

# UK Interface Requirements 2016 2016.1 to 2016.9

**Land mobile satellite systems**

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### Section 3

## References

- 1.1 EN 301 426 – Satellite Earth Stations and Systems (SES); Low data rate Land Mobile satellite Earth Stations (LMES) operating in the 1.5/1.6 GHz frequency bands.
- 1.2 EN 301 427 – Satellite Earth Stations and Systems (SES); Low data rate Land Mobile satellite Earth Stations (LMES) operating in the 11/12/14 GHz frequency bands.
- 1.3 EN 301 444 - Satellite Earth Stations and Systems (SES); Land Mobile Earth Stations (LMES) operating in the 1.5 GHz and 1.6 GHz bands providing voice and/or data communications.
- 1.4 EN 300 733 - Satellite Personal Communications Networks (S -PCN); Mobile Earth Stations (MES) including handheld earth stations, for S-PCN in the 1.6/2.4 GHz bands, providing voice and/or data communications under the Mobile Satellite Service (MSS).
- 1.5 EN 301 681– Satellite earth stations and systems (SES); Harmonized EN for mobile earth stations (MES) of geostationary mobile satellite systems, including handheld earth stations, for satellite personal communications networks (SPCN) in the 1.5/1.6 GHz bands under the mobile satellite service (MSS) covering the essential requirements under Article 3(2) of the Radio Equipment Directive (Directive 2014/53/EU).
- 1.6 EN 301 442 Satellite earth stations and systems (SES); Harmonized EN for mobile earth stations (MES), including handheld earth stations, for satellite personal communications networks (SPCN) in the 2.0 GHz bands under the mobile satellite service (MSS) covering the essential requirements under Article 3.2 of the Radio Equipment Directive (Directive 2014/53/EU).
- 1.7 EN 302 574 -1 - Satellite Earth Stations and Systems (SES); Harmonized standard for satellite earth stations for MSS operating in the 1 980 MHz to 2 010 MHz (earth-to-space) and 2 170 MHz to 2 200 MHz (space-to-earth) frequency bands. Part 1 - Complementary Ground Component (CGC) for wideband systems: Harmonized EN covering the essential requirements of article 3.2 of the Radio Equipment Directive (Directive 2014/53/EU).

## Section 2

# Foreword 2016 General

- 2.1 The Radio Equipment Directive (Directive 2014/53/EU) was implemented in the United Kingdom (UK) by the Radio Equipment Regulations 2016. In accordance with Articles 8 and 7 of Directive 2014/53/EU, this UK Interface Requirement contains the requirements for the licensing and use of land mobile satellite systems in the specified frequency bands.
- 2.2 Nothing in this UK Radio Interface Requirement shall preclude the need for equipment to comply with Directive 2014/53/EU.
- 2.3 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 2014/53/EU.
- 2.4 The requirements given in the main body of this UK Radio Interface Requirement will apply to land mobile satellite services in the UK.
- 2.5 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 land mobile satellite systems.
- 2.6 All UK Radio Interface Requirements notified under Directive 2015/1535/EU will be published and will be made available free of charge from the Ofcom web-site at <http://www.ofcom.org.uk>
- 2.7 Further information on this UK Radio Interface Requirement can be obtained from the technical enquiry contact given at the back of this document.

## Section 5

# 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 These UK Radio Interface Requirements give high level descriptions of how the spectrum in the UK is used for mobile satellite services. They do not prescribe technical interpretation of the 'essential requirements' of Directive 2014/53/EU.
- 3.3 IR 2016.1 to IR 2016.8 of this UK Radio Interface Requirement document stipulate the necessary equipment parameters for the licence exemption of mobile satellite services equipment in the UK. These taken together with the 'essential requirements' detailed in Article 3.2 of Directive 2014/53/EU constitute the minimum requirements for the installation and use of mobile satellite systems equipment within the UK. Nothing in these UK Interface Requirements shall preclude equipment from being placed on the market in the UK that complies with the 'essential requirements' specified in Directive 2014/53/EU.
- 3.4 The installation and use of mobile satellite user equipment meeting the minimum requirements outlined in IR 2016.1 to IR 2016.8 of this UK Radio Interface Requirement document, is exempt from licensing if it meets the requirements of the relevant exemption regulations. Details of the relevant exemption regulations are available from the Ofcom website <http://www.ofcom.org.uk>.
- 3.5 IR 2016.9 of this UK Radio Interface Requirement stipulates the necessary equipment parameters for the licensing of 2GHz land mobile satellite complimentary ground component base stations in the UK. It contains the relevant equipment parameters. These together with the 'essential requirements' detailed in Article 3.2 of Directive 2014/53/EU constitute the minimum equipment requirements for complimentary ground component services within the UK.
- 3.6 The technical parameters specified in the UK Radio Interface Requirement are applied to achieve the desired level of compatibility within the complimentary ground component services and with other radiocommunications services, whilst promoting enterprise, innovation and competition.
- 3.7 This UK Radio Interface requirement provides the necessary technical information which facilitates access to the land mobile satellite spectrum by making clear the assumptions that are made in planning the use of the land mobile satellite 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 2014/53/EU 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



