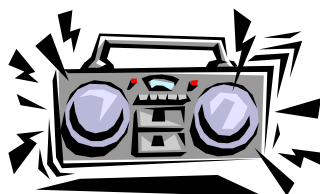


The Electromagnetic Compatibility Regulations

A Guide for Manufacturers and Importers



Regulations covering Electromagnetic Compatibility (EMC) came fully into effect on 1st January 1996. These regulations implement the European Directive on EMC and have major implications for manufacturers, importers and users of electrical and electronic equipment.

The EMC Directive is one of the European “new approach” Directives. The intention of the directive is to harmonise laws in the European Union and assist European Community trade. The EMC directive is not concerned with the safety of any given product range, but its requirements supplement the provisions of other laws. Therefore, manufacturers of toys, machinery, construction products and a range of other electrical goods must pay heed to these regulations, as well as to product specific legislation, if their product is to remain on the market.

This guide has been prepared to assist businesses affected by the EMC regulations. It is not an exhaustive document, but it does try to cover most aspects of the regulations. In particular advice is given on:-

- The essential protection requirements;
- demonstrating compliance;
- CE marking;
- Necessary documentation.

Every effort has been made to ensure the accuracy of this guide, but you are advised to seek more detailed advice before applying a CE mark to your product.



This is one of a series of leaflets prepared by the Wales Heads of Trading Standards Group. For details of other leaflets in the series, please contact your local Trading Standards Department - contact details are provided at the end of this leaflet.

Introduction

What is EMC?

In simple terms, it is the ability of any electrical or electronic equipment to operate without suffering any electromagnetic interference (EMI) from other electronic products. EMI may be described as an electronic form of pollution and its effects include causing radios to crackle and making sensitive medical equipment malfunction.

With advances in technology, electronic products become more common and the problems caused by EMI have caused concern. Some reported incidents of EMI include;

- mobile telephones affecting readings on petrol pumps
- arc welders affecting medical equipment
- in-car cigarette lighters causing car park barriers to operate

These problems are the reason for the drafting of this legislation.

What do the Regulations Require?

In common with the other new approach directives, manufacturers must ensure that their product complies with a number of rules. Products subject to the EMC Regulations must

- satisfy essential protection requirements;
- be CE marked (this is a visible declaration by the manufacturer that the product meets the requirements of regulations);
- be subject to a declaration of conformity (a written declaration stating compliance with the requirements of the regulations);
- be easily related to relevant technical data (this provides the means of assessing the conformity of the equipment to the requirements).

On the face of it these seem to be a simple set of rules, but the considerations that manufacturers must take on board vary across the different trade sectors. This guide now outlines the core elements listed above in more detail.

NB. For the purpose of these regulations any person who assembles component parts to build an end product is treated as the manufacturer of that product. Therefore, anyone who custom builds personal computers, for example, is viewed as the manufacturer of the computer. Any person who imports a product into the European Union is also treated as the manufacturer of that product.

The Essential Protection Requirements

The essential protection requirements are defined in the regulations. These require products to be built in such a way that

- the electromagnetic (EM) disturbance it generates does not exceed a level allowing radio and telecommunications equipment and other relevant apparatus to operate as intended; and
- it has a level of intrinsic immunity that is adequate to enable it to operate as intended when it is properly installed and maintained, and used for the purpose intended.

What this means is that electrical and/or electronic equipment should not emit excessive EMI. Such products should also have a level of immunity to any EMI that may be present in the same environment. The much asked question is, how does a manufacturer meet these requirements?

The answer is not a simple one, but the solution is within the grasp of all manufacturers.

First, they must consider the EM phenomena listed in Schedule 2 of the regulations.

