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Technical Specification

**GEO-Mobile Radio Interface Specifications;
Part 7: Terminal adaptor specifications;
Sub-part 3: Terminal Adaptation Functions (TAF)
for Services Using Synchronous Bearer Capacities
GMR-1 07.003**



Reference

DTS/SES-001-07003

Keywords

adaption, interface, mobile, radio, terminal

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
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Sous-Préfecture de Grasse (06) N° 7803/88

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IPR Owner: Digital Voice Systems Inc
One Van de Graaff Drive Burlington,
MA 01803
USA

Contact: John C. Hardwick
Tel.: +1 781-270-1030
Fax: +1 781-270-0166

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IPR Owner: Ericsson Mobile Communications (UK) Limited
The Keytech Centre, Ashwood Way
Basingstoke
Hampshire RG23 8BG
United Kingdom

Contact: John Watson
Tel.: +44 1256 864821

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

IPR Owner: Hughes Network Systems
11717 Exploration Lane
Germantown, Maryland 20876
USA

Contact: John T. Whelan
Tel: +1 301-428-7172
Fax: +1 301-428-2802

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| 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 |

IPR Owner: Lockheed Martin Global Telecommunications, Inc.
900 Forge Road
Norrstown, PA. 19403
USA

Contact: R.F. Franciose
Tel.: +1 610.354.2535
Fax: +1 610.354.7244

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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- the second digit (m) is incremented for all other types of changes, i.e. technical enhancements, corrections, updates, etc.

The present document is part 7, sub-part 3 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";

Part 4: "Radio interface protocol specifications";

Part 5: "Radio interface physical layer specifications";

Part 6: "Speech coding specifications";

Part 7: "Terminal adaptor specifications";

Sub-part 1: "General on Terminal Adaptation Functions (TAF) for Mobile Earth Stations (MES);
GMR-1 07.001";

Sub-part 2: "Terminal Adaptation Functions (TAF) for Services Using Asynchronous Bearer capabilities;
GMR-1 07.002";

**Sub-part 3: "Terminal Adaptation Functions (TAF) for Services Using Synchronous Bearer Capacities;
GMR-1 07.003".**

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 [7].

1 Scope

This specification defines Terminal Adaptation Functions (TAF) which are integrated in a Mobile Termination (MT) and which enable the attachment of fax adapters to an MT (see GMR-1 03.045 [6]). It is noted that the fax adapter itself may be integrated into an MT such as MESGMR-1 configuration described in GMR-1 03.045 [6]. The general aspects of Terminal Adaptation Functions are contained in specification GMR-1 07.001 [5]. This specification covers support of facsimile services that uses synchronous bearer capabilities.

- V.25bis Procedure
- V.25ter Procedure

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, subsequent revisions do apply.

- [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] GSM 03.10 (ETSI ETS 300-528): "European digital cellular telecommunications system (Phase 2); GSM Public Land Mobile Network (PLMN) connection types (GSM 03.10 version 4.3.1)".
- [3] 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; GMR-1 04.002".
- [4] 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; GMR-1 04.021".
- [5] 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); GMR-1 07.001".
- [6] 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; GMR-1 03.045".
- [7] 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".
- [8] GSM 07.03 (ETSI ETS 300 915): "Digital cellular telecommunications system (Phase 2+); Terminal Adaptation Functions (TAF) for services using synchronous bearer capabilities (GSM 07.03 version 5.4.0)".

3 Abbreviations

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

| | |
|----|-----------------|
| AU | Access Unit |
| PF | Packet Function |

Other abbreviations are listed in GMR-1 01.004 [1].

4 General

4.1 Customer access configuration

The GMR-1 satellite system access reference configuration is described in figure 1 of GMR-1 04.002 [3]. The present specification specifically refers to the MESs which support terminal equipments (TE1 or TE2) that use synchronous bearer capabilities.

