

UK Ofcom Consultation Freedom4 License Variation SES Comments - 20 July 2009

SES is particularly concerned about Ofcom's proposal to review the licensing conditions of Freedom4 who today operates fixed links in 3.6 and 3.9 GHz. Over C-Band, our sector has designed and is developing future communications systems. In particular and as described in more detail below, satellite service providers are using the C-Band for global communications within and outside Europe.

Introduction

Satellite operations in Europe in the 3400-4200 MHz frequency band (C-Band) support a wide range of critical applications including: distance learning, telemedicine and universal access; backhaul (telephony, Internet); very small aperture terminal ("VSAT") data links (e.g. for such purposes as bank transactions or corporate networks); distribution of television programs; feeder links for mobile satellite systems; and emergency links and safety-of-life communications, disaster recovery services and meteorological tracking. Additionally, these frequencies are also used in Europe for critical telemetry and telecommanding of satellites (e.g. for Galileo).

The typically large coverage area of C-Band satellites enables very broad geographical and intercontinental connectivity. As a result, C-Band is particularly well suited to address the connectivity needs of all of Europe and can deploy intercontinental links with Near Middle East, Arab States, Africa, North and South America or parts of Asia. The extensive geographical coverage and numerous service capabilities are possible because C-Band frequencies are particularly robust spectrum. In particular, the C-Band frequencies provide better protection from rain attenuation than higher frequencies.

C-band is equally used for feeder links for mobile satellite services ("MSS"), which deliver critical communications for first responders in emergency situations as well as safety of life at sea communications.

Planned C-Band investments and launches in Europe today include from SES and other European operators:

- SES Newskies NSS-12 in 2009 with 40 transponders in the 3625-4200 MHz band
- SES Newskies NSS-14 in 2010 with 52 transponders in the 3625-4200 MHz band
- SES Sirius 5 in 2011 with 24 transponders in the 3640-4200 MHz band
- Inmarsat Alphasat in 2011 with 6 transponders in the 3550-3700 MHz band

NSS-12: the launch is planned for the second half of 2009. NSS-12 will have 40 3625-4200 MHz transponders. NSS-12 will provide intercontinental links between all continents. It's a high-capacity, high-power spacecraft and its coverage will reach an estimated 2/3 of the world's population.

NSS-14, whose launch is foreseen in 2010, will enhance what is already the largest neighborhood in the Atlantic. With 52 transponders in the 3625-4200 MHz band, its high power C-Band coverage and incremental global capacity will be ideal for video distribution, government and VSAT services.



Sirius 5: launch is planned for 2011 and will have 24 3640-4200 MHz transponders. Sirius 5 will be used to provide connectivity between Africa and Central / Eastern Europe.

Alphasat: launch is planned for late 2011. Alphasat is a project of the European Space Agency. The satellite will have the equivalent of 6 C-Band transponders, providing feeder downlinks (for gateway satellite earth stations) in the 3550-3700 MHz band. The satellite will be operated by Inmarsat as a part of its global MSS network, with gateway earth stations located in Europe and elsewhere.

In addition, Eutelsat W2A was launched recently (March 2009) with 10 transponders in the 3625-4200 MHz band. Together with a Ku-Band payload aimed at connecting Europe & Africa (and a dedicated capacity for MSS in Europe in S-Band), EUT W2A has 10 C-Band transponders in 3625-4200 MHz to provide pan-African coverage for broadband and telecommunications services.

It is also to be noted that C-Band 3600-4200 MHz will be used for the Galileo data network to be operational as of 2013. C-Band has been chosen for Galileo both for its global coverage & high interference-free reliability. The service to be provided by Galileo will have very stringent requirements on network availability, continuity and latency since it is envisaged that it will be used in safety critical situations for the aviation industry.

The Difficulty of Sharing & the Risks of Interference

The co-allocation of C-Band frequencies between satellite and terrestrial services can be highly detrimental to fixed satellite services ("FSS"). The risks of interference into satellite services are such that protection zones of tens to hundreds of kilometers must be defined around existing satellite earth stations, as established by CEPT & ITU reports and studies. Notably, the deployment of high capacity / high density terrestrial systems in this band would be severely disruptive of any satellite use of the 3400 - 4200 MHz frequency band. Liberalisation of this band would thus lead to reduced technology and service neutrality.

Even in the absence of a liberalisation regime in this band, it is very clear that sustainable licensing requirements including protection measures such as power limits or geographical separation areas should be urgently defined and adopted at European level to enable the two services to coexist between 3400 and 3800 MHz.

European context

Freedom4 is calling for a liberalization of its license conditions both at 3.6 and 3.9 GHz by (1) increasing the central station (CS) maximum power and (2) removing the requirement to coordinate low-power terminals and allow them to be used for providing mobile services, in the two spectrum bands. SES considers the regulatory situation is not the same in these two bands.

• The 3605-3689 MHz band

EC decision 2008/411/EC has enabled the harmonized introduction of BWA within the EU in the spectrum band 3400-3800 MHz. It describes its goal of harmonisation, "...without prejudice to the protection and continued operation of other existing use in this band, the conditions for the availability and efficient use of the 3 400-3 800 MHz band for terrestrial systems capable of providing electronic communications services."



