

dti

PRODUCT STANDARDS

Electromagnetic
Compatibility

GUIDANCE NOTES ON THE UK
REGULATIONS

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Contents

	Page
Electromagnetic Compatibility - the law in brief	3
Free movement of goods	4
The Electromagnetic Compatibility Regulations 1992 as amended	5
General Requirements of the Regulations	7
Conformity Assessment Procedures	7
- Standards or Self-Certification Route	7
- Technical Construction File Route	7
- EC type-examination Route	9
- EC Declaration of Conformity	9
- CE marking	11
Enforcement	11
Contact points for further information	14
Annex A: List of apparatus excluded from the EMC Regulations	15
Annex B: Technical Construction File route to compliance	17
Annex C: Some suggestions as to how to keep down the cost of complying with the EMC Regulations	19

This guide is intended to assist manufacturers and suppliers of electronic and electrical equipment to understand the effect of the Regulations. It is not an authoritative interpretation of the Regulations, which is a matter for the Courts.

The guide seeks to explain the requirements of the Regulations in general terms and does not attempt to address detailed issues. You should refer to the Regulations themselves for a full statement of the requirements. These can be obtained from The Stationery Office, Publications Centre, details on page 14.

Electromagnetic Compatibility

- the law in brief

The Electromagnetic Compatibility Regulations 1992 (SI 1992/2372) implement the Electromagnetic Compatibility Directive 89/336/EEC into UK Law (the EMC Directive).

The Electromagnetic Compatibility Regulations 1992 have been amended twice by:

- ❑ the Electromagnetic Compatibility (Amendment) Regulations 1994 (SI 1994/3080) implementing the CE marking Directive (93/68/EEC);
- ❑ the Electromagnetic Compatibility (Amendment) Regulations 1995 (SI 1995/3180) which disapply the 1992 Regulations in respect of vehicles, components and separate technical units;

together referred to for the purposes of this guidance as the EMC Regulations.

Since 1 January 1996:

- ❑ most electrical and electronic products made or sold in the United Kingdom, including imports, must:
 - be so constructed that they do not cause excessive electromagnetic interference and are not unduly affected by electromagnetic interference;
 - in the case of certain radio-transmitting equipment, be subject to EC type-examination by a notified body; and
 - carry CE marking.
- ❑ in some cases a technical construction file must be drawn up and kept available, generally by the manufacturer, or the importer of a product from a non-European Economic Area (EEA) country.

Free movement of goods

The free movement of goods lies at the heart of achieving an open market for business in Europe.

In May 1985, European Community Ministers agreed on a 'New Approach to Technical Harmonisation and Standards' in order to fulfil this objective.

'New Approach' Directives (in other words Community laws) set out the essential requirements (for safety or protection, for example), written in general terms, which must be met before products may be placed on the market or put into service in the United Kingdom or elsewhere in the Community. Harmonised standards, which set out technical details, are the most common means by which business can meet the 'essential requirements' for products. The Directives also say how manufacturers are to demonstrate that products conform to the 'essential requirements'. Products meeting the requirements carry CE marking, which mean they have free movement anywhere in the Community.

The Electromagnetic Compatibility Directive has also been extended by the European Economic Area (EEA) Agreement which came into force on 1 January 1994. Under the Agreement the provisions of the Directive now apply across the fifteen member States of the European Community and three states of the European Free Trade Association (EFTA)¹.

¹ There are twenty five members of the Community - Austria, Belgium, Czech Republic, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden and the UK. EFTA comprises Iceland, Liechtenstein and Norway.

The Electromagnetic Compatibility Regulations 1992 - (S.I. 1992/2372)

Entry into force: 28 October 1992

Primary legislation: The European Communities Act 1972

Coverage: apparatus liable to cause electromagnetic disturbance or the performance of which is liable to be affected by such disturbance.

'Apparatus': in the context of the EMC Regulations, "apparatus" is defined as a product, with an intrinsic function intended for the end user, and supplied or intended for supply, or taken into service, or intended to be taken into service as a single commercial unit.