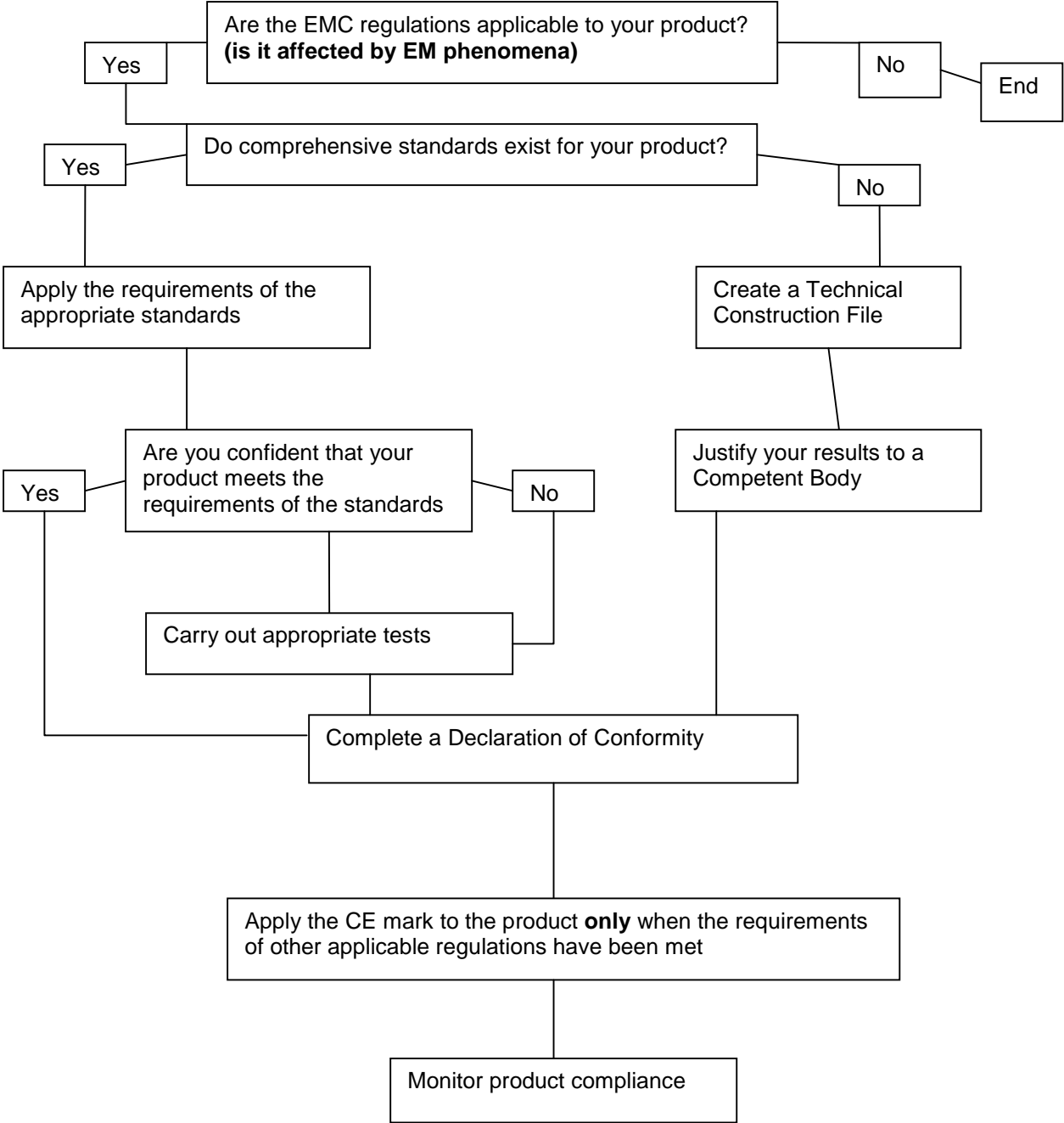
These are:-

- conducted low and high frequency phenomena such as voltage fluctuations, harmonics and transients;
- radiated low and high frequency phenomena such as magnetic fields, electromagnetic fields and transients;
- electrostatic discharge phenomena.

You should not worry about the technical aspects of EMI, there are testing houses who can assist you in this area. However it is vital that you seek technical help at the design stage, it could save you a lot of money on things like product recall, product modifications, etc. Manufacturers must determine how they will meet the essential protection requirements and then demonstrate compliance. Simply assembling CE marked components and relying on other manufacturers is not sufficient and some investment is necessary.

The Routes to Compliance or the “Attestation Process”

The diagram given below is a simple representation of the process manufacturers must go through to meet the requirements of the EMC regulations. This is known as the attestation process; the means of proving how and why you believe your product to be compliant.



This chart is only an outline of the process and the relevant components of the chart are discussed in more detail overleaf.

Meeting the Essential Protection Requirements

Radio communications equipment aside, there are two options available to demonstrate conformity with the law, commonly called the “routes of compliance”.

