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15th February 2002

Mrs. Sallyanne Miller
Technology Sectors Unit
Radiocommunications Agency
10R/2E
Wyndham House
189 Marsh Wall
London E14 9SX

Dear Mrs Miller,

Response to Radio communications Agency consultation
"Use of Licence-Exempt Spectrum For Provision of Public Telecommunication
Services"

At Annexe A is the Royal Astronomical Society's response to this inquiry. I have also sent this electronically as requested.

Please let me know if I can be of further assistance.

Yours sincerely,

J.E.J. Lane
Executive Secretary

ANNEXE A

Response to Radio communications Agency consultation

"Use of Licence-Exempt Spectrum For Provision of Public Telecommunication Services"

1. The Royal Astronomical Society is a learned scientific society which has the objective of encouraging and promoting astronomy and geophysics. The Society is therefore interested in the impact of the proposed changes on the conduct of scientific research in astronomy and geophysics.

2. Much scientific research within astronomy and geophysics involves use of radio methods - both passive (i.e. detection of natural radio emissions) and active (detection of radar echoes from objects of scientific interest). Examples of the former include studies of radio emissions from the planets, the Sun, other stars, galaxies and the most distant parts of the universe. Examples of the latter include radar studies of the Earth's upper atmosphere and the ionosphere. Radar techniques have also been used for studies of other planets.

3. Advanced research in these areas generally involves the detection and processing of weak signals. The scientific knowledge thus gained is valuable as pure science, but it is also widely accepted (and argued e.g. by the Particle Physics and Astronomy Research Council) that the radio techniques developed form part of the intellectual capital in the UK, and the researchers themselves, often young people, are being developed as national human resources at the limits of the skill range possible. About three quarters of the researchers who are active in radio astronomy will have passed out of pure science into the national economy after a ten year period. Without access to faint uncontaminated celestial signals, we would lose an activity of national importance. This type of research is sensitive to both to direct interference from nearby man-made radio sources and also to any increase in the general noise background that may arise from increased usage of the radio spectrum. We rely critically on the good spectrum management performed by the RA, in order that some frequency bands be kept clear for our work. This response is therefore largely focussed on Question 2 of the consultation.

4. The need to protect scientific research from interference has long been recognised by both national and international regulatory agencies. This protection has allowed scientific research to proceed very successfully alongside other uses of the radio spectrum.

5. The bands 1389-1399MHz and 24.15-24.35GHz are of particular concern to the radio astronomical community:

a. The 1389-1399 MHz frequency band is set aside for CCTV applications, licence-exempt. But there is also a secondary allocation to radio astronomy. Unfortunately the CCTV devices are causing growing interference to our work. We use the frequency band to search for the red-shifted hydrogen line (rest frequency

1420MHz). A whole range of redshifts (and hence distances) is simply obliterated by these CCTV transmitters.

b. The frequency band 24.15-24.35 GHz, which is allocated to radiolocation among other services, is close to the passive band 23.6-24.0 GHz used for radio astronomy line (ammonia) and continuum measurements. There is a proposal currently before the Radiocommunications Agency to use this frequency band for automobile collision-avoidance radars. The proposed devices, which originate in the USA, use ultra-wide band (UWB) technology. We understand that the emissions cover something like 5GHz. The danger is that the out-of-band emissions from these licence-exempt devices could accumulate sufficiently to make the nearby passive band unusable for radio astronomy. The effects on UK radio astronomy are likely to be far greater than those on US radio observatories, since we have far more automobiles in our vicinity!

6. A major concern is the risk of unplanned interference, for example through use of low quality equipment or poor maintenance. For this reason we would argue for a regulatory scheme that promotes good operational standards and has adequate powers of enforcement against poor performance. Of the three regulatory scenarios discussed in the consultation document, scenarios 1 and 2 are more likely to provide this.

J.E.J.Lane
Executive Secretary