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Noise suppression sheet for digital devices and equipment –

Part 1: Definitions and general properties

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

NOISE SUPPRESSION SHEET FOR DIGITAL DEVICES AND EQUIPMENT –

Part 1: Definitions and general properties

FOREWORD

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International Standard IEC 62333-1 has been prepared by IEC technical committee 51: Magnetic components and ferrite materials.

This standard is to be used in conjunction with IEC 62333-2.

The text of this standard is based on the following documents:

FDIS	Report on voting
51/852/FDIS	51/860/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

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

IEC 62333 consists of the following parts, under the general title *Noise suppression sheet for digital devices and equipment:*

Part 1: Definitions and general properties

Part 2: Measuring methods

Further topics are under consideration and will be issued as new parts in the IEC 62333 series. The present Part 1 of IEC 62333 will cover new definitions and will be updated as and when necessary.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result 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- withdrawn;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.

A bilingual version of this publication may be issued at a later date.

NOISE SUPPRESSION SHEET FOR DIGITAL DEVICES AND EQUIPMENT –

Part 1: Definitions and general properties

1 Scope

This part of IEC 62333 provides terms and definitions for an electromagnetic noise suppression sheet for digital devices and equipment used in a frequency range of between 30 MHz to 30 GHz, and refers to the influence on the signal by usage of a noise suppression sheet. Guidance is also given for uniform presentation of the properties of a noise suppression sheet, intended for use in manufactures' technical data. A noise suppression sheet is distinguished from RF wave absorbers used in free space.

This part of IEC 62333 is limited to establishing terms and definitions. It constitutes a concise reference for Part 2 of the standard. Part 2 specifies in detail the measurement of parameters defined in Part 1. The two parts of IEC 62333 are therefore closely related, and are intended to be used together.

NOTE This standard also specifies the influences on signal lines by using these sheets.

2 Normative reference

The following referenced documents are indispensable for the application 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, *International Electrotechnical Vocabulary (IEV)*

IEC 62333-2, *Noise suppression sheet for digital devices and equipment – Part 2: Measuring methods*

3 Terms, definitions and symbols

3.1 Terms and definitions

For the purposes of this document, the terms and definitions of IEC 60050 and the following apply.

3.1.1
noise suppression
suppression generally classified into signal decoupling, radiation suppression and attenuation of transmission power by its means

NOTE Each function above is achieved by absorption and/or shielding.

3.1.2
noise suppression sheet
NSS
sheet which enables noise suppression and is composed of magnetic or dielectric or conductive material with electromagnetic losses

3.1.3
suppression ratio
ratio of noise level with suppression sheets and without them, which is classified into intra-decoupling ratio, inter-decoupling ratio, transmission attenuation power ratio and radiation suppression ratio, and is expressed in dB

3.1.3.1
intra-decoupling ratio
R_{da}
reduction of coupling between lines and circuit existing on one side of the noise suppression sheet

3.1.3.2
inter-decoupling ratio
R_{de}
reduction of coupling between lines and circuit existing on both sides of the noise suppression sheet

3.1.3.3
transmission attenuation power ratio
R_{tp}
attenuation of conduction current noise caused by a noise suppression sheet

3.1.3.4
radiation suppression ratio
R_{rs}
suppression of radiation noise emitted from the circuit board

3.2 Symbols

μ_r relative complex permeability

μ_r' real part of relative complex permeability

μ_r'' imaginary part of relative complex permeability

ε_r relative complex permitivity

ε_r' real part of relative complex permitivity

ε_r'' imaginary part of relative complex permitivity

R_{da} intra-decoupling ratio

R_{de} inter-decoupling ratio

R_{tp} transmission attenuation power ratio

R_{rs} radiation suppression ratio

4 Properties to be specified in specifications and technical data

4.1 General

4.1.1 Noise suppression sheet

4.1.2 Product(s) name

4.1.3 Structural diagram

A: Bulk magnetic oxide or metal
B: Composite of magnetic oxide or metal and rubber or plastic
C: Composite of dielectrics or conductors and rubber or plastic
D: Others, for example multi-layers made of the above materials

4.1.4 Thickness

4.1.5 Commodity shape (roll or sheet)

4.1.6 Installation method

4.2 Electrical characteristics

4.2.1 Intra-decoupling ratio, R_{da}

4.2.2 Inter-decoupling ratio, R_{de}

4.2.3 Transmission attenuation power ratio, R_{tp}

4.2.4 Radiation suppression ratio, R_{rs}

4.2.5 Surface resistance, ρ_s or resistivity, ρ_v

NOTE The measuring methods of R_{da}, R_{de}, R_{tp} and R_{rs} should be referred to IEC 62333-2.

4.3 Mechanical characteristics

4.3.1 Density, ρ

4.3.2 Coefficient of linear thermal expansion, α_T

4.3.3 Young's modulus E or hardness

4.4 Environmental conditions

4.4.1 Temperature range

4.4.1.1 Operating temperature

4.4.1.2 Storage temperature

4.4.2 Humidity range

4.4.3 Flame resistance

4.4.4 Statement for non-usage of the prohibited chemical materials