

Licensing Procedures Manual For Satellite (Earth Station Network) Applications

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1 PURPOSE OF MANUAL

This is the Licensing Procedures Manual for Satellite (Earth Station Network) applications and complements the more general licensing policy and procedures described in the overarching Licensing Policy Manual of Ofcom.

This Manual provides information specifically relevant to the licensing of Satellite (Earth Station Network). The manual will be subject to revision as necessary to align with current technological developments for reasons related to the effective and appropriate use of the spectrum.

The criteria contained in the licensing manual along with UK Radio Licence Interface Requirement 2077 apply to the licensing of Satellite (Earth Station Network) operating in the UK.

2 RELEVANT LEGISLATION AND POLICY

2.1 Radio Equipment Directive (Directive 2014/53/EU)

The Radio Equipment Directive (RED) is European legislation which sets out regulatory compliance requirements for radiocommunications equipment in the European Union. The RED updates and replaces Directive 1999/5/EC, the Radio and Telecommunications Terminal Directive (R&TTE Directive) with effect from 13 June 2016. There are many similarities between the RED and R&TTE; equipment must conform with a set of essential requirements, and compliance with harmonised standards offers a presumption of conformity.

A transitional period applies so existing radio equipment covered by the RED but which has been tested and certified in conformity with the R&TTE Directive before 13 June 2016 may continue to be placed on the market until 12 June 2017 (i.e. up to one year after the RED comes into effect) and indeed can be put into service after that date. From 13 June 2017, however, equipment covered by the RED can only be placed on the market if it conforms with the RED.

2.2 Wireless Telegraphy (WT) Act 2006 – Licensing

Installation and use of radio equipment is authorised by a licence issued under the WT Act 2006.

2.3 Wireless Telegraphy (WT) Act 2006 - Spectrum Pricing

The WT Act 2006 provides the Ofcom with spectrum management legislation to manage the spectrum more effectively and promote its optimal utilisation. Licence fees are set out annually in regulations made under the WT Act 2006.

2.4 Broadcasting Act 1990

For satellite broadcasting, a Broadcasting Act licence may also be required.

2.5 Directive 2015/1535/EU

Directive 2015/1535/EU is intended to help avoid the creation of trade barriers within the European Community. It requires Member States to notify the Technical Regulations pertinent to a particular licence type to the European Commission to allow Member States the opportunity to comment.

All new and revised Technical Regulations are notified to the EC under the Directive notification procedures. All Technical Regulations are subject to a 3-month mandatory 'stand still period', for consultation which starts when they are received by the EC. Following the 'stand still period' and provided no objections are received from Member States then the new or amended Technical Regulation can be published and implemented.

2.6 Enforcement

Ofcom provides an enforcement service which aims to ensure that licensees operate within the conditions of their licence. On the whole, this requires us to investigate complaints of interference affecting existing licensees.

3 EQUIPMENT REQUIREMENTS

3.1 Minimum Requirements

The "essential requirements" of Article 3.2 of Directive 2014/53/EU include the minimum system requirements that are deemed necessary for reasons related to the effective and appropriate use of the radio spectrum. The information sheet OFW 241 gives a high level description of how spectrum in the UK is used for satellite systems.

3.2 Operational Requirements

Operators are required to conform to all conditions defined within the licence. Details can be found in Section 13.

All equipment types used by earth station network licensees shall achieve the necessary minimum standards sufficient to protect adjacent satellites and other terrestrial services from interference.

All transmissions to the satellite must be authorised by the Satellite Operator and the licensed apparatus must comply with their published technical Requirements and the UK Frequency Allocation Tables.

The level of off axis equivalent isotropically radiated power (e.i.r.p.) emitted by any earth station brought into service after June 2000 shall not exceed those limits specified in Radio Regulations RR 22.26-22.39 in bands where these limits are applied.

The relevant satellite is either fully operational or will be fully operational in the bands applied for within 3 years of the date of application at an orbital location known to the UK administration.

