

**MULTIMEEDIASEADME ELEKTROMAGNETILINE  
ÜHILDUVUS. KIIRGUSNÕUDED**

**Electromagnetic compatibility of multimedia  
equipment - Emission requirements**

**EESTI STANDARDI EESSÕNA****NATIONAL FOREWORD**

See Eesti standard EVS-EN 55032:2015 sisaldab Euroopa standardi EN 55032:2015 ingliskeelset teksti.	This Estonian standard EVS-EN 55032:2015 consists of the English text of the European standard EN 55032:2015.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 03.07.2015.	Date of Availability of the European standard is 03.07.2015.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile [standardiosakond@evs.ee](mailto:standardiosakond@evs.ee).

ICS 33.100.10

**Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele**

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:  
Koduleht [www.evs.ee](http://www.evs.ee); telefon 605 5050; e-post [info@evs.ee](mailto:info@evs.ee)

**The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation**

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Homepage [www.evs.ee](http://www.evs.ee); phone +372 605 5050; e-mail [info@evs.ee](mailto:info@evs.ee)

EUROPEAN STANDARD

**EN 55032**

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2015

ICS 33.100.10

Supersedes EN 55032:2012

English Version

**Electromagnetic compatibility of multimedia equipment -  
Emission Requirements  
(CISPR 32:2015)**

Compatibilité électromagnétique des équipements  
multimédia - Exigences d'émission  
(CISPR 32:2015)

Elektromagnetische Verträglichkeit von Multimediageräten  
und -einrichtungen - Anforderungen an die Störaussendung  
(CISPR 32:2015)

This European Standard was approved by CENELEC on 2015-05-05. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

## Foreword

The text of document CIS/1/498/FDIS, future edition 2 of CISPR 32, prepared by CISPR SC 1 "Electromagnetic compatibility of information technology equipment, multimedia equipment and receivers" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 55032:2015.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2016-02-05
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2018-05-05

This document supersedes EN 55032:2012.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive.

For the relationship with EU Directive see informative Annex ZZ, which is an integral part of this document.

## Endorsement notice

The text of the International Standard CISPR 32:2015 was approved by CENELEC as a European Standard without any modification.

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

CISPR 13:2009	NOTE	Harmonized as EN 55013:2013 (modified).
CISPR 16 Series	NOTE	Harmonized as EN 55016 Series.
CISPR 22:2008	NOTE	Harmonized as EN 55022:2010 (modified).

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: [www.cenelec.eu](http://www.cenelec.eu)

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
CISPR 16-1-1	2010	Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-1: Radio disturbance and immunity measuring apparatus - Measuring apparatus	EN 55016-1-1	2010
+A1	2010		+A1	2010
+A2	2014		+A2	2014
CISPR 16-1-2	2003	Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-2: Radio disturbance and immunity measuring apparatus - Ancillary equipment - Conducted disturbances	EN 55016-1-2	2004 <sup>1)</sup>
+A1	2004		+A1	2005
+A2	2006		+A2	2006
CISPR 16-1-4	2010	Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-4: Radio disturbance and immunity measuring apparatus - Antennas and test sites for radiated disturbance measurements	EN 55016-1-4	2010
+A1	2012		+A1	2012
CISPR 16-2-1	2008	Specification for radio disturbance and immunity measuring apparatus and methods - Part 2-1: Methods of measurement of disturbances and immunity - Conducted disturbance measurements	EN 55016-2-1	2009 <sup>2)</sup>
+A1	2010		+A1	2011
+A2	2013		+A2	2013
CISPR 16-2-3	2010	Specification for radio disturbance and immunity measuring apparatus and methods - Part 2-3: Methods of measurement of disturbances and immunity - Radiated disturbance measurements	EN 55016-2-3	2010
+A1	2010		+AC	2013
+A2	2014		+A1	2010
			+A2	2014

<sup>1)</sup> Superseded by EN 55016-1-2:2014 (CISPR 16-1-2:2014): DOW = 2017-04-25.

<sup>2)</sup> Superseded by EN 55016-2-1:2014 (CISPR 16-2-1:2014): DOW = 2017-04-02.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
CISPR 16-4-2	2011	Specification for radio disturbance and immunity measuring apparatus and methods - Part 4-2: Uncertainties, statistics and limit modelling - Measurement instrumentation uncertainty	EN 55016-4-2	2011
IEC 61000-4-6	2008	Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields	EN 61000-4-6	2009 <sup>3)</sup>
ISO/IEC 17025	2005	General requirements for the competence - of testing and calibration laboratories	-	-
ANSI C63.5	2006	American National Standard (for) Electromagnetic Compatibility - Radiated Emission Measurements in Electromagnetic Interference (EMI) Control - Calibration of Antennas (9 kHz to 40 GHz)	-	-
IEEE 802.3	-	IEEE Standard for Information technology -- Specific requirements - Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications	-	-

<sup>3)</sup> Superseded by EN 61000-4-6:2014 (IEC 61000-4-6:2013): DOW = 2016-11-27.

