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Foreword

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Contents

Foreword

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

No further changes to the contents of this TR are currently planned. Nevertheless, it is still possible that the contents of the present document may require changes in the future. Should the TSG modify the contents of the present document, it will be re-released with an identifying change of release date and an increase in version number as follows:

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Introduction

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

1   Scope

The present document's scope is the Release 99 of the 3GPP specifications to which it refers. This document is not currently planned to be kept updated beyond December 2000.

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

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

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

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

2   References

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

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

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the version as of the date in the relevant Annex applies. Since this TR is not planned to be kept updated beyond December 2000, validity of non-specific references beyond this date should be verified by the reader.

[1]   3GPP TS 25.304: "UE Procedures in idle mode and procedures for cell reselection in connected mode ".

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

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

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

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

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

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

[8]   3GPP TS 02.04: "Digital cellular telecommunications system (Phase2+); General on supplementary services".

[9]   3GPP TS 02.81: "Digital cellular telecommunication system (Phase 2+); Line identification supplementary services - Stage 1".

[10]   3GPP TS 02.82: "Digital cellular telecommunication system (Phase 2+); Call Forwarding (CF) supplementary services - Stage 1".

[11]   3GPP TS 02.83: "Digital cellular telecommunication system (Phase 2+); Call Waiting (CW) and Call Hold (HOLD) supplementary services - Stage 1".

[12]   3GPP TS 02.84: "Digital cellular telecommunication system (Phase 2+); MultiParty (MPTY) supplementary services - Stage 1".

[13]   3GPP TS 02.85: "Digital cellular telecommunication system (Phase 2+); Closed User Group (CUG) supplementary services - Stage 1".

[14]   3GPP TS 02.86: "Digital cellular telecommunication system (Phase 2+); Advice of Charge (AoC) supplementary services - Stage 1".

[15]   3GPP TS 02.88: "Digital cellular telecommunication system (Phase 2+); Call Barring (CB) supplementary services - Stage 1".

[16]   3GPP TS 02.91: "Digital cellular telecommunication system (Phase 2+); Explicit Call Transfer (ECT)".

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

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

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

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

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

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

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

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

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

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

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

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

[29]   3GPP TR 26.911: "Terminal Implementor's Guide".

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

3   Definitions and abbreviations

3.1   Definitions

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

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

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

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

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

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

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

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

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

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

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

UE Service Capabilities (USC): capabilities that can be used either singly or in combination to deliver services to the user. The characteristic of UE Service Capabilities is that their logical function can be defined in a way that is independent of the implementation of the UMTS system (although all UE Service Capabilities are of course constrained

by the implementation of UMTS). Examples: a data bearer of 144 kbps; a high quality speech teleservice; an IP teleservice; a capability to forward a speech call

3.2 Abbreviations

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

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

4 Baseline Definition

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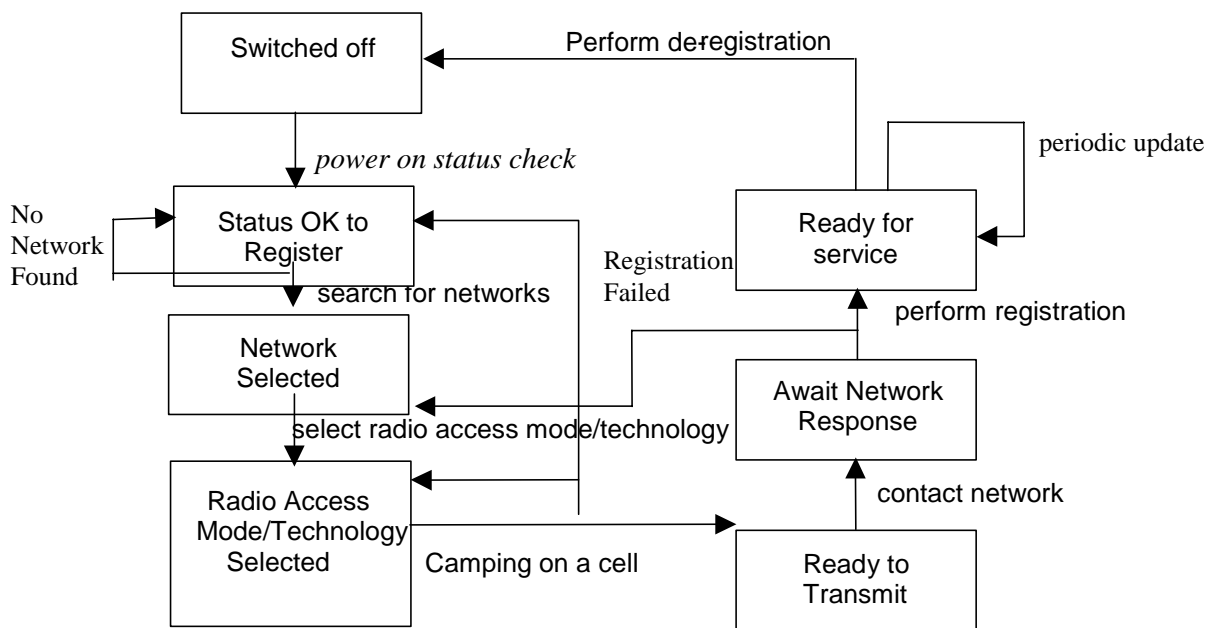
Figure 1: states required for baseline capability