The Regulations refer to 'General Exclusions' which are listed in Annex A of this document.

'Electromagnetic disturbance' means any electromagnetic phenomenon which may *degrade the performance* of apparatus. An electronic disturbance may be, for example, an electromagnetic *noise* or *unwanted signal*, etc. Thus all electromagnetic frequencies are involved and all electromagnetic phenomena as set out in Schedule 2 to the EMC Regulations.

A **signal or emission** (as specified in reg. 4(4) of the EMC Regulations) which is a necessary function, or a consequence of the operation, of applicable apparatus shall not be taken to be electromagnetic disturbance if, in relation to that apparatus, that signal or emission is permitted and does not exceed the limits specified by:

- the applicable EMC standard; or
- a condition of a technical report or technical certificate issued by a competent body for the purposes of a technical construction file; or
- a condition of an EC type-examination certificate issued by a notified body (in the case of radiocommunications transmitting equipment); or
- a term, provision or limitation of a licence granted under section 1 of the Wireless Telegraphy Act 1949, or regulations made under that section of the Act; or
- where the applicable apparatus is an item of radiocommunication transmitting apparatus, or apparatus other than wireless telegraphy apparatus which operates by emitting electromagnetic radiation in the radio frequency spectrum, the permitted signal or emission does not exceed the limits specified by regulations made under section 10 of the Wireless Telegraphy Act 1949 concerning radio frequency spectrum planning or implementation of European Community obligations.

For the purposes of the EMC Regulations the performance of apparatus which must comply is taken to be degraded if any of the following types of interference with its function occur :

- permanent, temporary or intermittent total loss of function or significant impairment of function; or
- where the apparatus is information storage or retrieval equipment, the destruction or corruption of the information so stored.

Protection requirements (as specified in reg. 5) is a reference to the essential requirements, being that apparatus shall be so constructed that:

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

Whether the level of intrinsic immunity is adequate is to be considered having regard to all the circumstances of the case, and in particular to:

- the level of performance reasonably expected of that apparatus having regard to its function or intended function;
- any specification for an acceptable level of degradation of performance provided by the manufacturer to the end user;
- the consequences of degradation of performance;
- provided that nothing shall authorise a level of intrinsic immunity which could permit the operation of the apparatus to be dangerous in any reasonable foreseeable circumstances.

The information required to enable use in accordance with the intended purpose of the relevant apparatus must be contained in the manufacturer's instructions accompanying the apparatus.

Modified application: the definition **education and training equipment** was amended in the Electromagnetic Compatibility (Amendment) Regulations 1994 (SI 1994/3080) allowing a broader modification of the protection requirements. Equipment in this category will need to satisfy the following:

- it must be accompanied by a declaration stating that the use of the apparatus outside the classroom, laboratory, study area or similar, environment invalidates conformity with the Directive and could lead to prosecution; and
- when operated, the equipment does not cause electromagnetic disturbance to apparatus outside its immediate electromagnetic environment.

A modification in respect of protection requirements also applies to **test apparatus** which in the EMC Regulations means any apparatus designed or adapted to generate, or be susceptible to electromagnetic disturbance intentionally for the purpose of conducting tests or measurements relating to an item of electrical or electronic apparatus or any other thing, matter or phenomenon.

GENERAL REQUIREMENTS OF THE EMC REGULATIONS

It is an offence for any person to supply relevant apparatus to an end user which does not conform to the following requirements:

- the essential protection requirements;
- the conformity assessment requirements (see below);
- the affixing of CE marking by the manufacturer or his authorised representative (established within the Community); and
- the issuing of an EC declaration of conformity (see below).

