This document specifies the stage 2 description of the enhanced Multi-Level Precedence and Pre-emption Service (eMLPP) which provides different call priorities in combination with fast call set-up and pre-emption for different applications.

9.1.66 TS 23.072 Call Deflection (CD) Supplementary Service

This document gives the Stage 2 description of the Call Deflection supplementary service.

9.1.67 TS 23.073 Support of Localised Service Area (SoLSA)

This document specifies the Stage 2 description of the SoLSA service, which gives the network operator the basis to offer subscribers or group of subscribers different services, different tariffs and different access rights depending on the geographical location of the subscriber.

9.1.68 TS 23.078 (CAMEL) Phase 3

This document specifies the stage 2 description for the second phase of the Customized Applications for Mobile network Enhanced Logic (CAMEL) feature

9.1.69 TS 23.081 Line identification supplementary services

This document gives the Stage 2 description of the call identification supplementary services.

9.1.70 TS 23.082 Call Forwarding (CF) supplementary services

This document gives the Stage 2 description of the call forwarding supplementary services.

9.1.71 TS 23.083 Call Waiting (CW) and Call Hold (HOLD) supplementary services

This document gives the stage 2 description of the call completion supplementary services.

9.1.72 TS 23.084 Multi Party (MPTY) supplementary service

This document gives the stage 2 description of the multi party supplementary services

9.1.73 TS 23.085 Closed User Group (CUG) supplementary service

This document gives the Stage 2 description of the closed user group supplementary service.

9.1.74 TS 23.086 Advice of Charge (AoC) supplementary services

This document gives the Stage 2 description of the Advice of Charge (AoC) supplementary services.

9.1.75 TS 23.087 User-to-User Signalling (UUS) Supplementary Service

This document gives the Stage 2 description of the User-to-User signalling supplementary services.

9.1.76 TS 23.088 Call Barring (CB) Supplementary Services

This document gives the Stage 2 description of the call barring services.

9.1.77 TS 23.090 Unstructured Supplementary Service Data (USSD)

This document defines the stage 2 description of Unstructured Supplementary Service Data (USSD).

9.1.78 TS 23.091 Explicit Call Transfer (ECT) supplementary service

This document gives the Stage 2 description of the call transfer supplementary services.

9.1.79 TS 23.093 Completion of Calls to Busy Subscriber (CCBS)

This document gives the Stage 2 description of the Completion of Calls to Busy Subscriber (CCBS) supplementary service.

9.1.80 TS 23.096 Name identification supplementary services

This document gives the Stage 2 description of the Name Identification Supplementary Services.

9.1.81 TS 23.097 Multiple Subscriber Profile (MSP) (Phase 1)

This document specifies the Stage 2 description of the Multiple Subscriber Profile (MSP) Supplementary Service Phase 1. MSP Phase 1 is implemented using CAMEL Phase 2. MSP Phase 2 will be implemented using CAMEL Phase 3.

9.1.82 TS 23.101 General UMTS Architecture

This document defines the basic physical and functional separation of UMTS. The content of this specification is limited to those features that are common to all UMTS networks independent of their origin. It identifies and names the reference points and functional groupings appearing at this level.

9.1.83 TS 23.107 QoS Concept and Architecture

This document provides the framework for Quality of Service in UMTS. The document shall be used as a living document which will cover all issues related Quality of Service in UMTS.

9.1.84 TS 23.108 Core Network Protocols

This document specifies the procedures used at the radio interface Control (CC), Mobility Management (MM), and Session Management (SM)..

9.1.85 TS 23.110 UMTS Access Stratum; Services and Functions

This document describes UMTS access stratum; its services and functions.

9.1.86 TS 23.121 Architectural Requirements for Release 1999

This document covers issues related to the evolution of the GSM platform towards UMTS with the overall goal of fulfilling the UMTS service requirements, the support of the UMTS role model, support of roaming and support of new functionality, signalling systems and interfaces.

9.1.87 TS 23.140 Multimedia Messaging Service (MMS); Functional description

This document defines the Stage 2 and Stage 3 description of the non real time Multimedia Messaging Service, MMS. Stage 2 identifies the functional capabilities and information flows needed to support the service described in Stage 1

9.1.88 TS 24.007 Mobile Radio Interface Signalling Layer 3 General Aspects

This document defines the principal architecture of layer 3 and its sublayers on the GSM Um interface, i.e. the interface between Mobile Station (MS) and network; for the CM sublayer, the description is restricted to paradigmatic examples, call control, supplementary services, and short message services for non-GPRS services

9.1.89 TS 24.008 Mobile Radio Interface Layer 3 specification; Core Network Protocols

This document specifies the procedures used at the radio interface for Call Control (CC), Mobility Management (MM) and Session Management (SM)

9.1.90 TS 24.010 Mobile Radio Interface Layer 3 Supplementary Services Specification General Aspects

This document gives specification the general aspects of the specification of supplementary services at the layer 3 radio interface.

