OFFICE OF COMMUNICATIONS

Recognised Spectrum Access as applied to Radio Astronomy

A report on introduction of RSA for Radio Astronomy and released spectrum

Report

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Section 1

Summary

1.1 The recent introduction of Recognised Spectrum Access (RSA) for radio astronomy and administered incentive pricing (AIP) has led to the lifting of constraints on use by other services in various frequency bands as described in this report. In some bands this will allow existing geographical exclusion zones to be lifted. In others, it will open the possibility for permitting more services to use the band.

1.2 The new regulatory framework will also provide greater assurance and certainty to the radio astronomy community for access to radio spectrum and will offer greater flexibility to radio astronomers/Science & Technology Facilities Council (STFC) in terms of adjusting their future spectrum requirements.

1.3 Following public consultation in 2005, Ofcom made the first RSA regulations on 14 February 2007 which came into force on 8 March 2007. This is part of a programme for reforming how the public sector manages spectrum in the UK[1]. Ofcom subsequently received six RSA grant applications from the STFC. STFC is a non-departmental public body, which supports radio astronomy activities in the UK. Ofcom have since issued six RSA grants to STFC covering six UK radio astronomy sites.

1.4 The introduction of RSA & Administrative Incentive Pricing (AIP) charges resulted in the release of spectrum and removal or reduction of constraints on other services in a number of bands shared with radio astronomy. This was undertaken in consultation with radio astronomers and STFC to ensure that there is no impact on UK radio astronomy research.

1.5 Ofcom has now updated its frequency assignment processes to remove coordination/exclusion zones where these are no longer required by STFC funded radio astronomy research in the UK. Ofcom is also considering the potential for alternative use of the band 10.6-10.68 GHz as this band is no longer required for radio astronomy research by STFC in the UK.

1.6 Radio astronomy RSA is non-tradable at present. We are currently consulting[2] on proposals to allow selected RSA bands to be traded.

1.7 Following the introduction of RSA grants to STFC, Ofcom will propose an update to the electronic version of UK FAT (Frequency Allocation Table) on its website including revision of Annex D, which details the locations and list of frequencies for the STFC funded radio astronomy sites.

[1] See http://www.spectrumaudit.org.uk
[2] See http://www.ofcom.org.uk/consult/condocs/sfrps08/

Section 2

Background to RSA for radio astronomy

2.1 RSA is a new spectrum management instrument that fills a significant gap in the management of radio spectrum. The Communications Act 2003[3] empowered Ofcom to introduce RSA on a selective basis to manage the spectrum more effectively.

2.2 Following public consultation on the general principles of introduction of RSA for radio astronomy in June 2005[4] and draft regulations in November 2006[5], Ofcom made a number of RSA regulations on 14th February 2007 that came into force on 8 March 2007 to allow RSA to be granted for radio astronomy. These regulations are :

- The Wireless Telegraphy (Recognised Spectrum Access) Regulations 2007
- The Wireless Telegraphy (Recognised Spectrum Access Charges) Regulations 2007
- The Wireless Telegraphy (Limitation of Number of Grants of Recognised Spectrum Access) Regulations 2007

Ofcom also amended the Wireless Telegraphy (Register) Regulations 2006 to include details of radio astronomy RSA frequencies.

[3] The relevant provisions are now contained in the Wireless Telegraphy Act 2006, a consolidation measure.
[4] http://www.ofcom.org.uk/consult/condocs/astronomy/main/
[5] http://www.ofcom.org.uk/consult/condocs/rsa/rsa.pdf

Section 3

RSA grants / spectrum trading

3.1 The RSA regulations relating to radio astronomy came into force on 8 March 2007. Ofcom subsequently received six RSA grant applications from the Science & Technology Facilities Council (STFC) and granted RSA for following six radio astronomy sites in the UK.

- **Jodrell Bank (SJ 79650 70950)**
- **Cambridge (TL 39400 54000)**
- **Darnhall (SJ 64275 62265)**
- **Defford (SO 90200 44700)**
- **Knockin (SJ 32855 21880)**
- **Pickmere (SJ 70404 76945)**

3.2 Currently RSA bands are non-tradable; however it is Ofcom's intention to extend the market mechanism to radio astronomy by making selected RSA bands tradable. We are currently consulting[6] on proposals to allow it to be traded.

[6] See http://www.ofcom.org.uk/consult/condocs/sfrps08/

Section 4

Released spectrum

The introduction of RSA has resulted in the reduction in a number of the constraints on use in certain frequency bands and locations by radio astronomy and the release of spectrum as detailed below;

37.75-38.25 MHz (500 kHz)

This band is no longer required by STFC, which means current constraints on use of this band by active services can be removed.

Ofcom has removed the 80 km exclusion zone around the Cambridge site.

80.5-82.5MHz (2MHz)

This band is no longer required by STFC. The band is also used for business radio systems outside the current 48 km exclusion zone. The constraints on use of this band by business radio systems can now be removed.

Ofcom has updated its frequency assignment tool to remove the 48 km exclusion zone around Cambridge, allowing greater deployment of business radio systems in the future.

150.05-152 MHz (1.95 MHz)

The protection requirement for STFC for this band has been reduced from 6 sites to 2 sites (Cambridge and Jodrell Bank). There are 50 km exclusion zones around these two sites.

Ofcom will consider use of this band for low power applications outside the 50 km exclusion zones around Cambridge and Jodrell Bank.

1660.5-1668 MHz (7.5 MHz)

This band is allocated to radio astronomy on a primary basis and to the fixed and mobile services on a secondary basis. Six STFC radio astronomy sites are covered under the RSA grants and there are 50 km exclusion zones around each location. This band was previously closed for other uses on a national basis, now additional use of the band outside the 50km exclusion zones can be considered.

Ofcom will explore the possibility of use this band for low power applications (e.g. radio microphones) and OB links outside the 50 km exclusion zones.

10.6-10.68 GHz (80 MHz)

This band is no longer required by STFC. The 10.6 GHz frequency band is currently allocated to the Earth exploration satellite service (EESS), radio astronomy, and fixed and mobile services on an equal primary status. However, in order to protect radio astronomy services, large coordination

zones were in place around 5 sensitive radio astronomy sites. This made this band unusable within the UK for other applications.

This is an important frequency band for Earth exploration satellite measurements and there are some technical constraints in the Radio Regulations (RR) on use of this band in order to protect EESS services. The band is also currently shared with fixed links, fixed wireless access systems and cordless camera applications in a number of countries.

Ofcom is considering alternative use of the band for applications such as Fixed Services (FS), Fixed Wireless Access (FWA) and Program Making and Special Events applications (e.g. cordless camera, OB links etc).

31.5 -31.8 GHz (300 MHz)

This band is no longer required by STFC which means that constraints placed on deployment of fixed links in the band can now be removed. The band is currently used for fixed analogue CCTV systems. This use was previously constrained by 50 km coordination zones around 2 radio astronomy sites (Jodrell Bank and Cambridge).

Ofcom has removed the 50 km coordination zones which were applied around these two sites, allowing for greater deployment of fixed links at these locations.