AY4439
Study to quantify the economic impact on the UK spectrum industry and its users of Ofcom not undertaking technical research and standards work in the area of Electromagnetic Compatibility (EMC)

Appendix 6
Overview of the EMC Directive

A Study for

Ofcom

11th February 2004

Your contact at Quotient is: Ken Pearson

Prepared by:

Quotient Associates Ltd
PO Box 716
Comberton
Cambridge CB3 7UW
UK

First Floor, Market Square
University of York
Heslington, York, UK
YO10 5DD
www.yorkemc.co.uk

and

Dr Chris Doyle
www.cdoyle.com
Centre for Management under Regulation, Warwick Business School

Email : Info@QuotientAssociates.com
Web : http://www.QuotientAssociates.com

CONTENTS Page

CONTENTS Page

1. INTRODUCTION

This report on the structure of the EMC Directive and its proposed amendments was performed in support of the "Study to quantify the economic impact on the UK spectrum industry and its users of Ofcom not undertaking technical research and standards work in the area of Electromagnetic Compatibility (EMC)". It forms Appendix 6 of the final report.

This report provides an overview of EMC issues and regulatory environment that informs the remainder of the project. It provides an overview of:

- The EMC Directive in its current form;
- The EMC Directive including the amendments proposed as a result of the Simpler Legislation for the Internal Market (SLIM) study;
- A hypothetical case where the EMC Directive were abandoned;
- The Radiocommunications Agency's (the "Agency"), and now Ofcom's, role in the development of harmonised standards.

The detail of this report provides a foundation for considering the economic impact of the proposed amendments to the EMC Directive.

2. EUROPEAN COMMUNITY NEW APPROACH DIRECTIVES

The objectives of creating a European 'common' market was an essential part of the Treaty of Rome signed on 25th March 1957, which established the European Economic Community (EEC). In 1985 the European Community (EC) Heads of Government committed themselves in the Single European Act, which came into operation on 1st July 1987, to complete the 'single market' progressively by 31st December 1992.

The single market is defined as 'an area without internal frontiers in which free movement of goods, persons, services and capital is ensured in accordance with the provisions of the Treaty'. The free movement of goods lies at the heart of achieving an open market for business in Europe.

Goods for sale within the EC are governed by EC Directives, which ensure that technical standards are maintained across all member states. These EC Directives originally specified a mass of technical detail, which required agreement each time modification was required. However, in 1985 the Community agreed a 'New Approach to Technical Harmonisation'. Under the new approach, Directives specify the essential requirements with the technical details being agreed separately under the auspices of the European standards bodies, CEN and CENELEC.

These New Approach Directives provide for total harmonisation. Products covered by them must meet their essential requirements and compliance with these will usually be demonstrated by meeting the relevant European standards, which set out the technical details and are the most common means by which businesses can meet the 'essential requirements'. Compliant products can then carry the CE (Communauté Européenne) marking which means they can be sold anywhere in the European Economic Area[1] (EEA). The new approach Directives allow for free circulation of products conforming to these Directives throughout the EEA.

There are currently 20 areas covered by the New Approach Directives, with a further directive on Measuring Instruments in preparation. These are listed in Table 2.1.

[1] The European Economic Area (EEA) Agreement came into force on 1st January 1994. The EEA comprises the 15 member states of the EU plus Iceland, Liechtenstein and Norway. The EEA is set to grow as there are currently a further 10 candidate states applying for full EU membership. This will extend the EEA to 28 members.

Low voltage	Active implantable medical devices	Lifts
Simple pressure vessels	Gas appliances	Pressure equipment
Toy safety	Hot-water boiler efficiency	Machinery
Construction products	Explosives for civil uses	Radio and telecommunications terminal equipment (R&TTE)
Electromagnetic compatibility (EMC)	Medical devices	In-vitro diagnostic medical devices
Personal protective equipment	Equipment for use in potentially explosive atmospheres	Cable cars
Non-automatic weighing instruments	Recreational craft	Measuring Instruments (in preparation)

Table 2.1 New Approach Directives

However, there are still a number of old approach directives still in force and some of these have emissions limits in the text of the directives. These include:

- The Automotive EMC Directive 95/54/EC, which applies to any road-going vehicle with 4 or more wheels or trailer attached to such, with a maximum speed exceeding 25 km/h and to components, either OEM or aftermarket intended to be fitted as such;

- Directive 75/322/EEC which concerns suppression of radio suppression of radio interference by spark-ignition engines for agricultural and forestry tractors.

In addition to the harmonisation of standards, it is essential that there are common criteria for assessing the competence of national test and certification laboratories. The EN 45 000 series of standards set out these criteria.

The most important of the Directives affecting governance of Electromagnetic Compatibility are the EMC Directive and the Radio and Telecommunications Terminal Equipment (R&TTE) Directive. However, it should be noted that some other directives contain their own EMC provisions.

In this report we have concentrated on the main provisions of the EMC Directive (including the recent proposal for a new EMC Directive), and the R&TTE Directive.

3. THE EMC DIRECTIVE 89/336/EEC

3.1 Overview

All electrical and electronic equipment "placed on the market and taken into service" is required to comply with the protection requirements of the EMC Directive adopted in May 1989, and which became legally binding in all Member States on 1st January 1996. This applies to both new products currently under development and extant products, which are in production and being marketed. By controlling emission and immunity levels. The EMC Directive provides an environment that will ensure the reliable operation of all electrical and electronic equipment. These controls also apply to equipment imported into the EEA.

The CE Marking Directive (93/68/EEC) amended the marking provisions of a number of Directives, including the EMC Directive. The CE Marking Directive entered into force on 1st January 1995, with a transitional period ending on 1st January 1997 when these new CE marking requirements became mandatory.

The EMC Directive is a New Approach Directive, therefore it details the essential protection requirements, whilst technical details are specified by standards harmonised throughout the EEA.

The essential protection requirements are:

- Equipment must be constructed to ensure that any electromagnetic disturbance it generates allows radio and telecommunications equipment and other apparatus to function as intended; and
- Equipment must be constructed with an inherent level of immunity to externally generated electromagnetic disturbances.

3.2 Scope of the Directive [Articles 1&2]

All electronic equipment together with equipment[2] and installations[3] containing electrical/electronic components[4] are deemed to be within the scope of the EMC Directive.

