Ofcom
making communications work
for everyone

UK Interface Requirement 2077

Satellite Earth Station Networks

Publication date: September 2023
EU Notification number: 2022/7009/XI

Contents

Section

1. References 3
2. Foreword 5
3. Minimum requirements for operation 6
4. Additional performance parameters 11
5. Contact details 12
6. Document history 13

1. References

[1]	EN 301 428	Satellite Earth Stations and Systems (SES); Harmonized EN for Very Small Aperture Terminal (VSAT); Transmit-only, transmit/receive or receive-only satellite earth stations operating in the 11/12/14 GHz frequency bands covering essential requirements under article 3.2 of Directive 2014/53/EU
[2]	EN 302 186	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 Directive 2014/53/EU
[3]	EN 302 448	Satellite Earth Stations and Systems (SES); Harmonized EN for tracking Earth Stations on Trains (ESTs) operating in the 14/12 GHz frequency bands covering essential requirements under article 3.2 of Directive 2014/53/EU
[4]	EN 302 977	Satellite Earth Stations and Systems (SES); Harmonized EN for Vehicle-Mounted Earth Stations (VMES) operating in the 12/14 GHz frequency bands covering essential requirements under article 3.2 of Directive 2014/53/EU
[5]	EN 301 360	Satellite Earth Stations and Systems (SES); Harmonized EN for Satellite Interactive Terminals (SIT) and Satellite User Terminals (SUT) transmitting towards geostationary satellites in the 27,5 GHz to 29,5 GHz frequency bands covering essential requirements under article 3.2 of Directive 2014/53/EU
[6]	EN 301 459	Satellite Earth Stations and Systems (SES); Harmonized EN for Satellite Interactive Terminals (SIT) and Satellite User Terminals (SUT) transmitting towards satellites in geostationary orbit in the 29,5 GHz to 30,0 GHz frequency bands covering essential requirements under article 3.2 of Directive 2014/53/EU
[7]	EN 301 489-12	Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 12: Specific conditions for Very Small Aperture Terminal, Satellite Interactive Earth Stations operated in the

		frequency ranges between 4 GHz and 30 GHz in the Fixed Satellite Service (FSS)
[8]	EN 300 673	Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for Very Small Aperture Terminal (VSAT), Satellite News Gathering (SNG), Satellite Interactive Terminals (SIT) and Satellite User Terminals (SUT) Earth Stations operated in the frequency ranges between 4 GHz and 30 GHz in the Fixed Satellite Service (FSS)
[9]	EN 303 979	Satellite Earth Stations and Systems (SES); Harmonised Standard for Earth Stations on Mobile Platforms (ESOMP) transmitting towards satellites in non-geostationary orbit, operating in the 27,5 GHz to 29,1 GHz and 29,5 GHz to 30,0 GHz frequency bands covering the essential requirements of article 3.2 of the Directive 2014/53/EU
[10]	EN 303 980	Satellite Earth Stations and Systems (SES); Harmonised Standard for fixed and in-motion Earth Stations communicating with non-geostationary satellite systems (NEST) in the 11 GHz to 14 GHz frequency bands covering essential requirements of article 3.2 of Directive 2014/53/EU

2. Foreword

2.1 The Radio Equipment Regulations 2017 (SI 2017/1206) set out the obligations on economic operators for placing radio equipment on the market. This UK Interface Requirement 2077 contains the requirements for licensing satellite earth station networks in the specified frequency bands.

2.2 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 2077 for the stated equipment types and for the stated frequency bands.

2.3 This UK Interface Requirement 2077 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 satellite earth station networks.

2.4 All UK Interface Requirements are published and made available free of charge from the Ofcom website.

2.5 Further information on this UK Interface Requirement can be obtained from the contacts provided in section 5 of this document.

3. Minimum requirements for operation

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 Interface Requirement 2077 gives a high level description of how the spectrum is used for satellite earth station networks. It does not prescribe technical interpretation of the 'essential requirements' of the Radio Equipment Regulations 2017.

3.3 This UK Interface Requirement 2077 therefore stipulates the necessary equipment parameters for the licensing of satellite earth station. Tables 3.1 and 3.2 contain the relevant equipment parameters. These together with the 'essential requirements' detailed in Regulation 6 of Radio Equipment Regulations 2017 constitute the minimum equipment requirements for earth station networks.

3.4 The technical parameters specified in this UK Interface Requirement 2077 are applied to achieve the desired level of compatibility within the satellite earth station networks and with other radiocommunications services, whilst promoting enterprise, innovation and competition.

