

European Aviation Safety Agency

European Technical Standard Order (ETSO)

Subject: AIRBORNE AREA NAVIGATION EQUIPMENT FLIGHT MANAGEMENT SYSTEMS (FMS) USING MULTI-SENSOR INPUTS

1 – Applicability

This ETSO gives the requirements which ~~Airborne Area Navigation Equipment~~ Flight Management Systems (FMS) using Multi-Sensor Inputs that are manufactured on or after the date of this ETSO must meet in order to be identified with the applicable ETSO marking.

2 – Procedures

2.1 – General

Applicable procedures are detailed in CS-ETSO, Subpart A.

2.2 – Specific

None.

3 – Technical conditions

3.1 – Basic

3.1.1 – Minimum performance standard

Standards set forth in the RTCA DO-283A, Minimum Operational Performance Standards for Required Navigation Performance for Area Navigation, dated 28/10/2003.

3.1.2 – Environmental standard

See CS-ETSO, Subpart A, paragraph 2.1.

3.1.3 – Software

See CS-ETSO, Subpart A, paragraph 2.2.

3.1.4 – Airborne electronic hardware

See CS-ETSO, Subpart A, paragraph 2.3.

3.2 — Specific

Add the following system performance requirement, consistent with the desired RNP capability, to DO-283A, paragraph 2.2.5.2:

When using GNSS, the aircraft navigation system shall provide an alert when the probability of signal-in-space errors causing a lateral position error greater than two times the desired RNP ($2 \times \text{RNP}$) exceeds 1×10^{-7} per hour.

Note: This exception supports international harmonisation of requirements for RNAV and RNP. The exception is comparable to the ETSO-C115b exception that invoked ETSO-C129a system performance requirements when integrating GNSS as part of a multi-sensor navigation solution.

3.2.1 Failure condition classification

See CS-ETSO, Subpart A, paragraph 2.4.

Design the system to the appropriate failure condition classification(s) as detailed in further guidance material dedicated to the different navigation specification (for instance RNP1, LPV, RNP AR...).

4 — Marking

4.1 — General

Marking as detailed in CS-ETSO, Subpart A, paragraph 1.2.

4.2 — Specific

None.

5 — Availability of referenced document

See CS-ETSO, Subpart A, paragraph 3.