

ETSI TS 101 376-3-11 V1.1.1 (2001-03)

Technical Specification

**GEO-Mobile Radio Interface Specifications;
Part 3: Network specifications;
Sub-part 11: Technical realization of the
Short Message Service (SMS) Point-to-Point (PP);
GMR-1 03.040**



Reference

DTS/SES-001-03040

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IPRs:

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TS 101 376 V1.1.1	Digital Voice Systems Inc		US	US 5,715,365	US
TS 101 376 V1.1.1	Digital Voice Systems Inc		US	US 5,826,222	US
TS 101 376 V1.1.1	Digital Voice Systems Inc		US	US 5,754,974	US
TS 101 376 V1.1.1	Digital Voice Systems Inc		US	US 5,701,390	US

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Project	Company	Title	Country of Origin	Patent n°	Countries Applicable
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TS 101 376 V1.1.1	Ericsson Mobile Communication	Power Booster	GB	GB 2 251 768	GB
TS 101 376 V1.1.1	Ericsson Mobile Communication	Receiver Gain	GB	GB 2 233 846	GB
TS 101 376 V1.1.1	Ericsson Mobile Communication	Transmitter Power Control for Radio Telephone System	GB	GB 2 233 517	GB

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Project	Company	Title	Country of Origin	Patent n°	Countries Applicable
TS 101 376 V1.1.1	Hughes Network Systems		US	Pending	US

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Project	Company	Title	Country of Origin	Patent n°	Countries Applicable
TS 101 376 V1.1.1	Lockheed Martin Global Telecommunic. Inc	2.4-to-3 KBPS Rate Adaptation Apparatus for Use in Narrowband Data and Facsimile Communication Systems	US	US 6,108,348	US
TS 101 376 V1.1.1	Lockheed Martin Global Telecommunic. Inc	Cellular Spacecraft TDMA Communications System with Call Interrupt Coding System for Maximizing Traffic Throughput Cellular Spacecraft TDMA Communications System with Call Interrupt Coding System for Maximizing Traffic Throughput	US	US 5,717,686	US
TS 101 376 V1.1.1	Lockheed Martin Global Telecommunic. Inc	Enhanced Access Burst for Random Access Channels in TDMA Mobile Satellite System	US	US 5,875,182	
TS 101 376 V1.1.1	Lockheed Martin Global Telecommunic. Inc	Spacecraft Cellular Communication System	US	US 5,974,314	US
TS 101 376 V1.1.1	Lockheed Martin Global Telecommunic. Inc	Spacecraft Cellular Communication System	US	US 5,974,315	US
TS 101 376 V1.1.1	Lockheed Martin Global Telecommunic. Inc	Spacecraft Cellular Communication System with Mutual Offset High-argin Forward Control Signals	US	US 6,072,985	US
TS 101 376 V1.1.1	Lockheed Martin Global Telecommunic. Inc	Spacecraft Cellular Communication System with Spot Beam Pairing for Reduced Updates	US	US 6,118,998	US

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Satellite Earth Stations and Systems (SES).

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

Version 1.m.n

where:

- the third digit (n) is incremented when editorial only changes have been incorporated in the specification;
- the second digit (m) is incremented for all other types of changes, i.e. technical enhancements, corrections, updates, etc.

The present document is part 3, sub-part 11 of a multi-part deliverable covering the GEO-Mobile Radio Interface Specifications, as identified below:

Part 1: "General specifications";

Part 2: "Service specifications";

Part 3: "Network specifications";

Sub-part 1: "Network Functions; GMR-1 03.001";

Sub-part 2: "Network Architecture; GMR-1 03.002";

Sub-part 3: "Numbering, Addressing and identification; GMR-1 03.003";

Sub-part 4: "Organization of Subscriber Data; GMR-1 03.008";

Sub-part 5: "Technical realization of Supplementary Services; GMR-1 03.011";

Sub-part 6: "Location Registration and Position Identification Procedures; GMR-1 03.012";

Sub-part 7: "Discontinuous Reception (DRX); GMR-1 03.013";

Sub-part 8: "Support of Dual-Tone Multifrequency Signalling (DTMF); GMR-1 03.014";

Sub-part 9: "Security related Network Functions; GMR-1 03.020";

