



Commission for
Communications Regulation

GUIDELINES

Guidelines for Satellite Earth Station (SES) Licences operating in spectrum above 3 GHz

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| 00/64R | December 2002 | Satellite Earth Stations operating in the FSS Guidelines |
| 01/33R | December 2002 | Satellite Teleport Facility Guidelines |

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1 Introduction

This document sets out the Commission for Communications Regulations' (ComReg) Guidelines for applicants wishing to apply for a Satellite Earth Station (SES) Licence operating at frequencies greater than 3 GHz.

The purpose of these Guidelines is to provide information on ComReg's licensing scheme for the above licences and, in particular on:

- licence types covered
- licence application procedures
- frequency bands available
- technical licensing requirements
- The applicable fees for each licence type

Further information on ComReg's Satellite Licensing scheme is available on ComReg's web-site. (www.comreg.ie)

ComReg encourages all potential applicants to read the Guidelines carefully.

If you have any queries on these guidelines or the licensing process, please contact ComReg's Licensing Operations Team:

Address:

Licensing Operations Team
ComReg
Block DEF
Abbey Court
Irish Life Centre
Lower Abbey Street
Dublin 1

Tel: +353 1 8049600

Email: licensing@comreg.ie

ComReg may update and revise these Guidelines from time to time.

Guidelines for Satellite Earth Station Licences in frequencies above 3 GHz

These Guidelines replace:

- ComReg 00/64R: “Guidelines for applicants for Satellite Earth Station Licences in the Fixed Satellite Service in Spectrum above 3 GHz”,
- ComReg 01/33R: “Guidelines for Applicants for a Teleport Facility Licence in the Fixed Satellite Service in Spectrum above 3 GHz”.

Additionally, ComReg has revised the FSES and Teleport Facility application forms. The revised application forms are:

- **ComReg 08/33:** Fixed Satellite Earth Station Licence (FSES) or a Teleport Facility Licence
- and
- **ComReg 08/32:** Transportable Earth Station (TES) Licence.

2 The Legislation

2.1 Wireless Telegraphy Act

A licence is required under Section 3 of the Wireless Telegraphy Act 1926 to keep and operate apparatus for wireless telegraphy, unless the apparatus is licence-exempt (see 2.2).

The specific regulations governing the issue of Fixed Satellite Earth Stations (FSES), Teleport Facility Licences and Transportable Earth Stations (TES) in Ireland are contained in the Wireless Telegraphy (Fixed Satellite Earth Stations and Teleport Facility) Regulations 2007 (Statutory Instrument No. 295 of 2007).

Please note that these Regulations should be read in the light of the regulatory framework for electronic communications networks and services and in conjunction with Appendix E of Wireless Telegraphy Licences - Future Applicability of Licence Conditions (ComReg Document 03/84).

Potential applicants should be aware that any SES Licence granted by ComReg is for the keeping and operating of only the apparatus for wireless telegraphy specified in the licence. Any licence issued by ComReg does not absolve the licensee from complying with any other obligations. Furthermore, any licence issued by ComReg does not confer any right of ownership of the frequency spectrum. It allows the assigned frequency block to be used during the term of the licence in accordance with the licence conditions.

2.2 Licence Exemptions

Certain SES are exempt from licensing. The specific regulations detailing licence-exempt operation of SES are:

- S.I. 505 of 2003 Wireless Telegraphy Act, 1926 (section 3) Exemption of Certain Classes of Fixed Satellite Earth Stations
- S.I. 273 of 2000 Wireless Telegraphy Act, 1926 (section 3) Exemption of Certain Fixed Satellite Receiving Earth Stations

2.3 General Authorisation Scheme

SES and Teleport Facility licensees must also comply with ComReg's General Authorisation scheme, which is governed by the European Communities (Electronic Communications Networks and Services) (Authorisation) Regulations 2003 (S.I. 306 of 2003). See ComReg documents 03/81, 03/82R, 03/83 and 03/102 for more information on the General Authorisation scheme.

3 General Information

3.1 Licence Categories

Two categories of licences are covered by these Guidelines:

- Fixed Satellite Earth Stations (FSES) licences;

and

- Teleport Facility licences.

FSES licences are divided into two categories:

- Fixed Earth Stations (FES) licences (which include large earth stations and Very Small Aperture Terminals (VSAT));

and

- Transportable Earth Stations (TES) licences.

3.1.1 Fixed Earth Stations (FES)

FES are earth stations used at fixed locations and which are non-transportable. They include earth stations which operate:

- in the fixed satellite service (FSS) at frequencies greater than 3GHz;
- as a feeder link in the mobile satellite service (MSS) at frequencies greater than 3GHz;

or

- as a feeder link in the broadcasting satellite service (BSS) at frequencies greater than 3GHz.

There is no longer a distinction between a Large Earth Station and a VSAT for licence applications.

3.1.2 Transportable Earth Stations (TES)

TES are earth stations used to transmit live or recently recorded footage from different locations. They are transportable and are commonly referred to as Satellite News Gathering stations.

TES can operate at different locations or remain in a fixed location during operation. TES can typically either be vehicle mounted or packed for transportation (i.e. a “fly-away” configuration).

