

Digitaler Fernsehroundfunk (DVB)Rahmenstruktur, Kanalcodierung und Modulation
bei Kabelsystemen

Englische Fassung EN 300429 V1.2.1 (1998-04)

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English version EN 300429 V1.2.1 (1998-04)**Die Europäische Telekommunikationsnorm EN 300429 : 1998 hat den Status einer Deutschen Norm.****Nationales Vorwort**

Die vorliegende Norm enthält die vom Europäischen Institut für Telekommunikationsnormen (ETSI) herausgegebene Europäische Norm (Telekommunikationsserie) EN 300429 V1.2.1 (1998-04) „Digital Video Broadcasting (DVB) – Framing structure, channel coding and modulation for cable systems“. Diese Norm enthält unter Berücksichtigung des DIN-Präsidialbeschlusses 13/1983 den englischen Originaltext der vom „Joint Technical Committee (JTC)“ des ETSI und der EBU erarbeiteten EN 300429. Fachlich zuständig in Deutschland ist das Unterkomitee 742.4 „Rundfunk-Empfangsgeräte und verwandte Geräte und Systeme der Unterhaltungselektronik“ der Deutschen Elektrotechnischen Kommission im DIN und VDE (DKE).

Änderungen

Gegenüber DIN ETS 300429:1995-06 wurden folgende Änderungen vorgenommen:

- EN 300429:1998 (zweite Ausgabe) übernommen.

Frühere Ausgaben

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European Standard (Telecommunications series)

Digital Video Broadcasting (DVB); Framing structure, channel coding and modulation for cable systems

European Broadcasting Union



Union Européenne de Radio-Télévision

DVB
Digital Video
Broadcasting



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Foreword

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

NOTE: The EBU/ETSI JTC was established in 1990 to co-ordinate the drafting of standards in the specific field of broadcasting and related fields. Since 1995 the JTC 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 market-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 market-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:	17 April 1998
Date of latest announcement of this EN (doa):	31 July 1998
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 January 1999
Date of withdrawal of any conflicting National Standard (dow):	31 January 1999

1 Scope

The present document only adds 128 and 256 QAM to the specification.

The present document describes the framing structure, channel coding and modulation (denoted "the System" for the purposes of the present document) for a digital multi-programme television distribution by cable. The aim of the present document is to present a harmonized transmission standard for cable and satellite, based on the MPEG-2 System Layer ISO/IEC 13818-1 [1], with the addition of appropriate Forward Error Correction (FEC) technique.

This System can be used transparently with the modulation/channel coding system used for digital multi-programme television by satellite (see EN 300 421 [3]). The System is based on Quadrature Amplitude Modulation (QAM). It allows for 16, 32, 64, 128 or 256-QAM constellations.

The System FEC is designed to improve Bit Error Ratio (BER) from 10^{-4} to a range, 10^{-10} to 10^{-11} , ensuring "Quasi Error Free" (QEF) operation with approximately one uncorrected error event per transmission hour.

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] ISO/IEC 13818-1: "Coding of moving pictures and associated audio".
- [2] IEEE Trans. Comm. Tech., COM-19, pp. 772-781, (October 1971) Forney, G.D.: "Burst-correcting codes for the classic bursty channel".
- [3] EN 300 421: "Digital Video Broadcasting (DVB); Framing structure, channel coding and modulation for 11/12 GHz satellite services".

3 Symbols and abbreviations

3.1 Symbols

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

α	Roll-off factor
A_k, B_k	Most Significant Bits at the output of the Byte to m-tuple converter
f_0	Channel centre frequency
f_N	Nyquist frequency
$g(x)$	RS code generator polynomial
HEX	Hexadecimal
I	Interleaving depth (bytes)
I, Q	In-phase, Quadrature phase components of the modulated signal
j	Branch index
k	Number of bytes mapped into n symbols