POLICY STATEMENT ON THE LICENSING OF PERMANENT EARTH STATIONS AND RECEIVE ONLY EARTH STATIONS

FINAL POLICY STATEMENT

Publication Date: 28 April 2020

Contents

1. Summary

Following the development of the Digital Strategy in 2017, the signature of a Memorandum of Understanding (MoU) for a submarine cable with SAEx in October 2017, a Letter of Intent in July 2019 and Contract Signing in December 2020 for a branch of the Equiano Cable to be delivered in 2022, the St Helena Government (SHG) has launched planning for an earth station project and has since been calling for expressions of interest from the satellite and space industry.

The development of a policy for licensing of Satellite Ground Stations is part of wider work to update the legal and regulatory framework for communications regulation in St Helena. The current legislation, the Telecommunications Ordinance (1989) needs to be updated to provide for the type of regulatory framework that consumers and industry have come to expect. A policy for reform of the regulatory framework for Communications will be subject to public consultation during 2020. That policy will look to enshrine principles such as transparency and consistency within it to encourage and support the development of communications on St Helena. It will also address issues such as responsibility for the operational oversight of the regulatory framework and enforcement.

We note that the consultation and policy statement do not address the satellite terminals for the provision of services to the public.

2. Background

The landing of a marine cable in St Helena is expected in 2022 and this will allow to develop a high speed broadband node on the island of St Helena, which will also facilitate the distribution of satellite services in all of the southern Atlantic Ocean region, through the placement of Earth stations in St Helena.

Since the confirmation of the connection to a marine cable, St Helena Government (SHG) has received several expressions of interest for the establishment of earth stations on the island. This opportunity will benefit the local economic development and the creation of technical expertise and workers to be employed by the operators to run these facilities.

In order to ensure the deployment of these Earth stations, SHG has developed a regulatory framework for authorising Permanent Earth Stations (PES) and Receive Only Earth Stations (ROES) on the island of St Helena.

Exceptions:

As per the Telecommunications Ordinance, (1989), Nothing in this policy affects or precludes the right of the Crown to establish, extend, maintain or work any telecommunications apparatus or station, or to authorise any other person to establish, extend, maintain or work any telecommunications apparatus or substation on behalf of the Crown, for:

- any Crown purpose of a non-commercial nature;
- experimental purposes;
- broadcasting;
- aeronautical services;
- purposes associated with the navigation of ships or the safety of shipping; or
- scientific purposes.

For the purposes of this exemption the operation of any telecommunications apparatus or station by Her Majesty's armed forces is deemed to be a Crown purpose of a non-commercial nature.

For the avoidance of doubt, this policy does not apply to antennas on moving platforms of any type, for example those used by ships, aeroplanes, vehicles and satellite phones. The policy statement does not address the satellite terminals for the provision of services to the public on St Helena.

The policy set in this document will provide for:

- A licence application form for a Permanent Earth Station's or a Receive only Earth Station's operator to submit to the SHG;
- A licence mechanism to authorise the Permanent Earth Station or Receive only Earth Station equipment installed on the island of St Helena;
- A set of technical requirements for such stations to comply with, as to protect other radio services, and for that this will include:
    - Frequency allocations;
    - Out-of-Band emission limits;
    - Health and Safety radiation limits;
    - Proper filtering for receiver and transmit equipment;
    - Licensing fees and the means to pay these.

3. Enforcement and legal requirements

The Permanent Earth Station licensing and Receive Only Earth Station Licence policy regime consulted in this document does not cover the user devices and terminals deployed for the services provided by satellite operators.

In regard to the Permanent Earth Station and Receive Only Earth Station installations in St Helena, the licensee must operate its Earth Station satellite equipment to an operational, or near operational satellite system, or satellite network.

SHG shall enforce the conditions as set on the Permanent Earth Stations licence or Receive Only Earth Stations Licence to ensure that licensees operate within the conditions of their licence. The applicant will be asked, at the application submission phase to:

i. Provide relevant information of the ITU satellite network, or satellite system;
ii. When such satellite network or system has been or will be brought into use and/or notified by the ITU;
iii. Provide information on status of its international coordination with other services and applications;
iv. A letter from the notifying Administration of the satellite system/network.

Because of the enforcement power of SHG, SHG has the right to investigate complaints of interference affecting existing and future licensees.

Before submitting an application, the applicant should remember that no matter who applies on his/her behalf, he/she is still legally responsible for all actions carried out on the proposed radio system. Any false information may lead to the licence being refused or revoked.

The licence application form carries legal status from an evidential point of view, and applicants are therefore asked to sign the declaration.

4. SHG Licensing Policy for PES and ROES

The policy, as set out in this document, provides for a licence regime for Permanent Earth Stations (PES) and Receive only Earth Station (ROES) installed in the territory of St Helena.

1. Frequency Allocations and other general conditions

SHG will accept application forms for a licence on the operations of Permanent Earth Stations (PES), or Receive Only Earth Stations (ROES), placed at a fixed location on the island of St Helena.

The definition of these Earth Stations is provided in **Annex 1** to this document.

The licence applicant must be a person or entity residing in the island of St Helena.

For this licence policy, SHG adopts **Table 1** for the frequencies authorised to be licensed for PES and **Table 2** for ROES installations in the island of St Helena.

Table 1 and **Table 2** are integrated in the National Frequency Table of St Helena, and the latter is published on the SHG web site.

A request for a licence, through the appropriate form in **Annex 2**, can be accepted if the relevant satellite is either fully operational, or will be fully operational, in the bands applied for within 2 years of the date of application at an orbital location provided in the application form.

For clarification purposes:

- **Permanent Earth stations (PESs)** operating in the frequency bands in **Table 1**:
    i. are not stations intended to deliver services directly to the public in St Helena, but a required installation connecting the access points on the ground to the satellites and vice-versa; thus, they have both a transmit and a receive link to the satellites.

