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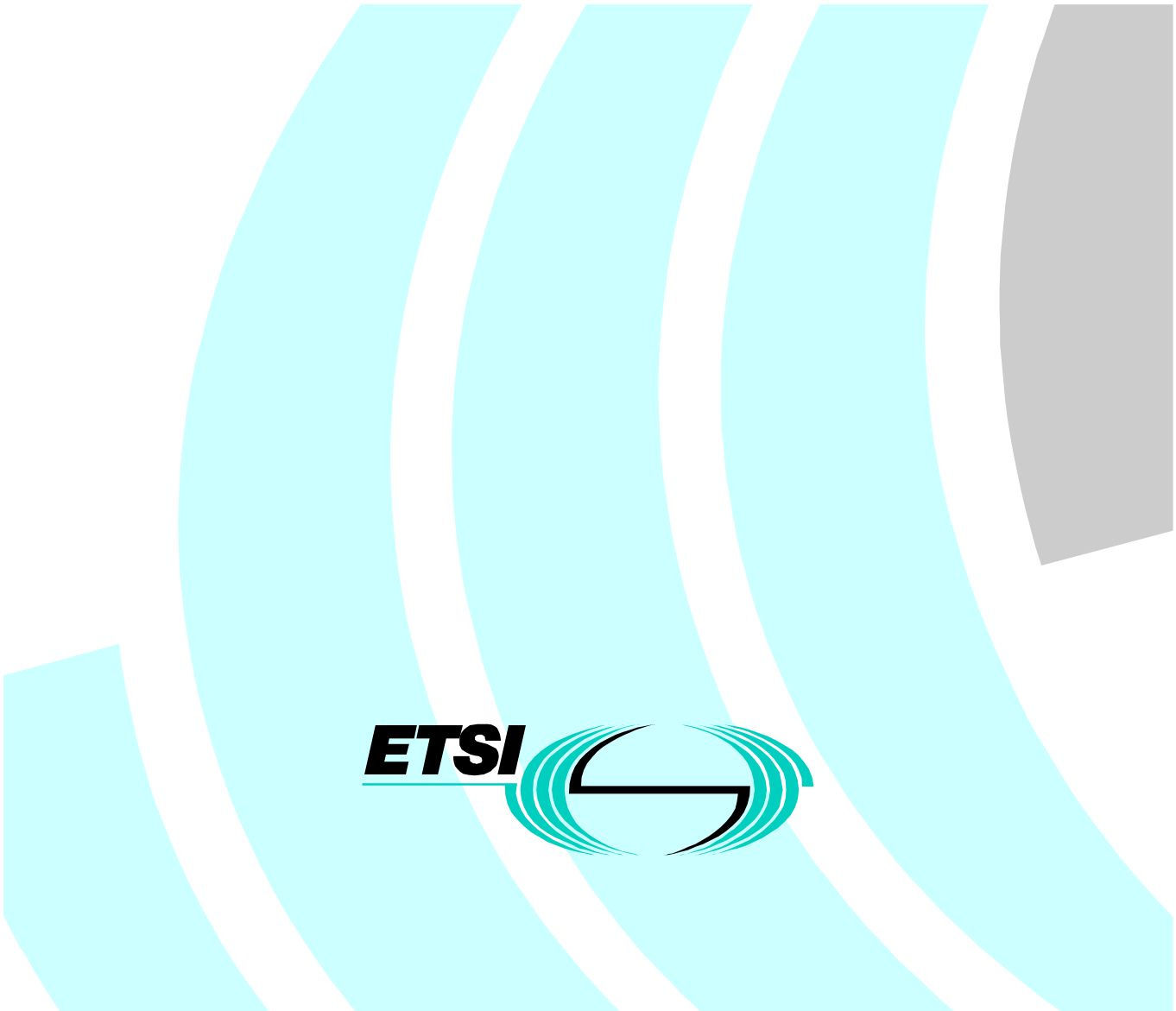
Technical Specification

GEO-Mobile Radio Interface Specifications;
Part 4: Radio interface protocol specifications;
Sub-part 2: GMR-2 Mobile Earth Station-Network Interface;
Channel Structures and Access capabilities
GMR-2 04.003



