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Immunity requirements for telecommunication network equipment

Recommendation ITU-T K.43



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Recommendation ITU-T K.43

Immunity requirements for telecommunication network equipment

Summary

Recommendation ITU-T K.43 describes the immunity requirements for telecommunication network equipment in a given environment. Specific product family Recommendations supersede this Recommendation. This Recommendation includes immunity requirements in the frequency range of 150 kHz-80 MHz for conducted immunity and 80-2700 MHz for radiated immunity.

Source

Recommendation ITU-T K.43 was approved on 14 July 2009 by ITU-T Study Group 5 (2009-2012) under Recommendation ITU-T A.8 procedures.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications, information and communication technologies (ICTs). The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure e.g., interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

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CONTENTS

Page

1	Scope	1
2	References.....	1
3	Definitions	2
3.1	Terms defined elsewhere	2
3.2	Terms defined in this Recommendation.....	3
4	Abbreviations.....	4
5	Equipment configuration and general operation during test.....	4
5.1	Equipment configuration	4
5.2	Equipment for operation.....	4
5.3	Laboratory environment	5
5.4	Operation of equipment during tests	5
6	Performance criteria.....	5
6.1	Performance criterion A	5
6.2	Performance criterion B	5
6.3	Performance criterion C	5
7	Immunity: Test method	6
7.1	General conditions.....	6
7.2	Particular conditions.....	6
8	Applicability	7
9	Test levels	8
	Appendix I – Coupling and decoupling networks for continuous conducted signal test.....	12
	Appendix II – Uniformity of test field	13
	Appendix III – Examples of coupling and decoupling network (CDN)	14
	Bibliography.....	16

Recommendation ITU-T K.43

Immunity requirements for telecommunication network equipment

1 Scope

This Recommendation specifies the immunity requirements for equipment used within the public telecommunication networks and for terminal equipment connected to such networks. This Recommendation is a product family Recommendation.

This Recommendation gives the minimum test levels applicable in a given environment. The requirements given in specific product family Recommendations supersede those given in this Recommendation.

This Recommendation is applicable to all equipment types:

- equipment in the telecommunication networks, including switching equipment, transmission equipment, radio equipment, power supply equipment, supervisory equipment and control equipment;
- terminal equipment connected to telecommunication networks, including telephone set, facsimile and PBX;
- terminal equipment that uses the LV AC network for telecommunications (i.e., PLT devices).

This Recommendation includes immunity requirements in the frequency range:

- 150 kHz-80 MHz for conducted immunity;
- 80-2700 MHz for radiated immunity.

Other frequency ranges are covered by other K series of ITU-T Recommendations, e.g., [b-ITU-T K.76] for the 9-150 kHz frequency range.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

- [ITU-T K.34] Recommendation ITU-T K.34 (2003), *Classification of electromagnetic environmental conditions for telecommunication equipment – Basic EMC Recommendation*.
- [IEC 60050-161] IEC 60050-161:1990, *International Electrotechnical Vocabulary. Chapter 161: Electromagnetic Compatibility*, plus Amendment 2 (1998).
- [IEC 61000-4-1] IEC 61000-4-1:2006, *Electromagnetic compatibility (EMC) – Part 4-1: Testing and measurement techniques – Overview of IEC 61000-4 series*.
- [IEC 61000-4-2] IEC 61000-4-2:2008, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*.
- [IEC 61000-4-3] IEC 61000-4-3:2008, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*.

- [IEC 61000-4-4] IEC 61000-4-4:2004, *Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test.*
- [IEC 61000-4-5] IEC 61000-4-5:2005, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test.*
- [IEC 61000-4-6] IEC 61000-4-6:2008, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields.*
- [IEC 61000-4-8] IEC 61000-4-8:2009, *Electromagnetic compatibility (EMC) – Part 4-8: Testing and measurement techniques – Power frequency magnetic field immunity test.*
- [IEC 61000-4-9] IEC 61000-4-9:2001, *Electromagnetic compatibility (EMC) – Part 4-9: Testing and measurement techniques – Pulse magnetic field immunity test.*
- [IEC 61000-4-10] IEC 61000-4-10:2001, *Electromagnetic compatibility (EMC) – Part 4-10: Testing and measurement techniques – Damped oscillatory magnetic field immunity test.*
- [IEC 61000-4-11] IEC 61000-4-11:2004, *Electromagnetic compatibility (EMC) – Part 4-11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests.*
- [IEC 61000-4-29] IEC 61000-4-29:2000, *Electromagnetic compatibility (EMC) – Part 4-29: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations on d.c. input power port immunity tests.*

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the definitions in the International Electrotechnical Vocabulary, Chapter 161: Electromagnetic Compatibility ([IEC 60050-161]).

3.1.1 burst (of pulses or oscillations) (161-02-07): A sequence of a limited number of distinct pulses or an oscillation of limited duration.

3.1.2 continuous disturbance (161-02-11): Electromagnetic disturbance whose effects on a particular device or piece of equipment cannot be resolved into a succession of distinct effects.

3.1.3 discontinuous interference (161-02-13): Electromagnetic interference occurring during certain time intervals separated by interference-free intervals.

3.1.4 duration (of a pulse) (161-08-03): The interval of time between the first and last instants when the instantaneous value of a pulse reaches 50% of the pulse magnitude.

3.1.5 immunity (to a disturbance) (161-01-20): The ability of a device, equipment, or system to perform without degradation in the presence of an electromagnetic disturbance.

3.1.6 impulsive disturbance (161-02-09): Electromagnetic disturbance which, when incident on a particular device or piece of equipment, manifests itself as a succession of distinct pulses or transients.

3.1.7 period (IEC 61000-4-11): A unit of duration equal to one cycle of AC supply frequency.

3.1.8 pulse (161-02-02): An abrupt short-duration variation in a physical quantity followed by a rapid return to the initial value.

3.1.9 surge (voltage) (161-08-11): A transient voltage wave propagating along a line or a circuit and characterized by a rapid increase followed by a slower decrease of the voltage.