



Earth Stations on Mobile Platforms

Consultation on the authorisation of
Earth Stations on Mobile Platforms

Consultation

Publication date: 15 August 2013

Closing Date for Responses: 10 October 2013

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Section 1

Executive summary

- 1.1 The last few years has seen increasing interest in the use of Earth Stations on Mobile Platforms (ESOMPs) for providing broadband connectivity to passengers on board moving vehicles, including aircraft, ships and trains. Several satellite operators are planning to launch commercial satellite networks in 2013/2014 that support the use of ESOMPs transmitting in the frequency band 27.5 – 30 GHz and receiving in the band 17.3 – 20.2 GHz. To facilitate the take up of these new innovative services, we are proposing to introduce a regulatory framework to allow their use.
- 1.2 For the purpose of this consultation, we categorise ESOMPs into three different types as follows:
 - aircraft-mounted ESOMP – earth station mounted on an aircraft;
 - ship-mounted ESOMP – earth station mounted on a ship/vessel;
 - land-based ESOMP – earth station mounted on a land-based vehicle (for example a train or coach).
- 1.3 We propose to authorise all three types of ESOMP in UK territory that transmit in the frequency bands shown below:
 - 27.5 – 27.8185 GHz;
 - 28.4545 – 28.8265 GHz;
 - 29.4625 – 30 GHz.
- 1.4 These bands are not used by terrestrial radio systems in the UK and are already available for other types of satellite earth stations, including Permanent Earth Stations and High Density Fixed Satellite Service (HDFSS).
- 1.5 ESOMP equipment receiving in the spectrum 17.3 – 20.2 GHz may operate at the risk of experiencing interference from other radio users.
- 1.6 The key proposals for consultation are:
 - Radio equipment for land-based ESOMPs should be exempted from the need to have a Wireless Telegraphy Act 2006 licence;
 - Radio equipment for aircraft and ship mounted ESOMPs should be licensed under the Wireless Telegraphy Act 2006 rather than licence-exempt;
 - Licensing of aircraft-mounted ESOMPs should be done through variation of the Aircraft Radio licence issued on Ofcom's behalf by the Civil Aviation Authority (CAA) with no additional fee;
 - Licensing of ship-mounted ESOMPs should be done through variation of the Ship Radio licence with no additional fee.

- 1.7 We welcome stakeholder feedback to this consultation document. The deadline to submit responses to us is 5pm on 10 October 2013. Information on Ofcom's consultation principles and how to respond to this consultation is provided in Annexes 1 to 3.
- 1.8 We expect to release a Statement on this consultation in December 2013 having taken into account stakeholder responses to our proposals. Subject to the responses, we plan to make licensing available for aircraft and ship mounted ESOMPs early in 2014. Subject to the responses, we also plan to publish a notice on amendments to the Wireless Telegraphy (Exemption) Regulations early in 2014 which will include the implementation of our proposals to exempt land-based ESOMPs from the need to have a Wireless Telegraphy Act 2006 licence.

Section 2

Background

Introduction

- 2.1 Ofcom is responsible for authorising civil use of the radio spectrum and achieves this by granting wireless telegraphy licences under the Wireless Telegraphy Act 2006 (the “WT Act”) or by making regulations exempting users of particular equipment from the requirement to hold such a licence.
- 2.2 Fixed-satellite service (FSS)¹ networks are being used at an increasing rate to provide services to earth stations on mobile platforms (ESOMPs). An ESOMP is a satellite earth station mounted on a mobile platform such as an aircraft, ship, train or road vehicle, which uses the radio spectrum to provide broadband backhaul links via satellite. When the ESOMP is combined with on-board access technology, it will allow consumers who are travelling to have broadband connectivity over wide territories where other technology is not available.
- 2.3 Existing FSS networks in some frequency bands have been used for many years to provide telecommunication services to mobile platforms such as aircraft and ships. As demand for broadband connectivity evolves, satellite service providers are targeting higher frequency bands (27.5 – 30 GHz for the uplink and 17.3 – 20.2 GHz for the downlink) to meet the need for greater broadband speed, capacity and efficiency.
- 2.4 Recent advances in stabilised antenna technology have allowed the development of earth station antennas capable of maintaining very stable pointing accuracy which allows the earth station antenna to track the satellite in earth orbit even when the earth station is mounted on a rapidly moving platform. This, in conjunction with the use of spread spectrum waveforms, has allowed ESOMPs to operate in accordance with the same technical constraints (e.g. off-axis e.i.r.p.² density) that apply to traditional fixed-sited uncoordinated FSS earth stations. With the appropriate operational controls, the technical characteristics of ESOMPs are such that they cause no more interference to neighbouring FSS networks than fixed-sited earth stations.
- 2.5 In recognition of these developments, this consultation sets out proposals for authorising the use of ESOMPs in the UK.

International regulatory context

- 2.6 In 2011, the European Conference of Postal and Telecommunications Administrations (CEPT) initiated work on the development of a European technical and regulatory framework for ESOMPs. Following the conclusion of this work, the CEPT Electronic Communications Committee (ECC) published ECC Report 184³ and ECC Decision (13)01⁴ in March 2013. The Decision covers the harmonised use and

¹ The fixed-satellite service (FSS) is a type of radio service defined in Radio Regulations 1.21.

² e.i.r.p. – equivalent isotropically radiated power. See Radio Regulations 1.161.

³ <http://www.erodocdb.dk/doks/filedownload.aspx?fileid=3956&fileurl=http://www.erodocdb.dk/Docs/doc98/official/pdf/ECCREP184.PDF>

⁴ <http://www.erodocdb.dk/doks/filedownload.aspx?fileid=3962&fileurl=http://www.erodocdb.dk/Docs/doc98/official/pdf/ECCDEC1301.PDF>

free circulation of ESOMPs and sets out the technical requirements and limitations which should be observed to ensure that ESOMPs do not cause interference to other radio services. The material contained in the ECC Decision is based on the studies contained in ECC Report 184.

- 2.7 Ofcom, representing the UK, played a significant role in the CEPT work in view of the benefit of having a common framework across Europe given the international environment that certain types of ESOMPs operate in. We feel that mutual recognition between Member States will facilitate the free movement of aircraft and ship mounted ESOMPs in Europe. We consider that the technical criteria specified in ECC Decision (13)01 provide an appropriate basis for authorising ESOMPs in the UK and this is what our technical authorisation framework is based on.
- 2.8 Because it is desirable for the CEPT work on ESOMPs to apply more widely, Ofcom is also supporting work within the International Telecommunication Union (ITU) to develop globally recognised requirements for their authorisation.
- 2.9 In parallel to the CEPT work, the European Telecommunications Standards Institute (ETSI) developed the harmonised standard ETSI EN 303 978 on ESOMPs, published in February 2013.
- 2.10 We recognise that aircraft and ship mounted ESOMPs can already operate across the whole of the band 27.5 – 30 GHz (27.0 – 30 GHz in ITU Regions 2 and 3⁵) in international airspace/waters. However, parts of these frequency ranges are used by terrestrial radio systems in the territory of some countries and the use of ESOMPs could cause interference to those terrestrial systems as the aircraft or ships approach national territory. The ESOMP should therefore be operated such that it does not cause interference to terrestrial systems. ECC Decision (13)01 provides limitations on power flux density (pfd) that operators may find useful when considering how aircraft and ship mounted ESOMPs can protect terrestrial services on national territory, where appropriate. Once the aircraft or ship has entered a national jurisdiction it must, of course, comply with the authorisation regime of that country.
- 2.11 It is the authorisation regime for ESOMPs within UK jurisdiction with which this consultation is concerned. In particular, this consultation proposes to authorise the use of ESOMPs in UK jurisdiction in those portions of the 27.5 – 30 GHz band which are already authorised for satellite earth station applications, including Permanent Earth Stations and HDFSS⁶.

