ATM - Guidance on the Application of the R&TTE Directive

Introduction

In accordance with Article 1.4 and Annex 1.6 of the Directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity (following named as R&TTE Directive), “Air-traffic-management equipment and systems within the meaning of Article 1 of Council Directive 93/65/EEC of 19 July 1993 on the definition and use of compatible technical specifications for the procurement of air-traffic-management equipment and systems” was not covered by the R&TTE Directive at the time that Directive came into force.

On the 20th October 2005, as a result of the repeal of Directive 93/65/EEC by the REGULATION (EC) No 552/2004 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 10 March 2004 on the interoperability of the European Air Traffic Management network (following named as Interoperability Regulation 552/2004), this exclusion ceased to apply. Accordingly, from that date, the essential radio requirements of such ATM equipment and systems are covered by the R&TTE Directive unless the equipment is amongst the “Products, appliances and components within the meaning of Article 2 of Council Regulation (EEC) No 3922/91 of 16 December 1991 on the harmonisation of technical requirements and administrative procedures in the field of civil aviation” (aircraft equipment) which continue to be excluded under Annex 1.5 of the R&TTE Directive. Consequently ATM equipment ceased to be covered by the Article 10.5 Type Examination Procedure of the EMC Directive.

The interoperability requirements for ATM equipment are covered in the Interoperability Regulation 522/2004. The Interoperability Regulation is complementary to the R&TTE Directive – see Annex A.

This guidance note explains the steps that manufacturers and suppliers of ATM equipment must take in order to ensure that the equipment will be compliant with the R&TTE Directive. ATM ground-based radio equipment subject to the R&TTE Directive typically will include (but not be limited to):

HF SSB Comms transmitter and receiver
VHF AM Comms Transmitter (25kHz and 8.33kHz)
VHF AM Comms Receiver (25kHz and 8.33kHz)
VHF Data Link Mode 2 (D8PSK)
VHF Data Link Mode 4 (S-TDMA)
VHF Direction Finder (VHF DF - Rx)
Non-Directional Beacon (NDB)
Marker)
Glide slope) ILS
Localiser)
Microwave Landing System
VHF omnidirectional radiorange (VOR)
Doppler VHF omnidirectional radio-range (DVOR)
Distance Measuring Equipment
Monopulse Secondary Surveillance Radar
Monopulse Secondary Surveillance Radar Mode S
MSSR Site Monitor
Automatic Surface Movement Guidance System
Primary Radar 23 cm
Primary Radar 10 cm
Primary Radar 3 cm
Primary Radar 15 GHz

More information about the placing on the market of equipment under the provisions of the R&TTE Directive can be found under:

http://ec.europa.eu/enterprise/rtte/guide7.htm

General information on the implementation and application of the R&TTE Directive can be found under:

http://ec.europa.eu/enterprise/rtte/index_en.htm

Objectives of the R&TTE Directive

The R&TTE Directive sets essential requirements for health & safety, electromagnetic compatibility and radio spectrum usage. Radio spectrum matters are addressed only to the extent necessary to avoid harmful interference. The Directive does not generally deal with functional safety, functionality, fitness for purpose or interoperability between systems. For ATM, such matters will continue to be addressed under legislation specific to the aviation sector, in particular, the Interoperability Regulation, 552/2004. Annex D of “ETSI EG 201 399 V2.1.1 (2005-12) Electromagnetic compatibility and Radio spectrum Matters (ERM); A guide to the production of candidate Harmonized Standards for application under the R&TTE Directive” provides an illustration of the scope of the R&TTE Directive and the standards required.

Technical Compliance

Initially, the compliance options for ATM under the R&TTE Directive are limited because at present there is no relevant harmonised standard in respect of Article 3.2 of the Directive. Accordingly, manufacturers must engage the services of a notified body. This may be done on a product type basis by seeking an opinion on a Technical Construction File (TCF) for each product type (Annex IV of the R&TTE Directive) or on the basis of a quality management system assessment by a notified body under the Full Quality Assurance (FQA) option (Annex V of the R&TTE Directive).

A list of notified bodies can be found at:
http://ec.europa.eu/enterprise/rtte/nb.htm
(Note: Only notified bodies that have ATM equipment in their designated scope of activities will be qualified to offer these services.)

It is not the intention to introduce any change in technical parameters as a result of the inclusion under the R&TTE Directive. Equally, it is not the intent to change the sources of test data used by manufacturers to demonstrate compliance provided that such data can be shown to be accurate and reliable. However, the nature and extent of information required is different (see Annex II and Annex IV of the R&TTE Directive) and must be presented in a suitable format for the purpose.

