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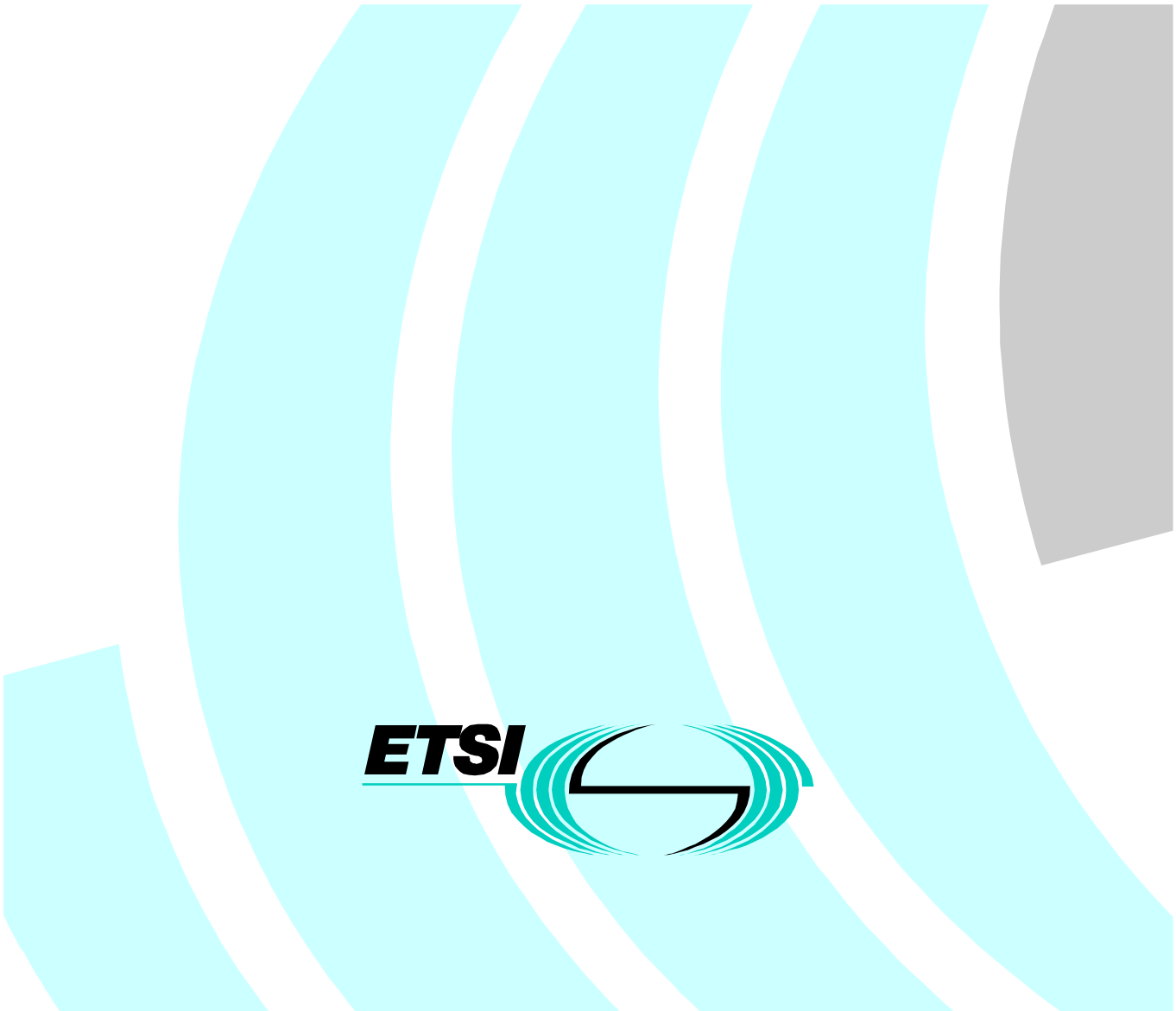
Technical Specification

GEO-Mobile Radio Interface Specifications;
Part 3: Network specifications;
Sub-part 21: Position Reporting services;
Stage 2 Service description;
GMR-1 03.299



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Contents

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IPRs:

Project	Company	Title	Country of Origin	Patent n°	Countries Applicable
TS 101 376 V1.1.1	Digital Voice Systems Inc		US	US 5,226,084	US
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
TS 101 376 V1.1.1	Ericsson Mobile Communication	Improvements in, or in relation to, equalisers	GB	GB 2 215 567	GB
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 ThroughputCellular 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 21 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 specifies the GMR-1 position-based services. The Mobile Earth Station (MES) contains a Global Positioning System (GPS) receiver, which periodically determines the position of the MES. The MES reports its position to the Gateway Station (GS) when it accesses the network. The GPS position is used to support the following procedures and services:

- spot beam selection;
- access restrictions based on country or region;
- active call disconnection;
- location-based tariffing and settlement;
- MES position display;
- national numbering plans;
- emergency call routing;
- lawful interception routing;
- call barring.

