

STN	Zariadenia telekomunikačnej siete Harmonizovaná norma pre požiadavky na elektromagnetickú kompatibilitu (EMC)	STN EN 300 386 V2.2.1 87 0386
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Telecommunication network equipment; Harmonised Standard for ElectroMagnetic Compatibility (EMC) requirements

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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Contents

Intellectual Property Rights	7
Foreword.....	7
Modal verbs terminology.....	8
1 Scope	9
2 References	10
2.1 Normative references	10
2.2 Informative references.....	12
3 Definition of terms, symbols and abbreviations.....	15
3.1 Terms.....	15
3.2 Symbols.....	17
3.3 Abbreviations	17
4 Installation environment.....	19
5 Immunity: test methods	19
5.0 General requirements	19
5.1 Electrostatic discharge.....	19
5.2 Electrical fast transients/burst.....	19
5.3 Surges	20
5.3.1 Signal line ports	20
5.3.2 AC power ports.....	20
5.4 Immunity to continuous conducted signals	20
5.4.1 Radio frequency (> 150 kHz)	20
5.4.1.1 AC power port.....	20
5.4.1.2 DC power port.....	20
5.4.1.3 Signal line port.....	20
5.5 Immunity to radiated electromagnetic fields	20
5.6 Voltage dips and short interruptions: AC power port.....	21
6 Emission: test methods.....	21
6.0 General	21
6.1 AC power port.....	21
6.2 DC power port.....	21
6.3 Wired network Ports.....	22
6.4 Antenna Port.....	22
6.5 Radiated emission.....	22
7 Test levels and limits.....	22
7.0 General requirements	22
7.1 Emission.....	22
7.1.1 Enclosure port, Radiated electromagnetic field emissions.....	22
7.1.2 AC ports.....	22
7.1.2.1 Conducted emissions.....	22
7.1.3 DC ports, Conducted emissions	22
7.1.4 Wired network ports, Conducted emissions	23
7.2 Immunity	23
7.2.0 General.....	23
7.2.1 Equipment operating in telecommunication centres	24
7.2.1.1 Telecommunication centres equipment, immunity requirement of enclosure port	24
7.2.1.2 Telecommunication centres equipment, immunity requirement of ports for outdoor signal lines and antenna ports	25
7.2.1.3 Telecommunication centres equipment, immunity requirements of ports for indoor signal lines	26
7.2.1.4 Telecommunication centres equipment, immunity requirements of AC power ports	27
7.2.1.5 Telecommunication centres equipment, immunity requirements of DC power ports	27
7.2.2 Equipment operating in locations other than telecommunication centres.....	28
7.2.2.1 Other than telecommunication centres equipment, immunity requirements of enclosure port	28

7.2.2.2	Other than telecommunication centres equipment, immunity requirements of ports for outdoor signal lines and antenna ports.....	29
7.2.2.3	Other than telecommunication centres equipment, immunity requirements of ports for indoor signal lines.....	30
7.2.2.4	Other than telecommunication centres equipment, immunity requirements of AC power ports	31
7.2.2.5	Other than telecommunication centres equipment, immunity requirements of DC power ports	31
8	General test configuration	32
9	General operational conditions during testing.....	32
9.0	General requirements	32
9.1	Equipment configuration.....	32
9.2	Operation of multimedia network equipment.....	33
10	General immunity conditions	33
10.1	General performance criteria.....	33
11	Switching equipment specific requirements.....	34
11.1	Test configuration.....	34
11.2	Operational conditions	35
11.2.0	General.....	35
11.2.1	Emission	35
11.2.2	Immunity	35
11.3	Specific immunity performance criteria	35
11.3.0	General.....	35
11.3.1	Digital port performance criteria	35
11.3.1.1	Performance criterion A (continuous phenomena).....	35
11.3.1.2	Performance criterion B (transient phenomena).....	35
11.3.1.3	Performance criterion C (interruptions)	36
11.3.2	Analogue port performance criteria	36
11.3.2.1	Performance criterion A (continuous phenomena).....	36
11.3.2.2	Performance criterion B (transient phenomena).....	36
11.3.2.3	Performance criterion C (interruptions)	36
12	Transmission equipment specific requirements	36
12.1	Test configuration.....	36
12.2	Operational conditions	37
12.2.0	General.....	37
12.2.1	Emission	37
12.2.2	Immunity	37
12.3	Specific immunity performance criteria	37
12.3.1	Digital signal ports.....	37
12.3.1.0	General.....	37
12.3.1.1	Performance criterion A (continuous phenomena).....	38
12.3.1.2	Performance criterion B (transient phenomena).....	38
12.3.1.3	Performance criterion C (interruptions)	38
12.3.2	Analogue voice frequency signal ports.....	38
12.3.2.0	General	38
12.3.2.1	Performance criterion A (continuous phenomena).....	38
12.3.2.2	Performance criterion B (transient phenomena).....	38
12.3.3	SDH and PDH interfaces	39
12.3.3.1	Tributary and aggregate interfaces	39
12.3.4	ISDN interfaces	39
12.3.4.1	Primary rate access ISDN interfaces	39
12.3.4.2	Network termination NT1 for ISDN "U" interfaces.....	39
12.3.4.3	Basic access ISDN interfaces	39
12.3.5	Analogue interfaces	39
12.3.5.1	Trunk interfaces and leased line interfaces	39
12.3.5.2	Subscriber interfaces	39
12.3.6	V.10, V.11, V.24, V.28, V.36, X.24 and similar V.- and X.- series interfaces	39
12.3.7	Ethernet and packet-data interfaces	39
12.3.7.0	General	39
12.3.7.1	Performance criterion A (continuous phenomena).....	39
12.3.7.2	Performance criterion B (transient phenomena).....	40