The essential radio test suites in respect of Article 3.2 of the R&TTE Directive will be established on the basis of the limited number of (non-harmonised) ETSI standards available for ATM communication equipment, on Annex 10 to the Convention on International Civil Aviation and on the relevant ITU or CEPT Recommendations (see Appendix A to this document).

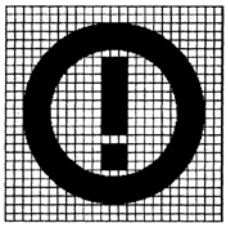
Compliance in respect of Article 3.1 will be established on the basis of available CENELEC and ETSI harmonised standards taking due account of the specific ATM environment and, where appropriate, the ETSI standard: EN 301 489-22 V1.3.1 (2003-11) “Electromagnetic compatibility and Radio Spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 22: Specific requirements for ground-based VHF aeronautical mobile and fixed radio equipment”. Other technical criteria may be applied provided compliance with Article 3.1 is ensured. Where appropriate CENELEC or ETSI

standards are not available then other technical criteria demonstrating compliance with Article 3.1 must be established. In all cases the Notified Bodies' opinion will advise whether or not the technical criteria selected and the resulting test outcomes form an adequate basis for compliance.

Radio Interface Specifications

Each EU member state will publish Radio Interface Specifications or Interface Requirements or Interface Regulations for ATM equipment in accordance with Article 4.1 of the R&TTE Directive. It is expected that these specifications will be identical in all material respects. They are high level requirements which concern the efficient use of spectrum in the territory concerned and the associated licensing regime. Equipment must meet these requirements, including licensing, before it is put into service. (Note: Compliance with the Interoperability Regulation 522/2004 or other relevant aviation regulations is also required before aeronautical radio equipment can enter into service. See "Putting into service" below.) These requirements apply separately from and in addition to the requirements that will be used by notified bodies to determine technical compliance but may be taken into account by them. The spectrum authorities in the individual member states have responsibility for the Interface Requirements applied in their territory.

Equipment Class



"Class 2" Equipment Identifier

Commission Decision 2000/299/EC provides for different classes of equipment under the R&TTE Directive. ATM equipment is Class 2 equipment, that is to say "Radio Equipment for which Member States apply restrictions on the putting into service as foreseen in Article 7(2) of Directive 1999/5/EC or for which Member States apply restrictions on the placing on the market as foreseen by Article 9(5) of Directive 1999/5/EC will constitute a class. This class will be referred to as 'Class 2'."

The Equipment Class Identifier illustrated alongside is assigned to equipment within this class.

The Equipment Class Identifier must be marked on the equipment as part of the CE marking. (See section on Equipment Marking).

Equipment Marking

The equipment marking must identify the manufacturer or the person responsible for placing the equipment on the EU market. It must also give an equipment type designation and a batch or serial number.

In addition, the regulatory “CE” symbol must be applied. The identifying number of the notified body involved must be shown alongside together with the Equipment Class Identifier shown above. Collectively, this is known as the CE Marking. The minimum height of the CE marking is normally 5mm. The CE Marking must be affixed to the equipment itself or to the equipment data plate. The format of the “CE” element is specified and a template can be found in Annex 7 of the Directive.

The marking must be visible, legible and indelible.

Packaging

If there is any packaging it must:

- have the CE Marking (see above) reproduced on it; and
- indicate the Member States or geographical regions within the Member States where the equipment is intended to be used.

This information should be prominently displayed.

User Information

The manufacturer or person responsible for placing the equipment on the market must provide information about the intended use of the equipment. This must be prominent and include a list of the Member States or geographical regions within the Member States where the equipment is intended to be used. It is also recommended that information is given about other restrictions that apply to use of the equipment, for example, the need to obtain an individual licence.

The documentation should also include the CE Marking (see above). Strictly speaking, this should be on all accompanying documents but the Telecommunications Conformity Assessment and Market Surveillance committee (TCAM), which advises the Commission, has agreed that reproduction on any one of them will suffice.

Declaration of Conformity

A Declaration of Conformity (DoC) is required as part of the TCF. A copy must also be supplied with or in the user information. The content and format of the DoC is not prescribed but it is recommended that EN ISO/IEC 17050-1:2004 is followed.

In order to avoid translation of the full text of the DoC into all the Community languages of the countries in which the equipment will be supplied, an abbreviated form with standard text in all the languages has been agreed. This can be found at:
http://europa.eu.int/comm/enterprise/rtte/faq.htm#informing.
Use of this abbreviated format in the user information is subject to the full declaration in one of the Community languages being made readily available at a location identified in the user information (for which purpose a web-site location with a “user-friendly” URL will suffice).