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IPRs:

Project	Company	Title	Country of Origin	Patent n°	Countries Applicable
TS 101 377 V1.1.1	Digital Voice Systems Inc		US	US 5,715,365	US
TS 101 377 V1.1.1	Digital Voice Systems Inc		US	US 5,754,974	US
TS 101 377 V1.1.1	Digital Voice Systems Inc		US	US 5,226,084	US
TS 101 377 V1.1.1	Digital Voice Systems Inc		US	US 5,701,390	US
TS 101 377 V1.1.1	Digital Voice Systems Inc		US	US 5,826,222	US

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Project	Company	Title	Country of Origin	Patent n°	Countries Applicable
TS 101 377 V1.1.1	Ericsson Mobile Communication	Improvements in, or in relation to, equalisers	GB	GB 2 215 567	GB
TS 101 377 V1.1.1	Ericsson Mobile Communication	Power Booster	GB	GB 2 251 768	GB
TS 101 377 V1.1.1	Ericsson Mobile Communication	Receiver Gain	GB	GB 2 233 846	GB
TS 101 377 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 101 377 V1.1.1	Hughes Network Systems		US	Pending	US

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Project	Company	Title	Country of Origin	Patent n°	Countries Applicable
TS 101 377 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 101 377 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 101 377 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 101 377 V1.1.1	Lockheed Martin Global Telecommunic. Inc	Spacecraft Cellular Communication System	US	US 5,974,314	US
TS 101 377 V1.1.1	Lockheed Martin Global Telecommunic. Inc	Spacecraft Cellular Communication System	US	US 5,974,315	US
TS 101 377 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 101 377 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 4, sub-part 2 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";

Sub-part 1: "GMR-2 Mobile Earth Station-Network Interface; General Aspects and Principles; GMR-2 04.001";

Sub-part 2: "GMR-2 Mobile Earth Station-Network Interface; Channel Structures and Access capabilities; GMR-2 04.003";

Sub-part 3: "Layer 1 General requirements; GMR-2 04.004";

Sub-part 4: "Data Link Layer General Aspects; GMR-2 04.005";

Sub-part 5: "GMR-2 Mobile Earth Station - Network Interface; Data Link (DL) layer Specifications; GMR-2 04.006";

Sub-part 6: "Mobile Radio Interface Signalling Layer 3; General Aspects; GMR-2 04.007";

Sub-part 7: "Mobile radio interface Layer 3 Specifications; GMR-2 04.008";

Sub-part 8: "Point-to-Point Short Message Services; GMR-2 04.011";

Sub-part 9: "Performance requirements on the mobile radio interface; GMR-2 04.013";

Sub-part 10: "Rate Adaptation on the Mobile Earth Station (MES) - Gateway System Interface; GMR-2 04.021";

Sub-part 11: "Call Waiting (CW) and Call Holding (HOLD) Supplementary Services; GMR-2 04.083";

Sub-part 12: "Multiparty Supplementary Services (MPTY); GMR-2 04.084";

Sub-part 13: "Technical Realisation of the Early Flag Technique; GMR-2 04.201";

Sub-part 14: "Call Barring Supplementary Services; GMR-2 02.088";

Part 5: "Radio interface physical layer specifications";

Part 6: "Speech coding specifications".

Introduction

GMR stands for GEO (Geostationary Earth Orbit) Mobile Radio interface, which is used for mobile satellite services (MSS) utilising 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 are defined in GMR-n 01.201.

1 Scope

The present document defines the technical specification for limited sets of channel types, access capabilities and channel configurations at the mobile earth station (MES) to the GMR-2 network radio interface.

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-2 01.004 (ETSI TS 101 377-1-1): "GEO-Mobile Radio Interface Specifications; Part 1: General specifications; Sub-part 1: Abbreviations and Acronyms; GMR-2 01.004".

[2] GMR-2 04.001 (ETSI TS 101 377-4-1): "GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 1: GMR-2 Mobile Earth Station-Network Interface; General Aspects and Principles; GMR-2 04.001".

[3] GSM 04.02 (ETSI ETS 300 551): "European digital cellular telecommunications system (Phase 2); GSM Public Land Mobile Network (PLMN) access reference configuration (GSM 04.02 version 4.0.4)".

