

# UK Interface Requirement 2059

**Ground based HF Single Sideband (SSB) radio  
equipment at Aeronautical Stations of the  
Aeronautical Mobile (R) Service for voice and  
data link communication.**

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## Section 1

# References

- 1.1 Annex 10 to the Convention on International Civil Aviation (ICAO) as amended.
- 1.2 Annex 10 to the Convention on International Civil Aviation (ICAO) Aeronautical Telecommunications Volume V (Aeronautical Radio Frequency Spectrum Utilization) as amended.
- 1.3 Annex 10 to the Convention on International Civil Aviation (ICAO) Aeronautical Telecommunications Volume III – Communication Systems (Part I – Digital Data Communication Systems Part II Voice Communication Systems) as amended.
- 1.4 ITU Radio Regulations Edition 2004 Volume 2: Appendices, Appendix 27 Frequency allotment Plan for the aeronautical mobile (R) service and related information.
- 1.5 CEPT/ERC/Recommendation 74-01E Unwanted Emissions in the Spurious Domain
- 1.6 Statutory Instrument 2003 No. 1902, The Wireless Telegraphy (Limitation of Number of Licences) Order 2003

## Section 2

# Foreword

- 2.1 The Radio Equipment and Telecommunications Terminal Equipment Directive 99/5/EC (R&TTE Directive) was implemented in the United Kingdom (UK) on the 8 April 2000 by The Radio Equipment and Telecommunications Terminal Equipment Regulations 2000, Statutory Instrument 2000 No. 730. In accordance with Articles 4.1 and 7.2 of Directive 1999/5/EC, this UK Interface Requirement contains the requirements for the licensing and use of ground based single sideband (SSB) HF Aeronautical Mobile (R) Service (AM(R)S) radio equipment in the specified frequency bands.
- 2.2 Nothing in this UK Radio Interface Requirement shall preclude the need for equipment to comply with Directive 1999/5/EC.
- 2.3 Nothing in this UK Radio Interface Requirement shall preclude the need for equipment to comply with Annex 10 to the convention on International Civil Aviation, where appropriate.
- 2.4 It is required by the Wireless Telegraphy Act 2006 that no radio equipment is installed or used in the UK except under the authority of a licence granted by or otherwise exempted by regulations made by Ofcom. It is a condition of such a licence or exemption regulations as appropriate that, in order to be installed or used in the UK, the equipment must meet the minimum requirements specified in this UK Interface Requirement for the stated equipment types and for the stated frequency bands. Nothing in this UK Interface Requirement shall preclude equipment from being placed on the market in the UK that complies with the 'essential requirements' specified in Directive 1999/5/EC.
- 2.5 The requirements given in the main body of this UK Radio Interface Requirement will apply to ground based SSB HF AM(R)S radio equipment in the UK.
- 2.6 This UK Radio Interface Requirement will be revised as necessary, for example to follow:
  - i) current technology developments for reasons related to the effective and appropriate use of the spectrum in particular maximising spectrum utilisation; and
  - ii) changes to the available spectrum allocated for aeronautical mobile (R) service.
- 2.7 All UK Radio Interface Requirements notified under Directive 1998/34/EC will be published and will be made available free of charge from the Ofcom web-site at <http://www.ofcom.org.uk>
- 2.8 Further information on this UK Radio Interface Requirement can be obtained from the technical enquiry contact given at the back of this document.

## Section 3

# Minimum requirements for operation within the UK

- 3.1 The minimum requirements in this document are made for reasons related to the effective and appropriate use of the radio spectrum, in particular maximising spectrum utilisation.
- 3.2 This UK Radio Interface Requirement gives a high level description of how the spectrum in the UK is used for ground based SSB HF AM(R)S radio equipment in the aeronautical mobile (R) service. It does not prescribe technical interpretation of the 'essential requirements' of Directive 1999/5/EC.
- 3.3 This UK Radio Interface Requirement therefore stipulates the necessary equipment parameters for the licensing of ground based SSB HF AM(R)S radio equipment in the aeronautical mobile service in the UK. Table 3.1 contains the relevant equipment parameters. These taken together with the 'essential requirements' detailed in Article 3.2 of Directive 1999/5/EC constitute the minimum requirements for the installation and use of ground based SSB HF AM(R)S radio equipment in the aeronautical mobile service within the UK. Nothing in this UK Interface Requirement shall preclude equipment from being placed on the market in the UK that complies with the 'essential requirements' specified in Directive 1999/5/EC.
- 3.4 The technical parameters specified in the UK Radio Interface Requirement are applied to achieve the desired level of compatibility within the aeronautical mobile (R) service and with other radiocommunications services, whilst promoting enterprise, innovation and competition.
- 3.5 This UK Radio Interface requirement provides the necessary technical information which facilitates access to the aeronautical mobile spectrum by making clear the assumptions that are made in planning the use of the aeronautical mobile spectrum in the UK. It is not the intention of this UK Radio Interface Requirement to duplicate or impose any additional 'essential requirements' of the Directive 1999/5/EC on products. Any specified parameters within this document are for the purpose of identifying product options and not as a national de facto product requirement.