The network assists the MES position-determination process by broadcasting ephemeris and almanac data for GPS satellites. This information reduces the time required to select satellites and measure the position.

The timing and frequency of GPS measurements are determined by parameters broadcast in the system information, by MES idle mode procedures (GMR-1 03.022 [3]), by parameters transmitted during the channel assignment procedure, by the active call disconnection procedure, and by the MES's ability to receive the GPS broadcast signals. The MES transmits the most recent GPS measurement as part of the CHANNEL REQUEST message on the RACH. Vehicular Terminals (VTs) transmit their GPS position during dedicated connections as part of the active call disconnection procedure.

The Traffic Control Subsystem (TCS) is the element of the GS responsible for providing position-based services. Many services are based upon the country and region within that country where the MES is located. The TCS determines the MES's country and region when it receives a GPS position. The TCS passes the country and region information across the A-Interface as part of the call set-up process.

Position-based services are subject to the limitations and availability of the GPS system. GMR-1 may be operated without GPS and position-based services because GPS is not available or because the operator does not wish to make use of it.

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 03.022 (ETSI TS 101 376-3-10): "GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 10: Functions related to Mobile Earth Station (MES) in idle mode; GMR-1 03.022".

[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] GMR-1 05.008 (ETSI TS 101 376-5-6): "GEO-Mobile Radio Interface Specifications; Part 5: Radio interface physical layer specifications; Sub-part 6: Radio Subsystem Link Control; GMR-1 05.008".

[6] GPS Interface Control Document: "ICD-GPS-200 Navstar GPS Space Segment/Navigation User Interfaces", Public Release Version. February 1995.

3 Abbreviations

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

4 GPS requirements

The GPS is the foundation of GMR-1 position-based services. The following fundamental requirements govern the availability and use of GPS:

- The MES should have a GPS receiver.
- The GS may limit or deny nonemergency service to an MES that does not have a functioning GPS receiver or is unable to measure its current position.
- The VT should be able to measure its position while operating in dedicated mode.
- The GS may limit or deny nonemergency service to a VT that is unable to measure its position while in dedicated mode.
- Emergency service shall not be restricted based on the presence or absence of GPS capabilities.

Position-based services are an integral part of GMR-1. Nevertheless, the specifications provide for the possibility of building a GMR-1 system without GPS capabilities. Such a system could include MESs without GPS capabilities, thereby reducing mobile cost and weight. However, those MESs need not be accepted by other GMR-1 systems, even though they are otherwise fully compliant with the specifications.

MESs without GPS receivers or whose GPS receivers are inoperable may exempt themselves from all requirements governing the operation of the GPS receiver. Such MESs shall set the GPS Capability Indicator to 0 (not capable) whenever they access a GMR-1 system.

5 Position-based services

This clause is devoted to describing each of the position-based services that may be provided in a GMR-1 system.

5.1 Validation of spot beam selection

The GS may compare the MES's reported position in a CHANNEL REQUEST or EXTENDED CHANNEL REQUEST with the geographic coverage of the accessed spot beam. If the GS determines that the MES has selected the wrong spot beam, the GS may redirect the MES to the correct spot beam by sending an IMMEDIATE ASSIGNMENT REJECT or EXTENDED IMMEDIATE ASSIGNMENT REJECT message with reject cause "invalid position for selected spot beam". See GMR-1 04.008 [4] for details.

5.2 Access restrictions

The GS may compare the MES's reported position in a CHANNEL REQUEST or EXTENDED CHANNEL REQUEST with the system service area. If the GS determines that the MES is not within the system service area and the establishment cause is not Emergency Call, the GS may send an IMMEDIATE ASSIGNMENT REJECT or EXTENDED IMMEDIATE ASSIGNMENT REJECT message with reject cause "invalid position". This signifies that nonemergency service is not available from the satellite system at this location. See GMR-1 04.008 [4] for details.