Sub-part 10: "Functions related to Mobile Earth station (MES) in idle mode; GMR-1 03.022";

Sub-part 11: "Technical realization of the Short Message Service (SMS) Point-to-Point (PP); GMR-1 03.040";

Sub-part 12: "Technical realization of the Short Message Service Cell Broadcast (SMSCB); GMR-1 03.041";

Sub-part 13: "Technical realization of group 3 facsimile using transparent mode of transmission; GMR-1 03.045";

Sub-part 14: Transmission Planning Aspects of the Speech Service in the GMR-1 system; GMR-1 03.050";

Sub-part 15: "Line Identification supplementary service - Stage 2; GMR-1 03.081";

Sub-part 16: "Call Barring (CB) supplementary services - Stage 2; GMR-1 03.088";

Sub-part 17: "Unstructured Supplementary Service Data (USSD) - Stage 2; GMR-1 03.290";

Sub-part 18: "Terminal-to-Terminal Call (TtT); GMR-1 03.296";

Sub-part 19: "Optimal Routing technical realization; GMR-1 03.297";

Sub-part 20: "Technical realization of High-Penetration Alerting; GMR-1 03.298";

Sub-part 21: "Position Reporting services; Stage 2 Service description; GMR-1 03.299";

Part 4: "Radio interface protocol specifications";

Part 5: "Radio interface physical layer specifications";

Part 6: "Speech coding specifications";

Part 7: "Terminal adaptor specifications".

Introduction

GMR stands for GEO (Geostationary Earth Orbit) Mobile Radio interface, which is used for mobile satellite services (MSS) utilizing geostationary satellite(s). GMR is derived from the terrestrial digital cellular standard GSM and supports access to GSM core networks.

Due to the differences between terrestrial and satellite channels, some modifications to the GSM standard are necessary. Some GSM specifications are directly applicable, whereas others are applicable with modifications. Similarly, some GSM specifications do not apply, while some GMR specifications have no corresponding GSM specification.

Since GMR is derived from GSM, the organization of the GMR specifications closely follows that of GSM. The GMR numbers have been designed to correspond to the GSM numbering system. All GMR specifications are allocated a unique GMR number as follows:

GMR-n xx.zyy

where:

- xx.0yy ($z = 0$) is used for GMR specifications that have a corresponding GSM specification. In this case, the numbers xx and yy correspond to the GSM numbering scheme.
- xx.2yy ($z = 2$) is used for GMR specifications that do not correspond to a GSM specification. In this case, only the number xx corresponds to the GSM numbering scheme and the number yy is allocated by GMR.
- N denotes the first ($n = 1$) or second ($n = 2$) family of GMR specifications.

A GMR system is defined by the combination of a family of GMR specifications and GSM specifications as follows:

- If a GMR specification exists it takes precedence over the corresponding GSM specification (if any). This precedence rule applies to any references in the corresponding GSM specifications.

NOTE: Any references to GSM specifications within the GMR specifications are not subject to this precedence rule. For example, a GMR specification may contain specific references to the corresponding GSM specification.

- If a GMR specification does not exist, the corresponding GSM specification may or may not apply. The applicability of the GSM specifications is defined in GMR-1 01.201 [2].

1 Scope

The present document describes point-to-point Short Message Service (SMS) of the GMR-1 Mobile Satellite System.

The document defines:

- the services and service elements;
- the network architecture;
- the Service Centre functionality;
- the MSC functionality (with regard to SMS);
- the routing requirements;
- the protocols and protocol layering,

for the Teleservices 21 and 22, as specified in the document GSM 02.03 [5].

The present document is applicable to networks that conform to the GMR-1 specifications, and to mobile earth stations.

The PLMN aspects of the service are identical to those defined in GSM 03.40 [6] for the GSM PLMN. The Short Message Services of the GMR system differs from the descriptions in GSM 03.40 [6] in terminology. The clauses of the present document refer to the corresponding clauses of GSM 03.40 [6].

The General Restrictions clause of the present document indicates a Point-to-Point SMS restriction to mobile earth stations operating in Terminal-to-Terminal (TtT) single-hop mode. The Service and service elements clause of the present document indicates the use of the "MES busy for MT SMS" error indication in response to SC originated transfers when the MES is operating in TtT single-hop mode.

