

**OFW 342 Licensing Procedures Manual
For Satellite Service Network Operator
License for Earth Station on Trains**

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1.	Manual Overview.....	3
2.	About The Space Services Unit.....	3
3.	Relevant Legislation And Policy	3
	3.1 Licensing Directive 1998 (Directive 97/13/EC)	3
	3.2 R&TTE Directive (Directive 99/5/EC).....	4
	3.3 Wireless Telegraphy (WT) Act 2006 – Licensing.....	4
	3.4 Wireless Telegraphy (WT) Act 2006 - Spectrum Pricing	4
	3.5 Directive 98/34/EC	4
	3.6 Enforcement.....	5
4.	Equipment Requirements	5
	4.1 Minimum Requirements	5
5.	Take-Overs, Transfers And Changes Of Name.....	7
6.	General Site Clearance.....	7
7.	Planning.....	7
8.	Frequency Bands.....	7
9.	Disclosure Of Information.....	7
10.	Description Of Licence Product	8
	10.1 The Licence.....	8
	10.2 Quality of Service	8
11.	Customer Responsibilities.....	8
	11.1 General.....	8
	11.2 Making a Licence Application.....	8
	11.3 How to complete the application form.....	9
12.	Ofcom Procedures.....	10
	12.1 Making the application	10
13.	SPACE SERVICES UNIT PROCEDURES	10
	13.1 Licence Application Process	10
	13.2 Licence Renewal Process.....	11
	13.3 licence Amendment process.....	12
	13.4 Licence Cancellation Process.....	13
	13.5 Licence Revocation Process.....	14
14.	Disclaimer	15
15.	Contact Details.....	15
16.	The Licence	16
17.	Glossary.....	26

1. Manual Overview

This is the Licensing Procedures Manual for Satellite Network Operator License for Earth Stations on Train (SNOL- EST) . It complements the more general licensing policy and procedures described in the overarching Licensing Policy Manual of Ofcom (OFW

These documents have been written to comply with the European Directive 97/13/EC, which sets a common framework for general authorisations and individual licences in the field of telecommunications services. Directive 97/13/EC has been enacted into UK legislation by Statutory Instrument 1997 No. 2930, which amended licensing provisions in both the Telecommunications Act 1984 and the Wireless Telegraphy Act 2006. The specific aim of Directive 97/13/EC is to ensure that Member States use fair and transparent procedures for issuing licences which allow licensees to provide telecommunications services or networks.

This Manual provides information on the procedure for applying for this SNOL-EST licence and Ofcom's cross-checks to the OFW 338 Application Form.

It further illustrates the key algorithms for processing new applications, renewals, cancellations and revocations. Also, this 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 the UK Radio Licence Interface Requirements apply to the licensing of SNOL-EST operating in the UK in frequency bands designated for the Fixed Satellite Service and assigned for Earth- to- space transmission.

2. About The Space Services Unit

The Space Services Unit is the lead Business Unit within Ofcom dealing with licensing, assignment and spectrum management issues pertaining to the administration of satellite services in geographical areas administered by Ofcom

3. Relevant Legislation And Policy

3.1 Licensing Directive 1998 (Directive 97/13/EC)

The European Licensing Directive came into effect in January 1998. The Licensing Directive has provision for any customer to appeal or make representations against any change made to their licence. This also applies to licences revoked due to non-payment, however, in this case representations will be limited to payment issues.

In all cases the customer can make representations, in writing, stating full details and all mitigating circumstances within 28 days of the Ofcom notifying them of the intent to amend or revoke the licence.

3.2 R&TTE Directive (Directive 99/5/EC)

The Radio and Telecommunications Terminal Equipment Directive (R&TTED) is European legislation which defines how regulatory compliance of radio telecommunications terminal equipment destined for the European Union will be dealt with. The Directive 99/5/EC removes the requirement for formal national type approval. The R&TTED, effective from the 8th April 2000, also has a one year transition period for equipment type approved under the old regime to be marketed and placed into service. However, manufacturers/suppliers need to ensure that such products are declared under the Directive 99/5/EC before the expiry of this transition period. Any equipment not declared under the Directive 99/5/EC can no longer be marketed.