Legal framework

- 2.12 The applicable legal framework derives from our duties under both European and domestic legislation, specifically from:
- the Common Regulatory Framework for electronic communications networks and services, in particular, the Framework Directive and the Authorisation Directive; and
 - the Communications Act 2003 (the “Communications Act”) and the WT Act which transpose the provisions of those directives into national law.

⁵ The three ITU world Regions are defined in Article 5 of the Radio Regulations

⁶ High Density Fixed-Satellite Service (HDFSS) is characterised by large numbers of earth stations deployed with high-geographical density.

Our general duties

- 2.13 Section 3(1) of the Communications Act provides that our principal duties in carrying out our functions are:
- to further the interests of citizens in relation to communications matters; and
 - to further the interests of consumers in relevant markets, where appropriate by promoting competition.
- 2.14 In carrying out these duties, we are required, among other things, to secure a number of objectives such as the desirability of promoting competition, investment and innovation⁷. Ofcom is also required to have regard to the principles under which regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed⁸.
- 2.15 Section 4 of the Communications Act requires Ofcom to act in accordance with the six Community requirements, which give effect to the requirements of Article 8 of the Framework Directive.

Our spectrum duties

- 2.16 In carrying out our general duties, we are required under the Communications Act to secure, in particular, the optimal use of the electromagnetic spectrum for wireless telegraphy⁹, and to have regard to the different needs and interests of all persons who may wish to make use of the spectrum for wireless telegraphy¹⁰.
- 2.17 In addition, in carrying out our spectrum functions under section 3(1) of the WT Act, we are required to have regard in particular to:
- the extent to which the electromagnetic spectrum is available for use, or further use, for wireless telegraphy;
 - the demand for use of the spectrum for wireless telegraphy; and
 - the demand that is likely to arise in future for the use of spectrum for wireless telegraphy.
- 2.18 Section 3(2) of the WT Act provides that Ofcom must also have regard to the desirability of promoting the efficient management and use of the spectrum for wireless telegraphy, the economic and other benefits that may arise from the use of wireless telegraphy, and the development of innovative services and competition in the provision of electronic communications services.

Wireless telegraphy licences and licence exemption regulations

- 2.19 Under section 8(1) of the WT Act, it is an offence to establish, install or use wireless telegraphy (WT) equipment in the UK except where such use is authorised either by the issue of an appropriate wireless telegraphy licence or where the use of such equipment is exempted from the need to hold such a licence by regulations made under section 8(3) of the WT Act. Section 8(4) of the WT Act requires that Ofcom

⁷ Sections 3(4)(a) and (d) Communications Act 2003

⁸ Section 3(3) Communications Act 2003

⁹ Section 3(2)(a) Communications Act 2003

¹⁰ Section 3(4)(f) Communications Act 2003

must make regulations to exempt the use of WT equipment if the conditions in section 8(5) of the WT Act are met, including that the use of the equipment is not likely to involve undue interference. By way of section 119 of the WT Act, the requirement for Ofcom's authorisation extends to the use of radio apparatus on UK-flagged ships and aircraft.

- 2.20 We aim wherever possible to reduce the regulatory burden upon our stakeholders (in this instance users of radio spectrum) and one way we can do this is, when appropriate, to exempt from licensing the use of specified equipment which is unlikely to cause undue interference to other legitimate users of the radio spectrum.
- 2.21 Whether the radio equipment is licensed or licence-exempt, UK regulations will normally refer to an IR which sets out the appropriate technical operational conformity requirements. The IR normally includes a cross-reference to any appropriate ETSI standard.
- 2.22 Section 9 of the WT Act gives us the power to grant wireless telegraphy licences subject to such terms as we think fit. Schedule 1(6) of the WT Act gives Ofcom a general discretion to vary wireless telegraphy licences and sets out the process that Ofcom must follow. In the case where a variation is proposed by the licensee, we are under no obligation (under the WT Act) to consult on the proposal.

Radio and Telecommunications Terminal Equipment

- 2.23 Most radio equipment must be compliant with the Radio and Telecommunications Terminal Equipment (R&TTE) Directive (Directive 99/5/EC) to reduce the risk of harmful interference. The R&TTE Directive has been implemented into UK law by the Radio Equipment and Telecommunications Terminal Equipment Regulations 2000 (SI 2000/730) as amended. Compliance with the relevant ETSI harmonised standard (where there is one) presumes that the equipment conforms with the essential requirements of the R&TTE Directive and the use of these standards has proved a popular method for manufacturers and suppliers to ensure compliance.
- 2.24 Interface requirements (IRs) for radio equipment provide a link between the requirements of the R&TTE Directive and the use of national radio spectrum. UK Interface Requirements describe the minimum technical specifications, such as power limits and frequency bands, which are necessary to avoid interference between services.

Impact Assessment and Equality Impact Assessment

- 2.25 The analysis presented in section 3 of this document represents an impact assessment, as defined in section 7 of the Communications Act 2003.
- 2.26 Impact assessments provide a valuable way of assessing different options for regulation and showing why the preferred option was chosen. They form part of best practice policy-making. This consultation sets out the potential impacts for stakeholders and the reasons we are proposing particular options for authorising ESOMPs. For further information about our approach to impact assessments see the guidelines "Better policy-making: Ofcom's approach to impact assessment"¹¹.

¹¹ <http://www.ofcom.org.uk/about/policies-and-guidelines/better-policy-making-ofcoms-approach-to-impact-assessment/>

- 2.27 Ofcom is separately required by statute to assess the potential impact of all our functions, policies, projects and practices on equality. Equality Impact Assessments (EIAs) also assist us in making sure that we are meeting our principal duty of furthering the interests of citizens and consumers regardless of their background or identity. We do not consider the impact of the proposals in this consultation to be to the detriment of any group within society.

Section 3

Proposals for authorising ESOMPs

Introduction

- 3.1 This section sets out Ofcom's proposals for authorising land-based, aircraft-mounted and ship-mounted Earth Stations on Mobile Platforms (ESOMPs) that transmit in the frequency ranges 27.5 – 27.8185 GHz, 28.4545 – 28.8265 GHz and 29.4625 – 30 GHz and receive in the frequency range 17.3 – 20.2 GHz. We explain first the rationale and case for enabling the use of ESOMPs and then set out our specific proposals for authorising ESOMPs. Our proposals for authorising ESOMPs focus on the transmit frequency ranges since reception is on a non-protected basis and does not require separate authorisation in the UK.
- 3.2 The proposed Regulations would apply in the United Kingdom, the Channel Islands and the Isle of Man, subject to agreement of the Island Authorities.