The GS may compare the MES's reported position in a CHANNEL REQUEST or EXTENDED CHANNEL REQUEST with the GS service area. If the GS determines that the MES is not within its service area and the establishment cause is not Emergency Call, the GS may send an IMMEDIATE ASSIGNMENT REJECT or EXTENDED IMMEDIATE ASSIGNMENT REJECT message with reject cause "invalid position for selected LAI", signifying that nonemergency service is not available from this GS at this location. Service could be available from other GSs within the satellite system at this location. See GMR-1 04.008 [4] for details.

The GS may compare the MES's reported position in a CHANNEL REQUEST or EXTENDED CHANNEL REQUEST with the MES's reported Home Public Land Mobile Network (HPLMN) or service provider. If the GS determines that the MES is not within the area where service is provided to subscribers of that Public Land Mobile Network (PLMN) or service provider and the establishment cause is not Emergency Call, the GS may send an IMMEDIATE ASSIGNMENT REJECT or EXTENDED IMMEDIATE ASSIGNMENT REJECT message with reject cause "invalid position for service provider," signifying that nonemergency service is not available from the satellite system to subscribers of this PLMN or service provider at this location. Service could be available at this location to subscribers of other PLMNs or service providers. See GMR-1 04.008 [4] for details.

5.3 Active call disconnection

The GS may require VTs to periodically measure their GPS position during dedicated mode connections and report their position to the network when it changes by more than a specified distance. The GS may determine that the VT has moved into an area where the GS is unwilling to continue the current dedicated mode connection. If this occurs the GS may disconnect the call either immediately or after a grace period. Before disconnecting the call, the GS should acknowledge the reported position and include a notification that disconnection is impending. The GS may require position reporting for emergency calls but shall not disconnect them based on position.

5.4 Tariffs and settlements

The GS may use the reported position of the MES when a dedicated connection is established as a factor in determining appropriate tariffs and settlements for a call.

5.5 MES position display

As part of the Immediate Assignment, Extended Immediate Assignment, or Cipher Mode Establishment Procedures, the GS may transmit to the MES a 12-character string containing the country name, region name, or other geographic name of the MES's reported position.

5.6 National dialling plans

The GS may use the reported position of the MES when a dedicated connection is established to determine which country's national dialling plan to use for interpreting called party numbers sent by the MES. The GS may use the reported position of the MES when a dedicated connection is established to determine which country's national dialling plan to use for formatting Calling Line Identification Presentation (CLIP) numbers transmitted to the MES.

5.7 Emergency call routing

The GS should use the reported position of the MES when an emergency call is established to determine the emergency center to route the call to.

5.8 Lawful interception routing

The GS should use the reported position of the MES when a dedicated connection is established to determine which country's authorities may lawfully intercept the call. The GS may use the reported position of the MES to determine the lawful interception facility within a country to route the call to.

5.9 Call barring

GSM implicitly assumes, for call barring purposes, that a mobile is located in the same country as the cellular system, which is in turn specified in the Mobile Country Code (MCC) portion of the PLMN ID. This treatment is not necessarily desirable for GMR-1 systems. GMR-1 systems may use any or all of the following variant treatments when providing call barring services related to the ability to make and receive international calls.

- The MES is considered to be in the same country as its reported position when a dedicated connection is established.
- Two MESs engaged in a TtT call are considered to be in the same country.
- The MES is considered to be in the same country as the GS.
- The MES is considered to be in the same country as the selected optimal GS.

6 Procedures

6.1 GPS fast acquisition

In order to reduce time-to-first fix, the GMR-1 system may provide GPS fast acquisition to terminals with customized GPS receivers. With fast acquisition, GPS position determination typically takes about 4 seconds, several seconds less than "hot start" of a typical GPS receiver. The time savings are achieved by utilizing information provided by the GMR-1 network instead of downloading data from the GPS satellites.

6.1.1 GS procedure

In order to provide fast acquisition, the GS:

a) determines GPS time and transmits it to MESs such that the GPS time an MES receives is within ±10 msec of the current GPS time;

b) broadcasts GPS time, ephemeris data, and other parameters required for the fast acquisition of satellite signals for satellites visible to MESs in the spot beam;

c) broadcasts a current GPS almanac in each spot beam.

6.1.2 GPS data broadcast

In the GMR-1 system, there are two channels that are used for GPS data broadcast: GPS Broadcast Control Channel (GBCH) and Paging Channel (PCH). See GMR-1 04.008 [4] for details.

