



IEC 61000-3-2

Edition 5.1 2020-07
CONSOLIDATED VERSION

INTERNATIONAL STANDARD



**Electromagnetic compatibility (EMC) –
Part 3-2: Limits – Limits for harmonic current emissions (equipment input
current ≤ 16 A per phase)**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 33.100.10

ISBN 978-2-8322-8679-1

Warning! Make sure that you obtained this publication from an authorized distributor.

REDLINE VERSION



**Electromagnetic compatibility (EMC) –
Part 3-2: Limits – Limits for harmonic current emissions (equipment input
current ≤ 16 A per phase)**

CONTENTS

FOREWORD	4
INTRODUCTION	6
1 Scope	7
2 Normative references	7
3 Terms and definitions	8
4 General	13
5 Classification of equipment	13
5.1 General	13
5.2 Description of lighting equipment	14
5.3 External power supplies	14
6 General requirements	15
6.1 General	15
6.2 Control methods	15
6.3 Harmonic current measurement	17
6.3.1 Test configuration	17
6.3.2 Measurement procedure	17
6.3.3 General requirements	18
6.3.4 Test observation period	19
6.4 Equipment in a rack or case	19
6.5 Multifunction equipment	20
7 Harmonic current limits	20
7.1 General	20
7.2 Limits for Class A equipment	21
7.3 Limits for Class B equipment	22
7.4 Limits for Class C equipment	22
7.4.1 General	22
7.4.2 Rated power > 25 W	22
7.4.3 Rated power ≥ 5 W and ≤ 25 W	23
7.5 Limits for Class D equipment	24
8 Compliance with this document	25
Annex A (normative) Measurement circuit and supply source	26
A.1 Test circuit	26
A.2 Supply source	26
Annex B (normative) Type test conditions	29
B.1 General	29
B.2 Test conditions for Television receivers (TV)	29
B.2.1 General requirements	29
B.2.2 Measurement conditions	29
B.2.3 Test report	30
B.3 Test conditions for Audio amplifiers	30
B.3.1 Conditions	30
B.3.2 Input signals and loads	30
B.4 Test conditions for Video-cassette recorders	31
B.5 Test conditions for Lighting equipment	31
B.5.1 General conditions	31

B.5.2	Lamps Light sources	31
B.5.3	Luminaires	31
B.5.4	Lighting control gear	32
B.5.5	DLT control devices	33
B.6	Test conditions for Independent phase control dimmers for lighting equipment	33
B.7	Test conditions for Vacuum cleaners	33
B.8	Test conditions for Washing machines	34
B.9	Test conditions for Microwave ovens	34
B.10	Test conditions for Information technology equipment (ITE)	34
B.10.1	General conditions	34
B.10.2	Optional conditions for measuring emissions of IT equipment with external power supplies or battery chargers	35
B.11	Test conditions for Cooking appliances	35
B.11.1	Induction hobs and hotplates	35
B.11.2	Hobs and hotplates other than induction cooking appliances	36
B.12	Test conditions for Air conditioners	36
B.13	Test conditions for Kitchen machines as defined in IEC 60335-2-14	36
B.14	Test conditions for Arc welding equipment which is not professional equipment	37
B.15	Test conditions for High pressure cleaners which are not professional equipment	37
B.16	Test conditions for Refrigerators and freezers	37
B.16.1	General	37
B.16.2	Refrigerators and freezers with VSD	38
B.16.3	Refrigerators and freezers without VSD	38
B.17	External power supplies (EPS)	38
B.17.1	EPS designated for specific models of equipment	38
B.17.2	EPS not designated for specific models of equipment	38
Annex C (normative)	POHC calculation	40
C.1	General	40
C.2	Calculation of the POHC from the final values of the harmonic currents, averaged over the complete observation time	40
C.3	Calculation of the final POHC from single POHC values for each DFT time window	40
Bibliography	41
Figure 1	– Flowchart for determining conformity	21
Figure 2	– Illustration of the relative phase angle and current parameters described in 7.4.3	23
Figure A.1	– Measurement circuit for single-phase equipment	27
Figure A.2	– Measurement circuit for three-phase equipment	28
Table 1	– Limits for Class A equipment	24
Table 2	– Limits for Class C equipment ^a	24
Table 3	– Limits for Class D equipment	25
Table 4	– Test observation period	25
Table B.1	– Conventional load for arc welding equipment tests	37

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTROMAGNETIC COMPATIBILITY (EMC) –**Part 3-2: Limits – Limits for harmonic current emissions
(equipment input current ≤ 16 A per phase)**

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.