[2] "Apparatus" and "equipment" are synonymous and mean a finished product having an intrinsic function, intended for the "final user" and intended to be "placed on the market" as a single commercial unit. Examples are a domestic sewing machine, an electric lawn mower, a bench power supply and an industrial vacuum cleaner. NB where a "component" can be considered to have an intrinsic function e.g. a drive then this should be treated as apparatus.

During 1991 the EC drafted an 'explanatory document' clarifying this scope. It contains a listing of all equipment which is covered, but which 'should not be regarded as restrictive'. Exceptions are equipment for which EMC provisions have been made in other Directives e.g. the Medical Devices Directive.

The Explanatory Document then considers how the EMC Directive applies to apparatus, systems[5] and installation. The EMC Directive is clearly applicable to apparatus and to systems comprised of apparatus designed and intended to be operated together.

The Explanatory Document was incorporated into the UK's EMC Regulations. Revised guidelines to the EMC Directive were published by the EC in 1997 - these became integrated into the 'Simpler Legislation for the Internal Market' (SLIM) process.

The definitions of electromagnetic disturbances are all-embracing, covering conducted and radiated emissions and immunity to electromagnetic fields, mains disturbances, Electrostatic Discharge (ESD) and lightning induced surges. However, since the technical aspects of the EMC Directive are delegated to standards the technical scope of the electromagnetic disturbances is as defined by the standards.

Modified applications of the EMC Directive

Equipment falling within the definition of education and training equipment will need to satisfy the following requirements:

---

[3] "Installation" means several combined items of apparatus or systems put together at a given location to fulfil a specific objective but not intended to be placed on the market as a single functional unit. Examples would be a computer network or more generally a manufacturing facility consisting of: Computer Numerical Control (CNC) machine tools, arc welding equipment, RF heat treatment equipment, a data logging system and a standby diesel generating set.

[4] A "component" is defined as an item which is used in the composition of an apparatus and which is not itself an apparatus with an intrinsic function intended for the final customer. Examples given in the explanatory document are: integrated circuits, electronic cards, miniature resistors, or small capacitors. A component may be more complex as long as it does not have an intrinsic function and its only purpose is to be incorporated inside an apparatus.

[5] "System" means several items of apparatus (or equipment) combined to fulfil a specific objective and intended to be "placed on the market" as a single function unit. The most obvious example is a personal computer consisting as a minimum system of keyboard, monitor, 'host' computer containing hard and floppy disk drives and CPU card, to which can be added a number of peripherals such as a printer. Where apparatus, which can be used in a system, is placed on the market, it should comply, when used in a system, so that the manufacturer complies with Article 3 of the Directive, which states that apparatus must be compliant "when it is used for the purposes for which it is intended".

- 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 EMC Directive and could lead to prosecution; and

- When operated, the equipment does not cause electromagnetic disturbance outside its immediate electromagnetic environment.

The modification above also applies to 'test apparatus' which in the Regulations means any apparatus designed or adapted to generate, or be susceptible to electromagnetic disturbance intentionally for the purposes of conducting tests or measurements relating to an item of electrical of electronic apparatus or any other thing, matter or phenomenon.

Exclusions

The regulations of the EMC Directive do not apply to:

- Apparatus for export to a country outside the EEA, where the supplier believes with reasonable cause that the apparatus will not be used in the EEA;

- Excluded installations - an installation 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 - 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 i.e. supply of equipment from a manufacturer based outside the EEA to his 'authorised representative' within the EEA;

- Second-hand apparatus, with the exception of such apparatus which has, since it was last used, been subject 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 supplied or used in a country or territory outside the EEA. Second-hand apparatus means that which has previously been used by an end user. Second-hand apparatus may be covered by other regulations e.g. in the UK by the General Product Safety Regulations 1994 (SI 1994/2328);

- Electromagnetic benign apparatus - the inherent qualities of which are such that neither is it liable to cause, not is its performance liable to be degraded by, electromagnetic disturbances.

Specific exclusions: the regulations of the EMC Directive do not apply to:

- 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;
- 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 Community (notwithstanding its capability of non-military use). Equipment designed for both military and non-military uses is covered by the Regulations.

Apparatus wholly covered by other Directives: the regulations of the EMC Directive do not apply to:

- Active Implantable Medical Devices, Directive (90/385/EEC);
- Medical Devices Directive (93/42/EEC);
- Automotive Directive (95/54/EEC);
- Radio and Telecommunications Terminal Equipment Directive (95/5/EC).

Apparatus partly covered by other Directives: the Regulations do not apply to:

- Electrical energy meters as regards the immunity (the immunity is regulated by Council Directive 76/89/EEC);
- Spark-ignition engines of tractors 75/322/EEC, as amended by 82/890/EEC;
- Non-automatic weighing instruments as regards the immunity (the immunity is regulated by Directive 90/384/EEC).

3.3 Requirements of the EMC Directive

Manufacturers and distributors of imports from outside the EEA are required to provide a declaration that their equipment conforms to the essential protection requirements of the EMC Directive. However, there are several means for demonstrating this compliance.

3.3.1 Self-Certification or Standards Route to Compliance [Article 10]

The simplest method is the standards or self-certification route to compliance. This is achieved by satisfying relevant standards[6] either by in-house tests or contracting the tests to an independent test house. The EMC Directive delegates responsibility for standards to CENELEC which is required to produce standards in the form of European Standards (EN). These generally follow the recommendations of CISPR, a committee of the International Electrotechnical Commission (IEC) concerned with radio interference.

Each national standards body is required to produce standards harmonised with OJEC listed ENs. It should be noted that the manufacturer is required to comply with the protection requirements of the EMC Directive, not with particular standards. The EMC Directive specifically refers to the possible shortcomings of standards [Article 9].

3.3.2 Technical File or TCF [Article 10(2)]

The alternative method is to keep a 'technical file', or Technical Construction File (TCF), which is to be available for inspection by the national body or bodies responsible for policing the EMC Directive. This form of certification implies that the TCF should demonstrate conformance with the protection requirements of the EMC Directive.

For the purposes of the EMC Directive, a TCF:

- Describes the apparatus to which it relates;
- Contains information about design, manufacture and operation thereof; and
- Sets out the procedures used and includes a technical report or certificate issued by a Competent Body[7].

For the avoidance of doubt, a technical construction file may be composed in relation to a single item of equipment, or where a number of items are to be produced, a sample which is representative of the total production, or a number of items of equipment or samples being variants of the same basic design.

