

ETSI TS 101 376-1-2 V3.1.1 (2009-07)

Technical Specification

**GEO-Mobile Radio Interface Specifications (Release 3);
Third Generation Satellite Packet Radio Service;
Part 1: General specifications;
Sub-part 2: Introduction to the GMR-1 family;
GMR-1 3G 41.201**

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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:

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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 1, sub-part 2 of a multi-part deliverable covering the GEO-Mobile Radio Interface Specifications (Release 3) Third Generation Satellite Packet Radio Service, as identified below:

Part 1: "General specifications":

Sub-part 1: "Abbreviations and acronyms";

Sub-part 2: "Introduction to the GMR-1 family";

Sub-part 3: "General System Description";

Part 2: "Service specifications";

Part 3: "Network specifications";

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.

The present document is part of the GMR Release 3 specifications. Release 3 specifications are identified in the title and can also be identified by the version number:

- Release 1 specifications have a GMR 1 prefix in the title and a version number starting with "1" (V1.x.x).
- Release 2 specifications have a GMPRS 1 prefix in the title and a version number starting with "2" (V2.x.x).
- Release 3 specifications have a GMR-1 3G prefix in the title and a version number starting with "3" (V3.x.x).

The GMR release 1 specifications introduce the GEO-Mobile Radio interface specifications for circuit mode Mobile Satellite Services (MSS) utilizing geostationary satellite(s). GMR release 1 is derived from the terrestrial digital cellular standard GSM (phase 2) and it supports access to GSM core networks.

The GMR release 2 specifications add packet mode services to GMR release 1. The GMR release 2 specifications introduce the GEO-Mobile Packet Radio Service (GMPRS). GMPRS is derived from the terrestrial digital cellular standard GPRS (included in GSM Phase 2+) and it supports access to GSM/GPRS core networks.

The GMR release 3 specifications evolve packet mode services of GMR release 2 to 3rd generation UMTS compatible services. The GMR release 3 specifications introduce the GEO-Mobile Radio Third Generation (GMR-1 3G) service. Where applicable, GMR-1 3G is derived from the terrestrial digital cellular standard 3GPP and it supports access to 3GPP core networks.

Due to the differences between terrestrial and satellite channels, some modifications to the GSM or 3GPP standard are necessary. Some GSM and 3GPP specifications are directly applicable, whereas others are applicable with modifications. Similarly, some GSM and 3GPP specifications do not apply, while some GMR specifications have no corresponding GSM or 3GPP specification.

Since GMR is derived from GSM and 3GPP, the organization of the GMR specifications closely follows that of GSM or 3GPP as appropriate. The GMR numbers have been designed to correspond to the GSM and 3GPP numbering system. All GMR specifications are allocated a unique GMR number. This GMR number has a different prefix for Release 2 and Release 3 specifications as follows:

- Release 1: GMR n xx.zyy
- Release 2: GMPRS n xx.zyy
- Release 3: GMR-1 3G xx.zyy

where:

- xx.0yy (z = 0) is used for GMR specifications that have a corresponding GSM or 3GPP specification. In this case, the numbers xx and yy correspond to the GSM or 3GPP numbering scheme.
- xx.2yy (z = 2) is used for GMR specifications that do not correspond to a GSM or 3GPP specification. In this case, only the number xx corresponds to the GSM or 3GPP 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 and 3GPP specifications as follows:

- If a GMR specification exists it takes precedence over the corresponding GSM or 3GPP specification (if any). This precedence rule applies to any references in the corresponding GSM or 3GPP specifications.

NOTE: Any references to GSM or 3GPP 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 or 3GPP specification.

- If a GMR specification does not exist, the corresponding GSM or 3GPP specification may or may not apply. The applicability of the GSM and 3GPP specifications is defined in the present document.

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1 Scope

The present document gives a general introduction to the GEO-Mobile Radio interface (GMR) specifications in the GMR-1 family.

The present document introduces both the Release 1 and the Release 2 specifications.