[4] GMR-2 04.004 (ETSI TS 101 377-4-3): "GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 3: Layer 1 General requirements; GMR-2 04.004".

[5] GMR-2 04.005 (ETSI TS 101 377-4-4): "GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 4: Data Link Layer General Aspects; GMR-2 04.005".

[6] GMR-2 04.006 (ETSI TS 101 377-4-5): "GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 5: GMR-2 Mobile Earth Station - Network Interface; Data Link (DL) layer Specifications; GMR-2 04.006".

[7] GMR-2 04.007 (ETSI TS 101 377-4-6): "GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 6: Mobile Radio Interface Signalling Layer 3; General Aspects; GMR-2 04.007".

[8] GMR-2 04.008 (ETSI TS 101 377-4-7): "GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 7: Mobile radio interface Layer 3 Specifications; GMR-2 04.008".

[9] GSM 04.10 (ETSI ETS 300 558 Edition 2): "Digital cellular telecommunications system (Phase 2); Mobile radio interface layer 3; Supplementary services specification; General aspects (GSM 04.10 version 4.10.0)".

[10] GSM 04.11 (ETSI ETS 300 559 Edition 4): "Digital cellular telecommunications system (Phase 2); Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface (GSM 04.11 version 4.10.0)".

[11] GSM 04.12 (ETSI ETS 300 560 Edition 3): "Digital cellular telecommunications system (Phase 2); Short Message Service Cell Broadcast (SMSCB) support on the mobile radio interface (GSM 04.12 version 4.6.0)".

[12] GSM 04.13 (ETSI ETS 300 561 Edition 3): "Digital cellular telecommunications system (Phase 2); Performance requirements on the mobile radio interface (GSM 04.13 version 4.2.0)".

[13] GMR-2 04.021 (ETSI TS 101 377-4-10): "GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 10: Rate Adaptation on the Mobile earth Station (MES)- Gateway System Interface.; GMR-2 04.021".

[14] GSM 04.80 (ETS 300 564 Edition 3): "Digital cellular telecommunications system (Phase 2); Mobile radio interface layer 3; Supplementary services specification; Formats and coding (GSM 04.80 version 4.11.1)".

[15] GSM 04.81 (ETSI ETS 300 565): "European digital cellular telecommunications system (Phase 2); Line identification supplementary services; Stage 3 (GSM 04.81 version 4.4.1)".

[16] GSM 04.82 (ETSI ETS 300 566 Edition 2): "Digital cellular telecommunications system (Phase 2); Call Forwarding (CF) supplementary services; Stage 3 (GSM 04.82 version 4.9.1)".

[17] GSM 04.83 (ETSI ETS 300 567 Edition 2): "Digital cellular telecommunications system (Phase 2); Call Waiting (CW) and Call Hold (HOLD) supplementary services; Stage 3 (GSM 04.83 version 4.6.1)".

[18] GSM 04.84 (ETSI ETS 300 568): "European digital cellular telecommunications system (Phase 2); Multi Party (MPTY) supplementary services; Stage 3 (GSM 04.84 version 4.3.2)".

[19] GSM 04.85 (ETSI ETS 300 569): "Digital cellular telecommunications system (Phase 2); Closed User Group (CUG) supplementary services; Stage 3 (GSM 04.85 version 4.1.1)".

[20] GSM 04.86 (ETSI ETS 300 570): "European digital cellular telecommunications system (Phase 2); Advice of Charge (AoC) supplementary services; Stage 3 (GSM 04.86 version 4.5.2)".

[21] GSM 04.88 (ETSI ETS 300 571 Edition 2): "Digital cellular telecommunications system (Phase 2); Call Barring (CB) supplementary services; Stage 3 (GSM 04.88 version 4.7.1)".

[22] GSM 04.90 (ETSI ETS 300 572): "European digital cellular telecommunications system (Phase 2); Unstructured Supplementary Service Data (USSD); Stage 3 (GSM 04.90 version 4.1.1)".