Further information on the scope of this directive, along with a copy of the R&TTED, is available from the Ofcom website, www.ofcom.org.uk

3.3 Wireless Telegraphy (WT) Act 2006 – Licensing

Installation and use of radio equipment is authorised by a licence issued under the WT Act 2006. A licence is required to operate any scanning telemetry system or earth station or fixed terrestrial microwave or millimetric links.

3.4 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.

3.5 Directive 98/34/EC

Directive 98/34/EC 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.

3.6 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. Where safety of life is involved, we aim to resolve problems within 24 hours. Otherwise, our targets are 5 days for business customers and 1 month for domestic customers. Please see the website for further details on our performance targets.

4. Equipment Requirements

4.1 Minimum Requirements

The “essential requirements” of Article 3.2 of Directive 99/5/EC include the minimum system requirements that are deemed necessary for reasons related to the effective and appropriate use of the radio spectrum.

The apparatus comprised in the station(s) ("the Apparatus") is so designed, constructed, maintained and operated, that its use does not cause any harmful interference to any authorised spectrum user.

All transmissions to the satellite are authorised by the Satellite Network Operator and the EST Apparatus complies with their published technical Requirements and the UK Frequency Allocation Tables

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

The UK requirements for interactive terminals to be included within a earth station network licence are as follows:

1. Networked earth station terminals shall use antennas that meet the minimum performance requirements as specified in ITU Recommendation ITU-R S.580.
2. Appropriate antenna aperture dimensions for interactive terminals operating within a Satellite Network Licence are given in the following table:

Frequency Range	14 – 14.25 GHz
Minimum Antenna Diameter	0.6 m

Applications for equipment classes that are unable to meet the above requirements are to be processed outside of this SNOL-EST licence.

4.2 Operational Requirements

All transmissions to the satellite must be authorised by the Satellite Operator and the Apparatus must comply with their published technical standards and the UK Frequency Allocation Tables. The information sheet OFW 241 gives a high level description of how spectrum in the UK is used for fixed satellite systems.

Operators are required to conform to all conditions defined within the licence. Details can be found in Section 16.

Earth station antennae shall not be employed for transmission at elevation angles of less than 3 degrees measured from the horizontal plane to the direction of maximum radiation.¹

The component of effective isotropic radiated power directed towards the horizon and the minimum elevation angle above the horizontal must comply with ITU Radio Regulations and not exceed those limits specified by Radio Regulations RR 21.8 – RR 21.15.

The level of equivalent isotropically radiated power (e.i.r.p.) emitted by an earth station of a geostationary network shall not exceed those limits specified in Radio Regulations RR22.26-22.39.

It is the responsibility of the terminal installer to ensure that all Health & Safety requirements are met and to obtain the necessary local permissions from the appropriate authorities at each notified location, site prior to commencing operation.

Terminals that are included as part of this 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
The Apparatus used for transmission complies with the R&TTE Directive and all appropriate National Interface Requirements for Satellite Earth Stations in force within the UK.

SNOL-EST 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, see OFW102.

For earth stations operating in a SNOL-EST 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.

¹ ITU-RR S21.14

5. 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.

6. General Site Clearance

Unless the use of a particular radio is covered by a specific exemption regulation, all radio transmissions within the UK are subject to National Site Clearance procedures, and are generally required to obtain site clearance.

For Satellite Network Operator Licensed Earth stations or Earth stations on Train located within the UK, site clearance occurs whenever:

- the equivalent isotropic radiated power (e.i.r.p)² exceeds 50dBW unless that class of equipment has been exempted by UK legislation (Statutory Instrument) ; and/or
- the height of the antenna above ground level exceeds 30m; and/or
- the antenna adds more than 5m to the existing height of the supporting structure.
- All radio stations that require site clearance must register the correct transmission and location details with the Ofcom prior to commencing transmissions.
- Or the use of the associated EST terminals is intended within the specific exclusion zones identified within OFW338.

7. Planning

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

8. Frequency Bands

At the present time, all SNOL-EST transmissions are restricted to operation within the frequency bands 14.000 -14.250 GHz.

9. Disclosure Of Information

Ofcom will not disclose information to any third party without the express consent of the applicant, however it reserves the right to disclose information relating to geographical

² RR S1.161

position of the station (e.g. latitude and longitude) to others that share the use of the frequency band.

10. Description Of Licence Product

10.1 The Licence

The licence, see example shown in Section 16, details the terms, provisions and limitations of the licence.