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

4.1 Switched off

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

4.2   Power-on status check

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

4.3   Status OK to register

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

4.4   Search for networks

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

4.5   Network selected

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

4.6   Select radio access mode/technology

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

4.7   Radio access mode/technology selected

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

4.8   Camping on a cell

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

4.9   Ready to Transmit

The state "ready to transmit" describes the condition in which the UE meets all the conditions required to start transmitting at the 3GPP frequencies.

4.10   Contact network

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

4.11 Await network response

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

4.12 Perform registration

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

4.13 Ready for service

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

4.14 Perform De-registration

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

5 UE Implementation Types

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

- UTRA FDD and/or TDD mode

- GSM mode

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

6 UE Service Definition

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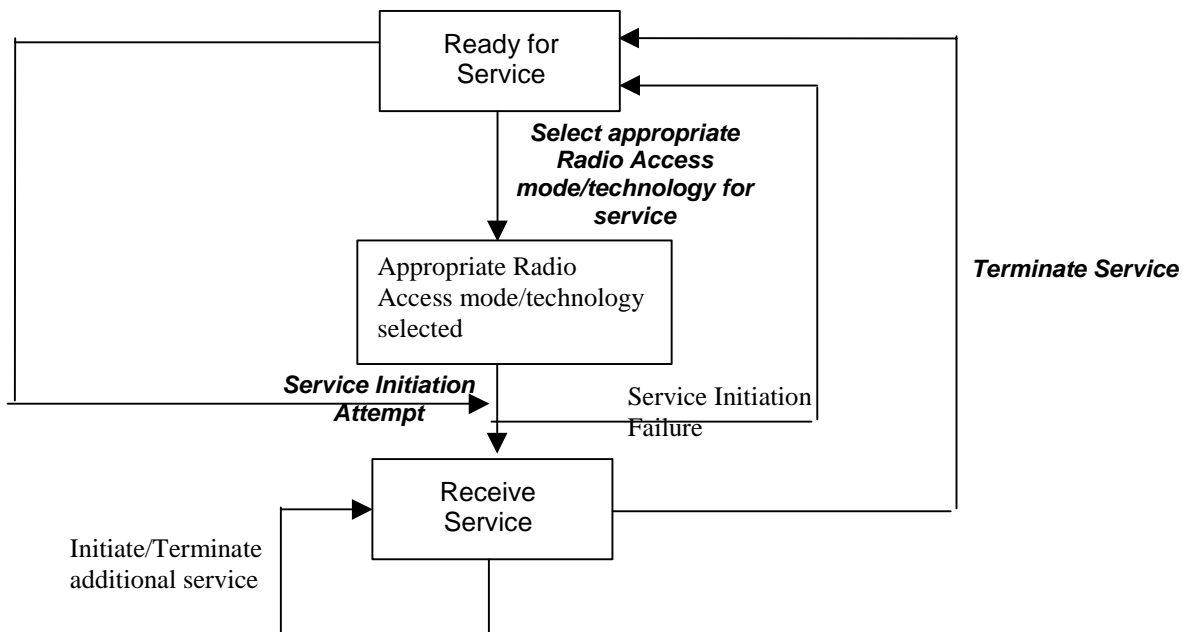
Figure 2: states required for service capability