9.1.91 TS 24.011 Point-to-Point (pp) Short Message Service (SMS); Support on Mobile Radio Interface

This document specifies the procedures used across the mobile radio interface by the signalling layer 3 function Short Message Control (SMC) and Short Message Relay function (SM-RL) for both circuit switched GSM and GPRS

9.1.92 TS 24.012 Short Message Cell Broadcast; Support on Mobile Radio Interface

This document describes how the Short Message Service Cell Broadcast (SMSCB) is supported over the mobile radio interface

9.1.93 TS 24.022 Radio Link Protocol (RLP) for Data and Telematic Services on the (MS-BSS) Interface and the Base Station System Mobile-services Switching Centre (BSS-MSC) Interface

This document specifies the Radio Link Protocol (RLP) for data transmission over the 3GPP UMTS PLMN

9.1.94 TS 24.065 Mobile Station (MS) - Serving GPRS Support Node (SGSN); Subnetwork Dependent Convergence Protocol (SND CP)

This document provides the description of the Subnetwork Dependent Convergence Protocol (SND CP) for the General Packet Radio Service (GPRS).

9.1.95 TS 24.067 enhanced Multi-Level Precedence and Pre-emption service (eMLPP)

This document specifies the procedures used at the radio interface for normal operation, invocation, registration and interrogation of the enhanced Multi-Level Precedence and Pre-emption Service (eMLPP) supplementary service. Provision and withdrawal of supplementary services is an administrative matter between the mobile subscriber and the service provider and cause no signalling on the radio interface.

9.1.96 TS 24.072 Call Deflection (CD) Supplementary Service

This document specifies the procedures used at the radio interface for normal operation of Call Deflection (CD) supplementary service. Provision and withdrawal of supplementary services is an administrative matter between the mobile subscriber and the service provider and cause no signalling on the radio interface.

9.1.97 TS 24.080 Mobile radio Layer 3 Supplementary Service specification - Formats and coding

This document contains the coding of information necessary for support of supplementary service operation on the mobile radio interface layer 3.

9.1.98 TS 24.081 Line identification supplementary services

This document specifies the procedures used at the radio interface for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of line identification supplementary services. Provision and withdrawal of supplementary services is an administrative matter between the mobile subscriber and the service provider and cause no signalling on the radio interface

9.1.99 TS 24.082 Call Forwarding (CF) supplementary services

This European Standard (EN) specifies the procedures used at the radio interface for normal operation, registration, erasure, activation, deactivation, interrogation and network invocation of call offering supplementary services. Provision and withdrawal of supplementary services is an administrative matter between the mobile subscriber and the service provider and cause no signalling on the radio interface.

9.1.100 TS 24.083 Call Waiting (CW) and Call Hold (HOLD) supplementary services

This document specifies the procedures used at the radio interface for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of call completion supplementary services. Provision and withdrawal of supplementary services is an administrative matter between the mobile subscriber and the service provider and cause no signalling on the radio interface

9.1.101 TS 24.084 Multi Party (MPTY) supplementary service

This document specifies the procedures used at the radio for normal operation and invocation of MultiParty supplementary services.

9.1.102 TS 24.085 Closed User Group (CUG) supplementary service

This document specifies the procedures used at the radio interface for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of community of interest supplementary services. The provision and withdrawal of supplementary services is an administrative matter between the mobile subscriber and the service provider and causes no signalling on the radio interface.

9.1.103 TS 24.086 Advice of Charge (AoC) supplementary services

This document specifies the procedures used at the radio interface for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of charging supplementary services. The provision and withdrawal of supplementary services is an administrative matter between the mobile subscriber and the service provider and causes no signalling on the radio interface.

9.1.104 TS 24.087 User-to-User Signalling (UUS) Supplementary Service

This document gives the Stage 3 description of the User-to-User signalling supplementary services.

9.1.105 TS 24.088 Call Barring (CB) Supplementary Service

This document specifies the procedures used at the radio interface for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of call barring supplementary services. Provision and withdrawal of supplementary services is an administrative matter between the mobile subscriber and the service provider and cause no signalling on the radio interface.

9.1.106 TS 24.090 Unstructured Supplementary Service Data (USSD)

This document gives the Stage 3 description of the Unstructured Supplementary Service Data (USSD) operations.

9.1.107 TS 24.091 Explicit Call Transfer (ECT) supplementary service

The document specifies the procedures used at the radio interface for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of call transfer supplementary services. Provision and withdrawal of supplementary services is an administrative matter between the mobile subscriber and the service provider and cause no signalling on the radio interface.

9.1.108 TS 24.093 Completion of Calls to Busy Subscriber (CCBS)

This document gives the Stage 3 description of the Completion of Calls to Busy Subscriber (CCBS) supplementary service. The document specifies the procedures used at the radio interface for normal operation, activation, deactivation, invocation and interrogation of the completion of calls to busy subscriber supplementary services. Provision and withdrawal of supplementary services is an administrative matter between the mobile subscriber and the service provider and cause no signalling on the radio interface.

9.1.109 TS 24.096 Name identification supplementary services

This document specifies the procedures used at the radio interface for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of name identification supplementary services. Provision and withdrawal of supplementary services is an administrative matter between the mobile subscriber and the service provider and cause no signalling on the radio interface

9.1.110 TS 26.071 Mandatory Speech Codec speech processing functions AMR Speech Codec; General Description

This document is an introduction to the speech processing parts of the narrowband telephony speech service employing the Adaptive Multi-Rate (AMR) speech coder. A general overview of

the speech processing functions is given, with reference to the documents where each function is specified in detail.

