



Recommendation SFCG 13-3R3

**DATA RELAY SATELLITE CHANNEL PLANS
FOR THE 23 AND 26 GHZ BANDS**

The SFCG,

CONSIDERING

- a) that the frequency bands 22.55 - 23.55 GHz and 25.25 - 27.50 GHz are allocated to the inter-satellite service,
- b) that the band 22.55 - 23.55 GHz is recommended for forward inter-orbit links from geostationary data relay satellites (DRS) to low-orbiting spacecraft and the band 25.25 - 27.5 GHz is recommended for return inter-orbit links from low-orbiting spacecraft to DRSs (Recommendation ITU-R SA.1019);
- c) that data relay satellites use these bands for inter-orbit links;
- d) that ESA, NASA and JAXA through the Space Networks Interoperability Panel (SNIP) have recommended that data relay satellites be designed to allow interoperable cross-support of each other's user spacecraft,
- e) that SNIP has recommended a standard channel plan in these frequency bands;
- f) that in addition to the SNIP recommended frequencies, DRS systems could make use of channel centre frequencies throughout the 22.55 - 23.55 band;
- g) that four DRS cross-support channels near 23 GHz overlap with Non-GSO inter-satellite links of the Hibleo-2 (Iridium) satellite system in the frequency range 23.183-23.377 GHz;
- h) that the bands 22.81-22.86 GHz and 23.07 – 23.12 GHz are identified in RR No. **5.149** for the radio astronomy service and need to be taken into account;

RECOGNIZING

- 1) that turn-around ratios often drive the selection of forward link channels based on the selected return link channel
- 2) that not all DRS satellites have the capability to support all identified DRS cross support channels

RECOMMENDS

1. that DRS systems using the 22.55 - 23.55 GHz band for forward inter-orbit links use the following channel centre frequencies:

22.605 GHz
22.665 GHz
22.725 GHz
22.785 GHz
22.845 GHz¹
22.905 GHz
22.965 GHz
23.025 GHz
23.085 GHz¹
23.145 GHz
23.205 GHz
23.265 GHz
23.325 GHz
23.385 GHz
23.445 GHz
23.505 GHz

2. that these forward channels have a minimum bandwidth of 50 MHz;
3. that, whenever practicable, priority be given to making assignments for forward inter-orbit links outside the range 23.183 – 23.377 GHz in order to reduce the potential for mutual interference with the Hibleo-2 (Iridium) system;
4. that DRS systems using the 25.25 - 27.50 GHz band for return inter-orbit links use the following channel centre frequencies:

25.600 GHz
25.850 GHz
26.100 GHz
26.350 GHz
26.600 GHz
26.850 GHz

¹ These channels may not be available on a global basis due to overlap with bands used by the radio astronomy service.

27.100 GHz
27.350 GHz

5. that these return channels have a minimum bandwidth of 225 MHz;
6. that data relay satellites be able to transmit forward signals on either left-hand or right-hand circular polarisation, and receive return signals on the same polarisation;
7. that data relay satellites transmitting a tracking beacon in these bands use one of the following frequencies;

23.530 GHz
23.535 GHz
23.540 GHz
23.545 GHz

8. that such tracking beacons be transmitted with left-hand circular polarisation.