3.1.3 Teleport Facilities

A Teleport Facility means two or more Non-transportable Fixed Satellite Earth Stations which collectively provide access to or from an electronic communications network, and which are located at a single, physically demarcated geographic location, and which collectively are capable of transmitting on more than one frequency to more than one Space Station simultaneously using steerable antennas, follows the same licensing procedure as an individual FES, with the exception that a different fee is applied.

3.2 Operation Details (Transmit and / or Receive)

FSES and Teleport Facility licensees can be licensed for:

- transmit (referred to as uplink or Earth-to-space (E-s)) operation;

and / or

- receive (referred to as downlink or space-to-Earth (s-E)) operation.

For transmit operation, a licence is required unless it is licence-exempt.

4 Frequency Bands

The International Telecommunication Union-Radiocommunications (ITU-R) Radio Regulations (ITU-R Radio Regulations) assigns wireless services usage to frequency bands on an international basis. The Radio Frequency Plan for Ireland (ComReg 07/81) outlines Ireland's Frequency Plan and is updated from time-to-time by ComReg. For each frequency band, the Frequency Plan sets out the types of radio services that are permitted for operation and those radio services currently in use.

For ease of reference, the primary frequency bands applicable to the licensing of SES are summarised in Appendix 2.

Due to the nature of TES applications and that they normally require a quick turnaround; ComReg recommends that applicants apply for TES transmit operation in the bands which do not have other primary sharing services.

4.1 Shared SES Frequency Bands

In accordance with the ITU-R Radio Regulations, applicants should be aware that some SES frequency bands are shared with other wireless services. The nature of this sharing depends upon the status (Primary or Secondary) of the other wireless service, as outlined in the Radio Frequency Plan. Two possible sharing scenarios can occur:

Scenario 1: Both SES and the other wireless service are Primary allocations. For example, some SES frequency bands are shared with fixed point-to-point radio links

Under this scenario the priority of both services is equal. Applications are therefore processed on a first-come-first served basis. Where two or more services occupy the same frequency band, a successful national and / or international coordination process will be required before a licence can be processed.

Scenario 2: SES is a Primary allocation while the other wireless service is a Secondary allocation. For example, some SES frequency bands are shared with Short Range Devices.

Under this scenario the priority of the SES service is greater than that of the other wireless service. Accordingly, the Secondary service operates on a non-protected non-interference basis thereby accommodating the primary service.

4.2 Exclusive SES Frequency Bands

Exclusive SES frequency bands are frequency bands which are not shared with other wireless services. The exclusive SES frequency bands are:

- 12.5 – 12.75 GHz;
- and
- 14.0 – 14.25 GHz.

A lower fee is charged for SES operating in the exclusive bands, since these frequency bands are not shared with other wireless services.

4.2.1 Frequency Band Plan Adjustments by ComReg

ComReg may be required to adjust frequency bands available in Ireland and / or their technical conditions relating to SES. These adjustments may arise from changes in:

- spectrum allocations in accordance with the requirements of international treaties or regionally negotiated agreements;
 - EU legislation and decisions;
 - national requirements;
- and / or
- spectrum management.

Existing licensees may be required to modify or cease operation of their licensed SES in order to comply with revised frequency bands and technical conditions. ComReg will endeavour to provide as much notice as possible where such changes are required. In this event, all expenses must be borne by the licensee.

4.3 National and International Coordination

When a SES frequency band is shared with another primary wireless service, national and / or international coordination is required with existing services in that band before a licence can be issued.

Coordination is the process by which the requirements of various users of radio spectrum are balanced against the available spectrum resources and the probability of interference between the various users is reduced to acceptable levels.

Coordination between SES and other terrestrial stations applies principally to the site of the SES. However, variations in the antenna radiation patterns, emitted power, receiver sensitivity, assigned frequency or bandwidth will have an effect on the coordination distances and the type of coordination required.

Generally, coordination, involving interference checks between different services on a national level, is sufficient for most applications. However, in some cases,

international coordination may be required, particularly where there is a possibility of interference to/from a wireless service of another administration.

For example, the 4/6 GHz SES frequency band generally requires both national and international coordination due to the large coordination areas.

In relation to international coordination, ComReg cannot licence SES transmitters which may cause interference above the internationally agreed level to receivers outside the country. Additionally, operators of receivers located in Ireland are required to accept interference levels if within internationally agreed limits. Potential applicants should also be aware that the process to complete international coordination can take at least 6 months.

4.3.1 Coordination Procedure

If national or international coordination is necessary ComReg may request the following from applicants in order to minimise interference to/from other wireless services:

- a physical site survey showing the horizon elevation angle from the centre of the proposed antenna;
- enhanced radio and antenna equipment to improve spectral efficiency;

and / or

- site shielding - being a natural or manufactured obstruction positioned between the SES, potentially interfering stations and/or stations potentially being interfered with.

5 Technical Licensing Requirements

5.1 Radio and Telecommunications Terminal Equipment (R&TTE) Directive

All radio and telecommunications terminal equipment placed on the market in Ireland since 5 June 2001 is required to comply with the essential requirements and other relevant provisions of the Radio and Telecommunications Terminal Equipment (R&TTE) Directive (1999/5/EC).

