SLOVENSKI STANDARD
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Oprema za telekomunikacijska omrežja - Harmonizirani standard za zahteve glede elektromagnetne združljivosti (EMC)

Telecommunication network equipment - Harmonised Standard for ElectroMagnetic Compatibility (EMC) requirements

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33.100.01	Elektromagnetna združljivost na splošno	Electromagnetic compatibility in general

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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:

1) under the Commission's standardisation request C(2016) 7641 final of 30.11.2016 [i.43] ('M/552'), to provide one voluntary means of conforming to the essential requirements of Directive 2014/30/EU on the harmonisation of the laws of the Member States relating to electromagnetic compatibility [i.31];

2) under the Commission's standardisation request C(2015) 5376 final of 4.8.2015 [i.7] ('M/536'), 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.6].

Once the present document is cited in the Official Journal of the European Union under the Directives, compliance with the normative clauses of the present document given in tables A.1 and A.2 confers, within the limits of the scope of the present document, a presumption of conformity with the corresponding essential requirements of the relevant Directives and associated EFTA regulations.

Proposed national transposition dates	
Date of latest announcement of this EN (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	18 months after doa

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).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

1 Scope

The present document specifies the EMC requirements for telecommunication equipment intended to be used within a telecommunications network, which provides telecommunications between Network Termination Points (NTPs) (i.e. excluding terminal equipment beyond the NTPs). Radio functionality (e.g. Bluetooth® , Wi-Fi® , GPS) incorporated in telecommunication network equipment is also within the scope of the present document. Examples of such equipment are:

1) Switching equipment. Such equipment includes:
   - local telephone exchanges;
   - remote switching concentrators;
   - international switches;
   - telex switches;
   - network packet switches;
   - base station controllers, radio network controllers;
   - network servers and gateways.
2) Non-radio transmission equipment and ancillary equipment. Such equipment includes:
   - multiplexers;
   - line equipment and repeaters, e.g. equipment for:
     - Synchronous Digital Hierarchy (SDH);
     - Plesiochronous Digital Hierarchy (PDH);
     - Asynchronous Transfer Mode (ATM);

   such as:
     - Digital Cross Connect systems;
     - network terminations;
     - transmission equipment used in the access network like xDSL.
3) Power supply equipment. Such equipment includes:
   - central power plant;
   - end of suite power supplies;
   - uninterruptible power supplies;
   - stabilized AC power supplies; and
   - other dedicated telecommunication network power supplies;

   but excludes equipment which is uniquely associated with or integrated in other equipment.
4) Supervisory equipment. Such equipment includes:
   - network management equipment;
   - operator access maintenance equipment;
   - traffic measurement systems;
   - line test units;

- functional test units.

NOTE 1: The function of *supervision* may either be performed by independent equipment or form part of other telecommunication network equipment. If the function of supervision forms part of a telecommunication network equipment, the performance may be evaluated simultaneously with other functions (such as switching and transmission) during EMC testing.

5) Telecommunication network equipment incorporating radio equipment.

6) Data centre equipment which is intended to be used within telecommunication network infrastructure:

- Storage.
- Processor.
- Server.

The requirements applicable to radio interfaces of Telecommunication network equipment within the scope of the present document (e.g. Bluetooth® , Wi-Fi® , GPS) are defined in clause 7 and annex D.

The environmental classification locations used in the present document refer to ETSI TR 101 651 [i.22].

The emission requirements of the present document refer to EN 55032 [31] that have been selected to ensure an adequate level of protection to radio services.

The immunity requirements of the present document have been selected to ensure an adequate level of immunity for the apparatus covered by the scope of the present document. The levels do not, however, cover extreme cases which may occur at any location but with a low probability of occurrence. In special cases, situations may arise where the levels of disturbance may exceed the immunity test levels specified in the present document. In these instances, special mitigation measures may have to be employed.

General purpose equipment, which is used as a part of a telecommunication network, may be covered by the scope of other standards. Equipment which also fall within the scope of EN 50083-2 [3] may require additional testing on the relevant RF ports. See clause 9.2 and annex G.

Equipment may provide different functions, i.e. switching equipment may also provide transmission functions and transmission equipment may provide storage capabilities etc. All available functions of the EUT are to be tested.

NOTE 2: The relationship between the present document and essential requirements of annex I.1 of Directive 2014/30/EU [i.31] and/or article 3.1(b) of Directive 2014/53/EU [i.6] is given in annex A.

2 References

2.1 Normative 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.

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] EN 55016-1-2 (2014 + Amendment 1: 2018): "Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-2: Radio disturbance and immunity measuring apparatus - Coupling devices for conducted disturbance measurements", (produced by CENELEC).

[2] EN 55016-2-3 (2017 + Amendment 1: 2019): "Specification for radio disturbance and immunity measuring apparatus and methods - Part 2-3: Methods of measurement of disturbances and immunity - Radiated disturbance measurements", (produced by CENELEC).

[3] EN 50083-2 (2012 + Amendment 1: 2015): "Cable networks for television signals, sound signals and interactive services - Part 2: Electromagnetic compatibility for equipment", (produced by CENELEC).

[4] Void.

[5] EN 61000-3-2 (2019): "Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current <= 16 A per phase)", (produced by CENELEC).

[6] EN 61000-3-3 (2013 + Amendment A1: 2019): "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", (produced by CENELEC).

[7] EN 61000-3-11 (2019): "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", (produced by CENELEC).

[8] 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", (produced by CENELEC).

[9] EN 61000-4-2 (2009): "Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test", (produced by CENELEC).

[10] EN 61000-4-3 (2006 + Amendment 1: 2008 + Amendment 2: 2010 + Interpretation Sheet: 2009): "Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test", (produced by CENELEC).