The Apparatus used for transmission complies with the Radio Equipment Directive and UK National Interface Requirement 2077.

The Antenna Radiation Pattern Envelope meets the minimum performance specified by ITU Recommendation ITU-R S.465, or ITU-R.S.580 for antennas installed after 1995.

Terminals that are included as part of a network licence shall implement independent local control and monitoring functions at the terminal, and be authorised, supervised and administered by a Network Control and Monitoring centre.

An emergency contact must be identified for the Network control and Monitoring Centre.

The Licensee shall have the facility to disable individual terminal transmission.

Hub stations located within the UK that provide the necessary centralised control and monitoring function shall be licensed on the same basis as permanent earth stations.

For network earth stations operating in a MESH configuration, the network operator must nominate and notify Ofcom of those earth station(s) located in the UK which have independent centralised control and monitoring functionality and possess the capability to suppress transmissions from any earth station within the network.

4 TAKE-OVERS, TRANSFERS AND CHANGES OF NAME

Details of the legal provisions surrounding changes to a licensee's circumstances are set out in the overarching Ofcom Licensing Policy Manual.

5 SITE CLEARANCE OF NETWORK TERMINALS

Clearance and authorisation of individual terminals may be required depending on the location and radiated power. Details of the specific cases where clearance is required are given in the licence (see Section 13).

6 PLANNING AND PROTECTION

Licensees must ensure that their apparatus (i.e. equipment with antennas) meet current planning requirements, and where the antennas may constitute a hazard, particularly to aircraft, then it is the applicant's responsibility to obtain appropriate approvals.

7 FREQUENCY BANDS

At the present time, all network earth station transmissions are restricted to operation within the frequency bands 14.0 – 14.25 GHz, 27.5 – 27.8185 GHz, 28.4545 – 28.8265 GHz and 29.4625 – 30 GHz.

8 DISCLOSURE OF INFORMATION

Since Satellite (Earth Station Network) licences are tradable, information relating to the licence will be published in the Ofcom Wireless Telegraphy Register.

9 DESCRIPTION OF LICENCE PRODUCT

See section 13 which details the terms, provisions and limitations of the licence.

10 LICENCE APPLICATIONS

10.1 General

Prior to terminal transmission at a particular location, the network earth station operator must hold a licence and, where necessary, ensure that clearance for the terminal is obtained in accordance with the conditions given in the licence.

10.2 Making your Application

Before making an application, you should remember that no matter who applies on your behalf, you are still legally responsible for all actions carried out on your proposed radio system. Any false information may lead to the granting of the licence being refused or

revoked. Also, the licence application form does carry legal status from an evidential point of view and applicants are therefore asked to sign the declaration.

Form OfW 103 should be used for applications in geographical areas and frequency bands managed by Ofcom.

Where applicable, form OfW 453 should be used to apply for specific clearance of an earth station operating within the network.

You can obtain a copy of these application forms on the Ofcom website, www.ofcom.org.uk.

10.3 How to complete your application forms

It is essential that all questions are answered as fully as possible. Incomplete forms will be returned to the applicant. You should consider each question mandatory unless otherwise stated.

10.3.1 New Customers

If you are a new customer, it is particularly important that you include all contact details on your application form, so that Ofcom can set up a new customer account.

10.3.2 Checking your application

Please ensure that you fill the licence application legibly, completely and accurately. Any missing information may result in a delay to the process or the form being returned. Information subsequently found to be inaccurate may render any licence invalid.

10.3.3 Licence Fees

There is a fixed charge for a Satellite (Earth Station Network) licence, which covers administration. An additional one-off fee will be charged for each terminal that requires site clearance by Ofcom. Details are provided in the relevant Statutory Instrument (S.I.) on Wireless Telegraphy (Licence Charges) Regulations, available from the Office of Public Sector Information website at www.opsi.gov.uk.

10.3.4 Payment Method

New customers will be billed on issue of the licence. Amendments will be billed on renewal of the amended licence. Permitted methods of payment are described in the Ofcom generic Licensing Policy Manual.