The most common means to demonstrate compliance is the **standards route**. This is where a manufacturer uses harmonised European standards to measure the EM characteristics of his product against agreed performance limits. If this route is chosen, it is essential that the appropriate standards are selected. It is crucial to appreciate that satisfying the requirements of any given standard is not the target of compliance, as many manufacturers suppose. The law requires manufacturers to meet the essential requirements. Standards do provide a means of achieving compliance, but there are other things to consider such as the scope of the standard used and its validity in the eyes of the law.

At this stage, the question of testing should be considered. There is no statutory requirement to test your equipment, but satisfying the statutory defence in the event of a non compliant product may prove difficult without it.

For small-scale manufacturers, the best advice at present, is to test a configuration of the product that is likely to cause the most problems, i.e. a “worst case scenario”. If this combination complies with the performance requirements of the appropriate standards, then it will be reasonable, given consistent design practices, to assume that the other products in the range are compliant.

The second route to compliance is by using a **Technical Construction File (TCF)**. This is used when the available standards are not entirely appropriate for the product in question. Its use will normally be confined to innovative products or items that are not currently catered for in the Standards regime. In simple terms, the TCF is the manufacturer’s justification that his product complies with the regulations. The TCF will contain information such as:

- a description of the apparatus to which it relates;
- the design and production process;
- the operating environment;
- the testing procedures used, if any;
- a verification report from a competent body appointed by the DTI.

The contents of a TCF will depend on the type of product and what is needed to show compliance. The TCF must be kept for 10 years and be available for inspection. The next stage is the paperwork. Only when all the relevant paperwork, relating to all the relevant regulations, has been assembled should the manufacturer affix the CE mark.

Documentation

The EMC Regulations require a manufacturer to create and sign a declaration of Conformity for each type of product and its variants. The example given below outlines the content of such a declaration. It should be in English and must be signed by a representative of the manufacturer. This might be a director of the company. In the event of a false declaration being made, action may be taken against the person who has signed the declaration as well as the manufacturer.

Example of a Declaration of Conformity

Company name/Address etc.

.....

.....

.....

This is to certify that

Product category

Model name

Conforms with the essential requirements of the European Directive 73/23/EEC, as implemented by the Electrical Equipment (Safety) Regulations 1994, by application of the following standards

State which used, e.g. EN60590:1992

Conforms with the protection requirements of European Directive 89/336/EEC, as implemented by the Electromagnetic Compatibility Regulations 1992, by application of the following standards

State which used, e.g. EN55022:1995

Signed:

Position:

Date:

Many of the European Directives require manufacturers to keep a technical file. This is a set of documents containing information on issues such as:

- a description of the equipment;
- drawings or photographs of the equipment;
- technical drawings;
- a list of the standards applied to the product;
- test reports.

It also provides you with evidence to demonstrate that your product meets the requirements of the appropriate regulations.

There is no explicit requirement in the EMC regulations to keep a technical file, but you are strongly advised to do so.

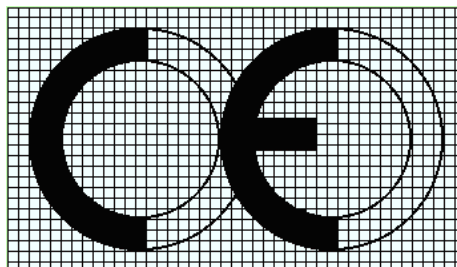
Applying the CE mark

Even the simple process of applying a CE mark can be problematic. The application of the CE mark by the manufacturer is taken as a claim that the product satisfies all of the relevant directives. You must be aware of any other European Directives that apply to your product and meet their requirements **before** applying the CE mark.

The EMC regulations state that the CE mark should be affixed to one of the following:

- the apparatus itself, or where that is not possible or impractical;
- the packaging for the product; or
- the instructions for use; or
- the guarantee certificate.

You are advised to place the CE mark on the product and its outer packaging wherever possible. The CE mark must be at least 5mm high and in the font style given in the Regulations.



Where can I get more information?

- The Trading Standards Service of your local council should be able to help with most of your queries. Contact details are given below:



Trading Standards

Torfaen County Borough Council
County Hall

Cwmbran NP44 2WN

trading.standards@torfaen.gov.uk

tel: 01633 648384

- The Department of Trade and Industry (DTI)

The Standards and Technical Regulations Directorate are the lead body within the UK for most of the CE marking directives (but not all). The Dti produce a number of in-depth guidance notes on the various regulations, most of which can be obtained from your Local Trading Standards department. Alternatively you can contact the Dti directly on 0207 215 5000 or by writing to 151 Buckingham Palace Road, London, SW1W 9SS.