The case for authorising the use of ESOMPs in the UK

- 3.3 Under the Communications Act Ofcom is required to secure optimal use of the radio spectrum and to promote the availability throughout the UK of a wide range of electronic communications services. Ofcom must also have regard to the desirability of encouraging investment and innovation in relevant markets as well as to further the interests of citizens and consumers.
- 3.4 Although other types of technology are already used to provide connectivity to aircraft, ships and land vehicles, the relatively large amount of spectrum that we propose to make available to ESOMPs means they have the ability to provide links with higher capacity. ESOMPs represent a potentially valuable innovation and the development of a new market for mobile communications. UK citizens and consumers will benefit from having broadband access whilst travelling in places where alternative means of connectivity is limited.
- 3.5 However, a decision to authorise the use of ESOMPs in the UK needs to consider the potential for interference with other services. In practice, we consider that the risk of interference with other services is very low for the reasons explained in the following sub-sections.

Interference with other satellite networks

- 3.6 All types of satellite earth station have the potential to interfere with other satellite networks and so the use of frequencies and satellite orbits needs to be carefully planned and coordinated. Because satellite services are international in nature, this coordination takes place within a framework of international rules operated by the ITU. The Radio Regulations, which have the force of an international treaty, contain procedures for the notification, coordination and registration of satellite space stations and networks and place certain rights and obligations on ITU member states. These procedures are designed to ensure that satellite networks operate without interfering with other satellite networks and also that spectrum and orbital resources are efficiently utilised.

- 3.7 The risk of interference from an ESOMP into other FSS networks is further mitigated through the implementation of interference-avoidance measures contained in ECC Decision (13)01 and ETSI harmonised standard EN 303 978. These measures include the requirement for ESOMPs to operate under the control of a Network Control Facility (NCF) which ensures that off-axis e.i.r.p. levels generated by the ESOMP are not greater than the levels agreed with other satellite network operators. Additionally, automatic monitoring and control mechanisms should be used to immediately inhibit transmissions from the ESOMP when a fault such as mis-pointing occurs.
- 3.8 Since the management of interference between satellite networks is governed by ITU procedures and because specific limits on interference are unique to each coordination agreement between satellite operators, we have not included any limits on interference to other satellite networks within our UK authorisation framework for ESOMPs. However, we have based our implementation on ECC Decision (13)01 and ETSI EN 303 978 which include the requirement to incorporate measures to avoid interference with other satellite networks.

Interference with terrestrial radio users

- 3.9 In the UK, the frequency bands 27.5 – 27.8185 GHz, 28.4545 – 28.8265 GHz and 29.4625 – 30 GHz (which the ESOMPs authorisation is proposed to cover) are only available to various types of transmitting satellite earth stations, including Permanent Earth Stations and HDFSS. Accordingly, there are no terrestrial radio users in these frequency ranges in the UK to which ESOMPs could cause interference.

Question 1) Do you agree that Ofcom should authorise the use of ESOMPs in the UK in the frequency bands 27.5 – 27.8185 GHz, 28.4545 – 28.8265 GHz and 29.4625 – 30 GHz?

Authorisation approach

Authorisation of land-based ESOMPs

- 3.10 Ofcom already authorises the use of transmitting uncoordinated earth stations (termed HDFSS) on a licence exempt basis in the same transmit frequency bands that are the subject of this consultation.
- 3.11 During the development of ECC Report 184 and ECC Decision (13)01, CEPT concluded that the technical characteristics of ESOMPs installed on land platforms such as trains and road vehicles do not differ substantially from typical uncoordinated stationary FSS earth stations. Ofcom agrees with this conclusion. In addition, we note that uncoordinated earth stations can operate at any location on the ground, just like land-based ESOMPs. Because land-based ESOMPs are technologically similar to uncoordinated earth stations, there is no reason to believe that there will be a change to the interference environment when they operate in the same frequency bands.
- 3.12 We therefore propose to authorise land-based ESOMPs in the same frequency bands as those already used for transmitting uncoordinated earth stations on a licence-exempt basis.
- 3.13 Licence exemption is seen as the most appropriate method for authorising land-based ESOMPs since they are unlikely to cause interference to other users of the radio spectrum when operating in accordance with specified technical parameters.

The proposed technical parameters are set out in the draft Interface Requirement shown in Annex 4.

Question 2) Do you agree with Ofcom's proposal to exempt from licensing the establishment, installation and use of land-based ESOMP equipment that transmits in the frequency bands 27.5 – 27.8185 GHz, 28.4545 – 28.8265 GHz and 29.4625 – 30 GHz?

Authorisation of aircraft and ship mounted ESOMPs

Rationale for licensing

- 3.14 The international community agrees how spectrum should be allocated through the ITU. These agreements are published in the Radio Regulations¹² and the UK implements the Radio Regulations through the WT Act and associated legislation. The ICAO Chicago Convention 1944¹³ is the principal international convention that governs civil aviation.
- 3.15 The Radio Regulations, in the case of aircraft and ships, and the ICAO Chicago Convention, in the case of aircraft, both require that radio apparatus on board is licensed. In order to comply with our international treaty obligations we consider that the use of ESOMP apparatus on UK registered aircraft and ships needs to be licensed. Furthermore, because aircraft and ship mounted ESOMPs that operate beyond UK waters or airspace have the potential to cause interference to terrestrial radio systems used in other countries, a licensed approach is the most appropriate method of authorisation since it will facilitate inspection of the equipment and provides an official record of its authorisation in its flag state.
- 3.16 We believe that the process for licensing will not be onerous (see sections below).

Who should be licensed?

- 3.17 There are in principle two options for who should be granted the WT Act licence to operate aircraft and ship mounted ESOMPs, namely:
- The service/network operator;
 - The owner or operator of the aircraft/ship (the existing WT Act licensee).
- 3.18 The service/network operators will be instrumental in promoting the services and are likely to provide expertise in the installation of ESOMP equipment on board aircraft and ships and in the provision of end-to-end services. However it is the aircraft or ship operator who chooses the company to install the ESOMP equipment on board and it is the aircraft or ship operator who (through the captain and crew) has ultimate responsibility for the operation of the equipment.
- 3.19 We also bear in mind that, under the Radio Regulations, the captain of an aircraft or ship is answerable for any use (or misuse, including undue interference) of radio. For

¹² <http://www.itu.int/pub/R-REG-RR/en>

¹³ The requirements of the ICAO Chicago Convention are incorporated into UK law by way of the Air Navigation Order 2009 (SI 2009/3015).

UK registered aircraft and ships, the captain is legally liable under the WT Act (as amended)¹⁴.

- 3.20 The aircraft/ship owners or operators must have WT Act licences to authorise the many types of radio apparatus that are used on board. These licences are issued to and maintained by the current owner or operator and must be kept with the radio station on the ship or aircraft. The operation of WT equipment within the airspace or territorial sea of other countries will be subject to the relevant regulations of those countries but must still be included on the UK Aircraft or Ship radio licence. Having a licence on board a UK aircraft or ship that can be made readily available to the relevant authority will simplify any inspection of the equipment.
- 3.21 For these reasons, we propose that the aircraft/ship operator should be licensed to use the ESOMP equipment on board the aircraft or ship.

