

Technical Guidance Note TGN 27 on ON-SITE TESTS OF LARGE PRODUCTS

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### 1. Introduction

This TGN covers the on-site tests of Equipment with large dimensions (example: large machine) and defines the on-site EMC tests and means which can be adapted to large machines.

Fixed installations which are mentioned in the EMC directive are not covered by this TGN.

### 2. Guidelines:

**Warning:** Before processing immunity tests, the laboratory will have to let its customer known about the risk which can be generated by these on-site immunity tests.

*The emission and immunity have to be adapted regarding in the following ways:*

Conducted emission on supply access measurements:

- *The LISN use is recommended until 100A. If the current is upper than the limit of use of LISN, we used to perform the measurement with the standardised voltage probe.*

Radiated emission measurements:

- The measures used to be performed at 3m from the DUT, with limit corrections. Place the antenna successively on the side of disturbance sources, that have been previously identified, trying to minimise the influence of the environment (radiation and obstacles). Some preliminary measurement (DUT OFF) are performed before (see EN 55016-2-3 § 7. 5 on-site measurements)

Conducted immunity tests:

- Fast Electrical transients in Bursts: *If the current is upper than the limits of the available coupling network, use wire-by-wire direct coupling throw a 33nF-capacitor. For the communication lines, the standardised ways of process are applicable (coupling clamp).*
- *Conducted disturbances, induced by radioelectric fields: between 150 kHz and 230 MHz: Use the electromagnetic clamp or the current probe. Both injections on the general supply and on the external interconnecting cables. Do not inject the supply of the electronic sub-systems which is connected to the general supply. The external interconnecting cables and the metallic cableways will be tested in reference to a compliance analysis of the rules of art.*
- *Surges waves, voltage dips and voltage variations tests: only partial tests will be performed (for example only the control unit) when it is not possible to carried out the test on the whole system because the machine current is higher than the limits of the CDN.*

Envelop immunity tests:

- Electrostatic discharges: *the indirect discharges are not performed closed to the metallic zone of the DUT.*
- *ISM frequency tests* (433 MHz and 2450MHz for the 80 MHz – 2700 MHz band following to EN 61000-6-2 standard): It is commonly held to conduct the test at a distance which can be lower than 3m (toll down to less than 1m) to deliver less power. The test must be reproduced in front of each subset or group of sub-assemblies containing electronics.

*The laboratory will assess the test relevance in accordance with the DUT surroundings (test and utilisation).*

The field strength setting can be previously determined thanks to the calculation of the incident power at the foot antenna or by a calibrated file. No field levelling. Ensure that the power is limited in order to not increase the harmonic rate.

- *Magnetic fields at 50Hz:* tests to be carried out on the subset isolated, when applicable.

*Note: This TGN is based on TECHNICAL DECISION n° 11E : Edition 1 – 08/09/10 of the Working Group of French Notified Bodies for EMD Directive 2004/108/EC.*

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