10.3.5 Where to send your application form

Please email form OfW 103 to Ofcom's spectrum licensing team:

Spectrum.Licensing@ofcom.org.uk

11 DISCLAIMER

Revisions to this document will be done periodically or when there is a substantive need to update the document. This document can therefore only be fully accurate at the time of writing and Ofcom apologises for any inaccuracies that may occur between major revisions. Please contact Ofcom if you have any queries or concerns.

12 CONTACT DETAILS

For information regarding the Satellite (Earth Station Network) licence, please contact:

Ofcom
FAO Spectrum Licensing
PO Box 1285
Warrington
WA1 9GL

Email: Spectrum.Licensing@ofcom.org.uk

Website: www.ofcom.org.uk/manage-your-licence

Phone: 020 7982 3131

13 THE SATELLITE (EARTH STATION NETWORK) LICENCE

Wireless Telegraphy Act 2006

Satellite (Earth Station Network)

Sector/class/product	<Product>
Licence number	<Lic_No>
Licensee	<Lic_Name>
Licensee address	<Address>
Licence first issue date	<Issue_Date>
Licence version date	<Date>
Payment interval	<Year>

1. This Licence is issued by the Office of Communications ("Ofcom") on <Date> and replaces any previous authority granted in respect of the service subject to this Licence by Ofcom or by the Secretary of State.
2. This Licence authorises <Lic_Name> ("the Licensee") to establish, install and/or use radio transmitting and/or receiving stations and/or radio apparatus as described in the schedule(s) (hereinafter together called "the Radio Equipment") subject to the terms set out below and subject to the terms of the General Licence Conditions booklet. (Version OF195. 1).

ISSUED BY OFCOM

**SATELLITE (EARTH STATION NETWORK) LICENCE
SCHEDULE 1 TO LICENCE NUMBER <Lic_No>
TERMS, PROVISIONS AND LIMITATIONS COVERED BY THIS LICENCE**

This schedule forms part of Licence <Lic_No>, issued to <Lic_Name>, the Licensee on <Date>, and describes the terms and equipment specifications covered by this licence.

1. The Licensee may establish and use:

Permanent, transportable or mobile sending and receiving Network Earth Station(s) ("the Station(s)") for the purpose of providing Wireless Telegraphy links between the Station(s) and Geostationary or Non-Geostationary Satellite(s).

2. Limitations on use

The Stations(s) operating with Geostationary Satellites shall:

- a) transmit within one or more of the following frequency ranges: 14.0-14.25 GHz, 27.5 - 27.8185 GHz, 28.4545 - 28.8265 GHz, 29.4625 - 30 GHz;
- b) transmit only to the satellite and its associated orbital longitude specified in Schedule 2;

Land Station(s) operating with Non-Geostationary Satellites shall:

- c) transmit within one or more of the following frequency ranges: 14.0-14.25 GHz, 27.5 - 27.8185 GHz, 28.4545 - 28.8265 GHz, 29.5 - 30 GHz;
- d) transmit only to the satellite network specified in Schedule 2;

Aeronautical Station(s) operating with Non-Geostationary Satellites shall:

- e) transmit within the frequency range 14.0-14.25 GHz;
- f) transmit only to the satellite network specified in Schedule 2.

Additionally:

- g) stations(s) that transmit with e.i.r.p. greater than 55 dBW shall operate only with prior consent from Ofcom and registration of the station(s) against the licence;
- h) station(s) that transmit within the frequency range 14.0 - 14.25 GHz inclusive shall not operate at any location that is less than or equal to 5 km from the two geographical locations specified in Schedule 3 without prior consent from Ofcom and registration of the station(s) against the licence;
- i) station(s) that transmit with e.i.r.p. greater than 50 dBW and less than 55 dBW (50 dBW < e.i.r.p. < 55 dBW) in the frequency range 14.0 - 14.25 GHz inclusive shall not operate at any location that is greater than 5 km and less than or equal to 7 km from the two geographical locations specified in Schedule 3 without prior consent from Ofcom and registration of the station(s) against the licence; and
- j) station(s) shall not operate within the perimeter fence of any of the aerodromes specified in Schedule 4 without prior consent from the Civil

Aviation Authority or stated Airport Authority.

