Recommendation SFCG 23-2

ASSIGNMENT OF DIFFERENTIAL ONE-WAY RANGING TONE FREQUENCIES FOR CATEGORY B MISSIONS

The SFCG,

CONSIDERING

a) that differential one-way ranging (DOR) is commonly used by Category B missions to enhance navigation accuracy required to satisfy mission objectives;

b) that measurement accuracy requires wide frequency separation between the DOR tones, examples including several missions using 38-40 MHz separation at the 8 GHz band and two missions using 158-240 MHz separation at the 32 GHz Band;

c) that because of the required separation some of the DOR tone frequencies may have to extend outside the Category B allocations in the future;

d) that a power flux density (PFD) for reception of DOR tones of –211 dB (W/m^2) in the 8 GHz band and –204 dB (W/m^2) in the 32 GHz band provides a received tone power 30 dB above the noise spectral density for a 34 meter Earth station, which is more than sufficient to guarantee reliable operation and accurate measurement;

e) that at such PFD a DOR tone entering the side-lobe of another antenna will be weaker than the ITU-R recommended interference thresholds[1] of the services operating in the adjacent bands by at least 37 dB;

NOTING

that radio astronomy service has a stringent protection requirement that precludes sharing of the 31.3-31.8 GHz band with any other services not mentioned in the Table of Frequency Allocations of the ITU Radio Regulations within this band;

[1] As defined in ITU-R Recommendations RA.769, RS.1029, M.1466, and M.1461.

RECOMMENDS

1. that member agencies assign DOR tone frequencies within the existing Category B allocations whenever possible;

2. that member agencies, when it is necessary to assign a DOR tone frequency outside a Category B allocation, limit the Power Flux Density of each tone to–211 dB (W/m^2) in the 8 GHz Band and –204 dB (W/m^2) in the 32 GHz Band;

3. that member agencies do not assign DOR tones[2] in the 31.3-31.8 GHz band.

2 Including intermodulation products when multiple tone pairs are used simultaneously