This consolidated version of the official IEC Standard and its amendment has been prepared for user convenience.

IEC 61000-3-2 edition 5.1 contains the fifth edition (2018-01) [documents 77A/986/FDIS and 77A/990/RVD] and its amendment 1 (2020-07) [documents 77A/1077/FDIS and 77A/1084/RVD].

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

International Standard IEC 61000-3-2 has been prepared by sub-committee 77A: EMC – Low frequency phenomena, of IEC technical committee 77: Electromagnetic compatibility.

It forms part 3-2 of the IEC 61000 series. It has the status of a product family standard.

This fifth edition constitutes a technical revision.

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

- a) an update of the emission limits for lighting equipment with a rated power ≤ 25 W to take into account new types of lighting equipment;
- b) the addition of a threshold of 5 W under which no emission limits apply to all lighting equipment;
- c) the modification of the requirements applying to the dimmers when operating non-incandescent lamps;
- d) the addition of test conditions for digital load side transmission control devices;
- e) the removal of the use of reference lamps and reference ballasts for the tests of lighting equipment;
- f) the simplification and clarification of the terminology used for lighting equipment;
- g) the classification of professional luminaires for stage lighting and studios under Class A;
- h) a clarification about the classification of emergency lighting equipment;
- i) a clarification for lighting equipment including one control module with an active input power ≤ 2 W;
- j) an update of the test conditions for television receivers;
- k) an update of the test conditions for induction hobs, taking also into account the other types of cooking appliances;
- l) for consistency with IEC 61000-3-12, a change of the scope of IEC 61000-3-2 from equipment with an input current ≤ 16 A to equipment with a rated input current ≤ 16 A.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 61000 series, published under the general title, *Electromagnetic compatibility (EMC)*, can be found on the IEC website.

The committee has decided that the contents of the base publication and its amendment will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

IEC 61000 is published in separate parts, according to the following structure:

Part 1: General

General considerations (introduction, fundamental principles)

Definitions, terminology

Part 2: Environment

Description ~~levels~~ of the environment

Classification of the environment

Compatibility levels

Part 3: Limits

Emission limits

Immunity limits (in so far as they do not fall under the responsibility of the product committees)

Part 4: Testing and measurement techniques

Measurement techniques

Testing techniques

Part 5: Installation and mitigation guidelines

Installation guidelines

Mitigation methods and devices

Part 6: Generic standards

Part 9: Miscellaneous

Each part is further subdivided into several parts, published either as international standards or as technical specifications or technical reports, some of which have already been published as sections. Others will be published with the part number followed by a dash and a second number identifying the subdivision (example: IEC 61000-6-1).

ELECTROMAGNETIC COMPATIBILITY (EMC) –

Part 3-2: Limits – Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)

1 Scope

This part of IEC 61000 deals with the limitation of harmonic currents injected into the public supply system.

It specifies limits of harmonic components of the input current which can be produced by equipment tested under specified conditions.

This part of IEC 61000 is applicable to electrical and electronic equipment having a rated input current up to and including 16 A per phase, and intended to be connected to public low-voltage distribution systems.

Arc welding equipment, which is not professional equipment, with a rated input current up to and including 16 A per phase, is included in the scope of this document. ~~Arc welding equipment intended for professional use, as specified in IEC 60974-1, is excluded from this document and can be subject to installation restrictions as indicated in IEC 61000-3-12.~~ All other arc welding equipment is excluded from the scope of this document; however, the harmonics emission can be evaluated using IEC 61000-3-12 and relevant installation restrictions.

