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ElectroMagnetic Compatibility (EMC) standard for combined and/or integrated radio and non-radio equipment;
Part 1: Requirements for equipment intended to be used in residential, commercial and light industry locations;
Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU

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ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
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Foreword

This draft Harmonised European Standard (EN) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM), and is now submitted for the combined Public Enquiry and Vote phase of the ETSI standards EN Approval Procedure.

The present document has been prepared under the Commission's standardisation request C(2015) 5376 final [i.3] to provide one voluntary means of conforming to the essential requirements of Directive 2014/53/EU on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC [i.1].

Once the present document is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of the present document given in table A.1 confers, within the limits of the scope of the present document, a presumption of conformity with the corresponding essential requirements of that Directive and associated EFTA regulations.

Proposed national transposition dates	
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Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

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Introduction

The present document is based on the principles given in ETSI EG 203 367 "Guide to the application of harmonised standards covering articles 3.1b and 3.2 of the Directive 2014/53/EU (RED) to multi-radio and combined radio and non-radio equipment" [i.4].

For equipment in the scope the present document contains all requirements for showing compliance of the combined and/or integrated equipment with article 3.1(b) of Directive 2014/53/EU [i.1]. For this purpose normative references to the appropriate product EMC standards are provided for the radio part(s), as well as for the non-radio part(s) of the combined and/or integrated equipment.

Furthermore it is determined which additional measurements, emission limits or performance criteria are necessary for the combination of a non-radio and a radio product (which is called "Δ" in ETSI EG 203 367 [i.4]).

Requirements for article 3.2 of Directive 2014/53/EU [i.1] (effective use of the spectrum) are not in the scope of the present document.

1 Scope

The present document defines requirements in respect of ElectroMagnetic Compatibility (EMC) under article 3.1(b) of Directive 2014/53/EU [i.1] for combined and/or integrated equipment intended to be used within residential, commercial and light industry locations.

The present document is only applicable to combined and/or integrated equipment where the radio function is within the scope of one or more of the standards listed in clause 2.1.1 and where the non-radio function is within the scope of one or more of the standards listed in clause 2.1.2.

NOTE: Requirements applicable to the antenna port specifically related to the efficient use of radio spectrum are not included in the present document. These requirements are found in the applicable product standards for the effective use of the radio spectrum under article 3.2 of Directive 2014/53/EU [i.1].

2 References

2.1 Normative references

2.1.1 Radio EMC standards

References are specific, identified by date of publication and/or edition number or version number. Only the cited version applies.

Referenced documents which are not found to be publicly available in the expected location might be found at https://docbox.etsi.org/Reference/.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

[1] ETSI EN 301 489-1 (V2.2.0) (03-2017): "ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU and the essential requirements of article 6 of Directive 2014/30/EU".

[2] ETSI EN 301 489-3 (V2.1.1) (03-2017): "ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU".

[3] ETSI EN 301 489-6 (V2.2.0) (03-2017): "ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 6: Specific conditions for Digital Enhanced Cordless Telecommunications (DECT) equipment; Harmonised Standard covering the essential requirements of article 3.1(b) of the Directive 2014/53/EU".

[4] ETSI EN 301 489-17 (V3.2.0) (03-2017): "ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU".

[5] ETSI EN 301 489-33 (V2.2.0) (03-2017): "ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 33: Specific conditions for Ultra-WideBand (UWB) devices; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU".

[6] ETSI EN 301 489-52 (V1.1.0) (11-2016): "ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 52: Specific conditions for Cellular Communication Mobile and portable (UE) radio and ancillary equipment; Harmonised Standard covering the essential requirements of article 3.1b of Directive 2014/53/EU".

2.1.2 Non-radio EMC standards

[7] CENELEC EN 50065-1 (2011): "Signalling on low-voltage electrical installations in the frequency range 3 kHz to 148,5 kHz - Part 1: General requirements, frequency bands and electromagnetic disturbances".

[8] CENELEC EN 50065-2-1 (2003) and A1 (2005): "Signalling on low-voltage electrical installations in the frequency range 3 kHz to 148,5 kHz - Part 2-1: Immunity requirements for mains communications equipment and systems operating in the range of frequencies 95 kHz to 148,5 kHz and intended for use in residential, commercial and light industrial environments".