10.2 Quality of Service

On receipt of the licence application it is Ofcom's aim to meet the following quality of service target:

Category C:

90% of Licence applications or variations to be processed and despatched within 40 working days or an explanation given of the delay.

11. Customer Responsibilities

11.1 General

If the Satellite Network Operator's Earth station is within the UK, prior to terminal transmission at a particular location, the network earth station operator must hold a licence and have obtained clearance from Ofcom. It is the responsibility of the operator to identify within OFW 338, the associated Earth Stations on train installations under control by the network operator.

It is the licensee's responsibility to transmit to a satellite only with the satellite operator's consent.

11.2 Making a Licence Application

Before making an application, the applicant should remember that no matter who applies on their behalf, the licence holder is still legally responsible for all actions carried out on their radio system. Any false information may lead to the granting of the licence being refused or revoked. The licence application form does carry legal status from an evidential point of view and applicants are therefore asked to sign the declaration.

The OFW 338 application form should be used for licence applications. The applicant can download a copy of this form from the Ofcom website www.ofcom.org.uk.

11.3 How to complete the application form.

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 as mandatory unless otherwise stated. Guidance to completion of the form is given in the associated OFW form.

11.4 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.

11.5 Licence variations

When applying for a licence variation, the existing licence number must be provided

11.6 Checking the application

Please ensure that the licence application form is legible, complete and accurate. Any missing information may require the form to be returned with the Quality of Service targets negated.

11.7 Licence Fees

Fees for Satellite (Network Earth Station) Licences are calculated according to the spectrum and bandwidth being accessed, and the aggregate power supplied to the antenna. Details are available from the Ofcom website www.ofcom.org.uk.

11.8 Payment method

New customers will be billed on issue of the licence. Variations will be billed on renewal of the amended licence. Payments should be made payable to the "The Office of Communications". Permitted methods of payment are described in Ofcom's generic Licensing Policy Manual.

11.9 Where to send your form

Please send applications to:

Space Services
Floor 3
Office of Communications
Riverside House
2a Southwark Bridge Road
London SE1 9HA

Tel: 020 7981 3995/3117

Fax: 020 7981 3208

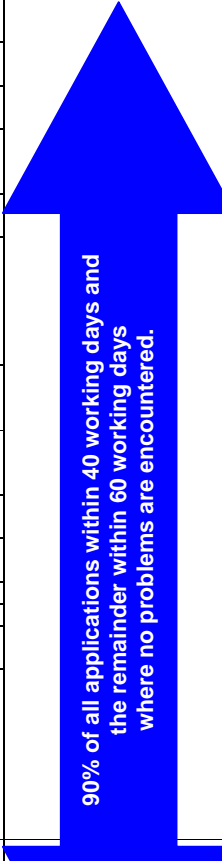
12. Ofcom Procedures

12.1 Making the application

Ofcom administers all licensing processes, i.e. new licence applications, renewals, variations, cancellations and revocations.


13. SPACE SERVICES UNIT PROCEDURES

13.1 Licence Application Process

Step / Check	Description	Responsibility	Activities covered by Quality of Service targets (see clause C.4)
1	Applicant submits application form OFW 338 to Ofcom	Customer	 <p>90% of all applications within 40 working days and the remainder within 60 working days where no problems are encountered.</p>
2	Ofcom checks applicant's legal status	Ofcom	
	Pass If the legal status passes validation then Ofcom will continue processing the application. The transaction proceeds to step 3.	Ofcom	
	Fail If the legal status fails validation then Ofcom will return the Application form and payment to the Applicant.	Ofcom	
3	The application form is checked to verify that all the necessary details are complete, accurate and legible.	Ofcom	
4	If any details are missing, Ofcom will attempt to contact the applicant by telephone or e-mail, giving the customer five working days to respond with the necessary information. Under such a condition the licence application will be ' Parked ' (i.e. suspending the Quality of Service target until the customer replies or the five working day resolution period expires).	Ofcom	
	Pass Ofcom will only continue to process the application when the applicant responds with the necessary information. Proceed to step 5.	Ofcom	
	Fail If the applicant fails to respond by the elapse of the five working day deadline then Ofcom will return the application form and payment to the Applicant.	Ofcom	
5	Ofcom establishes whether an application relates to an existing customer.	Ofcom	
	No For a 'new customer' the Ofcom will create and register a customer file. The transaction then proceeds to step 6.	Ofcom	
	Yes For an 'existing' customer the transaction now proceeds to step 6.	Ofcom	
6	Ofcom issues the invoice and awaits payment.		
	Payment clears The transaction now proceeds to step 7.	Ofcom	
	Payment fails to clear If the cheque is incorrect in anyway, or fails to go through Ofcom Finance, then Ofcom contact the customer to resolve (within five working days) any problems, otherwise the application will be terminated. Under such a condition the licence renewal will be ' Parked ' (i.e. suspending the transaction until the customer replies) until any problem(s) are resolved, or the five working day resolution period expires. After this time Ofcom will return the application form and payment to the Applicant.	Ofcom	
7	Ofcom produces the licence and sends it to the applicant.	Ofcom	