The tests according to this document are type tests.

For systems with nominal voltages less than but not equal to 220 V (line-to-neutral), the limits have not yet been considered.

NOTE The words apparatus, appliance, device and equipment are used throughout this document. They have the same meaning for the purposes of this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60050-161:1990, *International Electrotechnical Vocabulary (IEV) – Part 161: Electromagnetic compatibility* (available at www.electropedia.org)

IEC 60107-1:1997, *Methods of measurement on receivers for television broadcast transmissions – Part 1: General considerations – Measurements at radio and video frequencies*

IEC 60155:1993, *Glow-starters for fluorescent lamps*

IEC 60268-1:1985, *Sound system equipment – Part 1: General*
IEC 60268-1:1985/AMD1:1988
IEC 60268-1:1985/AMD2:1988

IEC 60268-3:2018, *Sound system equipment – Part 3: Amplifiers*

IEC 60335-2-2:2019, *Household and similar electrical appliances – Safety – Part 2-2: Particular requirements for vacuum cleaners and water-suction cleaning appliances*

IEC 60335-2-14:2016, *Household and similar electrical appliances – Safety – Part 2-14: Particular requirements for kitchen machines*

IEC 60335-2-24:2010, *Household and similar electrical appliances – Safety – Part 2-24: Particular requirements for refrigerating appliances, ice-cream appliances and ice makers*

IEC 60335-2-24:2010/AMD1:2012

IEC 60335-2-24:2010/AMD2:2017

IEC 60335-2-79:2016, *Household and similar electrical appliances – Safety – Part 2-79: Particular requirements for high pressure cleaners and steam cleaners*

IEC 60598-2-17:2012, *Luminaires – Part 2-17: Particular requirements – Luminaires for stage lighting, television and film studios (outdoor and indoor)*

IEC 60598-2-17:2012/AMD1:2015

IEC 60974-1:2017, *Arc welding equipment – Part 1: Welding power sources*

IEC 61000-4-7:2002, *Electromagnetic compatibility (EMC) – Part 4-7: Testing and measurement techniques – General guide on harmonics and interharmonics measurements and instrumentation, for power supply systems and equipment connected thereto*

IEC 61000-4-7:2002/AMD1:2008

IEC 62756-1:2015, *Digital load side transmission lighting control (DLT) – Part 1: Basic requirements*

FINAL VERSION



**Electromagnetic compatibility (EMC) –
Part 3-2: Limits – Limits for harmonic current emissions (equipment input
current ≤ 16 A per phase)**

CONTENTS

FOREWORD	4
INTRODUCTION	6
1 Scope	7
2 Normative references	7
3 Terms and definitions	8
4 General	12
5 Classification of equipment	12
5.1 General	12
5.2 Description of lighting equipment	13
5.3 External power supplies	14
6 General requirements	14
6.1 General	14
6.2 Control methods	14
6.3 Harmonic current measurement	15
6.3.1 Test configuration	15
6.3.2 Measurement procedure	16
6.3.3 General requirements	16
6.3.4 Test observation period	18
6.4 Equipment in a rack or case	18
6.5 Multifunction equipment	18
7 Harmonic current limits	19
7.1 General	19
7.2 Limits for Class A equipment	20
7.3 Limits for Class B equipment	21
7.4 Limits for Class C equipment	21
7.4.1 General	21
7.4.2 Rated power > 25 W	21
7.4.3 Rated power ≥ 5 W and ≤ 25 W	22
7.5 Limits for Class D equipment	23
8 Compliance with this document	24
Annex A (normative) Measurement circuit and supply source	25
A.1 Test circuit	25
A.2 Supply source	25
Annex B (normative) Type test conditions	28
B.1 General	28
B.2 Television receivers (TV)	28
B.2.1 General requirements	28
B.2.2 Measurement conditions	28
B.2.3 Test report	29
B.3 Audio amplifiers	29
B.3.1 Conditions	29
B.3.2 Input signals and loads	29
B.4 Video-cassette recorders	30
B.5 Lighting equipment	30
B.5.1 General conditions	30