**Annex ZZ**  
(informative)

**Coverage of Essential Requirements of EU Directives**

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and within its scope the standard covers protection requirements Annex I, Article 1(a) of the EU Directive 2004/108/EC, and essential requirements of Article 3.1(b) (immunity only) of the EU Directive 1999/5/EC.

Compliance with this standard provides presumption of conformity with the specified essential requirements of the Directives concerned.

**WARNING** Other requirements and other EU Directives may be applicable to the products falling within the scope of this standard.

This document is a preview generated by EVS

## CONTENTS

FOREWORD.....	8
1 Scope.....	10
2 Normative references .....	10
3 Terms, definitions and abbreviations .....	11
3.1 Terms and definitions.....	11
3.2 Abbreviations .....	16
4 Classification of equipment.....	17
5 Requirements .....	18
6 Measurements.....	18
6.1 General.....	18
6.2 Host systems and modular EUT .....	18
6.3 Measurement procedure .....	19
7 Equipment documentation .....	20
8 Applicability .....	20
9 Test report.....	21
10 Compliance with this publication .....	22
11 Measurement uncertainty .....	22
Annex A (normative) Requirements.....	23
A.1 General.....	23
A.2 Requirements for radiated emissions .....	24
A.3 Requirements for conducted emissions .....	28
Annex B (normative) Exercising the EUT during measurement and test signal specifications.....	33
B.1 General.....	33
B.2 Exercising of EUT ports .....	33
B.2.1 Audio signals .....	33
B.2.2 Video signals .....	33
B.2.3 Digital broadcast signals.....	34
B.2.4 Other signals .....	34
Annex C (normative) Measurement procedures, instrumentation and supporting information .....	38
C.1 General.....	38
C.2 Instrumentation and supporting information.....	38
C.2.1 General .....	38
C.2.2 Using CISPR 16 series as the basic standard .....	38
C.2.3 EUT cycle time and measurement dwell time .....	41
C.3 General measurement procedures .....	41
C.3.1 Overview .....	41
C.3.2 Prescan measurements .....	43
C.3.3 Formal measurements .....	43
C.3.4 Specifics for radiated emission measurements .....	43
C.3.5 Specifics for conducted emission measurements on the AC mains power ports .....	43
C.3.6 Specifics for conducted emission measurements on analogue/digital data ports .....	43



C.3.7	Specifics for conducted emission measurements on broadcast receiver tuner ports .....	44
C.3.8	Specifics for conducted emission measurements on RF modulator output ports .....	44
C.4	MME-related measurement procedures .....	44
C.4.1	Measurement of conducted emissions at analogue/digital data ports .....	44
C.4.2	Measurement of emission voltages at a TV/FM broadcast receiver tuner ports in the frequency range 30 MHz to 2,15 GHz .....	50
C.4.3	Measurement of the wanted signal and emission voltage at RF modulator output ports, in the frequency range 30 MHz to 2,15 GHz .....	51
C.4.4	Additional Normalized Site Attenuation (NSA) values .....	52
Annex D (normative)	Arrangement of EUT, local AE and associated cabling .....	54
D.1	Overview .....	54
D.1.1	General .....	54
D.1.2	Table-top arrangement .....	58
D.1.3	Floor standing arrangement .....	58
D.1.4	Combinations of table-top and floor standing EUT arrangement .....	59
D.1.5	Arrangements for radiated measurement in a FAR .....	59
D.2	MME-related conditions for conducted emission measurement .....	59
D.2.1	General .....	59
D.2.2	Specific conditions for table-top equipment .....	60
D.2.3	Specific requirements for floor standing equipment .....	61
D.2.4	Specific requirements for combined table-top and floor standing equipment .....	61
D.3	MME-related requirements for radiated measurement .....	61
D.3.1	General .....	61
D.3.2	Requirements for table-top equipment .....	61
Annex E (informative)	Prescan measurements .....	72
Annex F (informative)	Test report contents summary .....	73
Annex G (informative)	Support information for the measurement procedures defined in C.4.1.1 .....	74
G.1	Schematic diagrams of examples of asymmetric artificial networks .....	74
G.2	Rationale for emission measurements and procedures for wired network ports .....	83
G.2.1	Limits .....	83
G.2.2	Combination of current probe and CVP .....	84
G.2.3	Basic ideas of the CVP .....	85
G.2.4	Combination of current and voltage limit .....	85
G.2.5	Ferrite requirements for use in C.4.1.1 .....	87
Annex H (normative)	Supporting information for the measurement of outdoor unit of home satellite receiving systems .....	90
H.1	Rationale .....	90
H.2	General .....	90
H.3	Operation conditions .....	91
H.4	Specific requirements for LO measurement .....	91
H.5	EUT arrangements .....	92
Annex I (informative)	Other test methods and associated limits for radiated emissions .....	94
I.1	General .....	94
I.2	Procedures for radiated emission measurements using a GTEM or RVC .....	94
I.3	Additional measurement procedure information .....	96