9.1.111 TS 26.073 ANSI-C code for the Adaptive Multi Rate speech codec

This document contains an electronic copy of the ANSI-C code for the Adaptive Multi-Rate codec. The ANSI-C code is necessary for a bit exact implementation of the Adaptive Multi Rate speech transcoder (TS 26.090 [2]), Voice Activity Detection (TS 26.094 [6]), comfort noise (TS 26.092 [4]), source controlled rate operation (TS 26.093 [5]) and example solutions for substituting and muting of lost frames (TS 26.091 [3]).

9.1.112 TS 26.074 Mandatory Speech Codec speech processing functions; AMR Speech Codec Test Sequences

This document specifies the digital test sequences for the adaptive multi-rate (AMR) speech codec. These sequences test for a bit exact implementation of the adaptive multi-rate speech transcoder (TS 26.090 [2]), voice activity detection (TS 26.094 [5]), comfort noise (TS 26.092 [3]), and source controlled rate operation (TS 26.092 [4]).

9.1.113 TS 26.090 Mandatory Speech Codec speech processing functions AMR speech codec; Transcoding functions

This document describes the detailed mapping from input blocks of 160 speech samples in 13-bit uniform PCM format to encoded blocks.

9.1.114 TS 26.091 Mandatory Speech Codec speech processing functions AMR speech codec; Error concealment of lost frames

This document defines an error concealment procedure, also termed frame substitution and muting procedure, which shall be used by the AMR speech codec receiving end when one or more lost speech or lost Silence Descriptor (SID) frames are received.

9.1.115 TS 26.092 Mandatory Speech Codec speech processing functions AMR Speech Codec; Comfort noise aspects

This document gives the detailed requirements for the correct operation of the background acoustic noise evaluation, noise parameter encoding/decoding and comfort noise generation for the AMR speech codec during Source Controlled Rate (SCR) operation.

The requirements described in this document are mandatory for implementation in all UEs capable of supporting the AMR speech codec.

9.1.116 TS 26.093 Mandatory Speech Codec speech processing functions - AMR Speech Codec; Source Controlled Rate operation

This specifications describes mandatory speech codec speech processing functions for the AMR speech codec; source controlled rate operation.

9.1.117 This document describes the operation of the Adaptive Multi Rate speech codec during Source Controlled Rate (SCR) operation. TS 26.094 Mandatory Speech Codec speech processing functions AMR speech codec; Voice Activity Detector (VAD)

This document specifies two alternatives for the Voice Activity Detector (VAD) to be used in the Discontinuous Transmission (DTX) as described in [3]. Implementors of mobile station and infrastructure equipment conforming to the AMR specifications can choose which of the two VAD options to implement. There are no interoperability factors associated with this choice.

The requirements are mandatory on any VAD to be used either in User Equipment (UE) or Base Station Systems (BSS)s that utilize the AMR speech codec.

9.1.118 TS 26.101 Mandatory Speech Codec speech processing functions; AMR Speech Codec Frame Structure General description

This document outlines the frame format for all codec modes of the mandatory Adaptive Multi-Rate (AMR) speech coder.

9.1.119 TS 26.102 Mandatory speech codec; AMR speech codec; Interface to Iu and Uu Adaptive Multi-Rate (AMR) speech code.

This document is a description of the interfaces of the AMR speech codec and the Iu within the PLMN and Uu within the UE.

9.1.120 TS 26.110 Codec for Circuit Switched Multimedia Telephony Service; General Description

This document introduces the set of specifications which applies to 3G multimedia terminals.

9.1.121 TS 26.111 Codec for Circuit Switched Multimedia Telephony Service; Modifications to H.324

In ITU-T recommendation H.324, Annex C describes a generic multimedia codec for use in error-prone, wireless networks. The scope of this document includes the changes, deletions, and additions to those texts necessary to fully specify a multimedia codec for use in 3GPP networks. Note that this implicitly excludes the network interface and call set up procedures. Also excluded are any general introductions to the system components.

9.1.122 TS 26.112 Codec(s) for Circuit Switched Multimedia Telephony Service Call Set-up Requirements

This document describes the call-set-up requirements and related circuit switched call control procedures for ITU-T H.324 based multimedia service within GSM/3GPP networks and with external telecommunications networks.

9.1.123 TS 27.001 General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)

This document is based on the principles of terminal adapter functions presented in the CCITT I-series of recommendations (I.460 - I.463).

9.1.124 TS 27.002 Terminal Adaptation Functions (TAF) for services using asynchronous bearer capabilities

This document defines the interfaces and Terminal Adaptation Functions (TAF) integral to a Mobile Termination (MT) which enables the attachment of asynchronous terminals to a MT.

9.1.125 TS 27.003 Terminal Adaptation Functions (TAF) for services using synchronous bearer capabilities

This document defines Terminal Adaptation Functions (TAF) which are integrated in a Mobile Termination (MT) and which enable the attachment of Synchronous Terminals to an MT.

9.1.126 TS 27.005 Use of Data Terminal Equipment - Data Circuit terminating; Equipment (DTE - DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)

This document defines three interface protocols for control of SMS functions within a GSM mobile telephone from a remote terminal via an asynchronous interface.

9.1.127 TS 27.007 AT command set for 3GPP User Equipment (UE)

This document a profile of AT commands and recommends that this profile be used for controlling Mobile Equipment (ME) functions and network services.

9.1.128 TS 27.010 Terminal Equipment to Mobile Station (TE-MS) multiplexer protocol

The scope of this document is to define a multiplexing protocol between a mobile station and a terminal. The multiplexing protocol can be used to send any data, for instance voice, SMS, USSD, fax etc.

