
Methods of measurement on receivers for satellite broadcast transmissions in the 12 GHz band -- Part 5: Electrical measurements on decoder units for MAC/Packet systems (IEC 61079-5:1993)

Methods of measurement on receivers for satellite broadcast transmissions in the 12 GHz band -- Part 5: Electrical measurements on decoder units for MAC/Packet systems

Meßverfahren für Empfänger für Satelliten-Rundfunkübertragung im 12-GHz-Bereich -- Teil 5: Elektrische Messungen an Dekodern für MAC/Paket-Systeme

Méthodes de mesure sur les récepteurs d'émissions de radiodiffusion par satellite dans la bande de 12 GHz -- Partie 5: Mesures électriques sur les décodeurs pour les systèmes MAC/Paquet

Ta slovenski standard je istoveten z: EN 61079-5:1993

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ENGLISH VERSION

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Teil 5: Elektrische Messungen an Dekodern für MAC/Paket-Systeme
(IEC 1079-5:1993)

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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.

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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

FOREWORD

The text of document 12A(CO)169, as prepared by Sub-Committee 12A: Receiving equipment, of IEC Technical Committee 12: Radiocommunications, was submitted to the IEC-CENELEC parallel vote in April 1992.

The reference document was approved by CENELEC as EN 61079-5 on 9 March 1993.

The following dates were fixed:

- latest date of publication of an identical national standard (dop) 1994-07-01
- latest date of withdrawal of conflicting national standards (dow) 1994-07-01

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

ENDORSEMENT NOTICE

The text of the International Standard IEC 1079-5:1993 was approved by CENELEC as a European Standard without any modification.

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ANNEX ZA (normative)

OTHER INTERNATIONAL PUBLICATIONS QUOTED IN THIS STANDARD
WITH THE REFERENCES OF THE RELEVANT 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.

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

IEC Publication -----	Date ---	Title -----	EN/HD -----	Date ----
107-1	1977	Recommended methods of measurement on receivers for television broadcast transmissions - Part 1: General considerations - Electrical measurements other than those at audio-frequencies	-	-
107-2	1980	Part 2: Electrical and acoustic measurements at audio-frequencies	-	-
107-3	1988	Part 3: Electrical measurements on multichannel sound television receivers using subcarrier systems	-	-
107-4	1988	Part 4: Electrical measurements on multichannel sound television receivers using the two-carrier FM system	-	-
107-5	1992	Part 5: Electrical measurements on multichannel sound television receivers using the NICAM two-channel digital sound-system	EN 60107-5	1992
107-6	1989	Part 6: Measurement under conditions different from broadcast signal standards	HD 567.6 S1	1990
933-1	1988	Audio, video and audiovisual systems Interconnections and matching values Part 1: 21-pin connector for video systems - Application No.1	-	-

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the 12 GHz band**

Part 5:

**Electrical measurements on decoder units
for MAC/packet systems**

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International Electrotechnical Commission
Telefax: +41 22 919 0300

3, rue de Varembe Geneva, Switzerland
e-mail: inmail@iec.ch IEC web site <http://www.iec.ch>



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**METHODS OF MEASUREMENT ON RECEIVERS FOR
SATELLITE BROADCAST TRANSMISSIONS IN
THE 12 GHz BAND**

**Part 5: Electrical measurements on decoder units for
MAC/packet systems**

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 cooperation 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, prepared by technical committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 3) They have the form of recommendations for international use 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.

International Standard IEC 1079-5 has been prepared by IEC by sub-committee 12A: Receiving equipment, of IEC technical committee 12: Radiocommunications.

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

DIS	Report on Voting
12A(CO)169	12A(CO)172

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

IEC 1079 consists of the following parts, under the general title: *Methods of measurement on receivers for satellite broadcast transmission in the 12 GHz band.*

- Part 1: 1992, Radio-frequency measurements on outdoor units.
- Part 2: 1992, Electrical measurements on DBS tuner units.

- Part 3: 1992, Electrical measurements of the overall performance of receiver systems comprising an outdoor unit and a tuner unit for direct DBS reception.

- Part 4: 1993, Electrical measurements on sound/data decoder units for the digital subcarrier/NTSC system.
- Part 5: 1993, Electrical measurements on decoder units for MAC/packet systems.

Annex A forms an integral part of this standard.

Annex B is for information only.

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METHODS OF MEASUREMENT ON RECEIVERS FOR SATELLITE BROADCAST TRANSMISSIONS IN THE 12 GHz BAND

Part 5: Electrical measurements on decoder units for MAC/packet systems

Section 1: General

1.1 Scope and object

The object of this part of IEC 1079 is to define the conditions and methods of measurement to be applied to MAC/packet decoder units.

The specifications of the limit values of the various parameters of the decoder are outside the scope of this part.

This unit can either be connected to the output of a DBS tuner unit or be a part of it. The methods of measurement concerning the DBS tuner part are described in part 2 of IEC 1079.

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The input signal is a baseband video signal encoded according to one of the following MAC standards:

- D-MAC/packet; [SIST EN 61079-5:1999](https://standards.iteh.ai/catalog/standards/sist/219b37ab-ed2f-4e5c-9961-1c70b9823307/sist-en-61079-5-1999)
- D2 MAC/packet. <https://standards.iteh.ai/catalog/standards/sist/219b37ab-ed2f-4e5c-9961-1c70b9823307/sist-en-61079-5-1999>

The output signals are:

- red, green, blue colour signals (R,G,B);
- one or more audio signal(s);
- the composite synchronization signal.