[9] CENELEC EN 50065-2-3 (2003) and A1 (2005): "Signalling on low-voltage electrical installations in the frequency range 3 kHz to 148,5 kHz - Part 2-3: Immunity requirements for mains communications equipment and systems operating in the range of frequencies 3 kHz to 95 kHz and intended for use by electricity suppliers and distributors".

[10] CENELEC EN 50130-4 (2011) and A1 (2014): "Alarm systems - Part 4: Electromagnetic compatibility - Product family standard: Immunity requirements for components of fire, intruder, hold up, CCTV, access control and social alarm systems".

[11] CENELEC EN 50412-2-1 (2005): "Power line communication apparatus and systems used in low-voltage installations in the frequency range 1,6 MHz to 30 MHz - Part 2-1: Residential, commercial and industrial environment - Immunity requirements".

[12] CENELEC EN 50491-5-1 (2010): "General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) - Part 5-1: EMC requirements, conditions and test set-up".

[13] CENELEC EN 50491-5-2 (2010): "General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) - Part 5-2: EMC requirements for HBES/BACS used in residential, commercial and light industry environment".

[14] CENELEC EN 55011 (2016): "Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement".

[15] CENELEC EN 55014-1 (2016): "Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission".

[16] CENELEC EN 55014-2 (2015): "Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 2: Immunity - Product family standard".

[17] CENELEC EN 55015 (2013) and A1 (2015): "Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment".

[18] CENELEC EN 55024 (2010) and A1 (2015): "Information technology equipment - Immunity characteristics - Limits and methods of measurement".

[19] CENELEC EN 55032 (2015) and AC (2016): "Electromagnetic compatibility of multimedia equipment - Emission Requirements".

[20] CENELEC EN 60974-10 (2014) and A1 (2015): "Arc welding equipment - Part 10: Electromagnetic compatibility (EMC) requirements".

[21] CENELEC EN 61000-6-3 (2007), A1 (2011) and AC (2012): "Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments".

[22] CENELEC EN 61000-6-1 (2007): "Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments".

[23] CENELEC EN 61326-1 (2013): "Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements".

[24] CENELEC EN 61326-2-2 (2013): "Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 2-2: Particular requirements - Test configurations, operational conditions and performance criteria for portable test, measuring and monitoring equipment used in low-voltage distribution systems".

[25] CENELEC EN 61326-2-3 (2013): "Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 2-3: Particular requirements - Test configuration, operational conditions and performance criteria for transducers with integrated or remote signal conditioning".

[26] CENELEC EN 61326-2-4 (2013): "Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 2-4: Particular requirements - Test configurations, operational conditions and performance criteria for insulation monitoring devices according to IEC 61557-8 and for equipment for insulation fault location according to IEC 61557-9".

[27] CENELEC EN 61326-2-5 (2013): "Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 2-5: Particular requirements - Test configurations, operational conditions and performance criteria for devices with field bus interfaces according to IEC 61784-1".

[28] CENELEC EN 61547 (2009): "Equipment for general lighting purposes - EMC immunity requirements".

[29] CENELEC EN 61800-3 (2004) and A1 (2012): "Adjustable speed electrical power drive systems - Part 3: EMC requirements and specific test methods".

[30] CENELEC EN 62135-2 (2015): "Resistance welding equipment - Part 2: Electromagnetic compatibility (EMC) requirements".

[31] ETSI EN 300 386 (V1.6.1) (09-2012): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Telecommunication network equipment; ElectroMagnetic Compatibility (EMC) requirements".

[32] ETSI EN 300 386 (V2.1.1) (07-2016): "Telecommunication network equipment; ElectroMagnetic Compatibility (EMC) requirements; Harmonised Standard covering the essential requirements of the Directive 2014/30/EU".

[33] CENELEC EN 50561-1 (2013) and AC (2015): "Power line communication apparatus used in low-voltage installations - Radio disturbance characteristics - Limits and methods of measurement - Part 1: Apparatus for in-home use".

[34] CENELEC EN 50561-3 (2016): "Power line communication apparatus used in low-voltage installations - Radio disturbance characteristics - Limits and methods of measurement - Part 3: Apparatus operating above 30 MHz".

2.1.3 Other EMC standards

[35] CENELEC EN 61000-3-2 (2014): "Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)".

[36] CENELEC EN 61000-3-3 (2013): "Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <= 16 A per phase and not subject to conditional connection".

[37] CENELEC EN 61000-3-11 (2000): "Electromagnetic compatibility (EMC) - Part 3-11: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems - Equipment with rated current <= 75 A and subject to conditional connection".