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

6.1   Ready for service

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

6.2   Select appropriate service Radio Access Mode/Technology

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

6.3   Appropriate Radio Service Access Mode/Technology selected

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

6.4   Service initiation attempt

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

6.5   Receive service

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

6.6   Terminate service

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

7   UE Service Capabilities

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

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

7.1   3GPP Standardised UE Service Capabilities

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

1. **Tele-services (defined in [5])**

    -   Speech.

    -   Emergency Call (essential for all UE supporting the default speech service).

    -   Short Message Service.

    -   Cell Broadcast Service - CBS.

2. **Bearer Services**

    -    Circuit-switched data

    -    Packet-switched data

    -   Defined by their attributes as described in [5].

        -   Information transfer attributes (e.g. Information transfer rate, Information Transfer Characteristics,etc.).

        -   Information quality attributes (e.g. Bit Error Ratio, Maximum transfer delay, Delay variation, etc.).

3. **Supplementary services**

    -   Defined in GSM R'99[1]. Examples:

        -   Call Forwarding as defined in [10].

        -   Advice of Charge as defined in [14].

        -   Explicit Call transfer as defined in [16].

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[1]   Note that Supplementary Services are used to complement and personalise the usage of basic telecommunication services (bearer services and teleservices). The capabilities standardised in UMTS shall enable provision of all the supplementary services specified in 3GPP TS 02.04 [8] and the 02.8x/02.9xseries   [9] –[16].

4. Service capabilities (described in [6])

- Mobile station Execution Environment (MExE).

- Location Services (LCS).

- SIM Application Toolkit (SAT).

5. GSM system features (defined in [5])

- Network Identity and Time Zone (NITZ).

- Unstructured Supplementary Service Data (USSD).

7.1.1 Support of 3GPP standardised UE Service Capabilities

7.1.1.1 Teleservices

7.1.1.1.1 Default Speech Service

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

7.1.1.1.2 Emergency Speech Call

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

7.1.1.1.3 Short Message Service

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

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

7.1.1.1.4 Cell Broadcast Service

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

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

7.1.1.2 Bearer services

Bearer services are described in [5] as providing the capability for information transfer between access points, involving only low layer functions. 3GPP has identified a requirement to support real time and non-real time applications in release '99 of the UMTS specification. An example of a real time application is given as a real time data stream or conversational service , having a guaranteed bit rate, end to end delay and delay variation. A non – real time transfer of information, such as file transfer, should permit differentiation as regards the QoS between different users. In addition 3GPP has agreed the requirement to support Multi-Media applications requiring the ability to support several information flows to/from users, with each information flows having a different traffic types e.g. real/non- real time.

The quality of the information is described in terms of:

- Maximum transfer delay.

- Delay variation.

- Bit error ratio.

- Data rate.

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

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

7.1.1.3 Supplementary Service

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

7.1.1.4 Service Capabilities

7.1.1.4.1 MExE

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

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

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

7.1.1.4.2 USIM Application Toolkit

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

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

7.1.1.4.3 LCS

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

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

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

7.1.1.5 GSM System Features

7.1.1.5.1 Network Identities Time Zone (NITZ)

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

7.1.1.5.2 USSD

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

7.2 Other UE Service Capabilities

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

7.2.1 Multimedia Services

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

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

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

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

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

7.2.2   Fax Service

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

- Establishment of a connection with the following connection element attributes: non transparent, full duplex, asynchronous, 14,4 kbps or 9,6 kbps fixed network user rate, 28,8 kbps wanted air user rate.

- TAF Terminal Adaptation functions are required for conversion of electrical, mechanical, functional and procedural characteristics of the V series to those required by the PLMN. They are classified in:

  - General TAFs: performing synchronisation of traffic channel, terminal compatibility decision, interfacing with V. 24, (V.25bis V.25 ter).