The essential requirements include electromagnetic compatibility and low voltage requirements as well as a requirement for radio equipment to use the spectrum effectively and without causing harmful interference. The other relevant provisions to be met include marking requirements and requirements relating to the provision of information to the user.

ComReg's Spectrum Compliance Team will be happy to assist with any enquiries you may have concerning the R&TTE Directive.

5.1.1 Equipment originating outside the EU or EEA

Organisations from outside the European Union (EU) or European Economic Area (EEA), who are visiting Ireland to cover an event on a one-off basis are strongly advised to ascertain whether their equipment is in conformity with the essential requirements and other relevant provisions of the R&TTE Directive. Equipment put into service in Ireland must, by law, be R&TTE compliant.

The possibility exists that equipment brought into Ireland from outside the EU or EEA may not be R&TTE compliant, even though such equipment may have been manufactured to comply with standards which apply in other parts of the World. This may very well be the case for equipment which has not been manufactured for sale on the European Market.

If radio equipment has not been manufactured to comply with the R&TTE Directive, there is a risk that it may be:

- insufficiently immune to unwanted interference from licensed R&TTE compliant systems, and as such not entitled to protection from such interference;
- not constructed in such manner as to minimise all unwanted interference to licensed R&TTE compliant systems. In such a case the operator may be instructed by ComReg to cease operation of the equipment

5.2 Non-Ionising Radiation

Licensees must ensure that non-ionising radiation emissions from their FSES and/or Teleport facilities, and from any structure occupied by the FSES and Teleport facility, are within the limits specified in the guidelines published by the International Commission for Non-Ionising Radiation Protection (ICNIRP). Emission levels must comply with any radiation emission standards adopted and published by ICNIRP, any radiation emission standards of CENELEC and any other radiation emission standards specified by law.

5.3 Site Clearance

To ensure the safe operation of any Satellite Earth Station, to protect the public and other radio users the operator must comply with the following conditions:

- the antenna must be directed away from public vantage points by at least 5 degrees;
- the antenna must be directed away from any radio masts in the near vicinity by 10 degrees;
- a mechanism must be incorporated which inhibits operation at elevation angles of less than 10 degrees;
- the Earth Station must not be situated within 100 metres of a radio installation operating within ± 250 MHz of the Earth Station carrier frequency. This distance is increased if the installation is within ± 45 degrees of the TES main beam. When issuing a TES licence, ComReg will advise the licensee of any such radio installations in operation at that time;

and

- the TES must not be parked under electricity power lines.

5.4 Airport Exclusion and Notification Zones (see Appendix 4)

It is internationally recognised that there is a need to protect aircraft avionics from the possibility of interference arising from earth stations operating in close proximity to airports. **Consequently, the deployment of satellite earth stations in areas around certain airports is restricted.** In order to satisfy this statutory requirement and ensure that the safety of aircraft is not affected by the SES, a licensee must comply with special requirements relating to:

- Airport Exclusion Zones (which apply to all SES). No SES may operate inside Airport Exclusion Zones (see Table 2 of Appendix 4), except with the prior authorisation of the relevant Airport Contact;

and

- Airport Notification Areas (which applies to TES only). TES operators are required to notify the relevant Airport Contact (see Table 1 of Appendix 4) of their intention to transmit within a Notification Area.

6 The Application Process

Once an applicant has established their planned SES meets the technical requirements the application may be submitted.

6.1 Pre-Application Consultation

ComReg provides a pre-application consultation service to applicants. This service provides feedback on applications and is intended to:

- minimise application processing time;
- avoid or reduce the potential for applications being refused;
- facilitate an exchange of views for the optimisation of radio solutions.

ComReg recommends that applicants undertake a pre-application consultation particularly where:

- the applicant is not familiar with ComReg's application and licensing procedure;
- the application is not of a routine/repetitive nature;
- there are particular considerations which an applicant wishes to clarify.

For further information please contact ComReg's Licensing Operations Team at:

Licensing Operations
Tel: + 353 1 804 9600
Email: licensing@comreg.ie

6.2 Application Forms

Two different application forms are available, namely.

- **ComReg 08/33:** Fixed Satellite Earth Station Licence (FSES) or a Teleport Facility Licence;
- **ComReg 08/32:** Transportable Earth Station (TES)

6.3 Evaluation of the Application

Applications are generally processed on a first-come, first-served basis.

Each application is evaluated based on the following criteria:

- efficient use of the spectrum;
- minimum radio and antenna equipment requirements;
- successful coordination between Administrations and between users;
- compliance with international obligations
- compliance with other licensing regimes regulated by ComReg

ComReg may request additional information in order to evaluate a licence application.

6.4 Payment of Licence Fees

A licence cannot be issued until all fees have been received. Once processing of the application is complete, the ComReg will issue an invoice in respect of the licence fee. ComReg requires that this fee be paid within 30 days of invoicing whether or not the applicant intends making immediate use of the assigned frequency spectrum. Applications will be deemed to have lapsed if payment of this invoice is not received within 30 days.