This document describes the protocol, but not the commands or data transported with it.

9.1.129 TS 27.103 Wide Area Network Synchronisation Standard

This specification provides a definition of a Wide Area Synchronisation protocol. The synchronization protocol is based upon IrMC level 4.

This document covers Wide Area Network Synchronisation between current and future mobile communication end-user devices, desktop applications and server-based information servers. This is a living document and, as such, it will evaluate new technologies (e.g., XML) for inclusion as they become readily available.

9.1.130 TS 29.002 Mobile Application Part (MAP)

This document describes the MAP protocol.

9.1.131 TS 29.007 General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN)

This document identifies the Mobile-services Switching Centre/Interworking Functions (MSC/IWFs).

9.1.132 TS 29.010 Information element mapping between Mobile Station - Base Station System (MS - BSS) and Base Station System - Mobile-services Switching Centre (BSS - MSC); Signalling procedures and the Mobile Application Part (MAP)

This document describes information element mapping between Mobile Station - Base Station System (MS - BSS) and Base Station System - Mobile-services Switching Centre (BSS - MSC); Signalling procedures and the Mobile Application Part (MAP).

9.1.133 TS 29.011 Signalling interworking for supplementary services

The scope of this document is to provide a detailed specification for interworking between the A interface protocol and the Mobile Application Part for handling of supplementary services. The MAP interfaces of interest are the B-, C-, D- and E-interfaces.

9.1.134 TS 29.013 Signalling interworking between ISDN supplementary services; Application Service Element (ASE) and Mobile Application Part (MAP) protocols

The scope of This document provides a specification for interworking between the ISDN Application Service Element (ASE) protocol for supplementary services and the Mobile Application Part (MAP) protocol on MAP D-interface protocol for handling of supplementary services. This version of the specification includes the interworking for the Call Completion to Busy Subscriber (CCBS) service between the ISDN CCBS-ASE and MAP

9.1.135 TS 29.016 General Packet Radio Service (GPRS); Serving GPRS Support Node (SGSN) - Visitors Location Register (VLR); Gs Interface Network Service Specification

This specification defines the interaction between the SGSN and the VLR.

9.1.136 TS 29.018 General Packet Radio Service (GPRS); Serving GPRS Support Node (SGSN) - Visitors Location Register (VLR); Gs Interface Layer 3 Specification

This document specifies or references procedures used on the Serving GPRS Support Node (SGSN) to Visitors Location Register (VLR) interface for interoperability between circuit switched services and packet data services

9.1.137 TS 29.060 General Packet Radio Service (GPRS); GPRS Tunnelling Protocol (GTP)

This document describes GPRS Tunnelling Protocol.

9.1.138 TS 29.061 Interworking between the Public Land Mobile Network (PLMN) supporting GPRS and Packet Data Networks (PDN)

This specification describes the interworking between the Public Land Mobile Network (PLMN) supporting GPRS and a Packet Data Networks (PDN).

9.1.139 TS 31.101 UICC-Terminal Interface; Physical and Logical Characteristics

This document specifies the interface between the UMTS Integrated Circuit Card (UICC) and the Terminal for 3GPP telecom network operation.

9.1.140 TS 32.101 3G Telecom Management principles and high level requirements

This document establishes and defines the management principles and high level requirements for the management of UMTS

9.1.141 TS 32.102 3G Telecom Management architecture

This document identifies and standardises the most important and strategic contexts in the physical architecture for the management of UMTS. It will serve as a framework to help define a telecom management physical architecture for a planned UMTS and to adopt standards and provide products that are easy to integrate.

This document is applicable to all further Technical Specifications regarding the Telecom Management of UMTS.

9.1.142 TS 32.104 3G Performance Management

This document describes the requirements for the management of performance measurements and the collection of performance measurement data across a 3G network. It defines the administration of measurement schedules by the OMC, the generation of measurement results in the Network Elements (NEs) and the transfer of these results to one or more Operations Systems, i.e. OMC(s) and/or NMC(s).

9.1.143 TS 32.106 3G Configuration Management

This document describes the Configuration Management (CM) aspects of managing a 3G network. This is described from the management perspective outlined in the two 3GPP specifications 32.101 [1] and 32.102 [2].

9.1.144 TS 32.111 3G Fault Management

This document specifies the overall requirements for 3G Fault Management.

9.1.145 TS 33.102 Security Architecture

This document defines the security architecture i.e., the security features and the security mechanism, for the third generation mobile telecommunication system.

9.1.146 TS 33.103 Security Integration Guidelines

This document defines how elements of the 3G security architecture are to be integrated into the entities of the system architecture.

9.1.147 TS 33.105 Cryptographic Algorithm Requirements

This document constitutes a requirements specification for the security functions which may be used to provide the network access security features.

9.1.148 TS 33.106 Lawful Interception Requirements

This document provides basic interception requirements within a Third Generation Mobile Communication System.

9.1.149 TS 33.120 Security Principles and Objectives

This document gives the objectives and principles of security.

9.2 Family member: ANSI-41 evolved Core Network with cdma-2000 Access Network

The standards and specifications listed in this section apply to Release A.

9.2.1 A.S0001 3G-Interoperability Specification (IOS)

This is the A interface specification covering reference points A1 through A11 as described in a reference model included in this document.

