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European Standard (Telecommunications series)

Digital cellular telecommunications system (Phase 2+); Types of Mobile Stations (MS) (GSM 02.06 version 7.0.0 Release 1998)

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Special Mobile Group (SMG), and is now submitted for the ETSI standards One-step Approval Procedure.

The present document defines typical attributes of different types of Mobile Stations (MS) used with GSM and DCS 1800 PLMNs within the digital cellular telecommunications system.

The contents of the present document may be subject to continuing work within SMG and may change following formal SMG approval. Should SMG modify the contents of the present document it will then be re-submitted for formal approval procedures by ETSI with an identifying change of release date and an increase in version number as follows:

Version 7.x.y

where:

7 GSM Phase 2+ Release 1998

x the second digit is incremented for changes of substance, i.e. technical enhancements, corrections, updates, etc.;

y the third digit is incremented when editorial only changes have been incorporated in the specification.

Proposed national transposition dates	
Date of latest announcement of this EN (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	6 months after doa

1 Scope

The purpose of the present document is to describe typical attributes of different types of Mobile Stations (MS) to be used on GSM PLMNs. The term GSM PLMN refers to a GSM, DCS 1800 or any PLMN based on the GSM specification, irrespective of the frequency band used.

Manufacturers and customers may choose any appropriate combination of these attributes in order to fulfil their need while utilizing the services offered through a GSM or a DCS 1800 PLMN. This is not an exhaustive list of attributes or types of MS. Type approval of MSs is addressed in GSM 11.10.

1.1 References

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.
- For this Release 1998 document, references to GSM documents are for Release 1998 versions (version 7.x.y).

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

[2] GSM 04.03: "Digital cellular telecommunication system (Phase 2+); Mobile Station - Base Station System (MS-BSS) interface Channel structures and access capabilities".

[3] GSM 04.08: "Digital cellular telecommunication system (Phase 2+); Mobile radio interface layer 3 specification".

[4] GSM 05.02: "Digital cellular telecommunication system (Phase 2+); Multiplexing and multiple access on the radio path".

[5] GSM 05.05: "Digital cellular telecommunication system (Phase 2+); Radio transmission and reception".

[6] GSM 11.10: "Digital cellular telecommunication system (Phase 2+); Mobile Station (MS) conformity specification".

1.2 Abbreviations

Abbreviations used in the present document are listed in GSM 01.04.

2 General

The term Mobile Station is taken to mean equipment necessary to access GSM PLMN telecommunication services. It includes the mobile termination and also may include Terminal Equipments and Terminal Adaptors. Some of the characteristics of the configuration in use at any time will be reflected in the Mobile Station Class Mark (see GSM 04.08). A MS is characterized by a set of attributes defined in clause 3.

3 Mobile Station attributes

The list of MS attributes is as follows:

- MS service access configuration;
- MS access capability;
- Modes of use.

3.1 MS service access configuration

Service access configuration must suit the requirements of the customer and will depend on the combination of tele-, bearer and supplementary services to be used. The actual configuration will depend on the manufacturers" implementation and may comprise a single unit or a mobile termination unit with additional Terminal Equipment and/or Terminal Adaptors.

3.2 MS access capability

The MS access capability is defined in GSM 04.03 Channel Structures and Access Capability, and describes the limitation put on the simultaneous provision at a given time of tele- or bearer services.

3.2.1 Frequency Bands

Four frequency bands are defined:

i) Standard GSM Band;

ii) Extended GSM Band (includes standard band);

iii) Railways GSM Band, R-GSM (includes standard and extended bands);

iv) DCS1m800 Band.

MSs may support one or more of these bands.

A MS which supports more than one band and the functionality below is defined as a Multi-band MS.

> The Multi-band MS has functionality to perform handover, channel assignment, cell selection and cell re-selection between all its bands of operation within a PLMN, i.e. when one PLMN code is used in all bands. In addition it has the functionality to make PLMN selection, in manual or automatic mode, in all its bands of operation. The multi-band MS shall meet all requirements specified for each individual band. In addition it shall meet the extra functional requirements for multi band MSs.