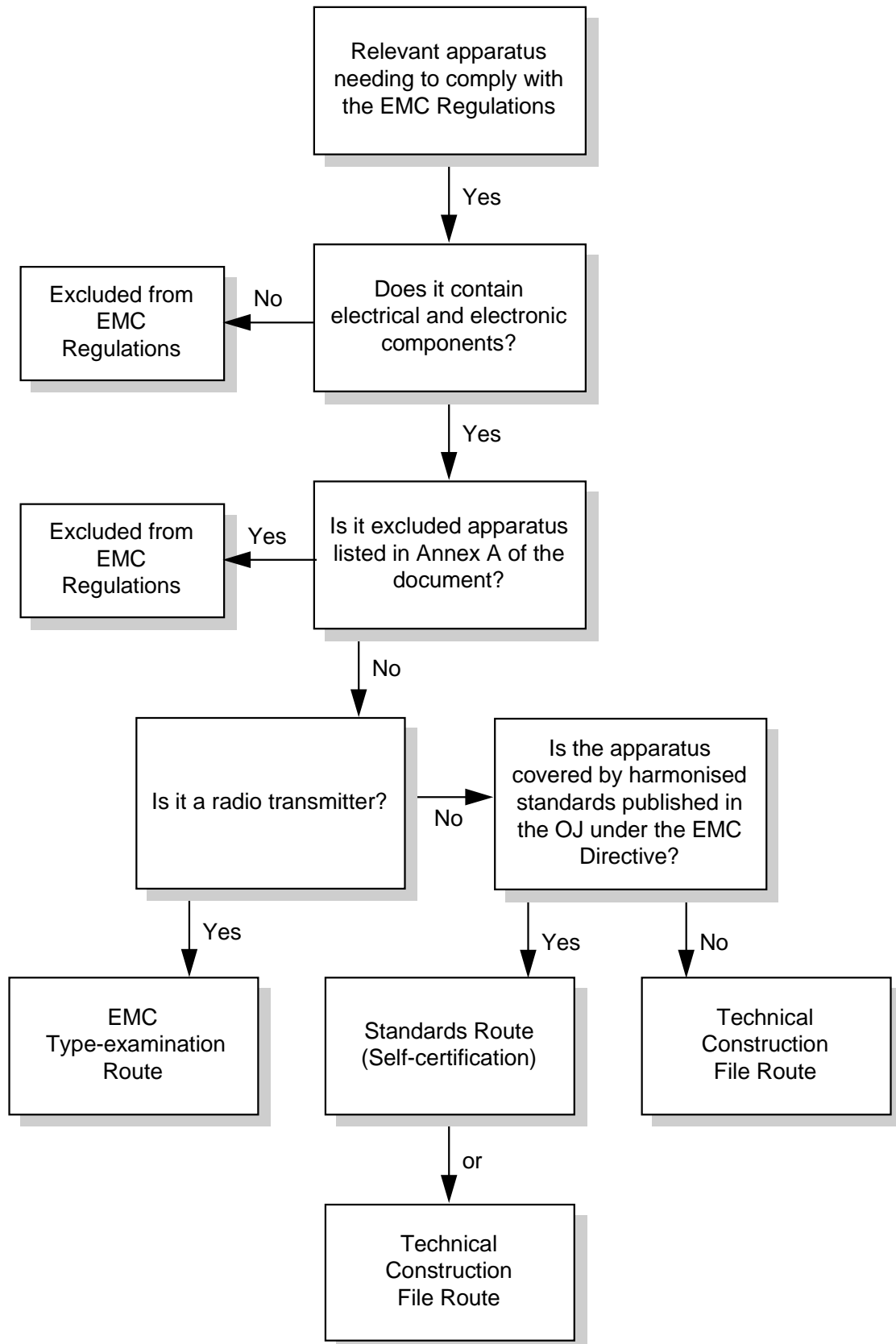
It is an offence for any person to take relevant apparatus into service unless the apparatus conforms with the protection requirements.

CONFORMITY ASSESSMENT PROCEDURES

Manufacturers should first decide whether their products come within the scope of the Directive. If the answer is "Yes" they should then decide which of the routes to conformity is the most applicable to their product.

