

## HOCAP Guidance Note HGN(P)39

### The Automotive EMC Directive 95/54/EC

#### 1. Introduction.

A European Directive is an instruction from the European Commission (EC) to Member States to implement the relevant requirements in national law. The format, style and content and degree of interpretation into national law will inevitably vary between nations because of their existing legal frameworks. It is general UK policy to make legislation as clear as possible and to leave as little as possible for interpretation by the courts. The reverse may be true in some other countries. This means that the same Directive can appear very different in the national legislation of different member states.

The Automotive EMC (ElectroMagnetic Compatibility) Directive 95/54/EC<sup>(1)</sup> has been enacted into the law in Great Britain (England, Wales & Scotland) through the Road Vehicles (Constructions and Use) Regulations, and in Northern Ireland through similar legislation. This Guidance Note is intended to provide police forces with an outline of the requirements of these regulations, and the implications for the ongoing installation of operational electrical and electronic equipment into their vehicles.

#### 2. Vehicle Type Approval Directives.

The Automotive EMC Directive 95/54/EC is one of over 40 Type Approval Directives to which all new vehicles generally have to conform before being granted a certificate of Type Approval (effectively a certificate of roadworthiness). Type Approval Directives cover mainly vehicle safety (for example there are Directives covering braking, exterior lighting, visibility, exterior projections, steering, suspension etc.) but increasingly there are Directives covering environmental issues such as audible noise and exhaust gas emissions.

A vehicle must hold a valid Type Approval certificate prior to registration for road use. Inherent in that validity is that the vehicle in question complies with the specification that is recorded in the approval. Hence, if the vehicle specification is changed in any way, then the approval loses its validity. This should be considered if modifications (including installation of radios and other operational equipment) are contemplated prior to registration.

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<sup>1</sup> Official Journal of the European Communities No. L 266, 8 November 1995, page 1

After registration, the Road Vehicles (Constructions and Use) Regulations, and also the Road Vehicles Lighting Regulations regulate the design of vehicles intended for use on roads. Some of the type approval requirements are repeated in these regulations.

Modifications to the vehicle at this stage should comply with these regulations in order that use of the vehicle on the road remains within the legal requirements.

The annual “MoT” inspection is an attempt to ensure that the vehicle remains in conformity with the Directives throughout its lifetime, but clearly there is a limit to the extent of testing that can be carried out. Type Approval sets the minimum standards for safety, although traditionally, car manufacturers have exceeded the requirements by a significant margin.

The legislative authorities recognise that vehicle manufacturers cannot comply with new Directives instantaneously and so they are phased in gradually. New Directives are applied to all new vehicle types that are created when a manufacturer designs a new model range. The Directives are usually applied several years later to existing vehicle types that are still in production, with an interim period of grace to allow for the transition.

### **3. Origins of The Automotive EMC Directive.**

The generic EMC Directive, 89/336/EEC was published in 1989<sup>(2)</sup>, and was enacted into law in Great Britain as the Electromagnetic Compatibility Regulations 1992<sup>(3)</sup>. These regulations require that from 1<sup>st</sup> January 1996, all electrical and electronic equipment must conform to the Directive unless it is covered by a product specific Directive.

The European automotive industry already had a relevant directive, 72/245/EEC, which covered the suppression of radio interference from spark ignition engines, and therefore an amendment to 72/245/EEC was initiated to cover the EMC of motor vehicles.

The Automotive EMC Type Approval Directive 95/54/EC amends 72/245/EEC to provide harmonised EMC protection requirements for vehicles, and devices intended to be fitted to vehicles. It ensures that vehicles operate safely in their electromagnetic environment and do not emit excessive levels of electromagnetic radiation. Under the terms of Article 2.2 of 89/336/EEC, the Automotive EMC Directive 95/54/EC takes motor vehicles, their components and systems outside of the scope of 89/336/EEC.