SDO	Document No.	Status
TIA	IS-2001	Approved

9.2.2 A.S0003 Abis interface specification

This document describes the interface between a Base Station Controller and a Base Station Transceiver System.

9.2.3 A.S0004 Tandem Free Operation

This specification describes the mechanisms used on the A interface in support of bypassing vocoders for mobile to mobile calls.

9.2.4 C.S0023 Removable User Identity Module

This document provides the air interface aspects for support of a removable UIM.

SDO	Document No.	Status
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TIA	IS-820	Approved
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9.2.5 C.P9001 SMV (Selectable Mode Vocoder)

This document describes an enhanced Rate Set 1 variable rate vocoder.

9.2.6 N.S0001 User Selective Call Forwarding

This document provides stage 3 for the core network aspects for this feature.

9.2.7 N.S0002 Answer Hold

This document provides stage 3 for the core network aspects for this feature.

9.2.8 N.S0003 User Identity Module

This document provides stage 3 for the core network aspects for this feature.

9.2.9 N.S0004 Wireless Intelligent Network (WIN) Phase 2

This document provides stages 2 and 3 for the core network aspects for support of:

- Triggers for Preferred Language
- Advice of Charge
- Rejection of Undesired Annoying Calls
- Premium Rate Charging
- Freephone

9.2.10 N.S0005 Cellular Radiotelecommunications Intersystem Operations

This document provides the specifications for intersystem communications in support of roaming subscribers. It includes registration, authentication and routing procedures. Chapters include stage 2 information flows, stage 3 protocol, stage 3 procedures, and abnormal condition handling.

SDO	Document No.	Status
TIA	ANSI-41-D	Approved

9.2.11 N.S0006 PCS Multi-band-Based on IS-41-C

This document specifies protocol and procedures for control of inter-system hand-off between different frequency bands.

SDO	Document No.	Status
TIA	TSB-76	Approved

9.2.12 N.S0007 Digital Control Channel (DCCH) Based on IS-41-C

This document provides support for several TDMA-specific features such as User Group and Non-Public Mode Service (PSID/TSID.)

SDO	Document No.	Status
TIA	IS-730	Approved

9.2.13 N.S0008 Circuit Modes Services Data-Based on IS-41-C

This document provides support for circuit data up to 64Kb/s for CDMA and TDMA systems.

SDO	Document No.	Status
TIA	IS-737	Approved

9.2.14 N.S0009 IMSI

This document provides the core network aspects for support of International Mobile Station Identifiers (IMSI.)

SDO	Document No.	Status
TIA	IS-751	Approved

9.2.15 N.S0010 Advanced Features in Wideband Spread Spectrum Systems

This document supports IS-95 specific features such as Network Directed System Selection (NDSS), Subscriber Confidentiality and TMSI.

SDO	Document No.	Status
TIA	IS-735	Approved

9.2.16 N.S0011 OTASP and OTAPA

This document provides the specification for supporting Over-the-Air Service provisioning and Over-the-Air Parameter Administration. These capabilities allow a subscriber to obtain or modify his basic and enhanced services without having to visit a system operator's service center.

SDO	Document No.	Status
TIA	IS-725-A	Approved

9.2.17 N.S0012 CNAP/CNAR

This document provides for the control of Calling Name Presentation and Calling Name Restriction services. These allow a called user to receive this information on a display on the mobile terminal for incoming calls, and for calling subscribers to restrict this information for outgoing calls.

SDO	Document No.	Status
TIA	IS-764	Approved

9.2.18 N.S0014 Authentication Enhancements

This document provides a number of minor changes to ANSI-41 to enhance second generation authentication mechanisms and procedures.

SDO	Document No.	Status
TIA	IS-778	Approved

9.2.19 N.S0015 ANSI-41-D Miscellaneous Enhancements

This document provides a place to collect items pending release of ANSI-41-E. As such, this document is not formally published but its contents will be integrated into ANSI-41-E.

9.2.20 N.S0016 TIA/EIA-41-D Enhancements for Internationalization

This document describes a number of adjustments made to ANSI-41 to enable its application by service providers outside the original geographical area for which it was developed, namely the United States of America.

SDO	Document No.	Status
TIA	IS-807	Approved

9.2.21 N.S0017 International Implementation of Wireless Telecommunication Systems Compliant with TIA/EIA-41

This document contains recommendations related to achieving successful international roaming. There are no ANSI-41 text changes. It provides guidance to operators to aid in deploying ANSI-41 systems, and contains important information for operators such as system IDs, international roaming MINS, etc.

SDO	Document No.	Status
TIA	TSB-29-C	Approved

9.2.22 N.S0018 TIA/EIA-41-D Prepaid Charging

This specification specifies the core network procedures in support of service for which a subscriber prepays a certain amount, the monitoring of usage, and the eventual denial of service unless the account is replenished.

9.2.23 N.S0019 Intersystem Link Protocol

This specification defines the link protocol for support of intersystem operations.

SDO	Document No.	Status
TIA	IS-728	Approved

9.2.24 P.S0001 Wireless IP Network Architecture based on IETF Protocols

This document describes the architecture within which selected IETF IP protocols are to be applied in support of packet data services.

9.2.25 P.S0002 Wireless IP Network Standard

This document describes how selected IETF IP protocols are to be applied in support of packet data services.

