INTERNATIONAL TELECOMMUNICATION UNION

Radiocommunication Bureau
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Administrative Circular
CA/102

6 July 2001

To Administrations of Member States and
Radiocommunication Sector Members of the ITU

Subject: Request for Administrations and Sector Members to supply data on sharing between the radionavigation-satellite service (space-to-Earth) and radiolocation/radionavigation services allocated on a co-primary basis in the 1 215-1 260 MHz band

1 Introduction

Resolution 606 (WRC-2000) invites ITU-R to conduct, as a matter of urgency and in time for WRC-03, the appropriate technical, operational and regulatory studies, including an assessment of the need for a power flux-density limit concerning the operation of radionavigation-satellite service (space-to-Earth) systems in the frequency band 1 215-1 300 MHz in order to ensure that the radionavigation-satellite service (space-to-Earth) will not cause harmful interference to the radionavigation and the radiolocation services.

Since it is understood that RNSS systems have operated successfully for many years and they exceed the Recommendation ITU-R M.1463 protection criteria when evaluated using the methodology in Recommendation ITU-R M.1461, it can be assumed that: 1) either administrations have been successfully employing spectrum management techniques other than a power flux-density limit, or 2) variations (orbital parameters, transmission characteristics, altitude, elevation angle, radar antenna pattern, or other technical interactions between the systems) peculiar to the RNSS/radiolocation/radionavigation sharing situation and not accounted for in current ITU-R Recommendations account for the lack of interference.

Working Party 8D asked Working Party 8B several questions with respect to this sharing question, such as:

– How are administrations using this band for radiolocation/radionavigation radars and which spectrum management methods are they using to ensure that interference is avoided?

– What are some other technical considerations that exist regarding sharing between RNSS and radionavigation/radiolocation radars, such as orbital parameters, transmission characteristics, altitude, elevation angle, radar receiver signal processing, radar power margin, radar antenna pattern or other technical interactions between the systems?

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A Radionavigation-Satellite Service (RNSS) (space-to-Earth) allocation is shared on a co-primary basis with radiolocation in the frequency band 1 215-1 260 MHz. **S5.331** provides an additional allocation to the radionavigation service on a primary basis in Algeria, Germany, Austria, Bahrain, Belgium, Benin, Bosnia and Herzegovina, Burundi, Cameroon, China, Croatia, Denmark, the United Arab Emirates, France, Greece, India, the Islamic Republic of Iran, Iraq, Kenya, The Former Yugoslav Republic of Macedonia, Liechtenstein, Luxembourg, Mali, Mauritania, Norway, Oman, Pakistan, the Netherlands, Portugal, Qatar, Senegal, Slovenia, Somalia, Sudan, Sri Lanka, Sweden, Switzerland, Turkey and Yugoslavia, the band 1 215-1 300 MHz. **S5.329** provides that the use of RNSS in the band 1 215-1 260 MHz shall be subject to the condition that no harmful interference is caused to the radionavigation service authorized under **S5.331**. The radiolocation and radionavigation allocations are both used for primary radars.

2 Data on RNSS and radiodetermination radars using the band 1 215-1 300 MHz

Administrations, particularly those of developing countries, and Sector members are requested to supply information regarding the use of the 1 215-1 300 MHz band in their country. First, given that RNSS has been operating successfully under the provisions of Radio Regulations for some time, it is important for administrations, particularly those covered by **S5.331** to respond to this questionnaire concerning the spectrum management methods they are currently using to ensure compatible sharing. Second, other technical considerations should be explored to determine whether there are circumstances, peculiar to the RNSS/radiolocation/radionavigation sharing situation, that ensure compatible sharing but are not considered by the criteria in Recommendation ITU-R M.1463 as evaluated using the methodology in Recommendation ITU-R M.1461. Third, operational tests could be used to provide documentation regarding the effects of RNSS on these radars and to provide measured data for use in determining why an impact has not been noticed. The Annex contains several questions regarding these issues.

3 Submission of contributions

Administrations and Sector members are urged to submit the information requested at the latest on 1 September 2001.

Contributions should be sent, if possible in a standard electronic format, to Mr. Robert Hinkle (USA), Tel.: +1 202 482 3212, Fax: +1 202 482 4595, e-mail: rhinkle@ntia.doc.gov.

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Robert W. Jones
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Annex: 1

Distribution:

- Administrations of Members States of the ITU
- Radiocommunication Sector Members
- Chairmen and Vice-Chairmen of Radiocommunication Study Groups and the Special Committee on Regulatory/Procedural Matters
- Chairman and Vice-Chairmen of the Radiocommunication Advisory Group
- Chairman and Vice-Chairmen of the Conference Preparatory Meeting
- Members of the Radio Regulations Board
- Secretary-General of the ITU, Director of the Telecommunication Standardization Bureau, Director of the Telecommunication Development Bureau

ANNEX

Questionnaire on methods used by administrations to ensure compatible sharing between radionavigation-satellite, radiolocation and radionavigation services in the 1 215-1 300 MHz band

RNSS systems have been operating in the 1 215-1 260 MHz band for many years without reports of interference to radiolocation or radionavigation systems operating on a primary basis. Current RNSS signals exceed the radar receiver protection criteria co-channel as calculated using the method and technical characteristics prescribed in Recommendations ITU-R M.1461 and ITU-R M.1463. Therefore, WP 8B is seeking information regarding the spectrum management methods used to ensure compatible operations.

Recommendation ITU-R SM.1132-1 describes spectrum management sharing methods in terms of frequency separation, spatial separation, time separation or signal separation and breaks these general approaches into specific techniques.

FOCAL POINT REGARDING CORRESPONDENCE ON THIS QUESTIONNAIRE

1. Mr/Ms _____ _____
   Family Name First Name
2. Country _____
3. Name of the Administration/Organization _____
4. Title _____
5. Address _____

   _____
6. Telephone: _____Fax: _____E-mail: _____

Radiolocation/radionavigation uses

1a. Does your Administration employ Radiolocation or Radionavigation radars in the band 1 215-1260 MHz?

1b. If so, what type of radar are they (i.e. airport surveillance, air route surveillance, weather, other) and do they perform a radiolocation or radionavigation function?

1c. Do any of these radars employ frequency agile, frequency diversity, frequency hopping, automatic power control or spread spectrum techniques?

1d. Are these radars fixed, mobile or transportable?

Spectrum management techniques

1 Recognizing that current RNSS signals exceed the radar receiver co-channel protection criteria as calculated using the method and technical characteristics prescribed in Recommendations ITU-R M.1461 and ITU-R M.1463, what, if any, spectrum management measures (Recommendation ITU-R SM.1132-1 may serve as a reference) have your Administration taken to ensure that interference to the radars has been avoided?

A. Frequency separation, such as band segmentation and frequency agile systems?

B. Signal Separation – signal coding and processing, interference rejection, spread spectrum, interference power/bandwidth adjustments and antenna polarization?

C. Other.

Other technical considerations

What are some other technical considerations that exist regarding sharing between RNSS and radionavigation/radiolocation radars, such as orbital parameters, transmission characteristics, altitude, elevation angle, radar receiver signal processing, radar power margin, radar antenna pattern or other technical interactions between the systems?

Operational tests

Could your Administration provide results of any operational tests conducted regarding the effects of RNSS on these radars and provide measured data for use in determining why an impact has not been noticed?

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