7 Licence Information

A SES and Teleport Facility licence granted under the Wireless Telegraphy (Fixed Satellite Earth Stations and Teleport Facility) Regulations 2007 (S.I. 295 of 2007) allows the licensee to keep and operate radio apparatus in accordance with these regulations.

The following provides guidance on the licence conditions attached to a SES licence.

7.1 The Licensed Frequency

A SES licence allows the licensee to install and operate equipment on a specified frequency band and channel spacing at particular sites. Licensees should be aware that ComReg may licence other users on the same frequencies provided that there is minimal interference potential.

7.2 Licence Duration

FES and TES licences are generally issued for a period of 1 year, and are then required to be renewed. However, these licenses may be issued for a period greater than 12 months but not exceeding 60 months from the date of commencement, at the request of licensee.

Teleport Facilities are licensed for a period of 5 years and are then required to be renewed.

7.2.1 Temporary Licences

Temporary licences are available for FSES only, and for periods of not less than 1 month and no greater than 11 months, and are mainly applicable to TES. Temporary licences cannot be renewed. If a full licence is required then a new licence application must be made.

7.3 Amendments to Licences

It is the responsibility of the licensee to inform ComReg of any changes to their licence as soon as they occur.

It is recognised that licensees, from time to time, may wish to request a modification to an existing licence (for example, a change of centre frequency). In these instances a new licence will be issued and a licence fee may apply

In certain circumstances, ComReg may need to amend an existing licence. In such cases ComReg will advise the licensee as necessary. In this event, any additional expenses incurred must be borne by the licensee.

7.4 Cancellation of a Licence

A licence may be cancelled at the written request of the licensee. There shall be no entitlement to any refund of licence fees in the event of any such cancellation.

A licence, if not renewed in accordance with the legislation will be deemed to have lapsed.

7.5 Revocation of a Licence

ComReg may suspend or revoke a licence where there is serious or repeated non-compliance, by the licensee, with the conditions of the licence.

7.6 Spectrum Compliance

ComReg reserves the right to inspect any SES to ensure that the system is configured and operating in accordance with the licence conditions. In addition, ComReg may attend the commissioning of sites and may carry out measurements on the system.

Where a Licensee experiences interference, it is advisable that they first check that their equipment is operating in accordance with their licence (such as correct output power and frequency). In the event that the licensee is satisfied that they are operating correctly and they are still experiencing interference they should contact ComReg's Spectrum Compliance Team at:

Spectrum Compliance
Tel : + 353 1 804 9600
Email: compliance@comreg.ie

8 Licence Fees

8.1 Teleport Facility

A Teleport Facility licence fee is calculated by summing the bandwidth of each SES comprising the Teleport Facility and applying the appropriate fee for as detailed in Table 1 of Appendix 3.

For each additional station added to a Teleport Facility after the initial grant of a licence, a coordination fee of €1,575 shall be paid upon application.

8.2 SES operating in Exclusive Band

The annual fee payable in relation to each station operating in the exclusive band is set out in Table 2 of Appendix 3.

8.3 SES operating in Non - Exclusive Bands

The annual fee payable in relation to each station operating in the non-exclusive band is set out in Table 3 of Appendix 3. The appropriate fee is dependent on the operating frequency, bandwidth (BW) and equivalent isotropically radiated power (eirp)

In addition to the above licence fees are payable in respect to Transmit only OR Transmit and Receive (other than Teleport Facilities) where protection is sought on the receive.

8.4 Short Term Licensing

Where a licence is required for a period other than 12 months, the fees are adjusted pro-rata as follows:

$$C = A \times (B/12)$$

- A = relevant annual licence fee set out above
- B = number of whole months for which the licence is granted
- C = appropriate fee to be paid.

Appendix 1 - Definitions

“**Feeder Link**” means a radio link from a Satellite Earth Station at a given location to a Space Station or vice versa, conveying information for a space Radiocommunications Service other than for a Fixed Satellite Service.

“**Fixed Earth Station (FES)**” means a Fixed Satellite Earth Station operated at a single specified location (i.e. a Non-transportable Satellite Earth Station).

“**Fixed Satellite Earth Station (FSES)**” means a Satellite Earth Station operating in the Fixed Satellite Service or as a feeder link in the Mobile Satellite Service or Broadcasting Satellite Service and in frequencies above 3 GHz.

“**Fixed Satellite Service (FSS)**” means a Radiocommunications Service between Satellite Earth Stations at specified fixed points when one or more satellites are used.

“**Harmful Interference**” means interference which endangers the functioning of radio navigation service or of other safety services or which otherwise seriously degrades, obstructs or repeatedly interrupts a Radiocommunications Service operating in accordance with the applicable European Community or national regulations.

“**High Altitude Platform Station**” means apparatus for wireless telegraphy located on an object at an altitude 20 km to 50 km and at a specified, nominal, fixed point relative to the Earth.

“**Licence**” means a licence granted in accordance with Section 5 of the Wireless Telegraphy Act 1926 (No. 45 of 1926), for a Fixed Satellite Earth Station or Teleport Facility.

