

INTERNATIONAL STANDARD

**Cable networks for television signals, sound signals and interactive services –
Part 5: Headend equipment**

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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**CABLE NETWORKS FOR TELEVISION SIGNALS,
SOUND SIGNALS AND INTERACTIVE SERVICES –****Part 5: Headend equipment**

FOREWORD

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International Standard IEC 60728-5 has been prepared by Technical Area 5: Cable networks for television signals, sound signals and interactive services, of IEC Technical Committee 100: Audio, video and multimedia systems and equipment.

This second edition cancels and replaces the first edition published in 2001, of which it constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- Revised title and scope
- Clause 3, several new terms and definitions
- Subclause 4.1, Methods of measurement for digitally modulated signals
- Subclause 4.6.2, RF signal-to-noise ratio ($S_{D,RF}/N$) for digitally modulated signals

- Subclause 4.8.2, Procedure for the measurement of group delay variation on DVB channel converters
- Subclause 4.9, Phase noise of an RF carrier
- Subclause 4.15, Decoding margin (Teletext)
- Annex D, Special national conditions
- Annex E, Correction factors for noise
- Annex F, Digital signal level and bandwidth
- Annex G, Minimum frequency distance of converted satellite signals in the IF range
- Annex H, Measurement errors which occur due to mismatched equipment
- Annex I, Correction factor for spectrum analyser

The text of this standard is based on the following documents:

FDIS	Report on voting
100/1244/FDIS	100/1276/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The list of all the parts of the IEC 60728 series, under the general title *Cable networks for television signals, sound signals and interactive services*, can be found on the IEC website.

The actual list of all parts of the IEC 60728 series can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

For special national conditions existing in some countries, see Annex D.

A bilingual version of this publication may be issued at a later date.

INTRODUCTION

Standards of the IEC 60728 series deal with cable networks including equipment and associated methods of measurement for headend reception, processing and distribution of television signals, sound signals and their associated data signals and for processing, interfacing and transmitting all kinds of signals for interactive services using all applicable transmission media.

This includes

- CATV¹-networks,
- MATV-networks and SMATV-networks,
- individual receiving networks

and all kinds of equipment, systems and installations installed in such networks.

The extent of this standardisation work is from the antennas and/or special signal source inputs to the headend or other interface points to the network up to the terminal input.

The standardisation of any user terminals (i.e., tuners, receivers, decoders, multimedia terminals, etc.) as well as of any coaxial, balanced and optical cables and accessories thereof is excluded.

¹ This word encompasses the HFC networks used nowadays to provide telecommunications services, voice, data, audio and video both broadcast and narrowcast.

CABLE NETWORKS FOR TELEVISION SIGNALS, SOUND SIGNALS AND INTERACTIVE SERVICES –

Part 5: Headend equipment

1 Scope

This part of IEC 60728 defines the characteristics of equipment used in the headends of terrestrial broadcast and satellite receiving systems (without satellite outdoor units and without those broadband amplifiers in the headend as described in IEC 60728-3). The satellite outdoor units for FSS are described in ETSI ETS 300 158, for BSS in ETSI ETS 300 249. Test methods for both types (FSS and BSS) of satellite outdoor units are laid down in ETSI ETS 300 457.

This standard

- covers the frequency range 5 MHz to 3 000 MHz,
- identifies performance requirements for certain parameters,
- lays down data publication requirements for certain parameters,
- stipulates methods of measurements;
- introduces minimum requirements defining quality grades (Q-grades).

This standard defines the overall characteristics for upstream/downstream signals between external sources/sinks (for example, antennas, cable modem termination systems, etc.) and the system interface to the cable network. In the case of modular headend systems, also single equipment as modulators, converters, etc. are described. Cable modem termination systems, encrypters, decrypters, etc. are not described in this standard. If such equipment is used in headends, the relevant parameters for RF, video, audio and data interfaces should be met.

According to the definitions in 3.1, the headends are divided into the following three quality grades:

- Grade 1: central headend;
- Grade 2: hub headend or hubsite;
- Grade 3: MATV headend/individual reception headend.

