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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 general aspects Base Station Controller (BSC) to Base Transceiver Station (BTS) interface. This ETS corresponds to GSM technical specification GSM 08.51 version 4.1.0.

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).

Reference is also made within this ETS to GSM xx.xx. series. The specifications in the series can be identified, with their full title, within the normative reference Clause of this ETS by the first two digits of their GSM reference number e.g. GSM 09.xx series, refers to GSM 09.01, GSM 09.02, etc.

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.

Proposed transposition dates	
Date of adoption of this ETS:	30 July 1995
Date of latest announcement of this ETS (doa):	31 October 1995
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	30 April 1996
Date of withdrawal of any conflicting National Standard (dow):	30 April 1996

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1 General

1.1 Scope

This Technical Specification is an introduction to the 08.5X - 08.6X series of GSM Technical Specifications and deals with the definition of the base station controller (BSC) to base transceiver station (BTS) interface defined inside the base station system (BSS) for the GSM system. These Technical Specifications define the basic interface with some identified options requiring further elaboration. The BSC-BTS interface is mandatory within GSM only if the BSC and the BTS are not colocated.

1.2 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 03.50 (ETS 300 540): "European digital cellular telecommunications system (Phase 2); Transmission planning aspects of the speech service in the GSM Public Land Mobile Network (PLMN) system".

[3] GSM 08.08 (ETS 300 590): "European digital cellular telecommunications system (Phase 2); Mobile Switching Centre - Base Station System (MSC - BSS) interface Layer 3 specification".

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

[5] GSM 08.52 (ETS 300 593): "European digital cellular telecommunications system (Phase 2); Base Station Controller - Base Transceiver Station (BSC - BTS) interface Interface principles".

[6] GSM 08.54 (ETS 300 594): "European digital cellular telecommunications system (Phase 2); Base Station Controller - Base Transceiver Station (BSC - BTS) interface Layer 1 structure of physical circuits".

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

[8] GSM 08.58 (ETS 300 596): "European digital cellular telecommunications system (Phase 2); Base Station Controller - Base Transceiver Station (BSC - BTS) interface Layer 3 specification".

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

[10] GSM 08.61 (ETS 300 598): "European digital cellular telecommunications system (Phase 2); Inband control of remote transcoders and rate adaptors (half rate)".

[11] GSM 12.00 (ETS 300 612-1): "European digital cellular telecommunications system (Phase 2); Objectives and structure of Network Management (NM)".

[12] GSM 12.01 (ETS 300 612-2): "European digital cellular telecommunications system (Phase 2); Common aspects of GSM Network Management (NM)".

[13] GSM 12.07 (ETS 300 612-3): "European digital cellular telecommunications system (Phase 2); Operations and performance management".

[14] GSM 12.02 (ETS 300 613): "European digital cellular telecommunications system (Phase 2); Subscriber, Mobile Equipment (ME) and services data administration".

[15] GSM 12.03 (ETS 300 614): "European digital cellular telecommunications system (Phase 2); Security management".

[16] GSM 12.04 (ETS 300 615): "European digital cellular telecommunications system (Phase 2); Performance data measurements".

[17] GSM 12.05 (ETS 300 616): "European digital cellular telecommunications system (Phase 2); Subscriber related event and call data".

[18] GSM 12.06 (ETS 300 617): "European digital cellular telecommunications system (Phase 2); GSM Network change control".

[19] GSM 12.10 (ETS 300 618): "European digital cellular telecommunications system (Phase 2); Maintenance provisions for operational integrity of Mobile Stations (MS)".

[20] GSM 12.11 (ETS 300 619): "European digital cellular telecommunications system (Phase 2); Maintenance of the Base Station System (BSS)".

[21] GSM 12.13 (ETS 300 620): "European digital cellular telecommunications system (Phase 2); Maintenance of the Mobile-services Switching Centre (MSC)".

[22] GSM 12.14 (ETS 300 621): "European digital cellular telecommunications system (Phase 2); Maintenance of location registers".

[23] GSM 12.20 (ETS 300 622): "European digital cellular telecommunications system (Phase 2); Network Management (NM) procedures and messages".

[24] GSM 12.21 (ETS 300 623): "European digital cellular telecommunications system (Phase 2); Network Management (NM) procedures and message on the A-bis interface".

[25] GSM 12.22 (ETS 300 624): "European digital cellular telecommunications system (Phase 2); Interworking of GSM Network Management (NM) procedures and messages at the Base Station Controller (BSC)".

[26] CCITT Recommendation Q.920: "ISDN user-network interface data link layer - General aspects".

[27] CCITT Recommendation Q.921: "ISDN user-network interface - Data link layer specification".

1.3 Definitions and abbreviations

Abbreviations used in this specification are listed in GSM 01.04

2 Interface capabilities

The BSC-BTS interface shall be capable of supporting all the services offered to the GSM users and subscribers. In addition it shall also allow control of the radio equipment and radio frequency allocation in the BTS.