In addition, the CEPT decision adopted a year before ECC/DEC(07)02 stating that "for the deployment of BWA (broadband wireless access) networks...,administrations shall take into account the in-band and adjacent band compatibility with other services/systems (e.g. FS, FSS, ENG/OB, etc.) and, as a result, coordination of the BWA CS with existing services/systems may be required in the concerned area." Although the satellite community does not welcome these decisions, at the very least, it makes clear the need to coordinate with and to protect the continued deployment of FSS in this band.

Ofcom in their consultation document claims that "through [their] policy of liberalisation to service and technology neutrality, [they] can facilitate the implementation of the technical requirements of the Decision, without prejudice to incumbent services" (section 3.6) and further that "the European Commission Decision 2008/411/EC has set parameters for the harmonisation of BWA in this band. We consider that to grant the variation would be consistent with the Decision." (section 6.32).

As a matter of fact, there is no parameter, criteria or methodology identified in any of these texts that makes clear how BWA can be introduced in 3400-3800 without causing interference onto satellite earth stations.

As a basis for appropriate coordination of BWA CS with FSS earth stations in the band 3605-3689 MHz, it is highly recommended that reference should be made to existing ITU-R recommendations and reports. In particular, recommended interference criteria are given in Recommendations ITU-R S.1432 and SF.1006. The latter recommendation includes a methodology for coordination of fixed service stations with respect to FSS earth stations that could be used for coordination of BWA base stations. As additional material of relevance, ITU-R Report M.2109 and ECC Report 100 include example coordination areas for BWA stations with respect to FSS earth stations.

The satellite industry recommends that coordination areas be established around each earth station which has the potential to suffer interference from BWA systems. <u>The size of the coordination area should be established in consultation with the FSS earth station licensees.</u> Operation of BWA systems within the coordination area should be subject to the agreement of the FSS licensee and the requirement to conduct such coordination should be included in each <u>BWA license</u>.

• The 3925-4009 MHz band

Above 3800 MHz, there is no European harmonization measure. ITU-RR considers Mobile as a secondary service, FSS & FIXED being co-primary between 3600 and 4200 MHz; and so does the European Common Allocation table (ECA) between 3800 and 4200 MHz. Satellite operators are even more present in this part of C Band where they're strongly developing their activities, as testified by the characteristics of the forthcoming launches. We therefore expect that at 3.9 GHz BWA CS would have to protect <u>future</u> earth stations as well as existing ones.

The license variations proposed by Freedom4, if introduced at 3.9 GHz, would lead to the deployment of a high-density network of uncoordinated mobile terminals under a secondary allocation and would no doubt severely constrain the development of the primary allocation of FSS using C Band in the UK, as largely demonstrated in CEPT & ITU reports and studies on the incompatibility between mobile BWA and FSS.



SES would respectfully remind Ofcom about their commitment not "to remove restrictions from licenses or other changes that would conflict with the UK's obligations under international law." (section 4.9) SES believes the proposed variation at 3.9 GHz is not acceptable as it is in a patent contradiction with ITU-RR, ECA and the UK National Allocation Table as well, and we would expect Ofcom not to grant the variation requested by Freedom4.

International coordination

As part of reviewing the licensing of Freedom4, we would expect Ofcom to put in place international coordination measures to protect non-UK FSS earth stations operating abroad that can be vulnerable to interference from UK BWA systems – and other countries should do the same to protect UK earth stations from their ground emissions.

For BWA systems in the band 3.4-3.6 GHz, there is a requirement to seek the coordination agreement of neighbouring administrations if the BWA stations would be located within the earth station coordination area. There is also a requirement for mobile BWA systems to meet the pfd limit at the border. <u>The ITU-R is currently developing a new Recommendation on</u> compliance with the pfd limit, and this could be the relevant reference for the licensee.

For BWA systems in the band 3.6-4.2 GHz, the regulatory requirements for fixed BWA systems are similar to those for the band 3.4-3.6 GHz. For mobile BWA systems, the requirements are different, due to the fact that the <u>mobile</u> allocation is on a secondary basis in Region 1. In this case there is a general requirement for mobile BWA systems to avoid interference to existing and future FSS earth stations. For the band 3.6-4.2 GHz, a similar approach to international coordination as in the band 3.4-3.6 GHz is recommended, and the pfd limit at the border should be applied in this band also to ensure cross-border harmful interference does not occur.

In 3.6-3.8 GHz, new FSS earth stations should also be entitled to coordination in accordance with the ITU provisions.

Response to Ofcom Question

Are there any reasonable grounds why Ofcom should not grant Freedom4's request to vary its licence as soon as practicable? If so, please explain your reasoning for this.

- SES believes that any variation of Freedom4 license in 3605-3689 MHz should be subject to appropriate national & international coordination measures & procedures, as explained above.
- SES believes that any variation of Freedom4 license in 3925-4009 MHz that would result in increased power of CS & mobility of terminals (uncoordinated) is not acceptable as it is incompatible with the allocations made to this band in Europe and in the UK, and it would blatantly threaten the growth of FSS operations in this band.