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Evaluation and testing with regard to EMF requirements

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THE EVALUATION AND TESTING OF ELECTRONIC AND ELECTRICAL APPARATUS FOR CONFORMITY WITH THE EUROPEAN COUNCIL RECOMMENDATION TO LIMIT HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS

1.0 Introduction

The Low Voltage Directive (LVD) and, by reference, the Radio Equipment and Telecommunications Terminal Directive (RTTED), require people and domestic animals to be protected from the adverse effects of radiation, but they do not contain any limit values. For protection from electromagnetic fields (EMF) in the range 0 Hz to 300 GHz requirements for exposure are contained within European Council Recommendation 1999/519/EC. The European Commission issued mandate M/305 to the European Standards Organisations and this resulted in the creation of a number of standards that may be used in conjunction with 1999/519/EC to demonstrate conformity with the safety objectives of the LVD the essential requirements of the RTTED. [In practice it has been agreed that the standards will be published by CENELEC.]

A manufacturer should only affix the CE marking to products covered by the LVD and RTTED once they have established conformity with 1999/519/EC. Because EMF is considered to be a requirement of the LVD and RTTED, it is considered that where a manufacturer chooses to use standards as the basis for their presumption of conformity with these Directives then this presumption can only be complete if they have included consideration of EMF.

Note 1. The standards referred to in this document should be considered relevant at the time of the creation of this document (May 2005).

Note 2. For further details regarding how EMF matters relate to the LVD and RTTED, see http://ec.europa.eu/enterprise/sectors/electrical/documents/lvd/guidance/chapter3/index_en.htm

Note 3 For the EMF mandate, see http://ec.europa.eu/enterprise/sectors/rtte/files/mandates/m305_en.pdf

It is considered that the subject of compliance with the European Council Recommendations is one that should be co-ordinated on a European-wide basis across the European Certification Schemes.

This paper proposes a basis on which that co-ordination might be achieved.

2.0 Demonstrating compliance with the European Council recommendations

In certain product groups the European Standards Organisations have created product specific standards for the measurement of EMF, and where these exist they shall be used for the demonstration of conformity across the frequency range of 0 Hz to 300 GHz. Where no relevant specific product EMF standards exist, compliance shall be determined by the use of generic standards.

2.1 Generic standards to demonstrate compliance

2.1.1 EN 50392~~:2004~~ (0 Hz – 300 GHz) establishes a suitable standard to demonstrate the compliance of apparatus intended for use by the general public with the basic restrictions or reference levels on exposure to electric, magnetic, electromagnetic fields and induced and contact current. A generic procedure for the assessment of apparatus is provided in section 7.3 of the standard.

2.1.2 EN 50371~~:2002~~ (10 MHz – 300 GHz) establishes a suitable standard to demonstrate the compliance of low power electronic and electrical apparatus with the basic restrictions on exposure of the general public to electric, magnetic, and electromagnetic fields and contact current.

2.2 Product specific standards to demonstrate compliance with the European Council Recommendations

Where the following product specific standards exist then they shall be used to demonstrate compliance with the European Council Recommendations.

2.2.1 EN 50366~~:2003~~ Household and similar electrical appliances – Electromagnetic fields – Methods for evaluation and measurement.

The European Standard EN 50366 has been prepared under mandate M/305 given to the European Standards Organisations by the European Commission and supports the safety objectives of the Low Voltage Directive (LVD) – ~~73/23/EEC~~ 2006/95/EC. (The Standard is listed in C103/2, Official Journal of the European Union, 29.04.2004). It can therefore be concluded that products falling within the scope of EN 50366 should be evaluated against this standard before a declaration of conformity to the LVD, based on conformity with harmonised standards, can be made by a manufacturer.

Where a manufacturer uses conformity with EN 50366 to support such a declaration, then they should be made aware that they will need to demonstrate compliance with that standard with effect from 1 February 2006, the Date of Withdrawal (dow) of the previous standard, in order to demonstrate ongoing compliance with the LVD.

3.0 Evaluation of conformity to generic and product specific electromagnetic fields standards

The methods for evaluating the conformity of apparatus are provided within the relevant standard.

It is proposed that these requirements together with the following three-level approach are adopted by a Certification Body when requested to evaluate the conformity of apparatus with the relevant standard:

3.1 Where apparatus has characteristics that are similar to other apparatus that have previously been evaluated by an expert and shown to be obviously benign then a declaration is made to this effect, referencing the source.

3.2 For products where it is not known if it is benign, investigation should be carried out by an expert using the procedures outlined in the relevant generic or product specific standard. The expert is asked to evaluate the product by examination of a sample and/or drawings and photographs or by comparison with a similar product that has been tested and found to conform with the EMF limit. If the expert concludes that the product is benign then no testing is necessary.

3.3 If conformity is uncertain, then test within the procedures of the relevant generic or product specific standards.

4.0 Persons authorised to carry out evaluation within the Schemes

The Certification Body is responsible for ensuring that the evaluation of a product has been carried out by a competent person or expert.

4.1 Where the criteria for identifying an obviously benign product has been established by an expert source then the evaluation can be carried out by a competent person in the Certification Body or Testing Laboratory.

4.2 Where it is not known if a product is benign the evaluation must be carried out by an expert identified and appointed by the Certification Body from its own staff, from the staff of a competent laboratory, or a manufacturer who has demonstrated to the Certification Body that they are competent.

5.0 Reporting within the CCA and ENEC Schemes

5.1 For obviously benign products the Certification Body is responsible for reporting the product status within any new Safety Test Report Form (TRF), in a supplement to that report, or as further information to be included on the relevant licence or NTR. Possible wording could be “On the basis of the construction and characteristics of this appliance it was deemed that it conforms to the limits of EMF given in EN 50366”.

5.2 For products where an examination by an expert concludes that the product is benign, then reporting should be the same as that outlined in 5.1. Possible wording could be “On the basis of an evaluation carried out by an expert it was deemed that the construction and characteristics of this appliance conforms to the limits of EMF given in En 50366.”

5.3 For products where testing is carried out then the test results should be included within, or referenced within, the Safety Test Report. If a separate test report is used this should be identified in the safety report and on the relevant licence or NTR.

The ultimate responsibility for stating compliance to the requirements of the European Council recommendations, within the context of any Declaration of Conformity of an appliance to the requirements of the LVD, lies with the manufacturer.