- **Receive only Earth stations (ROESs)** operating in the frequency bands in **Table 2**:
    i. are not stations intended to deliver services to the public in St Helena and have a receive only purpose; their intended scope is provided in **Table 2**;
    ii. usually do not require a licence and thus not be given protection from interference, and that this policy has been introduced for those operators that seek protection through the licence policy here introduced, which provides recognition for their spectrum use and protect these from harmful interference.

Once the licence is granted, SHG will place the licence information onto a licence Register.

Bands	Type of Use		Direction	Frequency range
Amateur Satellite	TLC[1] / TLMR[2] FL[3]		Both directions	**Primary Allocation** 28.0-29.7 MHz 144-146 MHz 24.0-24.05 GHz **Secondary Allocation** 435-438 MHz 1270-1280 MHz 2400-2450 MHz 3400-3410 MHz 10.45-10.5 GHz
	TLC / FL		Earth-to-space only	**Secondary Allocation** 1260-1270 MHz 5650-5670 MHz
VHF/UFH bands for: - Space Operations - Mobile Satellite	TLMR / FL		(space-to-Earth)	137 – 138 MHz
	TLC / FL		(Earth-to-space)	148 – 150.5 MHz
	TLC / FL		(Earth-to-space)	399.9 – 400.05 MHz
Space Research Space Operations Earth Exploration	TLC		(Earth-to-space)	2025 – 2110 MHz
	TLMR		(space-to-Earth)	2200 – 2300 MHz
	TLC		(Earth-to-space)	7145 – 7190 MHz
	TLC		(Earth-to-space)	7190 – 7250 MHz
	TLMR		(space-to-Earth)	8025 – 8400 MHz
	TLC		(Earth-to-space)	22.55 – 23.15 GHz
	TLMR		(space-to-Earth)	25.5 – 27.0 GHz
C-band: Fixed Satellite Service	GSO	FL /TLMR	(space-to-Earth)	3400 – 4200 MHz
		FL / TLC	(Earth-to-space)	5725 – 7075 MHz
	NGSO	FL / TLC	(Earth-to-space)	5091 – 5250 MHz
		FL / TLMR	(space-to-Earth)	6700 – 7075 MHz
X-band for: Fixed Satellite Service	FL / TLMR		(space-to-Earth)	7250 – 7750 MHz
	FL / TLC		(Earth-to-space)	7900 – 8400 MHz
Ku-band Fixed Satellite Service	FL / TLMR		(space-to-Earth)	10.7 – 12.75GHz
	FL / TLC		(Earth-to-space)	12.75 – 13.25GHz 13.75 – 14.5GHz
Ka-band Fixed Satellite Service	FL / TLMR		(space-to-Earth)	17.7 – 20.2GHz
	FL / TLC		(Earth-to-space)	27.5 – 31.0 GHz
	FL / TLC		(Earth-to-space)	24.65 – 25.25 GHz
	usually reserved[4]	FL / TLMR	(space-to-Earth)	20.2 – 21.2 GHz
		FL / TLC	(Earth-to-space)	30.0 – 31.0 GHz

Table 1 - List of frequency bands considered for PES and TT&C Earth Stations

[1] TLC = Telecommand transmit signals
[2] TLMR = Telemetry and Tracking receive signals
[3] FL = Feeder-Link
[4] Usually reserved for government use, utilising commercial and non-commercial space systems.

Band	Type of Use	Direction	Frequency range
L-band	Receive Earth stations of the Meteorological-Satellite Service	(space-to-Earth)	1690-1710 MHz
C-band	Receiver Earth stations of the Fixed-Satellite for Monitoring purposes	(space-to-Earth)	3600-4200 MHz
X-band	Receive Earth stations of the Meteorological-Satellite, Earth Exploration and Space missions	(space-to-Earth)	7750-7900 MHz
Ka-band	Receive Earth stations of the Meteorological-Satellite, Earth Exploration and Space missions	(space-to-Earth)	25.5-26.5 GHz

Table 2 - List of frequency bands considered for Receive Only Earth Stations.

2. Licensing of Permanent Earth Stations (PES)

A Permanent Earth Station equipment is a fixed Earth station in the island of St Helena that must have both transmit and receive radio components in the frequency allocations identified in **Table 1**. Both components will be licensed.

As the Permanent Earth Station may cause harmful interference to other services/applications, they must comply with the following:

2.1 General Conditions:

a. The intended applications of these PES are:

   i. To provide a feeder link communication service to any satellite system; and/or
   ii. To provide a Telemetry, Tracking and Command (also known as TT&C) communication service;

b. PESs operate within certain spectrum allocations as in **Table 1**;

c. PESs are stations that do not deliver services directly to the public. They are stations that are integral to the proper functions of the satellite system/network;

d. PESs operate so that they use the minimum amount of spectrum and limit its in-band and out-of-band emissions, by employing proper filtering in transmit and receive channels (also to suppress harmonics);

e. PESs operate in respect to certain technical limitations recommended and required by the ITU Radio Regulations and related ITU-R Recommendations, European Decisions and other international instrument, aimed at protecting other radio services and applications;

f. PES must be part of a satellite system which complies with the ITU Radio Regulations, thus:

i. Have its frequency assignments coordinated under the ITU Radio Regulations;
ii. At a point in time have its assignments entered in the Master International Frequency Register of the ITU;

g. When necessary, the operation should coordinate its frequency assignments with other services/applications in St Helena operating in the same frequency allocation;

h. PES's must operate in a manner that humans and animals are not caused any harm;

i. PES's must operate in a manner that the emissions do not cause harm to aircraft in flight landing or taking off at nearby airports.

