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TECHNICAL SPECIFICATION

Digital cellular telecommunications system (Phase 2+);
Base Station Controller - Base Transceiver Station (BSC - BTS)
interface;
Layer 2 specification
(3GPP TS 48.056 version 13.0.0 Release 13)

GLOBAL SYSTEM FOR MOBILE COMMUNICATIONS

Reference

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Contents

Foreword

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1 Scope

The present document specifies the link layer used for signalling on the A-bis interface between BSC and BTS. The use and general aspects of the A-bis interface are described in 3GPP TS 48.051 and the interface aspects in 3GPP TS 48.052.

The Link Access Procedure on the D-channel (LAPD) specification used on the A-bis interface in the GSM PLMN is a subset of the EN 300 125 which in turn has less options than the CCITT Recommendation Q.921.

This description contains first the protocol definitions and second the services provided by the layer 2 to the layer 3.

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. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1]   3GPP TS 21.905: "Vocabulary for 3GPP Specifications".

[2]   3GPP TS 48.051: "Base Station Controller - Base Transceiver Station (BSC - BTS) interface; General aspects".

[3]   3GPP TS 48.052: "Base Station Controller - Base Transceiver Station (BSC - BTS) interface; Interface principles".

[4]   Void.

[5]   Void.

[6]   Void.

[7]   Void.

[8]   Void.

[9]   Void.

[10]   Void.

[11]   Void.

[12]   Void.

[13]   Void.

[14]   Void.

[15]   Void.

[16]   Void.

[17]   Void.

[18]   Void.

[19]   CCITT Recommendation Q.921: "Integrated services digital network (ISDN) user-network interface - Data link layer specification".

[20]   EN 300 125: "Integrated Services Digital Network (ISDN); User-network interface data link layer specification Application of CCITT Recommendations Q.920/I.440 and Q.921/I.441".

3   Definitions and abbreviations

Abbreviations used in the present document are listed in 3GPP TS 21.905.

4   General description

The following information categories are supported by the procedures of this layer 2 Recommendation:

-   signalling (including Short Message Service (SMS) information);

-   operation and maintenance;

-   layer 2 management.

For each of these categories the BSC may have one or more layer 2 links to every TRX and BCF.

The signalling links over the A-bis interface are addressed to the different units by Terminal Endpoint Identifiers (TEI).

The same unit will normally have more than one functional entity. The logical links between different functional entities are identified by functional addresses, the Service Access Points Identifier (SAPI).

Figure 1 shows the architectural model with different layer 2 links.

A number of logical links may be multiplexed on each physical link. The same layer 2 logical link may not be distributed over more than one physical link.
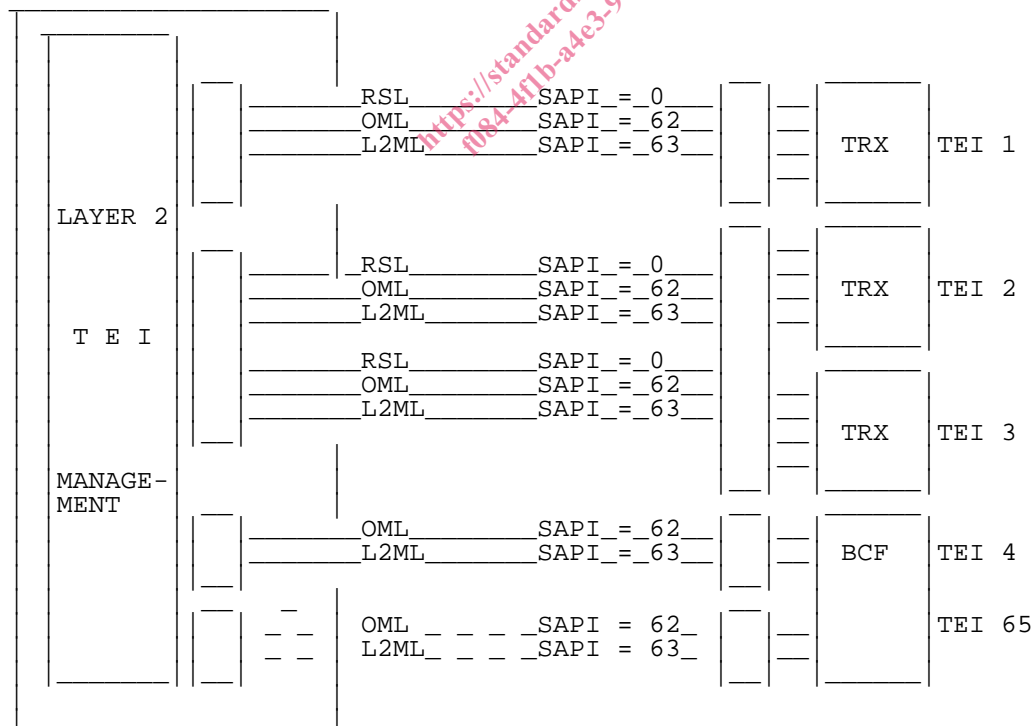