This method of claiming conformance became obligatory after 1st January 1996 if there is no appropriate relevant standard.

---

[6] A relevant standard is defined [Article 7] as a standard whose reference number has been published in the Official Journal of the European Communities (OJEC).

[7] The requirements for a Competent Body are set out in Annex II of the EMC Directive. In the UK Competent Bodies are accredited by the United Kingdom Accreditation Service, (UKAS).

3.3.3 EC Type-Examination Certificate [Article 10(4) and (5)]

The EMC Directive originally covered equipment used to send, process or receive information, i.e. Telecommunication Terminal Equipment (TTE)[8], and Radiocommunications transmission and receiving equipment for which it is required that an EC Type Examination Certificate would be issued by a Notified Body [Article 10(4)]. This is largely no longer the case as this equipment is now within the scope of the Radio and Telecommunications Terminal Equipment (R&TTE) Directive.

3.4 Declaration of Conformity

Once compliance has been demonstrated, a Declaration of Conformity (DoC) can be made. This declaration must contain a description of the apparatus to which it refers, reference to the specifications under which conformity is declared, identification of the signatory empowered to bind the manufacturer, and where appropriate reference to the TCF and Competent Body, or to the EC Type-Examination Certificate and issuing Notified Body. The DoC must be retained for inspection by the Competent Authorities for up to 10 years from the last date of manufacture of the product.

Free Circulation and Safeguard Procedure – Apparatus complying with the protection requirements of the EMC Directive may not be impeded from being placed on the market. However, if a Competent Authority finds that apparatus does not conform, then the Competent Authority should 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. The European Commission must then be informed, which in turn will inform all the national competent authorities. This will effectively ban the equipment throughout the EEA.

Having made a declaration of conformity, the CE marking can be affixed to the product or be included in the operating instructions, on the guarantee certificate or on its packaging.

3.5 Legislation

EU Directives are binding on Member States but specify a period within which they must be implemented. The method of implementation is at the discretion of the Member States. In the UK this may take the form of primary legislation or statutory instruments made under existing relevant specific powers. In itself a Directive does not have legal force in the Member States.

[8] Telecommunication Terminal Equipment (TTE) is equipment directly or indirectly connected to a public telecommunications network.

The Electromagnetic Compatibility Regulations Statutory Instrument 1992 No.2372

The UK EMC Regulations are the implementation of the EMC Directive 89/336/EEC. They are arranged in eight parts; the first six parts transpose the amended EMC Directive into UK law; Part VII is concerned with the UK enforcement of the regulations.

The eight parts are as follows:

Part I Preliminary
Part II Application
Part III General requirements
Part IV The standards route to conformity
Part V The technical construction file route to conformity
Part VI The EC type-examination route to conformity for Radiocommunications transmission apparatus
Part VII Enforcement
Part VIII Miscellaneous and supplemental

UK Enforcement

This part of the regulations details how the EMC Directive is to be enforced in the UK. It defines: the enforcement authorities and their powers to procure test purchases; the powers granted to an enforcement officer (search, seizure of apparatus or documentation), issue of prohibition and suspension notices; offences, misuse of the CE marking; penalties, power of the court and recovery of enforcement expenses.

The Enforcement Authorities are:

- In Great Britain, the weights and measures authorities - in practice the trading standards offices enforce the regulations;
- In Northern Ireland, the Department of Economics Development;
- The Secretary of State.

Enforcement for specific apparatus is delegated to:

- The CAA for Wireless Telegraphy apparatus as defined in Schedule 6 of the regulations;
- The Director General of Electricity Supply, in either Great Britain or Northern Ireland for electricity meters.

The EMC Directive requires member states to take “all appropriate measures” to ensure apparatus placed on the market or taken into service is conformant. This has been interpreted as requiring national legislation having adequate sanction for breaches of the EMC Directive’s protection requirements.

The following offences are included in the regulations:

82) Knowingly supplying or taking into service relevant apparatus contravening the regulations;

83) Contravention of prohibition or suspension notice;

84) Provision of false or misleading information in the required documentation;

85) Knowingly affixing the CE marking or an inscription which may be confused with it, to non-conformant apparatus and or issuing a Declaration of Conformity for that apparatus;

86) 1)Failure to assist an enforcement officer (obstruction);
2)Any person pretending to be an enforcement officer;

87) Failure to retain full documentation.

A person found guilty of offences 83), 84) and 86(2) is liable on conviction to: imprisonment for up to 3 months, or a fine up to level 5 on the standards scale (£5000 or approximately €7500 on 1st July 1992), or both. A person found guilty of 82), 85), 86(1) or 87) is liable to a fine up to level 5 only.

Where a person is convicted of offences 82) or 85) and it is the court's opinion that the person can take remedial action in order for equipment to become conformant, the court may order the person to take remedial action within a specified period of time. This period may be extended by order of the court.

An enforcement authority may apply for the forfeiture of any relevant apparatus contravening the regulations. An application may be made to a magistrate's court where proceedings have been brought against a person committing either offences 82), 83) or 85). The application for forfeiture may be for some or all of the apparatus contravening the regulations. The magistrate's court will only grant a forfeiture order if it is satisfied that the equipment does not satisfy the protection requirements. Forfeited apparatus will be destroyed, disposed of for reconditioning or disposed of for scrap as directed by the court.

3.6 Due Diligence

The UK EMC Regulations provide for manufacturers to take a reasonable approach under Regulation 88 - The Defence of Due Diligence.

An admissible defence will be to demonstrate that a person has taken "all reasonable steps and exercised all due diligence to avoid committing an offence".

The prime principle here is that where it is reasonable to take a precaution then it must be taken. Underlying this is the need for a manufacturer to be proactive in taking positive action, doing nothing is not a defence.

3.7 Summary

The implications for manufacturers of electrical/electronic equipment are:

a) Manufacturers have a duty to comply with the regulations of the EMC Directive;

b) Whilst different enforcement regimes may exist in each EEA member country, each member has a responsibility to withdraw non-conformant equipment from the market and inform the Commission who will inform all other members. This means that non-conformant equipment will be withdrawn from all EEA member countries;

c) It is necessary for manufacturers to demonstrate conformance with the protection requirements by:

   a. satisfying the requirements of relevant standards; or

   b. preparation of a TCF, assessed by a competent body.

d) In order to achieve c), EMC testing will be necessary;

e) To take advantage of the single market, manufacturers will apply the CE marking to products conforming to all relevant Directives/legislation and make a DoC;

f) Manufacturers need to understand the scope of the EMC Directive and the exclusions - advice may need to be sought from Competent Bodies or Competent Authorities on areas open to interpretation.