**Table 3.1: Minimum requirements for the use of ground based HF SSB aeronautical radio equipment for voice and data link communications.**

<b>Mandatory Elements (1-9)</b>		
1	Frequency band (or bands)	2850–3025, 3400–3500, 4650–4700, 5480–5680, 6525–6685, 8815–8965, 10005–10100, 11275–11400, 13260–13360, 17900–17970, 21924–22000 kHz
2	Radio service	Aeronautical mobile (R) service
3	Application	Aeronautical communications: AGA communications (civil) and SAR (communications).
4	Channelling modulation	<p>Analogue Voice: 2K80J3EJN; HF Data Link (HF DL): 2K80J2DEN; SELCAL – 1K48H2BFN (Highest Audio Tone 1479.1 Hz). Also F1B, J7B and J9B are permitted.</p> <p>The frequencies 3023 MHz and 5680 MHz are used for search and rescue operations normally with class of emission J3E, but A3E and H3E classes of emission may also be used where maritime and land mobile services are involved.</p> <p>Sideband transmitted is on the higher side of the carrier (reference) frequency (Upper Sideband – USB).</p> <p>The carrier (reference) frequency is 1.4 kHz below the assigned frequency. The carrier (reference) frequencies are on multiples of 1 kHz separated by 3 kHz.</p> <p>The HF DL M-PSK<sup>1</sup> carrier is offset from the SSB carrier (reference) frequency by 1.440 kHz.</p> <p>In accordance with ICAO Annex 10 (Ref 1.1), as relevant.</p>
5	Transmit power limit <sup>2</sup>	<p>Maximum peak envelope power shall be 6 kW.</p> <p>Maximum peak envelope power for F1B shall be 1.5 kW</p>
6	Channel occupation rules	Analogue Voice: SELCAL <sup>3</sup> equipment may be used to provide selective calling; Data Link: HF DL uses TDMA <sup>4</sup> protocol. In accordance with ICAO Annex 10 (Ref 1.1), as relevant.
7	Duplex type/separation	N/A
8	Licensing Regime	Aeronautical navigation aids (NDB) – Station Identifiers will need to be issued. <sup>5</sup> - Individual Aeronautical Licence required.
9	Additional essential requirements	N/A

<sup>1</sup> M-PSK – M-ary Phase Shift Keying modulation.

<sup>2</sup> Radio site clearance considerations may impose restrictions on maximum power use on certain frequency assignments. (Radio site clearance is required for any aeronautical station with an e.r.p. greater than 18dBW (50W) and/or antenna height greater than 30 metres above ground level, or where an existing structure is increased in height by greater than 5 metres.)

<sup>3</sup> SELCAL – Selective Calling

<sup>4</sup> TDMA – Time Division Multiple Access

<sup>5</sup> See Reference 1.6 Schedule 8 Aeronautical Parts 1, 2 & 3 for limitations on WT Act Licences

<b>Informative Elements (10-13)</b>		
10	Frequency planning assumptions	The sideband transmitted shall be that on the higher frequency side of its carrier (reference) frequency. ICAO Annex 10 Volume V (Reference 1.2). ICAO Annex 10 Volume III (Reference 1.3). ITU RR Appendix 27 (Reference 1.4) CEPT/ERO Recommendation 74-01E (Reference 1.5).
11	References	ICAO Annex 10, Vol 3, see Ref 1.3
12	Remarks	Fixed transmitter, receiver and transceiver equipment types operating in the MF/HF Aeronautical Mobile (R) Service allocations between 2 and 30 MHz using Single Sideband (SSB) Amplitude Modulation for voice and data link communications. A more detailed description is contained in Annex 10 to the Convention on International Civil Aviation. See Ref 1.1
13	Notification Number	2005/502/UK

## Section 4

# Additional performance parameters

**(informative)**

It is suggested that manufacturers refer to the appropriate volumes of Annex 10 to the Convention on International Civil Aviation, aeronautical telecommunications, as amended, for relevant manufacturing standards and guidelines. [www.icao.int](http://www.icao.int).

Equipment which complies with this radio interface specification is additionally subject to the putting into service provisions of Article 10.1 of Regulation (EC) No. 552/2004 of 10 March 2004 on the interoperability of the European Air Traffic Management Network (the Interoperability Regulation)

ICAO Manual on HF Data Link (Doc 9741)

ARINC Characteristic 719 Airborne HF/SSB System

ARINC Characteristic 635 HF Data Link Protocols

ARINC Characteristic 753 HF Data Link System

CEPT/ERC/Recommendation 74-01E Unwanted Emissions in the Spurious Domain

Statutory Instrument 2003 No. 1902

The Wireless Telegraphy (Limitation of Number of Licences) Order 2003



## Section 5

# Contact details

**Ofcom, Riverside House, 2a Southwark Bridge Road, London, SE1 9HA**

Technical enquiries to the Ofcom Central Licensing Team:-

- Tel: 020 7981 3087
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- Website: <http://www.ofcom.org.uk/radiocomms/ifi/licensing/classes/aeronautical/>

## Section 6

# Document history

Version	Date	Changes
Draft	8 Aug 2005	Notified as Draft
1.0	2 Feb 2006	Initial Publication as final text.