SLOVENSKI STANDARD
SIST EN 61237-4:1999

01-april-1999

Broadcast video tape recorders - Methods of measurement -- Part 4: Analogue audio performance measurements (IEC 61237-4:1997)

Broadcast video tape recorders - Methods of measurement -- Part 4: Analogue audio performance measurements

Videobandgeräte für den Rundfunk - Meßverfahren -- Teil 4: Messung der Leistungskennwerte für analoge Tonsignale

Magnétoscopes de radiodiffusion - Méthodes de mesure -- Partie 4: Mesure des caractéristiques audio-analogiques

Ta slovenski standard je istoveten z: **EN 61237-4:1997**

ICS:

33.160.40	Video sistemi	Video systems

SIST EN 61237-4:1999 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61237-4

November 1997

ICS 33.160.40

Descriptors: Electroacoustics, video recording, recording apparatus, magnetoscopes, radiocommunications, measurements, characteristics, acoustic signals, analog signals

English version

Broadcast video tape recorders - Methods of measurement Part 4: Analogue audio performance measurements (IEC 61237-4:1997)

Magnétoscopes de radiodiffusion
Méthodes de mesure
Partie 4: Mesure des caractéristiques audio-analogiques
(CEI 61237-4:1997)

Videobandgeräte für den Rundfunk
Meßverfahren
Teil 4: Messung der Leistungskennwerte für analoge Tonsignale
(IEC 61237-4:1997)

This European Standard was approved by CENELEC on 1997-10-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 61237-4:1997 E

Foreword

The text of document 100B/93/FDIS, future edition 1 of IEC 61237-4, prepared by SC 100B, Recording, of IEC TC 100, Audio, video and multimedia systems and equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61237-4 on 1997-10-01.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1998-07-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1998-07-01

Annexes designated "normative" are part of the body of the standard.
Annexes designated "informative" are given for information only.
In this standard, annex ZA is normative and annexes A and B are informative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61237-4:1997 was approved by CENELEC as a European Standard without any modification.

In the official version, for annex B, Bibliography, the following note has to be added for the standard indicated:

IEC 60094-2 NOTE: Harmonized as EN 60094-2:1995 (not modified).

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or 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 European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE: When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60094-3	1979	Magnetic tape sound recording and reproducing systems Part 3: Methods of measuring the characteristics of recording and reproducing equipment for sound on magnetic tape	EN 60094-3[1)]	1996
IEC 60268-1	1985	Sound system equipment Part 1: General	HD 483.1 S2[2)]	1989
IEC 60268-2	1987	Part 2: Explanation of general terms and calculation methods	HD 483.2 S2[3)]	1993
IEC 60268-3	1988	Part 3: Amplifiers	HD 483.3 S2[4)]	1992
IEC 60268-8	1973	Part 8: Automatic gain control devices	-	-
IEC 60386	1972	Method of measurement of speed fluctuations in sound recording and reproducing equipment	-	-
IEC 60602	1980	Type B helical video recorders	HD 574 S1[5)]	1990
IEC 60651	1979	Sound level meters	EN 60651	1994
IEC 61041-1	1990	Non-broadcast video tape recorders Methods of measurement Part 1: General video (NTSC/PAL) and audio (longitudinal) characteristics	EN 61041-1	1995
IEC 61041-3	1993	Part 3: Audio characteristics for FM recording	EN 61041-3	1995

1) EN 60094-3 includes A1:1980 + A2:1988 to IEC 60094-3.
2) HD 483.1 S2 includes A1:1988 to IEC 60268-1.
3) HD 483.2 S2 includes A1:1991 to IEC 60268-2.
4) HD 483.3 S2 includes A1:1990 + A2:1991 to IEC 60268-3.
5) HD 574 S1 includes A1:1987 to IEC 60602.