Putting into service

Article 7.2 of the R&TTE Directive provides that “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 ..”. Article 7.2 also provides that this restriction is “without prejudice to conditions attached to authorisations for the provision of the service concerned in conformity with Community law”. Accordingly, Article 7.2 does not

preclude the application of Interoperability Regulation 522/2004 or other relevant aviation regulations, compliance with which is required before aeronautical radio equipment can enter into service.

Notification to National Spectrum Authorities

The ATM equipment concerned uses frequency bands whose use is harmonised throughout the Community. Because there is a need to obtain an appropriate license from the relevant national authorities before such equipment can be taken into use, certain Member States take the view that notification under article 6.4 of the R&TTE Directive is required. Pending finalisation of this discussion, manufacturers should notify their intention to place equipment on the market to the following authority(ies):

- Germany
- Hungary

Compliance

It was recognised by the Telecommunications Conformity Assessment and Market Surveillance Committee established under the R&TTE Directive that it would not be practical for manufacturers to comply immediately with the administrative requirements of the R&TTE Directive described in this note and that inevitably there would be some non-compliance. Member States therefore decided to enforce the provisions of the R&TTE Directive in relation to ATM equipment placed on the market on or after 20 October 2005, and which had previously been placed on the market in a proportional manner. This means that where manufacturers are found to be taking all necessary steps to market such equipment in accordance with the provisions of the Directive at the earliest possible moment in general Member States will not take formal measures. However, it was expected that, by taking all necessary steps, manufacturers would soon be placing compliant equipment on the market and consequently cases of non-compliance would soon cease to exist.

Requirements for interoperability will continue to be overseen by the relevant aviation authorities.

APPENDIX A

Non-harmonised ETSI standards

ETSI EN 300 676 V1.3.1 (2003-03) Ground-based VHF hand-held, mobile and fixed radio transmitters, receivers and transceivers for the VHF aeronautical mobile service using amplitude modulation; Technical characteristics and methods of measurement

ETSI EN 301 841-1 V1.2.1 (2003-08) Electromagnetic compatibility and Radio spectrum Matters (ERM); VHF air-ground Digital Link (VDL) Mode 2; Technical characteristics and methods of measurement for ground-based equipment; Part 1: Physical layer and MAC sub-layer

ETSI EN 301 841-2 V1.1.1 (2004-03) Electromagnetic compatibility and Radio spectrum Matters (ERM); VHF air-ground Digital Link (VDL) Mode 2; Technical characteristics and methods of measurement for ground-based equipment; Part 2: Upper layers

ETSI EN 301 842-1 V1.2.1 (2005-04): "VHF air-ground Digital Link (VDL) Mode 4 radio equipment; Technical characteristics and methods of measurement for ground-based equipment; Part 1: EN for ground equipment"

ETSI EN 301 842-2 V1.4.1 (2005-04): "VHF air-ground Digital Link (VDL) Mode 4 radio equipment; Technical characteristics and methods of measurement for ground-based equipment; Part 2: General description and data link layer"

ETSI EN 301 842-3 V1.1.1 (2005-02): "VHF air-ground Digital Link (VDL) Mode 4 radio equipment; Technical characteristics and methods of measurement for ground-based equipment; Part 3: Additional broadcast aspects"

ETSI EN 301 842-4 V1.1.1 (2005-02): "VHF air-ground Digital Link (VDL) Mode 4 radio equipment; Technical characteristics and methods of measurement for ground-based equipment; Part 4: Point-to-point functions"

ETSI EN 302 186 V1.1.1 (2004-01) Satellite Earth Stations and Systems (SES);Harmonized EN for satellite mobile Aircraft Earth Stations (AESs) operating in the 11/12/14 GHz frequency bands covering essential requirements under article 3.2 of the R&TTE Directive

ICAO Annex 10 CNS references

(Note: the information in this table is subject to review and will need to be updated)

HF SSB Comms Transmitter	**ICAO Annex 10 Volume III,** Part II, Chapter 2, 2.4 & 3		ERC/Rec 74-01 Spurious emissions to be considered in all cases.,
	Chapter 11. HF Data Link		
VHF AM Comms (25kHz and 8.33kHz) Transmitter and Receiver	**ICAO Annex 10 Volume III,** Part II, Chapter 2.1 &2.2 **–**	**ITU Radio Regulations Edition of 2004**	
Aeronautical Radio Frequency Spectrum Utilization	**ICAO Annex 10 Volume V –**	Vol 1 Art 2 Vol 2 App 1 & Vol 2 App 3	
	Part II, Chapter 4		
Digital Data Communication Systems	Part I –		