3.5 This UK Interface Requirement 2077 provides the necessary technical information which facilitates access to the satellite earth station networks spectrum by making clear the assumptions that are made in planning the use of the satellite earth station networks spectrum. It is not the intention of this UK Interface Requirement 2077 to duplicate or impose any additional 'essential requirements' of the Radio Equipment Regulations 2017 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 Satellite Earth Station Networks operating with Geostationary satellites		
Mandatory (1-10)		
1	Radiocommunication Service	Fixed-Satellite Service
2	Application	Satellite Earth Station Network
3	Frequency band	Land and maritime stations: 14.0 – 14.5 GHz[1], 27.5 – 27.8185 GHz, 28.4545 – 28.8265 GHz and 29.4625 – 30 GHz[2] Aeronautical stations: 14.0 – 14.47 GHz, 27.5 – 27.8185 GHz, 28.4545 – 28.8265 GHz and 29.4625 – 30 GHz.
4	Channeling	n/a
5	Modulation/Occupied bandwidth	n/a
6	Direction/Separation	n/a
7	Transmit power/Power density	e.i.r.p from a single terminal ≤ 55 dBW[3]
8	Channel access and occupation rules	n/a
9	Authorisation regime	Light Licence
10	Additional essential requirements	n/a
Informative (11-14)		
11	Frequency planning assumptions	n/a
12	Reference	Harmonised Standards EN 301 428 [1]; EN 302 186 [2]; EN 302 448 [3]; EN 302 977 [4]; EN 301 360 [5]; EN 301 459 [6]; EN 301 489-12 [7]; EN 300 673 [8]
13	Remarks	**Note 1:** Prior to operation of an earth station within the perimeter fence of an aerodrome, permission must be obtained from the relevant aerodrome authority.

[1] The elevation angle of the terminal shall be higher than 5°
[2] The elevation angle of the terminal shall be higher than 3°
[3] Terminals transmitting with e.i.r.p. > 55 dBW require individual clearance by the UK administration and registration of the terminal(s) against the licence

		Note 2: For terminals transmitting with e.i.r.p. > 55 dBW, individual clearance is only usually possible when the terminal is located at a fixed location. **Note 3:** In the bands 27.5 – 27.8185 GHz, 28.4545 – 28.8265 GHz and 29.4625 – 30 GHz, land stations that transmit with e.i.r.p. ≤ 55 dBW are exempt from licensing (see UK Interface Requirement 2066)
14	Notification Number	2022/7009/XI

Table 3.2: Minimum requirements for the use of Satellite Earth Station Networks operating with Non-geostationary satellites		
Mandatory (1-10)		
1	Radiocommunication Service	Fixed-Satellite Service
2	Application	Satellite Earth Station Network
3	Frequency band	Land and maritime stations: 14.0 – 14.5 GHz[4], 27.5 – 27.8185 GHz, 28.4545 – 28.8265 GHz and 29.5 – 30 GHz[5] Aeronautical stations: 14.0 – 14.47 GHz
4	Channeling	n/a
5	Modulation/Occupied bandwidth	n/a
6	Direction/Separation	n/a
7	Transmit power/Power density	e.i.r.p from a single terminal ≤ 55 dBW[6]
8	Channel access and occupation rules	n/a
9	Authorisation regime	Light licence
10	Additional essential requirements	n/a
Informative (11-14)		
11	Frequency planning assumptions	n/a
12	Reference	EN 303 979 EN 303 980
13	Remarks	**Note 1**: Prior to operation of an earth station within the perimeter fence of an aerodrome, permission must be obtained from the relevant aerodrome authority. **Note 2:** For terminals transmitting with e.i.r.p. > 55 dBW, individual clearance is only

[4] The elevation angle of the terminal shall be higher than 5°
[5] The elevation angle of the terminal shall be higher than 3°
[6] Terminals transmitting with e.i.r.p. > 55 dBW require individual clearance by the UK administration and registration of the terminal(s) against the licence.

		usually possible when the terminal is located at a fixed location. **Note 3:** The earth stations operating with non-geostationary satellites shall ensure compliance with the equivalent power flux-density limitations specified in Article 22 of the ITU Radio Regulations.
14	Notification Number	2022/7009/XI

4. Additional performance parameters

(informative)

4.1 None specified

5. Contact details

Ofcom Spectrum Licensing, PO Box 1285 Warrington, WA1 9GL

Tel: 020 7981 3131

Email: spectrum.licensing@ofcom.org.uk

Website: https://www.ofcom.org.uk/manage-your-licence/radiocommunication-licences/satellite-earth/earth-stations

6. Document history

Version	Date	Changes
0.1	Jan 2009	Draft Published
1.0	May 2009	Final document published
2.0	July 2010	Transmit power level change
3.0	January 2018	Included Non-Geostationary use
4.0	January 2023	Access to 14-14.5 GHz (up to 14.47 GHz for aeronautical)
4.1	September 2023	Added maritime Non-geostationary use