12.3.8	Service and maintenance interfaces	40
12.3.9	Synchronization interfaces.....	40
12.3.9.0	General	40
12.3.9.1	Performance criterion A (continuous phenomena).....	40
12.3.9.2	Performance criterion B (transient phenomena).....	40
12.3.10	Remote alarm interfaces	40
12.3.10.0	General	40
12.3.10.1	Performance criterion A (continuous phenomena).....	40
12.3.10.2	Performance criterion B (transient phenomena).....	40
12.4	Digital Subscriber Line (DSL) Access Systems.....	40
12.4.1	Test configuration.....	40
12.4.2	Operational conditions.....	41
12.4.3	Immunity	42
12.4.4	Specific Immunity performance criteria	42
12.4.4.0	General.....	42
12.4.4.1	Performance Criteria A (continuous phenomena).....	42
12.4.4.2	Performance Criteria B (transient phenomena).....	42
12.4.4.3	Performance Criteria C (interruptions).....	42
13	Power supply equipment specific conditions	43
13.0	General	43
13.1	Test configuration.....	43
13.2	Operational conditions	44
13.2.1	Emission	44
13.2.2	Immunity	44
13.3	Specific immunity performance criteria	44
13.3.0	General.....	44
13.3.1	Alternating current secondary interface.....	44
13.3.1.1	Performance criterion A (continuous phenomena).....	44
13.3.1.2	Performance criterion B (transient phenomena).....	44
13.3.2	Direct current secondary interface	45
13.3.2.1	Performance criterion A (continuous phenomena).....	45
13.3.2.2	Performance criterion B (transient phenomena).....	45
13.3.3	Control/signal interface.....	45
13.3.4	Tertiary supply interface.....	46
14	Supervisory equipment specific conditions.....	46
14.1	Test configuration.....	46
14.2	Operational conditions	46
14.3	Specific immunity performance criteria	47
14.3.1	Performance criterion A (continuous phenomena).....	47
14.3.2	Performance criterion B (transient phenomena).....	47
Annex A (informative): Relationship between the present document and the essential requirements of Directives 2014/30/EU and 2014/53/EU		48
A.1	Relationship between the present document and the essential requirements of Directive 2014/30/EU	48
A.2	Relationship between the present document and the essential requirements of Directive 2014/53/EU	50
Annex B (informative): Evaluation of test results		52
Annex C (informative): Guidance on EMC performance requirements and methods of measurement for RF ports (also covered by EN 50083-2) of multimedia network equipment		54
Annex D (normative): Requirements of radio functions		55
D.1	Applicability.....	55
D.2	Exclusion bands.....	55
D.2.1	General	55

D.2.2	Calculation for exclusion Bands.....	56
D.2.2.1	Exclusion bands for receivers.....	56
D.2.2.1.1	For channelized systems.....	56
D.2.2.1.2	For non-channelized systems.....	56
D.2.2.2	Exclusion bands for transmitters.....	56
D.2.2.2.1	For channelized systems.....	56
D.2.2.2.2	For Non-Channelized Equipment.....	56
D.2.3	Example of exclusion Bands.....	56
D.3	Mode of operation.....	57
D.3.1	General.....	57
D.3.2	Standby Mode.....	57
D.3.3	Receivers.....	57
D.3.4	Transmitters.....	58
D.3.5	Performance criteria.....	58
D.3.5.1	Performance criterion A.....	58
D.3.5.2	Performance criterion B.....	58
D.3.5.3	Performance criterion C.....	58
Annex E (informative):	Bibliography.....	59
Annex F (informative):	Change History.....	60
History.....		61

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Foreword

This Harmonised European Standard (EN) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM).

The present document has been prepared:

- 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];
- 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.