[11] EN 61000-4-4 (2012): "Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test", (produced by CENELEC).

[12] EN 61000-4-5 (2014 + Amendment 1: 2017): "Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test", (produced by CENELEC).

[13] EN 61000-4-6 (2014): "Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields", (produced by CENELEC).

[14] EN 61000-4-11 (2004 + Amendment 1: 2017): "Electromagnetic compatibility (EMC) -- Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests", (produced by CENELEC).

[15] ETSI EN 300 132-1 (V.2.1.1) (03-2019): "Environmental Engineering (EE); Power supply interface at the input to Information and Communication Technology (ICT) equipment; Part 1: Alternating Current (AC)".

[16] ETSI EN 300 132-2 (V2.6.1) (04-2019): "Environmental Engineering (EE); Power supply interface at the input of Information and Communication Technology (ICT) equipment; Part 2: -48 V Direct Current (DC)".

[17] IEC 60050-161 (1990): "International Electrotechnical Vocabulary. Chapter 161: Electromagnetic compatibility".

[18] IEC 60050-714 (1992): "International Electrotechnical Vocabulary - Chapter 714: Switching and signalling in telecommunications".

[19] ETSI EN 301 489-1 (V2.2.3) (11-2019): "ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonised Standard for ElectroMagnetic Compatibility".

[20] Recommendation ITU-T O.41 (1994): "Psophometer for use on telephone-type circuits".

[21] ETSI EN 301 489-17 (V3.2.4) (09-2020): "ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems; Harmonised Standard for ElectroMagnetic Compatibility".

[22] Void.

[23] ETSI EN 301 489-19 (V2.1.1) (04-2019): "ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 19: Specific conditions for Receive Only Mobile Earth Stations (ROMES) operating in the 1,5 GHz band providing data communications and GNSS receivers operating in the RNSS band (ROGNSS) providing positioning, navigation, and timing data; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU".

[24] Void.

[25] Void.

[26] Void.

[27] Void.

[28] ETSI EN 300 132-3-1 (V2.1.1) (02-2012): "Environmental Engineering (EE); Power supply interface at the input to telecommunications and datacom (ICT) equipment; Part 3: Operated by rectified current source, alternating current source or direct current source up to 400 V; Sub-part 1: Direct current source up to 400 V".

[29] Recommendation ITU-T G.812 (2004 + Erratum 1: 2005): "Timing requirements of slave clocks suitable for use as node clocks in synchronization networks".

[30] Recommendation ITU-T G.813 (2003 + Corrigendum 1: 2006 + Corrigendum 2: 2011): "Timing characteristics of SDH equipment slave clocks (SEC)".

[31] EN 55032 (2015 + Amendment A11: 2020): "Electromagnetic compatibility of multimedia equipment - Emission requirements", (produced by CENELEC).

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] ETSI EN 300 011-1 (V1.2.2): "Integrated Services Digital Network (ISDN); Primary rate User Network Interface (UNI); Part 1: Layer 1 specification".

[i.2] ETSI EN 300 012-1 (V1.2.2): "Integrated Services Digital Network (ISDN); Basic User-Network Interface (UNI); Part 1: Layer 1 specification".

[i.3] ETSI EN 300 166 (V1.2.1): "Transmission and Multiplexing (TM); Physical and electrical characteristics of hierarchical digital interfaces for equipment using the 2 048 kbit/s - based plesiochronous or synchronous digital hierarchies".

[i.4] ETSI ETS 300 232 (1993 + Amendment 1: 1996): "Transmission and Multiplexing (TM); Optical interfaces for equipments and systems relating to the Synchronous Digital Hierarchy [ITU-T Recommendation G.957 (1993), modified]".

[i.5] ISO/IEC/IEEE 8802-3 (2014): "Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Specific requirements - Part 3: Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications".

[i.6] 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.7] Commission Implementing Decision C(2015) 5376 final of 4.8.2015, ('M/536'), 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.8] Recommendation ITU-T G.712 (2001): "Transmission performance characteristics of pulse code modulation channels".

[i.9] Void.

[i.10] Void.

[i.11] ITU Radio Regulations (Article 1, Section VI).

[i.12] Recommendation ITU-T G.961 (1993 + Erratum 1: 2000): "Digital transmission system on metallic local lines for ISDN basic rate access".

[i.13] Recommendation ITU-T O.150 (1996 + Corrigendum 1: 2002): "General requirements for instrumentation for performance measurements on digital transmission equipment".

[i.14] Recommendation ITU-T Q.552 (2001): "Transmission characteristics at 2-wire analogue interfaces of digital exchanges".

[i.15] Recommendation ITU-T V.10 (1993): "Electrical characteristics for unbalanced double-current interchange circuits operating at data signalling rates nominally up to 100 kbit/s".

[i.16] Recommendation ITU-T V.11 (1996): "Electrical characteristics for balanced double-current interchange circuits operating at data signalling rates up to 10 Mbit/s".

[i.17] Recommendation ITU-T V.24 (2000): "List of definitions for interchange circuits between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE)".

[i.18] Recommendation ITU-T V.28 (1993): "Electrical characteristics for unbalanced double-current interchange circuits".

[i.19] Recommendation ITU-T V.36 (1988): "Modems for synchronous data transmission using 60-108 kHz group band circuits".

[i.20] Recommendation ITU-T X.24 (1988): "List of definitions for interchange circuits between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) on public data networks".

[i.21] Recommendation ITU-T X.25 (1996 + Corrigendum 1: 1998): "Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit".

[i.22] ETSI TR 101 651 (V2.1.1): "Classification of the electromagnetic environment conditions for equipment in telecommunication networks".

[i.23] EN 61000-6-1 (2019): "Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity standard for residential, commercial and light-industrial environments", (produced by CENELEC).