8		Copies of the licence and licence schedule are attached to the registered customer file. The fee details are entered onto the renewal database, and marked 'paid', under the customer's name.	Ofcom
9		Ofcom's licence database includes the licensee's details, licence renewal date and licence fee. In the fee payment entry, "paid" must be entered so that the licence rolls around for renewal next year.	Ofcom

13.2 Licence Renewal Process

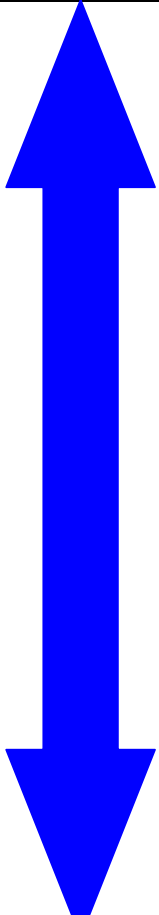
Step / Check	Description	Responsibility	Activities covered by Quality of Service targets (see Section C)
1	Ofcom initiates the licence renewal process at least six weeks in advance of the licence renewal date.	Ofcom	
2	Ofcom checks customer's legal status.	Ofcom	
	Pass If the legal status passes validation then Ofcom will continue processing the application. The transaction proceeds to step 3.	Ofcom	
	Fail If the legal status fails validation then Ofcom will return the application to the customer.	Ofcom	
3	Ofcom issues the customer six weeks in advance a licence renewal notice and associated licence fee request. A copy of the fee request is sent to Ofcom Finance so the debt can be added to the customer account. The transaction proceeds to step 4.	Ofcom	
4	Ofcom then await customer's payment / response within four weeks.	Customer	
	Payment/response received When Ofcom receive the customer's payment the transaction proceeds to step 6.	Ofcom	
	Response only If Ofcom receive a response then the transaction proceeds to step 5.	Ofcom	
	No payment/response If Ofcom fails to receive both response and payment from the customer two weeks before the renewal date then Ofcom will automatically issue a licence renewal notice reminder and associated licence fee request. Failing to respond or provide satisfactory answers will mean Ofcom initiates the licence revocation process.	Ofcom	
5	Ofcom receives response from the customer.	Customer	
	Pass If the response is satisfactory and timely then Ofcom proceed the transaction to step 6. Also the renewal date for the forthcoming year is automatically set at this stage.	Ofcom	
	Fail If the response is not acceptable to Ofcom then the transaction will proceed to the licence revocation process if the matter is not resolved within five days. While dealing with any unresolved enquiries during this standstill time Ofcom will ' Park ' the renewal.	Ofcom	
6	Ofcom processes the payment. Ofcom confirm that the cheque is made payable to ' Office of Communications ' before forwarding to Ofcom Finance, and subsequently to the bank.	Ofcom	
	Payment clears Ofcom finalises the licence and licence schedule(s). The transaction now proceeds to step 7.	Ofcom	
	Payment fails to clear If the cheque is incorrect in anyway, or fails to go through Ofcom Finance, then Ofcom contact the customer to resolve (within five working days) any problems, otherwise the application will be terminated. Under such a condition the licence renewal will be ' Parked ' (i.e. suspending the transaction until the customer replies) until any problem(s) are resolved, or the five working day resolution period expires. Should the customer not make a valid payment before the renewal date then the transaction proceeds to step 9.	Ofcom	
7	Ofcom updates the customer's file.	Ofcom	
8	Finally, a covering letter together with the licence, and appropriate licence schedule(s) are issued to the customer.	Ofcom	
9	Begin the licence revocation process one-day after the licence renewal date.	Ofcom	