Process for licensing

- 3.22 New radio equipment to be used on board an aircraft or ship is generally added to the existing associated Aircraft or Ship Radio licence by way of a Notice of Variation (NoV). This process is well established and understood. Since aircraft and ships will already be licensed for other wireless telegraphy apparatus, there would be little additional burden on licensees or UK regulators if ESOMP equipment was licensed in the same way. In addition, having all relevant authorisations under a single licence would be administratively efficient and would facilitate inspection by the relevant authorities and enforcement action where necessary.
- 3.23 Ofcom therefore proposes to authorise the use of aircraft and ship mounted ESOMPs by issuing, upon request from the licensee, a NoV to the existing Aircraft or Ship Radio licence. This represents a minimal additional burden to the administration of licences that already applies to aircraft and ships.
- 3.24 Wireless telegraphy licences for aircraft are distributed by the Civil Aviation Authority (CAA) on behalf of Ofcom. Under this proposal, aircraft operators would need to apply to the CAA to add ESOMP equipment to the Aircraft Radio licence. Applications to add ESOMP equipment to the Ship Radio licence should be directed to Ofcom.
- 3.25 Annexes 5 and 6 provide an indicative outline of the proposed NoVs for aircraft and ship mounted ESOMPs respectively. In conjunction with the draft IR (see Annex 4), these define the technical conditions under which ESOMP equipment would be licensed for operation on UK registered aircraft and ships.
- 3.26 No fees are currently charged for adding new radio equipment to an existing Aircraft or Ship Radio licence by way of a Notice of Variation (NoV). Consequently, we do not propose to charge a fee for an NoV that adds aircraft-mounted or ship-mounted ESOMPs to the licence.

Question 3) Do you agree that ESOMP equipment mounted on aircraft or ships should be licensed to transmit in the frequency bands 27.5 – 27.8185 GHz, 28.4545 – 28.8265 GHz and 29.4625 – 30 GHz using the existing Notice of Variation process?

¹⁴ Section 105(2) provides that, in relation to offences under sections 11, 35-38, 46-48, 58 and 60 of the WT Act: "Where the offence is committed in relation to a station or apparatus on board or released from a ship or aircraft, the captain or person for the time being in charge of the ship or aircraft is guilty of the offence (as well as anyone who is guilty of it apart from this subsection)."

Technical limitations

- 3.27 We propose that ESOMPs should operate in accordance with the technical parameters set out in the draft Interface Requirement shown in Annex 4. These technical parameters would apply to aircraft-mounted, ship-mounted and land-based ESOMPs.
- 3.28 In order to facilitate electromagnetic compatibility (emc) with avionic equipment in the vicinity of airfields, we propose to limit the e.i.r.p. of a single ESOMP terminal to a maximum of 55 dBW (decibel watt). This limitation, which already applies to uncoordinated HDFSS terminals, will ensure that ESOMPs can transmit anywhere outside the perimeter fence of an airfield without affecting the operation of sensitive avionic equipment. Text has been added in the informative part of the draft Interface Requirement to state that the Civil Aviation Authority (CAA) requires that prior to operation of ESOMP equipment within the perimeter fence of airfields, permission is obtained from either the CAA or the appropriate airport authority. A list of the relevant airfields and contact information is included in the draft Interface Requirement in Annex 4.
- 3.29 ESOMPs mounted on aircraft and ships will need to ensure that they do not cause interference to terrestrial radio systems operating outside the territory of the UK. This responsibility lies with the licensee. One way of achieving this, where appropriate, is to ensure that transmissions from the ESOMPs meet the power flux density (pfd) limitations contained in ECC Decision (13)01. Reference to the ECC Decision is made in the draft Interface Requirement.
- 3.30 In accordance with European Commission Directive 98/34¹⁵, we have notified the draft Interface Requirement contained in Annex 4 to the European Commission. The Commission will communicate the notified draft to CEPT Member States and will also publish it on the TRIS website¹⁶ for a three month public consultation. Following that consultation, we will need to take account of any comments received and then publish the final version on Ofcom's website.

Question 4) Do you agree with the proposed technical provisions given in the Draft Interface Requirement and Draft NoVs?

Next steps

- 3.31 We expect to release a Statement on this consultation in December 2013 having taken into account stakeholder responses to our proposals. Subject to the responses, we plan to make licensing available for aircraft and ship mounted ESOMPs early in 2014. Subject to the responses, we also plan to publish a notice on amendments to the Wireless Telegraphy (Exemption) Regulations early in 2014 which will include the implementation of our proposals to exempt land-based ESOMPs from the need to have a WT Act licence.

¹⁵ The 98/34/EC Directive (formerly 83/189/EEC) sets up a procedure which imposes an obligation upon the Member States to notify to the Commission and to each other all the draft technical regulations concerning products and soon Information Society Services before they are adopted in national law. Such procedure aims at providing transparency and control with regard to those regulations. Since they could create unjustified barriers between Member States, their notification in the draft form and subsequent evaluation of their content in the course of the procedure help to diminish this risk. See http://ec.europa.eu/enterprise/tris/about/index_en.htm.

¹⁶ See <http://ec.europa.eu/enterprise/tris>

Section 4

Summary of questions

Question 1) Do you agree that Ofcom should authorise the use of ESOMPs in the UK in the frequency bands 27.5 – 27.8185 GHz, 28.4545 – 28.8265 GHz and 29.4625 – 30 GHz?

Question 2) Do you agree with Ofcom's proposal to exempt from licensing the establishment, installation and use of land-based ESOMP equipment that transmits in the frequency bands 27.5 – 27.8185 GHz, 28.4545 – 28.8265 GHz and 29.4625 – 30 GHz?

Question 3) Do you agree that ESOMP equipment mounted on aircraft or ships should be licensed to transmit in the frequency bands 27.5 – 27.8185 GHz, 28.4545 – 28.8265 GHz and 29.4625 – 30 GHz using the existing Notice of Variation process?

Question 4) Do you agree with the proposed technical provisions given in the Draft Interface Requirement and Draft NoVs?

Annex 1

Responding to this consultation

How to respond

- A1.1 Ofcom invites written views and comments on the issues raised in this document, to be made **by 5pm on 10 October 2013**.
- A1.2 Ofcom strongly prefers to receive responses using the online web form at <http://stakeholders.webstage.intra.ofcom.local/consultations/earth-stations-mobile-platforms>, as this helps us to process the responses quickly and efficiently. We would also be grateful if you could assist us by completing a response cover sheet (see Annex 3), to indicate whether or not there are confidentiality issues. This response coversheet is incorporated into the online web form questionnaire.
- A1.3 For larger consultation responses - particularly those with supporting charts, tables or other data - please email ESOMPs@ofcom.org.uk attaching your response in Microsoft Word format, together with a consultation response coversheet.
- A1.4 Responses may alternatively be posted or faxed to the address below, marked with the title of the consultation.
- James Richardson
03:60
Spectrum Policy Group
Ofcom
Riverside House
2A Southwark Bridge Road
London SE1 9HA
- Fax: 020 7981 3990
- A1.5 Note that we do not need a hard copy in addition to an electronic version. Ofcom will acknowledge receipt of responses if they are submitted using the online web form but not otherwise.
- A1.6 It would be helpful if your response could include direct answers to the questions asked in this document, which are listed together in Section 4. It would also help if you can explain why you hold your views and how Ofcom's proposals would impact on you.

