

RECOMMENDATION ITU-R S.1718

Power flux-density values in the band 11.7-12.7 GHz and associated calculation methodology which may be used when the power flux-density values in § 6 of Annex 1 to Appendix 30 of the Radio Regulations are exceeded

(Question ITU-R 236/4)

(2005)

Scope

Section 6 of Annex 1 to RR Appendix 30 provides power flux-density (pfd) values to determine if a proposed BSS network in one Region needs to coordinate with an FSS network in another Region, in the frequency band 11.7-12.7 GHz. The mask in that section provides the envelope of pfd values to trigger coordination with a wide range of FSS earth station antenna sizes. This Recommendation gives a table of levels equivalent to those in § 6 of Annex 1 to RR Appendix 30 for particular combinations of FSS earth station antenna size and system noise temperature, and also describes the methodology by which these levels were computed and a methodology to determine such levels for other earth station antenna sizes by interpolation.

The ITU Radiocommunication Assembly,

considering

- a) that systems in the FSS and the BSS have allocations in the band 11.7-12.7 GHz;
- b) that the use of this band by the planned BSS is subject to the coordination procedure of Article 4 of Appendix 30 of the Radio Regulations (RR) and to the coordination requirements contained in the “Remarks” column in Article 11 of RR Appendix 30;
- c) that § 6 of Annex 1 to RR Appendix 30 provides thresholds to determine if there is a need to coordinate planned BSS networks in one region with respect to FSS networks in another region in the band 11.7-12.7 GHz,

further considering

- a) that pfd values in § 6 of Annex 1 to RR Appendix 30 are thresholds to determine if coordination is required between a planned BSS network operating in one region with respect to an FSS network in another region;
- b) that such threshold values should necessarily be protective of FSS links with a wide range of technical characteristics;
- c) that § 6 of Annex 1 to RR Appendix 30 also provides a pfd mask which corresponds to the envelope of the permissible interfering pfd into the range of GSO FSS earth station antenna sizes used in the 11.7-12.7 GHz band;
- d) that technical information is needed to address instances when the pfd values in § 6 of Annex 1 to RR Appendix 30 are exceeded and coordination of the corresponding BSS assignments with FSS assignments is necessary,

recommends

1 that in cases where, as a result of the application of Article 4 of RR Appendix 30 or the coordination requirements contained in the “Remarks” column in Article 11 of RR Appendix 30, the pfd values in § 6 of Annex 1 to RR Appendix 30 are exceeded, the pfd values given in Table 1 may be used by administrations, during their bilateral or multilateral coordination of their BSS assignments with FSS assignments, to identify levels equivalent to those in § 6 of Annex 1 to RR Appendix 30 for particular antenna sizes (see also Notes 1 to 10);

2 that, notwithstanding *recommends* 1, the pfd level produced at the surface of the Earth within the service area of the affected FSS assignment by a planned BSS network operating in another region should not exceed $-103.6 \text{ dB(W/(m}^2 \cdot 27 \text{ MHz))}$.

TABLE 1

Applicable pfd values ($\text{dB(W/(m}^2 \cdot 27 \text{ MHz))}$) corresponding to various FSS antenna sizes

Orbital separation between wanted and interfering space stations	Antenna size (cm)							
	45 (see Note 5)	60	80	120	240	500	800	1 100
	pfd values ($\text{dB(W/(m}^2 \cdot 27 \text{ MHz))}$)							
$\theta = 0^\circ$	-134.2	-136.7	-138.7	-141.4	-147.4	-152.5	-155.6	-158.4
$\theta > 0^\circ$	See Note 3 and Table 2 of Annex 1							

NOTE 1 – The applicable pfd value should be derived from Table 1 using the antenna diameters calculated from the maximum antenna gains as given in the RR Appendix 4 information provided to the Bureau under RR No. 9.30 for the affected FSS assignment in question.

NOTE 2 – In calculating the compliance of the pfd levels produced by the interfering BSS network with those given in Table 1, the affected FSS receive earth station antenna should be assumed to be compliant with the antenna pattern specified in Recommendation ITU-R BO.1213, extrapolated to the relevant frequency within the 11.7-12.7 GHz band, for antennas of 2.4 m in diameter or less, and with the antenna pattern specified in § 3 of Annex 3 to RR Appendix 7, for antennas of more than 2.4 m in diameter.

NOTE 3 – In calculating the compliance of the pfd levels produced by the interfering BSS network with those given in Table 1, the minimum orbital separation between the wanted and interfering networks should be assumed, including the station-keeping accuracies. For any value of the orbital separation θ between the wanted and interfering space stations, the applicable pfd should be relaxed from the value corresponding to 0° orbital separation by adding the off-axis antenna discrimination, as calculated under the assumptions in Note 2.

NOTE 4 – For FSS antenna diameters different from those in Table 1, the method given in Annex 2 is an example of possible way to interpolate.

NOTE 5 – The values for less than 60 cm antenna diameter are only applicable for Region 3 FSS networks in the orbital arc 110° E - 124° E with respect to assignments in the Regions 1 and 3 List in the orbital arc 105° E - 129° E :

– for which RR Appendix 4 information for coordination had been received by the Bureau prior to 30 March 2002; and