- Standards (or self certification) route.** This is perhaps the simplest route for the manufacturer to follow. A manufacturer chooses a relevant EMC standard or standards (see reg. 38) from a list published by the European Commission in the *Official Journal*, and manufactures his product in accordance with that standard or those standards. He completes a declaration of conformity and places the CE marking on his product. (Available for apparatus other than radiocommunication transmitting apparatus). A list of EMC standards can be obtained from the DTI contact on page 14 of this document.
- Technical Construction File route.** For apparatus other than radiocommunication transmitting apparatus where there are no applicable EMC standards, where a harmonised standard exists but can only be applied in part, or where the manufacturer has chosen not to apply all of the standard. This route requires the manufacturer to prepare a technical construction file on his apparatus. This has to include a technical report or technical certificate issued by a Competent Body. These bodies have been appointed by the Secretary of State for Trade and Industry specifically for issuing technical reports and technical certificates. A list of Competent Bodies is available from the DTI contact shown on page 14. Annex B of this document offers some suggestions for the technical construction file. However, the EMC Regulations do not prescribe a form for the file and manufacturers must satisfy themselves that their file complies with the requirements of the EMC Regulations.

CONFORMITY ASSESSMENT PROCEDURES



- ❑ **EC type-examination route.** Under this route a Notified Body is required to examine and test apparatus to determine if the apparatus conforms with the protection requirements and, if so, to issue an EC type-examination certificate in respect of radio transmitting equipment. Only products that are radio transmitters can follow this route, they do not have the option of the first two routes described above.

A list of addresses of Notified Bodies is available from the DTI's contact shown on page 14. These Notified Bodies are named in regulation 62 of the EMC Regulations 1992. For further information please refer to the Radiocommunications Agency publications **RA 227 (Rev. 1) EMC for Mobile Radio Services - The EC Type Examination Route to Compliance for Radiocommunication Transmitting Apparatus**, **RA 200 (Rev. 4) EMC and the Radio Amateur** and **RA 207 (Rev. 2) Type Approval for Mobile Radio Services**. All available from the Radiocommunications Agency contact shown on page 14.

EC Declaration of Conformity

There is no standard format for an EC declaration of conformity under the EMC Regulations. Many companies produce the declaration on their own headed notepaper.

For the purposes of the EMC Regulations, an EC declaration of conformity is a declaration which states that apparatus conforms with the protection requirements of the EMC Directive (however expressed). The declaration shall be regarded as properly issued if the following requirements are complied with:

- ❑ in the case of the **standards** route to compliance the declaration, if issued in the United Kingdom, shall:
 - (a) be in English;
 - (b) give the name and address of the responsible person¹ and, if not the manufacturer, the details of the manufacturer;
 - (c) be signed by or on behalf of the manufacturer or his authorised representative established within the Community and identify that signatory;
 - (d) bear the date of issue;
 - (e) give particulars of the apparatus to which it relates sufficient to identify it;
 - (f) state the numbers and titles of the applicable EMC standards, if any, applied by the manufacturer; and

¹ "Responsible person" in relation to relevant apparatus as defined in the EMC Regulations means (a) the manufacturer thereof, or (b) the manufacturer's authorised representative established in the Community, or (c) where the manufacturer is not established in the Community and he has not appointed an authorised representative, the person who supplies the relevant apparatus.

(g) certify that the apparatus to which the declaration relates conforms with the protection requirements of the EMC Directive.

□ in the case of the **technical construction file route** to compliance the declaration, if issued in the United Kingdom, shall be the same as for the standards route but for the following addition :

■ identify the technical construction file relating to the apparatus, and give the name and address of the competent body which issued the report or technical certificate and the date and any number thereof.

□ in the case of the **EC type-examination certificate route** to compliance (for radiocommunication transmitting apparatus) the declaration, if in the United Kingdom, shall be the same as for the standards route with the following addition:

■ identify the EC type-examination certificate relating thereto, and give the name and address of the notified body which issued it, and the date and any number thereof.

Leaving out the reference to applicable standards in paragraph (f) above.

