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Digitalna videoradiodifuzija (DVB) – Povratni kanal prek globalnega sistema mobilnih komunikacij (GSM)

Digital Video Broadcasting (DVB); Interaction channel through the Global System for Mobile communications (GSM)

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Foreword

This European Standard (Telecommunications series) has been produced by the Joint Technical Committee (JTC) Broadcast of the European Broadcasting Union (EBU), Comité Européen de Normalisation ELECtrotechnique (CENELEC) and the European Telecommunications Standards Institute (ETSI).

NOTE: The EBU/ETSI JTC Broadcast was established in 1990 to co-ordinate the drafting of standards in the specific field of broadcasting and related fields. Since 1995 the JTC Broadcast became a tripartite body by including in the Memorandum of Understanding also CENELEC, which is responsible for the standardization of radio and television receivers. The EBU is a professional association of broadcasting organizations whose work includes the co-ordination of its members' activities in the technical, legal, programme-making and programme-exchange domains. The EBU has active members in about 60 countries in the European broadcasting area; its headquarters is in Geneva.

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Digital Video Broadcasting (DVB) Project

Founded in September 1993, the DVB Project is a marked-led consortium of public and private sector organizations in the television industry. Its aim is to establish the framework for the introduction of MPEG-2 based digital television services. Now comprising over 200 organizations from more than 25 countries around the world, DVB fosters marked-led systems, which meet the real needs, and economic circumstances, of the consumer electronics and the broadcast industry.

National transposition dates	
Date of adoption of this EN:	5 February 1999
Date of latest announcement of this EN (doa):	31 May 1999
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 November 1999
Date of withdrawal of any conflicting National Standard (dow):	30 November 1999

1 Scope

The present document is the baseline specification for the provision of an interaction channel based on Global System for Mobile communications (GSM) to Digital Video Broadcasting (DVB) systems.

The DVB project does not intend to specify an interaction channel solution associated to each broadcast system because the interoperability of different delivery media to transport the interaction channel is desirable. Therefore the GSM solution for the interaction channel apply to satellite, cable, MATV, SMATV, terrestrial, microwave or any future DVB broadcasting or distribution system.

The solutions provided in the present document for an interaction channel through GSM are a part of a wider set of alternatives to implement interactive services for DVB systems.

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, subsequent revisions do apply.
- 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] ETS 300 802: "Digital Video Broadcasting (DVB); Network-independent protocols for DVB interactive services".

[2] CENELEC EN 50201: "Interfaces for Digital Video Broadcast Integrated Receiver Decoder (DVB-IRD)".

[3] ETS 300 505: "Digital cellular telecommunications system (Phase 2); Mobile Station (MS) features (GSM 02.07 version 4.8.2)".

[4] ETS 300 556: "European digital cellular telecommunication system (Phase 2); Mobile radio interface signalling layer 3; General aspects GSM 04.07".

[5] ETS 300 557: "Digital cellular telecommunications system (Phase 2); Mobile radio interface; Layer 3 specification (GSM 04.08 version 4.22.0)".

[6] ETS 300 600: "European digital cellular telecommunication system (Phase 2); Signalling requirements on interworking between the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN) and the Public Land Mobile Network (PLMN) (GSM 09.03)".

[7] ETS 300 604: "Digital cellular telecommunications system (Phase 2); General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN) (GSM 09.07)".

[8] ETS 300 582: "Digital cellular telecommunications system (Phase 2); General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS) (GSM 07.01)".

[9] ETS 300 583: "European digital cellular telecommunications system (Phase 2); Terminal Adaptation Functions (TAF) for services using asynchronous bearer capabilities (GSM 07.02)".

[10] ETS 300 500: "Digital cellular telecommunications system (Phase 2); Principles of telecommunication services supported by a GSM Public Land Mobile Network (PLMN) (GSM 02.01)".

[11] ETS 300 501: "European digital cellular telecommunications system (Phase 2); Bearer Services (BS) supported by a GSM Public Land Mobile Network (PLMN) (GSM 02.02)".

[12] ETS 300 522: "Digital cellular telecommunications system (Phase 2); Network architecture (GSM 03.02)".

[13] ETS 300 528: "European digital cellular telecommunications system (Phase 2); GSM Public Land Mobile Network (PLMN) connection types (GSM 03.10)".

[14] ETS 300 550: "European digital cellular telecommunications system (Phase 2); Mobile Station - Base Station System (MS - BSS) interface; General aspects and principles (GSM 04.01)".

