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Amendement 2

Compatibilité électromagnétique (CEM) –

Partie 4-4:
Techniques d'essai et de mesure –
Essai d'immunité aux transitoires électriques rapides en salves

Amendment 2

Electromagnetic compatibility (EMC) –

Part 4-4:
Testing and measurement techniques –
Electrical fast transient/burst immunity test

International Electrotechnical Commission 3, rue de Varembé Geneva, Switzerland
Telefax: +41 22 919 0300 e-mail: inmail@iec.ch IEC web site http://www.iec.ch

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FOREWORD

This amendment has been prepared by subcommittee 77B: High-frequency phenomena, of IEC technical committee 77: Electromagnetic compatibility.

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

FDIS	Report on voting
77B/314/FDIS	77B/320/RVD

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

The committee has decided that the contents of the base publication and its amendments will remain unchanged until 2003. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition or
- amended.

INTRODUCTION

This amendment introduces additional requirements for the calibration of the fast transient/ burst generator. The intention is to improve the reproducibility of the test.

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6.1.1 Characteristics and performance of the fast transient/burst generator

Replace the existing title and text of this subclause by the following:

6.1.1 Characteristics of the fast transient/burst generator

- Output voltage range with 1 000 Ω load shall be at least 0,25 kV to 4 kV.
- Output voltage range with 50 Ω load shall be at least 0,125 kV to 2 kV

The generator shall be capable of operating under short-circuit conditions.

Characteristics

– Polarity	positive/negative
– Output type	coaxial, 50 Ω
– DC blocking capacitor	10 nF ± 20 %
– Repetition frequency	function of the selected test level (see table 2) ±20 %
– Relation to the power supply	asynchronous
– Burst duration (see subclause 6.1.2 and figure 2)	15 ms ± 20 %
– Burst period (see subclause 6.1.2 and figure 2)	300 ms ± 20 %
– Wave shape of the pulse	
– into 50 Ω load	rise time t_r = 5 ns ± 30 % duration t_d (to 50 %) = 50 ns ± 30 % peak voltage = according to table 2, ±10 %
– into 1 000 Ω load	rise time t_r = 5 ns ± 30 % duration t_d (to 50 %) = 50 ns with a tolerance of –15 ns to +100 ns peak voltage = according to table 2, +10 % /–15 % (see the note below table 2)
– Test load impedance	50 Ω ± 2 %
	1 000 Ω ± 2 % // ≤ 6 pF. The resistance measurement is made at d.c and the capacitance measurement is made using a commercially available capacitance meter that operates at low frequencies.

6.1.2 Verification of the characteristics of the fast transient/burst generator

Replace the existing test of this subclause by the following new text:

The test generator characteristics shall be verified in order to establish a common reference for all generators. For this purpose the following procedure shall be undertaken:

The test generator output is connected to a 50 Ω and 1 000 Ω coaxial termination respectively and the voltage monitored with an oscilloscope. The –3 dB bandwidth of the measuring equipment and test load impedance shall be at least 400 MHz. The test load impedance at 1 000 Ω is likely to become a complex network. The rise time, impulse duration and repetition rate of the impulses within one burst shall be monitored.

The following EFT/B generator characteristics shall be measured with 50 Ω and 1 000 Ω terminations on the EFT/B generator.

NOTE Measures shall be taken to ensure that stray capacitance is kept to a minimum.

Table 2 – Repetition rate of the impulses and peak values of the output voltage

Set voltage kV	V_p (open circuit) kV	V_p (1 000 Ω) kV	V_p (50 Ω) kV	Repetition frequency kHz
0,25	0,25	0,24	0,125	5
0,5	0,5	0,48	0,25	5
1	1	0,95	0,5	5
2	2	1,9	1	5
4	4	3,8	2	2,5

NOTE 1 Use of a 1 000 Ω load resistor will automatically result in a voltage reading that is 5 % lower than the set voltage as shown in column V_p (1 000 Ω). The reading V_p at 1 000 Ω = V_p (open circuit) multiplied times 1 000/1 050 (the ratio of the test load to the total circuit impedance of 1 000 Ω plus 50 Ω). The voltage tolerance specified in 6.1.1 is referred to nominal values given in column V_p (1 000 Ω) of table 2.

NOTE 2 With the 50 Ω load, the measured output voltage is 0,5 times the value of the unloaded voltage as reflected in the table above.