3. Apparatus

The Licensee shall ensure that:

- a) The apparatus comprised in the Station(s) ("the Apparatus") is so designed, constructed, maintained and operated, that its use does not cause any undue interference to other users of the spectrum;
- b) The apparatus complies with (and is maintained in accordance with) the relevant performance specification(s) published by the operator(s) of the Geostationary or Non-Geostationary Satellite(s);
- c) 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; and
- d) The apparatus used for transmission complies with the Radio Equipment Directive and the appropriate UK National Interface Requirements.

4. Additional conditions for mobile operation

- a) The Radio Equipment shall be established or installed so that transmissions from the Radio Equipment may only be made when the Radio Equipment's operation is enabled by the crew of the vehicle, aircraft, vessel or train upon which it is mounted, and under the operational control of the Network Control Facility. The Radio Equipment shall provide the crew with a means immediately to terminate transmissions;
- b) Where an aircraft or vessel is registered in the United Kingdom, Channel Islands or the Isle of Man, the Licensee shall ensure that all Radio Equipment on board that aircraft is endorsed by either a separate licence or exemption under the Wireless Telegraphy Act 2006;
- c) Transmissions from the Radio Equipment shall automatically be terminated on loss or significant degradation of the downlink signal from the relevant Satellite;
- d) For operation with Geostationary Satellites, the Radio Equipment shall employ a stabilised platform with the ability to maintain a pointing accuracy ± 0.2 degrees towards the relevant Geostationary Satellite throughout transmissions; and
- e) For operation with Geostationary Satellites, the maximum EIRP at angles greater than or equal to 2.5 degrees from the antenna main beam axis shall not exceed 20 dBW/40 kHz from any individual station.

5. National and international obligations

- a) The relevant satellite data shall have been submitted to ITU in accordance with established ITU procedures; and
- b) All transmissions from the Radio Equipment must be terminated prior to any change of location; unless the apparatus used for transmission is designed for mobile operation and incorporates a stabilised platform or is operating

under a specific exemption authorised by Ofcom.

6. Requirements specific to Satellite (Earth Station Network) Licences

- a) The Licensee shall keep a record of the operational characteristics of all terminals in the network, including the locations of fixed installations or, for mobile operation, details of the vehicles, aircraft, vessels or trains on which the terminals are installed and the associated route or defined area of operation, which Ofcom may wish to have access to for enforcement purposes;
- b) The Radio Equipment shall implement independent local control and monitoring functions at the terminal, and be authorised, supervised and administered by a Network Control and Monitoring centre;
- c) The Licensee shall have the facility to disable individual terminal transmission; and
- d) For satellite networks in MESH configuration, the network operator must nominate and notify Ofcom of those earth station(s) located in the UK which have independent centralised control and monitoring functionality and possess the capability to suppress transmissions from any earth station within the network. Earth stations that are capable of dynamic assignment as point-to-multipoint and point-to-point configuration may only be licensed as permanent earth stations.

7. Interpretation

In this and subsequent schedule(s):

- a) “Earth Station” means a radio transmitter located on the surface of the earth or mounted on a vehicle, aircraft, vessel or train and intended for communication with one or more satellites;
- b) “Geostationary Satellite” means a satellite in geostationary orbit which remains approximately in a fixed position relative to a position on the surface of the earth;
- c) “Non-Geostationary Satellite” means a satellite that does not remain fixed relative to a position on the surface of the earth; and
- d) “IR” means the United Kingdom Radio Interface Requirement published by Ofcom in accordance with Article 8 of the Radio Equipment Directive (Directive 2014/53/EU of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to the making available of radio equipment on the market (known as the Radio Equipment Directive)).