1.3.1	General .....	96
1.3.2	Specific considerations for radiated emission measurements using a GTEM .....	96
1.3.3	Specific considerations for radiated emission measurements using an RVC .....	96
1.4	Use of a GTEM for radiated emission measurements .....	97
1.4.1	General .....	97
1.4.2	EUT layout .....	97
1.4.3	GTEM, measurements above 1 GHz .....	98
1.4.4	Uncertainties .....	99
1.5	Specific EUT arrangement requirements for radiated emission measurements above 1 GHz using an RVC .....	99
1.6	Reference documents .....	99
	Bibliography .....	101
	Figure 1 – Examples of ports .....	15
	Figure 2 – Example of a host system with different types of modules .....	19
	Figure A.1 – Graphical representation of the limits for the AC mains power port defined in Table A.10 .....	23
	Figure C.1 – Measurement distance .....	39
	Figure C.2 – Boundary of EUT, Local AE and associated cabling .....	40
	Figure C.3 – Decision tree for using different detectors with quasi peak and average limits .....	41
	Figure C.4 – Decision tree for using different detectors with peak and average limits .....	42
	Figure C.5 – Decision tree for using different detectors with a quasi-peak limit .....	42
	Figure C.6 – Calibration fixture .....	50
	Figure C.7 – Arrangement for measuring impedance in accordance with C.4.1.7 .....	50
	Figure C.8 – Circuit arrangement for measurement of emission voltages at TV/FM broadcast receiver tuner ports .....	51
	Figure C.9 – Circuit arrangement for the measurement of the wanted signal and emission voltage at the RF modulator output port of an EUT .....	52
	Figure D.1 – Example measurement arrangement for table-top EUT (conducted and radiated emission) (top view) .....	62
	Figure D.2 – Example measurement arrangement for table-top EUT (conducted emission measurement – alternative 1) .....	63
	Figure D.3 – Example measurement arrangement for table-top EUT (conducted emission measurement – alternative 2) .....	64
	Figure D.4 – Example measurement arrangement for table-top EUT measuring in accordance with C.4.1.6.4 .....	64
	Figure D.5 – Example measurement arrangement for table-top EUT (conducted emission measurement – alternative 2, showing AAN position) .....	65
	Figure D.6 – Example measurement arrangement for floor standing EUT (conducted emission measurement) .....	66
	Figure D.7 – Example measurement arrangement for combinations of EUT (conducted emission measurement) .....	67
	Figure D.8 – Example measurement arrangement for table-top EUT (radiated emission measurement) .....	67
	Figure D.9 – Example measurement arrangement for floor standing EUT (radiated emission measurement) .....	68

Figure D.10 – Example measurement arrangement for combinations of EUT (radiated emission measurement) .....	69
Figure D.11 – Example measurement arrangement for tabletop EUT (radiated emission measurement within a FAR) .....	70
Figure D.12 – Example cable configuration and EUT height (radiated emission measurement within a FAR) .....	71
Figure G.1 – Example AAN for use with unscreened single balanced pairs .....	74
Figure G.2 – Example AAN with high LCL for use with either one or two unscreened balanced pairs .....	75
Figure G.3 – Example AAN with high LCL for use with one, two, three, or four unscreened balanced pairs .....	76
Figure G.4 – Example AAN, including a 50 $\Omega$ source matching network at the voltage measuring port, for use with two unscreened balanced pairs .....	77
Figure G.5 – Example AAN for use with two unscreened balanced pairs .....	78
Figure G.6 – Example AAN, including a 50 $\Omega$ source matching network at the voltage measuring port, for use with four unscreened balanced pairs .....	79
Figure G.7 – Example AAN for use with four unscreened balanced pairs .....	80
Figure G.8 – Example AAN for use with coaxial cables, employing an internal common mode choke created by bifilar winding an insulated centre-conductor wire and an insulated screen-conductor wire on a common magnetic core (for example, a ferrite toroid) .....	81
Figure G.9 – Example AAN for use with coaxial cables, employing an internal common mode choke created by miniature coaxial cable (miniature semi-rigid solid copper screen or miniature double-braided screen coaxial cable) wound on ferrite toroids .....	81
Figure G.10 – Example AAN for use with multi-conductor screened cables, employing an internal common mode choke created by multifilar winding multiple insulated signal wires and an insulated screen-conductor wire on a common magnetic core (for example, a ferrite toroid) .....	82
Figure G.11 – Example AAN for use with multi-conductor screened cables, employing an internal common mode choke created by winding a multi-conductor screened cable on ferrite toroids .....	83
Figure G.12 – Basic circuit for considering the limits with defined common mode impedance of 150 $\Omega$ .....	86
Figure G.13 – Basic circuit for the measurement with unknown common mode impedance .....	86
Figure G.14 – Impedance layout of the components in the method described in C.4.1.6.3 .....	87
Figure G.15 – Basic measurement setup to measure combined impedance of the 150 $\Omega$ and ferrites .....	89
Figure H.1 – Description of $\pm 7^\circ$ of the main beam axis of the EUT .....	92
Figure H.2 – Example measurement arrangements of transmit antenna for the wanted signal .....	93
Figure I.1 – Typical GTEM side sectional view showing some basic parts .....	97
Figure I.2 – Typical GTEM plan sectional view showing floor layout .....	98
Figure I.3 – Typical EUT mounting for combination of modules being measured .....	98
Figure I.4 – Overview of the reverberation chamber for radiated emission measurement .....	99
Table 1 – Required highest frequency for radiated measurement .....	21