### **4. ‘New’ and ‘Old’ Approach Directives.**

The generic EMC Directive 89/336/EEC is a ‘New Approach’ directive, which allows manufacturers to put a “CE” mark on their product when they are satisfied it meets the requirements of the EMC Directive and other relevant directives.

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<sup>2</sup> Official Journal of the European Communities No. L 139, 23 May 1989, page 19

<sup>3</sup> Statutory Instrument No. 2372

The usual route, for products not covered by harmonised European technical standards, is to compile a Technical Construction File (TCF) incorporating test reports that have been certified by a “Competent Body” ie a test house appointed by the Member State Authority. In the UK, the Department of Trade & Industry (DTI) is the Authority for 89/336/EEC and it has appointed a number of test houses as “Competent Bodies”.

New Approach Directives such as 89/336/EEC do not lay down specific test requirements. Any appropriate European standard can be used once it has been recognised (harmonised) by publication of its reference number in the Official Journal of the European Communities.

The Automotive EMC Directive 95/54/EC is an ‘Old-Approach’ Directive, including regulations as well as test methods, limits and criteria. It states emission and immunity requirements for motor vehicles as well as for Electronic Sub-Assemblies (ESAs) to be fitted into vehicles. In terms of sub-assemblies that are not involved in the direct control of the vehicle, eg a domestic car radio, mandatory requirements mainly cover emission.

Motor cycles and three-wheel motor vehicles have their own Type Approval Directive 97/24/EC – further details in Section 11 of this Guidance Note. The EMC requirements of this Directive are virtually identical to the requirements of 95/54/EC.

95/54/EC requires the manufacturer to submit samples of their products to a Member State’s Approval Authority for testing by their appointed Technical Service. In the UK the Vehicle Certification Agency (VCA) is an executive Agency of the Department of the Environment, Transport and the Regions (DETR), charged with operating the system of automotive type approval. The VCA is both the UK Approval Authority and a designated Technical Service for all type approvals to EC automotive directives and ECE <sup>(4)</sup> regulations. The VCA has appointed a number of Technical Services for type approval to specific Directives.

The Technical Service will carry out the tests and issue a test report and then the Approval Authority will issue an approval certificate and an approval number incorporating an “e” mark (not the “CE” mark). The only approval mark for automotive equipment that provides freedom of movement across Europe is the automotive type approval ‘e’ mark. The ‘e’ mark is more comprehensive than the “CE” mark in that it incorporates a reference number that identifies the Member State that has granted Type Approval, the amendment number of the Directive and the unique reference number on the Type Approval certificate.

## **5. Scope of the Automotive EMC Directive.**

The Automotive EMC Directive 95/54/EC deals both with safety (immunity of vehicle electronics to radiated fields) and also the environment (emissions of radiated electrical noise). Aftermarket equipment is also included so that the essential requirements for vehicle type approval are not compromised.

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<sup>4</sup> United Nations Economic Commission for Europe

95/54/EC requires immunity for vehicle systems that affect the driver's direct control of the vehicle. It does not apply immunity requirements to other vehicle systems such as speedometers, clocks and heater controls. However, when a vehicle is tested any mal-function that could confuse the driver or other road users is classed as a failure.

95/54/EC applies to vehicles as defined in the type approval framework Directive 70/156/EEC as amended by 92/53/EC.

The framework Directive has the following definition of "vehicle":

'any motor vehicle intended for use on the road, being complete or incomplete, having at least four wheels and a maximum design speed exceeding 25 km/h, and its trailers, with the exception of vehicles which run on rails and of agricultural and forestry tractors and all mobile machinery'

Vehicles outside of this definition, eg tractors, plant, etc must comply with their own specific EMC directive or with the generic EMC Directive 89/336/EEC. Some vehicles such as kit cars and small model runs are exempted from the Type Approval process. Other vehicles such as fire appliances may also be exempted.