2.2 Information and Compliance Required at the Time of Application

Additional information to be submitted with the licence application, Frequency Coordination and Temporary Licence:

a. For ITU Coordination:

i. a written statement that their PES/TT&C equipment has been, or is being coordinated, with other Administrations under the relevant ITU-R provisions of Article 9.

ii. a written status of the ITU coordination (of the satellite network or system) for all frequency assignments of the PES/TT&C equipment installed on the island of St Helena.

b. **For coordination with other services** in the island of St Helena:

i. At the time of the application review, SHG will inform the applicant if it requires to coordinate with other licensed operators in the same frequency allocation. Applicants may initiate this coordination before the application is submitted. The applicant may request SHG a list of licensees in the same frequency allocation intended for the operations of their equipment. SHG will issue a Register of Licensees on its webpage;

ii. Before the full licence is issued, the applicant must perform any necessary frequency coordination with other licence holders in the island of St Helena and in the same allocation they intend to operate;

iii. When such coordination is concluded, and an agreement is reached the applicant must provide a written statement to SHG which provides the results of such coordination;

iv. The applicant has the right to file a complaint to the SHG against the other party after a period of 60 days when either (i) no response has been given to the request of coordination, or (ii) when the other party acted obstructively;

v. A full licence will be issued when this process is terminated by an agreement by both parties;

vi. During this process, the applicant may request in writing a temporary licence, authorising transmissions and receptions based on a non-interference and non-protection basis.

vii. During such time, if the equipment of the applicant is deemed to have caused harmful interference to another user of the allocation then the applicant must terminate its transmissions until the time it has resolved the cause of this interference and has then informed SHG of this.

2.3 Rights and Obligations for the Licensee

The rights given by the licence granted by SHG are:

a. Rights of use are on a first come first serve basis. However, these rights stem from:
   i. SHG's laws and regulations;
   ii. The ITU Radio Regulations, and Coordination agreements which takes precedent amongst satellite coordination, and,
   iii. Other applicable general rules and regulations.

b. Protection of its receivers from harmful interference from other licensed operators, where applicable;

c. Right to transmit its signals within the licence conditions granted.

However, if the licensee obstructs or delays the coordination of its installation vis-à-vis another applicant/licensee, SHG may initiate actions to revoke the licence (following a complaint filed by a new applicant) if the licensee has delayed or obstructed the coordination for a period of at least 60 days;

If any changes occur to the licensing conditions, the licensee must inform the SHG immediately. Failure to do this may initiate a termination of the licence by the SHG.

2.4 Technical Requirements for PES

a. Frequencies

PES must operate in the frequency bands and associated scope identified in **Table 1**.

b. St Helena's Licence Register

PES will be registered onto the SHG's licence register and be protected from future licensed transmitters in the overlapping frequencies.

c. Compliance to ITU Radio Regulations and other Equipment Standards

The applicant must provide written declaration that its PES equipment complies with the following:

i. General Technical Requirement

1. PES must follow, (where these exist and are applicable), the ITU-R Recommendations[5] and ITU Radio Regulations, as well as existing and/or current transmit and receiver standards, as these form a basis for international cooperation and coordination on an equal playing field for all satellite operators and their Earth station operators.

[5] See, https://www.itu.int/rec/R-REC-S/en.

2. In particular, compliance to the following (amongst others), or equivalent ITU-R Recommendations, inter-alia:
    a) ITU-R Recommendation S.580 (antenna radiation pattern);
    b) ITU-R Recommendation S.524 (Off-Axis EIRP);
    c) ITU-R Recommendation S.726 (Spurious Emission Limits)
    d) ITU-R Recommendation S.731 (Cross-polarized radiation pattern).

ii. PES pass band filtering, Out-of-Band and Spurious Emissions Requirements

The PES equipment must have a pass-band filters at both Transmit and Receive chain that ensure the minimal use of spectrum and which (i) protects other radio systems from harmful interference outside the PES's pass-band, and (ii) protects the PES receiver from harmful interference in adjacent frequency bands and allocations. Such pass-band filters are also necessary to ensure that the PES is efficient in the use of the spectrum.

The applicant must submit a written statement that its facility and the equipment forming part of the facility comply with the limitations on the Out-Of-Band Emissions and Spurious Emissions referred to below. The submission will need to include any technical evidence of such compliance.

If any complaints of potential interference caused to other equipment in the surroundings of the licensed installation are received by SHG, or even by satellite systems of other countries, these complaints will be investigated. If it is concluded that the interference is originated by the licensee's installation, SHG will request the licensee to turn off any transmissions from the facility until such interference is resolved. If the interference is not resolved within a period of at least 60 days, then it may start a process to terminate the licence of the installation.

1. PES must comply with Out-of-Band and Spurious emission limits to protect other satellite systems in the same allocation and other services in other frequency allocations.

   The ITU-R Recommendations in reference are:

   - ITU-R Recommendation SM.329, "Unwanted emissions in the spurious domain";
   - ITU-R Recommendation SM.1540, "Unwanted emissions in the out-of-band domain falling into adjacent allocated bands";
   - ITU-R Recommendation SM.1541, "Unwanted emissions in the out-of-band domain", see Annex 5 of such ITU-R Recommendation.

   For the potential interference caused to other radio services in the island of St Helena by Out-Of-Band and/or Spurious Emissions of PES installations in St Helena, other mitigation schemes may exist, such as site shielding, and/or some other filtering. The applicant will need to put a written statement with the technical details in its application if it intends to use such other schemes.

2. It is typical that the amount of spectrum that is utilised by a ROES is equal to the allocated bandwidth (ABW), usually equal to 1.2 times the occupied bandwidth (OBW), i.e., to ABW = 1.2 OBW.

    a) The occupied bandwidth may be taken as the 3dB bandwidth of the ROES signal it is receiving.

b) If this is not the case, the applicant must provide justification to the SHG in its application.

d. Compliance to International Guidelines on Radiation Limits for PES

i. General Terms

The electromagnetic field emitted from a radio installation could pose health and safety risks to humans and animals. There exist international guidelines on emissions limitations from (i) the ICNIRP[6] and (ii) the European Union. These guidelines are very similar, and these are provided below in Tables of **Figures 1**, **2** and **3**.

Alternatively, or additionally, the applicant may have other means to comply with such guidelines, such as exclusion zones, as long as such exclusion zones are properly isolated, fenced and with signage that warns people and to stop animals from entering the given installation area.

