Dundee Satellite Receiving Station, University of Dundee
Response to the Ofcom Consultation:

Recognised Spectrum Access ("RSA") for Receive Only Earth Stations in the Bands 1690 – 1710 MHz, 3600 – 4200 MHz and 7750 – 7850 MHz

We fully support the Ofcom initiative to introduce a mechanism which will formally recognise and protect passive receive-only earth stations operating in these bands, such as our own facility at the University of Dundee.

We have concerns and questions regarding the proposed implementation of RSA. These are outlined in our responses below to the specific questions raised in the consultation document. Nevertheless, we encourage Ofcom to pursue this initiative as we believe it is a vital measure to safeguard successful long-term operation of the receive-only stations and therefore ensure continuity of the wider benefits they provide to society, including essential operational services, scientific research support, educational and public outreach activities.

Question 1: "Do you agree with the list of proposed RSA parameters for assessing interference and for setting fees for receive-only earth stations? Are sufficient parameters defined for a grant of RSA? If you disagree, please give your reasons and suggest alternatives. "

Response 1: Generally the figures are reasonable. However, for our MetSat applications the typical antenna directivity gain figures are 48dBi in X-band and 32dBi in L-band. For most operations the antennas are directed away from the horizon, so side lobe levels of around -30dB w.r.t. peak can be expected, so the figures are reasonable other than when the satellite is near horizon where we have coverage of the Arctic region, for example.

Question 2: "Do you agree with the proposals for introducing fees for RSA for receive-only earth stations in the bands concerned on the basis of parity with existing PES fees (with a minimum fee of £500) and that the full fees be implemented from the date of grant of RSA? If you disagree, please give your reasons and suggest alternatives. "

Response 2: No. We are a passive (receive-only) user of satellites operated by other agencies. As such, we have no control over the transmission spectrum usage and are limited to a 'take it or leave it' choice to protect the complete bandwidth these satellites may use. There is no profit to consider, so we do not agree that the concept of 'incentive pricing' can influence our spectrum use.

We are not sure exactly what Ofcom mean by 'mitigation'. Our interpretation is that the local terrain surrounding a site may make the area of concern for other spectrum use significantly smaller than the spherical Earth + refraction model typically used to estimate best-case path attenuation, and this reduction in area is the basis of the '10dB' benefit etc. We assume that Ofcom has the ability to model path propagation in the relevant frequency ranges, taking in to account a terrain model of the UK and that we would not be required to define the 'exclusion area' for protection. In this case, Ofcom would take antenna site coordinates and height and provide an assessment of the area of land where other spectrum users could cause problems for operations. This assessment would then be used as the basis for the fee valuation and to inform the applicant's decision. Clarification of this would be welcome.

Also, we are unclear as to whether fees are calculated on a 'per site' or 'per antenna' basis. Point 4.37 suggests it is per site - "the fee for a grant of RSA at a given site is … irrespective of the number of receive only terminals being used at the location in question." However, Annex A6.4 suggests it is per antenna – "The square root is to encourage multiple use of single sites thereby reducing the impact on shared services e.g. for 2 antennas at a single site, the fee is approximately 1.4 x the single antenna fee." Again, clarification of this would be welcome.

Question 3: "Do you agree that grants of RSA in the bands should normally be on a rolling annual basis, with a 5-year revocation period?"

Response 3: Yes. That seems a reasonable approach.

We are, however, concerned about some aspects of grants and possible future fees. Our understanding of the Ofcom document is that the fee for granting of RSA will be a one-off payment unless the circumstances mentioned in the proposals arise, in which case 5-year notice of revocation may be given. We would wish to see provision for the holder of RSA to have priority in applying for renewal should this be available following revocation, perhaps subject to revised terms for example. We would also wish to have assurance that renewal costs would not increase substantially other than for inflation.

The principal of 'incentive pricing' and adopting a 'market-led approach' for this RSA is a general concern for us, particularly in any future RSA renewal scenario that may arise. We fear this may lead to direct competition with commercial operators and result in escalating fees. As a publicly funded facility, it is highly unlikely that we would be in a position to compete.

Question 4: "Do you agree that grants of RSA in the bands should be tradable and that grants of RSA and WT licences should be inter-convertible? If so, do you agree with our proposal to model the process for trading and conversion on that for RSA for radio astronomy?"

Response 4: No. Firstly, as already stated, we do not have any control over the choice of spectrum usage by the satellite operators, so are not able to 'trade' spectrum in any meaningful manner.

This is different to the radio astronomy case where, as we understand it, they can conduct reasonable science in other bands and/or reduced windows in existing bands. In our case, we are strictly constrained by the satellite operators' long-term planning based on the ITU allocation of frequency.

Secondly the point 4.41 "used for whichever terrestrial or satellite service is most beneficial for society" is one that is more complex than the issue of money, which is implicit in the trading model. We do not operate in competition with other communication users where the questions of profit and efficiency could usefully drive a better deal for the consumer. Instead our services support the UK environmental research community and science communication to the public. There is no commercial aspect to this and the benefits to society such as monitoring climate change, biodiversity, natural resources and hazards, have no impact on our funding income.

Finally, the negative aspects of terrestrial use of these frequencies should be considered. While a satellite has no alternative to radio links for data communications, a commercial terrestrial operator is trading off the infrastructure costs with the desired data capacity and revenue. If, for example, they opt for a fibre optic link to a remote site (or their guaranteed business demand makes it worthwhile for a telecoms operator to provide this) it will have a capacity that is orders of magnitude greater than a radio link and one that could help provide connectivity to others (e.g. fast rural broadband). By permitting low cost radio for fixed terrestrial usage, it diverts investment from other technology that could be of greater overall benefit to society.

Question 5: "Do you agree with our proposed procedure for considering applications for the grant of RSA to receive-only earth stations? If you disagree, please give your reasons and suggest alternatives?"

Response 5: Yes, agree.

Question 6: "Do you agree that RSA for receive-only earth stations could provide greater security against interference and help promote optimal use of the 1690 - 1710, 3600 - 4200 and 7750 - 7850 MHz bands? If not, please explain why and describe any alternative mechanism that you consider to be necessary."

Response 6: The granting of RSA for protecting the receive-only sites appears to be the best way of ensuring any new systems take the existing users in to account. However, as for Q2 the whole question of 'incentive pricing' is not appropriate in the case where the receive-only site has no control over the choice of spectrum use.

For example, in the 1690-1710MHz band the current NOAA (American) satellites occupy around 2.6MHz of spectrum, but this can be on any one of 3 centre frequencies, 1698, 1702.5 and 1707MHz. The choice of downlink centre frequency is taken by NOAA on the basis of what transmitter(s) are functioning normally on each of the satellites, and how they can minimise mutual interference between in-orbit satellites. As a ground station already using these, we therefore need the whole band even though it may only be 2.6MHz in use at a given time. With anything less, we risk loosing (potentially) all satellites if that frequency is rendered useless by a local terrestrial user, while NOAA's internal choices push them to use that.

We cannot influence that choice, so the charging of some variable amount of protection fee is not going to improve the spectrum usage. Exactly the same applies in the 7750-7850MHz band, but with bigger fees due to the greater bandwidth.

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