The GMR-1 specifications are organized into series that correspond to the organization of the ETSI GSM technical specifications. Clause 4 of the present document defines the contents of each GMR-1 series and shows how the individual GMR-1 specifications relate to their GSM counterparts. Clause 5 of the present document defines the relationship between GMR-1 terminology and the GSM terminology.

2 References

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.
- Non-specific reference may be made only to a complete document or a part thereof and only in the following cases:
 - if it is accepted that it will be possible to use all future changes of the referenced document for the purposes of the referring document;
 - for informative references.

Referenced documents which are not found to be publicly available in the expected location might be found at <http://docbox.etsi.org/Reference>.

NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

2.1 Normative references

The following referenced documents are indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

- [1] ETSI GMPRS-1 01.004 (ETSI TS 101 376-1-1): "GEO-Mobile Radio Interface Specifications (Release 2) General Packet Radio Service; Part 1: General specifications; Sub-part 1: Abbreviations and acronyms; GMPRS-1 01.004".

NOTE: This is a reference to a GMR-1 Release 2 specification. See the introduction for more details.

- [2] ETSI GMR-1 03.001 (ETSI TS 101 376-3-1): "GEO-Mobile Radio Interface Specifications (Release 2) General Packet Radio Service; Part 3: Network specifications; Sub-part 10: Functions related to Mobile Earth Station (MES) in idle mode; GMPRS-1 03.022".

NOTE: This is a reference to a GMR-1 Release 1 specification. See the introduction for more details.

2.2 Informative references

The following referenced documents are not essential to the use of the present document but they assist the user with regard to a particular subject area. For non-specific references, the latest version of the referenced document (including any amendments) applies.

- [i.1] GSM 01.04 (ETSI TR 101 748): "Digital cellular telecommunications system (Phase 2+) (GSM); Abbreviations and acronyms".
- [i.2] GSM 01.60 (ETSI TR 101 186): "Digital cellular telecommunications system (Phase 2+) (GSM); General Packet Radio Service (GPRS); Requirements specification of GPRS"..
- [i.3] GMR-1 3G 41.201 (ETSI TS 101 376-1-2): "GEO-Mobile Radio Interface Specifications (Release 2) General Packet Radio Service; Part 1: General specifications; Sub-part 2: Introduction to the GMR-1 family".
- [i.4] GMR-1 3G 41.202 (ETSI TS 101 376-1-3): "GEO-Mobile Radio Interface Specifications; Part 1: General specifications; Sub-part 3: General System Description".
- [i.5] GMR-1 02.011 (ETSI TS 101 376-2-1): "GEO-Mobile Radio Interface Specifications; Part 2: Service specifications; Sub-part 1: Service Accessibility".
- [i.6] GMR-1 03.002 (ETSI TS 101 376-3-2): "GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 2: Network Architecture".
- [i.7] GMR-1 03.003 (ETSI TS 101 376-3-3): "GEO-Mobile Radio Interface Specifications (Release 2) General Packet Radio Service; Part 3: Network specifications; Sub-part 3: Numbering, addressing and identification".
- [i.8] GMR-1 03.008 (ETSI TS 101 376-3-4): "GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 4: Organization of Subscriber Data".
- [i.9] GMR-1 03.011 (ETSI TS 101 376-3-5): "GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 5: Technical realization of Supplementary Services".
- [i.10] GMR-1 03.012 (ETSI TS 101 376-3-6): "GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 6: Location Registration and Position Identification Procedures".
- [i.11] GMR-1 03.013 (ETSI TS 101 376-3-7): "GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 7: Discontinuous Reception (DRX)".
- [i.12] GMR-1 03.014 (ETSI TS 101 376-3-8): "GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 8: Support of Dual-Tone Multifrequency Signalling (DTMF)".
- [i.13] GMR-1 03.020 (ETSI TS 101 376-3-9): "GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 9: Security related Network Functions".
- [i.14] GMR-1 3G 43.022 (ETSI TS 101 376-3-10): "GEO-Mobile Radio Interface Specifications (Release 2) General Packet Radio Service; Part 3: Network specifications; Sub-part 10: Functions related to Mobile Earth Station (MES) in idle mode".
- [i.15] GMR-1 03.040 (ETSI TS 101 376-3-11): "GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 11: Technical realization of the Short Message Service (SMS) Point-to-Point (PP)".
- [i.16] 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)".
- [i.17] GMR-1 03.045 (ETSI TS 101 376-3-13): "GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 13: Technical realization of group 3 facsimile using transparent mode of transmission".