4. COMMISSION PROPOSAL FOR A NEW EMC DIRECTIVE

4.1 Introduction

The EMC Directive 89/336/EEC as amended, became fully effective from 1st January 1996. In 1997 the Commission issued an informal guide to clarify a number of issues and in order to ensure a homogenous application of the Directive. This guide has no legal standing and therefore the Commission identified the EMC Directive as a candidate for the SLIM (Simpler Legislation for the Internal Market) initiative.

During 1998 the SLIM panel presented their opinion, taking account of the 1997 guide and presented a report making 20 recommendations. The Commission endorsed most of these recommendations in its communication (COM(1999)88) to the Council. The Commission then set up a working party to help it draft a proposal for revision of the EMC Directive. During 1999 and 2000 several drafts were produced and circulated for comment and consultation. The current proposal has been drafted taking account of this extensive and wide ranging consultation.

This section aims to identify the main changes to 89/336/EEC; if not specifically addressed then it may be assumed that the provisions of 89/336/EEC are substantially unaltered.

It should be remembered that at this stage this is a proposal and not implemented legislation and that the implementations of 89/336/EEC remain legally binding until this proposal is adopted.

For full details see the Commission Communication, COM(2002) 759 final.

4.2 Objectives of the revision

In general terms the revision maintains the objectives of 89/336/EEC and follows the same regulatory concept of the New Approach. It does however seek to:

- Clarify the scope by improved definitions, more clearly defined exclusions;
- Treat fixed installations under a different regulatory approach;
- Enhance the clarity by more detailed essential requirements;
- Clarify the role of harmonised standards;
- Simplify the Conformity Assessment procedure by reducing it to a single route;
- Cut “red tape” and increase manufacturer’s choice by removing compulsory use of a Competent Body where harmonised standards cannot be used, but

allowing manufacturers to voluntarily use a 'Notified Body' (Competent Bodies and Notified Bodies are effectively synonymous terms);

- Allow better market surveillance through better traceability of the manufacturer, by defined documentation.

Some of the changes reflect the practices used in more recent New Approach Directives, for example the R&TTE Directive, which allows the voluntary use of Notified Bodies.

In general, the essential requirements remain unchanged insofar as they apply to both apparatus and fixed installations. However more specific requirements are identified for apparatus and fixed installations; these are covered in the following sections.

4.3 Scope of the amended proposal

The scope of the EMC Directive is revised by the proposal. Particularly it is identified that: references are made explicit.

- Equipment within the scope of other more specific Community legislation is excluded e.g. the Medical Devices Directive. Although this is the case currently, it is stated explicitly in the revision for clarification;

- Equipment within the scope of the R&TTE Directive is excluded from the EMC Directive. This too is the case currently, and is stated explicitly in the revision for clarification. It is noted that the R&TTE Directive (1999/5/EC) refers to the EMC Directive and since the revision has different Article Numbers a correlating table is provided in Annex VI of the proposal;

- Aircraft and aircraft equipment is excluded as it has been concluded that EMC protection for aircraft is met by aircraft specific regulations;

- Benign equipment is specifically excluded, examples of these given are wristwatches or greetings cards incorporating electronic devices;

- The EMCD is defined as not covering safety of equipment, since safety is dealt with by separate community or national legislation e.g. the Machinery Safety Directive;

- Member States are required to take appropriate measures to ensure that equipment is placed on the market and/or put into service only if it complies with the EMC Directive when properly installed, maintained and used for its intended purpose.

4.4 Distinction between Apparatus and Fixed Installations

4.4.1 Apparatus

Apparatus are “goods” which, once they comply with the EMC Directive can be placed on the market and/or put into service anywhere within the EEA. It is the responsibility of the manufacturer to carry out a conformity assessment to show that the apparatus complies with the “essential requirements” of the EMC Directive. Apparatus is defined as “any finished appliance, or combination thereof [a system] made commercially available as a single functional unit, intended for an end user, and liable to generate EM disturbance, or the performance of which is liable to be affected by such disturbance”.

Apparatus also includes:

- “Components” or “sub-Assemblies” intended for incorporation into an apparatus by an end user;
- Residual radio transmitting equipment outside the scope of the R&TTE Directive, e.g. air traffic management equipment. ‘Type examination’ (testing of a sample carried out by a Notified Body) will no longer be required under the amendment.

Apparatus Conformity Assessment

A manufacturer is required to perform an EMC assessment, in which all relevant electromagnetic phenomena are identified and addressed in order to meet the protection requirements. There is a presumption of conformity if all relevant harmonised EMC standards applicable to the apparatus are met. The conformity must always be demonstrated through a technical file (TF), even if products are manufactured in compliance with harmonised standards (currently, a TCF would not be required if compliant with harmonised standards), and attested by issuing a Declaration of Conformity (DoC). The technical documentation may include a report from a Notified Body confirming the compliance of the apparatus with the essential requirements. The TF and DoC should be available upon request to the Competent Authorities for up to 10 years after the last date of manufacture of the product.

Compliance with a harmonised standard means conformity to its provisions (e.g. limits) and using the methods the standard describes (e.g. the use of receivers meeting CISPR 16 requirements). Presumption of conformity is limited to the scope of the standard(s) applied and the relevant essential requirements covered by the standard(s).

Where apparatus can take different configurations, the EMC assessment should confirm that the apparatus meets the protection requirements in the configurations foreseeable by the manufacturer as representative of normal use in the intended

applications. In such cases it should be sufficient to perform an assessment on the basis of the configuration likely to cause the maximum disturbance and the configuration most susceptible to disturbance.

Apparatus must be accompanied by information clearly identifying the product (e.g. type number, batch code, etc), and the name and address of the manufacturer or his EU authorised representative. Where the manufacturer or authorised representative is outside the EU then the person responsible for placing the apparatus on the EU market must be identified. These provisions are to strengthen the means available to the market surveillance (enforcement) authorities to verify conformance of apparatus and take enforcement measures considered necessary.

The manufacturer will also need to provide installation instructions on any specific precautions to be taken before installation, assembly or use of the apparatus to ensure that it complies with the protection requirements. Apparatus will be required to conform without the addition of external devices (such as filters or shielding) that are available separately on the market; if equipment requires a filter to be compliant then this must be supplied as part of the apparatus.