“**Mobile Satellite Service (MSS)**” means a Radiocommunications Service between Mobile Satellite Earth Stations and one or more Space Stations used by this service; or between Mobile Satellite Earth Stations by means of one or more Space Stations and includes any Feeder Links necessary for its operation.

“**Non-transportable Satellite Earth Station**” means a Fixed Satellite Earth Station operated at a single specified location (i.e. a Fixed Earth Station).

“**Radiocommunications Service**” means a service involving the transmission, emission and/or reception of radio waves specified for specific telecommunications purposes.

“**Satellite Earth Station (SES)**” means apparatus for wireless telegraphy, located on the Earth’s surface, intended for either the transmission of radio signals to a Space Station or the reception of radio signals from a Space Station, or both.

“**Space Station (SS)**” means apparatus for wireless telegraphy, located on an object which is beyond the major portion of the Earth’s atmosphere and which is not a high altitude platform.

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“**Teleport Facility**” means two or more Non-Transportable Fixed Satellite Earth Stations which collectively provide access to or from an electronic communications network, and which are located at a single, physically demarcated geographic location, and which collectively are capable of transmitting on more than one frequency to more than one Space Station simultaneously using steerable antennas.

“**Temporary Licence**” means a Licence for a Fixed Satellite Earth Station which is not renewable and is granted for a period from 1 month to 11 months.

“**Transportable Earth Station (TES)**” means a Fixed Satellite Earth Station which is transportable, which operates at varying locations and which remains in a fixed location during operation, as used in Satellite News Gathering.

“**Very Small Aperture Terminal (VSAT)**” means an earth station adapted or designed to operate as covered by ERC/DEC (00)05.

Appendix 2 –Frequency Band Plan

The tables in this Annex summarise, for each frequency band details of other terrestrial services which are shared on a primary basis (indicated in **bold text**) and secondary basis (indicated in plain text). Non national Frequency Bands other than those listed may be applied and licensed on a case by case basis at ComRegs discretion

Table 1 Frequency bands applicable to SES transmit operation

| Frequency (GHz) | Other Primary (bold) and Secondary (plain) Sharing Services |
|-----------------|--|
| 5.15 – 5.25 | |
| 5.25 – 5.35 | Short Range Devices (SRD) |
| 5.35 – 5.47 | |
| 5.47 – 5.57 | Meteorological, Amateur, Short Range Devices (SRD) |
| 5.725 – 5.85 | Amateur, SRD, FWA (5.725–5.875 GHz) |
| 5.85 – 5.925 | SRD, FWA (5.725–5.875 GHz) |
| 5.925 – 6.7 | L6 & U6 GHz P2P Links |
| 6.7 – 7.075 | U6 & L7 GHz P2P Links |
| 7.9 – 8.4 | L8 & U8 GHz P2P Links & Meteorological Satellite & Earth Exploration Satellite |
| 10.7 – 11.7 | 11 GHz Point to Point Links |
| 12.5 – 12.75 | Satellite Exclusive Band |
| 12.75 – 13.25 | 13 GHz Point to Point Links |
| 13.75 – 14.0 | Short Range Devices (SRD) (movement detection and alert equipment) |
| 14.0 – 14.25 | Satellite Exclusive Band (14.0 -14.5GHz VSAT uplinks) |
| 14.25 – 14.5 | |
| 17.3 – 18.1 | Feeder link bands for BSS |
| 29.5 – 30.0 | |

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Table 2 Frequency bands applicable to SES receive operation

| Frequency (GHz) | Other Primary (bold) and Secondary (plain) Sharing Services |
|------------------------|--|
| 3.4 – 3.6 | FWPMA & FWALA (3.4 – 3.8 GHz) |
| 3.6 – 4.2 | FWALA (3.4 – 3.8 GHz) |
| 4.5 – 4.8 | |
| 6.7 – 7.075 | U6 & L7 GHz Point to Point Links |
| 7.25 – 7.3 | L7 GHz Point to Point Links & Meteorological Satellite |
| 7.3 – 7.45 | L7 & 7 GHz Point to Point Links |
| 7.45– 7.55 | 7 GHz Point to Point Links & Meteorological Satellite |
| 7.55– 7.75 | 7 GHz Point to Point Links |
| 7.9 – 8.025 | L8 GHz Point to Point Links & Meteorological Satellite |
| 8.025 – 8.175 | L8 GHz Point to Point Links & Meteorological Satellite |
| 8.175 – 8.215 | L8 GHz Point to Point Links & Meteorological Satellite |
| 8.215 – 8.4 | L8 GHz Point to Point Links & Meteorological Satellite |
| 10.7 – 11.7 | 11 GHz Point to Point Links |
| 11.7 – 12.5 | MMDS (if interference protection is required the tabulated fee applies.) |
| 12.5 – 12.75 | Exclusive (interference protection not required as this band is exclusive to satellite services) |
| 17.3 – 17.7 | Feeder link bands for BSS. |
| 19.7 – 20.2 | |

