

## RECOMMENDATION ITU-R BS.411-4\*

**Fading allowances in HF broadcasting**

(1963-1966-1978-1986-1990)

The ITU Radiocommunication Assembly,

*recommends*

that the values given in Table 1 below should be used for the fading factors necessary to ensure a satisfactory signal-to-interference ratio for given percentages of the time.

TABLE 1

Ratio (dB)	(1)	(2)	(3)	(4)
Radio-frequency signal-to-interference	10	13	23	16
Wanted signal-to-atmospheric noise	6	16	22	17
Wanted signal-to-industrial noise	6	10	16	12

*Column 1:* the short-term fading allowance which must be made to ensure that the steady-state ratio is attained for 90% of any given hour.

*Column 2:* the long-term fading allowance which must be made to ensure that the steady-state ratio is achieved for 90% of the hours in any one month at a particular time of day in 90% of the cases.

*Column 3:* the sum of the values in columns (1) and (2), and is the overall variability allowance which must be made to ensure that the steady-state ratio is attained for 90% of any one hour in 90% of the hours in any month at a particular time of day and in 90% of the cases. This represents an assured steady-state ratio for 96% of the overall time.

*Column 4:* the square root of the sum of the squares of the values (in dB) given in columns (1) and (2), and is the overall variability allowance which must be made to ensure that the steady-state ratio is attained for 90% of the time.

NOTE – The figures in the above Table, relating to the time availability of service, were selected on a theoretical basis and on experience derived principally from broadcasting in band 6 (MF). For HF, Study Group 3 has proposed appropriate fading allowances for a range of percentages of time and has concluded in particular that the long-term fading of wanted or interfering signal depends upon the ratio of the wave frequency to the basic MUF and also upon the great-circle path geomagnetic latitude. These allowances are contained in Table III of Report ITU-R P.266.

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\* Radiocommunication Study Group 6 made editorial amendments to this Recommendation in 2002 in accordance with Resolution ITU-R 44.