Figure 4.1: An example of Logical Layer 2 links supported by three permanent and one semipermanent links

5 Functional contents

The basic functional content of the layer 2 protocol is:

- transparent layer 2 links and time fill;

- point-to-point dedicated layer 2 links addressing both physical entities and functional entities;

- point-to-multipoint addressed links used for layer 2 management;

- basic functions for TEI assignment and management;

- basic priority functions;

- basic supervision of links when not carrying traffic;

- sequence control;

- transmission error control;

- control of errors not recoverable by retransmission.

6 LAPD functions

The LAPD functions as specified in EN 300 125 are applicable. However, the exceptions and modifications specified in the remainder of the present document shall be used.

6.1 Exceptions and modifications

In the following headlines from EN 300 125 are kept and references are made to the corresponding clause of EN 300 125.

6.1.1 Void

6.1.2 Command/Response field bit (C/R)

(Refer to EN 300 125, part 2, clause 3.3.2)

In GSM PLMN's BSC represents the network side and TRX/BCF the user side of the interface.

6.1.3 Service Access Point Identifier (SAPI)

(Refer to EN 300 125, part 2, clause 3.3.3)

The SAPI values for the A-bis interface are as listed in table 6.1.3.

Table 6.1.3: Allocation of SAPI values and priority classes

SAPI value	Related layer 3 or layer management entity	Priority
0	Radio signalling procedures	2
1	Reserved for packet mode communications using Q.931 call control procedures (Not used in GSM PLMN)	-
16	Reserved for packet communication conforming to X.25 level 3 procedures (Not used in GSM PLMN	-
62	Operation and maintenance procedure	1
63	Layer 2 management procedures	1
All others	Reserved for future standardization	-

6.1.4 TEI for point-to-point data link connection

(Refer to EN 300 125, part 2, clause 3.3.4.2).

The remaining Terminal Endpoint Identifier (TEI) values are used for the point-to-point data link connections associated with the addressed Service Access Point (SAP). The range of TEI values shall be allocated as shown in table 6.1.4.

Table 6.1.4: Allocation of TEI values

TEI value	User type
0-63	TEI assignment for fixed TRX and BCF addresses
64-126	TEI assignment for additional, TRX or BCF addresses

NOTE: A BCF is given a separate layer 2 link only if it is not integrated with a TRX.

6.1.5 Commands and responses

(Refer to EN 300 125, part 2, clause 3.6.1)

The XID command and response are not used.

6.1.6 Exchange identification (XID) command/response

(Refer to EN 300 125, part 2, clause 3.6.12)

This functionality is not used.

6.1.7 MDL-XID

(Refer to EN 300 125, part 2, clause 4.1.1.9)

This functionality is not used.

6.1.8 PH-DATA, PH DEACTIVATE and PH-ACTIVATE

(Refer to EN 300 125, part 2, clauses 4.1.1.10 - 4.1.1.12)

This functionality is not relevant.

6.1.9 MPH-ACTIVATE, MPH-DEACTIVATE an MPH-INFORMATION

(Refer to EN 300 125, part 2, clauses 4.1.1.13 - 4.1.1.15)