□ in the case of a **declaration** issued other than in the United Kingdom, the declaration shall be issued by the manufacturer or his authorised representative established within the Community in one of the official languages of the EEA and comprise the following:

■ a description of the apparatus to which it refers;

■ a reference to the harmonised standards under which conformity is declared as meeting the provisions of the EMC Directive;

■ identification of the signatory empowered to bind the manufacturer or his authorised representative; and

■ where appropriate, reference to the EC type-examination certificate issued by a notified body.

In all cases the declaration of conformity shall be held by a responsible person at the disposal of the Secretary of State for Trade and Industry for ten years beginning with the date on which the last item of apparatus is supplied to the end user.

CE Marking

Products meeting the requirements are also to carry CE marking. The marking is as illustrated in diagram 1, below. It may not be smaller than 5mm in its vertical height, and the proportions in diagram 2 below must be maintained whatever its size. The grid does not form part of the marking and is for information only.



Diagram 1

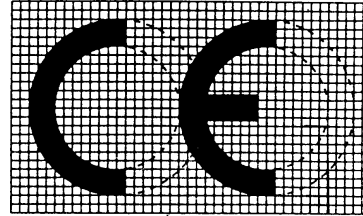


Diagram 2

The CE marking shall be affixed visibly, legibly and indelibly.

Under whichever route a manufacturer has chosen to follow, he is required to complete a declaration of conformity and place the CE marking on the apparatus or on the packaging, the instructions for use or the guarantee certificate. It would be sensible, but is not mandatory, to more readily facilitate free movement, to affix CE marking to more than one place, for example marking the outer packaging, as well as the apparatus inside, will not necessitate the opening of the packaging. There is nothing in the EMC legislation to prevent this.

Where the apparatus is covered by other directives providing for CE marking, the application of the CE marking also indicates that the apparatus conforms to the provisions of the other directive applicable to it.

The EMC Regulations make it an offence to affix CE marking to:

- apparatus unless that apparatus complies with the relevant protection requirements and the conformity assessment procedures have been complied with;
- electrical apparatus other than relevant apparatus (see regs 6 and 7).

Enforcement: the EMC Regulations are enforced:

- in Great Britain, by the trading standards departments of local authorities; and
- in Northern Ireland, by the Department of Economic Development.

The Secretary of State for Trade and Industry may enforce the Regulations. However, the Civil Aviation Authority is the enforcement authority for wireless telegraphy apparatus described in paragraph 2 of Schedule 6 to the EMC Regulations.

In relation to electricity meters, other than those which are wireless telegraphy apparatus, the EMC Regulations may be enforced:

- in Great Britain, by the Director General of Electricity Supply; and
- in Northern Ireland, by the Director General of Electricity Supply for Northern Ireland.

Penalties: any person committing an offence under the EMC Regulations is liable, on summary conviction, to imprisonment for a term not exceeding three months or a fine not exceeding £5,000 or both. It is an offence to supply or take into service apparatus which does not comply with the requirements of the EMC Regulations. Apparatus which does not comply with the EMC Regulations, and documents relating thereto, may be seized and the apparatus forfeited. A prohibition or suspension notice may be issued prohibiting the supply or taking into service of any such apparatus, and it is an offence to contravene such a notice (as set out in Part VII of the EMC Regulations).

Free circulation: under European Community rules (as set out in the EMC Directive) member States are required not to impede the supply or taking into service, for reasons relating to electromagnetic compatibility, apparatus which satisfy the requirements of that Directive, and to presume that apparatus bearing CE marking meet the protection requirements; this presumption is rebuttable.

Safeguard procedure: member States are required to take all appropriate measures to withdraw from the market, or to prohibit and restrict the supply of, apparatus bearing CE marking but not complying with the protection requirements. They must then immediately inform the European Commission of its action and give reasons. The Commission must consult the parties concerned as soon as possible and, where it finds the action justified, inform immediately all member States. The Regulations provide for apparatus to be withdrawn from the market by means of prohibition and suspension notices.

Availability of texts of harmonised standards: these may be obtained from BSI Sales, 389 Chiswick High Road, London W4 4AL. Tel: 0208 996 7000.