In such case, the applicant must properly document its solutions in showing that animals and humans are protected at all times from harmful emissions of the radio installations. In such case, these premises must be appropriately fenced to avoid humans and animals entering and have visible signs to deter humans from entering while the equipment is in operation.

ii. PES Radiation Limits Requirements

1. At the time of the submission of the application:

   a. The applicant must provide a written statement that states that the PES equipment (which includes all of its structure, cables, antennas, etc.) complies with either one of the requirements in **Figures 1**, **2** or **3**. The submission will need to include any technical evidence of such compliance.

   b. Alternatively, or additionally, if the applicant has other means to comply with such requirements, it must then provide a written statement and any technical evidence that an alternative physical or electro-magnetic structure complies in its intent with to the ICNIRP or EU referred in (1) above.

   c. If SHG is made aware that the installation is in breach of the commitments undertaken by the licensee, SHG will inform immediately the licensee and if after 60 days from the date of such communication the licensee has not remedied the breach SHG may initiate a process of termination of the licence.

iii. Reference Radiation Limits

1. ICNIRP Guidelines

The ICNIRP[7] Guidelines for limiting exposure to time-varying electric, magnetic and electromagnetic fields (up to 300 GHz)[8] state that the occupational exposure power density[9]

[6] International Commission on Non-Ionizing Radiation Protection
[7] International Commission on Non-Ionizing Radiation Protection
[8] http://www.icnirp.org/cms/upload/publications/ICNIRPemfgdl.pdf
[9] https://www.mdltechnologies.co.uk/products/hi-2200-rf-survey-meter/

limit from ICNIRP is 50W m^{-2} (or 5 mW cm^{-2}) over the range 10-300GHz. **Table 4** of the Guidelines is presented in **Figures 1** and **2** below.

Table 4. Basic restrictions for time varying electric and magnetic fields for frequencies up to 10 GHz.[a]

Exposure characteristics	Frequency range	Current density for head and trunk (mA m^{-2}) (rms)	Whole-body average SAR (W kg^{-1})	Localized SAR (head and trunk) (W kg^{-1})	Localized SAR (limbs) (W kg^{-1})
Occupational exposure	up to 1 Hz	40	—	—	—
	1–4 Hz	40/*f*	—	—	—
	4 Hz–1 kHz	10	—	—	—
	1–100 kHz	*f*/100	—	—	—
	100 kHz–10 MHz	*f*/100	0.4	10	20
	10 MHz–10 GHz	—	0.4	10	20
General public exposure	up to 1 Hz	8	—	—	—
	1–4 Hz	8/*f*	—	—	—
	4 Hz–1 kHz	2	—	—	—
	1–100 kHz	*f*/500	—	—	—
	100 kHz–10 MHz	*f*/500	0.08	2	4
	10 MHz–10 GHz	—	0.08	2	4

[a] Note:

Figure 1 – Extract from ICNIRP guidelines.

Table 5. Basic restrictions for power density for frequencies between 10 and 300 GHz.[a]

Exposure characteristics	Power density (W m^{-2})
Occupational exposure	50
General public	10

Figure 2* – Extract from *ICNIRP guidelines.

2. European Guidelines

Also, the Council of the European Union issued the "COUNCIL RECOMMENDATION (1999/519/EC) of 12 July 1999, on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)"[10]. Table 1 from this Recommendation is extracted below in **Figure 3** below.

[10] https://op.europa.eu/en/publication-detail/-/publication/9509b04f-1df0-4221-bfa2-c7af77975556/language-en

Basic restrictions for electric, magnetic and electromagnetic fields (0 Hz to 300 GHz)

Frequency range	Magnetic flux density (mT)	Current density (mA/m^2) (rms)	Whole body average SAR (W/kg)	Localised SAR (head and trunk) (W/kg)	Localised SAR (limbs) (W/kg)	Power density, S (W/m^2)
0 Hz	40	—	—	—	—	—
>0-1 Hz	—	8	—	—	—	—
1-4 Hz	—	8/f	—	—	—	—
4-1 000 Hz	—	2	—	—	—	—
1 000 Hz-100 kHz	—	f/500	—	—	—	—
100 kHz-10 MHz	—	f/500	0,08	2	4	—
10 MHz-10 GHz	—	—	0,08	2	4	—
10-300 GHz	—	—	—	—	—	10

Figure 3* – Extract from *COUNCIL RECOMMENDATION (1999/519/EC-12 July 1999).

e. Limitations Near Airports for PES

i. General Terms

The European Conference of Post and Telecommunications (CEPT) has determined that fixed Earth stations operating near airports need to comply with high intensity radiated field (HIRF) levels established by the European Aviation Safety Agency (EASA) to protect aircraft safety systems. These limits, for which PES stations installed in St Helena must comply with, are provided in Table 1 of the ECC Report 272[11]; see also **Figure 4** below.

A map of the "wedge shaped area originating at the departure and arrival end of the runway and extending for 3 nautical miles from the runway over which the aircraft would normally track" is provided below in **Figure 5**.

ii. PES Compliance to Limitations Near Airports

1. At the time of the submission of the application, the applicant must provide a written statement that states that the PES equipment complies with the requirements of ECC Report 272 (see also **Figure 4** below).

   In such written statement the applicant must provide technical evidence on how it intends to comply with such limitations. The evidence must be complete of diagrams of the disposition of the installation vis-à-vis any airport facility in the island of St Helena, along with any necessary calculations that show compliance to the regulations below.

2. SHG will inform the airport authority of such written statement.

[11] https://www.ecodocdb.dk/document/1028

3. The applicant must inform the local airport authority and coordinate with the airport authority any limitations that the airport authority sees fit. The applicant must provide SHG any agreement, consent, authorization that the airport authority will provide to the applicant.