A specific restriction must be explicitly stated where apparatus is not suitable for use in residential areas. This requirement is already in place for Information Technology Equipment (ITE) complying with EN 55022 Class A, but is in effect now extended to all industrial equipment.

Where standards are not available or have only been applied in part by the manufacturer, under 89/336/EEC a manufacturer is required to produce a TCF and have this assessed by a third party, a Competent Body appointed by the Competent Authorities. Under the new proposal, involvement of a third-party is no longer obligatory. However, the proposal allows the manufacturer to decide whether to involve a third-party and if so to what extent. The conformity assessment bodies are to be renamed as Notified Bodies to align them with recent new approach directives and remove anomalies. As for existing Competent Body appointment, manufacturers will be allowed to own a Notified Body if they can demonstrate its independence.

4.4.2 Fixed Installations

Fixed installations are identical to the “excluded installation” defined in the 1991 Guidelines and the UK EMC Regulations, i.e.:

“an installation 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”

Fixed installations are assemblies of various apparatus and other devices, carrying CE Marks, installed/constructed “in accordance with good engineering practice” and intended to be used permanently at a pre-defined location within the EU (e.g. electricity

distribution networks, telecommunications networks, large machinery and assemblies of machinery on manufacturing sites). A fixed installation is not subject to conformity assessment; it must, however, meet the protection requirements (usually the generic emission and immunity limits).

The Competent Authority may request evidence of compliance of the fixed installation with the protection requirements and, when appropriate, initiate an assessment. Member States are required to set out the provisions for the identification of the person(s) responsible for the compliance of a fixed installation. If a fixed installation is identified as an unacceptable source of emissions, a Competent Authority can request that the responsible person brings it into compliance with the protection requirements.

Since the constituent pieces of apparatus of the fixed installation will conform to the EMC Directive and this conformance is likely to have been demonstrated by compliance with harmonised standards, the Commission argue that the electromagnetic environment of the fixed installation is defined and allows for the incorporation of additional apparatus employing “rapidly changing technologies” which will itself conform to relevant harmonised standards. In other words, the addition of compliant apparatus to a fixed installation is highly unlikely to degrade the electromagnetic environment of the installation such that it falls below the protection requirements.

Where apparatus is designed and built for incorporation into a specific fixed installation and is not otherwise commercially available, it is not required to undergo formal conformity assessment procedures. The manufacturer may choose to either follow conformity assessment procedures or to provide accompanying documentation detailing the name and site of the fixed installation and the EMC precautions to be taken for the incorporation of the apparatus in order to maintain the conformity of the installation; “such apparatus should not be permitted to compromise the conformity of the fixed installation into which it is incorporated”. The manufacturer must also provide identification of the apparatus and his name and address, or the name and address of his authorised representative (if the manufacturer is outside the EEA) or the person within the Community responsible for placing the equipment on the market.

4.5 Transitional Period

Assuming this proposal is adopted then 89/336/EEC will be repealed; a transition period of 2 years will be allowed during which manufacturers may abide by either the new or old EMC Directives.

5. R&TTE DIRECTIVE 1999/5/EC

5.1 Overview

The R&TTE Directive "establishes a regulatory framework for the placing on the market, free movement and putting into service in the Community of radio equipment and telecommunications terminal equipment". It is a "New Approach" Directive that aims to reduce the regulatory burden placed on manufacturers by allowing them to self-declare compliance in a similar way to the EMC Directive. It does not contain standards itself - instead, it sets essential requirements which are contained within harmonised standards, published in the OJEC.

The Directive has been enacted into UK legislation as the Radio Equipment and Telecommunications Terminal Equipment Regulations 2000, which came into force on 8th April 2000.

5.2 Scope

The R&TTE Directive covers apparatus "capable of communication by means of the emission and/or reception of radio waves [between 9 kHz and 3,000 GHz]" and apparatus "enabling communication […] which is intended to be connected directly or indirectly by any means whatsoever to interfaces of public telecommunications networks" where the interface is a physical connection point or an intangible connection over radio waves.

Where such apparatus incorporates medical devices or active implantable medical devices, or constitutes a component or separate technical unit of a vehicle, then whilst the R&TTE Directive still applies, requirements in the appropriate Directive take precedence:

- Active Implantable Medical Devices Directive 90/385/EEC;
- Medical Devices Directive 93/42/EEC;
- Vehicle Directive 72/245/EEC;
- Vehicle Directive 92/61/EEC.

Exclusions

The R&TTE Directive does not apply to:

- Radio equipment used by radio amateurs unless the equipment is available commercially. Kits of components to be assembled by radio amateurs and

commercial equipment modified by and for the use of radio amateurs are not regarded as commercially available equipment;

- Marine equipment, covered exclusively by the Marine Equipment Directive 96/98/EC;
- Cable and wiring
- Receive-only radio equipment intended solely for the reception of sound and TV broadcasting services;
- Civil aviation products, appliances and components;
- Air traffic management equipment and systems;
- Apparatus exclusively used for activities concerning public security, defence, State security (including the economic well-being of the State in the case of activities pertaining to State security matters) and the activities of the State in the area of criminal law.

5.3 Essential Requirements

All apparatus falling under the scope of the R&TTE Directive is required to:

- Protect the health and safety of the user and any other persons, including the objectives with respect to safety requirements contained in the Low Voltage Directive 73/23/EEC, but with no voltage limits applying;
- Afford electromagnetic compatibility according to the requirements contained in the EMC Directive 89/336/EEC.

Radio equipment shall “be so constructed that it effectively uses the spectrum allocated to terrestrial/space radio communication and orbital resources so as to avoid harmful interference”.

Certain classes of equipment may be required by the Commission to:

- Interwork via networks with other apparatus and be connected to interfaces of the appropriate type throughout the community;
- Not harm the network or its functioning nor misuse network resources, thereby causing an unacceptable degradation of service;
- Incorporate safeguards to ensure that the personal data and privacy of the user and of the subscriber are protected;

- Support certain features ensuring avoidance of fraud;
- Support certain features ensuring access to emergency services;
- Support certain features in order to facilitate its use by users with a disability.

5.4 Routes to Compliance

Manufacturers of apparatus falling within the scope of the R&TTE Directive may use any appropriate standard to demonstrate conformity with the essential requirements. There is a presumption of conformity with the essential requirements if manufacturers make use of relevant harmonised standards (produced by ETSI, CEN or CENELEC) that have been published in the OJEC under the relevant directive. Using harmonised standards affords the (conceptually) simplest demonstration of compliance. However, this does not preclude a manufacturer following another route to compliance (for example, by using a TCF or Full Quality Assurance).