Availability of text of the Regulations: the Electromagnetic Compatibility Regulations 1992 (SI 1992/2372), the Electromagnetic Compatibility (Amendment) Regulations 1994 (SI 1994/3080) and the Electromagnetic Compatibility (Amendment) Regulations 1995 (SI 1995/3180) are available from The Stationery Office and its agents. (Details of The Stationery Office Publications Centre are shown on page 14 of this booklet.)

Availability of the text of the EMC Directives: the complete texts of Directives 89/336/EEC, 91/263/EEC and 92/31/EEC have been published in the *Official Journal of the European Communities* (No. L139 of 23.05.89, pages 19-26, No. L128 of 23.05.91 and No. L126 of 12.05.92 page 11). Copies of these texts are generally available from European Information Centres and European Documentation Centres located throughout the United Kingdom, who may provide them for a modest charge.

Availability of Commission guidance on the EMC Directive: the European Commission has prepared a guidance document in consultation with member States and in collaboration with representatives of European industry, European standardisation bodies, competent and notified bodies; *Guidelines on the application of Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility* is available free from the Office for Official Publications of the European Communities, 2 rue Mercier, L-2985 Luxembourg, Fax: + 34 2 2929 42755.

This document is also available on the web site of the European Commission. The address of the web site is: <http://europa.eu.int/comm/dg03/public.htm>

Please note that the DTI does not supply copies of the Regulations, Standards or Directives.

Contact points:

Policy relating to the EMC Directive and UK Regulations:

Kevin Lane
Department of Trade and Industry
Standards & Technical Regulations
Directorate
Bay 328
151 Buckingham Palace Road
London SW1W 9SS

Tel: 020 7215 1774
Fax: 020 7215 1529
E-mail: Kevin.Lane@dti.gsi.gov.uk
Web: <http://www.dti.gov.uk/strd>

Standards:

Technical Information Group
British Standards Institute
389 Chiswick High Road
Chiswick
London W4 4AL

Tel: 020 8996 7474
Fax: 020 8996 7048
Web: <http://www.bsi-global.com>

HMSO Online

For Statutory Instruments.

<http://www.legislation.hmso.gov.uk/stat.htm>

Policy relating to the Automotive EMC Directive:

Catherine Parton
Department for Transport
Zone 2/04
Great Minster House
76 Marsham Street
London SW1P 4DR

Tel: 020 7944 2114
Fax: 020 7944 2069

EMC Clubs / Compliance Associations

A network of regional Compliance Clubs can provide expert advice on how to comply with the EMC directive and other New Approach Directives. A list is available at:
<http://www.dti.gov.uk/strd/emc.html>

DTI Publications Orderline

Further copies of this booklet are available from the *DTI Publications Orderline* on:

Tel: 0870 1502 500 (*national rate*)
Fax: 0870 1502 333
Minicom: 0870 1502 100
E-mail: publications@dti.gsi.gov.uk

Excluded Apparatus

There are general and specific exclusions from the scope of application of the EMC Regulations. The following list specifies some of the key exclusions from the EMC Regulations

a) The emission and immunity aspects

- Radio equipment used by radio amateurs unless the apparatus is available commercially;**

This exclusion has been stipulated because of the specific nature of the activity pursued by radio amateurs, which does not constitute any kind of commercial transaction. Radio amateurs are persons carrying out experimental activities within the field of radio communications, according to the definition No 53 of the International Telecommunications Union Radio Communications Regulation.

On the other hand, CB (citizen's band) equipment is not considered to be radio amateur equipment but consumer electronics and therefore comes within the scope of the Regulations.