Publication	Year	Title	EN/HD	Year
IEC 61105	1991	Reference tapes for video tape recorder systems	EN 61105	1993
IEC 61213	1993	Analogue audio recording on video tape Polarity of magnetization	EN 61213	1994
IEC 61260	1995	Electroacoustics - Octave-band and fractional-octave-band filters	EN 61260	1995
IEC 61295	1994	Calibration tapes for broadcast VTRs	-	-
ITU-R Recommendation BS 468-4	1990	Measurement of audio-frequency noise voltage level in sound broadcasting	-	-
ITU-R 798-2	1990	Simulated programme signals	-	-

NORME INTERNATIONALE

INTERNATIONAL STANDARD

CEI
IEC
61237-4

Première édition
First edition
1997-10

Magnétoscopes de radiodiffusion – Méthodes de mesure –

Partie 4: Mesure des caractéristiques audio-analogiques

Broadcast video tape recorders – Methods of measurement –

Part 4: Analogue audio performance measurements

International Electrotechnical Commission 3, rue de Varembé Geneva, Switzerland
Telefax: +41 22 919 0300 e-mail: inmail@iec.ch IEC web site http: //www.iec.ch

Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

CODE PRIX
PRICE CODE T

Pour prix, voir catalogue en vigueur
For price, see current catalogue

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

BROADCAST VIDEO TAPE RECORDERS – METHODS OF MEASUREMENT –

Part 4: Analogue audio performance measurements

FOREWORD

1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61237-4 has been prepared by subcommittee 100B: Recording, of IEC technical committee 100: Audio, video and multimedia systems and equipment.

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

FDIS	Report on voting
100B/93/FDIS	100B/111/RVD

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

IEC 61237 consists of the following parts, under the general title *Broadcast video tape recorders – Methods of measurement:*

Part 1: Mechanical measurements

Part 2: Electrical measurements of analogue composite video signals

Part 3: Electrical measurements of analogue component video signals

Part 4: Analogue audio performance measurement

Part 5: Electrical measurements of digital composite video signals and digital audio signals

Part 6: Electrical measurements of digital component video signals and digital audio signals

Annexes A and B are for information only.

BROADCAST VIDEO TAPE RECORDERS – METHODS OF MEASUREMENT –

Part 4: Analogue audio performance measurements

1 General

1.1 *Scope and object*

This part of IEC 61237 describes methods of measurement and special test signals for the analogue audio part of equipment mainly dedicated to recording reproduction of TV signals on magnetic tape on reels or in cassettes.

The allowable tolerances for the rated values for acceptable performance are not given in this standard, but may be derived from the specifications for the related system i.e. appropriate publications, manufacturers' specifications, etc.

The necessary reference and calibration tapes are either mentioned in the specific IEC publication of the equipment under test or included in IEC 61105 and IEC 61295, respectively.

The methods are applicable to acceptance tests, performance comparison and, as far as possible, to routine checks.

To ensure that the results obtained at a specific time and at a specific place are comparable to other measurements, it is advisable to specify the test signal, measuring devices and types of tapes used together with results obtained.

1.2 *Normative references*

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 61237. At the time of publication, the editions indicated were valid. All normative documents are subject to revision and parties to agreements based on this part of IEC 61237 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60094-3: 1979, *Magnetic tape sound recording and reproducing systems – Part 3: Methods of measuring the characteristics of recording and reproducing equipment for sound on magnetic tape*

IEC 60268-1: 1985, *Sound system equipment – Part 1: General*

IEC 60268-2: 1987, *Sound system equipment – Part 2: Explanation of general terms and calculation methods*

IEC 60268-3: 1988, *Sound system equipment – Part 3: Amplifiers*

IEC 60268-8: 1973, *Sound system equipment – Part 8: Automatic gain control devices*

IEC 60386: 1972, *Method of measurement of speed fluctuations in sound recording and reproducing equipment*

IEC 60602: 1980, *Type B helical video recorders*

IEC 60651: 1979, *Sound level meters*

IEC 61041-1: 1990, *Non-broadcast video tape recorders – Methods of measurement – Part 1: General video (NTSC/PAL) and audio (longitudinal) characteristics*