Table 1: Maximum Earth station e.i.r.p. levels to ensure compliance with aircraft HIRF protection criteria

Earth station deployment type	Maximum e.i.r.p. levels (dBW)		
	4-6 GHz	12-18 GHz	18-40 GHz
Earth station on board aircraft located within airport premises	59.0	60.5	58.4
Earth stations in a fixed location within airport premises	67.0	68.4	66.4
Land mobile earth stations located within airport premises	53.0	54.5	52.4
Fixed earth stations or mobile earth stations on land within a wedge shaped area originating at the departure and arrival end of the runway and extending for 3 nautical miles from the runway over which aircraft would normally track**	73.0	74.5	72.4
Fixed earth stations or land mobile earth stations operating with NGSO satellites located outside the wedge shaped area extending for 3 nautical miles from the runway of an airfield over which aircraft would normally track**	79.0	80.5	78.4
Fixed earth stations or land mobile earth stations operating with GSO satellites located outside the wedge shaped area extending for 3 nautical miles from the runway of an airfield over which aircraft would normally track**	80.7-93.0*	82.2-94.5*	80.2-92.4*
Earth station on vessels	79.0	80.5	78.4
Earth stations on board aircraft in flight	73	74.5	72.4

NOTE 1: For satellite earth stations operating within TDMA networks, the above e.i.r.p values shall be respected after taking into consideration the duty cycle (see section 3.3 and 3.4).
* e.i.r.p values are dependent on earth station latitude (see section 3.4.6)
** the width of the wedge shaped area originating at the departure and arrival end of the runway and extending for 3 nm from the runway over which aircraft would normally track depends on the airfield and is determined by the airport authority

NOTE 2: In the context of this Report, the term "Mobile" refers to the definition in section 3.1.1 of the FAA Report and it relates to earth stations that are not operated in a fixed location

***Figure 4* – Extract from *ECC Report 272*.**

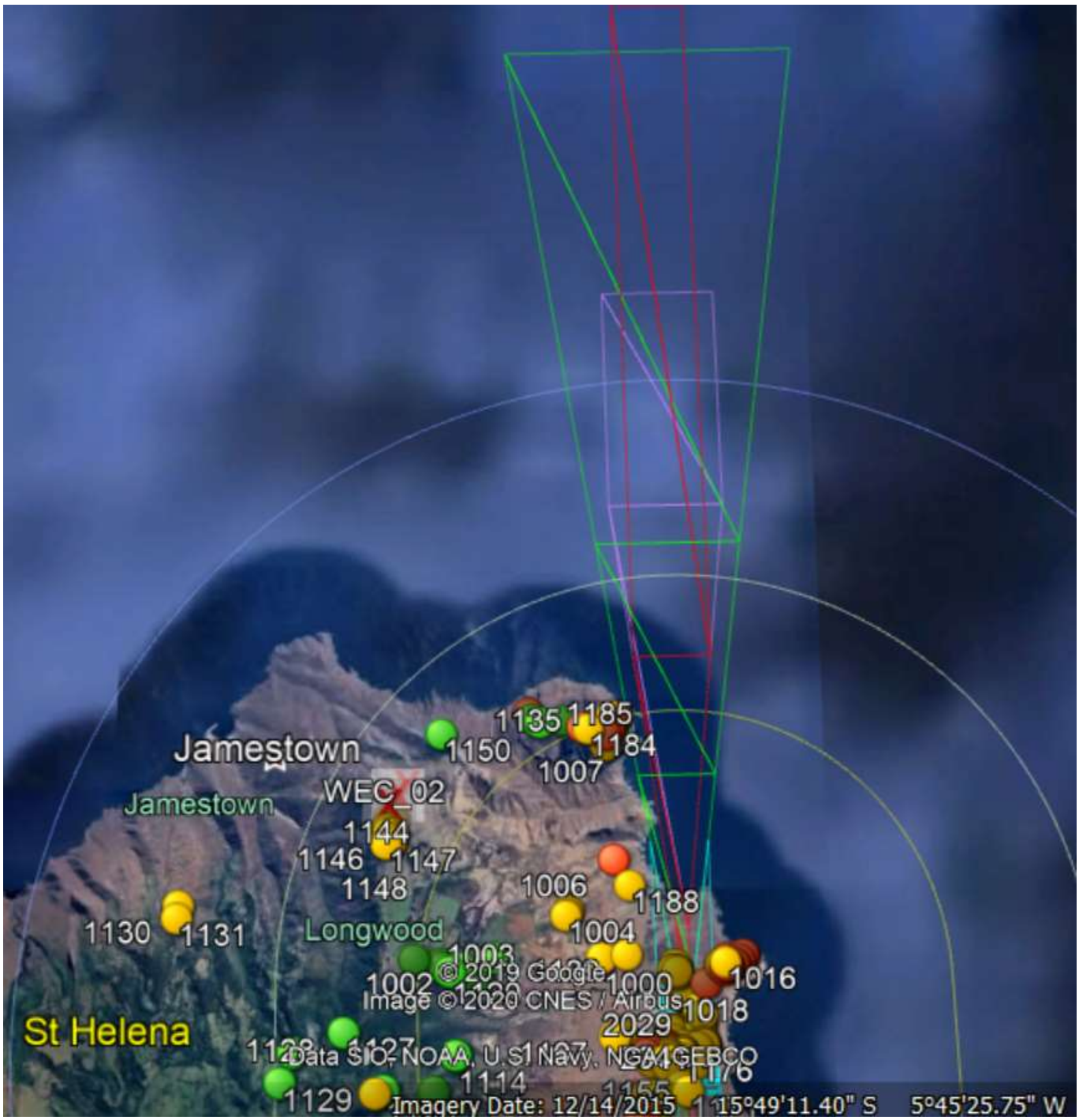
Jamestown
Jamestown
WEC_02
Longwood
St Helena
1135
1185
1150
1184
1007
1144
1146
1147
1148
1006
1188
1130
1131
1004
1003
1002
1000
1016
1018
2029
1114
1129
© 2019 Google
Image © 2020 CNES / Airbus
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Imagery Date: 12/14/2015
15°49'11.40" S
5°45'25.75" W

Figure 5 - Wedge shaped area originating at the departure and arrival end of the runway and extending for 3 nautical miles from the runway over which the aircraft would normally track.