  - TAFs for asynchronous bearers capabilities and non-transparent services: including L2R (RLP), flow control and buffering functions.

  - Specific TAFs for facsimile: for adaptation to T.30, T.4, interface V 24, (V.25bis V.25 ter).

- Asynchronous bearer capabilities.

- Procedures for Mobile Originated call, Mobile Terminated call, generate MODIFY message (if Speech/facsimile service).

Annex A:
Baseline Implementation Capabilities

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

A.1 Baseline implementation capabilities to facilitate conformance testing

UE baseline implementation capabilities:

- The special conformance testing functions and the logical test interface as specified in TS 34.109.

- Up-link reference measurement channel 12.2 kbps (FDD), TS 25.101 clause A.2.1.

- Down-link reference measurement channel 12.2 kbps (FDD), TS 25.101 clause A.3.1.

- Up-link reference measurement channel 12.2. kbps (TDD), TS 25.102 clause A.2.1.

- Down-link reference measurement channel 12.2 kbps (TDD), TS 25.102 clause A.2.2.

A.2   RF Baseline Implementation Capabilities

Table 1: Void

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

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

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

Table 3: RF baseline implementation capabilities for TDD mode

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

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

A.3 Physical Layer baseline implementation capabilities

Table 4: FDD mode Physical Layer Baseline implementation capabilities

Baseline Implementation Capability[2]	Specification	Subclause(s)	Comments
Physical Layer UE procedures and measurements:			
Support for network and access node selection	25.214	4.1, 4.2	Cell search and synchronisation
Measurements for Cell selection and reselection	25.215	5.1.1, 5.1.2, 5.1.4, 5.1.6, 5.1.9, 5.1.10	The Measurement in 5.1.2 is essential on the condition that the UE is dual mode FDD-TDD CPICH RSCP measurement
Support for network contact and registration	25.214	6.1	Random access procedure
Power control	25.214 25.215	5.1.1, 5.2.3 5.1	Open Loop PC for PRACH RSCP, SIR measurement
Channel Coding & Multiplexing	25.212	4.1, 4.2	Support of Convolutional coding at rates ½ and 1/3 is Essential for all terminals. Support of no coding and Turbo coding is Optional.
Spreading and Scrambling Code Generation	25.213 25.926	4.1, 4.2.2, 4.3.1, 4.3.2, 4.3.3 5	Code allocation for PRACH Long scrambling code Scrambling code for PRACH message PRACH preamble codes For the uplink, a baseline capable UE is required to support a spreading factor of 256.
Code de-spreading and de-scrambling	25.213 25.926	5.1 5.2 5	
Modulation	25.213	4.4	
De-modulation	25.213	5.3	
Support for downlink Transmit Diversity	25.211	5.3.1, 5.3.3	Open Loop mode Tx diversity is essential to support baseline capability
Transport channels necessary for the above:			
Broadcast channel (BCH)	25.211	4.1.2.1	
Paging channel (PCH)	25.211	4.1.2.3	PCH is required to transport notification of a change in system information carried on BCCH.
Random access channel (RACH)	25.211	4.1.2.4	
Forward access channel (FACH)	25.211	4.1.2.2	
Transport Format Combination Indicator (TFCI)	25.212	4.3.2, 4.3.3, 4.3.5.1	
Physical channels necessary for above:			
Timing relation	25.211	7.1, 7.2, 7.3	
Common Pilot Channel (CPICH)	25.211	5.3.3.1	Primary CPICH
Primary Common Control Physical Channel (P-CCPCH)	25.211	5.3.3.2	
Secondary Common Control Physical Channel (S-CCPCH)	25.211	5.3.3.3	

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

Physical Random Access Channel (PRACH)	25.211	5.2.2.1	
Synchronisation Channel (SCH)	25.211	5.3.3.4	
Acquisition Indicator Channel (AICH)	25.211	5.3.3.6	