[23] GMR-2 05.001 (ETSI TS 101 377-5-1): "GEO-Mobile Radio Interface Specifications; Part 5: Radio interface physical layer specifications; Sub-part 1: Physical Layer on the Radio Path; GMR-2 05.001".

[24] GMR-2 05.002 (ETSI TS 101 377-5-2): "GEO-Mobile Radio Interface Specifications; Part 5: Radio interface physical layer specifications; Sub-part 2: Multiplexing and Multiple Access on the Radio Path; GMR-2 05.002".

[25] GMR-2 05.003 (ETSI TS 101 377-5-3): "GEO-Mobile Radio Interface Specifications; Part 5: Radio interface physical layer specifications; Sub-part 3: Channel Coding; GMR-2 05.003".

[26] GMR-2 05.004 (ETSI TS 101 377-5-4): "GEO-Mobile Radio Interface Specifications; Part 5: Radio interface physical layer specifications; Sub-part 4: Modulation; GMR-2 05.004".

[27] GMR-2 05.005 (ETSI TS 101 377-5-5): "GEO-Mobile Radio Interface Specifications; Part 5: Radio interface physical layer specifications; Sub-part 5: Radio Transmission and Reception; GMR-2 05.005".

[28] GMR-2 05.008 (ETSI TS 101 377-5-6): "GEO-Mobile Radio Interface Specifications; Part 5: Radio interface physical layer specifications; Sub-part 6: Radio Subsystem Link Control; GMR-2 05.008".

[29] GMR-2 05.010 (ETSI TS 101 377-5-7): "GEO-Mobile Radio Interface Specifications; Part 5: Radio interface physical layer specifications; Sub-part 7: Radio Subsystem Synchronization; GMR-2 05.010".

[30] GSM 05.90 (ETSI ETR 108 Am1): "European digital cellular telecommunications system (Phase 2); GSM Electro Magnetic Compatibility (EMC) considerations (GSM 05.90 version 4.3.0)".

[31] GSM 06.02 (ETSI ETS 300 581-1): "European digital cellular telecommunications system; Half rate speech; Part 1: Half rate speech processing functions (GSM 06.02 version 4.0.2)".

[32] GMR-2 06.001 (ETSI TS 101 377-6-1): "GEO-Mobile Radio Interface Specifications; Part 6: Speech coding specifications; Sub-part 1: Basic Rate Speech; Basic Rate Speech Processing Functions; GMR-2 06.001".

[33] GSM 06.20 (V4.3.1) (ETSI ETS 300 581-2 Edition 2): "Digital cellular telecommunications system (Phase 2); Half rate speech; Part 2: Half rate speech transcoding (GSM 06.20 version 4.3.1)".

[34] GSM 06.21 (ETSI ETS 300 581-3): "European digital cellular telecommunications system; Half rate speech; Part 3: Substitution and muting of lost frames for half rate speech traffic channels (GSM 06.21 version 4.0.2)".

[35] GSM 06.22 (ETSI ETS 300 581-4): "European digital cellular telecommunications system; Half rate speech; Part 4: Comfort noise aspects for the half rate speech traffic channels (GSM 06.22 version 4.1.1)".

[36] GSM 06.41 (ETSI ETS 300 581-5): "European digital cellular telecommunications system; Half rate speech; Part 5: Discontinuous Transmission (DTX) for half rate speech traffic channels (GSM 06.41 version 4.0.2)".

[37] GMR-2 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); GMR-1 06.031".

[38] GSM 06.42 (ETSI ETS 300 581-6): "European digital cellular telecommunications system; Half rate speech; Part 6: Voice Activity Detector (VAD) for half rate speech traffic channels (GSM 06.42 version 4.1.1)".

3 Abbreviations

Abbreviations used in the present document are listed in GMR-2 01.004 [1].

4 General definitions

A channel represents a specified portion of the information-carrying capacity of an interface.

Channels are classified by channel types, which have common characteristics. Channel types appearing on the radio interface are specified in clauses 5 and 6.

At a given time, the complete interface between the network and the set of mobile earth stations (MESs) corresponds to some interface structure. The interface structure may change in time. The number of possible different such interface structures can be large. The network access capability is a description of all the possible interface structures of the network. Network access capabilities are specified in clause 7.