4.2 Terminal adaptation function

The TAF is functionally part of an MT0, MT1, MT2 {see GMR-1 04.002 [3]} or MESGMR-1 (see GMR-1 03.045 [6]). The following functions are included:

- Conversion of electrical, mechanical, functional and procedural characteristics of the V-series interfaces to those required by a GMR-1 satellite system.
- Bit rate adaptation of V-series to that provided in the GMR-1 satellite system.
- The mapping of ITU-T Recommendation V.25bis or V.25 ter AUTO CALL/AUTO ANSWER procedures to the GMR-1 Dm-channel signalling.
- The mapping functions necessary to convert S-interface signalling to satellite system Dm-channel signalling.
- Synchronization procedure, which means the task of synchronizing the entry to and the exit from the data transfer phase between two subscriber terminals. This is described in the specification GMR-1 07.001 [5].
- Filtering of channel control information. This is described in the specification GMR-1 07.001 [5].
- Compatibility checking (see GMR-1 07.001 [5]).
- In Call Modification function (see clause 5).

4.3 TAF interfacing to other MES functions

TAF interfacing is shown in figure 1.

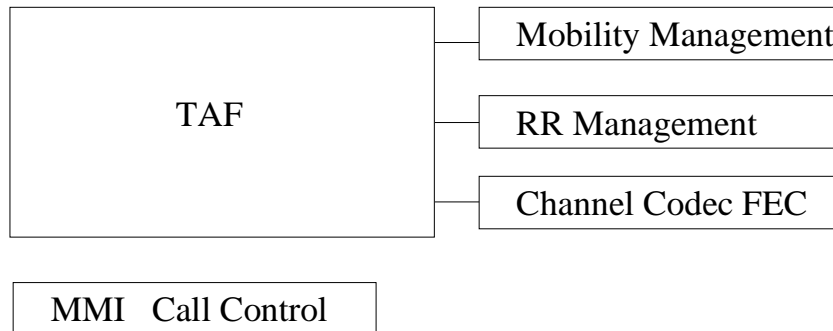


Figure 1: TAF interfacing to other MES functions

5 Terminal adaptation functions for synchronous transparent services

Specification GSM 03.10 [2] refers to the facsimile information transfer models that uses the underlying synchronous transparent service.

5.1 Rate adaptation

Same as clause 4.1 of GSM 07.03 [8].

5.1.1 Rate adaptation - V-series

This is provided as indicated in specification GMR-1 04.021 [4].

5.1.2 Rate adaptation - X.21

Not applicable.

5.1.3 Rate adaptation - S-interface

The functions applied in this case are shown in figure 2, configuration B of GMR-1 03.045 [6].

The rate adaptation functions are as described in GMR-1 04.021 [4].

5.2 Interchange circuit signalling mapping

5.2.1 V-series interchange circuit mapping

Same as clause 4.2.1 of GSM 07.03 [8].

Use of Network Independent Clocking:

Not applicable.

Signal element timing:

Same as "Signal Element Timing" subsection of GSM 07.03 [8].

5.2.2 X.21 interchange circuit mapping

Not applicable.

5.2.3 Case of S-interface

Same as clause 4.2.3 of GSM 07.03 [8].

5.3 Call establishment signalling mapping at TE/MES interface

5.3.1 V-series interfaces

5.3.1.1 Call establishment manual operation

Same as clause 4.3.1.1 of GSM 07.03 [8].

5.3.1.2 Call establishment manual operation - utilizing the unrestricted digital capability

Same as clause 4.3.1.2 of GSM 07.03 [8].

5.3.1.3 V.25 *bis* auto call/auto answer

Same as clause 4.3.1.3 of GSM 07.03 [8].

5.3.2 X-series interfaces

Not Applicable.

5.3.2.1 X.21 *bis* call establishment manual operation - utilizing the unrestricted digital capability

Not Applicable.

5.3.3 S-interface (I.420) signalling mapping

Same as clause 4.3.3 of GSM 07.03 [8].

5.3.4 X.25 procedures mapping

Not Applicable.

6 Terminal adaptation functions for synchronous non-transparent services

Not Applicable.

7 V- and S-series interface procedures to GMR-1 04.008 mapping

Same as clause 6 of GSM-07.03 [8].

8 X.21 interface procedures to GMR-1 04.008 mapping

Not applicable.

9 Support for packet service

Not applicable.

Annex A (normative): L2R functionality

Not applicable.

History

| Document history | | |
|-------------------------|------------|-------------|
| V1.1.1 | March 2001 | Publication |
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