Radiocommunication Study Groups

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Working Party 7D

REPLY LIAISON STATEMENT TO TASK GROUP 6/1

Preparations of WRC-23 agenda item 1.5
Information on spectrum use and spectrum needs of the Radio Astronomy Service within the frequency band 470-960 MHz in Region 1

Working Party (WP) 7D would like to thank Task Group 6/1 for its liaison statement in Document 7D/41. WP 7D noted that Task Group 6/1-Working Group (WG) 1 seeks information on the spectrum use and spectrum needs of the Radio Astronomy Service (RAS) within the frequency band 470-960 MHz in Region 1. WP 7D also noted the work under Task Group 6/1-WG 2 on sharing and compatibility studies in the band 470-694 MHz, for which WP 7D has already provided the relevant information in Document 6-1/10.

WP 7D would like to provide the following information and background on the RAS existing spectrum use and spectrum needs within the frequency band 470-960 MHz in Region 1:

Region 1 except African Broadcasting Area

The band 608-614 MHz is currently used under a secondary allocation (RR No. **5.306**)

African Broadcasting Area

The band 606-614 MHz is currently used under a primary allocation (RR No. **5.304**)

The RAS telescopes currently observing in the 606-614 MHz band in Region 1 are listed in the below table:

Country	Site(s)	N. Latitude	E. Longitude	Instrument
France	Nançay	47° 23' 00	02° 12' 00	ORFEES spectrometer 5 m dish
Germany	Effelsberg	50° 31' 29	06° 53' 03	100 m dish
Netherlands	Westerbork	52° 55′ 01″	06° 36′ 15″	Array of 14 x 25 m dish
United Kingdom	Jodrell Bank	53° 14' 07	-02° 18' 23"	13 m dish
Finland	Metsähovi	60° 13' 04	24° 23' 37	14 m dish
Russia	Pushchino	54° 49' 20	37° 37' 53	22 m dish
South Africa	Karoo Central Astronomy Advantage Area (KCAA)	-30° 42′ 47″	21° 26′ 38″	MeerKAT 64 x 13 m dishes SKA-MID* 133x15 m dishes
Belgium	Humain	50° 11′ 31″	05° 15′ 12″	6 m dish

Country	Site(s)	N. Latitude	E. Longitude	Instrument
Czech Republic	Ondrejov	49° 54′ 55″	14° 46′ 52″	3 - 7.5 - 10 m dish
Greece	Thermopyles	38° 49′ 18.6″	22° 41′ 10.4″	7 m dish
Switzerland	Bleien	47° 20′ 23.5″	8° 6′ 41.8″	HIRAX 5m + 7m dish

* started construction in 2021

WP 7D would like to highlight the considerable importance of the band 606-614 MHz for RAS observations within the frequency range 470-960 MHz. In addition to bridging the gap between the RAS allocated bands at 406 MHz and 1 400 MHz bands, the band is essential for several unique scientific observations:

- The band is one of the preferred bands for high-precision timing observations of pulsars. Precision pulsar timing programmes are being conducted at radio observatories in France, Germany, the Netherlands, the Russian Federation, and the United Kingdom. Ensembles of millisecond pulsars (or Pulsar Timing Array – PTA) are observed regularly for forming of pulsar time-scale in these programmes. More information can be found in the Report ITU-R RA.2099-1.
- Radio observations of linearly polarized extra-terrestrial radio emissions to study the physical circumstances under which the radiation is generated. For an unambiguous determination of these extra-terrestrial radio sources, observations need to be done using a minimum of three not too widely spaced but unequally separated frequencies. Together with the bands 322-328.6 MHz and 1 400-1 427 MHz, the band is of vital importance for such polarization studies.
- Solar radio astronomy: The total radio solar flux at this frequency is currently monitored by many stations around the world including several stations in region 1. Most of these stations provide real time measurements and alerts in support to the solar activity forecast centres of the International Space Environment Service, ISES. Besides, the band also provides the longest quantitative record of solar activity. This is essential for the understanding of the long-term contribution of changing solar activity to global climate change on the Earth.
- Continuum VLBI observations by the European VLBI Network (EVN) at 611 MHz provide an angular resolution very similar to the Hubble Space Telescope (0.05 arcsec). Through this band European astronomers have an optimum instrument for producing radio images to match optical data from the Hubble Space Telescope.

WP 7D appreciates taking the RAS spectrum needs into consideration by Task Group 6/1 and would like to stay informed on the progress of the spectrum review under WRC-23 agenda item 1.5.

Status: For information

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