Table 5: TDD mode Physical Layer Baseline Implementation Capabilities

Baseline Implementation Capability[3]	Specification	Subclause(s)	Comments
Physical Layer UE procedures and measurements:			
Support for network and access node selection	25.224	4.4.1	
Cell selection and reselection	25.225	5.1.1, 5.1.4, 5.1.10	
Support for network contact and registration	25.224	4.7	
Power control	25.224	4.2.2.2	
Channel Coding	25.222	4.1, 4.2	Convolutional coding is essential to support the baseline functionality.
Spreading and Scrambling Code Generation	25.223	6, 7	
Code de-spreading and de-scrambling	25.223	6, 7	
Modulation	25.223	5	
Support for downlink Transmit Diversity	25.221	5.4	
Transport channels necessary for the above:			
Synchronisation channel (SCH)	25.221	5.3.4	SCH exists for TDD mode only
Broadcast channel (BCH)	25.221	4.2.1, 6	
Paging channel (PCH)	25.221	4.2.3, 6	PCH is required to transport notification of a change in system information carried on BCCH.
Random access channel (RACH)	25.221	4.2.4, 6	
Forward access channel (FACH)	25.221	4.2.2, 6	
Physical channels necessary for above:			
Common Control Physical Channel (CCPCH)	25.221	5.3.2, 6	
Physical Random Access Channel (PRACH)	25.221	5.3.3, 6	
Physical Synchronisation Channel (PSCH)	25.221	5.4, 6	

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

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

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

Baseline Implementation Capability[4]	Specification	Subclause(s)	Comments
UE procedures:			
The procedures below require support of the RLC protocol described in 25.322, with the exception of RLC header compression.			
Support for PLMN selection Support for location registration	25.304	5.1, 5.4, 10.4, 10.5, 10.6, 10.7	
Cell selection and reselection	25.304	5.2, 10.8	
System information reception	25.304 25.331	6.1, 10.1, 10.2 8.1.1, 10.2.52, 10.2.53, 10.3.8.1,	The following messages are required: - System information message - BCCH modification info in the Paging type 1 message - System Information Change Indication message
Paging	25.303 25.304 25.331	6.5, 6.6 8, 10.3 8.1.2, 10.2.18, 10.2.19	The following messages are required: - Paging type 2 message - Paging type 1 message
Idle mode measurements procedure	25.304	7	
RRC connection establishment	25.303 25.331	6.1.1 8.1.3, 10.2.40, 10.2.43, 10.2.44, 10.2.45	The following messages are required: - RRC connection request message - RRC connection set up message - RRC connection set-up complete message - RRC connection reject message
RRC Status	25.331	10.2.46	The following message is required: - RRC status message
RRC connection release	25.303 25.331	6.1.3 8.1.4, 10.2.41, 10.2.42	The following messages are required: - RRC connection release message - RRC connection release complete message
Support for higher layer messages on signalling connection	25.303	6.1.2	
Initial Direct transfer	25.331	8.1.8 10.2.12	The following message is required: - Initial Direct transfer message
Downlink Direct transfer	25.331	8.1.9 10.2.8	The following messages are required: - Downlink Direct transfer message
Uplink Direct transfer	25.331	8.1.10 10.2.62	The following message - Uplink Direct transfer message
Cell update	25.303 25.331	6.4.2 10.2.4, 10.2.5, 10.2.34, 10.2.35	The following messages are required: - Cell update message - Cell update confirm message - RNTI reallocation message - RNTI reallocation complete message
UE capability	25.303 25.331	6.7.1 8.1.6 10.2.59 10.2.60 10.2.61	The following messages are required: - UE capability enquiry message - UE capability information message - UE capability information confirm message
Security mode control	25.331	8.1.12 10.2.47 10.2.48	The following messages are required: - Security mode command message - Security mode complete message

