

Sat-Reg Response to the RA Consultation Document on Introducing Recognised Spectrum Access

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Introduction

Sat-Reg Ltd welcomes the opportunity to respond to this consultation on the possibility of introducing Recognised Spectrum Access.

Sat Reg is a new consultancy company aimed at providing technical and regulatory advice to the satellite industry in the UK. It's director has some twenty years experience in the satellite industry, twelve of which were spent working within the regulatory and spectrum management area of BT.

These comments on the RSA document are structured to follow the consultation document, in the first instance responding directly to the questions and then commenting on the substance of the document.

1 Response to Questions

Question 1: *Do you agree in principle that RSA should be introduced for satellite services?*

No, individual receivers or networks of transceivers should be licensed either on a normal coordinated basis under administrative pricing or a licence exempt basis.

Question 2: For which satellite services and in which bands should RSA be introduced?

We do not accept that the RSA concept is necessary. Protection should be afforded receive satellite Earth stations as at present under the normal licensing regime and site clearance procedures. Currently in shared bands in the UK, transmitters, both Fixed Service (FS) and Fixed Satellite Service (FSS) are licensed and site cleared specifically in order to ensure that there is no interference to receivers of either service.

Question 3: *How should the recognition granted by RSA be defined and what*

technical and other factors should be included?

If licensing for receive terminals is introduced in bands where it currently doesn't exist, then in the main, it should be similar to that granted to any licensed apparatus. However, there may be one exception which could be considered – see our response to segment 3.5 below

Question 4: *Would tradability of RSA and interchangeability with licences be advantageous and how useful would it be in practice?*

We would not expect to see frequent use of the ability to trade a receive terminal licence with a transmit FS licence. It may occasionally make it easier to resolve difficult co-ordinations by offering an alternative to negotiating a move of an interfering transmitter / receiver to an alternative frequency.

Question 5: *Should RSA be perpetual or fixed term and what factors should be taken into account in deciding security of tenure?*

All licences, other than those auctioned should be perpetual on an annual renewable basis as at present, with a guarantee that they will not be revoked without full compensation for the cost of refarming and any outstanding amortisation of equipment.

In shared bands, receive licences should be similar to a normal transmit licence and subject to the normal international harmonization process.

Question 6: *How should spectrum pricing principles apply to RSA?*

It seems totally inequitable to introduce a pricing mechanism in any part of the FS/FSS bands that is based on a model drastically different to those currently in existence. Thus if receive licensing of individual satellite Earth stations is introduced, similar principles to those currently developed for permanent earth stations (PES), very small aperture terminals (VSAT)s and terrestrial fixed links should be applied..

Question 7: *How should administrative incentive pricing fees be calculated in practice?*

If receive licensing of individual satellite Earth stations is introduced, then for large numbers of terminals in a network, the pricing fees should be calculated based on the current regime applied to both VSATs and PESs in the Fees order. This will require re-examination of the calculation of the base fee, in particular if there is to be a charge for the receive element of licensed permanent satellite Earth stations in shared bands.

Question 8: *Are there services other than satellite for which application of RSA could be advantageous?*

We can see no advantage of the RSA concept over that which would be provided by the licensing of individual Earth stations.

Comments on Specific items within the consultation document.

i) Executive Summary

- Para ii)** We do not understand the assertion that RSA provides for the “*principles of good spectrum management to be extended to services that cannot be licensed*” particularly when the Irish and other Administration offer licenses for receive Earth stations as indicated in paragraph vii. We can only assume that the intention is basically to offer protection to receive only terminals in space-to-Earth direction which can be better provided by a licence or licence exempt regime.
- Para iii)** If the proposed RSA can be traded as a license – then if introduced, why not call the RSA as a receive license in the same way as the Australian and Irish legislation??
- Para iv)** It is unclear where / how the “better reception” will arise from the RSA concept, unless protection to receivers is provided as within a licensing regime.
- Para v)** It is difficult to see how the UK can license the space-to-Earth links of satellites notified by other Administrations, in particular when one considers the EC legislation covering issues such as TV without Frontiers – all the UK can do is license use of receivers in the UK – as has been the case in the past.
- Para vi)** If the licensing of receive satellite earth stations is introduced in shared bands, then it should clearly be on a site-by-site basis. The RSA concept advocated by the RA will lead to band segmentation which is spectrally inefficient. The RA has consistently argued for the last seven years that band sharing is a more efficient use of spectrum than band segmentation and only last May endorsed an extensive BT paper submitted to ITU-R 4-9/S supporting this argument.
- Para vii)** the statement here is factually correct, but the US auctioned DBS bands which are non-shared and Australia offers a number of alternatives, including licensing receivers. As pointed out above, the Irish legislation *licenses* individual receive Earth stations.

Chapter 2 - What is RSA

2.1 In the past, receivers have also been licensed as well as transmitters. It is difficult to understand why it is necessary to introduce RSA at this stage, since the receive bands for a PES have always been protected as part of the normal licensing and site clearance process. Does the RA intend to change this now?

