
Methods of measurement on receiving antennas for satellite broadcast transmission in the 11/12 GHz band -- Part 2: Mechanical and environmental tests on individual and collective receiving antennas (IEC 61114-2:1996)

Methods of measurement on receiving antennas for satellite broadcast transmission in the 11/12 GHz band -- Part 2: Mechanical and environmental tests on individual and collective receiving antennas

Meßverfahren für Empfangsantennen für Satelliten-Rundfunkübertragung im 11/12 GHz-Bereich -- Teil 2: Mechanische und klimatische Prüfungen an Antennen für Einzel- und Gemeinschaftsempfang

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Méthodes de mesure pour les antennes de réception des émissions de radiodiffusion par satellite dans la bande 11/12 GHz -- Partie 2: Essais mécaniques et climatiques sur les antennes de réception à usage individuel ou collectif

Ta slovenski standard je istoveten z: EN 61114-2:1996

ICS:

33.120.40 Antene Aerials

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EUROPEAN STANDARD

EN 61114-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 1996

ICS 33.120.40

Descriptors: Radiocommunications, satellite broadcasting, receivers, antenna conductor, mechanical tests, environmental tests, measurements, characteristics, testing conditions

English version

**Methods of measurement on receiving antennas for
satellite broadcast transmission in the 11/12 GHz band
Part 2: Mechanical and environmental tests on individual
and collective receiving antennas
(IEC 1114-2:1996)**

Méthodes de mesure pour les
antennes de réception des émissions
de radiodiffusion par satellite dans la
bande 11/12 GHz
Partie 2: Essais mécaniques et
climatiques sur les antennes de
réception à usage individuel ou collectif
(CEI 1114-2:1996)

Meßverfahren für Empfangsantennen
für Satelliten-Rundfunkübertragung im
11/12 GHz-Bereich
Teil 2: Mechanische und klimatische
Prüfungen an Antennen für Einzel- und
Gemeinschaftsempfang
(IEC 1114-2:1996)

This European Standard was approved by CENELEC on 1996-03-05. 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, 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

Foreword

The text of document 12A/410/FDIS, future edition 1 of IEC 1114-2, prepared by SC 12A (transformed into SC 100A, Receiving equipment, 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 61114-2 on 1996-03-05.

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) 1996-12-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 1996-12-01

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 1114-2:1996 was approved by CENELEC as a European Standard without any modification.

In the official version, for annex B, Bibliography, the following notes have to be added for the standards indicated:

- IEC 68-2-6 NOTE: Harmonized, together with its amendments 1:1983 and 2:1985,
as HD 323.2.6 S1:1988 (not modified).
 - IEC 68-2-27 NOTE: Harmonized as EN 60068-2-27:1993 (not modified).
 - IEC 597-3 NOTE: Harmonized as HD 95.3 S1:1984 (not modified).
 - IEC 1079-1 NOTE: Harmonized as EN 61079-1:1993 (not modified).
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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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 50(712)	1992	International electrotechnical vocabulary (IEV) Chapter 712: Antennas	-	-
IEC 68-1	1988	Environmental testing Part 1: General and guidance	EN 60068-1 ¹⁾	1994
IEC 68-2-11	1981	Part 2: Tests - Test Ka: Salt mist	HD 323.2.11 S1	1988
IEC 68-2-14	1984	Part 2: Tests - Test N: Change of temperature	HD 323.2.14 S2 ²⁾	1987
IEC 68-2-52	1984	Part 2: Tests - Test Kb: Salt mist, cyclic (sodium chloride solution)	HD 323.2.52 S1 ³⁾	1987
IEC 1114-1	1992	Methods of measurement on receiving antennas for satellite broadcast transmissions in the 12 GHz band Part 1: Electrical measurements on DBS receiving antennas	EN 61114-1	1993

1) EN 60068-1 includes the corrigendum October 1988 + A1:1992 to IEC 68-1.

2) HD 323.2.14 S2 includes A1:1986 to IEC 68-2-14.

3) HD 323.2.52 S1 is superseded by EN 60068-2-52:1996, which is based on IEC 68-2-52:1996.

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de réception des émissions de radiodiffusion
par satellite dans la bande 11/12 GHz –**

Partie 2:

**Essais mécaniques et climatiques sur les antennes
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**Methods of measurement on receiving antennas
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Part 2:

**Mechanical and environmental tests on
individual and collective receiving antennas**

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International Electrotechnical Commission
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

METHODS OF MEASUREMENT ON RECEIVING ANTENNAS FOR SATELLITE
BROADCAST TRANSMISSIONS IN THE 11/12 GHz BAND –Part 2: Mechanical and environmental tests on individual
and collective receiving antennas

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.
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- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 1114-2 has been prepared by sub-committee 12A: Receiving equipment, of IEC technical committee 12: Radiocommunications.

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

FDIS	Report on voting
12A/410/FDIS	100A/3/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.

Annexes A and B are for information only.

METHODS OF MEASUREMENT ON RECEIVING ANTENNAS FOR SATELLITE BROADCAST TRANSMISSIONS IN THE 11/12 GHz BAND –

Part 2: Mechanical and environmental tests on individual and collective receiving antennas

1 Scope

This part of IEC 1114 applies to receiving antennas for satellite broadcast transmissions in the 11/12 GHz band. The frequency ranges of the band are those defined by WARC BS-77 and RARC SAT-83.