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

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

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

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

<table>
<tr>
<th colspan="3">Baseline Implementation Capabilities</th>
<th>Ref. Doc</th>
<th>Subclause(s)</th>
<th colspan="3">Kind of UEs</th>
<th>Comments</th>
</tr>
<tr>
<th></th><th></th><th></th><th></th><th></th>
<th>CS-only</th><th>PS-only</th><th>CS+PS</th><th></th>
</tr>
<tr>
<td rowspan="24">UMTS CS mobility management (Optional)</td>
<td rowspan="6">MM common procedures</td>
<td>TMSI reallocation procedure</td><td>24.008</td><td>4.3.1</td><td>E</td><td>-</td><td>E</td><td></td>
</tr>
<tr><td>Authentication procedure</td><td>24.008</td><td>4.3.2</td><td>E</td><td>-</td><td>E</td><td></td></tr>
<tr><td>Identification procedure</td><td>24.008</td><td>4.3.3</td><td>E</td><td>-</td><td>E</td><td></td></tr>
<tr><td>IMSI detach procedure</td><td>24.008</td><td>4.3.4</td><td>E</td><td>-</td><td>E</td><td></td></tr>
<tr><td>Abort procedure</td><td>24.008</td><td>4.3.5</td><td>E</td><td>-</td><td>E</td><td></td></tr>
<tr><td>MM information procedure</td><td>24.008</td><td>4.3.6</td><td>O</td><td>-</td><td>O</td><td></td></tr>
<tr>
<td rowspan="8">MM specific procedure</td>
<td>Location updating procedure</td><td>24.008</td><td>4.4.1</td><td>E</td><td>-</td><td>E</td><td></td>
</tr>
<tr><td>Periodic updating</td><td>24.008</td><td>4.4.2</td><td>E</td><td>-</td><td>E</td><td></td></tr>
<tr><td>IMSI attach procedure</td><td>24.008</td><td>4.4.3</td><td>E</td><td>-</td><td>E</td><td></td></tr>
<tr><td>Generic Location Updating procedure</td><td>24.008</td><td>4.4.4</td><td>E</td><td>-</td><td>E</td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr>
<td rowspan="6">MM connection management procedure</td>
<td>MM connection establishment initiated the mobile station</td><td>24.008</td><td>4.5.1.1</td><td>E</td><td>-</td><td>E</td><td></td>
</tr>
<tr><td>MM connection establishment for emergency calls</td><td>24.008</td><td>4.5.1.5</td><td>C</td><td>-</td><td>C</td><td>Essential If speech calls supported.</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>MM connection establishment initiated by the network</td><td>24.008</td><td>4.5.1.3</td><td>O</td><td>-</td><td>O</td><td>'Paging response' is Essential</td></tr>
<tr><td>MM connection release</td><td>24.008</td><td>4.5.3</td><td>E</td><td>-</td><td>E</td><td></td></tr>
<tr>
<td rowspan="14">UMTS PS mobility management (Optional)</td>
<td rowspan="8">GMM common procedures</td>
<td>P-TMSI reallocation procedure</td><td>24.008</td><td>4.7.6</td><td>-</td><td>E</td><td>E</td><td></td>
</tr>
<tr><td>Authentication and ciphering procedure</td><td>24.008</td><td>4.7.7</td><td>-</td><td>E</td><td>E</td><td></td></tr>
<tr><td>Identification procedure</td><td>24.008</td><td>4.7.8</td><td>-</td><td>E</td><td>E</td><td></td></tr>
<tr><td>Paging procedure</td><td>24.008</td><td>4.7.9</td><td>-</td><td>E</td><td>E</td><td></td></tr>
<tr><td>Receiving a GMM Status message</td><td>24.008</td><td>4.7.10</td><td>-</td><td>E</td><td>E</td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>GMM Information procedure</td><td>24.008</td><td>4.7.12</td><td>-</td><td>O</td><td>O</td><td></td></tr>
<tr><td>Service request procedure</td><td>24.008</td><td>4.7.13</td><td>-</td><td>E</td><td>E</td><td></td></tr>
<tr>
<td rowspan="6">GMM specific procedure</td>
<td></td><td></td><td></td><td></td><td></td><td></td><td></td>
</tr>
<tr><td>Intersystem change between GSM and UMTS</td><td>24.008</td><td>4.7.1.7</td><td>-</td><td>C</td><td>C</td><td></td></tr>
<tr><td>GPRS attach procedure</td><td>24.008</td><td>4.7.3.1</td><td>-</td><td>E</td><td>E</td><td></td></tr>
<tr><td>Combined GPRS attach procedure</td><td>24.008</td><td>4.7.3.2</td><td>-</td><td>-</td><td>C</td><td>Essential If class-A or B.</td></tr>
<tr><td>MS initiated GPRS detach procedure</td><td>24.008</td><td>4.7.4.1</td><td>-</td><td>E</td><td>E</td><td></td></tr>
<tr><td>MS initiated Combined GPRS detach procedure</td><td>24.008</td><td>4.7.4.1.3</td><td>-</td><td>-</td><td>C</td><td>Essential If class-A or B.</td></tr>
</table>