VHF Air-Ground Digital Link (VDL)	Chapter 6.		
Radio channels and functional channels	6.1.2		
Air-Ground VHF Digital Link Communications Systems Characteristics	6.1.4		
Power	6.2.2		
Spurious Emissions	6.2.3		
Adjacent Channel Emissions	6.2.4		
Chapter 3 - Specifications for Radio Navigation Aids - the detailed SARP's	**ICAO Annex 10 Volume 1 Chapter 3**		
ILS	Para 3.1		
VOR	3.3		
NDB	3.4		
DME	3.5		
VHF Marker	3.6		
VHF Marker Beacons	3.1.7		
Enroute VHF Marker Beacons	3.6		
GNSS	3.7		
MLS	3.11		
Surveillance			
Monopulse Secondary Surveillance Radar (Mode A and Mode C)	ICAO Annex 10 Volume 4 Para 3.1.1 series	Rec ITU-R M 1177, SM 328, SM 329, SM 1539, SM 1540, SM 1541,	
Monopulse Secondary Surveillance Radar Mode S	ICAO Annex 10 Volume 4 Para 3.1.2.1 & 3.1.2.11 series and Figure 3-2	Rec ITU-R M 1177, SM 328, SM 329, SM 1539, SM 1540, SM 1541,	
MSSR Site Monitor Note: There are no SARPs in Annex 10 for MSSR Site Monitors. However typical systems utilise aircraft transponders in their design, whereupon the requirements placed upon aircraft transponders apply:-	ICAO Annex 10 Volume 4 Para 3.1.2.2 series and Figure 3-5. ICAO Annex 10 Volume 4 Para 3.1.2.10 series. ICAO Annex 10 Volume 4 Para 4.3.11.1 f) for Mode S with ACAS	:	

Automatic Surface Movement Guidance System Note There are no SARPs in Annex 10 for ASMGCS surveillance equipment. However at least one known system (London Heathrow) employs Mode S Interrogator technology in order to interrogate Mode S equipped aircraft. This equipment complies with the Mode S requirements identified above.			
Primary Radar 23 cm There are no SARPs in Annex 10 for Primary Radar 23cm		Rec ITU-R M 1177, SM 328, SM 329, SM 1539, SM 1540, SM 1541,	
Primary Radar 10 cm There are no SARPs in Annex 10 for Primary Radar 10cm		Rec ITU-R M 1177, SM 328, SM 329, SM 1539, SM 1540, SM 1541,	
Primary radar 3 cm There are no SARPs in Annex 10 for Primary Radar 3cm		Rec ITU-R M 1177, SM 328, SM 329, SM 1539, SM 1540, SM 1541,	

Annex A

Extract from Commission Document TREN.F.2/EMM D(2005) of 23 February 2006 – Conformity Assessment of the European Air Traffic Management Network (EATMN)

"Section 8 – COMPLEMENTARY ASPECT OF INTEROPERABILITY

"Whereas 14" foresees that the interoperability Regulation should not affect the obligation on manufacturers to affix the CE mark to certain constituents in order to certify their compliance with other Community legislation relating to them.

This whereas confirms the complementary aspect of the interoperability Regulation in relation with other relevant Community legislation.

If we take the example of ground aeronautical radio equipment, they will be under the scope of Directive 1999/5/EC (R&TTE - Radio and Telecommunication Terminal Equipment Directive) from 20 October 2005 and the interoperability Regulation may be only the basis for complementary provisions.

More precisely, the R&TTE Directive sets essential requirements for health & safety, electromagnetic compatibility and radio spectrum usage. Radio spectrum matters are addressed only to the extent necessary to avoid harmful interference. This directive does not generally deal with functional safety, functionality, fitness for purpose or interoperability.

In practice a ground aeronautical radio equipment has to be certified in conformity with the R&TTE Directive. General information can be found under:

http://ec.europa.eu/enterprise/rtte/index_en.htm

Concerning the certification in accordance with the complementary requirements, particularly the essential requirements of the interoperability Regulation, the relevant certificates, previously mentioned, have to be issued. If there is a lack of applicable detailed requirements (Implementing rules) or means of compliance (Community specifications), the technical requirements actually used for certification (consistent with ICAO SARPs or Technical manuals, EUROCAE specifications, ETSI standards…) and that are related with the essential requirements of the interoperability Regulation may continue to be used."