10	<p>In parallel, the customer records are updated and a copy of the licence and link schedule is placed on the registered customer files. Ofcom now prepare the licence and the licence schedule.</p> <p>Also on the licence database, details of the customer, the renewal date of the application (the date the licence was sent) and the amount added. "Paid" must be entered so that it rolls around for renewal next year.</p> <p>If for any reason the transaction was unsuccessful or terminated then this will also be recorded in the customer records.</p>	Ofcom	
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13.3 Licence Amendment process

Step / Check	Description	Responsibility	Activities covered by Quality of Service targets (see Section C.)
1	The customer should submit any variations, to Ofcom, using either the OFW 338 application form or as a written request. Note that any written customer correspondence will be put on the Customer file.	Customer	 <p>90% of Variations processed within 40 working days and the remainder within 60 working days. (Time-scale extended if</p>
2	Ofcom checks applicant's legal status in accordance with advice given in the overarching Licensing Policy Manual	Ofcom	
	Pass If the legal status passes validation then Ofcom will continue processing the application. The transaction proceeds to step 11.	Ofcom	
	Fail If the legal status fails validation then Ofcom will return the application to the customer.	Ofcom	
3	Ofcom acknowledges the variation request and verifies that the customer is an established customer.	Ofcom	
4	Ofcom will distinguish whether the request is technical or administrative.	Ofcom	
	Administrative If administrative (i.e. change of contact details etc.) the appropriate records are updated and the customer is informed when this has been completed.	Ofcom	
	Technical If technical or technical and administrative in nature then the transaction proceeds to step 5.	Ofcom	
5	The request is checked to verify that all the necessary details are complete, accurate and legible.	Ofcom	
6	If any details are missing, Ofcom will attempt to contact the customer by telephone or e-mail, giving the customer five working days to respond with the necessary information. The transaction is now ' Parked ' until the matter is resolved or the five working days elapse.	Ofcom	
	Pass Ofcom only processes the request if the customer responds in time with the necessary information. The transaction proceeds to step 7.	Customer	
	Fail If the customer fails to respond in time then Ofcom return the request to the customer and take no further action.	Customer	
7	Ofcom creates the revised licence schedule and sends it to the customer.	Ofcom	
8	Ofcom's licence database includes the licensee's details, licence renewal date and licence fee. In the fee payment entry, "paid" must be entered so that the licence rolls around for renewal next year.	Ofcom	

13.4 Licence Cancellation Process

Step / Check		Description	Responsibility	Activities covered by Quality of Service targets (see Section C)
1		The customer should submit a cancellation request in writing to Ofcom.	Customer	
2		Ofcom checks the applicant's legal status in accordance with advice given in the overarching Licensing Policy Manual.	Ofcom	
	Pass	If the legal status passes validation then the transaction proceeds to step 3.	Ofcom	
	Fail	If the legal status fails validation then Ofcom will return the cancellation request to the sender.	Ofcom	
3		Ofcom shall verify that the applicant is an existing customer.	Ofcom	
	Pass	Ofcom will continue to process the application if this check proves favourable. The transaction proceeds to step 4.	Ofcom	
	Fail	If the applicant is not an existing customer, the cancellation request will be returned.	Ofcom	
4		Ofcom checks the cancellation request to verify that all the necessary details are meaningful, complete, accurate and legible.	Ofcom	
	Pass	If the cancellations details are complete and understandable the transaction proceeds to step 5.	Ofcom	
	Fail	If any details are missing, Ofcom will attempt to contact the applicant by telephone or e-mail, giving the customer time to respond with the details. In so doing Ofcom will ' Park ' the request until contact has been made with the customer or 5 working days if no contact can be made. The cancellation request may remain ' Parked ' until any outstanding issues are resolved. If the customer fails to respond then Ofcom, at its discretion, may decide to terminate the request and return the cancellation request to the sender and take no further action.	Ofcom	
5		Ofcom identifies which stations the customer requires cancelling (i.e. confirming whether the customer wishes to: cancel all stations; cancel one or several stations).	Ofcom	
	All stations	Ofcom will now cancel all the customer links and close the customer file. Ofcom issue a cancellation letter to customer confirming their action. A copy of which is placed in the registered customer file that is then closed.	Ofcom	
	One or several stations	Ofcom will now finalise the transaction by cancelling the requested link(s), update the registered customer files in parallel with preparing the link schedule. A copy of this letter and the revised link schedule will also be put on the registered customer file. The Renewal database will also be updated.	Ofcom	