Further information

- A1.7 If you want to discuss the issues and questions raised in this consultation, or need advice on the appropriate form of response, please contact James Richardson on 020 7981 3154.

Confidentiality

- A1.8 We believe it is important for everyone interested in an issue to see the views expressed by consultation respondents. We will therefore usually publish all responses on our website, www.ofcom.org.uk, ideally on receipt. If you think your

response should be kept confidential, can you please specify what part or whether all of your response should be kept confidential, and specify why. Please also place such parts in a separate annex.

- A1.9 If someone asks us to keep part or all of a response confidential, we will treat this request seriously and will try to respect this. But sometimes we will need to publish all responses, including those that are marked as confidential, in order to meet legal obligations.
- A1.10 Please also note that copyright and all other intellectual property in responses will be assumed to be licensed to Ofcom to use. Ofcom's approach on intellectual property rights is explained further on its website at <http://www.ofcom.org.uk/about/accoun/disclaimer/>

Next steps

- A1.11 Following the end of the consultation period, Ofcom intends to publish a statement in December 2013.
- A1.12 Please note that you can register to receive free mail Updates alerting you to the publications of relevant Ofcom documents. For more details please see: http://www.ofcom.org.uk/static/subscribe/select_list.htm

Ofcom's consultation processes

- A1.13 Ofcom seeks to ensure that responding to a consultation is easy as possible. For more information please see our consultation principles in Annex 2.
- A1.14 If you have any comments or suggestions on how Ofcom conducts its consultations, please call our consultation helpdesk on 020 7981 3003 or e-mail us at consult@ofcom.org.uk . We would particularly welcome thoughts on how Ofcom could more effectively seek the views of those groups or individuals, such as small businesses or particular types of residential consumers, who are less likely to give their opinions through a formal consultation.
- A1.15 If you would like to discuss these issues or Ofcom's consultation processes more generally you can alternatively contact Graham Howell, Secretary to the Corporation, who is Ofcom's consultation champion:

Graham Howell
Ofcom
Riverside House
2a Southwark Bridge Road
London SE1 9HA

Tel: 020 7981 3601

Email Graham.Howell@ofcom.org.uk

Annex 2

Ofcom's consultation principles

A2.1 Ofcom has published the following seven principles that it will follow for each public written consultation:

Before the consultation

A2.2 Where possible, we will hold informal talks with people and organisations before announcing a big consultation to find out whether we are thinking in the right direction. If we do not have enough time to do this, we will hold an open meeting to explain our proposals shortly after announcing the consultation.

During the consultation

A2.3 We will be clear about who we are consulting, why, on what questions and for how long.

A2.4 We will make the consultation document as short and simple as possible with a summary of no more than two pages. We will try to make it as easy as possible to give us a written response. If the consultation is complicated, we may provide a shortened Plain English Guide for smaller organisations or individuals who would otherwise not be able to spare the time to share their views.

A2.5 We will consult for up to 10 weeks depending on the potential impact of our proposals.

A2.6 A person within Ofcom will be in charge of making sure we follow our own guidelines and reach out to the largest number of people and organisations interested in the outcome of our decisions. Ofcom's 'Consultation Champion' will also be the main person to contact with views on the way we run our consultations.

A2.7 If we are not able to follow one of these principles, we will explain why.

After the consultation

A2.8 We think it is important for everyone interested in an issue to see the views of others during a consultation. We would usually publish all the responses we have received on our website. In our statement, we will give reasons for our decisions and will give an account of how the views of those concerned helped shape those decisions.

Annex 3

Consultation response cover sheet

- A3.1 In the interests of transparency and good regulatory practice, we will publish all consultation responses in full on our website, www.ofcom.org.uk.
- A3.2 We have produced a coversheet for responses (see below) and would be very grateful if you could send one with your response (this is incorporated into the online web form if you respond in this way). This will speed up our processing of responses, and help to maintain confidentiality where appropriate.
- A3.3 The quality of consultation can be enhanced by publishing responses before the consultation period closes. In particular, this can help those individuals and organisations with limited resources or familiarity with the issues to respond in a more informed way. Therefore Ofcom would encourage respondents to complete their coversheet in a way that allows Ofcom to publish their responses upon receipt, rather than waiting until the consultation period has ended.
- A3.4 We strongly prefer to receive responses via the online web form which incorporates the coversheet. If you are responding via email, post or fax you can download an electronic copy of this coversheet in Word or RTF format from the 'Consultations' section of our website at www.ofcom.org.uk/consult/.
- A3.5 Please put any parts of your response you consider should be kept confidential in a separate annex to your response and include your reasons why this part of your response should not be published. This can include information such as your personal background and experience. If you want your name, address, other contact details, or job title to remain confidential, please provide them in your cover sheet only, so that we don't have to edit your response.

Cover sheet for response to an Ofcom consultation

BASIC DETAILS

Consultation title:

To (Ofcom contact):

Name of respondent:

Representing (self or organisation/s):

Address (if not received by email):

CONFIDENTIALITY

Please tick below what part of your response you consider is confidential, giving your reasons why

Nothing Name/contact details/job title

Whole response Organisation

Part of the response If there is no separate annex, which parts?

If you want part of your response, your name or your organisation not to be published, can Ofcom still publish a reference to the contents of your response (including, for any confidential parts, a general summary that does not disclose the specific information or enable you to be identified)?

DECLARATION

I confirm that the correspondence supplied with this cover sheet is a formal consultation response that Ofcom can publish. However, in supplying this response, I understand that Ofcom may need to publish all responses, including those which are marked as confidential, in order to meet legal obligations. If I have sent my response by email, Ofcom can disregard any standard e-mail text about not disclosing email contents and attachments.

Ofcom seeks to publish responses on receipt. If your response is non-confidential (in whole or in part), and you would prefer us to publish your response only once the consultation has ended, please tick here.