9.2.26 S.R0003 System Capability Guide

This document provides an overall description of this IMT-2000 Family member, including details within some of the documents making up these specifications down to major sections dealing with selected topics.

9.2.27 S.R0004 Service Implementation Guide

This document describes how a selected set of additional services may be realized through the combination and reuse of other capabilities:

- International Access/+ Code Dialing
- Credit Card Calling Service
- Closed User Group
- Enhanced Routing
- International Roaming
- Special Service Dialing

9.2.28 S.R0005 3GPP2 Network Reference Model (Rev. A)

This document provides a description of the Network Reference Model, including identification of interfaces among the entities within the model.

9.2.29 S.R0006 Cellular Features Description

This document provides stage 1 descriptions and feature interactions, including authorization, activation, registration, and other service aspects.

SDO	Document No.	Status
TIA	TIA/EIA-664-A	Approved

9.2.30 S.R0007 User Selective Call Forwarding (Stage 1)

This document provides the Stage 1 specification for a service that enables a user to selectively forward a call while it is being offered and before it has been answered.

9.2.31 S.R0008 Answer Holding (Stage 1)

This document provides the Stage 1 specification for a service that enables a user to place an incoming call on hold prior to answering the call. This enables the user to, e.g., step out of a meeting room, drive to the side of the road and stop, etc.

9.2.32 S.R0009 User Identity Module (Stage 1)

This document provides the stage 1 for the functionality and features associated with a removable UIM.

9.2.33 S.R0010 Preferred Language Enhancement (Stage 1)

This document provides additional language options for support of subscribers beyond those previously covered in this IMT-2000 Family member.

9.2.34 S.R0011 Advice of Charge (Stage 1)

This document provides the stage 1 for advising the user of the charges for a given call or call and feature usage.

9.2.35 S.R0012 Rejection of Undesired Annoying Calls (Stage 1)

This document provides the stage 1 for a service where a subscriber may control acceptance of incoming calls based on a screening list, as well as control of the list itself.

9.2.36 S.R0013 Global Emergency Call Origination (Stage 1)

This document provides the stage 1 to enable a user to place an emergency call where ever he is roaming and have it recognized as an emergency call by the system currently serving the user.

9.2.37 S.R0014 Tandem Free Operation (Stage 1)

This document provides the stage 1 from a system perspective on how to minimize transcoding distortions by avoiding unnecessary use of vocoders in a mobile to mobile call.

9.2.38 S.R0015 ISDN Interworking (Stage 2)

This document provides the stage 1 for interworking ISDN basic data services with mobile data services to realize 64Kb/s interworking.

9.2.39 S.R0016 Automatic Code Gapping (Stage 1)

This document provides the stage 1 from a system perspective on how a system may protect itself from focussed loads by throttling call events near the source of the calls. It is used by IN SCP network elements to control excessive service logic invocations on them, and provides a

general mechanism that can be used independent of and according to the actual capacity of the realization of the network element.

9.2.40 S.R0017 3G Wireless Network Management System High Level Requirements (Stage 1)

This document provides the requirements for key aspects of the Operations, Administration, Management and Provisioning (OAM&P) of IMT-2000 Family member networks.

SDO	Document No.	Status
TIA	IS-410	Approved

9.3 Family member: ANSI-41/GPRS evolved Core Network with UWC-136 Access Network

The following standards apply to this family member. All specifications and standards are available at the following address: <http://www.tiaonline.org/standards/sfg/imt2k/>

9.3.1 TIA/EIA-136-000B List of Parts

This part outlines the intended scope of the TIA/EIA-136 standard and details the list of parts comprising the current revision.

SDO	Document No.	Status
TIA	TIA/EIA-136-000B	Approved

9.3.2 TIA/EIA-136-005A Introduction, Identification and Semi-permanent Memory

This part contains explanations of terms along with identity definition and selection as used in all of the parts.

SDO	Document No.	Status
TIA	TIA/EIA-136-005A	Approved

9.3.3 TIA/EIA-136-010B Optional Mobile Station Facilities

This part outlines Optional Mobile Station Facilities.

SDO	Document No.	Status
TIA	TIA/EIA-136-010B	Approved

9.3.4 TIA/EIA-136-020B SOC, BSMC, and Other Code Assignments

This part provides a list of the System Operator Codes, Base Station Manufacturer Codes, Carrier Specific Higher Layer Protocol Identifiers, and Broadcast Air-Interface Transport Service Category assignments.

SDO	Document No.	Status
TIA	TIA/EIA-136-020B	Approved

9.3.5 TIA/EIA-136-100B Introduction to Channels

This part provides the protocol reference model, the logical channel definitions, and the layer 3 message mapping through layer 2 to the physical layer.

SDO	Document No.	Status
TIA	TIA/EIA-136-100B	Approved

9.3.6 TIA/EIA-136-121A Digital Control Channel Layer 1

This part provides the Digital Control Channel (DCCH) layer 1 service access points, protocols, and ARQ procedures, as well as requirements on the monitoring of radio link quality.

SDO	Document No.	Status
TIA	TIA/EIA-136-121A	Approved

9.3.7 TIA/EIA-136-122B Digital Control Channel Layer 2

This part provides the Digital Control Channel (DCCH) layer 2 service access points, protocols, and ARQ procedures, as well as requirements on the monitoring of radio link quality.