3. Licensing for Receive only Earth Station (ROES)

A ROES is a fixed Earth stations in the island of St Helena operating at a specific receive only carrier frequency and operating for the specific scope, such as meteorological or scientific purposes, or for monitoring purposes.

Because ROESs do not interfere other radio services they do not usually require a licence. This policy allows those operators in the frequencies and purposes provided in **Table 2**, to ask for a licence for their ROESs. Operator that do not seek to obtain a licence for its ROES, it can continue its operations on a non-recognised and on a non-protected basis only.

ROES that are licenced will be added onto the Licence Register, placed on onto SHG's webpage.

3.1 General Conditions:

a. The intended applications of these ROES are to provide a receive only radio stations as per **Table 2**;

b. ROES are stations that do not deliver services directly to the public. They are stations that are integral to the proper functions of the satellite system/network;

c. ROES operate so that they use the minimum amount of spectrum by employing proper filtering in their receive channels;

d. ROES operate in respect to certain technical limitations recommended and required by the ITU Radio Regulations and related ITU-R Recommendations, European Decisions and other international instrument, aimed at ensuring that these properly coordinated and that these use spectrum efficiently;

e. When necessary, ROES must coordinate its frequency assignments with other terrestrial services/applications operating in St Helena and in the same frequency allocation;

3.2 Procedure to follow for licence application of ROES

The following procedure shall be followed for obtain a licence for ROES.

a. To obtain a licence, the ROES operator must submit a ROES licence application (see **Annex 2**).

b. At the application stage the applicant must declare (see also below):

   i. the technical characteristics of the equipment, as per the application form;

   ii. the receiver filtering characteristics of the front-end filter;

   iii. the antenna radiation pattern and its characteristics.

c. An application for a Spectrum Licence for ROES can be accepted if the relevant satellite is either fully operational or will be fully operational in the bands applied for within 2 years of the date of application at an orbital location provided in the application form.

d. The applicant may start its operations on a non-protected basis upon submission of the application.

e. Within 60 days from submitting the ROES application, the applicant may want to seek coordination with terrestrial licensed users in St Helena overlapping the ROES pass-band frequencies[12].

f. Applicants may seek information on other users from the SHG, or alternatively review the Licensee Register on the SHG website.

g. Upon determination by the ROES applicant that their radio receiver equipment overlaps that of transmitters of other operators operating in the same band, the ROES operator may, at its own will, contact the identified operators to seek coordination. Otherwise, the applicant may wish not to pursue this coordination and operate on a non-protected basis from prior licensed transmitters.

h. The applicant must provide a written statement, within 60 days of submitting the application to SHG, which should state that the applicant has either obtained coordination agreements, or that it will not request any protection from other existing co-frequency or overlapping transmitters.

i. Whereas, the applicant requires more than 60 days to finalise its coordination, it may seek extension of this deadline by writing to the SHG.

j. SHG will issue a licence to the applicant within a 60-day period from when the application was submitted. Other requirements are applicable as per this policy. Within this period the ROES equipment will be registered and operate on a non-protected basis.

k. After the 60 day period, unless a written request was made to extend this period, if the applicant does not comply with all the necessary requirements of this policy, including coordination, then SHG may inform the applicant that it will not issue a Spectrum Licence and the equipment may be registered as, and continue to operate on a, non-protected basis. Any application fees will be retained by SHG.

l. SHG may from time to time be called upon by these parties, or by licensees, to resolve their interference disputes. At those times an independent expert may be called upon to resolve such disputes.

3.3 Rights and Obligations for the ROES Licensee

The rights given by the licence granted by SHG are:

a. Rights of use are on a first come first serve basis. However, these rights stem from:
   i. SHG's law and regulations;
   ii. The ITU Radio Regulations, and Coordination agreements which takes precedent amongst satellite coordination, and,
   iii. Other applicable general rules and regulations.

b. Protection of its receivers from harmful interference from other licensed operators, where applicable;

[12] The pass-band frequencies of the ROES are usually the allocated bandwidth equal 1.2 times the occupied bandwidth, i.e., to ABW = 1.2 OBW. The occupied bandwidth may be taken as the 3dB bandwidth of the ROES signal it is receiving.

If the licensee obstructs or delays the coordination of its installation vis-à-vis another applicant/licensee, SHG may initiate actions to revoke the licence (following a complaint filed by a new applicant) if the licensee has delayed or obstructed the coordination for a period of at least 60 days;

If any changes occur to the licensing conditions, the licensee must inform the SHG immediately. Failure to do this may initiate a termination of the licence by the SHG.

3.4 Technical Requirements for PES

a. ROES Receive Frequencies and Scope

ROES must operate in the frequency bands and associated scope identified in **Table 2**.

b. St Helena's Licence Register

ROES will be registered onto the SHG's licence register and be protected from future licensed terrestrial transmitters in the overlapping frequencies (unless this is waived by the ROES operator at its application stage).

c. Compliance to ITU Radio Regulations and other Equipment Standards

The applicant must provide written declaration that its equipment complies with the following:

i. Technical Requirement

ROES must follow, (where these exist and are applicable), the ITU-R Recommendations[13] and ITU Radio Regulations, as well as existing and/or current receiver standards, as these form a basis for international cooperation and coordination on an equal playing field for all satellite operators and their Earth station operators.

In particular, compliance to the following (amongst others), or equivalent ITU-R Recommendations for receive antenna equipment, inter-alia:

a) ITU-R Recommendation S.580 (antenna radiation pattern);
b) ITU-R Recommendation S.731 (Cross-polarized radiation pattern).

ii. ROES pass band filtering

The ROES equipment must have a pass-band filter which ensure the minimal use of spectrum and which protect the ROES from harmful interference in adjacent frequency bands and allocations. Such pass-band filter is also necessary to ensure that the ROES is efficient in the use of the spectrum.