# IR 2016.1

<b>Minimum equipment requirements for the use of land mobile satellite systems</b>		
<b>Mandatory Elements (1-9)</b>		
1	Radiocommunication Service	Land mobile satellite
2	Application	Land mobile satellite
3	Frequency band (or bands)	Earth to space 1997.5-2010.0 MHz (Space to Earth 2187.5-2200.0 MHz)
4	Channelling	N/A
5	Modulation/Occupied Bandwidth	N/A
6	Direction/separation	N/A
7	Transmit power Power Density	+9.8dBW/25kHz
8	Channel access and occupation rules	N/A
9	Authorisation Regime	Licence Exempt in accordance with requirements of Exemption Regulations.
10	Additional essential requirements According to Art 3.3 of Radio Equipment Directive 2014/53/EU	Operation with a Non-Geostationary satellite system
11	Frequency planning assumptions	N/A
<b>Informative Elements (10-13)</b>		
12	Planned Changes	
13	References	EN 301 442
14	Notification Number	
15	Remarks	Ofcom may impose additional restrictions on the maximum power used for specific frequencies and locations.

# IR 2016.2

<b>Minimum equipment requirements for the use of land mobile satellite systems</b>		
<b>Mandatory Elements (1-9)</b>		
1	Radiocommunication Service	Land mobile satellite
2	Application	Land mobile satellite
3	Frequency band (or bands)	Earth to space 14,000-14,250 MHz 12,500-12,750 MHz  (Space to Earth 10,700-11,700 MHz)
4	Channelling	N/A
5	Modulation/Occupied Bandwidth	
6	Direction/separation	N/A
7	Transmit power Power Density	19dBW
8	Channel access and occupation rules	N/A
9	Authorisation Regime	Licence Exempt in accordance with requirements of Exemption Regulations.
10	Additional essential requirements According to Art 3.3 of Radio Equipment Directive 2014/53/EU	N/A
11	Frequency planning assumptions	N/A
<b>Informative Elements (10-13)</b>		
12	Planned Changes	
13	References	EN 301 427
14	Notification Number	
15	Remarks	Ofcom may impose additional restrictions on the maximum power used for specific frequencies and locations.



# IR 2016.3

<b>Minimum equipment requirements for the use of land mobile satellite systems</b>		
<b>Mandatory Elements (1-9)</b>		
1	Radiocommunication Service	Land mobile satellite
2	Application	Land mobile satellite
3	Frequency band (or bands)	Earth to space 1626.5-1645.5 MHz 1646.5-1660.5 MHz  (Space to Earth 1525.0-1544.0 MHz 1545.0-1559.0 MHz)
4	Channelling	N/A
5	Modulation/Occupied Bandwidth	Bit-rates of up to 9,6 kbits/s
6	Direction/separation	N/A
7	Transmit power Power Density	+37dBW e.i.r.p.
8	Channel access and occupation rules	N/A
9	Authorisation Regime	Licence Exempt in accordance with requirements of Exemption Regulations.
10	Additional essential requirements According to Art 3.3 of Radio Equipment Directive 2014/53/EU	N/A
11	Frequency planning assumptions	N/A
<b>Informative Elements (10-13)</b>		
12	Planned Changes	
13	References	EN 301 426 MSS Low data rate ETSI
14	Notification Number	
15	Remarks	Ofcom may impose additional restrictions on the maximum power used for specific frequencies and locations.