There are four routes to demonstrate compliance, detailed as follows; the first is a self-certificated route for Telecommunications Terminal Equipment and Radio Receiving Equipment; the second is an equivalent route for Radio Transmitting Equipment for which there exists a fully encompassing set of harmonised standards.

5.4.1 Internal production control

Technical documentation enabling the conformity of the product with the essential requirements to be assessed must be established by the manufacturer. This documentation must contain:

- A general description of the product;
- Conceptual design, manufacturing drawings and schemes of components, sub-assemblies, circuits, etc;
- Descriptions and explanations necessary for the understanding of said drawings and schemes and the operation of the product;
- A list of the harmonised standards which cover the equipment in full (where such harmonised standards do not exist, another compliance route must be followed, according to Article 10 of the Directive);
- Results of design calculations made, examinations carried out, etc;
- Test reports.

The technical documentation must be held by the manufacturer or his authorised representative established within the EC for at least ten years after manufacture of the last product, at the disposal of the relevant national authorities of any Member State for inspection purposes, together with a Declaration of Conformity stating that the product meets all the essential requirements of the Directive.

The manufacturer must also take all necessary steps to ensure the products continue to be manufactured in accordance with the documentation and the essential requirements of the Directive.

5.4.2 Internal production control plus specific apparatus tests

Technical documentation must be established and held by the manufacturer or his authorised representative established within the EC, as described above. Additionally, the (radio transmitting) equipment must be tested to the appropriate harmonised standards (by or on behalf of the manufacturer). Where such standards do not exist, another compliance route must be followed. The Declaration of Conformity must state that the applicable radio test suites have been carried out.

5.4.3 Technical Construction File (TCF)

A Technical Construction File is typically used where harmonised standards have not been applied or do not exist. (A TCF can also be used where harmonised standards do exist and have been applied, but there seems to be little advantage to the manufacturer in this case.)

The TCF contains the technical documentation listed above and additionally "descriptions and explanations of the solutions adopted to meet the essential requirements of the Directive where [harmonised standards] have not been applied or do not exist" and, for radio transmitting equipment, a list of the essential radio test suites (as advised by a Notified Body) where harmonised standards do not fully define the applicable tests. The file must also include the Declaration of Conformity to the essential requirements of the Directive.

The TCF is then presented to one or more Notified Bodies, who must review the TCF and may, within four weeks of receipt of the file, offer an opinion as to whether the product meets the essential requirements of the Directive. On receipt of a favourable opinion or after the elapsing of the four-week period, the manufacturer may place the product on the market. On receipt of an unfavourable Notified Body opinion, the manufacturer has a number of options:

- Seek another opinion from a different Notified Body, declaring the previous opinion;
- Rectify the non-compliance and resubmit the TCF;

- Rectify the non-compliance and follow a different route;
- Develop a reasoned justification that the product does meet the essential requirements of the R&TTE Directive in spite of the opinion, to be included with the TCF. (The final decision to issue a Declaration of Conformity rests with the manufacturer.)

5.4.4 Full Quality Assurance

As an alternative to producing detailed documentation for each product, a manufacturer can choose the FQA route to compliance. In this route the manufacturer must "operate an approved quality system for design, manufacture and final product inspection and testing" and be subject to audits carried out by the Notified Body that approves the quality system. A manufacturer that holds EN ISO9000 certification will satisfy most of the general requirements of the FQA compliance route. Once FQA is set up, a new product (necessarily similar to previous products) can be manufactured using the system and be placed on the market as soon as a DoC has been drawn up, without requiring the submission of a TCF to a Notified Body, thus providing significant time-to-market advantages.

The quality system must contain in particular an adequate description of:

- The quality objectives and the organisational structure, responsibilities and powers of the management with regard to design and product quality;
- The technical specifications, including the harmonised standards and technical regulations as well as relevant test specifications that will be applied and, where the harmonised standards will not be applied in full, the means that will be used to ensure that the essential requirements of the Directive that apply to the products will be met;
- The design control and design verification techniques, processes and systematic actions that will be used when designing the products pertaining to the product category covered;
- The corresponding manufacturing, quality control and quality assurance techniques, processes and systematic actions that will be used;
- The examinations and test that will be carried out before, during and after manufacture, and the frequency with which they will be carried out, as well as the results of the tests carried out before manufacture where appropriate;
- The means by which it is ensured that the test and examination facilities respect the appropriate requirements for the performance of the necessary test;

- The quality records, such as inspection reports and test data, calibration data, qualification reports of the personnel concerned, etc;

- The means to monitor the achievement of the required design and product quality and the effective operation of the quality system.

The documented quality system is presented to a Notified Body, which must assess the system and visit the manufacturer's premises to conduct an initial examination. The auditing team must have at least one member experienced as an assessor in the product technology concerned. The Body's decision (on whether the described system ensures compliance with the essential requirements of the Directive) must be notified to the manufacturer, including the conclusions of the examination and the reasoned assessment decision.

Any updates to the quality system must be evaluated by the Notified Body, and a notification (of its conclusions and decision on the continuing effectiveness of the quality assurance system) sent to the manufacturer.

The manufacturer must undertake to fulfil the obligations arising out of the quality system as approved and to uphold it so that it remains adequate and efficient. He is also subject to surveillance, or audits from the Notified Body, to ensure the maintenance and application of the quality system; both pre-arranged and unexpected audits are allowed. The results of an audit (including results from any tests) must be reported in writing to the manufacturer.

During an audit, the notified body must have access to the locations of design, manufacture, inspection and testing, storage and to all necessary information, in particular:

- The quality system documentation;

- The quality records as foreseen by the design part of the quality system, such as results of analyses, calculations, tests, etc;

- The quality records as foreseen by the manufacturing part of the quality system, such as inspection reports and test data, calibration data, qualification reports of the personnel concerned, etc.

The documentation for the quality system (including any updates) must be kept by the manufacturer, along with the decisions and reports from the Notified Body for at least ten years after the last product has been manufactured. The Declarations of Conformity for each product must also be kept for this period.

Notified Bodies must share with each other relevant information concerning quality system approvals including reference to the product(s) concerned, issued and withdrawn.