IEC 61041-3: 1993, *Non-broadcast video tape recorders – Methods of measurement – Part 3: Audio characteristics for FM recording*

IEC 61105: 1991, *Reference tapes for video tape recorder systems*

IEC 61213: 1993, *Analogue audio recording on video tape – Polarity of magnetization*

IEC 61260: 1995, *Electroacoustics – Octave-band and fractional-octave-band filters*

IEC 61295: 1994, *Calibration tapes for broadcast VTRs*

ITU-R Recommendation BS 468-4: 1990, *Measurement of audio-frequency noise voltage level in sound broadcasting*

ITU-R 798-2: 1990, *Simulated programme signals*

1.3 *Definitions*

For the purpose of this part of IEC 61237, the following definitions apply:

1.3.1 **reference level:** Value of signal level defined in the relevant system IEC publication as remanent magnetic short-circuit flux level on the tape, for example 90 ± 5 nWb/m r.m.s. for 625-50 systems in IEC 60602. Method of measurement is given in annex A of this standard.

1.3.2 **crosstalk attenuation or track separation:** In multi-channel equipment, signals in one channel can break through into another channel in an attenuated and distorted form. Particularly when two adjacent tracks are used or two adjacent channels in the same head stack are operated simultaneously in different modes for example record and reproduction, impairments can arise. To make matters worse, beside these audio tracks additional longitudinal tracks are present on a video tape for example control track and time and control code track.

The influence of a signal in one channel to another channel can be described in terms of crosstalk attenuation or track separation.

1.3.3 **polarity of the audio signal:** An audio signal is deemed to be positive when it results in an increase in the acoustic pressure on the microphone diaphragm, and thus in the displacement of the diaphragm towards the rear (see IEC 60268-2).

1.3.4 **conservation of polarity on magnetic tapes:** To obtain an optimal audio reproduction it is necessary to make sure that a backward movement of the microphone diaphragm leads to a forward direction of the loudspeaker diaphragm. This should be preserved either during recording or tape interchange, detailed explanation is given in IEC 61213.

2 Manual and automatic measurements

If an automatic measuring device is designed to give reliable results under the special conditions of television tape recording/reproducing as for example drop-out, jitter, time-base errors, head switching or partly insufficient head-to-tape contact, a significant improvement in measuring speed, accuracy and comparability of results can be achieved.

Therefore preference was given to measuring methods which can be carried out by automatic measuring equipment or which are suitable for automatic measuring techniques.

Except where a distinction is made in particular clauses between manual and automatic methods of measurement, the measuring procedures given in this standard are valid for both methods. However, although in the case of automatic measurements the procedure is carried out automatically by the test signal analyzer, the various steps are described as if they were performed manually.

3 Procedure of measurement

The measurements shall be carried out by measuring the reproduced signal after recording on the same machine (best case configuration).

In certain particular cases, if the multigeneration-performance of a TV signal recording system is measured, the measurements shall be carried out by measuring the reproduced signal after recording on a different machine (worst case configuration).

If the television tape machine under test is equipped with external controls for example tracking control, gain control, etc. these controls shall be set to their preset and mid-position respectively for all measurements.

Before testing the overall performance, the reproducing channel shall be measured by means of a calibration tape (see 1.1). Attention shall be paid to the manufacturer's manual and instructions respectively.

4 Environmental conditions

If not otherwise stated, all measurements shall be carried out at the following atmospheric conditions:

temperature	(20 ± 2) °C;
relative humidity	(50 ± 2) %;
air pressure	86 kPa to 106 kPa;
conditioning before testing	24 h.

5 Measurement on analogue audio baseband recording using bias

5.1 *Reproducing performance using calibration tape*

An audio calibration tape according to IEC 61295 or recommended by the manufacturer of the equipment under test shall be used for measuring the performance of the reproducing chain of each channel.