Appendix 3 Licence Fee Calculations

Teleport Fees

Table 1: 5 Year Teleport Fee Calculation

| Total BW of Radio Spectrum Used (MHz) | 5 Year Licence Fee Payable (€) |
|--|--------------------------------|
| $BW < 0.5$ | 25,000 |
| $0.5 \leq BW < 2$ | 31,250 |
| $2 \leq BW < 11$ | 37,500 |
| $11 \leq BW < 40$ | 43,750 |
| $40 \leq BW \leq 80$ | 50,000 |
| $BW > 80$, per MHz BW or part thereof | 625 |

Exclusive Band Fees

Table 2: Annual Fee in Exclusive Band

| |
|--------------------------------|
| €100 each for first 10 SES and |
| €25 for each additional SES. |

Non Exclusive Band Fees

Table 3 Fee calculation table for SES licences in the Non Exclusive frequency bands

| Frequency (GHz) | Bandwidth (MHz) | Annual Fee Payable (€) | | |
|-----------------|-----------------|------------------------|------------------------|-------------------|
| | | eirp < 50 dBW | 50 dBW ≤ eirp ≤ 75 dBW | eirp > 75 dBW |
| 3-10 | BW < 0.5 | 1000 | 1250 | 1500 |
| | 0.5 ≤ BW < 2 | 1250 | 1500 | 1750 |
| | 2 ≤ BW < 11 | 1500 | 1750 | 2000 |
| | 11 ≤ BW < 40 | 1750 | 2000 | 2250 |
| | 40 ≤ BW ≤ 80 | 2000 | 2250 | 2500 |
| | BW > 80 | 2000 + (BW-80)x25 | 2250 + (BW-80)x25 | 2500 + (BW-80)x25 |
| 10-15 | BW < 0.5 | 500 | 750 | 1000 |
| | 0.5 ≤ BW < 2 | 750 | 1000 | 1250 |
| | 2 ≤ BW < 11 | 1000 | 1250 | 1500 |
| | 11 ≤ BW < 40 | 1250 | 1500 | 1750 |
| | 40 ≤ BW < 80 | 1500 | 1750 | 2000 |
| | BW > 80 | 1500 + (BW-80)x25 | 1750 + (BW-80)x25 | 2000 + (BW-80)x25 |
| 15-20 | BW < 0.5 | 125 | 375 | 625 |
| | 0.5 ≤ BW < 2 | 375 | 625 | 875 |
| | 2 ≤ BW < 11 | 625 | 875 | 1125 |
| | 11 ≤ BW < 40 | 875 | 1125 | 1375 |
| | 40 ≤ BW < 80 | 1125 | 1375 | 1625 |
| | BW > 80 | 1125 + (BW-80)x25 | 1375 + (BW-80)x25 | 1625 + (BW-80)x25 |
| 20-30 | BW < 0.5 | 100 | 350 | 600 |
| | 0.5 ≤ BW < 2 | 350 | 600 | 850 |
| | 2 ≤ BW < 11 | 600 | 850 | 1100 |
| | 11 ≤ BW < 40 | 850 | 1100 | 1350 |
| | 40 ≤ BW < 80 | 1100 | 1350 | 1600 |
| | BW > 80 | 1100 + (BW-80)x25 | 1350 + (BW-80)x25 | 1600 + (BW-80)x25 |
| >30 | BW < 0.5 | 50 | 300 | 550 |
| | 0.5 ≤ BW < 2 | 300 | 550 | 800 |
| | 2 ≤ BW < 11 | 550 | 800 | 1050 |
| | 11 ≤ BW < 40 | 800 | 1050 | 1300 |
| | BW > 80 | 800 + (BW-80)x25 | 1050 + (BW-80)x25 | 1300 + (BW-80)x25 |

Appendix 4 – Airport Exclusion and Notification Procedures

An SES may not operate inside an Airport Exclusion Zones, except with the prior authorisation from the relevant Airport Contact.

TES operators are required to notify the relevant Airport Contact of their intention to transmit within a Notification Area. See Table 1 of this Appendix for further details.

Airport Contacts

Table 1 Airport Contact Details

| Airport | Airport Contact Person | Phone | 24-HR | FAX |
|----------------------|-------------------------------|--------------|--------------|-------------|
| Cork | Aer Rianta. Duty Officer | 021 4329659 | 021 4329659 | 021 4313442 |
| | I.A.A Systems Manager | 021 4329618 | 087 2424303 | 021 4313029 |
| Donegal | Ops Manager | 074 9548284 | 087 2938230 | 074 9548483 |
| Dublin | Aer Rianta. Duty Officer | 01 8144774 | 01 8144774 | 01 8145749 |
| | I.A.A Systems Manager | 01 8067301 | 01 8067301 | 01 8445374 |
| Galway | Ops Manager | 091 755569 | 086 8330525 | 091 752876 |
| Ireland West (Knock) | The Manager | 094 9368100 | 094 9367222 | 094 9367232 |
| Kerry | The Manager | 066 9764644 | 087 2544100 | 066 9764134 |
| Shannon | Aer Rianta. Duty Officer | 061 712240 | 061 712240 | 061 474240 |
| | I.A.A Systems Manager | 061 363246 | 061 363246 | 061 366298 |
| Sligo | The Manager | 071 9168280 | 071 9167700 | 071 9168396 |
| Waterford | The Manager | 051 846600 | 087 231574 | 051 877809 |

Airport Exclusion Zone & Procedure (All SES)

An Airport Exclusion Zone is an area 1 km wide (centred on the runway centre line) and extending 7 km in the approach direction from the stop-end of each Instrument Landing Systems equipped airport runway.