13.5 Licence Revocation Process

Step / Check	Description	Responsibility	Activities covered by Quality of Service targets (see Section C.)
1	This process description assumes that the licence revocation is a result of non-payment of the licence fee. A licence can also be revoked for other reasons e.g. the conditions of that licence are not complied with. In such cases the Licensee will be sent a proposed notice of revocation and allowed a period of 28 days in which to lodge an appeal. If the appeal is unsuccessful then a notice of revocation will be sent at the end of the 28 days period.	Overview	
2	Prior to the licence revocation process the customer can choose between the following possibilities:	Customer	
	Send payment Customer acknowledges intent to renew licence and sends payment to Ofcom. The process now proceeds to step 4.	Customer	
	Send response Customer acknowledges their intent to renew licence subject to making some alterations to the licence schedule. Revocation is temporarily suspended for five days only. The customer is required to settle payment within this time period, in which case the revocation process proceeds to step 4, otherwise the transaction proceeds to step 3.	Customer	
	No response/ payment Failing any acknowledgement and/or payment the revocation process proceeds to step 3.	Customer	
3	A proposed notice of revocation (see Section O) is sent to the customer one day after the licence renewal date.	Ofcom	
	Sends payment Customer acknowledges their intent to renew licence and sends payment to Ofcom. The process now proceeds to step 4.	Customer	
	Sends response Customer acknowledges their intent to renew licence subject to making some alterations to the licence schedule. The revocation process is now deferred to allow for the changes to be made following the variation process. Revocation will be reinstated should this process fail. Otherwise the customer is required to settle payment within the ' Park 5 working day period, in which case the revocation process proceeds to step 4, else the transaction proceeds to step 5.	Customer	
	No response/ payment Failing any acknowledgement(s) and/or payment the revocation process proceeds to step 5.	Customer	
4	Is the payment processed successfully?	Ofcom	
	Successful The customer's files are updated. The licence and link schedule is sent to the customer.	Ofcom	
	Un-successful If the payment fails to clear then Ofcom will inform the customer. Ofcom will ' Park ' the request for a maximum of 5 working days. If the customer fails to make a valid payment in that time then the transaction will proceed to step 5.	Ofcom	
5	Revocation of licence notice (see Section P) is issued 28 days after the renewal date.	Ofcom	
6	The Ofcom Field Operations Team are informed of the revocation.	Ofcom	

14. Disclaimer

If Ofcom are prevented from issuing appropriate documents to an applicant, for example as a result of an internal system failure, a temporary alternative may be provided.

This document is designed to provide details of Ofcom's licensing procedures relating to Satellite Network Operator License for Earth stations on Vessel applications made to Ofcom. However, it should not be taken as giving exact policy for all areas of licensing undertaken by Ofcom and should in any event be read in conjunction with Ofcom's Licensing Policy Manual.

This document can therefore only be fully accurate at the time of writing, Space Services Unit apologises for any inaccuracies that may occur between major revisions.

Revisions to this document will be done periodically or when there is a substantive need to update the document.

15. Contact Details

For information regarding Satellite Services Wireless Telegraphy Act Licences contact:

Space Services Unit Helpdesk:

Office of Communications

Space Services Unit

Riverside House

2a Southwark Bridge Road

London SE1 9HA

Telephone: 020 7981 3995/3117

Fax: 020 7981 3208

Ofcom website: www.ofcom.org.uk

16. The Licence

Wireless Telegraphy Acts 2006

EARTH STATIONS ON TRAINS (EST) NETWORK OPERATOR LICENCE

Licence Number	
Sector/class/product	
Licensee	
Licensee address	
Date of issue	
Licence start date	
Fee Payment Date	

1. This Licence is issued by the Office of Communications ("Ofcom") on [XX/XX/XX] 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 [XXXX] ("the Licensee") to establish, install and/or use radio transmitting and/or receiving stations and/or radio apparatus as described in Schedule 1 (hereinafter together called "the Radio Equipment") subject to the terms set out in Schedule 1 and subject to the terms of the Ofcom Wireless Telegraphy General Licence Conditions Booklet OFW195.