The scope of 95/54/EC includes all electrical and electronic equipment intended for fitment to vehicles. This includes both aftermarket equipment and original equipment. These are defined in 70/156/EEC, as amended by 92/53/EC as:

**Component.** A device, such as a lamp, subject to the requirements of a separate Directive, intended to be part of a vehicle, which may be type approved independently of a vehicle where the separate Directive makes express provision for so doing.

**Separate Technical Unit.** A device, such as a rear protective device, subject to the requirements of a separate Directive, intended to be part of a vehicle, which may be type approved separately but only in relation to one or more specified types of vehicle, where the separate Directive makes express provision for so doing.

Therefore, any device, whether original fit or aftermarket, which falls within the above definitions, is within the scope of the Automotive EMC Directive 95/54/EC and consequently falls outside of the generic EMC Directive 89/336/EEC.

Where a device is also used in areas outside of the above definitions (eg a handportable radio), then it remains within the scope of 89/336/EEC and it must be "CE" marked for those non-automotive applications. Further details in Section 10 of this Guidance Note.

The definition of equipment "which is approved for fitment as part of the vehicle" does not include, for example, an electric compressor temporarily plugged into the accessory socket (cigarette lighter) to inflate the tyres while the vehicle is parked.

An Electrical/Electronic Sub-Assembly (ESA) is defined as a device that can be separately approved as a Component or a Separate Technical Unit. An ESA is defined in the Automotive EMC Directive 95/54/EC (Annex I, item 2.1.10) as :

**ESA.** An electrical and/or electronic device or set(s) of devices intended to be part of a vehicle, together with any associated electrical connections and wiring, which performs one or more specialised functions.

This is a fairly broad definition but could include devices such as engine management units, anti-lock brake controllers and many aftermarket products.

ESA's will require to be "e" marked (95/54/EC, Annex I, item 5.1)

If an electrical or electronic system has been approved as part of a whole vehicle test then that system does not require "e" marking. The same system sold as a spare part will also not require "e" marking, although it is recommended that the packaging bears the "e" mark.

Otherwise, non-original fit aftermarket products, falling within the requirements of 95/54/EC will need to be "e" marked.

## **6. Requirements of the Automotive EMC Directive.**

Automotive Type Approval directives, including the Automotive EMC Directive 95/54/EC differ from "New Approach" Directives, in that they set out exactly what tests are to be performed and what performance is required.

From 1<sup>st</sup> January 1996, all new type vehicles first registered after that date, and parts fitted as original equipment to those vehicles must comply with 95/54/EC.

From 1<sup>st</sup> January 1996, all new type ESAs first marketed after that date, must comply with 95/54/EC.

Vehicles and products placed on the market before 1<sup>st</sup> January 1996 may continue to be sold until 1<sup>st</sup> October 2002 without having to meet the requirements of 95/54/EC.

Diesel-engined vehicles with a smoke approval to 72/306/EEC and spark-ignitioned engines currently having approval to 72/245/EEC (the original Directive which limited radiated emissions from the ignition system) must comply from 1<sup>st</sup> October 2002.

Spare parts for vehicles approved before 1<sup>st</sup> January 1996 can continue to be sold indefinitely without having to comply with 72/245/EEC as amended by 95/54/EC.

Until 1<sup>st</sup> October 2002, manufacturers of aftermarket products have the option of continuing to comply with whatever national EMC requirements are in force in Member states, or else complying with 95/54/EC so as to gain immediate access to European markets.

From 1<sup>st</sup> October 2002, vehicle electrical/electronic systems and components, both fitted as original equipment and after registration must comply with 95/54/EC, including aftermarket accessories and police service electrical/electronic operational equipment.

In the UK the Automotive EMC Directive (<sup>5</sup>) has been interpreted in such a way that aftermarket products intended solely for fitment to vehicles that come under the scope of the Type Approval regime will not have to comply with any EMC requirements until October 2002.

Examination of the documentation supporting 89/336/EEC suggests that equipments that meet the requirements of this generic EMC Directive, and carrying the “CE” mark, will not necessarily be fit for use within the vehicle environment when the requirements of the Automotive EMC Directive 95/54/EC apply. In most cases the CE mark only shows suitability for use in domestic or industrial environments.