Exclusion Zone Procedure

SES must not operate within an exclusion zone, except with the prior permission of the relevant Airport Contact. If the SES operator is in any doubt as to the location or extent of an exclusion zone they should liaise with the relevant Airport Contact.

List of Airports with Exclusion Zones

Airports which have exclusion zones (i.e. are equipped with Instrument Landing Systems) are listed below.

Table 2 Exclusion Zone Locations and Notification Areas for Airports in Ireland

| Airport Name | Runway ILS | Direction of Exclusion Zone (Degrees) * | Stop End (Lat Long DMS) |
|----------------------|------------|---|-------------------------------|
| Cork (Dual) | 17 | 340 | 51N 49 56.16 008W 29 08.84 |
| Cork (Dual) | 35 | 160 | 51N 51 00.97 008W 29 47.18 |
| Donegal | 21 | 20 | 55N 02 22.45 008W 20 38.36 |
| Dublin (Dual) | 10 | 275 | 53N 25 12.94 006W 15 02.08 |
| Dublin (Dual) | 28 | 95 | 53N 25 20.75 006W 17 24.27 |
| Dublin | 16 | 337 | 53N 25 11.66 006W 14 58.54 |
| Galway | 26 | 75 | 53N 18 05.51 008W 55 58.46 |
| Ireland West (Knock) | 27 | 79 | 53N 54 30.72 008W 50 00.46 |
| Kerry | 26 | 71 | 52N 10 40.75 009W 32 15.46 |
| Shannon (Dual) | 6 | 232 | 52N 42 36.03 008W 54 27.87 |
| Shannon (Dual) | 24 | 52 | 52N 41 35.42 008W 56 36.67 |
| Sligo | NA | NA | NA |
| Waterford | 21 | 21 | 52N 10 54.98 007W 05 24.89 |

* The Direction of the Exclusion Zone is from runway stop-end in Degrees East of True North

Illustration of an Airport Exclusion Zone

An example of the Exclusion Zone at Cork Airport in relation to Runway 17/35 (dual) is illustrated below.

