

2.3.2 ELECTROMAGNETIC COMPATIBILITY (EMC) DOCUMENTATION

The Electromagnetic Compatibility (EMC) Directive 2004/108/EC is incorporated into UK law by the Electromagnetic Compatibility Regulations SI 2006 3418. The Directive is applicable to most electronic appliances with “active” components which are likely to produce, or be affected by, electrical interference. The EMC Directive changes made since the original publication are in essence procedural and do not affect the route to compliance for non-complex installations. For most applications within the industry, the self certification route to compliance should be used. For complex installations, guidance should be obtained from a notified body or similar.

The Directive requires anyone placing relevant equipment on the market to;

1. Affix a **CE** mark to the product or, if this is impractical, the packaging and/or documentation.
2. Raise a Declaration of Conformity (DoC).
3. Compile a technical documentation file.

The “self certification” route to compliance.

There is no specific requirement to test equipment to a particular Standard, but there is the requirement to be able to demonstrate compliance. If a manufacturer DOES carry out testing to a relevant Harmonised EMC Standard (one published in the Official Journal of the European Community) then he can PRESUME conformity to the Directive without any further reasoning. If the manufacturer decides to demonstrate compliance by using a set of tests not Harmonised by publication in the Official Journal, he cannot presume conformity and may have to justify that the test plans he used are sufficiently rigorous.

In the majority of cases, this route is the cheapest and simplest method of demonstrating compliance as it does not require the intervention of a notified body.

Test requirements

The electrical noise produced by the equipment must meet limits which tend to be the same irrespective of the standard that is applied (there are two sets of levels, one for the Residential, commercial & light industry environment and one for the Industrial environment), the requirements being associated with noise being generated down the power cable on to the public supply network (inducted) and to that radiated from the enclosure and cables (radiated).

There are requirements for Immunity (similar to those requirements set by EN45501 for the Non Automatic Weighing Instruments Directive) which require the equipment to work as intended (bearing in mind the expectations of the user and consequences of a failure) when subjected to continuous and transient interference; again there are different sets of interference test levels depending on the intended operating environment.

As the manufacturer is the person who is going to raise the DoC, it is he who will define the normal operation of the equipment and the significance of any failure (this is usually done in conjunction with a test house or test department to produce an EMC Test Plan to set the scope of the testing). He will then incorporate the test results into the mandatory Technical Documentation with, when necessary, an explanation as to why the performance of the item is deemed to comply with the protection requirements of the Directive.

Test standards

There are no specific Harmonised EMC test standards for weighing equipment. While this would seem to be a problem in certifying this type of equipment, in reality, the test requirements are very similar for all types of equipment - general test levels are usually identical and product specific test Standard simply specify additional testing or a particular method of testing which is applicable to that equipment. In the situation where there is no specific product Standard, the Generic EMC Standards are used.

There are four Generic Standards;

BS EN 61000-6-1:2007

EMC Immunity for the residential, commercial & light industry environment.

BS EN 61000-6-2:2005

EMC Immunity for the industrial environment.

BS EN 61000-6-3:2007

EMC Emissions for the residential, commercial & light industry environment.

BS EN 61000-6-4:2007

EMC Emissions for the industrial environment.



The complete suite of tests for a particular piece of equipment is dependant on how it is powered (AC /DC / Internal battery) and the type and length of any interface cables. The performance criteria for a test is set by the Standard but the interpretation of the significance of the results is decided by the manufacturer – the test house or department can explain the performance of the equipment when subjected to interference and state an opinion, but it is the manufacturer who is going to sign the DoC.

References

The Electromagnetic Compatibility (EMC) Directive 2004/108/EC

The Electromagnetic Compatibility Regulations SI 2006 3418