# IR 2016.4

<b>Minimum equipment requirements for the use of land mobile satellite systems</b>		
<b>Mandatory Elements (1-9)</b>		
1	Radiocommunication Service	Land mobile satellite
2	Application	Land mobile satellite
3	Frequency band (or bands)	Earth to space 1610.0-1621.35 MHz) (space to Earth 2483.5-2500.00 MHz)
4	Channelling	N/A
5	Modulation/Occupied Bandwidth	CDMA carrier modulation
6	Direction/separation	N/A
7	Transmit power Power Density	-3dBW/4kHz e.i.r.p
8	Channel access and occupation rules	N/A
9	Authorisation Regime	Licence Exempt in accordance with requirements of Exemption Regulations.
10	Additional essential requirements According to Art 3.3 of Radio Equipment Directive 2014/53/EU	N/A
11	Frequency planning assumptions	N/A
<b>Informative Elements (10-13)</b>		
12	Planned Changes	
13	References	EN 300 733
14	Notification Number	
15	Remarks	Ofcom may impose additional restrictions on the maximum power used for specific frequencies and locations.

# IR 2016.5

<b>Minimum equipment requirements for the use of land mobile satellite systems</b>		
<b>Mandatory Elements (1-9)</b>		
1	Radiocommunication Service	Land mobile satellite
2	Application	Land mobile satellite
3	Frequency band (or bands)	Earth to space 1621.35-1626.5 MHz (Space to Earth 1621.35-1626.5 MHz)
4	Channelling	N/A
5	Modulation/Occupied Bandwidth	TDMA carrier modulation
6	Direction/separation	N/A
7	Transmit power Power Density	-3dBW/4kHz e.i.r.p
8	Channel access and occupation rules	N/A
9	Authorisation Regime	Licence Exempt in accordance with requirements of Exemption Regulations.
10	Additional essential requirements According to Art 3.3 of Radio Equipment Directive 2014/53/EU	N/A
11	Frequency planning assumptions	N/A
<b>Informative Elements (10-13)</b>		
12	Planned Changes	
13	References	EN 300 733
14	Notification Number	
15	Remarks	Ofcom may impose additional restrictions on the maximum power used for specific frequencies and locations.

# IR 2016.6

<b>Minimum equipment requirements for the use of land mobile satellite systems</b>		
<b>Mandatory Elements (1-9)</b>		
1	Radiocommunication Service	Land mobile satellite
2	Application	Land mobile satellite
3	Frequency band (or bands)	Earth to space 1626.5 - 1645,5 MHz 1646,5 MHz - 1660,5 MHz 1670-1675 MHz Space to earth 1518,0 MHz- 1544,0 MHz 1555,0 MHz - 1559,0 MHz
4	Channelling	N/A
5	Modulation/Occupied Bandwidth	N/A
6	Direction/separation	N/A
7	Transmit power Power Density	+33dBW e.i.r.p
8	Channel access and occupation rules	N/A
9	Authorisation Regime	Licence Exempt in accordance with requirements of Exemption Regulations.
10	Additional essential requirements According to Art 3.3 of Radio Equipment Directive 2014/53/EU	Operation with a Geostationary satellite system
11	Frequency planning assumptions	N/A
<b>Informative Elements (10-13)</b>		
12	Planned Changes	
13	References	EN 301 444
14	Notification Number	
15	Remarks	Ofcom may impose additional restrictions on the maximum power used for specific frequencies and locations.

# IR 2016.7

<b>Minimum equipment requirements for the use of land mobile satellite systems</b>		
<b>Mandatory Elements (1-9)</b>		
1	Radiocommunication Service	Land mobile satellite
2	Application	Land mobile satellite
3	Frequency band (or bands)	Earth to space 1626,5 MHz- 1645,5 MHz 1646,5 MHz - 1660,5 MHz 1670-1675 MHz Space to Earth 1518,0 MHz- 1544,0 MHz 1555,0 MHz - 1559,0 MHz
4	Channelling	N/A
5	Modulation/Occupied Bandwidth	N/A
6	Direction/separation	N/A
7	Transmit power Power Density	+15dBW e.i.r.p
8	Channel access and occupation rules	N/A
9	Authorisation Regime	Licence Exempt in accordance with requirements of Exemption Regulations.
10	Additional essential requirements According to Art 3.3 of Radio Equipment Directive 2014/53/EU	Operation with a Geostationary satellite system
11	Frequency planning assumptions	N/A
<b>Informative Elements (10-13)</b>		
12	Planned Changes	
13	References	EN 301 681
14	Notification Number	
15	Remarks	Ofcom may impose additional restrictions on the maximum power used for specific frequencies and locations.

