

TS 101 298 V6.0.0 (1998-07)

Technical Specification

**Digital cellular telecommunications system (Phase 2+);
General Packet Radio Service (GPRS);
Base Station System (BSS) - Serving GPRS Support Node
(SGSN) interface; Gb interface Layer 1
(GSM 08.14 version 6.0.0 Release 1997)**

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) of the European Telecommunications Standards Institute (ETSI).

This ETSI Technical Specification (TS) specifies the physical layer on the Base Station System (BSS) to Serving GPRS Support Node (SGSN) interface (Gb interface) and references layer 1 within the digital cellular telecommunications system.

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

Version 6.x.y

where:

- 6 indicates GSM Phase 2+ Release 1997;
- x the second digit is incremented for all other types of changes, i.e. technical enhancements, corrections, updates, etc.;
- y the third digit is incremented when editorial only changes have been incorporated in the specification.

1 Scope

This ETSI Technical Specification (TS) specifies the physical layer on the Base Station System (BSS) to Serving GPRS Support Node (SGSN) interface (Gb interface) and references layer 1 standards to be used on this interface.

The protocol stack on the Gb interface is defined in the stage 2 GSM 03.60 [3].

2 References

References may be made to:

- a) specific versions of publications (identified by date of publication, edition number, version number, etc.), in which case, subsequent revisions to the referenced document do not apply; or
- b) all versions up to and including the identified version (identified by “up to and including” before the version identity); or
- c) all versions subsequent to and including the identified version (identified by “onwards” following the version identity); or
- d) publications without mention of a specific version, in which case 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.

- [1] GSM 01.04: “Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms”.
 - [2] GSM 02.60: “Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Service description; Stage 1”.
 - [3] GSM 03.60: “Digital cellular telecommunications system (Phase 2+); Stage 2 Service Description of the General Packet Radio Service (GPRS)”.
 - [4] GSM 08.04: “ Digital cellular telecommunications system (Phase 2); Base Station System - Mobile-services Switching Centre (BSS - MSC) interface Layer 1 specification”.
 - [5] FRF 1.1 (January 19, 1996): “The Frame Relay Forum User-to-Network Implementation Agreement (UNI)”.
 - [6] CCITT Recommendation G.704 (Blue Book): “Synchronous frame structures used at 1544, 6312, 2048, 8488 and 44 736 kbit/s hierarchical levels”.
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3 Definitions, symbols and abbreviations

3.1 Definitions

Refer to GSM 02.60 [2].

3.2 Symbols

Refer to GSM 03.60 [3].

3.3 Abbreviations

For the purposes of this specification the following abbreviations apply. Additional applicable abbreviations can be found in GSM 01.04 [1] and GSM 03.60 [3].

DCE	Data Circuit-terminating Equipment
DTE	Data Terminal Equipment
FRF	Frame Relay Forum

4 Layer 1 specification

Since Frame Relay shall be used on the Gb interface for phase 1 of GPRS, see TS GSM 03.60 [3], this version of this Technical Specification refers to “The Frame Relay Forum User-to-Network Implementation Agreement (UNI)” [5] which recommends physical layer interfaces to be used in conjunction with Frame Relay.

4.1 Physical configuration of the Gb interface

The detailed physical configuration of the Gb interface is subject to negotiation between operators and equipment providers and is out of the scope of this Technical Specification.

For example, point-to-point physical lines or an intermediate Frame Relay network may be used. In the latter case, the two ends of the Gb interface may use different types of physical interfaces.

4.2 Physical layer interface

Each of the physical layer of the Gb interface shall conform to one of the following FRF 1.1 [5] clauses. This does not mean that each BSS and SGSN equipment has to support all of these physical interfaces, it means that the supported physical interfaces shall be compliant with the corresponding clause of FRF 1.1 [5].

- a) clause 2.1.1: ANSI T1.403.
- b) clause 2.1.2: V.35, physical circuit and DTE/DCE interface clauses.
- c) clause 2.1.3: G.703.
- d) clause 2.1.4: G.704.
- e) clause 2.1.5: X.21.
- f) clause 2.1.6: ANSI-530-A-1992.
- g) clause 2.1.7: HSSI.

The Gb interface may be multiplexed with the A interface on the same 2048 kbit/s digital path. In this case, CCITT Recommendation G.704 [6] shall be applied according to FRF 1.1 [5] and GSM 08.04 [4] as appropriate.

In the case where multiple 64 kbit/s channels are used on a 2048 kbit/s digital path on the Gb interface, it is recommended to aggregate them into one nx64 kbit/s channel, see CCITT Recommendation G.704 [6], clause 5 and included sub-clauses. This approach optimises the use of the available bandwidth by taking advantage of the statistical multiplexing at the upper layer. However, this approach requires that no slipping occurs between individual 64 kbit/s channels e.g. when passing through intermediate equipments between BSS and SGSN.

4.3 Error rate

The error rate experienced at the physical layer between the BSS and the SGSN shall be compatible with the operation of the upper layers.

4.4 Provision of physical channels

The physical channels on the Gb interface shall be permanently reserved by means of administrative procedures.

Annex A (informative): Document change history

SPEC	SMG#	CR	PHASE	VERS	NEW_VERSIONS	SUBJECT
08.14	s24	new	R97	2.0.0	6.0.0	Gb interface Layer 1

History

Document history		
V6.0.0	July 1998	Publication