The use of radio resources for the transfer of short messages between the MES and the MSC is described in GSM 04.11 [7].

The network aspects of Short Message Service provision are outside the scope of the present document (i.e. the provision of network connectivity between the PLMN Subsystems). The required and assumed network service offered to the higher layers is defined in the present document.

The Cell Broadcast Short Message Service (Teleservice 23) is a separate service, and is described in GMR-1 03.041 [3].

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 and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

- [1] GMR-1 01.004 (ETSI TS 101 376-1-1): "GEO-Mobile Radio Interface Specifications; Part 1: General specifications; Sub-part 1: Abbreviations and acronyms; GMR-1 01.004".
- [2] GMR-1 01.201 (ETSI TS 101 376-1-2): "GEO-Mobile Radio Interface Specifications; Part 1: General specifications; Sub-part 2: Introduction to the GMR-1 Family; GMR-1 01.201".
- [3] GMR-1 03.041 (ETSI TS 101 376-3-12): "GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 12: Technical realization of the Short Message Service Cell Broadcast (SMSCB); GMR-1 03.041".

- [4] GMR-1 04.008 (ETSI TS 101 376-4-8): "GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 8: Mobile Radio Interface Layer 3 Specifications; GMR-1 04.008".
- [5] GSM 02.03 (ETSI ETS 300 502): "European digital cellular telecommunications system (Phase 2); Teleservices supported by a GSM Public Land Mobile Network (PLMN) (GSM 02.03 V4.3.1)".
- [6] GSM 03.40 (ETSI ETS 300 536): "Digital cellular telecommunications system (Phase 2); Technical realization of Short Message Service (SMS) Point-to-Point (PP) (GSM 03.40 V4.13.0)".
- [7] GSM 04.11 (ETSI ETS 300 559): "Digital cellular telecommunications system (Phase 2); Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface (GSM 04.11 V4.10.0)".

3 Abbreviations

For the purposes of the present document, the abbreviations given in GMR-1 01.004 [1] and the following apply.

MES	Mobile Earth Station
GMR	GEO-Mobile Radio interface

4 General restrictions

Point-to-Point Short message services shall not be supported when mobile earth stations are operating in the GMR Terminal-to-Terminal single-hop mode.

5 Service and service elements

Refer to clause 3 of GSM 03.40 [6], with the following differences:

- references to GSM 04.08 shall be replaced with references to GMR-1 04.008 [4];
- GSM 03.40 [6] clause 3.3.2, table 03.40/1: "Error indications related to mobile terminated short message transfer which may be transferred to the originating SC." Applies, with the error indication "MES busy for MT SMS" including the additional meaning "-MES involved in Terminal to Terminal call" as follows:

MES busy for MT SMS	T	<p>The PLMN rejects the short message TPDU because of congestion encountered at the visited MSC. Possible reasons include any of the following events in progress:</p> <ul style="list-style-type: none"> - short message delivery from another SC; - IMESI detach; - Location Update; - paging; - emergency call; - call set-up; - MES involved in TrT call.
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6 Network architecture

Refer to clause 4 of GSM 03.40 [6].

7 Service centre and PLMN interconnection

Refer to clause 5 of GSM 03.40 [6].

8 Service centre functionality

Refer to clause 6 of GSM 03.40 [6].

9 MES functionality

Refer to clause 7 of GSM 03.40 [6].

10 MSC functionality

Refer to clause 8 of GSM 03.40 [6].

11 Protocols and protocol architecture

Refer to clause 9 of GSM 03.40 [6].

12 Fundamental procedures within the point-to-point SMS

Refer to clause 10 of GSM 03.40 [6] with the following differences:

- references to GSM 04.08 shall be replaced with references to GMR-1 04.008 [4].
-

13 Mapping of error causes between RP layers

Refer to clause 11 of GSM 03.40 [6].

Annex A (informative): Protocol stacks for interconnecting SCs and MSCs

Refer to annex A of GSM 03.40 [6].

Annex B (informative): Short message information flow

Refer to annex C of GSM 03.40 [6].

Annex C (informative): Mobile earth station reply procedures

Refer to annex D of GSM 03.40 [6].

History

Document history		
V1.1.1	March 2001	Publication