2.4 Optimal use of bands should be to the general benefit and public good. This is not represented by introducing a new charge for spectrum which has been used for satellite television receive only (TVRO) for over 15 years without fees, unless real additional benefit is provided to the end users, or society as a whole.

Chapter 3 - Why is RSA being Proposed

The justification for introduction provided by the RA (3.1) ignores the issue of the RA taking back management of the 10.7-11.7 GHz terrestrial fixed link band from BT. This band is the only major shared FS /FSS band which can be considered as fulfilling the conditions set out in section 8.55 of the Cave Report. The use of the 11 GHz fixed link band by terrestrial links has been increasingly restricted to well established trunk and spur routes for the past fifteen years by the use of satellite receive only Earth stations (TVRO receivers) in the band – approx 7 million. The TVROs are licence exempt and unprotected as a consequence of a DTI decision in the early 1980s and a subsequent statutory instrument. However, because the existing terrestrial links are well established and the TVROs are operating to geostationary satellites, it is relatively easy to shield from sources of interference by judicious positioning of the receivers. We can only assume that the Administration believes that this use of license exempt receivers unduly constrains the use of the band for fixed links, and as such should be paid for by a new class of charge - ergo RSA.

In all FSS bands currently shared with terrestrial services, the majority of satellite Earth station terminals are licensed by virtue of a transmitter, either by a PES licence or a VSAT network licence and as such the receivers are capable of coordination and protection within the normal UK site clearance procedures. The Administrative pricing charges implemented by the RA, whilst only currently applicable to the earth station transmitter, were derived by a non rigorous methodology and the satellite industry has good reason to argue that the administrative licensing charges are sufficient to virtually cover the costs of both the transmit and receive spectrum used by permanent Earth stations.

It is interesting to note that the vast majority of Earth station licenses in the UK are currently issued on a non interference, non protected basis, even those in bands shared with fixed service spectrum managed by the RA.

Whilst it may be argued that terminals other than TVRO (e.g. VSAT) also unduly constrain terrestrial use of the spectrum, a price is paid in terms of the administrative pricing license fees imposed. The satellite industry prides itself on the efficient use of spectrum, the downlink bands in the UK being reused by a large number of operators from a wide arc of orbit locations.

It is recognised by satellite users that the demand for use of the spectrum resource is increasing, but little advantage to improvements in efficient use can be seen to derive

from the introduction of RSA, only an increase in revenue to the treasury. Taking one example that is well known, if Teledesic chose to buy an RSA for the band 18.8 – 19.3 GHz on a national basis, then according to the examples in Annex F in the report, this would attract a fee in the region of £2.6M per annum. The downside would be that the thousand or so BT links currently in the band would gradually have to move frequency as the satellite services roll out and require protection. This would lead to an increase in congestion of fixed links in other bands. It could be considered significant that the probable income to the RA from these existing fixed links is currently only in the region of £1M per annum which indicates that the advocated charges for RSA are excessive.

3.4 It is interesting to note that the Independent Review which was executed under an economist – Professor Cave, advocates that where there is no opportunity cost, as in the exclusive Satellite bands, then there should be no administrative pricing charge for use of spectrum, this would tend to suggest that there should be no licensing fee for those VSAT systems operating in non shared bands, which is the situation applicable to several other European nations. Despite this, both the RA and Professor Cave advocate charging for interactive terminals, despite the majority use being in satellite exclusive bands.

3.6 Advantages of RSA

Satellite operators cannot currently be given formal assurance that their use of spectrum is recognised in spectrum planning

It is difficult to see why the RA is suggesting that the use of space-to-Earth spectrum by satellite operators is not currently recognised in spectrum planning. Since the 1960s, the UK practice has always been to provide protection to coordinated permanent earth stations with transmitters and receivers in the shared FS/FSS bands. It is difficult to see in an RSA situation how the RA could suddenly take an increased account of, and provide protection to, a large number of receive only terminals, operating UK wide to a variety of different satellites. The only solution would appear to be registration of the location of all receivers in the band – ergo a return to the concept of a TV or radio licence. As such, an alternative to the RSA concept would be to introduce a voluntary satellite receive terminal licence in conjunction with the current TV licence, in return for which the RA could offer protection to existing TVRO terminals and some degree of assurance or support to the purchasers of new terminals.

The downside of both this or the RSA concept would be the cessation of further deployment of fixed links in the 10.7 – 11.7 GHz band in more rural environments and the gradual reduction of current fixed links due to the large number of receive only terminals which would require protection.

It is worrying to see the RA's assertion in this section that “*The full advantages of spectrum trading cannot be realised in spectrum shared between terrestrial and satellite transmitters*” in particular with regard the possible impact on the 18GHz bands, since, as stated above, the Agency has consistently argued in the ITU WP 4/9S for some seven years that it is more spectrally efficient to share spectrum between large numbers of point to point links and large numbers of satellite terminals on a coordinated basis within national boundaries, rather than imposing band segmentation for the different services. If the Agency really believes that band segmentation is the

best solution, then we would have expected to see papers from the UK demonstrating this in the international fora, rather than those submitted to date.