Name

Signed (if hard copy)

Annex 4

Draft Interface Requirement

DRAFT

IR xxxx - UK Interface Requirement xxxx

Earth Stations on Mobile Platforms (ESOMPs)

Publication date: xxxxx 2013
98/34/EC Notification number: 2013/xxx/UK

Contents

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3	Minimum requirements for operation within the UK	x
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Section 1

References

[1]	ETSI EN 303 978 V1.1.2	Satellite Earth Stations and Systems (SES); Harmonized EN for Earth Stations on Mobile Platforms (ESOMP) transmitting towards satellites in geostationary orbit in the 27,5 GHz to 30,0 GHz frequency bands covering the essential requirements of article 3.2 of the R&TTE Directive
[2]	ECC Decision (13)01	The harmonised use, free circulation and exemption from individual licensing of Earth Stations On Mobile Platforms (ESOMPs) within the frequency bands 17.3-20.2 GHz and 27.5-30.0 GHz

Section 2

Foreword

- 2.1 The Radio Equipment and Telecommunications Terminal Equipment Directive 99/5/EC (R&TTE Directive) was implemented in the United Kingdom (UK) on the 8 April 2000 by The Radio Equipment and Telecommunications Terminal Equipment Regulations 2000, Statutory Instrument 2000 No. 730. In accordance with Articles 4.1 and 7.2 of Directive 1999/5/EC, this UK Interface Requirement contains the requirements for the authorisation and use of Earth Stations on Mobile Platforms (ESOMPs) in the specified frequency bands.
- 2.2 Nothing in this UK Radio Interface Requirement shall preclude the need for equipment to comply with Directive 1999/5/EC.
- 2.3 It is required by the Wireless Telegraphy Act 2006 that no radio equipment is installed or used in the UK except under the authority of a licence granted by or otherwise exempted by regulations made by Ofcom. It is a condition of such a licence or exemption regulations as appropriate that, in order to be installed or used in the UK, the equipment must meet the minimum requirements specified in this UK Interface Requirement for the stated equipment types and for the stated frequency bands. Nothing in this UK Interface Requirement shall preclude equipment from being placed on the market in the UK that complies with the 'essential requirements' specified in Directive 1999/5/EC.
- 2.4 The requirements given in the main body of this UK Radio Interface Requirement will apply to the licensing of aircraft and ship mounted ESOMPs and to the licence-exemption of land-based ESOMPs.
- 2.5 This UK Radio Interface Requirement will be revised as necessary, for example to follow:
 - i) current technology developments for reasons related to the effective and appropriate use of the spectrum in particular maximising spectrum utilisation; and
 - ii) changes to the available spectrum allocated for Earth Stations on Mobile Platforms.
- 2.6 All UK Radio Interface Requirements notified under Directive 1998/34/EC will be published and will be made available free of charge from the Ofcom web-site at <http://stakeholders.ofcom.org.uk/spectrum/spectrum-management/research-guidelines-tech-info/interface-requirements/> .
- 2.7 Further information on this UK Radio Interface Requirement can be obtained from the technical enquiry contact given at the back of this document.

Section 3

Minimum requirements for operation within the UK

- 3.1 The minimum requirements in this document are made for reasons related to the effective and appropriate use of the radio spectrum, in particular maximising spectrum utilisation.
- 3.2 This UK Radio Interface Requirement gives a high level description of how the spectrum in the UK is used for ESOMPs. It does not prescribe technical interpretation of the 'essential requirements' of Directive 1999/5/EC.
- 3.3 This UK Radio Interface Requirement therefore stipulates the necessary equipment parameters for the authorisation of ESOMPs in the UK. Table 3.1 contains the relevant equipment parameters. These taken together with the 'essential requirements' detailed in Article 3.2 of Directive 1999/5/EC constitute the minimum requirements for the installation and use of ESOMPs within the UK. Nothing in this UK Interface Requirement shall preclude equipment from being placed on the market in the UK that complies with the 'essential requirements' specified in Directive 1999/5/EC.
- 3.4 The technical parameters specified in the UK Radio Interface Requirement are applied to achieve the desired level of compatibility between ESOMPs and other radiocommunications services, whilst promoting enterprise, innovation and competition.
- 3.5 This UK Radio Interface requirement provides the necessary technical information which facilitates access to the spectrum bands 27.5 – 27.8185 GHz, 28.4545 – 28.8265 GHz and 29.4625 – 30 GHz (for transmission) and 17.3 – 20.2 GHz (for reception) for the installation and use of ESOMPs by making clear the assumptions that are made in planning the use of the spectrum for ESOMPs in the UK. It is not the intention of this UK Radio Interface Requirement to duplicate or impose any additional 'essential requirements' of the Directive 1999/5/EC on products. Any specified parameters within this document are for the purpose of identifying product options and not as a national de facto product requirement.

Table 3.1: Minimum requirements for the use of Earth Stations on Mobile Platforms transmitting in the 27.5 – 27.8185 GHz, 28.4545 – 28.8265 GHz and 29.4625 – 30 GHz bands

Mandatory (1-10)		
1	Frequency band(s)	27.5 – 27.8185 GHz, 28.4545 – 28.8265 GHz and 29.4625 – 30 GHz
2	Radiocommunication Service	Fixed-Satellite Service
3	Application	Earth Stations on Mobile Platforms (ESOMPs)
4	Channelling	n/a
5	Modulation / Occupied bandwidth	n/a
6	Direction / Separation	n/a
7	/Maximum Transmit Power / Power Density	e.i.r.p from a single terminal $\leq 55 \text{ dBW}^{17}$
8	Channel access and occupation rules	n/a
9	Authorisation regime	Licence exempt – for land-based ESOMPs. Licensed – for ESOMPs mounted on aircraft or ships.
10	Additional essential requirements	n/a
Informative (11-13)		
11	Frequency planning assumptions	Use of 17.3 – 20.2 GHz for reception is unprotected.
12	Planned changes	n/a
13	Reference	ETSI EN 303 978 V1.1.2
14	Notification	2013/xxx/UK
15	Remarks	<p>Note 1: In order to ensure compatibility with avionic systems the UK Civil Aviation Authority (CAA) requires that prior to operation within the perimeter fence of airfields, permission is obtained from either the CAA or the appropriate Airport authority. Further information, along with a list of designated airfields is provided in Annex 1.</p> <p>Note 2: The limitations on power flux density (pfd) contained in ECC Decision (13)01 may be used to ensure that transmissions from aircraft and ship mounted ESOMPs protect terrestrial services in other countries, where appropriate.</p>

¹⁷ The elevation angle of the antenna shall be higher than 3 degrees.

Section 4

Additional performance parameters

(informative)

None specified

Section 5

Contact details

Ofcom, Riverside House, 2a Southwark Bridge Road, London, SE1 9HA

Technical enquiries to Spectrum Policy Group

Tel: 020 7981 3154

Fax: 020 7981 3990

Email: james.richardson@ofcom.org.uk

Website: <http://www.ofcom.org.uk/radiocomms>

Section 6

Document history

<i>Version</i>	<i>Date</i>	<i>Changes</i>
1.0	dd mmm yyyy	Draft Published

Annex 1

Prior to operation of equipment subject to this IR, within the perimeter fence of the airfields listed below, the CAA requires that permission be obtained from either the CAA or the Airport Authority.