At a given moment, the channel configuration of a mobile earth station is the interface structure this user terminal actually uses to transmit information or receive information to/from the network. The channel configuration may change in time. A limited number of channel configurations are identified, and specified in clause 8.

5 Channel types and their use: traffic channels and user channels

5.1 User channels

User channels (also referred to as traffic channels) are intended to carry a wide variety of user information streams. A distinguishing characteristic is that user channels do not carry signalling information for connection management (CM), mobility management (MM) or radio resource (RR) management. This signalling information is carried over other types of channels, namely the control channels.

User channels may be used to provide access to the PLMN and the networks it permits access to.

Different types of user channels are distinguished by their rates.

5.2 Bm channel

A Bm channel is a user channel able to carry a 9,6 kbit/s rate bit stream with an error structure and a transmission delay compatible with some grade of service, intended to carry data or fax according to technical specifications in GMR-2 06-series.

User information streams are carried on the Bm channel on a dedicated or simultaneous basis, consistent with the Bm channel carrying capability. The following is an sample of a user information stream: data information corresponding to circuit switching user classes of services at bit rates compatible with the channel capability.

A Bm channel uses the radio resources referred to as S-TCH/F9.6 (full rate traffic channel). Traffic channels (TCH) are fixed physical gross rate channels, accompanied with timing (see GMR-2 05.002 [24]).

5.3 Lm channels

An Lm channel is a user channel with a carrying capability lower than a Bm channel. A Lm channel is a user channel able to carry:

a) A bit stream at varying rates with error structures and transmission delays compatible with grades of encoded voice service, (see GMR-2 06-series);

b) A bit stream at varying rates with an error structure and a transmission delay adapted to a wider range of services, including fax and data transmission;

c) Other kinds of bit streams adapted to a wider range of services (for further study).

User information streams are carried on an Lm channel on a dedicated or simultaneous basis, consistent with the S-TCH/H channel or lesser carrying capability.

The following are samples of user information streams:

1) voice encoded speech according to the methods specified in GMR-2 05-series;

2) data information corresponding to circuit switching user classes of services at bit rates compatible with the channel capability.

An Lm channel uses the radio resources referred to as S-TCH/H, S-TCH/Q or S-TCH/E. Traffic channels are fixed physical gross rate channels, accompanied with timing (see GMR-2 05.002 [24]).

NOTE: There are multiple versions of the S-TCH/H, S-TCH/Q and TCH/E channels which differ in content (voice or data) and coding (see GMR-2 05-series).

6 Channel types and their use: control channels

Control channels are used to provide all active mobile earth stations with a continuous frame oriented means of communication across the MES - network interface.

A mobile earth station channel configuration contains one or more control channels. These control channels may change in time, with the channel configuration. Access management signalling functions are used to insure the continuity when a change in the control channels occurs.

Control channels are classified by control channel types, which have common characteristics. These control channel types are specified in clause 6.1.

The control channels are primarily intended to carry signalling information for connection management (CM), mobility management (MM) and radio resource (RR) management.

In addition to signalling information, as an option, control channels may also be used to carry other data, including those relating to short message services.

NOTE: The term "Dm channel" may be used to refer to the controls channels used by a mobile earth station at a given moment, independent of their type.

6.1 Control channel types

6.1.1 Broadcast control channel types

Broadcast control channels are point-to-multipoint unidirectional control channels, from the gateway to the mobile earth stations. They are intended to broadcast to MESs a variety of network information unique to a specific L-band spotbeam.

There are three different types of control channels which comprise broadcast control channels:

a) The high margin synchronization channel (S-HMSCH) provides time and frequency synchronization and spotbeam identification.

b) The synchronization channel (S-SCH) contains information identifying the frame count.

c) The broadcast control channel (S-BCCH) and high margin BCCH (S-HBCCH) contain information necessary for a MES to register in the system.

A broadcast control channel uses a protocol specified in technical specifications in GMR-2 04-series (and GSM 04-series as required).

6.1.2 Common control channel

A common control channel (S-CCCH) is a point-to-multipoint bi-directional control channel.

A common control channel is primarily intended to carry signalling information necessary for access management functions (e.g., allocation of dedicated channels). Common control channels can be used for other signalling purposes.

