

# ETSI TS 100 588 V8.0.0 (2000-06)

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*Technical Specification*

**Digital cellular telecommunications system (Phase 2+);  
Base Station System - Mobile-services Switching Centre  
(BSS - MSC) interface  
Layer 1 specification  
(GSM 08.04 version 8.0.0 Release 1999)**

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**GSM**®  
GLOBAL SYSTEM FOR  
MOBILE COMMUNICATIONS



Reference

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## Foreword

This Technical Specification (TS) has been produced by the Special Mobile Group (SMG).

The present document defines the layer 1 specification for the Base Station System (BSS) to Mobile-services Switching Centre (MSC) interface within the digital cellular telecommunications system.

The contents of the present document is subject to continuing work within SMG and may change following formal SMG approval. Should SMG modify the contents of the present document, it will be re-released by SMG with an identifying change of release date and an increase in version number as follows:

Version 8.x.y

where:

- 8 indicates GSM Phase 2+ Release 1999;
- x the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.;
- y the third digit is incremented when editorial only changes have been incorporated in the specification.

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# 1 Scope

The present document defines the structure of the physical layer (layer 1) of the BSS-MSC interface for supporting traffic channels. Use of the physical layer for supporting Signalling System No.7 signalling links is covered in Technical Specification GSM 08.06.

The physical layer is the lowest layer in the OSI Reference Model and it supports all functions required for transmission of bit streams on the physical medium.

For the present document only digital transmission will be considered, the use of analogue transmission is a national concern.

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# 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, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.
- For this Release 1999 document, references to GSM documents are for Release 1999 versions (version 8.x.y).

- [1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".
- [2] CCITT Recommendation G.705: "Characteristics required to terminate digital links on a digital exchange".
- [3] CCITT Recommendation G.709: "Synchronous multiplexing structure".
- [4] CCITT Recommendation G.711: "Pulse code modulation (PCM) of voice frequencies".
- [5] CCITT Recommendation G.732: "Characteristics of primary PCM multiplex equipment operating at 2 048 kbit/s".
- [6] GSM 08.06: "Digital cellular telecommunications system (Phase 2); Signalling transport mechanism specification for the Base Station System - Mobile-services Switching Centre (BSS - MSC) interface".
- [7] ANSI T1.102-1993: "Digital Hierarchy Electrical Interface".
- [8] ANSI T1.403-1995: "Carrier to Customer installation, DS1 metallic interface".
- [9] ANSI T1.107-1995: "Digital Hierarchy Format specification".

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# 3 Definitions and abbreviations

Abbreviations used in the present document are listed in GSM 01.04.

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## 4 Layer 1 Specification

All CCITT recommendations referred to are Blue Book.

Layer 1 shall utilise digital transmission:

- at a rate of 2048 kbit/sec with a frame structure of 32 \* 64kbit/sec time slots, as specified in CCITT Recommendation G.705 section 3 for E1 interface; or
- at a rate of 1544kbit/sec with a frame structure of 24\*64 kbit/s time slots, as specified in T1.102 specification for T1 interface.

Therefore the physical/electrical characteristics are defined in CCITT Recommendation G.703 for E1 interface or ANSI T1.403 specification T1 interface.

The functional characteristics are defined in CCITT Recommendation G.732 section 2 and 3 for E1 interface or ANSI T1.10 specification for T1 interface.

Fault conditions should be treated in accordance with CCITT Recommendation G.732 section 4 for E1 interface or ANSI T1.403 specification for T1 interface.

Speech encoding shall be the A-law or Mu-law (for North America) as defined in CCITT Recommendation G.711.

The idle pattern must be transmitted on every timeslot that is not assigned to a channel, and to every timeslot of a channel that is not allocated to a call. The idle pattern shall be 01010100 in CCITT based systems and 01111111 in ANSI based systems.

Synchronisation at the BSS for the transmitted 2048/1544 kbit/sec bit stream shall be derived from the received 2 048/1 544 kbit/s bit stream.

Data encoding is covered in Technical Specification GSM 08.20.

NOTE: A predetermined number of the 56/64kbit/s time slots may be used for signalling, to one or more base station systems. 56kbit/s is applicable to T1 interface only.

## Annex A (informative): Change History

<b>Document history</b>	
September 1994	First Edition
November 1995	Converted into Adobe Acrobat Portable Document Format (PDF)
November 1996	Creation of version 5.0.0 (Conversion to a new GTS)
February 1998	Inclusion of Harmonisation CR 08.04 A001
March 2000	Release 1999

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# History

<b>Document history</b>		
V8.0.0	June 2000	Publication