- Motor vehicles:** (covered by specific Directive 72/245/EEC amended by Directive 95/54/EC.);
- Active implantable medical devices** (covered by specific Directive 90/385/EEC);
- Medical devices** (covered by specific Directive 93/42/EEC);
- Council Regulation (EEC) No 3922/91 of 16 December 1991 concerning **equipment intended for use in operating aircraft in flight;**
- Marine equipment** if covered by the specific Directive 96/98;
- Military equipment** which is designed for use as arms, munitions and war material within the meaning of Article 223.1 (b) of the Treaty establishing the European Economic Area (notwithstanding it is capable of non-military use). Equipment designed for both military and non-military uses is covered by the Regulations;
- Apparatus for use in a **sealed electromagnetic environment** so long as it is accompanied by instructions stating that the apparatus is suitable for use only in a sealed electromagnetic environment;

- ❑ **Second-hand apparatus**, with the exception of such apparatus which has, since it was last used, been subjected to further manufacture; and second-hand apparatus which is either supplied or taken into service in the EEA for the first time having previously been used by an end user. Second-hand apparatus may be covered by the General Product Safety Regulations 1994 (SI 1994/2328). (Contact: Mr R Loughlin, Consumer Safety Unit, Department of Trade and Industry, Fax No. 020-7215 0359);
- ❑ Electromagnetically benign apparatus, the inherent qualities of which are such that neither it is liable to cause, nor is its performance liable to be degraded by, electromagnetic disturbances;
- ❑ Apparatus for **export** to a country outside the EEA, where the supplier believes with reasonable cause that the apparatus will not be used either in the United Kingdom or in another member State;
- ❑ **Excluded installations**, as defined in the Regulations, comprising two or more combined items of apparatus or system put together at a given place to fulfil a specific objective, but not designed by the manufacturer(s) for supply as a single functional unit;
- ❑ **Spare parts**, subject to regulation 14(2) whereby nothing shall be taken to affect the application of the Regulations to relevant apparatus into which a spare part has been incorporated. In the Regulations, 'spare part' means a component or combination of components intended for use in replacing parts of electrical or electronic apparatus;
- ❑ Supply of apparatus by the manufacturer to his **authorised representative** who is responsible for complying with the Regulations.

b) the emission aspect only

- ❑ **Agricultural or forestry tractors** (covered by Directive 75/322/EEC).

c) the immunity aspect only

- ❑ **Non-automatic weighing instruments** (covered by Annex I, paragraph 8(2), of Directive 90/384/EEC).

Technical Construction File route to compliance

The following provides some recommendations as to the completion of a TCF.

BASIC REQUIREMENTS FOR A TCF

Part I: Description of the apparatus:

- i) identification of apparatus;
- ii) a technical description.

Part II: Procedures used to ensure conformity of the apparatus to the protection requirements:

- i) a technical rationale;
- ii) details of significant design elements;
- iii) test evidence where appropriate.

Part III: A report or certificate from a 'Competent Body'.

SPECIFIC REQUIREMENTS FOR A TCF

The level of detail required in each of the above sections of the TCF will depend on individual circumstances, but might include the following:

Identification of the apparatus:

- (a) brand name;
- (b) model number;
- (c) name and address of manufacturer or agent;
- (d) a description of the intended function of the apparatus;
- (e) for installations - physical location;
- (f) external photographs;
- (g) any limitation on the intended operating environment.

Technical description of the apparatus:

- (a) a block diagram showing the interrelationship between the different functional areas of the apparatus;
- (b) relevant technical drawings, including circuit diagrams, assembly diagrams, parts list, installation diagrams;
- (c) description of intended interconnections with other products, devices etc;
- (d) descriptions of product variants.

Technical rationale

- (a) a brief exposition of the rationale underpinning the inclusion and balance of the evidence given.

Detail of significant design aspects

- (a) design features adopted specifically to address EMC problems;
- (b) relevant component specifications, (eg the use of cabling products known to minimise EMC problems);
- (c) an exposition of the procedures used to control variants in the design together with an explanation of the procedures used to assess whether a particular change in the design will require the apparatus to be retested;
- (d) details and results of any theoretical modelling of performance aspects of the apparatus.

Test data

- (a) a list of the EMC tests performed on the product, and test reports relating to them, including details of test methods, etc;
- (b) an overview of the logical processes used to decide whether the tests performed on the apparatus were adequate to ensure compliance with the directive;
- (c) a list of tests performed on critical sub-assemblies, and test reports or certificates relating to them.

Report or certificate from a competent body

This to be completed by the competent body.