An MS capable of GSM and DCS 1 800 operation is also allowed where the band of operation is selected by means of an internal manual or automatic procedure. This type of MS cannot use the GSM and DCS 1800 modes simultaneously and does not support handover, channel assignment, cell selection or reselection between the bands of operation. Once the frequency band has been selected, the MS shall comply with all the specifications relevant to that band. The network does not provide any more functionality to support this type of MS than that required for single band MS.

3.2.2 Full Rate/Half Rate Services

Both Full Rate and Half Rate services are specified. For each basic service, they may be supported by a MS on full rate, full and half rate, or not at all. MSs supporting services using signalling modes only are also permitted.

3.2.3 MS multislot capability

MSs with different multislot capability (and complexity) will exist. The multislot capability is defined by a multislot class, which is characterized by items such as:

- Semiduplex or duplex operation capability, i.e. the capability to use the Rx and Tx slots in sequence or in parallel
- The maximum number of Rx slots
- The maximum number of Tx slots
- For semiduplex MS only, the maximum sum of Rx and Tx slots

The multislot classes are defined in GSM 05.02.

The multislot class is specified independently of other MS capabilities, i.e. the MS shall provide any multislot configuration according to its multislot class in combination with any other of its capabilities.

The multislot capability defined by the multislot class can be utilized for different services, separately or combined, according to the MS´s service capability.

3.2.3.1 Signalling support for GBS

An MS may support General Bearer Service (GBS) signalling without supporting multislot configurations.

3.2.4 Speech codecs

Speech teleservices may be provided using the Full Rate (full rate, version 1), Enhanced Full Rate (full rate, version 2), Half Rate (half rate, version 1) or Adaptive Multirate (AMR) speech codecs. For speech services, the allowed MS configurations are:

- Full Rate (full rate, version 1) speech codec only.
- Full Rate (full rate, version 1) plus any combination of the Enhanced Full Rate (full rate, version 2), Rate (half-rate, version 1) or Adaptive Multirate (AMR) speech codecs.

3.3 Definition of a hand-held MS

In this standard, a handheld station is an MS where the used antenna is directly attached to the portion of the equipment containing the acoustic transducers for speech (this condition applies only to speech MSs).

3.4 Definition of a vehicular mounted MS

In this standard, a vehicular mounted MS is an MS where the used antenna is physically mounted to the outside of a vehicle. Vehicles include, for example, trucks, buses, trains and ships.

4 Mobile Station output and power control

GSM and DCS MS are categorized into classes according to their maximum output power as defined in GSM 05.05. The mean output power for each of these classes is as follows in table 1:

Table 1: Mean output power

MS class	Nominal maximum mean power (milliwatts) Full rate	Half rate
GSM class 2	960	500
GSM class 3	600	312
GSM class 4	240	125
GSM class 5	96	50
DCS class 1	120	62
DCS class 2	30	16
DCS class 3	480	250

A multi-band MS has a combination of power classes, one from each of the bands of operation in the table above. Any combination can be used.

GSM and DCS 1800 MSs must be capable of reducing transmitter output power on command from a base station. See GSM 05.05.

5 Configuration possibilities

Any given configuration will be a combination of attributes mentioned in clause 3 above and may include additional features e.g. payphones.

A GSM handheld MS shall only be of GSM class 4 or 5. A DCS handheld MS shall only be DCS of class 1 or 2. A handheld multi-band MS must meet the above requirements on each band supported by the MS.

A DCS MS of DCS class 3 shall only be vehicular mounted.

Annex A (informative): Change Request History

Change history					
SMG No.	**TDoc. No.**	**CR. No.**	**Section affected**	**New version**	**Subject/Comments**
SMG#20		A001	3.2.3 3.2.4	5.0.0	Introduction of MS multislot classes Allowed speech codec configurations on the MS
SMG#21	232/97	A005	3.2.3	5.1.0	Changes needed to implement 14.4kps data service
SMG#27>				6.0.0	Specification upgrade to Release 1997 version 6.0.0
SMG#28	028/99	A007	3.2.1	6.1.0	Inclusion of Railways GSM Band
SMG#29	P-99-365	A008	3.2.4	7.0.0	Addition of AMR speech codec for release '98.

History

Document history			
V7.0.0	August 1999	One step Approval Procedure	OAP 9954: 1999-08-11 to 1999-12-10