5.5 Right to Connect

Where equipment complies with the essential requirements of the R&TTE Directive, operators of public telecommunications networks shall not refuse to connect it to appropriate interfaces on technical grounds.

A Member State may authorise operators to refuse connection to, disconnect or withdraw from service apparatus where it considers that the apparatus causes “serious damage to a network or harmful radio interference or harm to the network or its functioning”. Such authorisation must be notified to the Commission, with a view to revising or replacing the relevant harmonised standards and to take any other appropriate measures.

In case of emergency, an operator may disconnect apparatus if the protection of the network requires the equipment to be disconnected without delay and if the user can be offered a free, alternative and immediate solution. The operator must immediately inform the relevant national authority.

Member States may restrict the putting into service of radio equipment only for reasons related to the effective and appropriate use of the radio spectrum, avoidance of harmful interference or matters relating to public health.

5.6 Conformity Marking

The CE (Communauté Européenne) mark is a declaration to the consumer that a product meets the minimum requirements of all relevant European Directives. The R&TTE Directive requires a CE mark to be affixed to the product or its data plate “visibly, legibly and indelibly”; additionally, it must be affixed to any packaging and any accompanying documents.

If a Notified Body was involved with the conformity assessment process, its identification number must be displayed alongside the CE mark.

If the equipment uses radio frequencies that are not harmonised across the EU (since spectrum management is undertaken by individual Member States) then an “alert” mark (an exclamation mark in a circle) must be affixed to the equipment alongside the CE mark. Additionally, the manufacturer must notify the relevant national authority (in the UK, this is the Secretary of State at the Radiocommunications Agency) at least four weeks before placing the product on the market, including details of the frequency bands used, channel spacings, modulation type, RF power and any Notified Bodies used.

6. ABANDONING THE EMC DIRECTIVE?

This is seen as a most unlikely scenario given that EU Performance Directives are an integral tool in allowing free trade throughout the EEA. The European EMC Directive became law in October 1992 (although it existed alongside other national legislation until the start of 1996). Since then the use of the radio spectrum has increased enormously both in services (2G cellular, 3G cellular, digital terrestrial TV, DAB, TETRA, WLAN, wireless security systems) and volume. Over the same period the use of electronic systems has increased many-fold (as has their speed of operation) whilst the use of heavier current electrical systems particularly for transport purposes is also in the ascendancy. The current and anticipated future reliance on electrical devices, electronic devices and radio communications systems means that it is almost unthinkable that any administration in the developed world would wish to repeal all EMC legislation as the potential economic and political consequences could be major.

However, the hypothetical question may be useful to consider so that the economic value of the current legislation can be better understood.

Much of the world has now adopted EMC requirements, which are broadly either:

- National (eg FCC regulations in the US, CSA in Canada, EMC framework in Australia);
- International (eg EU EMC Directive);
- Generally accepted (contracts in countries which have no specific EMC regulations are often required to conform with either the EU or US EMC regulations).

Therefore, if the EMC Directive were to be abandoned then it is likely that legislation in each country would revert to national legislation that applied international EMC standards in a similar manner. Where the EMC Directive were not replaced with equivalent national legislation, the immediate results of the withdrawal of the EMC Directive in Europe would be that:

- Many small manufacturers and importers of low cost goods would cease to take EMC precautions for equipment destined for the European market; hence the levels of radiofrequency noise interference would be expected to rise in the domestic environment;
- Medium sized enterprises would probably continue to monitor EMC performance of their equipment to ensure that performance did not fall to such a level that customers noticed the effect on other equipment. This would be unlikely to look to the future uses of the radio spectrum in any way;
- Manufacturers of high value equipment would expect EMC requirements to become part of their contractual obligations and so it is unlikely that drastic

increases in EMC emissions would be seen. The contractual requirements would almost certainly become based upon the US FCC rules;

However, EU members could be expected to apply national regulations either individually or in small ‘cartels’, effectively fragmenting the free movement of goods. This diversity in national standards would tend to discourage manufacturers from developing products for the EU market.

7. HARMONISED STANDARDS

In order to achieve electromagnetic compatibility between electrical/electronic apparatus, it is necessary to control:

- Emissions from equipment;
- The level of immunity of equipment to such emissions.

In the EU, guidelines for achieving EMC are published by CEN, CENELEC and ETSI in the OJEC; these are referred to as 'harmonised standards'.

7.1 CEN - The European Committee for Standardisation

CEN's mission is to "promote voluntary technical harmonization in Europe in conjunction with worldwide bodies and its partners in Europe". It is made up of:

- Members (national standards bodies from the 15 EU member states plus Czech Republic, Hungary, Iceland, Malta, Norway, Slovakia and Switzerland);
- Affiliates (national standards bodies from Central and Eastern European countries - currently Albania, Bulgaria, Croatia, Cyprus, Estonia, Latvia, Lithuania, Poland, Romania, Slovenia and Turkey);
- Associates (organisations representing European industry sectors, consumers and workers);
- Counsellors (from the EC and EFTA).

CEN has technical cooperation agreements with the International Organisation for Standardisation (ISO) and the International Commission on Illumination (CIE), among others. Very few harmonised standards from CEN are concerned with EMC.

7.2 CENELEC - The European Committee for Electrotechnical Standardisation

CENELEC is "committed to being recognized as the European leader in the development, adoption and use of international standards in the fields of electricity, electronics and associated technologies". It is composed of:

- Members (the National Electrotechnical Committees of 22 European countries - the EU member states plus Czech Republic, Hungary, Iceland, Malta, Norway, Slovakia and Switzerland); in the UK this committee is part of the British Standards Institute;

- Affiliates (the National Committees of 13 Central and Eastern European countries - Albania, Bosnia-Herzegovina, Bulgaria, Croatia, Cyprus, Estonia, Latvia, Lithuania, Poland, Romania, Slovenia, Turkey and Ukraine);

- Cooperating Partners (representing the interest of major European industries).

CENELEC has a technical cooperation agreement with the IEC[9] to avoid the duplication of work and expedite the publication of standards. Around 65% of standards published by CENELEC are identical to IEC standards; around a further 10% are based on IEC standards while the remainder are European in origin. The vast majority of harmonised standards for the EMC Directive are published by CENELEC. The EMC basic (or reference method) standards published by CENELEC are almost exclusively identical to or derived from IEC standards. The most common standards used (or referenced) to show emissions compliance with the EMC Directive are EN55011, EN55013, EN55014, EN55015 and EN55022. These broadly follow CISPR standards CISPR 11, 13, 14, 15 and 22 respectively.