Notes

1. This Licence does not affect the requirement, when necessary, to obtain licences or authorisations under other Acts, such as the Broadcasting Act.
2. Some terminal installations require Local Authority Planning Approval. Advice should be sought from the Department for Business, Enterprise and

Regulatory Reform and the appropriate Local Authority planning department.

3. The licensee must apply for a variation of the licence from Ofcom before making any changes which may contravene the conditions of the licence.
4. Technical terms used in clause 2 shall have the meanings assigned to them in the ITU Radio Regulations.
5. For Radio Equipment installed on aircraft, licensees are advised that they must comply with Civil Aviation Authority (CAA) airworthiness requirements and regulations.
6. Further information, in respect of airworthiness requirements and certification requirements before installation, can be obtained by contacting the Civil Aviation Authority (CAA):

Civil Aviation Authority

CAA House
45-59 Kingsway
London
WC2B 6TE

Tel: 020 7379 7311

[<http://www.caa.co.uk/>](http://www.caa.co.uk/)

SCHEDULE 2

Licence No	<Lic_No>	Licence version date	<Date>	Payment Interval	1 year
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Earth Station Network Name	Emergency Telephone Number (24 Hours)
<Network_name>	<Emergency_telephone>

Network Type	Satellite Type	Satellite / Satellite Network Name	Geostationary Orbital Longitude (degrees)
<Network_type>	<Geostationary/Non-Geostationary>	<Sat_name>	<Orbit_Long>

Frequency band
14.0 – 14.25 GHz 27.5 – 27.8185 GHz 28.4545 – 28.8265 GHz 29.4625 – 30 GHz (GSO) 29.5 – 30 GHz (NGSO)

Operations are subject to the provision of Article 4.4 of the ITU Radio Regulations (non-interference basis to users of this spectrum) prior to international coordination.

SCHEDULE 3

Restrictions on equipment to be located within 7 km of the following National Grid References apply - see Schedule 1, Sections 2 h) and i) for further details.

SE 20900 56100

SS 20500 12600

SCHEDULE 4

Permission to operate equipment subject to this licence from any location within the perimeter fence of the aerodromes listed below must be obtained from either the CAA or the Airport Authority.

CAA Contact: 0207 453 6531

Aerodrome name	Address	Postcode	Telephone	UK/CI/NI	Easting	Northing	Aerodrome POC
Aberdeen / Dyce	Aberdeen Airport	AB21 7DU	01224 723714	UK	387997	812609	Duty Tels Officer
Alderney	Alderney Airport	GY9 3AJ	01481 822851	CI	556723	5506468	Senior Air Traffic Controller
Belfast Aldergrove	Belfast International Airport	BT29 4AB	028 9448 4281	NI	315195	380283	Duty Air Traffic Engineer
Belfast City	Belfast City Airport	BT3 9JH	028 9045 4871	NI	337483	376510	ATC Supervisor
Benbecula	Benbecula Aerodrome	HS7 5LA	01870 602051	UK	78483	855733	Senior Air Traffic Controller
Biggin Hill	Biggin Hill Airport	TN16 3BN	01959 574677	UK	541691	161064	ATS Manager
Birmingham	Birmingham International Airport	B26 3QJ	0121 780 0922	UK	417220	284022	Duty Engineering Officer
Blackpool	Blackpool Airport	FY4 2QY	01253 343434	UK	332307	431071	Senior Telecommunications Officer
Bournemouth	Bournemouth International Airport	BH23 6SE	01202 364150	UK	411201	97844	ATS Manager
Bristol	Bristol Airport	BS48 3DY	08701 212747	UK	350055	165098	Air Traffic Engineering Manager
Cambridge	Cambridge Airport	CB5 8RX	01223 293737	UK	548723	258544	Senior Air Traffic Controller
Cardiff	Cardiff International Airport	CF62 3BD	01446 712562	UK	306643	167265	Duty Engineering Officer
Carlisle	Carlisle Airport	CA6 4NW	01228 573629	UK	348265	560609	Senior Telecommunications Officer
Coventry	Coventry Airport	CV8 3AZ	02476 308638	UK	435519	274761	Senior Air Traffic Engineer
Cranfield	Cranfield Aerodrome	MK43 0AL	01234 754761	UK	494909	242446	Manager ATS
Dundee	Dundee Airport	DD2 1UH	01382 643242	UK	336868	729382	Senior Air Traffic Controller
Doncaster/Sheffield	Robin Hood Airport	DN9 3RH	01302 624870	UK	46603	39807	ATC Manager
East Midlands	East Midlands Airport	DE74 2SA	01332 852910	UK	445367	326168	Duty Engineering Officer
Edinburgh	Edinburgh Airport	EH12 9DN	0131 317 7638	UK	314389	673842	Duty Air Traffic Engineer
Exeter	Exeter Airport	EX5 2BD	01392 367433	UK	300326	93702	Senior Air Traffic Controller

