RECOMMENDATION ITU-R BO.1373*

Use of BSS assignments for FSS transmissions

(1998)

The ITU Radiocommunication Assembly,

considering

a) that ORB-88 adopted RR 846 or No. S5.492 that allowed BSS assignments to be used for FSS transmissions in Region 2;

b) that WRC-97 extended this footnote to be applicable in Regions 1 and 3;

c) that some administrations may notify FSS transmissions for use in their BSS channels;

d) that such use is only possible if the FSS transmissions do not cause more interference or require more protection than the corresponding BSS assignments,

recognizing

a) that the BSS Plans are prevalently based on analogue frequency-modulated carriers and that other modulating signals (e.g. digital) are not precluded;

b) that various types of FSS carriers may be transmitted in the BSS channels;

c) that Recommendation ITU-R BO.1293, contains interference calculation methods for BSS sharing situations involving carriers which differ from the standard TV/FM carriers used for establishing the BSS Plans;

d) that there is a need for further study on other potential sharing scenarios and calculation methods not addressed by the above-mentioned Recommendation,

recommends

1 that the Radiocommunication Bureau, in its application of RR No. S5.492, should use the information contained in the Annex to this Recommendation in order to assess allowable interference from an FSS carrier being used in BSS assignments.

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* Radiocommunication Study Group 6 made editorial amendments to this Recommendation in 2001 in accordance with Resolution ITU-R 44.

ANNEX

Allowable interference from FSS transmissions being used in BSS assignments

When BSS assignments are used for FSS transmissions, it is assumed that these assignments may not cause more interference than BSS transmissions operating in conformity with the Plan. This Annex presents limits on the power levels of FSS transmissions with respect to BSS transmissions (analogue or digital) in order to satisfy this criterion.

The interference possibilities are shown in the Table below. This Table covers co-channel and adjacent channel cases only. For other frequency spacings, and for the different possible carrier types, on-going work on protection ratio templates should be further reflected in the Table.

In this Table, it is assumed that the BSS plan entry was designated for analogue FM/TV or Digital TV (columns 2 and 3). Column 1 identifies the FSS usage to which such a channel is to be put.

In the case of co-channel interference, the requirement that the FSS transmission causes no more interference than a BSS transmission would be satisfied if the FSS interference power is less than or equal to the BSS power.

In the case of adjacent channel interference, when using a digital signal instead of an analogue signal the approach for an FSS digital signal is as follows:

$$P_{fss} \leq P_{bss} - \Delta - 10 \log(b/B) + K \qquad \text{dBW}$$

where:

B: bandwidth of the analogue TV carrier

b: bandwidth of the overlapping spectrum

K: digital/analogue correction factor

Δ: difference between co- and adjacent channel protection ratios (= 8 dB).

For wideband digital systems of 27 MHz necessary bandwidth:

$$B = 27 \text{ MHz}, \; b = 7.82 \text{ MHz}$$

$$P_{fss} \leq P_{bss} - 2.6 + K \qquad \text{dBW}$$

For narrow-band digital systems, each of n carriers within the overlapping bandwidth permitted the same interference value, resulting in:

$$P_{fss} \leq P_{bss} - 8 - 10 \log n + K \qquad \text{dBW}$$

The results are summarized in the following Table:

TABLE 1

Allowable equivalent FSS interference power

FSS usage[1]		**BSS analogue filing**	**BSS digital filing**
Analogue FM/TV	Co-channel	$P_{fss} \leq P_{bss}$	$P_{fss} \leq P_{bss}$
	Adj channel	$P_{fss} \leq P_{bss}$	$P_{fss} \leq P_{bss}$
Digital wideband Digital TV	Co-channel	$P_{fss} \leq P_{bss}$	$P_{fss} \leq P_{bss}$
	Adj channel	$P_{fss} \leq P_{bss} - 2.6 + K$ [2]	$P_{fss} \leq P_{bss}$
Digital narrow-band [3]	Co-channel	$P_{fss} + 10 \log N \leq P_{bss}$	$P_{fss} + 10 \log N \leq P_{bss}$
	Adj channel	$P_{fss} + 10 \log n \leq P_{bss} - 8 + K$ [2]	$P_{fss} + 10 \log n \leq P_{bss}$

(1) Co-channel and adjacent channel cases are given. Other frequency off-set values need further study.

(2) Possible values of K range from 3-4 dB.

(3) N: no. of narrow-band carriers replacing the BSS TV carrier
n: no. of narrow-band FSS channels in the over-lapping bands.