



Number: CTSO-C110a
Date of approval: Jun 4, 2019
Approved by: Xu Chaoqun

China Civil Aviation Technical Standard Order

This China Civil Aviation Technical Standard Order (CTSO) is issued according to Part 37 of the China Civil Aviation Regulations (CCAR-37). Each CTSO is a criterion which the concerned aeronautical materials, parts or appliances used on civil aircraft must comply with when it is presented for airworthiness certification.

AIRBORNE PASSIVE THUNDERSTORM DETECTION EQUIPMENT

1. Purpose.

This China Civil Aviation Technical Standard Order (CTSO) is for manufacturers applying for airborne passive thunderstorm detection equipment CTSO authorization (CTSOA). This CTSO prescribes the minimum performance standards(MPS) that airborne passive thunderstorm detection equipment must first meet for approval and identification with the applicable CTSO marking.

2. Applicability.

This CTSO affects new application submitted after its effective date. Major design changes to article approved under this CTSO will require a new authorization in accordance with section 21.353 of CCAR-21-R4.

3. Requirements

Models of airborne passive thunderstorm detection systems that are to be so identified and that are manufactured on or after the date of this CTSO must meet the minimum performance standard of Radio Technical Commission for Aeronautics (RTCA) Document No. DO-191, “Minimum Operational Performance Standards for Airborne Thunderstorm Detection Equipment,” dated May 1986.

a. Environmental Qualification. Demonstrate the required performance under the test conditions specified in RTCA/DO-160G or the later versions, titled Environmental Conditions and Test Procedures for Airborne Equipment, using standard environmental conditions and test procedures appropriate for airborne equipment.

Note: The use of RTCA/DO-160D (with Changes 1 and 2 only, incorporated) or earlier versions is generally not considered appropriate and will require substantiation via the deviation process as discussed in paragraph 3.c of this CTSO.

b. Software Qualification. If the article includes software, develop the software according to RTCA/DO-178B, Software Considerations in Airborne Systems and Equipment Certification, dated December 1, 1992.

c. Deviations. For using alternative or equivalent means of compliance to the criteria in this CTSO, the applicant must show that the equipment maintains an equivalent level of safety. Apply for a deviation

under the provision of 21.368(a) in CCAR-21-R4.

4. Marking.

a. Mark at least one major component permanently and legibly with all the information in 21.423(b) of CCAR-21-R4. The marking must include the serial number.

b. Also, mark the following permanently and legibly, with at least the manufacturer's name, subassembly part number, and the CTSO number:

(1) Each component that is easily removable (without hand tools);
and,

(2) Each subassembly of the article that manufacturer determined may be interchangeable.

c. If the article includes software and/or airborne electronic hardware, then the article part numbering scheme must identify the software and airborne electronic hardware configuration. The part numbering scheme can use separate, unique part numbers for software, hardware, and airborne electronic hardware.

d. The applicant may use electronic part marking to identify software or airborne electronic hardware components by embedding the identification within the hardware component itself (using software) rather than marking it on the equipment nameplate. If electronic marking

is used, it must be readily accessible without the use of special tools or equipment.

5. Application Data Requirements.

The applicant must furnish the responsible certification personnel with the related data to support design and production approval. The application data include a statement of conformance as specified in section 21.353(a)(1) in CCAR-21-R4 and one copy each of the following technical data:

- a. Operating instructions.
- b. Equipment limitations.
- c. Installation procedures and limitations.
- d. Schematic drawings as applicable to the installation procedures.
- e. Wiring diagrams as applicable to the installation procedures.
- f. Specifications.
- g. List of the major components (by part number) that make up the equipment system complying with the standards prescribed in this CTSO.
- h. An environmental qualification form as described in RTCA Document No. DO-160G.
- i. Manufacturer's CTSO qualification test report.
- j. Nameplate drawing.
- k. If the article includes software, the appropriate documentation

defined in RTCA/DO-178B including all data supporting the applicable objectives in RTCA/DO-178B Annex A, Process Objectives and Outputs by Software Level.

6. Manufacturer Data Requirements.

Besides the data given directly to the authorities, have the following technical data available for review by the authorities:

a. A drawing list, enumerating all the drawings and processes that are necessary to define the article's design.

b. The functional test specification to be used to test each production article to ensure compliance with this CTSO.

c. Equipment calibration procedures.

d. Corrective maintenance procedures (within 12 months after CTSO authorization).

e. Schematic drawings.

f. Wiring diagrams.

g. If the article includes software, the appropriate documentation defined in RTCA/DO-178B including all data supporting the applicable objectives in RTCA/DO-178B Annex A, Process Objectives and Outputs by Software Level.

h. The results of the environmental qualification tests conducted according to paragraph 3.a of this CTSO.

7. Furnished Data Requirements.

If furnishing one or more articles manufactured under this CTSO to one entity (such as an operator or repair station), provide one copy or technical data and information specified in paragraphs 5.a through 5.h of this CTSO. Add any data needed for the proper installation, certification, use, or for continued compliance with the CTSO, of the airborne passive thunderstorm detection equipment.

8. Availability of Referenced Documents.

Order RTCA documents from:

Radio Technical Commission for Aeronautics, Inc.

1150 18th Street NW, Suite 910, Washington D.C. 20036

You may also order them online from the RTCA Internet website at:

www.rtca.org.