Aerodrome name	Address	Postcode	Telephone	UK/CI/NI	Easting	Northing	Aerodrome POC
Farnborough	Farnborough Airport	GU14 6XA	01252 526015	UK	485452	153678	Senior Air Traffic Controller
Filton	Filton Aerodrome	BS99 7AR	0117 969 9094	UK	359103	180229	Senior Air Traffic Controller
Glasgow	NATS, Control Tower	PA3 2SG	0141 840 8029	UK	247869	666993	Manager Engineering
Gloucestershire	Gloucestershire Aerodrome	GL51 6SR	01452 857700	UK	388598	221747	Duty Aerodrome Controller
Guernsey	Guernsey Airport	GY8 0DJ	01481 237766	CI	528960	5476102	Senior Air Traffic Controller
Hawarden	Hawarden Airport	CH4 0DR	01244 522012	UK	334748	364998	Senior Air Traffic Controller
Humberside	Humberside Airport	DN39 6YH	01652 682022	UK	509295	409914	Air Traffic Manager
Inverness	Inverness Airport	IV2 7JB	01667 464293	UK	277380	851836	ATC Inverness
Isle of Man	Isle of Man Airport	IM9 2AS	01624 821600	UK	228463	468452	Senior Air Traffic Engineer
Jersey	Jersey Airport	JE1 1BW	01534 492226	CI	558699	5451100	Senior Air Traffic Controller
Kirkwall	Kirkwall Airport	KW15 1TH	01856 886205	UK	348020	1008196	Senior Air Traffic Controller
Lands End / St Just	Lands End Aerodrome	TR19 7RL	01736 788944	UK	137630	28983	Senior Air Traffic Controller
Leeds Bradford	Leeds Bradford International Airport	LS19 7TU	0113 391 3277	UK	422418	441129	Duty Air Traffic Engineer
Liverpool	Liverpool Airport Plc	L24 1YD	0151 288 4300	UK	343507	382196	Senior Air Traffic Controller
London City	London City Airport	E16 2PX	020 7646 0205	UK	542674	180487	Duty Air Traffic Engineer
London Gatwick	London (Gatwick) Airport	RH6 0NP	01293 601060	UK	526676	140318	Duty Air Traffic Engineer
London Luton	London Luton Airport	LU2 9LY	01582 395029	UK	512422	220804	Duty Air Traffic Engineer
London Stansted	London Stansted Airport	CM24 1QW	01279 669316	UK	553916	223081	Duty Air Traffic Engineer
Londonderry /Eglinton	City of Derry Airport	BT47 3PY	028 7181 1099	NI	253681	422039	Senior Air Traffic Engineer
Manchester	Manchester Airport	M90 1QX	0161 499 5025	UK	381796	384132	Duty Air Traffic Engineer
Manchester Woodford	Manchester Woodford	SK7 1QR	0161 439 3383	UK	390174	382355	Senior Air Traffic Controller
Manston	Kent International Airport	CT12 5BP	01843 825063	UK	633140	165662	Senior Air Traffic Controller
Newcastle	Newcastle Airport	NE13 8BZ	0191 214 3244	UK	419802	571483	Senior Air Traffic Controller
Northolt	RAF Northolt	HA4 6NG	020 8833 8228	UK	509755	184987	Air Traffic Supervisor

