

CambsQuality®

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Keeping Product Legal (Meeting EU and US Regulations)

1. Introduction

These notes describe, in broad terms, the types of product testing and inspection needed to meet EU and US regulations on safety and also those on electro-magnetic compatibility (EMC) for electrical and electronic equipment.

2. Responsibility for Verification

Both the EU and USA place this with the importer or manufacturer. Self-verification backed up by test and inspection results and manufacturing drawings, instructions and inspection and test procedures is the normal route.

3. Exemption from Verification

Products that are to be used for evaluation or development purposes only. There are special requirements for this.

3.1 Exemption from Verification, (specific USA Requirement)

Products within verified free-standing units, such as PCB assemblies, power supplies and CD drives, and again special requirements apply.

3.2 Exemption from Verification, (specific EU Requirements)

- Products that are not free standing, such as PCB assemblies, power supplies and CD drives **that are not intended to be run on benches in normal use**. These do not need to be CE marked but could be under special circumstances if the lack of a mark was a barrier to a sale
- Products that will not be sold directly to the final user
- Products only for use by another manufacturer after modification
- Equipment sent outside the EU for repair and then returned. Note that an upgraded product would be deemed to be manufactured and would need a CE mark unless at least one of the other rules in this section were met
- Spare parts, even if they differ from the original, i.e. a replacement power supply from a different manufacturer
- Second hand equipment, provided that it has not been modified or reworked
- Equipment sold before January 1st 1996

4. Non-Compliant Products

The manufacturer or importer's installation instructions and sales literature will need to carry a warning of the non-compliance and measures needed to make them safe or prevent electro-magnetic interference.

5. Safety Standards

The EU and USA generally use standards **based on** international standards. Proof of compliance is by inspection of new system designs and by the use of approved

power supplies, etc. Note that these standards are generally based on international standards but may differ in detail.

6. Electro Magnetic Compatibility (EMC) Standards

The International Special Committee on Radio Interference (CISPR) produces the internationally recognised standards for EMC.

6.1 Levels of EMC

Two levels are defined:

- Class A - Industrial, office, etc
- Class B - Domestic environment

The definitions of these classes differ between the EU and the USA.

Class A is less stringent than Class B.

6.2 Emissions

Various CISPR standards are used for different product types. These are accepted unchanged by the FCC but the EU uses modified versions also given them EN numbering.

The tests are:

- Conducted emissions, measured along the mains lead
- Radiated emissions

The following are unique to FCC testing:

- The test method must be as defined by the American National Standards Institute (ANSI)
- Tests for single-phase equipment must be performed on a 120 Volts, 60 Hz supply
- Additional tests above 1 GHz are required for equipment with internal oscillators with frequencies of greater than 108 MHz

6.3 Susceptibility

The USA has no requirements. The EU calls up EN standards, many of which may have not been finalised and are constantly being added to.

The tests cover immunity from such aspects as:

- Radiated Fields
- Conducted RF
- Electrical Fast Transients
- Electrostatic Discharge
- Surge
- Voltage Dips and Interruptions
- Power Frequency Magnetic Fields

The equipment should continue to work to specification, during these tests.

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