SDO	Document No.	Status
TIA	TIA/EIA-136-122B	Approved

9.3.8 TIA/EIA-136-123B Digital Control Channel Layer 3

This part provides the Digital Control Channel (DCCH) Layer 3 description, including the Mobile Station State Diagram, detailed procedures (e.g., intelligent roaming), the Layer 3 message set, Information Element Descriptions, and timer descriptions.

SDO	Document No.	Status
TIA	TIA/EIA-136-123B	Approved

9.3.9 TIA/EIA-136-132 Digital Traffic Channel Layer 2

This part describes Layer 2 for the Digital Control Channel (DTC) which consists primarily of Supervision information.

SDO	Document No.	Status
TIA	TIA/EIA-136-132	Approved

9.3.10 TIA/EIA-136-133B Digital Traffic Channel Layer 3

This part describes Digital Traffic Channel (DTC) Layer 3, including Discontinuous Transmission, Mobile Assisted Handoff, Charging rate and total charge indication, Mobile Station Control Signalling and Formats, smart antenna support, and per-slot power control.

SDO	Document No.	Status
TIA	TIA/EIA-136-133B	Approved

9.3.11 TIA/EIA-136-140B Analog Control Channel

This part describes the Identification, Call Processing, Signalling Formats, and Mobile/Base Station Requirements for the Analog Control Channel.

SDO	Document No.	Status
TIA	TIA/EIA-136-140B	Approved

9.3.12 TIA/EIA-136-150B Analog Voice Channel

This part includes descriptions of the Modulation Characteristics, Charging Indication, Mobile Station Control, and Signalling formats for the Analog Voice Channel.

SDO	Document No.	Status
TIA	TIA/EIA-136-150B	Approved

9.3.13 TIA/EIA-136-330 Packet-Data Service Overview

This part provides an overview of the GPRS-136 packet data service. An overview of the network reference model, base station and mobile station protocols, channel types, and options are provided. In addition.

SDO	Document No.	Status
TIA	TIA/EIA-136-330	Approved

9.3.14 TIA/EIA-136-333 Packet-Data Service Logical-Link Control

This part defines the Logical Link Control (LLC) layer protocol to be used for packet data transfer between the Mobile Station (MS) and Serving GPRS Support Node (SGSN).

SDO	Document No.	Status
TIA	TIA/EIA-136-333	Approved

9.3.15 TIA/EIA-136-334 Packet-Data Service Subnetwork Dependent Convergence Protocol

This part provides the description of the Subnetwork Dependent Convergence Protocol (SNDCP). The user of the services provided by SNDCP is a packet data protocol (PDP) at the mobile Station (MS) or the Relay at the Serving GPRS Support Node (SGSN).

SDO	Document No.	Status
TIA	TIA/EIA-136-334	Approved

9.3.16 TIA/EIA-136-336 Packet-Data Service Mobility Management

This part describes GPRS-136 Mobility Management and functions such as location tracking and user-identity confidentiality. The GPRS-136 packet data network combines TIA/EIA-41 circuit switched network elements with GPRS network elements.

SDO	Document No.	Status
TIA	TIA/EIA-136-336	Approved

9.3.17 TIA/EIA-136-337 Packet-Data Service Tunneling of Signalling Messages

This part specifies procedures to provide co-ordination between the TIA/EIA-136 circuit switched services controlled at the Mobile Switching Center (MSC)/Visitors Location Register (VLR) and the GPRS-136 packet switched services controlled at the Serving GPRS Support Node (SGSN).

SDO	Document No.	Status
TIA	TIA/EIA-136-337	Approved

9.3.18 TIA/EIA-136-340 Packet-Data Service 136HS Outdoor Overview

This part provides an overview of the 200 kHz 136HS Outdoor bearer.

SDO	Document No.	Status
TIA	TIA/EIA-136-340	Approved

9.3.19 TIA/EIA-136-350A Data-Service Control ??

This part provides a description of the user-network commands and responses used to access asynchronous data service, fax data service, and other services running over Radio Link Protocol 1. The SDL is provided in a separate file that is available here.

SDO	Document No.	Status
TIA	TIA/EIA-136-350A	Approved

9.3.20 TIA/EIA-136-360 Packet Data Service 136HS Indoor Overview

This part provides an overview of the 1.6 MHz 136HS Indoor bearer.

SDO	Document No.	Status
TIA	TIA/EIA-136-360	Approved

9.3.21 TIA/EIA-136-510B Authentication, Encryption of Signalling Information/User Data, and Privacy

This part provides information on Authentication for the Digital Control Channel, Analog Voice Channel, Analog Control Channel, and Digital Traffic Channel. It also provides a description of Signalling Message Encryption and Voice Privacy and Data Privacy for TIA/EIA-136 systems.

SDO	Document No.	Status
TIA	TIA/EIA-136-510B	Approved

9.3.22 TIA/EIA-136-511A Messages Subject to Encryption

This part describes the messages which are subject to the encryption techniques described in TIA/EIA-136-510.

SDO	Document No.	Status
TIA	TIA/EIA-136-511A	Approved

9.3.23 TIA/EIA-136-610 R-DATA/SMDPP Transport

This part describes the transport of TIA/EIA-136 Teleservice messages using a combination of the R-DATA Message air interface transport and the TIA/EIA-41 Short Message Delivery Point to Point (SMDPP) transport.

