

RECOMMENDATION ITU-R SA.1344-1

**Preferred frequency bands and bandwidths for the transmission
of space VLBI data within existing space
research service (SRS) allocations**

(Question ITU-R 203/7)

(1998-2009)

Scope

This Recommendation provides the preferred frequency bands and bandwidths for the transmission of science data and time/phase reference signals.

The ITU Radiocommunication Assembly,

considering

- a) that the angular resolution of measurements made by very long baseline interferometry (VLBI) techniques improves as the distance between two observing stations increases;
- b) that, compared to the largest possible distance between two observing stations on Earth, this baseline distance may be substantially increased by locating one or more of the observing stations in space;
- c) that by conducting VLBI measurements which utilize spacecraft, it is possible to substantially reduce the errors of ground-based observations caused by the absorption, path length fluctuations and noise contributions by the atmosphere, or eliminate these errors if both VLBI stations are in space;
- d) that space VLBI can provide data for accurate determination of:
 - radio source structure and positions;
 - geodynamic parameters;
 - and deep-space spacecraft navigation;
- e) that the transmission of wideband space VLBI data from space-to-Earth is required;
- f) that contemporary space VLBI systems require the transmission of highly accurate time/phase reference signals from Earth-to-space and space-to-Earth;
- g) that space VLBI systems are an application of the space research service (SRS),

recommends

1 that preferred frequency bands for transmission of telemetry data and time/phase reference signals in the space-to-Earth direction should be as follows:

Frequency band (GHz)	RF bandwidth (MHz)	SRS allocation status	Direction of transmission in SRS allocation
8.45-8.5 ^{(1), (2)}	0.1	Primary	Space-to-Earth
14-14.3	300	Secondary	All directions
14.5-15.35	300-500	Secondary	All directions
25.5-27	1 000	Primary	Space-to-Earth
37-38	1 000	Primary	Space-to-Earth
74-84	10 000	Secondary	Space-to-Earth

⁽¹⁾ Radioastron will continue to use the frequency 8 400 MHz for phase transfer under existing ITU-R publication API/A/3957.

⁽²⁾ Use for phase transfer only.

2 that preferred frequency bands for the transmission of telecommand data and time/phase reference signals in the Earth-to-space direction should be as follows:

Frequency band (GHz)	RF bandwidth (MHz)	SRS allocation status	Direction of transmission in SRS allocation
7.190-7.235	0.1-2	Primary	Earth-to-space
15.20-15.35	0.1-2	Secondary	All directions
40-40.5	0.1-2	Primary	Earth-to-space