6.1.2.1 GBCH

Information useful for MESs in computing a fast GPS fix may be transmitted on a GBCH channel in each spot beam. The GS shall indicate whether the GBCH is being provided by setting the system information flag GBCH PRESENT.

The broadcast data on the GBCH channel shall include the following:

a) Ephemeris data for at least 4 satellites and up to 12 satellites visible to MESs in the spot beam:

- a set of coefficients for the curve fit model of the satellite motion for each of the satellites in order to determine each satellite's precise position at any instant in the next few minutes;
- Curve Fit Time: the time at which the curve fit coefficients are computed;
- Curve Fit Cutover: the flag that shows whether curve fit time has changed since the last broadcast of curve fit time.

b) GPS time accurate to within ±10 msec of the actual GPS time when received by the MES:

- timestamp (in microsecond): GPS time at which the frame # F edge arrives at MES;
- Frame Number F: The frame number to which timestamp is referenced.

c) Parameters that facilitate the fast acquisition of signals from GPS satellites:

- doppler estimates for the satellites;
- estimated Code Phase offsets for the satellites.

6.1.2.2 PCH

Current GPS Almanac Data may be broadcast in unused TMSI positions in paging messages on the PCH channel. The GS shall indicate whether almanac data is being provided by setting the system information flag ALMANAC PRESENT.

The portions of the GPS almanac that shall be broadcast on the PCH are:

- GPS subframe 4 - pages 2, 3, 4, 5, 7, 8, 9, 10, 25, words 3-10 of each page.
- GPS subframe 5 - pages 1-25, words 3-10 of each page.

As described in ICD-GPS-200 see reference [6].

GPS almanac data is usually valid for about 3-4 weeks.

6.1.3 MES procedure

The MESs GPS receiver should be customized for fast acquisition.

The MES should read the GBCH.

As an MES will often seek a GPS fix in the vicinity of its last fix, the last known location should be used as a position estimate to seed the GPS receiver in a fast acquisition. If this position estimate is not working, a second position estimate should be provided by the MES, based on the relative signal strengths of BCCHs from neighbouring spot beams. The procedure to obtain a position estimate is described in GMR-1 05.008 [5].

In order to achieve optimal acquisition time, the MES should maintain a current GPS almanac. Therefore, the MES should also download the updated almanac from the spare TMSIs on the PCH.

After acquiring the required information, the MES determines its position based on conventional GPS measurement.

For time estimate error within 10 msec and position estimate within 700 kilometers, the GPS fix accuracy from fast acquisition shall be within 187 meters.

6.2 Idle mode Operations

Idle mode operations are described in GMR-1 03.022 [3].

6.3 Call set-up

The MES shall send position information in the CHANNEL REQUEST message. When setting up a dedicated connection, the MES shall attempt to obtain a current GPS position before sending the first CHANNEL REQUEST. A GPS position is current if it was measured more recently than the current time minus the GPS Position Age value broadcast in the system information. See GMR-1 04.008 [4] for details.

If the GPS position available is not current, the MES shall start RACH position timer T3118 and shall perform a new GPS fix. If a new GPS fix is obtained before the timer expires, the timer shall be stopped and a new fix shall be sent with the CHANNEL REQUEST. If the timer expires, the CHANNEL REQUEST shall be sent with the last available position, if any, or with no position. See GMR-1 04.008 [4] for details.

6.3.1 Mobile-terminated call

The following modifications to the foregoing shall apply when responding to a PAGING REQUEST or ALERTING REQUEST.

The system information value Page GPS Position Age shall be used instead of GPS POSITION AGE to determine whether a GPS position is current. See GMR-1 04.008 [4] for details.

If system information flag Page Response Current GPS is set to 1, the MES shall use the page timer T3114 (for an MES responding to PAGING REQUEST) or the alert timer T3112 (for an MES responding to ALERTING REQUEST) in place of T3118. See GMR-1 04.008 [4] for details.

6.3.2 Position verification

If the establishment cause is position verification, the concept of current position does not apply. The MES shall measure its position immediately before sending a CHANNEL REQUEST message with an establishment cause of position verification and shall not send the message if it is unable to measure its position.

6.4 Dedicated mode position reporting

Dedicated mode position reporting is a procedure performed by VTs during dedicated connections. All requirements in this clause shall be interpreted within the context of a single dedicated connection.

