

ETSO-C165b

ED Decision 2020/011/R (applicable from 25.7.2020)

ELECTRONIC MAP SYSTEMS FOR GRAPHICAL DEPICTION OF AIRCRAFT POSITION

1 Applicability

This ETSO provides the requirements that any electronic map system for the graphical depiction of aircraft position (own-ship), designed and manufactured on or after the date of this ETSO, must meet in order to be identified with the applicable ETSO marking.

This ETSO applies to equipment that is intended to provide graphical depiction of advisory information on a display (e.g. navigation, traffic, weather, obstacles, graphical taxi routing, etc.). The system is intended to improve flight crew positional awareness of the aircraft own-ship position relative to other items depicted on the display.

2 Procedures

2.1 General

The applicable procedures are detailed in CS-ETSO [Subpart A](#).

2.2 Specific

Applications to certify only the software without certifying the hardware and/or the operating system will be accepted. Nevertheless, the applicant has to specify the requirements for the hardware and/or the operating system to be used, the tests to be performed once the software is integrated into the final system, and the environment which has been used to demonstrate functionality of the system.

2.3 Databases

If the article includes database(s), each database must be processed in accordance with the requirements in EUROCAE ED-76A, Standards For Processing Aeronautical Data, dated June 2015, or RTCA DO-200B, Standards for Processing Aeronautical Data, dated 18 June 2015.

3 Technical Conditions

3.1 Basic

3.1.1 Minimum Performance Standard (MPS)

The applicable are those provided in Section 2 of RTCA document DO-257B, 'Minimum Operational Performance Standards for the Depiction of Navigational Information on Electronic Maps', dated 22 March 2018.

Electronic map systems may include displays, controls, and processing equipment that is intended to provide a graphical depiction of navigation information on the display (e.g. flight plans, fixes, nav aids, electronic charts, terrain, weather, obstacles, aerodrome surfaces, graphical taxi routing, etc.). The electronic map system improves flight crew positional awareness of the aircraft relative to other items depicted on the display. The standards were updated to support required navigation performance (RNP) systems, specifically when the in-flight (plan view) and vertical situation display (VSD) maps are displaying defined paths that are generated by the RNP system.

Table 1 provides the RTCA DO-257B requirements that are applicable to each specific function of the electronic map systems.

Electronic Map System functional description	Applicable Requirements Sections in RTCA DO-257B				
	2.1	2.2	2.3	2.4	2.5
In flight (Plan View Display)	X	X	X		
Aerodrome Moving Map (AMM)	X	X		X	
Vertical Situation Display (VSD)	X	X			X

Table 1

Displays that are part of the electronic map system must also be approved in accordance with ETSO-C113().

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

3.2.1 Failure Condition Classification

See CS-ETSO, [Subpart A](#), paragraph 2.4. RTCA DO-257B Section 2.1.8 defines the minimum failure condition classifications for the specific electronic map system functions that are summarised in Table 1, except for the loss of the aerodrome moving map display, which is a minor failure condition.

Failure of the functions defined in paragraph 3.1.1 of this ETSO for Electronic Map Systems used in flight and VSD equipment (airborne applications) have been determined to be a major failure condition for malfunctions causing the incorrect depiction of aircraft position (own-ship).

3.2.2 Documentation

Installation procedures and limitations must include:

- a description of the intended function of the electronic map system;
- a description of the data quality characteristics that are necessary for the electronic map system to perform its intended function (reference EUROCAE ED-76A Standards For Processing Aeronautical Data, dated June 2015, Section 2.3, or RTCA DO-200B, Standards for Processing Aeronautical Data, dated 18 June 2015, Section 2.3);
- a requirement to interface the electronic map system with a TSO or ETSO-approved global navigation satellite system (GNSS) sensor, which is the source of position input data;
- if applicable, a description of how the electronic map system with AMM meets the total system accuracy requirements of RTCA DO-257B, Section 2.4.1.1; and

- a requirement stating that the aeronautical database(s) associated with the electronic map system, whether internal or external to the electronic map system, must demonstrate compliance with EUROCAE ED-76A/RTCA DO-200B, or its subsequent revisions as required in paragraph 2.3 of this ETSO.

4 Marking

4.1 General

See CS-ETSO, [Subpart A](#), paragraph 1.2

4.2 Specific

None.

5 Availability of Referenced Documents

See CS-ETSO, [Subpart A](#), paragraph 3

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