Standard domestic and business equipment complying with 89/336/EEC may be fitted to a vehicle provided it is installed in accordance with the recommendations of the equipment and vehicle manufacturer. Further details are contained in Section 12 of this Guidance Note.

Mobile radio communications equipment may be installed provided it is in accordance with guidelines provided by the vehicle and equipment manufacturer, and the Approval Authority is satisfied that when the communications equipment is transmitting, the vehicle’s normal operation is not affected. Further details are contained in Section 9 of this Guidance Note.

## **7. The Automotive Type Approval Process.**

The Type Approval procedure is essentially the same for a vehicle as for a component. The procedure is followed for 95/54/EC and 97/24/EC.

The VCA does not have its own EMC facilities and has therefore appointed a number of independent laboratories as Technical Services for 95/54/EC, which are used to test that a product complies with the Directive. The results are presented to the VCA and this enables the VCA to issue an approval certificate and an approval number incorporating an ‘e’ mark.

The manufacturer applies to the Technical Service, see the VCA website (<sup>6</sup>) for the work to be done. If an independent test house is to be used, then contact with the test house may be made direct, and the VCA is informed by the Technical Service of the application.

The Technical Service carries out worst case selection prior to testing in order to reduce the amount of testing needed across the range of a product type. A meeting will be held between the manufacturer and the Technical Service to consider the products to be tested, the tests to be carried out, and the date and venue for testing.

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<sup>5</sup> Statutory Instrument 1995 No.3180

<sup>6</sup> European Type Approval for Automotive Systems and Components

Recognising that a manufacturer may need both automotive EMC approval against 95/54/EC and against other product specific directives as well as the generic EMC approval against 89/336/EEC, the VCA has appointed independent laboratories as automotive Technical Services that have also been appointed by the DTI as Competent Bodies for the 89/336/EEC certification.

These arrangements allow the manufacturer to choose the test house and then arrange for the relevant reports and information documents to be sent to VCA to issue the automotive approval certificate against 95/54/EC. If generic EMC approval against 89/336/EEC is needed also, then the test house can assume its Competent Body role and certify those same tests for 89/336/EEC approval.

Tests carried out at laboratories that have not yet been appointed as Technical Services will have to be witnessed by VCA. If a manufacturer has his own EMC test facilities, then VCA can witness tests on site, without the involvement of any other test house, provided that the facilities prove acceptable after appraisal.

Type approval requires not only the testing of a sample of the type and the documentation of the technical specification, but also requires Conformity of Production (CoP) – confirmation that the manufacturer can consistently produce products to the approved specification. To do this the VCA quality assessors will wish to examine the manufacturer's quality systems and will look for established quality system principles as in ISO 9002.

Certification to ISO 9002 will normally be accepted in place of factory assessments, although control plans dealing with issues specific to type approval activities may be needed in addition.

Approval can only be given to the manufacturer of a product, someone who is able to take legal authority for the manufacture of the product, or his appointed representative. Therefore, if a distributor of a product wishes to seek approval, he will need to gain written authority from the manufacturer to act as the manufacturer's representative for the purposes of type approval.

Testing is carried out on the sample product with the Technical Service witnessing the test work as necessary. The Directive defines the permitted test methods and the test limits to be used for both vehicles and components for radiated immunity and radiated emissions. Test reports are prepared and the Technical Service provides a complete set of technical documentation and test reports to the approval authority.

Subject to a satisfactory review of the submitted documents and Conformity of Production assessment, the approval body issues a type approval certificate that authorises the manufacturer to put the "e" mark on the product.

A vehicle is only tested for immunity if there are electronic systems in the direct control of the vehicle. The immunity testing will be monitored for either failure of direct control or behaviour of other vehicle systems likely to mislead other road users.