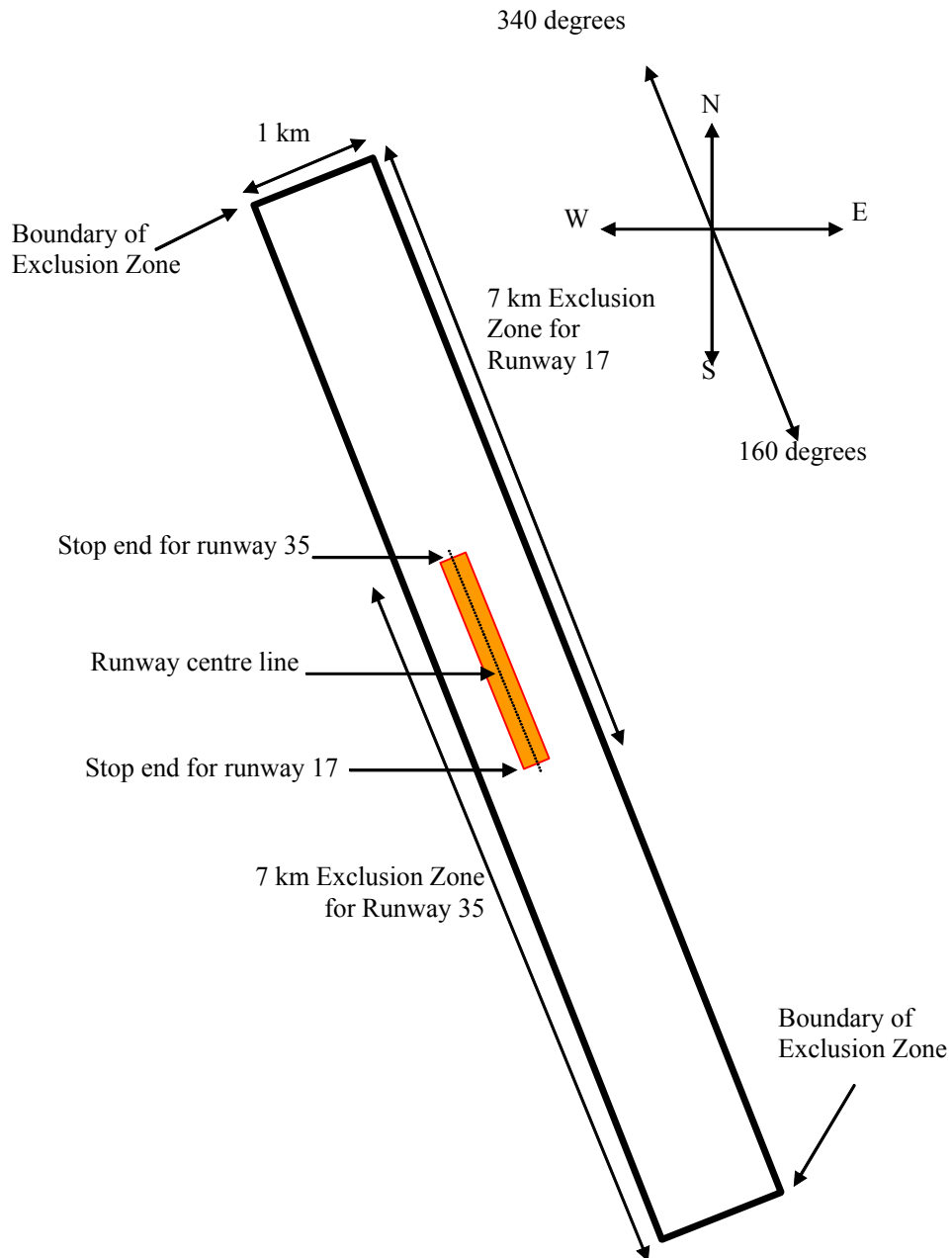


Illustration of Exclusion Zone at Cork Airport in relation to Runway 17 / 35 (dual)

Note 1: All bearings are given in Degrees East of True North

Note 2: This diagram is not to scale

Airport Notification Area & Procedure (TES Only)

An Airport Notification Area is a circular area within a 7 km radius centred on the Airport Reference Point of an airport equipped with an Instrument Approach Facility

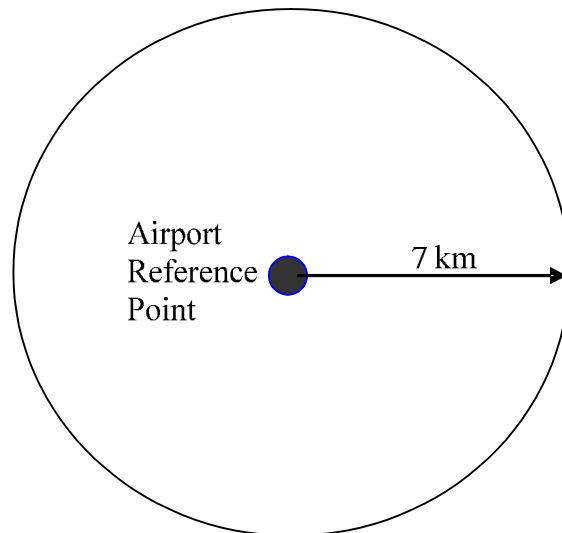


Diagram illustrating an Airport Notification Area

Notification Area Procedure

- Operators of a TES must notify the Airport Contact, of their intention to operate within a notification area.
- This advance notification must include the following:
 - TES location,
 - Date, time and duration of each transmission.
- A dedicated telephone (mobile or fixed) line, plus a back-up line, must be made available by the operator, which directly connects the TES and the Airport Contact.
- The TES must be contactable at this telephone number, 24 hours a day, for the whole period of the operation.
- Transmission is limited to an eirp of 70 dBW.
- Transmission must cease immediately if requested to do so by the Airport Contact.

Notification Area Procedure (contd.)

Airports with notification areas are listed in below.

List of Airports requiring Notification

| Airports | Airport Reference Point (Lat Long DMS) |
|----------------------|---|
| Cork | 51N 50 29 |
| | 008W 29 28 |
| Donegal | 55N 02 39.09 |
| | 008W 20 27.60 |
| Dublin | 53N 25 17 |
| | 006W 16 12 |
| Galway | 53N 18 00.88 |
| | 008W 56 28.17 |
| Ireland West (Knock) | 53N 54 37.07 |
| | 008W 49 06.57 |
| Kerry | 52N 10 51.16 |
| | 009W 31 25.62 |
| Shannon | 52N 42 07.12 |
| | 008W 55 29.34 |
| Sligo | 54N 16 48.77 |
| | 008W 35 57.15 |
| Waterford | 52N 11 13.92 |
| | 007W 05 13.07 |

Appendix 5 – Acronyms

| | |
|---------|--|
| BSS | Broadcasting Satellite Service |
| ComReg | Commission for Communications Regulation |
| CENELEC | European Committee for Electrotechnical Standardization |
| ENG | Electronic News Gathering |
| E-s | Earth-to-Space |
| ETSI | European Telecommunications Standards Institute |
| FSES | Fixed Satellite Earth Station |
| FES | Fixed Earth Station |
| FSS | Fixed Satellite Service |
| IAA | Irish Aviation Authority |
| ICNIRP | International Commission for Non-Ionising Radiation Protection |
| ILS | Instrument Landing System |
| ITU-R | International Telecommunication Union - Radiocommunications |
| MSS | Mobile Satellite Service |
| NTFA | National Table of Frequency Allocations |
| OB | Outside Broadcasting |
| R&TTE | Radio and Telecommunications Terminal Equipment |
| s-E | Space-to-Earth |
| SNG | Satellite News Gathering |
| SRD | Short Range Devices |
| SS | Space Station |
| SES | Satellite Earth Station |
| TES | Transportable Earth Station |
| VSAT | Very Small Aperture Terminal |