It is typical that the amount of spectrum that is utilised by a ROES is equal to the allocated bandwidth (ABW), usually equal to 1.2 times the occupied bandwidth (OBW), i.e., to ABW = 1.2 OBW.

1. The occupied bandwidth may be taken as the 3dB bandwidth of the ROES signal it is receiving.
2. If this is not the case, the applicant must provide justification to the SHG in its application.

[13] See, https://www.itu.int/rec/R-REC-S/en.

4. Fee Schedule for the Licensing of PES, TT&C Earth Stations and ROES

4.1 General

Under the Telecommunication Ordinance, St Helena Government has the power to charge fees to applicants and licence of radio apparatus. As such SHG is introducing, both for:

a. **Administrative fees**, which are fees to recover any spectrum management activities and the processing of the licence application form. These are fees paid one time at the submission of the application.

   However, if the licensee may require additional spectrum management activities, SHG may reserve the right to charge additional fees.

b. **Yearly spectrum use fee**, which is a fee related to the operations of the apparatus in the use of the spectrum resource.

SHG will reserve the right to recommend a waiver, or reduction in fees, where there is a strong economic or social case to do so, with the permission from SHG's Financial Secretary. Additionally, from time to time, SHG will aim to review and communicate changes the PES and ROES fees proposed in this policy.

The fee schedule for Permanent Earth Stations and Receive Only Earth Stations installed in the territory of St Helena, is provided in **Annex 3** and can be subject to updates from time to time.

The applicable fees for each licence application will be based on:

a. The applicable frequency band, or bands applied for, i.e., **Table 1** for PES and TT&C stations, and **Table 2** for ROES;

b. The number of antennas deployed;

c. One fee applicable for both the receive and transmit frequency bands of the PES, or TT&C;

d. TT&C fees are smaller than the PES fees because these stations do not carry data traffic and their spectral occupancy is much smaller than that of PES feeder-links.

Cumulative fees are applicable if the applicant applies for more than one frequency allocation in the transmit, or in the receive frequencies.

4.2 Procedure for the payment of fees

a. For the payment of the relevant fees the applicant will pay these after it submits an application to SHG.

b. Within 60 days from submitting the application, the applicant must provide to SHG evidence (for example, copies of the bank transactions) of such payment.

c. Spectrum fees must be paid before each anniversary date and a written evidence must be submitted to SHG before the anniversary date. If this fee is not paid by the anniversary date SHG will initiate termination of the licence.

4.3 Penalties due to Breach of Licence Conditions

The licence for PES and ROES will be issued under certain obligations. If the licensee if found to be in breach of such condition, as per Telecommunications Ordinance (1989), SHG will then retain the right to:

a. To issue a penalty notice and associated fee;

b. Initiate a revocation of the license;

The licensee will have 60 days to remedy its breach. For more serious breaches the period may be shortened.

5. Licence Period of Validity, Renewal or Cancellation

5.1 Period of validity of Licence for PES and ROES

The length of a Permanent Earth Stations, TT&C Earth Station or Receive Only Earth Station Licence is for **ten (10) years** from the date of when the licence is granted (such date is the licence "expiry date").

5.2 Renewal of Licence

a. Each year the licence is automatically renewed upon payment of the spectrum fees (as per fee schedule – see **Annex 3**) and the written submission of the payment made as per fee schedule.

b. Within 60 days before the period of validity of the licence ends, the licensee may request to renew the licence for the Permanent Earth Station, TT&C Earth station, or Receive Only Earth Stations by submitting a formal letter to SHG requesting its renewal and stating also that nothing has changed from its current licence. In such case, no new application form is required.

c. Within 30 days of receiving the letter, SHG will issue a response letter to the licensee informing that the licence has been either granted or cancelled (for reasons to be provided by SHG).

d. If the licence has been cancelled, the licensee can appeal the decision to SHG and SHG will organise a meeting with the licensee to discuss this. If the licence is deemed to be cancelled, the licensee can re-submit a new licence application.

e. If SHG does not received a letter from the licensee to renew its licence, SHG will cancel the licence at the expiry date. SHG will inform the licensee, where possible, that the licence has been cancelled.

f. SHG reserves the right, under certain justifications, to reinstate the licence after its expiry date or after its cancellation.

5.3 Cancellation of Licence before the period of validity of the licence ends

SHG has the right to cancel, or not renew a licence, due to legal and/or policy constraints, and/or breach to licence conditions. Such reasons shall be communicated in writing to the licensee. Other reasons may be applicable.

A licence can be terminated, within 60 days from when the licensee has been informed by SHG in writing, if inter-alia:

a. The satellite system, or satellite network, under which the licence is granted is no longer operational;

b. The licence conditions under which the licence has been granted are no longer valid;

c. The relevant yearly spectrum fee has not been paid;

d. Or other breaches as determined by SHG.

When a licence is cancelled SHG will issue a letter to the licensee. The licensee can appeal the decision of SHG to cancel the licence and SHG will organise a meeting with the licensee to discuss this. If the licence is deemed to be cancelled, the licensee can re-submit a new licence application.

ANNEX 1: Glossary of terms and definitions used in this consultation

In this document, unless the context otherwise requires, the listed abbreviations are to be read as having the meanings referenced below.