## **8. The Automotive EMC Directive Test Requirements.**

The Automotive EMC Directive 95/54/EC takes a different approach to EMC than the generic EMC Directive 89/336/EEC which requires all devices whatever their function to work correctly in their electromagnetic environment. The Automotive EMC Directive 95/54/EC is primarily concerned with ensuring that the driver's control of the vehicle is not affected by ElectroMagnetic Interference (EMI).

95/54/EC is exceptional in the limited range of tests that are applicable. Many of the test clauses that will be familiar to those who have dealt with the generic EMC standards, have been excluded from the Automotive EMC Directive. There are no requirements for transient immunity, conducted emissions, or electrostatic discharge, but the customer should be advised of the need to ensure his product is such as to comply with the EMC requirements of the vehicle manufacturer.

There are three types of test in 95/54/EC, with a range of alternative test methods :

- i. Radiated narrow band emissions
- ii. Radiated broad band emissions
- iii. Radiated immunity

However, 95/54/EC (Annex I, item 8) offers some important exemptions from some of these tests for certain types of devices.

Firstly, if a vehicle or electrical/electronic system or ESA does not have an electronic oscillator with an operating frequency greater than 9 kHz, it is considered to meet the radiated narrow band emission requirements.

Secondly, if a vehicle does not have electrical/electronic systems or ESAs involved in the direct control of the vehicle, it does not require radiated immunity testing. A vehicle is only tested for radiated immunity if there are safety critical systems in the direct control of the vehicle. 95/54/EC (Annex I, item 6.4.2.3) explains that "the driver's direct control of the vehicle is exercised by means of, for example, steering, braking or engine speed control".

Similarly, ESAs which are not involved in the direct control of the vehicle do not require immunity testing.

Immunity testing is monitored for either failure of direct control or behaviour of other systems likely to mislead other road users. Where equipment is not operated during the defined RF immunity testing, the Technical service has to be provided with technical evidence that shows this equipment does operate correctly in the presence of high RF fields.

All electrical components fitted to the vehicle gain approval as Separate Technical Units as they are all tested by the whole vehicle testing. If the manufacturer decides later in the life of the vehicle that

he wishes to change a component, then he may do this if the replacement component is type approved and the Technical Service agrees to the change.

## **9. Mobile Radio Communications Equipment.**

Type Approval of mobile radio communications equipment is a regulatory requirement in order to satisfy the conditions necessary for the user's radio licence. Separate guidance is being issued with regard to this <sup>(7)</sup>. From 8<sup>th</sup> April 2000, the RTTE Directive 1999/5/EC has changed the type approval regime for radio equipment, which will now need to be "CE" marked to indicate compliance with that Directive.

In addition, where mobile radio communications equipment is intended to be installed in a vehicle, then it is subject to the requirements of the Automotive EMC Directive. With effect from 1<sup>st</sup> October 2002 mobile radios must also be "e" marked to indicate compliance with 95/54/EC if they are to be fitted into a vehicle.

A handportable radio will not necessarily require approval to 95/54/EC, but any vehicle adaptor will be required to be compliant if it is fitted to the vehicle. Where a vehicle manufacturer advises against the use of specific communications equipment, their advice should be accepted.

Part of the Automotive EMC approval includes showing by technical evidence that whilst transmitting, the radio communications equipment does not affect the normal operation of the vehicle. Installation procedures, instructions for operation, and technical evidence should be such that when correctly followed the required level of immunity for typical vehicles and their electrical/electronic systems is achieved.

Assuming that the radio equipment meets applicable requirements, it could be added to the approved specification by the vehicle manufacturer, and be part of the whole vehicle approval against 95/54/EC before delivery to the customer. Whole vehicle approval (where this applies) could be extended to include all the police and fire service requirements for lightbars, sound systems and other electrical/electronic devices prior to delivery and registration. This is understood to be the practice in Germany.

