RECOMMENDATION ITU-R M.1234

PERMISSIBLE LEVEL OF INTERFERENCE IN A DIGITAL CHANNEL OF A GEOSTATIONARY SATELLITE NETWORK IN THE AERONAUTICAL MOBILE-SATELLITE (R) SERVICE (AMS(R)S) IN THE BANDS 1 545 TO 1 555 MHz AND 1 646.5 TO 1 656.5 MHz AND ITS ASSOCIATED FEEDER LINKS CAUSED BY OTHER NETWORKS OF THIS SERVICE AND THE FIXED-SATELLITE SERVICE

(Question ITU-R 83/8)

(1997)

Summary

In this Recommendation, the allowable aggregate interference level of 20% of the total noise power in AMS(R)S channel, and the single-entry interference level of 6% of the total noise power in AMS(R)S channel, are specified.

The ITU Radiocommunication Assembly,

considering

a) that the bands 1 545 to 1 555 MHz and 1 646.5 to 1 656.5 MHz are allocated to the AMS(R)S, which is reserved for communications relating to safety and regularity of flights (see provisions No. S1.36, S1.59, S5.358 and Article S44 of the Radio Regulations (RR));

b) that the AMS(R)S usually utilizes the bands allocated to the fixed-satellite service (FSS) for its feeder links;

c) that the provision No. S4.10 of the RR recognizes that safety services require special measures to ensure freedom from harmful interference;

d) that there is a need to prevent harmful interference to the AMS(R)S;

e) that interference between networks of the mobile-satellite service (MSS) and between those of the MSS and the FSS contributes to the noise in the network and thus should be taken into account;

f) that the International Civil Aviation Organization (ICAO) Standards and recommended practices (SARPs) provide technical data for AMS(R)S operations;

g) that the mean interference noise power should be an appropriate fraction of the total noise power permitted in the hypothetical reference circuit;

h) that it is desirable that the increase in the bit error ratio (BER) due to interference from other satellite networks should be a fraction of the total BER specified in Recommendation ITU-R M.1037, bit error performance objectives for AMS(R)S radio link;

j) that the desired signal, the interfering signal, and the noise-power levels vary with the operational and environmental conditions in a manner that can be portrayed as a statistical parameter;

k) that FSS feeder links for AMS(R)S do not have any priority with respect to FSS feeder link stations operating with other FSS systems,

recommends

1 that the networks operating in the frequency bands 1 545 to 1 555 MHz and 1 646.5 to 1 656.5 MHz and using geostationary satellite, be designed and operated in such a manner that the total interference power level in a digital channel in the AMS(R)S, caused by the earth station and space station transmitters of all other AMS(R)S, AMSS, and FSS networks should not exceed 20% of the total noise power at the input to the demodulator which would give rise to the bit-error ratio performance objectives as specified in Recommendation ITU-R M.1037;

2 that the maximum permissible level of interference power in any such digital channel in the AMS(R)S caused by the transmitters of another mobile-satellite network or fixed-satellite network, should not exceed 6% of the total noise power at the input to the demodulator which would meet the bit error ratio performance objectives as specified in Recommendation ITU-R M.1037.