NOTE - The methods of measurement can also be used for MAC/packet receivers with built-in MAC decoder units if R,G,B output signals are available.

1.2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 1079. At the time of publication of this standard, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 1079 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 107-1: 1977, *Recommended methods of measurement on receivers for television broadcast transmissions – Part 1: General considerations. Electrical measurements other than those at audio frequencies*

IEC 107-2: 1980, *Recommended methods of measurement on receivers for television broadcast transmissions – Part 2: Electrical and acoustic measurements at audio frequencies*

IEC 107-3: 1988, *Recommended methods of measurement on receivers for television broadcast transmissions – Part 3: Electrical measurements on multichannel sound television receivers using subcarrier systems*

IEC 107-4: 1988, *Recommended methods of measurement on receivers for television broadcast transmissions – Part 4: Electrical measurements on multichannel sound television receivers using the two-carrier FM system*

IEC 107-5: 1992, *Recommended methods of measurement on receivers for television broadcast transmissions – Part 5: Electrical measurements on multichannel sound television receivers using the NICAM two-channel digital sound system*

IEC 107-6: 1989, *Recommended methods of measurement on receivers for television broadcast transmissions – Part 6: Measurement under conditions different from broadcast signal standards*

IEC 933-1: 1988, *Audio, video and audiovisual systems – Interconnections and matching values. Part 1: 21-pin connector for video systems – Application No.1.*

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Section 2: (General explanation of terms)

For the purpose of this part of IEC 1079, the following general definitions apply.

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2.1 MAC/packet decoder unit

The function of this unit is to process an incoming baseband video MAC signal issued from a DBS tuner unit and to decode it in order to provide R,G,B colour, audio and composite synchronization signals which can be applied to a monitor or a TV set having an appropriate audiovideo connector such as the one defined by IEC 933-1.

The exact configuration of the unit depends on overall product design and the related type of MAC/packet system that the equipment is designed to process.

In the description of the measurement methods, it is assumed that the arrangement of the units is similar to the notional block diagram shown in figure 1.

Section 3: General notes on measurements

3.1 General conditions

3.1.1 Introduction

Measurements should be carried out in accordance with the following conditions to ensure measurement reliability.

3.1.2 Test site

Measurement shall be carried out at a location that is not subject to external radio frequency interference. If interference cannot be avoided, the tests shall be carried out in a screened room.

3.1.3 Environmental conditions

Sections three, four and five of IEC 107-1 shall be applied.

3.1.4 Power supply

A power supply equivalent to the rated voltage and rated frequency of the unit shall be used. The fluctuation of the power supply voltage and frequency during the tests shall not exceed ± 2 % and harmonic components of the power supply shall not exceed 5 %.

3.1.5 Accuracy of measuring instruments

The accuracy of the measuring instruments used, if known, shall either be stated as a percentage or in decibels, as appropriate.

Alternatively, the precision class may be quoted as stated in the relevant publications.

3.1.6 Stabilization period

Unless otherwise specified, measurements should be started at the time that stabilization of the characteristics is obtained.

3.2 Setting of the decoder

Unless otherwise specified, all adjustments of the decoder should be set to nominal (for video and audio parts).

Special care should be taken concerning saturation and contrast settings. They can be checked using the colour-bar test signal and observing that R,G,B output colour signals are as close as possible to those shown in figure 17.

3.3 Video, audio and digital test signals

3.3.1 Video test signals

Most video measurements are performed on one of the outgoing R,G,B colour signals which are derived from both luminance and chrominance components. In order to easily determine the characteristics of each processing channel, the video test signals exist in two forms:

- one for the luminance channel testing (referred to as "L") where the test signal is included in the luminance part of the line;
 - one for the chrominance (referred to as "Ch") where the test signal is included in the chrominance part of the video line.
- a) Multiburst L and Ch signals.
 - b) Complex wobble L and Ch signals (real part).
 - c) Complex wobble L and Ch signals (imaginary part).
 - d) Modulated pulses signal L and Ch signals.
 - e) Pulse and bar L and Ch signals.
 - f) Rising ramp L and Ch signals.
 - g) Eight-riser staircase L and Ch signals.
 - h) 50 % grey level signal.
 - i) 75 % colour-bar signal.
 - j) Bow-tie signal (even line) bow-tie signal (odd line).
 - k) Low frequency black to white transition signal

Examples are shown in figure 2, but complete signal description is provided in the annex A.

NOTES

1 The nominal dynamic range of the MAC video is 1 V. In this text, signals will be described as ranging from -0,5 V to +0,5 V as follows:

	Chrominance	Luminance
Nominal dynamic range	-0,5 V to +0,5 V	-0,5 V to +0,5 V
Offset (relative to standardized signal descriptions)	0 V	- 0,5 V
Relative gain (relative to standardized signal descriptions)	0,733 for Eu' 0,927 for Ev'	1
Black signal	0 V	-0,5 V
50 % grey signal	0 V	0 V
White signal	0 V	+0,5 V

2 In the figures showing the colour output signals, a gain is arbitrarily applied in order to set the range between 0 and +0,7 V.

3 The test signals are usually defined on one or two successive lines. It is always assumed that field and frame structures comply with the relevant MAC system. Normalized reference signal on line 624 should also be present.

4 The time interval T used in the text is equal to the reference sampling period:

$$\frac{1}{20,25} \mu\text{s} = \frac{64}{1\,296} \mu\text{s} = 49,38 \mu\text{s}$$