However, vehicle manufactures in the UK have indicated that this approach will only work if there is significant standardisation of the equipment, and radios, being provided for one-stop factory installation. The current range of additional equipment being selected is too large for vehicle manufacturers to carry out whole vehicle approval against each variant. It is possible to approve equipment, including radio equipment, for aftermarket fitment separately as an Electrical/Electronic Sub-assembly (ESA) see Section 5 of this Guidance Note.

## **10. Dual marking of Products.**

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<sup>7</sup> HOCAP Guidance Note HGN(P)38 - The Radio & Telecomms Terminal Equipment (RTTE) Directive

Some products are by their nature, designed for both automotive and non-automotive applications. Examples might be a car radio system for use in a vehicle (“e” mark) or in a boat (“CE” mark). Or an alarm/immobiliser for use on a vehicle (“e” mark) or on a mobile machine eg bulldozer (“CE” mark). In such cases, the “CE” mark on its own may not be sufficient to confer free movement of goods, and in any case the “e” mark must also be applied for the automotive application of the product.

Where dual marking is a requirement, compliance with 89/336/EEC should be based upon the testing and documentation prepared for 95/54/EC. This testing should be augmented by testing for electrostatic discharge, transient immunity, conducted emissions and also by radiated immunity where this has not been tested.

Note that under the RTTE Directive 1999/5/EC all radio products must be CE marked for radio spectrum management purposes from 8 April 2001. The RTTE Directive specifically states (Article 1, item 3) that where apparatus consists of a Component or Separate Technical Unit of a vehicle, compliance is without prejudice to the application of the automotive legislation.

## **11. Two and Three Wheeled Motor Vehicles.**

The Multi-Directive 97/24/EC for 2 and 3 wheeled vehicles was adopted on 17<sup>th</sup> June 1997.

Chapter 8 of this Directive covers EMC both for the vehicles and the Separate Technical Units, and is similar to the Automotive EMC Directive 95/54/EC, although there are a number of detail differences. The radiated emission and immunity requirements in 97/24/EC have the same reference levels as in 95/54/EC, as well as the type approval and Conformity of Production levels. There are a number of detail differences in the testing methods.

The title of Chapter 8 is “Electromagnetic Compatibility of 2 or 3 wheel motor vehicles and Electrical or Electronic Separate Technical Units” The definition of a Separate Technical Unit (STU) is different to that in 95/54/EC in that the Component approval of a STU is for either fitting to any vehicle type, or to a specific vehicle type or types.

Any electrical or electronic component sold as aftermarket equipment which is not exclusively designed for 2 or 3 wheeled vehicles may either comply with this Directive 97/34/EC or with 89/336/EEC, but the EMC tests carried out should be ones appropriate for the vehicle application.

## **12. Domestic and Business Products.**

The 89/336/EEC approval has to ensure that the product is suitable for use in the specified working environment for that product. A product specified for domestic and business use that is “CE” marked for vehicle use in addition to its normal domestic and business use should have technical justification in the manufacturers Technical Construction File showing that it complies with a typical

vehicle's EMC environment, and should also include user instructions that fully cover safe use in a vehicle. A Competent Body who is called to advise on this should also have vehicle EMC expertise.

If a vehicle manufacturer advises against the use of specific equipment of this nature then it cannot be used in that vehicle.

### **13. Multi-stage Build Vehicles.**

Certain vehicles such as coaches, ambulances or motorhomes start life as a basic chassis on which a body is built. From 1<sup>st</sup> January 1998, new types of certain multi-stage build vehicles have been brought within the scope of mandatory European whole vehicle type approval. Consequently, they are required to comply with the technical requirements of 95/54/EC.

The class of vehicles affected are "M1" vehicles which are defined in the type approval framework Directive 70/156/EC as :

"Vehicles used for the carriage of passengers and comprising no more than eight seats in addition to the driver's seat"

The details of multi-stage type approval are being finalised. However, as regards EMC, it is likely that the manufacturer of the base vehicle would be responsible for the EMC of that vehicle, and the manufacturer of the body would be responsible for the EMC of the body and any additional equipment added to the base vehicle.

