

RECOMMENDATION ITU-R S.1429

**ERROR PERFORMANCE OBJECTIVES DUE TO INTERNETWORK INTERFERENCE
BETWEEN GSO AND NON-GSO FSS SYSTEMS FOR HYPOTHETICAL
REFERENCE DIGITAL PATHS OPERATING AT OR ABOVE
THE PRIMARY RATE CARRIED BY SYSTEMS
USING FREQUENCIES BELOW 15 GHz**

(Questions ITU-R 73/4 and ITU-R 75/4)

(2000)

The ITU Radiocommunication Assembly,

considering

- a) that interference between GSO and non-GSO FSS systems can be of a short-term nature;
- b) that error performance objectives for satellite digital paths operating at or above the primary rate with systems utilizing frequencies below 15 GHz are given in Recommendation ITU-R S.1062;
- c) that the error performance objectives for satellite digital paths given in Recommendation ITU-R S.1062 can be expressed in terms of errored seconds (ES) and severely errored seconds (SES);
- d) that sharing considerations between FSS systems carrying digital traffic are given in Recommendations ITU-R S.735 and ITU-R S.1323;
- e) that Recommendation ITU-R S.1323 requires that time varying interference be responsible for at most 10% of time allowance for a given BER;
- f) that availability objectives for satellite digital paths are given in Recommendation ITU-R S.579,

recommends

1 that, for satellite hypothetical reference digital paths (HRDPs) operating at or above the primary rate, 10% of the error performance objectives for these HRDPs be allotted to short-term interference between GSO and non-GSO FSS systems. These allotments are shown in terms of bit error probability (BEP) in Table 1. Tables 2 and 3 give the objectives in terms of ES and SES (see Note 1).

NOTE 1 – The technical basis for the interference allotments is given in Annex 1.

NOTE 2 – This Recommendation should be used in conjunction with Recommendation ITU-R S.1062.

TABLE 1

Allowable BEPs due to short-term interference between GSO and non-GSO FSS systems

Bit rate (Mbit/s)	Percentage of total time (worst month)	BEP/ $\alpha^{(1)}$
1.5	0.02	7×10^{-7}
	0.2	3×10^{-8}
	1.0	5×10^{-9}
2.0	0.02	7×10^{-6}
	0.2	2×10^{-8}
	1.0	2×10^{-9}
6.0	0.02	8×10^{-7}
	0.2	1×10^{-8}
	1.0	1×10^{-9}
51.0	0.02	4×10^{-7}
	0.2	2×10^{-9}
	1.0	2×10^{-10}
155 ⁽²⁾	0.02	1×10^{-7}
	0.2	1×10^{-9}
	1.0	1×10^{-10}

(1) For example, Alpha (α) = 10. Errors on satellite links employing FEC and scrambler schemes tend to occur in clusters. The appearance of the clusters, which can also be called error events, is random following a Poisson distribution. The resulting block error rate is the same as if it were caused by randomly (Poisson distribution) occurring bit errors with a BER/ α ratio, where α is the average number of errored bits within a cluster, α also represents the ratio between the BER and the error-event ratio.

(2) These objectives should be used at bit rates below 155 Mbits/s when it is desirable or necessary for certain services (see ITU-R Recommendation S.1062, Note 2).

Allowable errored interval objectives due to short-term interference which correspond to the BEPs given in Tables 1 and 2 of Recommendation ITU-R S.1062 are shown in the following Tables. These values are obtained by taking 10% of the errored interval objectives computed using the method given in Annex 1 of Recommendation ITU-R S.1062.

TABLE 2

**Allowable errored interval objectives due to short-term interference between
GSO and non-GSO FSS systems for systems using the objectives
of Table 1 of Recommendation ITU-R S.1062**

Bit rate (Mbit/s)	1.5-5	> 5-15	> 15-55	> 55-160
Allowable ES per day	121	151	226	483
Allowable SES per day	6	6	6	6