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

A.6   Security baseline implementation capabilities

Table 8: UE Baseline Implementation Capabilities in the security domain

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

A.7 USIM baseline implementation capabilities

Table 9: Baseline Implementation Capabilities in the USIM domain

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

Annex B:
Speech Service Implementation Capabilities

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

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

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

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

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

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

Service Implementation Capability	Specification	Sub/Clause(s)	Comments
Physical Layer UE procedures and measurements:			
Handover	25.225	5.1	Support of Intra and Inter Frequency hard handover is essential for all terminals. Terminals shall support measurements commensurate with their mode/system capabilities, to facilitate inter-frequency, inter-mode & inter-system handover.
Dynamic Channel Allocation	25.225	5.1	Terminals shall support measurement of SIR in different timeslots.
Power control	25.224 25.225	4.2 5	Support of inner loop control for DL power. Support of open loop control for UL power.
Error detection	25.222	4.2.1	Support of 0, 8, 12 and 16 bits CRC per transport block is essential for all terminals
Channel Coding	25.222	4.2.3	Support of convolutional coding with rates ½ and 1/3 is essential for all terminals.
Multiplexing	25.222 25.926	4.2.4 – 4.2.13 5.1	Uplink. In single service case, with only AMR and dedicated signalling channel, it is essential for all terminals to support at minimum 4 transport channels in uplink, of which 1-3 is reserved for AMR and 1 for dedicated signalling. Downlink. In single service case, with only AMR and dedicated signalling channel, it is essential for all terminals to support at minimum 4 transport channels in downlink, of which 1-3 is reserved for AMR and 1 for dedicated signalling. <Note: This assumes that fast mode control is required to be signalled in the downlink direction only. >
Transport format detection	25.222 25.926	4.2.13 5.1	The support of transport format detection with a TFCI length of 0, 4, 8, 16 and 32 bits is essential for all terminals. Support of 1024 transport format combinations is essential for all terminals
Spreading and Scrambling Code Generation	25.223	6	Terminals shall support spreading factors 8 and 16 for uplink transmission. Simultaneous transmission of up to two codes shall be supported.
Code de-spreading and de-scrambling	25.223	6	Terminals shall support simultaneous reception of up to 2 codes using spreading factor 16 for speech.
Support for Downlink Transmit diversity	25.221 25.224	5.4 4.8	Support channel estimation on different midambles
Timing Advance	25.224	4.3	Support of TA adjustment according to higher layer signalling
Discontinuous transmission	25.224	4.5	Each mobile must be capable to switch of transmission in those physical channels which are not needed to transmit the instantaneous TFC.
Transport channels necessary for the above:			
DCH	25.221	4.1.1.1, 6	
Physical channels necessary for above:			
Dedicated Physical Channel (DPCH)	25.221	5.2, 6	

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

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

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

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

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

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

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

Annex C:
SMS Service Implementation Capabilities

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

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

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

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

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

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

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

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

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

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

Annex D:
CBS Service Implementation Capabilities

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

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

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

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

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

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

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

Annex E:
Bearer Services Service Implementation Capabilities

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

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

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

Terminal service implementation capabilities:

- Down-link reference measurement channel 64 kbps (FDD), TS 25.101 clause A.3.2.

- Down-link reference measurement channel 144 kbps (FDD), TS 25.101 clause A.3.3.

- Down-link reference measurement channel 384 kbps, 20ms TTI (FDD), TS 25.101 clause A.3.4.

- Down-link reference measurement channel 384 kbps (FDD), TS 25.101 clause A.3.5

- Down-link reference measurement channel 64 kbps (TDD), TS 25.102 clause A.2.3.