# IR 2016.8

<b>Minimum equipment requirements for the use of land mobile satellite systems</b>		
<b>Mandatory Elements (1-9)</b>		
1	Radiocommunication Service	Land mobile satellite
2	Application	Land mobile satellite
3	Frequency band (or bands)	Earth to space 149 – 150 MHz (Space to Earth 137-138 MHz)
4	Channelling	N/A
5	Modulation/Occupied Bandwidth	N/A
6	Direction/separation	N/A
7	Transmit power Power Density	+10dBW/5kHz e.i.r.p
8	Channel access and occupation rules	N/A
9	Authorisation Regime	Licence Exempt in accordance with requirements of Exemption Regulations.
10	Additional essential requirements According to Art 3.3 of Radio Equipment Directive 2014/53/EU	Operation with a non- Geostationary satellite system
11	Frequency planning assumptions	N/A
<b>Informative Elements (10-13)</b>		
12	Planned Changes	
13	References	EN 301 721
14	Notification Number	
15	Remarks	Ofcom may impose additional restrictions on the maximum power used for specific frequencies and locations.

# IR 2016.9

Minimum equipment requirements for Complementary Ground Component Base stations operating in the band 2170-2200 MHz within a land mobile satellite system network: -		
<b>Mandatory Elements (1-9)</b>		
1	Radiocommunication Service	Complimentary ground component services
2	Application	Land mobile Complementary Ground Component associated with mobile satellite services
3	Frequency band (or bands)	2170.0-2200.0 MHz
4	Channelling	N/A
5	Modulation/Occupied Bandwidth	1 – 5 MHz
6	Direction/separation	Downlink
7	Transmit power	+65dBm EIRP +58dBm/MHz EIRP
8	Channel access and occupation rules	N/A
9	Authorisation Regime	WT Act licence required for Complementary Ground Component base stations
10	Additional essential requirements According to Art 3.3 of Radio Equipment Directive 2014/53/EU	
11	Frequency planning assumptions	N/A
<b>Informative Elements (10-13)</b>		
12	Planned Changes	
13	References	EN 302 574-1 - Base Stations
14	Notification Number	
15	Remarks	Ofcom may impose additional restrictions on the maximum power used for specific frequencies and locations.

## Section 4

# Additional Information

### (Informative)

Prescribed apparatus in the band 1610MHz to 1626.5MHz shall cease operation at or within a distance determined by Ofcom for each relevant radio astronomy site for the duration of any radio astronomy observation.

<b>Type</b>	<b>It is assumed for Spectrum Planning purposes that equipment will operate in accordance with following ECC Decisions or their notified replacement:-</b>
ECC Decision	ECC Decision (07)04 - Free circulation and use of mobile satellite Terminals operating in the Mobile-Satellite Service allocations in the frequency range 1-3 GHz
ECC Decision	ECC Decision (07)05 Exemption from individual licensing of land mobile satellite terminals operating in the Mobile-Satellite Service allocations in the frequency range 1-3 GHz.



# IR 2016.5

## Section 5

# Contact details

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

- Tel: 020 7981 3131
- Fax: 020 7981 3208
- Email: [spectrum.licensing@ofcom.org.uk](mailto:spectrum.licensing@ofcom.org.uk)
- Website: <http://www.ofcom.org.uk/radiocomms/ifi/licensing/classes/satellite/>



## Section

# Document history

Version	Date	Changes
1.0	15 Dec 2000	Initial publication
2.0	30 Jan 2001	Revised to include Thuraya satellite system.
3.0	21 Jan 2003	Revised to include Orbcomm and Space Checker satellite systems, and standards for Iridium and Globestar
3.1	26 Apr 2006	Rebranded to Ofcom format and updated for Inmarsat BGAN systems
4.0	July 2007	Removed Specific LMSS terminal Manufacturer type names
5.1	March 2011	Updated to the latest template and reformatted for an individual table for different user terminal types. Removed and updated the relevant ECC Decisions and ETSI informative references, added updated with CGC base station network parameters.
6.0	June 2013	Extended L band 1518-1525MHz 1670-1675 MHz added to items IR2016.6 & IR2016.7 -
7.0	January 2018	Replaced R&TTE Directive 1999/5/EC and Directive 98/34/EC with Radio Equipment Directive 2014/53/EU and Directive (EU) 2015/1535 respectively. Minor editorials