CAA contact: Alistair Abington, e-mail: alistair.abington@caa.co.uk,
telephone: 020 7453 6535

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

Earth Stations on Mobile Platforms

Farnborough	Farnborough Airport	GU14 6XA	01252 526015	485452	153678	Senior Air Traffic Controller
Filton	Filton Aerodrome	BS99 7AR	0117 969 9094	359103	180229	Senior Air Traffic Controller
Glasgow	NATS, Control Tower	PA3 2SG	0141 840 8029	247869	666993	Manager Engineering
Gloucestershire	Gloucestershire Aerodrome	GL51 6SR	01452 857700	388598	221747	Duty Aerodrome Controller
Guernsey	Guernsey Airport	GY8 0DJ	01481 237766	528960	5476102	Senior Air Traffic Controller
Hawarden	Hawarden Airport	CH4 0DR	01244 522012	334748	364998	Senior Air Traffic Controller
Humberside	Humberside Airport	DN39 6YH	01652 682022	509295	409914	Air Traffic Manager
Inverness	Inverness Airport	IV2 7JB	01667 464293	277380	851836	ATC Inverness
Isle of Man	Isle of Man Airport	IM9 2AS	01624 821600	228463	468452	Senior Air Traffic Engineer
Jersey	Jersey Airport	JE1 1BW	01534 492226	558699	5451100	Senior Air Traffic Controller
Kirkwall	Kirkwall Airport	KW15 1TH	01856 886205	348020	1008196	Senior Air Traffic Controller
Lands End / St Just	Lands End Aerodrome	TR19 7RL	01736 788944	137630	28983	Senior Air Traffic Controller
Leeds Bradford	Leeds Bradford International Airport	LS19 7TU	0113 391 3277	422418	441129	Duty Air Traffic Engineer
Liverpool	Liverpool Airport Plc	L24 1YD	0151 288 4300	343507	382196	Senior Air Traffic Controller
London City	London City Airport	E16 2PX	020 7646 0205	542674	180487	Duty Air Traffic Engineer
London Gatwick	London (Gatwick) Airport	RH6 0NP	01293 601060	526676	140318	Duty Air Traffic Engineer
London Heathrow	London (Heathrow) Airport	UB3 5AP	020 8745 3326	506947	176521	Heathrow DTO
London Luton	London Luton Airport	LU2 9LY	01582 395029	512422	220804	Duty Air Traffic Engineer
London Stansted	London Stansted Airport	CM24 1QW	01279 669316	553916	223081	Duty Air Traffic Engineer
Londonderry / Eglinton	City of Derry Airport	BT47 3PY	028 7181 1099	253681	422039	Senior Air Traffic Engineer
Manchester	Manchester Airport	M90 1QX	0161 499 5025	381796	384132	Duty Air Traffic Engineer
Manchester Woodford	Manchester Woodford Aerodrome	SK7 1QR	0161 439 3383	390174	382355	Senior Air Traffic Controller
Manston	Kent International Airport	CT12 5BP	01843 825063	633140	165662	Senior Air Traffic Controller
Newcastle	Newcastle Airport	NE13 8BZ	0191 214 3244	419802	571483	Senior Air Traffic Controller

Earth Stations on Mobile Platforms

Northolt	RAF Northolt	HA4 6NG	020 8833 8228	509755	184987	Air Traffic Supervisor
Norwich	Norwich Airport	NR6 6JA	01603 420645	622014	313753	Tels/Engineering
Oxford/Kidlington	Oxford Airport	OX5 1RA	01865 844272	446949	215594	Senior Air Traffic Controller
Pembrey	Pembrey Airport	SA16 0HZ	01554 891534	240360	204220	Senior Air Traffic Controller
Plymouth	Plymouth City Airport	PL6 8BW	01752 515341	250511	60229	Senior Air Traffic Controller
Prestwick	Glasgow Prestwick International Airport	KA9 2PL	01292 511107	236746	626815	Senior Air Traffic Controller
Redhill	Terminal Building	RH1 5YP	01737 823377	530105	147698	Senior Air Traffic Controller
Scatsta	Scatsta Aerodrome	ZE2 9QP	01806 242791	438844	1172284	Senior Air Traffic Controller
Scilly Isles / St Marys	St Mary's Airport	TR21 0NG	01720 422677	92020	10300	Senior Air Traffic Controller
Shoreham	Shoreham Airport	BN4 5FJ	01273 467377	519999	105406	Senior Air Traffic Controller
Southampton	Southampton Airport	SO18 2NL	023 8062 7113	445278	116962	Duty Air Traffic Engineer
Southend	London Southend Airport	SS2 6YF	01702 608120	586898	189290	Senior Air Traffic Controller
Stornoway	Stornoway Aerodrome	HS2 0BN	01851 707415	145851	933141	Senior Air Traffic Controller
Sumburgh	Sumburgh Airport	ZE3 9JP	01950 460173	439533	1110613	Senior Air Traffic Controller
Swansea	Swansea Aerodrome	SA2 7JU	01792 204063	256904	191635	Senior Air Traffic Controller
Teeside	Teeside International Airport Ltd	DL2 1LU	01325 332811	437041	512801	Senior Air Traffic Controller
Warton	British Aerospace	PR4 1AX	01772 852374	341805	427980	Senior Air Traffic Controller
Wick	Wick Aerodrome	KW1 4QP	01955 602215	336317	952799	Senior Air Traffic Controller
Wolverhampton	Wolverhampton Aerodrome	DY7 5DY	01384 221378	382473	291103	Senior Air Traffic Controller
Wycombe Air Park / Booker	Wycombe Air Park	SL7 3DP	01494 529261	482630	190993	Senior Air Traffic Controller
Yeovil / Westland	Yeovil Aerodrome	BA20 2YB	01935 475222	353823	115831	Senior Air Traffic Controller

Annex 5

Draft Notice of Variation (NoV) to the Aircraft Radio licence

WIRELESS TELEGRAPHY ACT 2006

NOTICE OF VARIATION OF AIRCRAFT RADIO LICENCE FOR THE PURPOSE OF THE INSTALLATION AND USE OF SATELLITE EARTH STATION(S) ON MOBILE PLATFORMS (“ESOMPs”) ON BOARD AN AIRCRAFT

1 Licence reference details

Sector/class/product	<xxx>
Licence number	<xxx>
Aircraft Registration	<xxx>
Aircraft Type	<aircraft type>
Licensee Name	<name of licensee>
Licensee address	<licensee address>
Date of this variation	<date>

2 Ofcom, in exercise of the power conferred by Schedule 1, paragraph 6 of the Wireless Telegraphy Act 2006 (the “WT Act”), hereby varies the Aircraft Radio Licence (the “Licence”) as identified above, in accordance with Schedule 1 of the WT Act.

3 Terms and expressions defined in the Licence shall have the same meaning herein except where the context requires otherwise.

4 The terms of the Licence shall be varied from the Date of Issue of this Notice of Variation, such that the following apparatus may, in addition to that already set out in the Licence, be established, installed and used on the aircraft named above subject to the terms set out in the Aircraft Radio Licence as varied by paragraphs 5 to 9 below:

(a) Sending and receiving Earth Station(s) on Mobile Platforms (“ESOMPs”) on board an aircraft for the purpose of providing wireless telegraphy links between the ESOMP and Satellite(s) (together the “Radio Equipment”).