- Down-link reference measurement channel 144 kbps (TDD), TS 25.102 clause A.2.4.

- Down-link reference measurement channel 384 kbps (TDD), TS 25.102 clause A.2.5.

E.2 Physical layer implementation capabilities to support Bearer service

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

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

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

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

Bearer Services Service Implementation Capabilities	Specification	Subclause(s) ii	Comments
UE procedures:			
RRC connection re-establishment	25.331	8.1.5 10.2.37 10.2.38 10.2.39	The following messages are required: - RRC connection re-establishment message - RRC connection re-establishment complete message - RRC connection re-establishment request message
Radio bearer establishment	25.303 25.331	6.2.1.1 8.2.1 10.2.31 10.2.32 10.2.33	The following messages are required: - Radio Bearer Setup message - Radio Bearer Setup Complete message - Radio Bearer Setup Failure message
Radio bearer reconfiguration	25.303 25.331	6.2.1.3 8.2.2 10.2.25 10.2.26 10.2.27	The following messages are required: - Radio Bearer Reconfiguration message - Radio Bearer Reconfiguration complete message - Radio Bearer Reconfiguration Failure message
Radio bearer release	25.303 25.331	6.2.1.2 8.2.3 10.2.28 10.2.29 10.2.30	The following messages are required: - Radio Bearer Release message - Radio Bearer Release Complete message - Radio Bearer Release Failure message
Transport channel reconfiguration	25.303 25.331	6.2.2 8.2.4 10.2.54 10.2.55 10.2.56	The following messages are required: - Transport channel reconfiguration message - Transport channel reconfiguration complete message - Transport channel reconfiguration failure message
Transport format combination control	25.303 25.331	6.2.4 8.2.5 10.2.57 10.2.58	The following messages are required: - Transport format combination control message - Transport format combination control failure message
Physical channel reconfiguration	25.303 25.331	6.2.3 8.2.6 10.2.20 10.2.21 10.2.22	The following messages are required: - Physical channel reconfiguration message - Physical channel reconfiguration complete message - Physical channel reconfiguration failure message
URA update	25.303 25.331	6.4.3 8.3.2 10.2.64 10.2.65	The following messages are required: - URA update message - URA update confirm message

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

E.4 Layer 3 (non access stratum)

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

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

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

Annex F:
Supplementary Services Service Implementation Capabilities

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

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

Table 21: UE Service Implementation Capability for Supplementary Service Layer3
(non access stratum)
E: Essential unconditional, C: essential Conditional, O: Optional

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

Annex G:
USAT Service Implementation Capabilities

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

G.1   USIM implementation to support USAT

Table 22: USIM Implementation Capabilities to support USAT

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

Annex H:
LCS Service Implementation Capabilities

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

H.1   Physical layer implementation capabilities to support LCS

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

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

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

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

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

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

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

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

Annex I:
Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
17/03/00	T#7	TP-000026			New	2.0.0	3.0.0
28/03/00					Editorial modification by MCC	3.0.0	3.0.1
21/06/00	T#8	TP-000073	001		Addition of reference measurement channel	3.0.1	3.1.0
21/06/00	T#8	TP-000073	002		Correction of terminology	3.0.1	3.1.0
21/06/00	T#8	TP-000073	003		Deletion of PCPCH/AICH timing relation	3.0.1	3.1.0
21/06/00	T#8	TP-000073	004		Reflection of changes in core specification 24.008 to v3.3.1	3.0.1	3.1.0
21/06/00	T#8	TP-000073	005		Reflection of document structure changes in core specifications and correction of editorial mistakes	3.0.1	3.1.0
22/10/00	T#9	TP-000143	006		Reflection of document structure changes in core specifications and correction of editorial mistakes in the annexes	3.1.0	3.2.0
22/10/00	T#9	TP-000143	007		Reflection of document structure changes in core specifications and correction of editorial mistakes in the main text	3.1.0	3.2.0
03/01/01	T#10	TP-000194	008		Reflection of the decision stop work on the TR after December 2000, and miscellaneous editorial corrections	3.2.0	3.3.0

History

Document history		
V3.0.1	March 2000	Publication
V3.1.0	July 2000	Publication
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