Issued on behalf of Ofcom by

**[Name of duly authorized person]
[Title of duly authorized person], Ofcom**

A person duly authorized in accordance with paragraph 18 of the Schedule to the Office of Communications Act 2002.

EARTH STATION/S ON TRAIN/S (EST) NETWORK OPERATOR LICENCE

SCHEDULE 1 TO LICENCE NUMBER [XXXX]

TERMS, PROVISIONS AND LIMITATIONS COVERED BY THIS LICENCE

Comment: Limitations order and Procedures order and Fees order has to be modified to include this licence product. SI docs see Mark R

This schedule forms part of Licence [XXXX], issued to [XXXX], the Licensee on [xx/xx/xx], and describes the terms and equipment specifications covered by this Licence.

1. Radio Equipment

The Licensee may establish, install and use the sending and receiving Earth Station(s) described in Schedule 2 on board trains for the purpose of providing wireless telegraphy links between the Earth Station(s) and Geostationary Satellite(s) described in Schedule 2.

2. Special conditions relating to the Radio Equipment

- 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 train's crew, and under the operational control of the Network Control Facility. The Radio Equipment shall provide the train's crew with a means immediately to terminate transmissions.
- b) The Radio Equipment shall be operated on a 'Non-Interference Non-Protected' basis, that is, the Radio Equipment shall not cause harmful interference to, and shall not claim protection from other stations operating in accordance with the ITU Radio Regulations (Article 4.4) or UK licensed wireless telegraphy stations. The Radio Equipment may suffer interference from foreign transmissions.
- c) The Radio Equipment shall not be permitted to operate when the train is within the boundary of an airfield (airports and Ministry of Defence establishments).
- d) The Licensee shall inform Ofcom in writing when the contact information set out in Schedule 2 changes.

Comment: Deletion rejected as this means it shall not cause interference to other space services, nor claim protection from other transmissions from space services in the 10/11/12GHz. I have linked your need to add wireless telegraphy stations and apparatus

3. "Essential requirements"

The Radio Equipment shall comply with the appropriate essential requirements identified in Article 3 of the R&TTE Directive and the other relevant provisions of that Directive.

4. Frequencies of operation

This Licence authorises the use in the UK of the service link, comprising of "the service link between the Earth Station and the Geostationary Satellite" i.e. comprising the space-Earth (to train) and Earth-space (from train) space radio links.

The Radio Equipment shall be operated within the following frequency ranges:

- a) In respect of transmission, 14.0 to 14.25 GHz; and
- b) In respect of reception, 10.70 to 11.70 GHz and 12.50 to 12.75 GHz.

5. Radiated Emissions

- a) The required occupied bandwidth (MHz), ITU emission code descriptor, type of modulation, multiplex scheme and any filtering is described by the operator and as set out in Schedule 2.

6. Maximum Power

- a) The maximum power spectral density shall not exceed 39 dBW/40 kHz and the Equivalent Isotropic Radiated Power (EIRP) shall not exceed 50 dBW EIRP total from any individual Station.
- b) The maximum power is described by the operator and as set out in Schedule 2.

7. Elevation angle

- a) The minimum elevation angle used by any antenna as part of the Radio Equipment shall exceed 15 degrees.
- b) The minimum elevation angle is described by the operator and as set out in Schedule 2.

8. Antenna characteristics

- a) The Radio Equipment shall employ an antenna with a minimum effective antenna size of 0.6 metres.
- b) The transmit antenna beam width shall not be greater than 2 degrees.
- c) 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.
- d) The pointing angle update time is as that indicated in Schedule 2 to achieve the required pointing accuracy.

9. The Earth Station(s)

- a) The manufacturers make/model identifier and antenna descriptor is as defined by the satellite network operator and as described in Schedule 2.

- b) The combined maximum input power to the antenna and the antenna Tx gain shall not exceed the maximum power as described in Schedule 2.
- c) The satellite system(s) and the orbital location(s) to which operation is sought are as defined by the satellite network operator, as are the associated forward and return channel frequencies and the antenna polarisations, as set out in schedule 2.
- d) The maximum satellite transponder bandwidth(s) within which operation is sought is as defined by the satellite network operator and as set out in Schedule 2.