[15] ETS 300 551: "European digital cellular telecommunications system (Phase 2); GSM Public Land Mobile Network (PLMN) access reference configuration (GSM 04.02)".

[16] ETS 300 552: "European digital cellular telecommunications system (Phase 2); Mobile Station - Base Station System (MS - BSS) interface; Channel structures and access capabilities (GSM 04.03)".

[17] ETS 300 554: "European digital cellular telecommunications system (Phase 2); Data Link (DL) layer; General aspects (GSM 04.05)".

[18] ETS 300 555: "European digital cellular telecommunications system (Phase 2); Mobile Station - Base Station System (MS - BSS) interface; Data Link (DL) layer specification (GSM 04.06)".

[19] ETS 300 562: "European digital cellular telecommunications system (Phase 2); Rate adaption on the Mobile Station - Base Station System (MS - BSS) interface (GSM 04.21)".

[20] GSM 04.22 "Digital cellular telecommunications system (Phase 2+); Radio Link Protocol (RLP) for data and telematic services on the Mobile Station - Base Station System (MS-BSS) interface and the Base Station System -Mobile-services Switching Centre (BSS-MSC) interface".

[21] ETS 300 586: "European digital cellular telecommunications system (Phase 2); Use of the V series Data Terminal Equipment - Data Circuit terminating Equipment (DTE - DCE) interface at the Mobile Station (MS) for Mobile Termination (MT) configuration (GSM 07.06)".

[22] DVB-A008 October 1995: "Commercial requirements for asymmetric interactive services supporting broadcast to the home with narrowband return channels".

3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

BC	Broadcast Channel
BIM	Broadcast Interface Module
BSC	Base Station Controller
BTS	Base Transceiver Station
DCE	Data Circuit-terminating Equipment
DTE	Data Terminal Equipment
DVB	Digital Video Broadcasting
ETS	European Telecommunication Standard
EN	European Norm
GMSK	Gaussian Minimum Shift Keying
GSM	Global System for Mobile Communications
IC	Interactive Channel
IIM	Interactive Interface Module
INA	Interactive Network Adapter
ISDN	Integrated Services Digital Network

MS	Mobile Station
MSC	Mobile Switching Centre
MT	Mobile Termination
NIU	Network Interface Unit
OSI	Open Systems Interconnection
PSTN	Public Switched Telephone Network
RA	Rate Adaptation
SMS	Short Message Service
STB	Set Top Box
STU	Set Top Unit
TDMA	Time Division Multiple Access

4 Reference model

A reference model for the system architecture of narrowband interaction channels in a broadband scenario (asymmetric interactive services) is presented in this clause.

4.1 Protocol Stack Model

Within the DVB commercial requirements for asymmetric interactive services supporting broadcast to the home with narrowband return channel [22], a simple communications model has been used to identify the necessity and importance of each commercial requirement consisting of the following layers (the layers do not coincide exactly with the OSI layers):

Physical layer: Where all the physical (electrical) transmission parameters are defined.

Transport layer: Defines all the relevant data structures and communication protocols like data containers, etc.

Application layer: Is the interactive application software and runtime environment (e.g. home shopping application, script interpreter, etc.).

The present document addresses the lower two layers (the physical and transport layers), leaving the application layer open to competitive market forces. A simplified model of the OSI layers was adopted to facilitate the production of specifications for these nodes. Figure 1 points out the lower layers of the simplified model and identifies some of the key parameters. Following the user requirements for interactive services, no attempt will be made to consider higher layers in the present document.

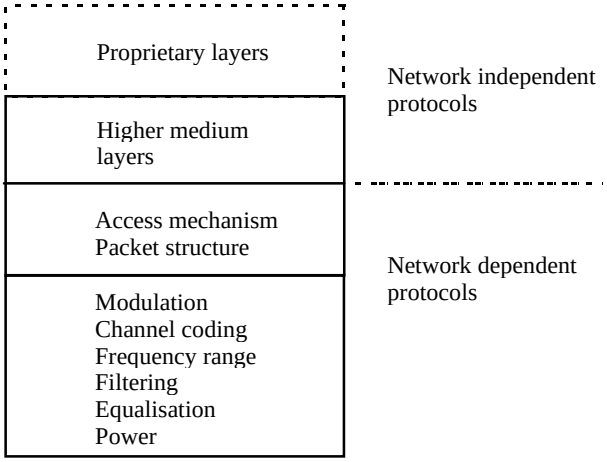

Figure 1: Layer structure for generic system reference model

The present document addresses the GSM specific aspects only. The network independent protocols are specified separately in ETS 300 802 [1].