

RECOMMENDATION ITU-R F.338-2*

**BANDWIDTH REQUIRED AT THE OUTPUT OF A TELEGRAPH
OR TELEPHONE RECEIVER**

(1953-1963-1966-1970)

The ITU Radiocommunication Assembly,

considering

- (a) the urgent need to determine the minimum separation between frequency assignments of stations operating on adjacent channels, in the range 10 kHz to 30 MHz;
- (b) that the width of the frequency band, which is necessary at the output of the receiver, is one of the factors which determine the band of frequencies required for the overall system;
- (c) that, for telegraphy, the permissible degree of distortion is not yet defined;
- (d) that, for telephony, the bandwidth may depend, among other factors, upon the type of privacy equipment in use,

recommends

1. that, for telegraphy, a provisional value for the bandwidth necessary at the output of the receiver, under average practical conditions, should be as follows:

1.1 for classes of emission A1A and A1B, the bandwidth in hertz, after the final detector stage, should be equal to 2.5 times the modulation rate in bauds;

1.2 for class of emission F1B, the bandwidth in hertz after the discriminator, should be equal to 1.4 times the modulation rate in bauds.

The extent to which these values can be applied, to permit closer spacing of adjacent channels, depends upon the degree and speed of amplitude variations due to fading and upon the differential fading of the frequencies corresponding to the two significant conditions of modulation;

2. that, for telephony, as a compromise between intelligibility and economy of bandwidth, the bandwidth necessary, for each speech channel at the output of the receiver, should be as follows:

2.1 the upper limit frequency should be reduced to 3000 Hz or less but no lower than 2600 Hz. In the case of the improved radio telephone system using a linked compressor-expander (Recommendation ITU-R F.1111), the bandwidth should be strictly preserved to not less than 3000 Hz;

2.2 the lower frequency limit of speech channels should be 250 Hz, and that of programme transmission channels should be 100 Hz;

2.3 for systems employing commercial privacy equipment, the necessary bandwidth for satisfactory service may require the use of an upper limit frequency greater than 2600 Hz (e.g. in five-band privacy equipment the necessary bandwidth is 2750 Hz, the upper limit being 3000 Hz).

* Radiocommunication Study Group 9 made editorial amendments to this Recommendation in 2000 in accordance with Resolution ITU-R 44.