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SIST EN 60835-2-2:2002

01-oktober-2002

Methods of measurement for equipment used in digital microwave radio transmission systems - Part 2: Measurements on radio-relay systems - Section 2: Antenna (IEC 60835-2-2:1994)

Methods of measurement for equipment used in digital microwave radio transmission systems -- Part 2: Measurements on radio-relay systems -- Section 2: Antenna

Meßverfahren für Geräte in digitalen Mikrowellen-Funkübertragungssystemen -- Teil 2: Messungen an terrestrischen Richtfunksystemen -- Hauptabschnitt 2: Antenne

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Méthodes de mesure applicables au matériel utilisé pour les systèmes de transmission numérique en hyperfréquence -- Partie 2: Mesures applicables aux faisceaux hertziens terrestres -- Section 2: Antennes

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Ta slovenski standard je istoveten z: **EN 60835-2-2:1994**

ICS:

33.060.30	Radiorelejni in fiksni satelitski komunikacijski sistemi	Radio relay and fixed satellite communications systems

SIST EN 60835-2-2:2002 **en**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

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EUROPEAN STANDARD

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IEC/SC 12E

June 1994

UDC 621.396.6:620.1:621.317.08

Descriptors: Radiocommunications, telecommunications, communication equipment, earth stations, radio-relay systems, microwave frequencies, digital technics, antenna, conductors, measurements, electrical properties, tests

ENGLISH VERSION

Methods of measurement for equipment used in digital microwave radio transmission systems
Part 2: Measurements on terrestrial radio-relay systems
Section 2: Antenna
(IEC 835-2-2:1994)

Méthodes de mesure applicables au matériel utilisé pour les systèmes de transmission numérique en hyperfréquence
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Meßverfahren für Geräte in digitalen Mikrowellen-Funkübertragungssystemen
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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.

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.

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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

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FOREWORD

The text of document 12E(CO)158, as prepared by Sub-Committee 12E: Radio relay and fixed-satellite communications systems, of IEC Technical Committee 12: Radiocommunications, was submitted to the IEC-CENELEC parallel vote in July 1993.

The reference document was approved by CENELEC as EN 60835-2-2 on 8 March 1994.

The following dates were fixed:

- latest date of publication of an identical national standard	(dop)	1995-05-01
- latest date of withdrawal of conflicting national standards	(dow)	1995-05-01

Annexes designated "normative" are part of the body of the standard. In this standard, annex ZA is normative.

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ENDORSEMENT NOTICE

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The text of the International Standard IEC 835-2-2:1994 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
50	-	International Electrotechnical Vocabulary (IEV)	-	-
835-1-2	1992	Methods of measurement for equipment used in digital microwave radio transmission systems Part 1: Measurements common to terrestrial radio-relay systems and satellite earthstations Section 2: Basic characteristics	EN 60835-1-2	1993

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Methods of measurement for equipment used in digital microwave radio transmission systems

Part 2:
Measurements on terrestrial radio-relay systems
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Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

METHODS OF MEASUREMENT FOR EQUIPMENT USED IN DIGITAL MICROWAVE TRANSMISSION SYSTEMS –

Part 2: Measurements on terrestrial radio-relay systems – Section 2: Antenna

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.

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International Standard IEC 835-2-2 has been prepared by IEC by sub-committee 12E, of IEC technical committee 12: Radiocommunications.

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

DIS	Report on Voting
12E(CO)158	12E(CO)163

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

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INTRODUCTION

Antennas are key elements of radio-relay systems. A satisfactory fade margin for such systems is usually obtained by using high directivity, i.e. high-gain, antennas at both the transmitter and receiver terminals of a radio link.

An antenna with a high directivity usually also has a narrow beam width main lobe which can provide a useful measure of protection against reflected rays. These reflected rays can lead to multipath fading.

Rapid sidelobe suppression away from the main lobe is often a requirement at radio-relay system nodes to provide sufficient de-coupling between radio links which employ frequency use and small angular separation between the line-of-sight paths.

Moreover, and especially for digital radio-relay systems, a high cross-polarization discrimination is necessary to provide sufficient decoupling between adjacent orthogonally polarized channels where the signal spectra overlap considerably, and between two orthogonally polarized co-frequency channels, i.e. using the same nominal carrier frequency.

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If the antenna under test is installed with a radome in normal operation on a radio link, all measurements should be performed with the radome fitted.

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METHODS OF MEASUREMENT FOR EQUIPMENT USED IN DIGITAL MICROWAVE TRANSMISSION SYSTEMS –

Part 2: Measurements on terrestrial radio-relay systems – Section 2: Antenna

1 Scope

This section of IEC 835-2 gives methods of measurement of the electrical characteristics of antennas used in terrestrial radio-relay systems at frequencies above 1 GHz.

The methods described are suitable for both line-of-sight and tropospheric scatter radio-relay systems using linear polarization. This section does not consider methods of measurement for passive repeaters or periscope antennas nor does it address systems where the antenna cannot be measured separately.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this section of IEC 835-2. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this section of IEC 835-2 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.

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IEC 50, *International Electrotechnical Vocabulary (IEV)*

IEC 835-1-2: 1992, *Methods of measurement for equipment used in digital microwave transmission systems – Part 1: Measurements common to terrestrial radio-relay systems and satellite earth stations – Section 2: Basic characteristics*

3 Definitions

For the purposes of this section of IEC 835-2, the following definitions apply.

Where a term is not defined in this section, the definition is assumed to be identical with the definition given in the International Electrotechnical Vocabulary (IEV). In case of conflict, the definition given here takes precedence.

NOTE - Characteristics for which methods of measurement are given are defined in the corresponding measurement subclause.