5 The terms of the Licence shall be varied from the Date of Issue of this Notice of Variation, such that the additional terms below shall apply in respect of the establishment, installation and use of the Radio Equipment described in paragraph 4(a), and shall be read as an integral part of the Licence for this purpose:

(a) The Radio Equipment shall be operated on a ‘non-interference non-protected’ basis: that is, the use of the Radio Equipment shall not cause harmful interference to and shall not claim protection against harmful interference from

- any other radio communication service operating in accordance with Article 5 of the Radio Regulations, wherever that other service may be operating;
- (b) Within airspace of the UK or Crown Dependencies, the licensee may operate the Radio Equipment only in the frequency bands identified below:
 - (i) 27.5 – 27.8185 GHz, 28.4545 – 28.8265 GHz and 29.4625 – 30 GHz for transmission (Earth-to-space)
 - (ii) 17.3 – 20.2 GHz for reception (space-to-Earth)
 - (c) Outwith airspace of the UK or Crown Dependencies, the licensee may operate the Radio Equipment in any part of the frequency band 27.5 – 30 GHz;
 - (d) Within the airspace of an administration other than the UK or Crown Dependencies, the Radio Equipment shall be used in accordance with the relevant regulations and authorisations of that administration;
 - (e) Means shall be used to allow transmissions of the Radio Equipment to be identified.
- 6 The operation of the Radio Equipment shall comply with the essential requirements of the R&TTE Directive and with the technical and operational criteria contained within the UK Interface Requirement xxxx.
- 7 Interpretation for the purposes of this Notice of Variation:
- (a) “Earth Station” means a station for transmitting and receiving wireless telegraphy intended for communication with one or more satellites;
 - (b) “Radio Regulations” means the 2012 edition of the Radio Regulations made under Article 13 of the Constitution of the International Telecommunication Union;
 - (c) all technical terms, unless the contrary intention appears, shall have the meaning assigned to them in the Radio Regulations;
- 8 This Notice of Variation forms part of and shall be attached to the Aircraft Radio Licence stated above.
- 9 This Notice of Variation shall take immediate effect.

Notes for Licensees

- 1 This Notice of Variation does not affect the requirement, where necessary, to obtain licences or authorisations under other legislation or from other countries prior to the installation or operation of an ESOMP, in particular outside the territory of the UK. The Licensee is encouraged to seek its own independent professional advice in this respect.
- 2 Further guidance and information on general WT Act licensing matters can be obtained from:

Ofcom Spectrum Licensing
Riverside House
2a Southwark Bridge Road
London
SE1 9HA
UK

Tel. +44 (0)20 7981 3131
Fax. +44 (0)20 7981 3333
Email Spectrum.licensing@ofcom.org.uk
Web <http://www.ofcom.org.uk>

Guidance on aeronautical radio licensing is available from:

Radio Licensing Section
Directorate of Airspace Policy
CAA House, 45 – 59 Kingsway
London WC2B 6TE

Tel. +44 (0)20 7453 6555
Fax. +44 (0)20 7453 6556
Email radio.licensing@caa.co.uk
Web <http://www.caa.co.uk/default.aspx?catid=8>

and, in respect of any aircraft certification requirements:

CAA
Safety Regulation Group
Civil Aviation Authority
Aviation House
Gatwick Airport South
West Sussex RH6 0YR

+44 (0) 1293 573293
+44 (0) 1293 573187

Department.Certification@srq.caa.co.uk

Annex 6

Draft Notice of Variation (NoV) to the Ship Radio licence

WIRELESS TELEGRAPHY ACT 2006

NOTICE OF VARIATION OF SHIP RADIO LICENCE FOR THE PURPOSE OF THE INSTALLATION AND USE OF SATELLITE EARTH STATION(S) ON MOBILE PLATFORMS (“ESOMPs”) ON BOARD A SHIP

Ofcom, in exercise of the power conferred by Schedule 1, paragraph 6 of the Wireless Telegraphy Act 2006 (the “WT Act”), in accordance with Schedule 1, paragraph 7 of the WT Act, hereby varies the Ship Radio Licence granted to:

[Name of Licensee]

in respect of the vessel identified below:

Vessel name	<vessel name>
Licence No.	<licence no>
Call Sign	<call sign>
MMSI No.	<MMSI no>
Date of Issue of this Notice of Variation:	<date of NoV>

- 1 Terms and expressions defined in the Licence shall have the same meaning herein except where the context requires otherwise or where otherwise stated.
- 2 The terms of the Licence shall be varied from the Date of Issue of this Notice of Variation, such that the following radio equipment may, in addition to that already set out in the Licence, be established, installed and used on the vessel named above subject to the terms set out in the Ship Radio Licence as varied by paragraphs 3 to 6 below:
 - (a) Sending and receiving Earth Station(s) on Mobile Platforms (“ESOMPs”) on board a ship for the purpose of providing wireless telegraphy links between the ESOMP and Satellite(s) (together the “Radio Equipment”).
- 3 The terms of the Licence shall be varied from the Date of Issue of this Notice of Variation, such that the additional terms below shall apply in respect of the establishment, installation and use of the radio equipment described in paragraph 2(a), and shall be read as an integral part of the Licence for this purpose:

- (a) 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 against harmful interference originating from, any other radio communication service operating in accordance with Article 5 of the Radio Regulations, wherever that service may be operating;
 - (b) Within territorial waters of the UK or Crown dependencies, the licensee may operate the Radio Equipment only in the frequency bands identified below:
 - (i) 27.5 – 27.8185 GHz, 28.4545 – 28.8265 GHz and 29.4625 – 30 GHz for transmission (Earth-to-space)
 - (ii) 17.3 – 20.2 GHz for reception (space-to-Earth)
 - (c) Outwith territorial waters of the UK or Crown Dependencies, the licensee may operate the Radio Equipment in any part of the frequency band 27.5 – 30 GHz.
 - (d) Within the territorial waters of an administration other than the UK or Crown Dependencies, the Radio Equipment shall be used in accordance with the relevant regulations and authorisations of that administration;
 - (e) Means shall be used to allow transmissions of the Radio Equipment to be identified.
- 4 The operation of the Radio Equipment shall comply with the essential requirements of the R&TTE Directive and with the technical and operational criteria contained within the UK Interface Requirement xxxx.
- 5 Interpretation for the purposes of this Notice of Variation:
- (a) "Earth Station" means a station for transmitting and receiving wireless telegraphy intended for communication with one or more satellites;
 - (b) "Radio Regulations" means the 2012 edition of the Radio Regulations made under Article 13 of the Constitution of the International Telecommunication Union;
 - (c) All technical terms, unless the contrary intention appears, shall have the meaning assigned to them in the Radio Regulations.
- 6 This Notice of Variation forms part of and shall be attached to the Ship Radio Licence stated above.

Issued by Ofcom

Notes for Licensees

1. This Notice of Variation does not affect the requirement, where necessary, to obtain licences or authorisations under other legislation or from other countries prior to the installation or operation of an ESOMP, in particular outside of UK territorial waters. The Licensee is encouraged to seek its own independent professional advice in this respect.
2. Further guidance and information can be obtained from:

Ofcom Spectrum Licensing
Riverside House
2a Southwark Bridge Road
London
SE1 9HA
UK

Tel. +44 (0)20 7981 3131
Fax. +44 (0)20 7981 3333
Email Spectrum.licensing@ofcom.org.uk
Web <http://www.ofcom.org.uk>

and, in respect of any survey and certification requirements:

The Maritime and Coastguard Agency
Survey and Certification
Spring Place
105 Commercial Road,
Southampton
SO15 1EG

Tel. 02380 329100
Fax. 02380 329466
Web <http://www.dft.gov.uk/mca>