## SLOVENSKI

## PREDSTANDARD

## SIST EN 61000-4-3:2006/oprA2:2007

februar 2007

Elektromagnetna združljivost (EMC) - 4-3. del: Preskusne in merilne tehnike – Preskušanje odpornosti proti sevanim radiofrekvenčnim elektromagnetnim poljem

Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test

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## 77B/531/CDV

## COMMITTEE DRAFT FOR VOTE (CDV) PROJET DE COMITÉ POU<u>R VOTE (CDV)</u>

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Also of interest to the following committees Intéresse également les comités suivants			Supersedes document Remplace le document 77B/488/CD & 77B/507/CC			
Functions concerned Fonctions concernées						
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## iTeh Standards

Titre : Amendement 2 à la 61000-4-3 Ed.3: Incertitude de mesure de l'instrumentation d'essai Title : Amendment 2 to IEC 61000-4-3 edition 3: Measurement uncertainty of Test instrumentation

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Note d'introduction

ATTENTION VOTE PARALLÈLE CEI – CENELEC

L'attention des Comités nationaux de la CEI, membres du CENELEC, est attirée sur le fait que ce projet de comité pour vote (CDV) de Norme internationale est soumis au vote parallèle. Un bulletin de vote séparé pour le vote CENELEC leur sera

envoyé par le Secrétariat Central du CENELEC.

Introductory note

ATTENTION IEC – CENELEC PARALLEL VOTING

The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) for an International Standard is submitted for parallel voting. A separate form for CENELEC voting will be sent to them by the CENELEC Central Secretariat.

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## Annex M (informative) Measurement Uncertainty of Test Instrumentation

## M.1 Introduction

The repeatability of EMC testing relies on many factors or influences that affect the test result. These influences give rise to errors in the realization of the disturbance quantity which may be ascribed to random or systematic effects. The conformance of the realized disturbance quantity with the disturbance quantity defined in this standard usually is confirmed by a series of measurements (e.g. measurement of the magnitude of the electric field strength with field probes, measurement of the modulation depth with an oscilloscope,...). The result of each measurement is only an approximation to the value of the measurand and the measured quantity may differ from the true value by some amount due to measurement uncertainty.

In order to achieve a high reliability of the test result, it is necessary to identify the sources of uncertainty involved in the test instrumentation and to make a statement of the uncertainty of the measurement.

Uncertainties for immunity tests cannot be handled in the same way as for emission measurements since immunity tests normally do not have a numerical result, but will give a simple "pass" or "fail" as test result. During the immunity test, the disturbance quantity characterised by several parameters is applied to the EUT. One or more observable signals of the EUT are monitored or observed and compared against agreed criteria, from which the test result (pass/fail) is derived.

A classical measurement uncertainty can, in principle, be applied to the measurement of the signals from the EUT. Since the process of measurement for the monitoring is EUT specific, a basic standard cannot and should not deal with measurement uncertainties for the monitoring system (the observer), however this may be performed.

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https://standards/Uncertainties/can also be specified for the parameters of the disturbance quantity. As4-3-2006-a2-201 such they describe the degree of agreement of the specified instrumentation with the specifications of this basic standard.

These uncertainties derived for a particular test instrumentation do not describe the degree of agreement between the simulated electromagnetic phenomenon, as defined in the basic standard and the real electromagnetic phenomena in the world outside the laboratory. Therefore questions regarding the definitions of the disturbance quantity (e.g. the deletion of maximum 25 % of the points of the UFA) are not relevant for the test instrumentation uncertainties.

Since the influence of the parameters of the disturbance quantity (e.g. level setting, frequency, modulation index etc.) on the EUT is a priori unknown and in most cases the EUT shows non linear system behaviour, a single uncertainty number cannot be defined for the disturbance quantity as "overall uncertainty". Each of the parameters of the disturbance quantity should be accompanied with a specific uncertainty, which may yield to more than one uncertainty budget for the test.

This document focuses on the uncertainties for level setting. Other parameters of the disturbance quantity may be of equal importance and should also be considered by the test laboratory. The methodology shown in this annex is considered to be applicable to all parameters of the disturbance quantity. However Clause M.8 should be applied with the test level uncertainty only.

The treatment of uncertainty involves the use of statistics to estimate the probability of an outcome and to assign an associated confidence interval to each characteristic of the realized disturbance quantity.

## M.2 Definitions

## M.2.1

### accuracy of measurement

closeness of the agreement between the result of a measurement and the conventional true value of the measurand. [VIM 3.5 MOD]

NOTE 1 – "Accuracy" is a qualitative concept. NOTE 2 – The term "precision" should not be used for "accuracy".

[394-20-39]

## M.2.2

#### accuracy (of a measuring instrument)

quality which characterizes the ability of a measuring instrument to provide an indicated value close to a true value of the measurand [H VIM 5.18]

NOTE 1. This term is used in the "true value" approach.

NOTE 2 . Accuracy is all the better when the indicated value is closer to the corresponding true value.

[311-06-08]

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## M.2.3

## confidence level https://standards.iteh.ai)

probability, generally expressed as a percentage, that the true value of a statistically estimated quantity falls within a pre-established interval about the estimated value

[393-18-31]

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#### error

The difference between the result of a measurement and the conventional true value of the measurand. [VIM 3.10 MOD]

[394-20-38]

## M.2.5

### influence quantity

quantity which is not the subject of the measurement but which influences the value of the quantity to be measured or the indications of the measuring instrument

[311-06-01 MOD]

## M.2.6

### limits of error of a measuring instrument (tolerance)

extreme values of an error permitted by specifications, regulations, etc., for a given measuring instrument

## M.2.7

measurand

particular quantity subject to measurement [VIM 2.6]

[311-01-03]

### M.2.8

## measuring system

complete set of measuring instruments and other equipment assembled to carry out specified measurements [VIM 4.5]

[311-03-06]

### M.2.9

## random error

The difference between a measurement and the mean that would result from a sufficiently large number of measurements of the same measurand carried out under repeatability conditions. [VIM 3.13 MOD]

[394-20-36]

### M.2.10

### range of uncertainty (confidence interval) of measurement

value expressed by the formula  $2k\sigma$  for a single measurement and by  $2k\sigma$  for the arithmetic mean of a series of measurements. This corresponds to the statistical term "confidence interval".

#### M.2.11

#### repeatability (of results of measurements)

closeness of agreement between the results of successive measurements of the same measurand, carried out under the same conditions of measurement, i.e.:

. by the same measurement procedure,

. by the same observer,

. with the same measuring instruments, used under the same conditions,

. in the same laboratory, standards then a

. at relatively short intervals of time.

[H VIM 3.6] Document Preview

NOTE . The concept of "measurement procedure" is defined in VIM 2.5.

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## M.2.12

## reproducibility of measurements

closeness of agreement between the results of measurements of the same value of a quantity, when the individual measurements are made under different conditions of measurement:

. principle of measurement,

. method of measurement,

. observer,

. measuring instruments,

. reference standards,

. laboratory,

. under conditions of use of the instruments, different from those customarily used,

. after intervals of time relatively long compared with the duration of a single measurement. [H VIM 3.7]

NOTE 1 . The concepts of "principle of measurement" and "method of measurement" are respectively defined in VIM 2.3 and 2.4.

NOTE 2 . The term "reproducibility" also applies to the instance where only certain of the above conditions are taken into account, provided that these are stated.

[311-06-07]