### **14. The Machinery Directive.**

The Machinery Directive 89/392/EEC sets out essential health & safety requirements for "machinery" which essentially means an assembly of linked parts or components, at least one of which moves and which provides a specific application such as packaging or processing a material. Products covered by the Machinery Directive must meet the requirements of the relevant Directives and be "CE" marked. The generic EMC Directive 89/336/EEC generally applies to products covered by the Machinery Directive with appropriate consideration being given to the EMC environment of the intended use and the level of safety risk involved.

However, machinery intended for fitting to a vehicle can be considered to be a vehicle component. Therefore if the vehicle falls within the scope of 95/54/EC, the machinery fitted to that vehicle may also fall within the scope and consequently be governed by that Directive as well as any relevant tests needed to meet the Machinery Directive.

In certain cases, eg: large, slow-moving dump trucks/mobile cranes, the whole vehicle will have been designed as a piece of mobile machinery. Such vehicles fall outside of 95/54/EC and hence will have to comply with 89/336/EEC from 1<sup>st</sup> January 1996. Of course, for mobile machinery which will operate on normal roads, the road electromagnetic environment would have to be considered when designing and testing to 89/336/EEC.

## **15. The Vehicle Security Directive.**

Many vehicle security products are electronic based, use low-power radio communication equipment for remote control and have a specific automotive Directive 95/56/EC. The EMC requirements of 95/54/EC are fully applicable to vehicle security products, but the requirements of 95/56/EC will take precedence in some respects. Compliance with 95/56/EC was required for new type vehicles and security devices from 1<sup>st</sup> January 1997, and was required for all existing types from 1<sup>st</sup> October 1998. If a radio transmitter is part of the security system, it has to comply with the requirements for radio approval under the RTTE Directive 1999/5/EC as well as the automotive type approval requirements.

## **16. Equipment in Caravans/Motorhomes.**

Equipment intended for fitment in vehicles and which operates when the vehicle is in use should comply with the Automotive EMC Directive 95/54/EC. Equipment which is powered independently from the vehicle supply and which can only be used when the vehicle is parked should comply with the generic EMC Directive 89/336/EEC.

## **17. “e” marking.**

Electrical/electronic Sub Assemblies (ESAs) certified to 95/54/EC will require “e” marking. This mark shall consist of a rectangle surrounding the letter “e” followed by the distinguishing number or letters of the Member State that has granted type-approval.

It must also include in the vicinity of the rectangle the four digit number reference the type-approval certificate, preceded by the two figures indicating the amendment number of the Directive at the date that type-approval was granted.

The type-approval mark must be affixed to the main part of the ESA in such a way as to be clearly legible and indelible.

No marking is required for electrical/electronic systems included in vehicle types approved by this Directive 95/54/EC as part of the whole-vehicle approval.

## **18. Summary.**

European vehicle legislation covers vehicles and electrical/electronic equipment intended for fitment in vehicles, both original fit and aftermarket fit.

After 1<sup>st</sup> October 2002, police and fire service aftermarket equipment including lightbars, sound systems, video systems etc will need to be “e” marked for installation in vehicles which have already been type approved.

Mobile radio equipment will need to be “CE” marked to demonstrate regulatory compliance with the RTTE Directive and also need to be “e” marked to demonstrate compliance with the Automotive EMC Directive for installation in vehicles.

Ongoing installation of non-“e” marked equipment in type approved vehicles after 1<sup>st</sup> October 2002 will result in the user operating a vehicle unlawfully on the road. This is expected to include non-“e” marked aftermarket parts purchased before 1 October 2002.

#### **19. Further information.**

The following websites may be of help in obtaining further information regarding automotive type approval :-

**<http://www.roads.detr.gov.uk>**

**<http://www.vca.gov.uk>**

**<http://www.mira.co.uk/electrical>**

**Flow chart for Automotive EMC approval of electrical/electronic devices**