The form needs to reflect the requirements of Regulation 53 of the EMC Regulations.

Some suggestions as to how to keep down the cost of complying with the EMC Regulations

NOTE: when self certifying, the manufacturer takes responsibility for his products' performance. He must be confident that his products meet the essential requirements of the EMC Directive and is responsible for deciding what measures are necessary to achieve this. If he decides to conduct minimal tests, or none at all, he must assess the risk of so doing and be prepared to justify his actions to the enforcement authority in demonstrating compliance, if so requested.

To this end, check that your product is covered by the UK EMC Regulations, because although the EMC Regulations apply to virtually all electrical and electronic products, there are exceptions. For example, products that do not cause significant electrical interference and are not themselves unduly affected by interference from other sources are not covered. This means that battery-operated products, such as torches or wrist watches, for example, should not need to demonstrate compliance. Furthermore, components or sub-assemblies that are supplied for incorporation in another product that will itself be tested and CE-marked will not need to comply individually. Also, prototypes, test rigs and one-off items for developmental use by a manufacturer, and which are not being supplied on the open market, do not need to demonstrate compliance.

Make sure that you do not apply an unnecessarily rigorous standard. If your product is intended to be used in a certain way or is suitable only for certain environments, explain this in the instructions. There is then no need to test for other uses or environments. In addition, the level of immunity required has only to be adequate having regard to all the circumstances, including the level of performance reasonably expected of that product, any specification laid down by the user and the consequences of a malfunction. There is no need to build in excessive protection for a low cost product which has, for example, no safety use.

When applying the generic immunity standard it is recommended that you take the user's expectations into account. If the product is permitted to suffer a temporary loss of function during the application of interference, this can be noted in the user documentation and the standard's requirements are satisfied. Also, if it is obvious that the equipment will not suffer from a particular mode of susceptibility - for example, large electric motors with no electronic controls when faced with a moderate RF field - then if you state this in the test report, that particular test need not be applied.

If a standard is unnecessarily demanding, you should take this up with the British Standards Institution (BSI) through your trade association. The standards are set by the standards-making bodies in the EC, on which industry is heavily represented and not by member States' governments.

The following are guidelines on the actions required to achieve a minimum level of confidence. They have been produced with a view to minimising expenditure.

- a) You must be aware of the standards which apply to your product. There will normally be two standards, one covering emissions and the other immunity.
- b) You must be aware of the implications of the standards on your product's performance.
- c) If you have ever had a complaint arising from the electromagnetic performance of your product then this must have been dealt with satisfactorily, including if necessary modifying the product. This applies also to complaints which may arise in the future.
- d) Some simple actions may be required to give you sufficient confidence that your product is electromagnetically compatible. This may include performing some limited tests in-house with existing or rented test equipment.
- e) Comparison with similar products which have been tested more extensively may also increase your confidence to self certify.
- f) Act in the spirit of the EMC Directive: you should do everything practical to remove doubt about your product's EMC performance.
- g) Where full certification tests have not been carried out, there is always the possibility that the product may cause a problem. You should be prepared therefore, to take whatever action is necessary to rectify the problem.

An essential requirement of the EMC Directive is the need to protect the electromagnetic environment against pollution from excessive electrical interference. The Directive therefore requires that the electromagnetic emissions of almost all electrical and electronic products sold in the EC are controlled, and that products are sufficiently immune to such emissions thereby enabling them to operate as intended within their specified environment.

It also requires that, for most products, compliance is demonstrated. This can be done in one of three ways:

- self certification to appropriate harmonised standards; or
- the construction of a technical file which is approved by a DTI appointed competent body (list available on request from DTI contact on Page 14); or
- type examination, which is required for certain classes of equipment, e.g. radio transmitting equipment including mobile telephones.

The Technical Construction file route may be the best route to compliance depending on the nature of the product, and if there are a number of variants, whether or not harmonised standards are available. However, self certification may be the most straightforward route. The harmonised standards against which certification should be made fall into two categories: product specific and generic. When a suitable product specific standard exists, this will take precedence.