B.5.2	Light sources	30
B.5.3	Luminaires	30
B.5.4	Lighting control gear	31
B.5.5	DLT control devices	31
B.6	Independent phase control dimmers for lighting equipment	31
B.7	Vacuum cleaners	32
B.8	Washing machines	32
B.9	Microwave ovens	33
B.10	Information technology equipment (ITE)	33
B.10.1	General conditions	33
B.10.2	IT equipment with external power supplies	33
B.11	Cooking appliances	34
B.11.1	Induction hobs and hotplates	34
B.11.2	Hobs and hotplates other than induction cooking appliances	34
B.12	Air conditioners	34
B.13	Kitchen machines as defined in IEC 60335-2-14	35
B.14	Arc welding equipment which is not professional equipment	35
B.15	High pressure cleaners which are not professional equipment	35
B.16	Refrigerators and freezers	36
B.16.1	General	36
B.16.2	Refrigerators and freezers with VSD	36
B.16.3	Refrigerators and freezers without VSD	36
B.17	External power supplies (EPS)	37
B.17.1	EPS designated for specific models of equipment	37
B.17.2	EPS not designated for specific models of equipment	37
Annex C (normative)	POHC calculation	38
C.1	General	38
C.2	Calculation of the POHC from the final values of the harmonic currents, averaged over the complete observation time	38
C.3	Calculation of the final POHC from single POHC values for each DFT time window	38
Bibliography	39
Figure 1	– Flowchart for determining conformity	20
Figure 2	– Illustration of the relative phase angle and current parameters described in 7.4.3	22
Figure A.1	– Measurement circuit for single-phase equipment	26
Figure A.2	– Measurement circuit for three-phase equipment	27
Table 1	– Limits for Class A equipment	23
Table 2	– Limits for Class C equipment ^a	23
Table 3	– Limits for Class D equipment	24
Table 4	– Test observation period	24
Table B.1	– Conventional load for arc welding equipment tests	35

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTROMAGNETIC COMPATIBILITY (EMC) –**Part 3-2: Limits – Limits for harmonic current emissions
(equipment input current ≤ 16 A per phase)**

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.

This consolidated version of the official IEC Standard and its amendment has been prepared for user convenience.

IEC 61000-3-2 edition 5.1 contains the fifth edition (2018-01) [documents 77A/986/FDIS and 77A/990/RVD] and its amendment 1 (2020-07) [documents 77A/1077/FDIS and 77A/1084/RVD].

This Final version does not show where the technical content is modified by amendment 1. A separate Redline version with all changes highlighted is available in this publication.

International Standard IEC 61000-3-2 has been prepared by sub-committee 77A: EMC – Low frequency phenomena, of IEC technical committee 77: Electromagnetic compatibility.

It forms part 3-2 of the IEC 61000 series. It has the status of a product family standard.

This fifth edition constitutes a technical revision.

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

- a) an update of the emission limits for lighting equipment with a rated power ≤ 25 W to take into account new types of lighting equipment;
- b) the addition of a threshold of 5 W under which no emission limits apply to all lighting equipment;
- c) the modification of the requirements applying to the dimmers when operating non-incandescent lamps;
- d) the addition of test conditions for digital load side transmission control devices;
- e) the removal of the use of reference lamps and reference ballasts for the tests of lighting equipment;
- f) the simplification and clarification of the terminology used for lighting equipment;
- g) the classification of professional luminaires for stage lighting and studios under Class A;
- h) a clarification about the classification of emergency lighting equipment;
- i) a clarification for lighting equipment including one control module with an active input power ≤ 2 W;
- j) an update of the test conditions for television receivers;
- k) an update of the test conditions for induction hobs, taking also into account the other types of cooking appliances;
- l) for consistency with IEC 61000-3-12, a change of the scope of IEC 61000-3-2 from equipment with an input current ≤ 16 A to equipment with a rated input current ≤ 16 A.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 61000 series, published under the general title, *Electromagnetic compatibility (EMC)*, can be found on the IEC website.

