

RECOMMENDATION ITU-R SA.1162-2

Performance criteria for service links in data collection and platform location systems in the Earth exploration- and meteorological-satellite services

(Question ITU-R 142/7)

(1995-1997-2003)

The ITU Radiocommunication Assembly,

considering

- a) that satellite systems for data collection and platform location of the Earth exploration-satellite service (EESS) and meteorological-satellite (MetSat) service have unique telecommunication requirements;
- b) that the hypothetical reference system specified in Recommendation ITU-R SA.1020 defines service and feeder links for data collection, and data collection platform (DCP) interrogation by satellite;
- c) that performance objectives for these transmissions must be consistent with the attendant functional requirements and with the performance limitations associated with the systems and frequency bands in which the requirements will be fulfilled;
- d) that performance objectives for representative systems operating in the EESSs (including the MetSat service) are intended to provide guidelines for the development of actual systems;
- e) that performance objectives may be determined using the methodology described in Recommendation ITU-R SA.1021;
- f) that performance objectives are a prerequisite for the determination of interference criteria;
- g) that Recommendation ITU-R SA.1627 contains the telecommunication requirements and characteristics of EESS and MetSat systems for data collection and platform location,

recommends

- 1** that the service links associated with data collection systems be designed to meet the performance objectives specified in Table 1.

TABLE 1

Performance objectives for data collection system links in the EESS and the MetSat service

Frequency band (MHz)	Satellite orbit	Modulation	Applicable elevation angle (degrees)	Maximum BER	Required time availability (%)	Function and type of earth station Antenna
401-403 (Earth-to-space)	Non-GSO	– PSK/PM – Mixed QPSK – Gaussian filtered minimum shift keying (GMSK)	≥ 5	10^{-5}	99.6	Data collection Low-gain antenna
	GSO	– Biphase – L – Trellis coded 8-PSK	≥ 3	Not available	99.6	Data collection Low-gain antenna
1 690-1 698 (space-to-Earth)	GSO	– Manchester encoded PSK – Trellis coded 8-PSK	≥ 3	10^{-6}	99.6	Command and data acquisition (CDA) station High-gain antenna
137-138 (space-to-Earth)	Non-GSO	Manchester encoded PSK	≥ 5	10^{-5}	99.6	CDA station High-gain antenna
2 025-2 110 (Earth-to-space)	GSO	Manchester encoded PSK	≥ 3	Not available	99.6	CDA station High-gain antenna
460-470 (space-to-Earth)	Non-GSO	PSK/PM	≥ 5	10^{-5}	99.6	DCP interrogation, Low-gain antenna
	GSO	Biphase – L	≥ 3	10^{-5}	99.6	DCP interrogation, Low-gain antenna

NOTE 1 – Performance objectives for specific systems may differ from the objectives presented in this Recommendation; however, the objectives defined herein are used as a basis for deriving permissible levels of interference that are the minimum interference thresholds to be accepted by specific systems.

NOTE 2 – Additional performance objectives could be associated with an availability of 99.99% of the time that relate to the need to synchronize the receiver to the data transmission frames and to avoid bit slips within a frame. However, for the purpose of deriving interference criteria, these objectives can be assumed to be met if the objectives associated with the above specified lower availability levels are met.

NOTE 3 – The service links addressed herein are between satellite and DCPs and between the satellite and CDA station. The performance objectives for feeder links associated with the data collection and DCP interrogation functions are not specified in this Recommendation.

NOTE 4 – DCP interrogation from non-GSO satellites will be available in the near future.