The object of this part is to define the conditions and methods of measurement to be applied. This part does not specify performance requirements.

The receiving antenna, together with an SHF converter, constitutes an outdoor unit of a satellite receiver. Methods of measurement on the SHF converter are described in IEC 1079-1.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 1114. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreement based on this part of IEC 1114 are encouraged to investigate the possibility of applying the most recent editions of the normative documents listed below. Members of ISO and IEC maintain registers of currently valid International Standards.

IEV 50(712): 1992, *International Electrotechnical Vocabulary (IEV) – Chapter 712: Antennas*

IEC 68-1: 1988, *Environmental testing – Part 1: General and guidance*

IEC 68-2-11: 1981, *Environmental testing – Part 2: Tests – Test Ka: Salt mist*

IEC 68-2-14: 1984, *Environmental testing – Part 2: Tests – Test N: Change of temperature*

IEC 68-2-52: 1984, *Environmental testing – Part 2: Tests – Test Kb: Salt mist, cyclic (sodium chloride solution)*

IEC 1114-1: 1992, *Methods of measurement on receiving antennas for satellite broadcast transmissions in the 12 GHz band – Part 1: Electrical measurements on DBS receiving antennas*

3 General explanation of terms

For the purpose of this part of IEC 1114, the following general definitions of terms apply.

3.1 receiving antenna: An SHF antenna intended for use in individual and collective reception of satellite broadcast signals.

This standard mainly applies to paraboloidal reflector antennas, which include offset paraboloidal reflector antennas, Cassegrain reflector antennas and other equivalent types. However, it may also apply to planar array antennas.

A paraboloidal reflector antenna usually comprises a main reflector, a primary (and sometimes a secondary) radiator, a circular polarizer, an SHF converter, supporting structures for a primary radiator or subreflector, pointing structures and an antenna fixture to a supporting mast. The supporting mast, however, is not included in this standard. A radome is also excluded.

3.2 mechanical characteristics: The characteristics selected concern the ability of the antenna under test to withstand mechanical forces (wind load, vibration etc.) with acceptable degradation of the electrical performance.

3.3 environmental characteristics: These characteristics concern the durability of the antenna under test when exposed to various adverse climatic conditions over a long period.

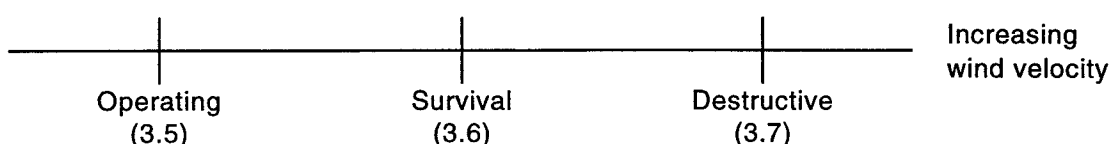
3.4 wind velocity: The wind velocity is defined as the maximum instantaneous wind velocity.

3.5 operating wind velocity: The specified velocity at which the electrical characteristics of the antenna under test shall not degrade by more than specified values, without readjustment of the antenna direction. A typical value for the antenna gain reduction is 1 dB.

3.6 survival wind velocity: The specified velocity at which no permanent degradation of the antenna under test may occur, but re-adjustment of the antenna is required to restore the electrical performance characteristics of the antenna.

3.7 destructive wind velocity: The specified velocity at which permanent degradation of the electrical characteristics of the antenna under test may occur. But, for safety reasons, no part of the antenna shall mechanically disintegrate at this specified wind velocity.

3.8 illustrative definitions and typical values of the three kinds of wind velocities: An illustration of the definitions of the three wind velocity values is shown below:



The three values of wind velocities shall be as specified in the standard of the country for which the antenna is designed. Typical wind velocities are as follows:

- operating wind velocity 20 m/s
- survival wind velocity 40 m/s
- destructive wind velocity 60 m/s

3.9 maximum wind exposure area: The maximum wind exposure area for a device under test is the maximum projected area for the device. It may not coincide with the projected area in the direction of the applied force, but it represents the worst case.

4 General notes on measurements

4.1 General conditions

4.1.1 Introduction

Measurements shall be carried out in accordance with the following conditions, to ensure repeatable results.

4.1.2 Environmental conditions

Unless otherwise specified, the general ranges of ambient atmospheric conditions for measurement are those shown in table 1.

Table 1 – Environmental conditions

Temperature range	20 °C ± 15 °C
Relative humidity	55 % ± 30 %
Air pressure	86 kPa to 106 kPa

4.1.3 Number of test samples

One antenna should be prepared for each test item. If an antenna has to be tested for more than two test items, the test order shall follow the procedure given in IEC 68-1.

4.1.4 Accuracy of measuring instruments

Under consideration.

4.1.5 Stabilization period

Measurements should be started after the characteristics have had time to stabilize.

4.2 Measuring instruments

4.2.1 Vibration generator

The vibration generator shall be able to generate sinusoidal vibrations over a range of frequencies from at least 5 Hz to 55 Hz and have amplitudes that can be adjusted easily.