A common control channel uses a layered protocol according to technical specifications in GMR-2 04-series (and GSM 04-series as required). In particular the multipoint-to-point management is achieved through random access techniques.

The following control channel types are classified as S-CCCHs. These terms will be used when the context requires it:

a) The S-RACH (random access channel) is the uplink (MES to network) part of the S-CCCH.

b) The S-AGCH (access grant channel) is the part of the downlink (network to MES) part of the S-CCCH reserved for assignment messages.

c) The S-PCH (paging channel) and S-HPACH (high powering alerting channel) are the remaining parts.

6.1.3 Dedicated Control Channel

A dedicated control channel (DCCH) is a point-to-point bi-directional control channel.

Dedicated control channels exist with a variety of bit rates.

Dedicated control channels are further classified as follows according to some technical particularities:

a) An S-SDCCH (stand-alone DCCH) is a dedicated control channel whose allocation is not linked to the allocation of a TCH.

b) An S-FACCH (fast associated DCCH) is a dedicated control channel obtained by preemptive dynamic multiplexing on a S-TCH/F, S-TCH/H, S-TCH/Q or S-TCH/E channel. The allocation of an S-FACCH is obviously linked to the allocation of a TCH.

c) An S-SACCH (slow associated DCCH) is a dedicated control channel with an S-TCH/F or S-TCH/H; an S-TCH/Q; or an S-TCH/E or S-SDCCH/E, respectively. An independent S-SACCH is always allocated together with an S-TCH or an S-SDCCH.

The terms Bm, or Bm + ACCHs can be used to refer to a Bm channel together with the corresponding S-FACCH and the co-allocated S-SACCH when the context avoids any ambiguities. Similar remarks apply to the terms Lm, Lm + ACCHs, Lm + Lm, Lm + Lm + ACCHs. The term S-SDCCH can be used to refer specifically to an S-SDCCH together with the co-allocated S-SACCH when the context avoids any ambiguities.

NOTE: TCH/F is sometimes used to designate Bm associated with its control channel (S-FACCH and S-SACCH). TCH/H, TCH/Q or TCH/E is sometimes used to designate Lm associated with its control channel (S-FACCH and S-SACCH).

The S-DCCHs use a layered protocol according to technical specifications in GMR-2 04 and 05-series (and GSM 04 and 05-series, as required).

7 Access capability

The network access capability is the total number and mix of logical channels that can be supported simultaneously by one L-band spotbeam interfacing with all the MESs in that spotbeam. It is composed of:

a) one broadcast control channel containing S-SCH, S-HMSCH, S-BCCH and S-HBCCH;

b) one or two common control channel(s) containing S-RACH, S-AGCH, S-PCH and S-HPACH physically related to the S-BCCH; and

c) global resource (network signalling and traffic channels allocated to this spotbeam).

The exact use of the global resource may vary in time.

8 Channel configurations

At a given moment, a mobile earth station accesses only a limited number of the channels appearing on its radio interface. Different compositions for the accessed channel set are identified, and specified below.

Different channel configurations are:

a) S- BCCH or S-HBCCH;

b) S-CCCH (i.e., S-RACH, S-AGCH, S-HPACH and S-PCH);

c) S-CCCH + S-BCCH;

d) S-SDCCH +S-SACCH;

e) Bm + S-FACCH + S-SACCH;

f) Lm + S-FACCH + S-SACCH;

Configuration a) is normally used only in the phase when the physical connection is not set (i.e., just after switch-on, or after a too long interruption of the physical connection due to poor propagation conditions).

Configurations b) or c) are used by an active but idle MES in an advantaged environment.

Configurations d) is used in phases when only a dedicated control channel is needed.

Configurations e) and f) are used in particular when a circuit-switched communication is in progress.

8.1 Mandatory capabilities

The following access capabilities are mandatory for all MESs:

a) All MESs shall support the S-SCH, S-HMSCH, S-HBCCH, and S-BCCH;

b) All MESs shall support the S-RACH, S-AGCH, S-PCH and S-HPACH;

c) All MESs shall support the S-SDCCH.

History

Document history		
V1.1.1	March 2001	Publication