SDO	Document No.	Status
TIA	TIA/EIA-136-610	Approved

9.3.24 TIA/EIA-136-620 Teleservice Segmentation and Reassembly (TSAR)

This part describes Teleservice Segmentation and Reassembly (TSAR). TSAR provides a mechanism to deliver TIA/EIA-136 Teleservice Messages that are not constrained by any message length limitations imposed by the air interface, or network layers supporting the teleservice. The service consists of the application of segmentation & reassembly, and retransmission of errored segments.

SDO	Document No.	Status
TIA	TIA/EIA-136-620	Approved

9.3.25 TIA/EIA-136-630 Broadcast Teleservice Transport Broadcast Air-Interface Transport Service

This part describes a broadcast teleservice transport. The BATS teleservice transport operates between a Teleservice Server (TS) and mobile stations using both TIA/EIA-136 and TIA/EIA-41 based protocol stacks along with relay functions in the Base Station, Mobile Switching Center and interworking function. BATS is a general-purpose broadcast transport mechanism that can be used by existing teleservices as well as other future teleservices/applications requiring broadcast transport support.

SDO	Document No.	Status
TIA	TIA/EIA-136-630	Approved

9.3.26 TIA/EIA-136-700B Introduction to Teleservices

This part provides an introduction to TIA/EIA-136 based Teleservices including the teleservice protocol stack, transport, and Higher Layer Protocol Identifiers.

SDO	Document No.	Status
TIA	TIA/EIA-136-700B	Approved

9.3.27 TIA/EIA-136-710B Short Message Service Cellular Messaging Teleservice

This part describes the procedures, message set, and information elements necessary to provide Short Message Service in TIA/EIA-136 based systems.

SDO	Document No.	Status
TIA	TIA/EIA-136-710B	Approved

9.3.28 TIA/EIA-136-720B Over-the-Air Activation Teleservice (OATS)

This part describes a Teleservice that is designed to support Over-the-Air Activation (OTA). The Over-the-Air Activation Teleservice (OATS) supports data exchange between a mobile station and a Customer Service Center (CSC)/Over-the-Air Activation Function (OTAF) which enables downloading information to the mobile station's Number Assignment Module.

SDO	Document No.	Status
TIA	TIA/EIA-136-720B	Approved

9.3.29 TIA/EIA-136-730 Over-the Air Programming Teleservice (OPTS)

This part describes a teleservice that is designed to support downloading of non-NAM programming information (e.g., Intelligent roaming database or IRDB) to an MS. The Over-the-Air Programming Teleservice (OPTS) provides a sequence of messages exchanged between the Over-the-Air Service Provisioning Function (OTASP) and the MS for the delivery of information.

SDO	Document No.	Status
TIA	TIA/EIA-136-730	Approved

9.3.30 TIA/EIA-136-750 General UDP Transport Service (GUTS)

This part describes the General UDP Transport Service (GUTS) which is a teleservice to support the transport of User Datagram Protocol (UDP) PDUs between a teleservice server and an MS.

SDO	Document No.	Status
TIA	TIA/EIA-136-750	Approved

9.3.31 TIA/EIA-136-760 Charge Indication Teleservice (CIT)

This part describes a teleservice that is designed to provide the Mobile Station user with charge information for a call.

SDO	Document No.	Status
TIA	TIA/EIA-136-760	Approved

9.3.32 TIA/EIA-136-900 Introduction to Annexes and Appendices

This part contains information concerning the 900 series of parts which contain additional normative and informative information related to the TIA/EIA-136 standard.

SDO	Document No.	Status
TIA	TIA/EIA-136-900	Approved

9.3.33 TIA/EIA-136-905 Normative Information

This part contains additional normative information related to the TIA/EIA-136 standard.

SDO	Document No.	Status
TIA	TIA/EIA-136-905	Approved

9.3.34 TIA/EIA-136-910B Informative Information

This part provides additional informative information to aid the user to understand the use or application of the TIA/EIA-136 standard. Information such as Frame formats, Calculation of R-DATA Message lengths and Addressing is provided.

SDO	Document No.	Status
TIA	TIA/EIA-136-910B	Approved

9.3.35 TIA/EIA-136-932 Packet-Data Service Stage 2 Description

This informative part of TIA/EIA-136 contains stage 2 descriptions for the GPRS-136 packet data service. It describes the main traffic scenarios and the message flows between different network elements.

SDO	Document No.	Status
TIA	TIA/EIA-136-932	Approved

9.3.36 TIA/EIA-136-933 Packet-Data Service Fixed Coding Mode MAC

This part describes the fixed-coding mode of the 136+ Medium Access Control (MAC) function specified in TIA/EIA-136-332. Higher layers may use the MAC to transport data across a GPRS-136 radio interface using the 136+ bearer.

SDO	Document No.	Status
TIA	TIA/EIA-136-933	Approved

9.3.37 TIA/EIA-136-940 Capacity and Performance Characteristics of UWC-136

This informative part contains additional information concerning the voice capacity, spectrum efficiency, and throughput performance for the UWC-136 system.

SDO	Document No.	Status
TIA	TIA/EIA-136-940	Approved

9.4 Family Member: DECT Digital Enhanced Cordless Telecommunications

DECT specifications are related to radio matters. These are under the responsibility of ITU-R and are available as ITU Recommendation (IMT.RSPC) 05/2000: Detailed specifications of the radio interfaces of IMT-2000.