- [i.18] GMR-1 03.050 (ETSI TS 101 376-3-14): "GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 14: Transmission Planning Aspects of the Speech Service in the GMR-1 system".
- [i.19] GMR-1 03.081 (ETSI TS 101 376-3-15): "GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 15: Line Identification supplementary service - Stage 2".
- [i.20] GMR-1 03.088 (ETSI TS 101 376-3-16): "GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 16: Call Barring (CB) supplementary services - Stage 2".
- [i.21] GMR-1 03.290 (ETSI TS 101 376-3-17): "GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 17: Unstructured Supplementary Service Data (USSD) - Stage 2".
- [i.22] GMR-1 03.296 (ETSI TS 101 376-3-18): "GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 18: Terminal-to-Terminal Call (TtT)".
- [i.23] GMPRS-1 03.297 (ETSI TS 101 376-3-19): "GEO-Mobile Radio Interface Specifications (Release 2) General Packet Radio Service; Part 3: Network specifications; Sub-part 19: Optimal Routing technical realization".
- [i.24] GMR-1 03.298 (ETSI TS 101 376-3-20): "GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 20: Technical realization of High-Penetration Alerting".
- [i.25] GMR-1 03.299 (ETSI TS 101 376-3-21): "GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 21: Position Reporting services; Stage 2 Service description".
- [i.26] GMR-1 04.001 (ETSI TS 101 376-4-1): "GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 1: Mobile Earth Station-Gateway Station System (MES-GSS)".
- [i.27] GMR-1 04.002 (ETSI TS 101 376-4-2): "GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 2: GMR-1 Satellite Network Access Reference Configuration".
- [i.28] GMR-1 04.003 (ETSI TS 101 376-4-3): "GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 3: Channel Structures and Access Capabilities".
- [i.29] GMR-1 04.004 (ETSI TS 101 376-4-4): "GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 4: Layer 1 General Requirements".
- [i.30] GMR-1 04.005 (ETSI TS 101 376-4-5): "GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 5: Data Link Layer General Aspects".
- [i.31] GMR-1 04.006 (ETSI TS 101 376-4-6): "GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 6: Mobile earth Station-Gateway Station Interface Data Link Layer Specifications".
- [i.32] GMPRS-1 04.007 (ETSI TS 101 376-4-7): "GEO-Mobile Radio Interface Specifications (Release 2) General Packet Radio Service; Part 4: Radio interface protocol specifications; Sub-part 7: Mobile Radio Interface Signalling Layer 3 General Aspects".
- [i.33] GMR-1 3G 44.008 (ETSI TS 101 376-4-8): "GEO-Mobile Radio Interface Specifications (Release 2); General Packet Radio Service; Part 4: Radio interface protocol specifications; Sub-part 8: Mobile Radio Interface Layer 3 Specifications".
- [i.34] GMR-1 04.013 (ETSI TS 101 376-4-9): "GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 9: Performance Requirements on the Mobile Radio Interface".
- [i.35] GMR-1 04.021 (ETSI TS 101 376-4-10): "GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 10: Rate Adaptation on the Access Terminal-Gateway Station Subsystem (MES-GSS) Interface".