National transposition dates	
Date of adoption of this EN:	5 September 2022
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Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 June 2023
Date of withdrawal of any conflicting National Standard (dow):	30 June 2024

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 C.

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.

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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] Void.
- [6] Void.
- [7] Void.
- [8] Void.
- [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 (2020): "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 (2020): "Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current up to 16 A per phase", (produced by CENELEC).
- [15] ETSI EN 300 132-1 (V2.1.1) (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] EN 61000-4-34 (2007 + Amendment A1: 2009): "Electromagnetic compatibility (EMC) - Part 4-34: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests for equipment with mains current more than 16 A per phase", (produced by CENELEC).
- [25] Void.
- [26] Void.
- [27] Void.
- [28] ETSI EN 300 132-3 (V2.2.1) (05-2021): "Environmental Engineering (EE); Power supply interface at the input of Information and Communication Technology (ICT) equipment; Part 3: Up to 400 V Direct Current (DC)".
- [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 + Amendment A1: 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.

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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).
- [i.24] Void.
- [i.25] Recommendation ITU-T G.783 (2006 + Erratum 1: 2006 + Amendment 1: 2008 + Amendment 2: 2010): "Characteristics of synchronous digital hierarchy (SDH) equipment functional blocks".
- [i.26] Recommendation ITU-T G.798 (2017 + Corrigendum 1: 2018 + Amendment 1: 2018): "Characteristics of optical transport network hierarchy equipment functional blocks".
- [i.27] Void.

- [i.28] IEEE 1284™ (2000): "IEEE Standard Signalling Method for a Bidirectional Parallel Peripheral Interface for Personal Computers".
- [i.29] IEEE 1394™ (2008): "IEEE Standard for High Performance Serial Bus Bridges".
- [i.30] Void.
- [i.31] 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.32] Recommendation ITU-T G.996.1 (2001 + Amendment 1: 2003): "Test procedures for digital subscriber line (DSL) transceivers".
- [i.33] ETSI TS 101 135 (V1.5.3): "Transmission and Multiplexing (TM); High bit-rate Digital Subscriber Line (HDSL) transmission systems on metallic local lines; HDSL core specification and applications for combined ISDN-BA and 2 048 kbit/s transmission".
- [i.34] ETSI TS 101 524-1 (V1.1.1): "Transmission and Multiplexing (TM); Access transmission system on metallic access cables; Symmetrical single pair high bitrate Digital Subscriber Line (SDSL); Part 1: Functional requirements".
- [i.35] ETSI TS 101 270-1 (V1.4.1): "Transmission and Multiplexing (TM); Access transmission systems on metallic access cables; Very high speed Digital Subscriber Line (VDSL); Part 1: Functional requirements".
- [i.36] Recommendation ITU-T G.992.1 (1999 + Annex H: 2000 + Corrigendum 1: 2001 + Corrigendum 2: 2002 + Amendment 1: 2003 + Corrigendum of Amendment 1: 2003): "Asymmetric digital subscriber line (ADSL) transceivers".
- [i.37] Recommendation ITU-T G.992.3 (2009 + Corrigendum 1: 2009 + Amendment 1: 2010 + Amendment 2: 2010 + Amendment 3: 2010 + Corrigendum 2: 2011 + Amendment 4: 2011 + Amendment 5: 2012 + Corrigendum 3: 2013): "Asymmetric digital subscriber line transceivers 2 (ADSL2)".
- [i.38] Recommendation ITU-T G.992.5 (2009 + Corrigendum 1: 2010): "Asymmetric digital subscriber line 2 transceivers (ADSL2) - Extended bandwidth ADSL2 (ADSL2plus)".
- [i.39] Recommendation ITU-T G.993.1 (2004): "Very high speed digital subscriber line transceivers (VDSL)".
- [i.40] Recommendation ITU-T G.993.2 (2015): "Very high speed digital subscriber line transceivers 2 (VDSL2)".
- [i.41] Recommendation ITU-T G.991.1 (1998): "High bit rate digital subscriber line (HDSL) transceivers".
- [i.42] Recommendation ITU-T G.991.2 (2013 + Amendment 1: 2004 + Amendment 2: 2005 + Amendment 2 Erratum 1: 2005 + Amendment 3: 2005): "Single-pair high-speed digital subscriber line (SHDSL) transceivers".
- [i.43] Commission implementing Decision C(2016) 7641 final of 30.11.2016, ('M/552'), on a standardisation request to the European Committee for Standardisation, to the European Committee for Electrotechnical Standardisation and to the European Telecommunications Standards Institute as regards harmonised standards in support of 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.
- [i.44] EN 50083 series: "Cable networks for television signals, sound signals and interactive services", (produced by CENELEC).

koniec náhľadu – text ďalej pokračuje v platenej verzii STN