6.4.1 Requirement to report

The GS shall specify in the IMMEDIATE ASSIGNMENT message whether dedicated mode position reporting is required. The VT shall perform the dedicated mode position reporting procedure if and only if the Position Update Information (IE) is present. If the extended channel request procedure is used, the GS shall use the EXTENDED IMMEDIATE ASSIGNMENT message instead. Nonvehicular MESs shall not perform dedicated mode position reporting even if directed to do so by the GS.

An MES can potentially become a VT or cease being a VT during a call through the classmark change procedure. The measuring and reporting requirements in this clause shall apply whenever the MES is vehicular. Position Update Information received from the GS while the MES is not vehicular shall apply if the MES subsequently becomes vehicular.

Dedicated mode position reporting shall not apply to dedicated connections with an establishment cause of Location Update.

VTs should not measure and shall not report their position while connected to a single hop during a TtT call, but the VTs shall resume doing so upon subsequent reversion to TtG mode.

6.4.2 Update timer and distance

The VT shall measure its GPS position whenever more than GPS Update Timer time has elapsed since it last measured its position. If the VT did not report any position in its CHANNEL REQUEST, it shall measure its GPS position immediately. If the VT is unable to measure its position, it shall try again, trying no less than every 2 minutes until it succeeds. The VT should not measure and shall not report its position if the value of GPS Update Timer is 0.

If a newly measured GPS position differs from the VT's last reported position by more than the GPS Update Distance, the VT shall send its new GPS position to the GS. If the VT did not report any position in its CHANNEL REQUEST, it shall send its first measured GPS position to the GS. The VT should not measure and shall not report its position if the value of GPS Update Distance is 0. See GMR-1 04.008 [4] for details.

6.4.3 Reporting procedure

The VT shall report its GPS position using the POSITION UPDATE REQUEST message and shall then start timer T3117. The GS shall reply to the POSITION UPDATE REQUEST message with a POSITION UPDATE ACCEPT message. When the MES receives the POSITION UPDATE ACCEPT message, the MES shall stop the timer T3117 and mark the most recently transmitted position as the last reported position. Further evaluations of the distance moved by the MES shall be based on this last reported position.

If T3117 expires before the receipt of the POSITION UPDATE ACCEPT message, the VT shall resend the POSITION UPDATE REQUEST message and restart T3117. If the current GPS position has been updated, due to another expiry of the GPS UPDATE TIMER or any other cause, the newest position shall be reported to the GS. Note that the VT shall report even if the newest position is within GPS Update Distance of the last reported position.

The GS may update the Position Update Information in the POSITION UPDATE ACCEPT message. The new values of GPS Update Timer and GPS Update Distance shall override the current values.

If the GS intends to disconnect the call based on the reported position, the GS should set the I bit of the Disconnect Indication IE to 1. If the I bit is set, the VT shall warn the user that the VT is in an unauthorized position and therefore the call will soon be cleared. See GMR-1 04.008 [4] for details.

7 Availability of position-based services

GMR-1 systems can be operated without the GPS. The GS shall specify one of four different GPS modes in the SI parameter, POSITION REPORTING REQUIRED.

- Required - MESs shall measure and report GPS positions according to the requirements and procedures in this and other GMR-1 specifications.
- Optional - The MES should report its most recent position when sending a CHANNEL REQUEST or EXTENDED CHANNEL REQUEST message unless, in the judgment of the implementer, it is likely to be misleading. The MES may disregard or only partially adhere to requirements concerning whether, when, and how often it shall measure its GPS position. An MES that reports its position shall follow all requirements concerning the method of reporting and the accuracy of the information. The MES shall adhere to all requirements for dedicated mode position reporting.
- No reporting - The MES shall not report its GPS position to the GS.
- GPS forbidden - The MES shall not use GPS position for any network-related purpose. The MES may consider the GPS satellites to be an unreliable source of information for any purpose.

NOTE: The GPS requirements presented elsewhere in the present document and in other GMR-1 specifications assume that reporting is required unless specifically stated otherwise. The requirements in this clause shall take precedence over those requirements when reporting is Optional, No Reporting, or GPS Forbidden.

When for any reason the MES does not report a position to the GS in the CHANNEL REQEST and EXTENDED CHANNEL REQUEST messages, the GS may assign a nominal position for the MES based upon the spot beam accessed. The GS may adjust this position to reflect other technical data available to it, such as the properties of the received signal. The GS may also substitute a nominal position for the reported position when the spot beam accessed and other available technical data indicate that the nominal position is more representative of the actual position.

The GS may use the nominal position of the MES to provide position-based services. See GMR-1 04.008 [4] for details.

History

Document history		
V1.1.1	March 2001	Publication