- [i.36] GMR-1 04.022 (ETSI TS 101 376-4-11): "GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 11: Radio Link Protocol (RLP) for Data Services".
- [i.37] GMR-1 05.001 (ETSI TS 101 376-5-1): "GEO-Mobile Radio Interface Specifications (Release 1); Part 5: Radio interface physical layer specifications; Sub-part 1: Physical Layer on the Radio Path: General Description".
- [i.38] GMR-1 3G 45.002 (ETSI TS 101 376-5-2): "GEO-Mobile Radio Interface Specifications (Release 2); General Packet Radio Service; Part 5: Radio interface physical layer specifications; Sub-part 2: Multiplexing and Multiple Access; Stage 2 Service Description".
- [i.39] GMR-1 3G 45.003 (ETSI TS 101 376-5-3): "GEO-Mobile Radio Interface Specifications (Release 2); General Packet Radio Service; Part 5: Radio interface physical layer specifications; Sub-part 3: Channel Coding".
- [i.40] GMR-1 3G 45.004 (ETSI TS 101 376-5-4): "GEO-Mobile Radio Interface Specifications (Release 2); General Packet Radio Service; Part 5: Radio interface physical layer specifications; Sub-part 4: Modulation".
- [i.41] GMR-1 3G 45.005 (ETSI TS 101 376-5-5): "GEO-Mobile Radio Interface Specifications (Release 2); General Packet Radio Service; Part 5: Radio interface physical layer specifications; Sub-part 5: Radio Transmission and Reception".
- [i.42] GMR-1 3G 45.008 (ETSI TS 101 376-5-6): "GEO-Mobile Radio Interface Specifications (Release 2); General Packet Radio Service; Part 5: Radio interface physical layer specifications; Sub-part 6: Radio Subsystem Link Control".
- [i.43] GMR-1 3G 45.010 (ETSI TS 101 376-5-7): "GEO-Mobile Radio Interface Specifications (Release 2); General Packet Radio Service; Part 5: Radio interface physical layer specifications; Sub-part 7: Radio Subsystem Synchronization".
- [i.44] GMR-1 06.001 (ETSI TS 101 376-6-1): "GEO-Mobile Radio Interface Specifications; Part 6: Speech coding specifications; Sub-part 1: Speech Processing Functions".
- [i.45] GMR-1 06.010 (ETSI TS 101 376-6-2): "GEO-Mobile Radio Interface Specifications; Part 6: Speech coding specifications; Sub-part 2: Vocoder: Speech Transcoding".
- [i.46] GMR-1 06.011 (ETSI TS 101 376-6-3): "GEO-Mobile Radio Interface Specifications; Part 6: Speech coding specifications; Sub-part 3: Vocoder: Substitution and Muting of Lost Frames".
- [i.47] GMR-1 06.012 (ETSI TS 101 376-6-4): "GEO-Mobile Radio Interface Specifications; Part 6: Speech coding specifications; Sub-part 4: Vocoder: Comfort Noise Aspects".
- [i.48] GMR-1 06.031 (ETSI TS 101 376-6-5): "GEO-Mobile Radio Interface Specifications; Part 6: Speech coding specifications; Sub-part 5: Vocoder: Discontinuous Transmission (DTX)".
- [i.49] GMR-1 06.032 (ETSI TS 101 376-6-6): "GEO-Mobile Radio Interface Specifications; Part 6: Speech coding specifications; Sub-part 6: Vocoder: Voice Activity Detection (VAD)".
- [i.50] GMR-1 07.001 (ETSI TS 101 376-7-1): "GEO-Mobile Radio Interface Specifications; Part 7: Terminal adaptor specifications; Sub-part 1: General on Terminal Adaptation Functions (TAF) for Mobile Earth Stations (MES)".
- [i.51] GMR-1 07.002 (ETSI TS 101 376-7-2): "GEO-Mobile Radio Interface Specifications; Part 7: Terminal adaptor specifications; Sub-part 2: Terminal Adaptation Functions (TAF) for Services Using Asynchronous Bearer capabilities".
- [i.52] GMR-1 07.003 (ETSI TS 101 376-7-3): "GEO-Mobile Radio Interface Specifications; Part 7: Terminal adaptor specifications; Sub-part 3: Terminal Adaptation Functions (TAF) for Services Using Synchronous Bearer Capacities".
- [i.53] GMR-1 3G 43.064 (ETSI TS 101 376-3-22): "GEO-Mobile Radio Interface Specifications (Release 2); General Packet Radio Service; Part 3: Network specifications; Sub-part 22: Overall description of the GMPRS radio interface; Stage 2".