Aerodrome name	Address	Postcode	Telephone	UK/CI/NI	Easting	Northing	Aerodrome POC
Norwich	Norwich Airport	NR6 6JA	01603 420645	UK	622014	313753	Tels/Engineering
Oxford/ Kidlington	Oxford Airport	OX5 1RA	01865 844272	UK	446949	215594	Senior Air Traffic Controller
Pembrey	Pembrey Airport	SA16 0HZ	01554 891534	UK	240360	204220	Senior Air Traffic Controller
Plymouth	Plymouth City Airport	PL6 8BW	01752 515341	UK	250511	60229	Senior Air Traffic Controller
Prestwick	Glasgow Prestwick International Airport	KA9 2PL	01292 511107	UK	236746	626815	Senior Air Traffic Controller
Redhill	Terminal Building	RH1 5YP	01737 823377	UK	530105	147698	Senior Air Traffic Controller
Scatsta	Scatsta Aerodrome	ZE2 9QP	01806 242791	UK	438844	1172284	Senior Air Traffic Controller
Scilly Isles / St Marys	St Mary's Airport	TR21 0NG	01720 422677	UK	92020	10300	Senior Air Traffic Controller
Shoreham	Shoreham Airport	BN4 5FJ	01273 467377	UK	519999	105406	Senior Air Traffic Controller
Southampton	Southampton Airport	SO18 2NL	023 8062 7113	UK	445278	116962	Duty Air Traffic Engineer
Southend	London Southend Airport	SS2 6YF	01702 608120	UK	586898	189290	Senior Air Traffic Controller
Stornoway	Stornoway Aerodrome	HS2 0BN	01851 707415	UK	145851	933141	Senior Air Traffic Controller
Sumburgh	Sumburgh Airport	ZE3 9JP	01950 460173	UK	439533	1110613	Senior Air Traffic Controller
Swansea	Swansea Aerodrome	SA2 7JU	01792 204063	UK	256904	191635	Senior Air Traffic Controller
Teeside	Teeside International Airport Ltd	DL2 1LU	01325 332811	UK	437041	512801	Senior Air Traffic Controller
Warton	British Aerospace	PR4 1AX	01772 852374	UK	341805	427980	Senior Air Traffic Controller
Wick	Wick Aerodrome	KW1 4QP	01955 602215	UK	336317	952799	Senior Air Traffic Controller
Wolverhampton	Wolverhampton Aerodrome	DY7 5DY	01384 221378	UK	382473	291103	Senior Air Traffic Controller
Wycombe Air Park / Booker	Wycombe Air Park	SL7 3DP	01494 529261	UK	482630	190993	Senior Air Traffic Controller
Yeovil / Westland	Yeovil Aerodrome	BA20 2YB	01935 475222	UK	353823	115831	Senior Air Traffic Controller

14 DEFINITIONS

Fixed Service: A radiocommunication service between specified fixed points

Fixed Satellite Service: A radiocommunication service between earth stations at given positions, when one or more satellites are used; the given position may be a specified fixed point or any fixed point within specified areas; in some cases this service includes satellite-to-satellite links, which may also be operated in the inter-satellite service; the fixed-satellite service may also include feeder links for other space radiocommunication service

Mesh Network: A mesh satellite network can be defined as a one where any terminal can operate as the network's hub and traffic can be routed via any of the terminals

Satellite Network: A Satellite Network is defined as a satellite system or a part of a satellite system consisting of only one satellite and the cooperating earth stations

Star Network: A star satellite network can be defined as one where only one terminal can operate as the network's hub and all network traffic is routed via this terminal