Table A.1 – Radiated emissions, basic standards and the limitation of the use of particular methods .....	25
Table A.2 – Requirements for radiated emissions at frequencies up to 1 GHz for class A equipment .....	26
Table A.3 – Requirements for radiated emissions at frequencies above 1 GHz for class A equipment .....	26
Table A.4 – Requirements for radiated emissions at frequencies up to 1 GHz for class B equipment .....	26
Table A.5 – Requirements for radiated emissions at frequencies above 1 GHz for class B equipment .....	27
Table A.6 – Requirements for radiated emissions from FM receivers .....	27
Table A.7 – Requirements for outdoor units of home satellite receiving systems .....	28
Table A.8 – Conducted emissions, basic standards and the limitation of the use of particular methods .....	29
Table A.9 – Requirements for conducted emissions from the AC mains power ports of Class A equipment.....	29
Table A.10 – Requirements for conducted emissions from the AC mains power ports of Class B equipment.....	30
Table A.11 – Requirements for asymmetric mode conducted emissions from Class A equipment.....	30
Table A.12 – Requirements for asymmetric mode conducted emissions from Class B equipment.....	31
Table A.13 – Requirements for conducted differential voltage emissions from Class B equipment.....	32
Table B.1 – Methods of exercising displays and video ports.....	34
Table B.2 – Display and video parameters .....	34
Table B.3 – Methods used to exercise ports.....	35
Table B.4 – Examples of digital broadcast signal specifications .....	36
Table C.1 – Analogue/digital data port emission procedure selection .....	45
Table C.2 – LCL values.....	46
Table C.3 – 5 m OATS/SAC NSA values.....	53
Table D.1 – Measurement arrangements of EUT.....	54
Table D.2 – Arrangement spacing, distances and tolerances .....	57
Table F.1 – Summary of information to include in a test report.....	73
Table G.1 – Summary of advantages and disadvantages of the procedures described in C.4.1.6.....	84
Table H.1 – Derivation of the limit within $\pm 7^\circ$ of the main beam axis.....	90
Table I.1 – Radiated emissions, basic standards and the limitation of the use of GTEM and RVC methods.....	94
Table I.2 – Proposed limits for radiated emissions at frequencies up to 1 GHz for Class A equipment, for GTEM.....	95
Table I.3 – Proposed limits for radiated emission for frequencies above 1 GHz for Class A equipment, for GTEM.....	95
Table I.4 – Proposed limits for radiated emission for frequencies above 1 GHz for Class A equipment, for RVC .....	95
Table I.5 – Proposed limits for radiated emissions at frequencies up to 1 GHz for Class B equipment, for GTEM.....	96
Table I.6 – Proposed limits for radiated emission for frequencies above 1 GHz for Class B equipment, for GTEM.....	96

Table I.7 – Proposed limits for radiated emission for frequencies above 1 GHz for Class B equipment, for RVC .....96

This document is a preview generated by EVS

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTROMAGNETIC COMPATIBILITY  
OF MULTIMEDIA EQUIPMENT –****Emission requirements**

## FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of 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, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). 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. 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 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 IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard CISPR 32 has been prepared by CISPR subcommittee 1: Electromagnetic compatibility of information technology equipment, multimedia equipment and receivers.

This second edition cancels and replaces the first edition published in 2012. This edition constitutes a technical revision.

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

- a) additional requirements using FAR,
- b) additional requirements for outdoor unit of home satellite receiving systems,
- c) addition of new informative annexes covering GTEM and RVC,
- d) numerous maintenance items are addressed to improve the testing of MME.