The committee has decided that the contents of the base publication and its amendment will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

IEC 61000 is published in separate parts, according to the following structure:

Part 1: General

General considerations (introduction, fundamental principles)

Definitions, terminology

Part 2: Environment

Description of the environment

Classification of the environment

Compatibility levels

Part 3: Limits

Emission limits

Immunity limits (in so far as they do not fall under the responsibility of the product committees)

Part 4: Testing and measurement techniques

Measurement techniques

Testing techniques

Part 5: Installation and mitigation guidelines

Installation guidelines

Mitigation methods and devices

Part 6: Generic standards

Part 9: Miscellaneous

Each part is further subdivided into several parts, published either as international standards or as technical specifications or technical reports, some of which have already been published as sections. Others will be published with the part number followed by a dash and a second number identifying the subdivision (example: IEC 61000-6-1).

ELECTROMAGNETIC COMPATIBILITY (EMC) –

Part 3-2: Limits – Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)

1 Scope

This part of IEC 61000 deals with the limitation of harmonic currents injected into the public supply system.

It specifies limits of harmonic components of the input current which can be produced by equipment tested under specified conditions.

This part of IEC 61000 is applicable to electrical and electronic equipment having a rated input current up to and including 16 A per phase, and intended to be connected to public low-voltage distribution systems.

Arc welding equipment, which is not professional equipment, with a rated input current up to and including 16 A per phase, is included in the scope of this document. All other arc welding equipment is excluded from the scope of this document; however, the harmonics emission can be evaluated using IEC 61000-3-12 and relevant installation restrictions.

The tests according to this document are type tests.

For systems with nominal voltages less than but not equal to 220 V (line-to-neutral), the limits have not yet been considered.

NOTE The words apparatus, appliance, device and equipment are used throughout this document. They have the same meaning for the purposes of this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60050-161:1990, *International Electrotechnical Vocabulary (IEV) – Part 161: Electromagnetic compatibility* (available at www.electropedia.org)

IEC 60107-1:1997, *Methods of measurement on receivers for television broadcast transmissions – Part 1: General considerations – Measurements at radio and video frequencies*

IEC 60155:1993, *Glow-starters for fluorescent lamps*

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

IEC 60268-1:1985/AMD1:1988

IEC 60268-1:1985/AMD2:1988

IEC 60268-3:2018, *Sound system equipment – Part 3: Amplifiers*

IEC 60335-2-2:2019, *Household and similar electrical appliances – Safety – Part 2-2: Particular requirements for vacuum cleaners and water-suction cleaning appliances*

IEC 60335-2-14:2016, *Household and similar electrical appliances – Safety – Part 2-14: Particular requirements for kitchen machines*

IEC 60335-2-24:2010, *Household and similar electrical appliances – Safety – Part 2-24: Particular requirements for refrigerating appliances, ice-cream appliances and ice makers*

IEC 60335-2-24:2010/AMD1:2012

IEC 60335-2-24:2010/AMD2:2017

IEC 60335-2-79:2016, *Household and similar electrical appliances – Safety – Part 2-79: Particular requirements for high pressure cleaners and steam cleaners*

IEC 60598-2-17:2012, *Luminaires – Part 2-17: Particular requirements – Luminaires for stage lighting, television and film studios (outdoor and indoor)*

IEC 60598-2-17:2012/AMD1:2015

IEC 60974-1:2017, *Arc welding equipment – Part 1: Welding power sources*

IEC 61000-4-7:2002, *Electromagnetic compatibility (EMC) – Part 4-7: Testing and measurement techniques – General guide on harmonics and interharmonics measurements and instrumentation, for power supply systems and equipment connected thereto*

IEC 61000-4-7:2002/AMD1:2008

IEC 62756-1:2015, *Digital load side transmission lighting control (DLT) – Part 1: Basic requirements*