RECOMMENDATION ITU-R F.593[*]

Noise in real circuits of multi-channel trans-horizon FM radio-relay systems of less than 2 500 km

(1982)

The ITU Radiocommunication Assembly,

considering

a)   that provisional maximum values for noise power in the hypothetical reference circuit of trans-horizon systems are given in Recommendation ITU-R F.397 as a guide to the designers of equipment;

b)   that in many cases the real circuits differ in both composition and length from the hypothetical reference circuit described in Recommendation ITU-R F.396;

c)   that Recommendations governing noise in real trans-horizon radio-relay systems should be issued for guidance in the engineering of radio links,

recommends

1   that in the case described in Recommendation ITU-R F.397, § 3, the statistical distribution of noise at a point of zero relative level in the telephone channel of a real communication system of length L km (less than 2 500 km), the composition of which does not substantially differ from that of the hypothetical reference circuit, should be defined as follows:

1.1   the psophometric mean-minute noise power should not exceed 10 L pW for more than 20% of the time in any month;

1.2   the psophometric mean-minute noise power should not exceed 63 000 pW for more than (0.5 L/2 500)% of the time in any month;

2   that the following Notes should be considered as part of the Recommendation:

NOTE 1 – Noise in the frequency-division multiplex equipments is excluded from the foregoing. On a 2 500 km hypothetical reference circuit, the ITU-T allows 2 500 pW0p mean value for this noise.

NOTE 2 – It is assumed that noise surges and clicks from power supply systems and from switching apparatus are reduced to negligible proportions and will not be taken into account when calculating the noise power.

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[*]   Radiocommunication Study Group 9 made editorial amendments to this Recommendation in 2001 in accordance with Resolution ITU-R 44.

NOTE 3 – It is assumed that, at junctions between the homogeneous sections of a hypothetical reference circuit, the telephone channels, groups, supergroups and mastergroups are interconnected at random; and that the noise coming from the homogeneous sections of the hypothetical reference circuit is power-additive.

NOTE 4 – It is assumed that, during the busy hour, the multiplex signal can be represented by a uniform-spectrum signal, the mean power absolute level of which, at a point of zero relative level is equal to $(-1 + 4 \log N)$ dBm for numbers of channels between 12 and 240 (this value is provisional for systems with a capacity of less than 60 channels), N being the total number of channels for which the radio-relay system is to be designed.

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