Currently the only satellite bands, shared or otherwise, where there is no charge for satellite transmitters are the mobile satellite bands. If licensing of receive satellite Earth station terminals (RSA) is introduced, then it should be subject to the existing administrative pricing regime. It is inequitable that the Agency should impose a charge on the satellite operator – who owns the transmitter in space, rather than the service provider or terminal user based in the UK, who requires protection from fixed link transmitters which are licensed and charged by the Agency.

It is unclear how “RSA could provide a mechanism for making available the UK’s allocation of spectrum-orbit resource, for example for broadcasting satellite services, in a way that ensured it went to the operator capable of generating maximum benefits.” Currently the BSS bands space-to-Earth are only shared with services ancillary to broadcasting the FS in the UK allocation table (*PMSE, Radiocameras operate on the frequencies 11.74666 GHz, 11.82338 GHz, 11.90010 GHz and 11.97682 GHz, 12.2-12.5 GHz use for Temporary point-to-point video links, Radcameras and Mobile and Portable video links*) and as such should not suffer harmful interference.

In short, the arguments put forward in section 3 regarding the advantages to satellite operators of the introduction of RSA are not compelling. RSA, as advocated by the RA, would appear to be a charge set at a price far higher than that currently paid by the FS in return for which no guarantee of service availability is provided by the RA. Since industry is constantly assured by the RA that the Agency doesn’t licence receivers, only transmitters, all that will be achieved is some nebulous recognition of the fact that the band is used by the FSS. In the past the Agency has stated that it has a duty of care to the existing receive only satellite terminals, even though they operate on a licence exempt and unprotected basis. We cannot agree in principle that RSA should be introduced for satellite services or see that any obvious benefit will be derived from such introduction.

4 Characteristics of RSA

4.2.1 Any compulsory charge for use of radio spectrum cannot be considered “complementary to licensing”. It must of necessity be seen as either a licence or tax. If RSA is introduced on a voluntary basis, then we can see no reason for anyone to request such recognition. The Agency is aware the the prime TVRO band has been used for this purpose for the last fifteen years and as such already recognizes that this needs to be taken into account when considering the assignment of spectrum to new terrestrial fixed links.

4.2.2 It is difficult to see how the existing administrative pricing regime as applied to satellite Earth station terminals would not be affected by RSA, unless the RSA charges are directly related to the existing charging structure for small terminal networks i.e. VSATs in the appropriate bands.

When considering paragraphs **4.2.3 to 4.2.7** there appear to be available a number of alternatives to the RSA concept. If one considers the need to assure the quality of signal to users of professional satellite receive only Earth stations, this could be

achieved just as easily by providing them with a receive only licence, thus providing for their consideration within the UK site clearance process.

VSAT network operators are already subject to network licences and in the main operate in unshared bands, but again if operating in shared bands, the registration of terminals – as required by the RA provides similar recognition within the UK assignment procedure.

The delivery of Broadcast Satellite Services in the UK is currently in an exclusive, unshared band (apart from services ancillary to broadcasting), thus we return to the argument that the only band of concern is the 10.7 – 11.7 GHz band where there are a large number of small terminals receiving direct to home entertainment signals.

We can see no argument for the introduction of the RSA concept as advocated by the RA or the Cave Report.

The technical parameters set for any sharing scenario between FS and FSS should remain consistent with those agreed within the ITU, CEPT and be supportive of the ETSI standards. To advocate other criteria is likely to lead to conflict with both the EC and the WTO.

If RSA is voluntary and tradeable with a license, why has the RA been so reluctant to introduce a voluntary licensing regime for individual receive only satellite terminals as suggested by industry in the past.

4.6.2 Industry has never accepted that when it comes to encouraging efficient use of spectrum, unfettered market forces are necessarily superior to effective regulation. Industry did accept that correctly implemented, administrative pricing could encourage more efficient use of the spectrum.

We would be extremely concerned to see the introduction of yet another charging mechanism for satellite services when the effectiveness of the current pricing mechanisms has yet to be assessed and the RA has only just introduced a new “administrative incentive pricing” mechanism for VSATs in the 20002 Fees Order. It would be irresponsible in the extreme not to give these mechanisms time to prove themselves.

4.7.1 It is difficult to see how the RA would justify limiting the use of receive only terminals in the UK as long as they are compliant with the EMC and low voltage directives. Since receivers don’t emit high power signals they should not in theory cause interference to other services. We fail to understand the statement in 4.7.1 regarding authorization.

RSA for services other than satellite.

We are surprised to see the comment regarding Radio Astronomy, since the RA has consistently assured the Communications industry that the Radio Astronomy community is charged for the spectrum used for passive measurements in the UK.

One can only assume that this is on an interdepartmental basis within government, since as far as we are aware, no mechanism has been introduced under the amendments to the WT Act or the Fees Order Statutory Instrument.