Acronym	Definition
BOT	British Overseas Territory
CEPT	European Conference of Postal and Telecommunications
EASA	European Aviation Safety Agency
ECC	Electronic Communications Committee
EESS	Earth Exploration-Satellite Service
e.i.r.p. or EIRP	Effective Isotropic Radiated Power
EMC	Electro-Magnetic Compatibility
EMF	Electro-Magnetic Force
ETSI	European Telecommunications Standards Institute
EU	European Union
FL	Feeder-Link
FOI	Freedom of Information
FSS	Fixed Satellite Service
GBP	Pound Sterling
GDPR	General Data Protection Regulation
GHz	One billion Hertz = 10^9 Hertz
GSO	Geostationary Orbit
HIRF	High Intensity Radiated Field
ICNIRP	International Commission on Non-Ionizing Radiation Protection
ICT	Information and Communications Technologies
ITU	International Telecommunications Union
ITU-R	International Telecommunications Union – Radio
MHz	One million Hertz = 10^6 Hertz
MSS	Mobile Satellite Service
Non-GSO or NGSO	Non-geostationary orbit
PES	Permanent Earth Station
ROES	Receive Only Earth Station

SEDP	Sustainable Economic Development Plan
SES	Space Exploration Service
SHG	St Helena Government
SOS	Space Operations Service
Tbps	Terabytes per second
TLC	Telecommand signals
TLM	Telemetry signals
TLMT	Telemetry and Tracking
TT&C	Telemetry, Tracking and Command
UHF	Ultra-High Frequencies
UK	United Kingdom
VHF	Very-High Frequencies
WRC	World Radio Conference

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

Meteorological Satellite Service (MetSat): An earth exploration-satellite service for meteorological purposes.

Earth Exploration Satellite Service: A satellite radiocommunication service which obtains information relating to the characteristics of the Earth and its natural phenomena from active or passive sensors on the satellite and distributes this information to earth stations.

Space Research Service: A radiocommunication service in which spacecraft or other objects in space are used for scientific or technological research purposes.

Earth station: The ITU definition of an earth station applies, i.e.:

i. A station located either on the Earth's surface or within the major portion of the earth's atmosphere and intended for communication with one or more space stations; or with one or more stations of the same kind by means of one or more reflecting satellites or other objects in space.

ii. ITU Regulations require that receiving stations should use equipment with technical characteristics appropriate for the class of emission concerned; in particular, selectivity should be appropriate having regard to RR No. 3.9 on the bandwidth of emissions.

iii. For the purpose of licensing by the Authority of St. Helena, other technical limitations on the earth station characteristics may apply.

iv. Earth Station Licences for operation in the Fixed Satellite Service bands typically provide for radio transmissions (uplinks) to specific orbital satellite positions, using transponders or spot frequencies that have been independently assigned by satellite operators.

Permanent Earth Station (PES): For the purposes of Licensing by the authority of St Helena, a Permanent Earth Station is defined as being an earth station:

i. whose antenna(s) is(are) fixed on the ground and are connected by appropriate radio spectrum to one or more satellites;

ii. whose transmit (Tx) and receive (Rx) frequencies conform to SHG's frequency allocations and the ITU table of allocation (see Article 5 of the ITU Radio Regulations) and allocated to the Fixed Satellite Service (FSS), Space Operation Service (SOS), Mobile Satellite Service (MSS), Broadcasting Satellite Service (BSS), Earth Exploration Satellite Service (EESS) and Space Research Service (SRS);

iii. operating with the aim to provide either feeder-link connectivity to satellites (which off-load/up-load data and information between the satellite segment and the ground network), or provide telecommand/telemetry communication for the health and control of the spacecraft;

iv. which provides a radio link to a single satellite or multiple satellites in the geostationary orbit (GSO), or non-geostationary orbit (NGSO) that have been brought into use as notified to the ITU, or intended to be in less than 2 years from the date of the application;

v. which may provide, in addition to feeder-link services or as a standalone, Telemetry, Tracking and Command (TT&C) capabilities, for the provision of position, health and manoeuvring of the spacecraft, or controlling the spacecraft payload.

Receive Only Earth Station (ROES): For the purposes of Licensing by the authority of St Helena, a Receive Only Earth Station is defined as being an earth station:

i. whose antenna(s) is(are) fixed on the ground and are connected by appropriate radio spectrum to one or more satellites;

ii. that uses spectrum only for receiving data/information from a space station;

iii. whose receive (Rx) frequencies conform to SHG's frequency allocations and the ITU table of allocation (see Article 5 of the ITU Radio Regulations) and allocated to the Fixed Satellite Service (FSS), Space Operation Service (SOS), Mobile Satellite Service (MSS), Broadcasting Satellite Service (BSS), Earth Exploration Satellite Service (EESS) and Space Research Service (SRS);

iv. that operate with the aim to provide either receive feeder-link connectivity to satellites (which off-load data and information from a space station), or provides telemetry communication for monitoring the health and control of the spacecraft;

v. which provides a radio link to a single satellite or multiple satellites in the geostationary orbit (GSO), or non-geostationary orbit (NGSO) that have been brought into use as notified to the ITU, or intended to be in less than 2 years from the date of the application.

Satellite System: is defined as a space system using one of more satellites.

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.

Geostationary Orbit (GSO): the orbit of a spacecraft that lies on the equatorial plane of the Earth and at radius from the centre of the Earth of 42,164 km, and whose altitude from the mean sea level is 35,786 km. A space object on the GSO will have the same angular rotation with the Earth rotation and thus remain fixed in the sky as seen from someone on the Earth.

Geostationary satellite: a space object located on the geostationary orbit at a given longitude (the geocentric angle from the Greenwich meridian to the space object). A GSO satellite is seen to be remaining at a fixed position in the sky, usually measured by its azimuth (Az) and its elevation (el).

Non-Geostationary Orbit (NGSO, or non-GSO): an orbit that is not GSO, and thus any space craft on such orbit will not be fixed with to the Earth's rotation. There are many types of NGSO, such as Low Earth orbit (LEO), Medium Earth orbit (MEO), High Elliptical orbit (HEO). Some NGSO can also be circular (radius is constant, or eccentricity is zero), or elliptical (eccentricity is greater than 0 and no more than 1).

Non-Geostationary satellite: a space object located at a NGSO. This means that the azimuth, elevation and distance from any point on the Earth surface change all the time.

ANNEX 2: Application Form

ANNEX 3: Fee Schedule for the Licensing of PES, TT&C Earth Stations and ROES