Comment: Defined in a)

10. Interpretation

In this and subsequent schedule(s):

- a) "Earth Station" means a radio transmitter located on the surface of the earth and intended for communication with one or more Geostationary satellites;
- b) "Geostationary Satellite" means a satellite having the earth as its primary body and which remains approximately in a fixed position relative to the earth;
- c) "Network Control Facility" means a central monitoring and management facility for the Earth Station(s) which is controlled by the Licensee, the location and contact details in respect of which are set out in Schedule 2;
- d) "R&TTE Directive" means 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;
- e) "Radio Regulations" means the 2004 edition of the Radio Regulations made under Article 13 of the Constitution of the International Telecommunication Union;
- f) all technical terms, unless the contrary intention appears, shall have the meaning assigned to them in the Radio Regulations.

Notes

1. This Licence does not affect the requirement, when necessary, to obtain licenses or authorisations under other legislation or from other countries prior to the installation or

operation of the Radio Equipment. The Licensee is encouraged to seek its own independent professional advice in this respect.

2. Licensees and applicants are advised that the European Telecommunications Standards Institute are developing a relevant standard, EN 302 448 Harmonized EN for satellite Earth Stations on board Trains (EST's) due to be published early 2007. The finalisation of such a standard may necessitate Licence amendment.
3. For the purpose of complying with Condition 3 of Schedule 1 above ("Essential requirements"), elements of the following standards are considered harmonised standards for the purposes of Article 5 of the R&TTE Directive:
 - (a) EN 50155
 - (b) EN 50121-3-2

The Draft ETSI EN 302 448 V0.21.2 (2006-03) is the current version being formally considered against this license. The finalisation of this standard may necessitate implementation of changed technical standards or Licence amendment.

4. Further guidance and information on satellite service network operator licence for earth station(s) on train(s) (EST's) licensing can be obtained from:

Ofcom

SPG SR-2 Space

Riverside House

2a Southwark Bridge House

London SE1 9HA

Telephone 020 7981 3995/3117

Facsimile 020 7981 3060

Email: satellite.licensing@ofcom.org.uk

Website: www.ofcom.org.uk

SCHEDULE 2 TO LICENCE NUMBER [XXXXXX]

This Schedule forms part of the Licence issued to [xxxx], the Licensee, on [xxxx] and contains current contact information for the Licensee and describes the Radio Equipment endorsed by the Licence.

Name and Address of Licensee	1. EST NETWORK NAME	Emergency Telephone Number (24 Hours)	Reference Details
	2.		Customer Account No File No
Point of Contact Name:			
Title of Contact:			
Email of Contact:			
Tel / Fax Number of Contact:			

Network Control Facility	Local Earth Station 1	Local Earth Station 2
Point of Contact Name:	Point of Contact Name:	Point of Contact Name:
Title of Contact:	Title of Contact:	Title of Contact:
Email of Contact:	Email of Contact:	Email of Contact:
Tel / Fax Number of Contact:	Tel / Fax Number of Contact:	Tel / Fax Number of Contact:

EST Antenna and maximum output power Details				Transmit	
EST Make/ Model	EST Effective Antenna Size (m)	Maximum E.I.R.P. (dBW)	Maximum I/P power to Antenna (W)	Tx Gain (dBi)	Tx Beamwidth (deg)

EST Antenna Details (continued)				
Terminal Type identifier	Minimum Elevation (deg)	Polarization	Stabilised pointing accuracy (deg)	Pointing Update time deg/sec

Waveform Details				
Occupied bandwidth (MHz)	Emission Code	Modulation	Multiplex scheme	Filtering

Off-axis Link power spectral density – Future limits may apply	

Operating Satellite(s) Details			
ITU Filing designation	GEO Longitude	Satellite service area	Max Tx Transponder assigned bandwidth (MHz)

Forward Channel details (LES to EST)			
Uplink centre frequency (MHz)	Uplink polarization	Downlink centre frequency (MHz)	Downlink polarization

Return Channel details (EST to LES)			
Uplink centre frequency (MHz)	Uplink polarization	Downlink centre frequency (MHz)	Downlink polarization

17. Glossary

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