It can thus be seen that CISPR is the most important body for the formulation of international standards for the measurement of interference at frequencies in excess of 9kHz. CISPR is broken down into several groups, or sub-committees as follows:

- Sub-Committee A covers radio-interference measurement methods, instruments and statistical methods;

- Sub-Committee B covers interference relating to Industrial, Scientific and Medical (ISM) RF apparatus;

- Sub-Committee D covers issues relating to interference from internal combustion engines;

- Sub-Committee F covers interference relating to household appliances, tools, lighting and similar equipment;

- Sub-Committee H is concerned with setting interference limits to protect radio services;

- Sub-Committee I has been formed from the merging of former sub-committees E and G; it deals with EMC of Information Technology Equipment (ITE), multimedia equipment and receivers;

- Sub-Committee S is the CISPR steering committee.

[9] CISPR, a part of the IEC, produces EMC emissions standards; the IEC TC77 produces EMC immunity standards and low-frequency (<9kHz) emissions standards.

7.3 ETSI - European Telecommunications Standards Institute

ETSI's mission is to "produce the telecommunications standards that will be used for decades to come throughout Europe and beyond". It is comprised of 786 members from 56 countries, representing "administrations, network operators, manufacturers, service providers, research bodies and users". Its procedural articles state its support for international standards, particularly those produced by the ITU or ISO/IEC JTC1. It supports both the "promotion of ETSI documents as the basis of world-wide recommendations and standards" and the contribution to and building upon of international recommendations and standards in preparation.

7.4 Scope of the standards

7.4.1 Limits below 1GHz

The emission limits are set to protect the extant radio services, which have historically been largely placed in frequency bands below 1 GHz and hence the majority of European EMC emissions standards are presently limited to frequencies up to 1 GHz.

The measurement methods are also historically based upon protecting analogue (and particularly AM) radio services from the effects of vehicle spark ignition systems. The result of this requirement was the 'quasi-peak' measurement detector commonly used in commercial EMC emissions standards. The applicability of this detector type is questionable in the determination of interference to modern (particularly digital) broadcast systems, however it has survived in the standards thus far. The 'average' detector is also employed for many measurements below 30 MHz where the effects of high power narrowband sources such as electronic power supplies have given cause for concern.

A list of the EMC standards adopted by the EU is published in the Official Journal for European Union[10] and is available on the EU website. The RF emissions standards all contain tests at frequencies below 1 GHz.

[10] The full list of harmonised standards applied under the EMC Directive can be found on the EC website:
www.europa.eu.int/comm/enterprise/newapproach/standardization/harmstds/reflist/emc.html

A high proportion of the equipment tested to EMC emissions standards is tested in accordance with the so called generic emissions standards. These define general electromagnetic environments for equipment operation and are broken down as follows:

EN50081-1 and EN61000-6-3:

> These are the standards defining emissions tests and limits suitable for the 'residential, commercial and light industrial' environment. This environment is typically characterised by the house or office. EN61000-6-3 is an updated version of EN50081-1, which will become obsolete on 1st July 2004. Emissions testing is currently only required at frequencies below 1 GHz.

EN50081-2 and EN61000-6-4

> These are the standards defining emissions tests and limits suitable for the 'industrial' environment. This environment is typically characterised by a factory which has power supplied via its own sub-station. The emissions limits for this environment are not as tight as the use of broadcast reception equipment in close proximity to a large machine is not usually expected. EN61000-6-4 is an updated version of EN50081-2, which will become obsolete on 1st July 2004. Emissions testing is currently only required at frequencies below 1GHz.

The environments defined in the generic standards are used widely to form the basis for many of the product specific standards found in the harmonised list.

7.4.2 Limits above 1GHz

As noted above, there are very few standards that require emissions tests at frequencies above 1 GHz:

BS EN 55011:1998 +A2:2002 (CISPR 11:1997/A2:2002) "Industrial, scientific and medical (ISM) radio-frequency equipment - Radio disturbance characteristics - Limits and methods of measurements".

> This standard contains limits for electromagnetic radiated disturbances for equipment intended for domestic use which locally uses or generates RF energy, up to 18 GHz. A similar test is under consideration for inclusion in BS EN 55022 (CISPR 22) for Information Technology Equipment.

BS EN 55013:2001 (CISPR 13:2001) "Sound and television broadcast receivers and associated equipment - Radio disturbance characteristics - Limits and methods of measurement"

This standard contains limits for:

- The unwanted (disturbance) voltage at the antenna input terminal for TVs, VCRs, PC tuner cards up to 2.15 GHz;
- The unwanted (harmonics and disturbance) voltage at the output terminals of equipment with RF video modulators (eg VCRs) up to 2.15 GHz;
- The radiated power of direct to home satellite receiver tuner units up to 3 GHz;
- The radiated power of direct to home satellite receiver outdoor units up to 18 GHz.

8. ROLE OF THE RADIOCOMMUNICATIONS AGENCY

The Agency has been represented in several international and regional bodies concerned with standards-making, policy and regulation:

- ITU;
- European Conference of Postal and Telecommunications Administrations (CEPT);
- CISPR;
- ETSI.

Of these, CISPR is the body most concerned with EMC. Prior to the formation of Ofcom; the Agency had the following involvements with the bodies:

- Peter Kerry is President of CISPR, regularly attends CISPR B and CISPR I meetings and chairs the steering committee (CISPR S). Peter also attends CENELEC technical committee 210 meetings (EMC co-ordination activities) and IEC ACEC (Advisory Committee on Electromagnetic Compatibility) meetings. In addition Peter attends ETSI ERM meetings, which are concerned with EMC as well as EU meetings concerned with the EMC Directive.
- Neil Waby regularly attended CISPR A, CISPR D CISPR F and CISPR H meetings as well as chairing the CISPR H Working Group 1, which is concerned with maintaining the limits for the generic EMC emissions standards.
- Oliver Wheaton chaired ETSI ERM, which is the ETSI technical committee concerned with the standardisation of EMC and radio spectrum matters within ETSI.

Thus the Agency was seen to offer by far the most extensive representation from the UK in international EMC interference standards making bodies.

In addition to its direct contribution to the development of harmonised standards, the Agency has played an active role in the development of EMC legislation through a coordinated activity led by the Department for Trade and Industry.