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ETSI

European Telecommunications Standards Institute

ETSI Secretariat

Postal address: F-06921 Sophia Antipolis CEDEX - FRANCE
Office address: 650 Route des Lucioles - Sophia Antipolis - Valbonne - FRANCE
X.400: c=fr, a=atlas, p=etsi, s=secretariat - **Internet:** secretariat@etsi.fr

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

Contents

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Foreword

This European Telecommunication Standard (ETS) has been produced by the Special Mobile Group (SMG) Technical Committee (TC) of the European Telecommunications Standards Institute (ETSI).

This ETS defines the layer 1 structure of physical circuits for the Base Station Controller (BSC) to Base Transceiver Station (BTS) interface. This ETS corresponds to GSM technical specification GSM 08.54 version 4.0.4.

The specification from which this ETS has been derived was originally based on CEPT documentation, hence the presentation of this ETS may not be entirely in accordance with the ETSI/PNE rules.

Reference is made within this ETS to GSM-TSs (NOTE).

NOTE: TC-SMG has produced documents which give the technical specifications for the implementation of the European digital cellular telecommunications system. Historically, these documents have been identified as GSM Technical Specifications (GSM-TSs). These TSs may have subsequently become I-ETSs (Phase 1), or ETSs (Phase 2), whilst others may become ETSI Technical Reports (ETRs). GSM-TSs are, for editorial reasons, still referred to in GSM ETSs.

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1 Scope

The use and general aspects of the A-bis interface are given in Technical Specification GSM 08.51.

This specification defines the structure of the physical layer (layer 1) of the BSC - BTS/TRX interface for supporting traffic channels and control channels. Use of the physical layer for supporting link protocol is covered in Technical Specification GSM 08.56.

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 this specification only digital transmission will be considered, the use of analogue transmission is a national concern.

2 Normative references

This ETS incorporates by dated and undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

[1] GSM 01.04 (ETR 100): "European digital cellular telecommunications system (Phase 2); Abbreviations and acronyms".

[2] GSM 08.20 (prETS 300 591): "European digital cellular telecommunications system (Phase 2); Rate adaption on the Base Station System - Mobile-services Switching Centre (BSS - MSC) interface".

[3] GSM 08.51 (prETS 300 592): "European digital cellular telecommunications system (Phase 2); Base Station Controller - Base Transceiver Station (BSC - BTS) interface General aspects".

[4] GSM 08.56 (prETS 300 595): "European digital cellular telecommunications system (Phase 2); Base Station Controller - Base Transceiver Station (BSC - BTS) interface Layer 2 specification".

[5] GSM 08.60 (prETS 300 597): "European digital cellular telecommunications system (Phase 2); Inband control of remote transcoders and rate adaptors".

[6] CCITT Recommendation G.703: "Physical/electrical characteristics of heirarchical digital interfaces".

[7] CCITT Recommendation G.705: "Characteristics required to terminate digital links on a digital exchange".

[8] CCITT Recommendation G.711: "Pulse code modulation (PCM) of voice frequencies".

[9] CCITT Recommendation G.732: "Characteristics of primary PCM multiplex equipment operating at 2048 kbit/s".

[10] CCITT Recommendation I.460: "Multiplexing, rate adaption and support of existing interfaces".

3 Definitions and abbreviations

Abbreviations used in this specification are listed in GSM 01.04

4 Layer 1 specification

All the CCITT recommendations referred to are Red Book.

Layer 1 shall utilize digital transmission at a rate of 2048 kbit/sec with a frame structure of 32 * 64 kbit/sec time slots, as specified in CCITT Recommendation G.705 section 3 or at a rate of 64 kbit/sec.

The physical/electrical characteristics are defined in CCITT Recommendation G.703.

Synchronization at the BTS/TRX for the transmitted bit stream toward the BSC shall be derived from the received bit stream from the BSC.

For transmission rate at 64 kbit/sec it shall be an interface as defined in CCITT Recommendation G.703.

For transmission rate at 2048 kbit/sec the functional characteristics are defined in CCITT Recommendation G.732 section 2 and 3, and fault conditions should be treated in accordance with CCITT Recommendation G.732 section 4.

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 for a 64 kbit/sec channel and the 2-bit pattern 01 for 16 kbit/sec channels.

If transcoders are located in BTS speech encoding shall be the A-law as defined in CCITT Recommendation G.711.

If speech transcoders are located in the BSC the speech, data and signalling channels will utilize either a transmission rate of 16 kbit/sec or 64 kbit/sec according to Technical Specification GSM 08.60. They shall be rate adapted or multiplexed according to CCITT Recommendation I.460 with fixed format, to fit into the physical interface.

Data encoding is covered in Technical Specification GSM 08.20.

In the case of a 2048 kbit/sec circuit, multidrop solutions should be possible. Dynamic sharing of terrestrial 64 kbit/sec channels between BTS:s on a per-call basis must not be used.

History

Document history	
September 1994	First Edition
April 1996	Converted into Adobe Acrobat Portable Document Format (PDF)