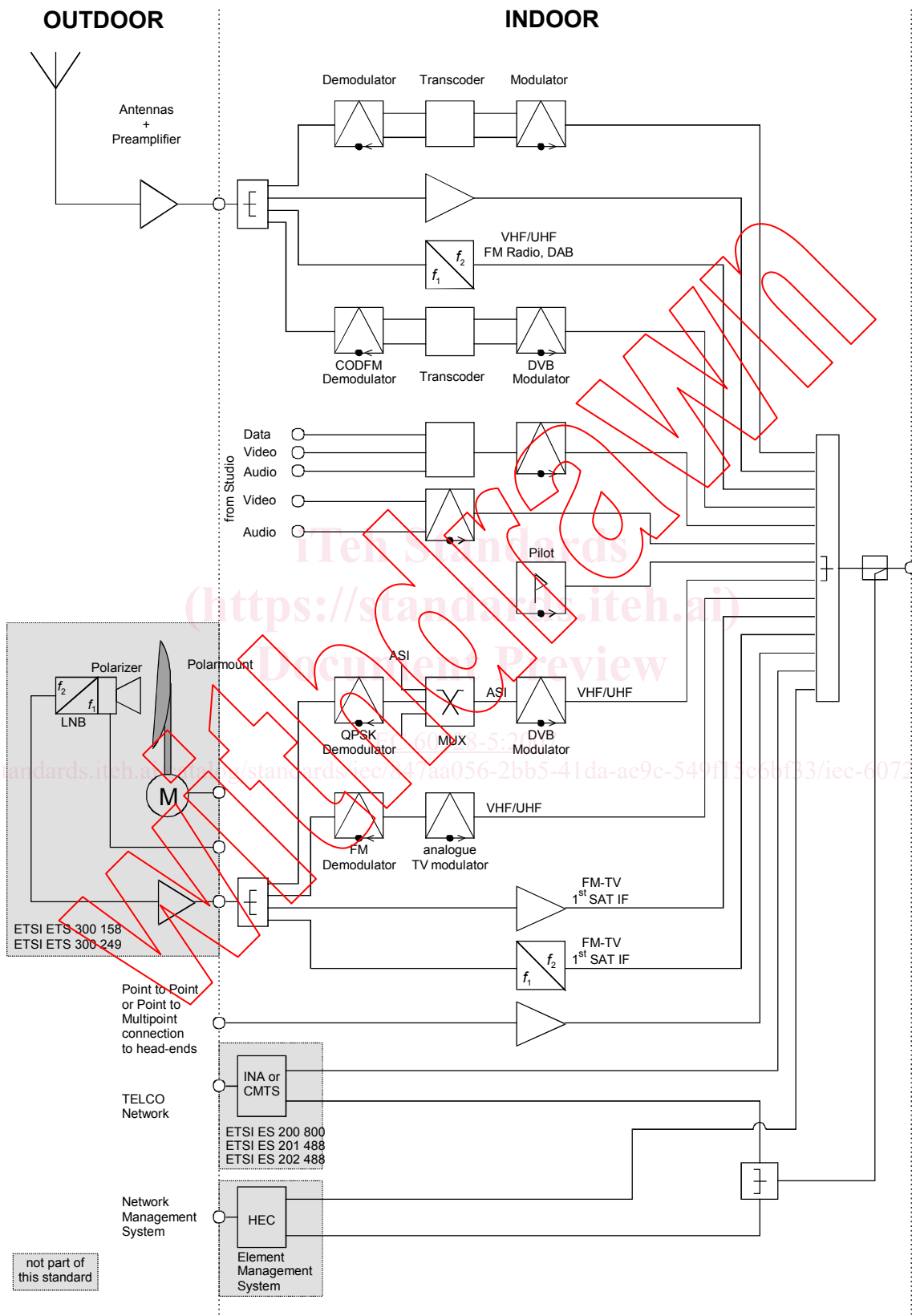


Figure 1 – Example of headend