

**GROUP OF NOTIFIED BODIES UNDER
THE EMC DIRECTIVE
- ECANB -**

Technical Guidance Note TGN 26 on Measurements of flicker according to EN 61000-3-3 (1995) + A1 (2001) + A2 (2005) and EN 61000-3-11 (2000)

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1. Introduction

Product:

All the electrical and electronic products supplied by the public low voltage network and not exceeding a current of 16 A by phase.

Quoted standards: EN 61000-3-3 (1995) + A1 (2001) + A2(2005) & EN 61000-3-11 (2000)

2. Guidelines:

For EN 61000-3-3

The group agrees with the use of the sentence “it is not necessary to carry out the tests” on the apparatus non likely to cause fluctuations of tension “with the provision of specifying it in the test report”. In this case produces it is declared in conformity without test.

Whatever it is necessary to apply the § 6.1 of amendment A1:

It may be necessary to determine, by examination of the circuit diagram and specification of the equipment and by a short functional test, whether significant voltage fluctuations are likely to be produced.

For voltage changes caused by manual switching, equipment is deemed to comply without further testing if the maximum r.m.s. input current (including inrush current) evaluated over each 10 ms half-period between zero-crossings does not exceed 20 A, and the supply current after inrush is within a variation band of 1,5 A.

If measurement methods are used, the maximum relative voltage change d_{max} caused by manual switching shall be measured in accordance with annex B.

If the equipment under test is not described in appendix C of the EN 61000-3-3 standard, then all the following parameters will be considered:

- Pst: severity of the flicker evaluated over one period of 10 min
- Plt: severity of the flicker evaluated over one period of 120 min, by using the successive values of Pst (possible numerical result)
- Dc: relative variation of the permanent tension

- D max: maximum relative variation
- D (T): relative duration of the variations of tension

Question: is the measurement of Pst for a product having a short cycle (< 10 mn) sufficient?

Outside the appendix C, the answer is in articles 4.3 and 6.5 which exclude Plt but which forces to restart the apparatus over the 10 min-period of observation (§6.5).
dc, dmax; d(t) have to be measured.

Amendment A1 gives possibilities of dmax dependent on conditions and types of apparatus. Only examples of apparatus are given for a dmax of 7%, not for dmax of 4 nor of 6%.

The following interpretations are proposed:

<i>D</i> MAX	Normative conditions on the apparatus	Examples of apparatus
4 %	Without additional condition	Convecteur TV Heat water Day/Night
6 %	Manual commutation Automatic commutations > 2 times per day and delay with starting or manual restarting	Motorized controlled ventilation at several speeds Microwave oven Programmable washing machine Heating pump, air-conditioner with anti short cycles and delay with the powering
7 %	Under monitoring during their use Powering automatic or manual 2 times per day to the maximum and delay with starting or manual restarting	kitchen blender Hair drier Lawn mower Portable tool Vacuum cleaner Server or professional PC.

Comment:

Following the reading of amendment A1, the group considers that for the air-conditioners (§A14) all the parameters have to be evaluated.

If possible, measurements by using flickermeter will be preferable than the analytical method. In the absence of cycle defined by the manufacturer the supposed cycle is **1 by 10 min.**

Application of EN 61000-3-11

The EN 61000-3-11 standard can apply to the apparatus consuming less 16A including with mobile apparatus having by definition several destinations.

This part of IEC 61000 is also applicable to equipment within the scope of IEC 61000-3-3 that does not meet the limits when tested or evaluated with reference impedance Z_{ref} and is therefore subject to conditional connection. Equipment which meets the requirements of IEC 61000-3-3, is excluded from this part of IEC 61000.

Any mobile (or not) device of rated current upper 16 A is also in the scope of EN 61000-3-11.

Conclusion:

EN 61000-3-11 standard can be applied on any apparatus instead of EN 61000-3-3 standard in the event of non conformity with this one; however the conditions of connection (according to §4) must be indicated in the instructions accompanying the apparatus.

Note: This TGN is based on TECHNICAL DECISION n° 10E: Edition 1 of 08/12/03 of the Working Group of French Notified Bodies for EMD Directive 2004/108/EC.

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