[38] CENELEC EN 61000-3-12 (2011): "Electromagnetic compatibility (EMC) - Part 3-12: Limits - Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current > 16 A and <= 75 A per phase".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] Directive 2014/53/EU of the European Parliament and of the council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC.

[i.2] Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (recast).

[i.3] Commission Implementing Decision C(2015) 5376 final of 04.08.2015 on a standardisation request to the European Committee for Electrotechnical Standardisation and to the European Telecommunications Standards Institute as regards radio equipment in support of Directive 2014/53/EU of the European Parliament and of the Council.

[i.4] ETSI EG 203 367: "Guide to the application of harmonised standards covering articles 3.1b and 3.2 of the Directive 2014/53/EU (RED) to multi-radio and combined radio and non-radio equipment".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in ETSI EN 301 489-1 [1] and the following apply:

AC mains power port: port that connects to the low voltage AC mains power network for the sole purpose of supplying electrical energy to the EUT

applicable non-radio EMC standard: standard that would be applicable to the equipment under the EMCD [i.2] if it did not contain any radio functionality

applicable radio EMC standard: standard that is applicable under RED article 3.1(b) [i.1] to the embedded radio transmitter and/or receiver depending on the used radio functionality

combined equipment: equipment consisting of two or more products where at least one of which is radio communication or radio determination equipment and at least one of which is non-radio equipment

commercial, public and light-industrial location: location exemplified by areas of the city centre, offices, public transport systems (road/train/underground), and modern business centres containing a concentration of office automation equipment (PCs, fax machines, photocopiers, telephones, etc.), and characterized by the fact that equipment is directly connected to a low-voltage public mains network or connected to a dedicated DC source which is intended to interface between the equipment and the low-voltage mains network

Examples of commercial, public or light-industrial locations are:

- retail outlets, for example shops, supermarkets;
- business premises, for example offices, banks, hotels, data centers;
- areas of public entertainment, for example cinemas, public bars, dance halls;
- places of worship, for example temples, churches, mosques, synagogues;

- outdoor locations, for example petrol stations, car parks, amusement and sports centers;
- general public locations for example park, amusement facilities, public offices;
- hospitals, educational institutions, for example schools, universities, colleges;
- public traffic area, railway stations, and public areas of an airport;
- light-industrial locations, for example workshops, laboratories, service centers.

conditional connection: connection of equipment under specific conditions, as explained in CENELEC EN 61000-3-11 [37]

configuration: operational conditions of the EUT and AE, consisting of the set of hardware elements selected to comprise the EUT and AE, mode of operation used to exercise the EUT and arrangement of the EUT and AE

exclusion band(s): frequency range(s) where during immunity test, the radio functionality is not required to meet the performance criteria defined for the specific test and where the emissions are not assessed

function: operation carried out by an equipment

NOTE: Functions are related to basic technologies incorporated in the equipment such as radio reception, radio transmission, emitting light, washing, etc.

integrated equipment: equipment which cannot be separated into radio and non-radio constituent products that can be assessed individually

PLC port: port for the purpose of data transfer and communications that may also carry electrical energy to or from the EUT

NOTE 1: PLC ports are also called PLT ports.

NOTE 2: A PLC port is not considered a wired network port in the sense of this definition.

radio module: piece of a radio equipment allowing the radio function of this equipment

residential location: location which exists as an area of land designated for the construction of domestic dwellings, and is characterized by the fact that equipment is directly connected to a low-voltage public mains network or connected to a dedicated DC source which is intended to interface between the equipment and the low-voltage mains network

NOTE: The function of a domestic dwelling is to provide a place for one or more people to live. A dwelling can be a single, separate building (as in a detached house) or a separate section of a larger building (as in an apartment in an apartment block).

wired network port: point of connection for voice, data and signalling transfers intended to interconnect widely dispersed systems by direct connection to a single-user or multi-user communication network (for example CATV, PSTN, ISDN, xDSL, LAN and similar networks)

NOTE: These ports may support screened or unscreened cables and may also carry AC or DC power where this is an integral part of the telecommunication specification.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in ETSI EN 301 489-1 [1] and the following apply:

AC	Alternating Current
AE	Associated Equipment
DC	Direct Current
EM	ElectroMagnetic
EMC	ElectroMagnetic Compatibility
EUT	Equipment Under Test
PLC	Power Line Communication