3 Interface specification objectives

The BSC to BTS interface specifications should allow the following:

(I) Connection of various manufacturers BTS/TRX to the same BSC, according to the location of the transcoder.

(II) The use of several manufacturers BSC to the same type of BTS/TRX, according to the location of the transcoder.

(III) The use of the same BTS/TRX in any PLMN, according to the location of the transcoder.

(IV) The use of the same BSC in any PLMN.

(V) Separate evolution of BSC and BTS/TRX technology.

(VI) Separate evolution of O & M facilities.

(VII) Sub-multiplexing of speech channels on a 64 kbit circuit.

(VIII) Evolution towards lower speech coding rates.

(IX) Location of transcoders either in BSC or in BTS.

(X) Support of all services defined in the 02 series of GSM Technical Specifications.

(XI) A stepwise expansion of capacity in a BTS.

(XII) Different physical solution of the various equipment in the BTS.

(XIII) Support of a single TRX forming a BTS.

(XIV) Support of a set of TRX'S forming a BTS.

(XV) Support of a BTS as one entity.

4 Interface characteristics

The interface is defined to be at the terrestrial link of a remote BTS connected to the BSC.

The BSC to BTS interface is specified by a set of characteristics, including:

a) physical and electrical parameters;

b) channel structures;

c) signalling transfer procedures;

d) configuration and control procedures;

e) operation and maintenance information support.

The definition of the BSC to BTS/TRX interface follows a layered approach simular to the ISDN. Layer 3 is for the most part based on Technical Specification GSM 08.08 with additional procedures for control of radio resources. Layer 2 is based on the LAPD protocol. Layer 1 is either digital (at a rate 2048 kbit/sec with a frame structure of 32 x 64 kbit/sec time slots or at a rate of 64 kbit/sec.) or analogue with the data being passed by the use of modems (this latter case is a national option).

In the case that the transcoder is positioned outside the BTS, the overall one way propagation delay between the Point Of Interconnection to PSTN/ISDN and the MS is limited to 1.5 ms (approximately 300 km). With the transcoder in the BTS, the limit is 6.5 ms (approximately 1300 km). These limits may be subject to increase resulting from savings made in the overall network. See also Technical Specification GSM 03.50.

5 Other technical specifications on the BSC-BTS interface

The full structure of the Technical Specifications specifying the BSC to BTS interface are as follows:

5.1 Technical Specification GSM 08.52 BSC-BTS Interface Principles

This specification gives the principle basis for the rest of the specifications specifying the interface between the base station controller and the base transceiver station. It gives the functional split between these two entities.

5.2 Technical Specification GSM 08.54 BSC-BTS Layer 1 Specification

This specification defines the structure of the physical layer at the BSC - BTS interface. The physical interface is either chosen as 2048 kbit/sec or as 64 kbit/sec, both according to standard CCITT recommendations.

Depending on location of transcoders, speech is standard A-law or it is 16 kbit/sec remote control protocol multiplexed or rate adapted to 64 kbit/sec in the same way as data.

5.3 Technical Specification GSM 08.56 BSC-BTS Layer 2 Specification

At layer 2 the signalling information is passed by a standard LAPD protocol mechanism in accordance with the CCITT Recommendations Q.920 and Q.921.

5.4 Technical Specification GSM 08.58 BSC-BTS Layer 3 Specification

This specification specifies the layer 3 procedures used on the BSC-BTS interface for control of the GSM services. The functional split between BSC and BTS is defined in Technical Specification GSM 08.52.

5.5 Technical Specification GSM 12.21 BSC-BTS Operation/Maintenance Signalling

This specification defines the transport mechanism for O&M messages over the Abis interface. O&M procedures and messages are defined in GSM 12 series.

5.6 Technical Specification GSM 08.60 Inband Control of Remote Transcoders and Rate Adaptors

The transcoder is a part of the BSS and may optionally be located outside the BTS (e.g. at MSC-site or at BSC-site) in order to make it possible to multiplex speech and data channels on the links within the BSS and on the BSC-BTS link.

This specification describes the protocol which carries the full rate speech and data frames between the transcoder and the radio link codec across a 16 kbit/sec interface. Both full rate speech and full rate data services are covered. It also defines the signals needed for remote controlling the timing of the transcoder in accordance to the transmission time at the radio link. It also addresses the signals for voice activity and comfort noise. It interfaces the 06- series to the 05-series.

5.7 Technical Specification GSM 08.61 Inband Control of Remote Transcoders and Rate Adaptors for Half Rate Traffic Channels

This Technical Specification describes the protocol which carries the half rate speech and data frames between the transcoder and the radio link codec across a 16 kbit/sec or an 8 kbit/sec interface. Both half rate speech and half rate data services are covered. It also defines the signals needed for remote controlling the timing of the transcoder in accordance to the transmission time at the radio link. It also addresses the signals for voice activity and comfort noise.

History

Document history	
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