



# Technical Standard Order

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**Subject: TSO-C122, DEVICES THAT PREVENT BLOCKED CHANNELS USED IN TWO-WAY RADIO COMMUNICATIONS DUE TO SIMULTANEOUS TRANSMISSIONS**

a. Applicability.

(1) Minimum Performance Standard. This technical standard order (TSO) prescribes the minimum performance standard that devices for preventing blocked channels used in two-way radio communication due to simultaneous transmissions must meet in order to be identified with the marking "TSO-C122." Devices that are to be so identified and that are manufactured on or after the date of this TSO must meet the minimum performance standards set forth in Section 2.0 of RTCA, Inc., (RTCA) Document No. DO-209, "Minimum Operational Performance Standard for Devices That Prevent Blocked Channels Used in Two-Way Radio Communications Due to Unintentional Transmissions," dated April 23, 1992.

(2) Environmental Standard. RTCA Document No. DO-209 incorporates, as a reference, RTCA Document No. DO-160C, "Environmental Conditions and Test Procedures for Airborne Equipment," dated December 4, 1989.

(3) Computer Software. If the equipment design includes a digital computer, the software must be developed in accordance with RTCA Document No. DO-178B, "Software Considerations in Airborne Systems and Equipment Certification," dated December 1, 1992. In accordance with RTCA/DO-178B, the applicant must submit a Software Aspect of Certification Plan (RTCA/DO178B, Section 11.1) for review and approval.

NOTE: The Federal Aviation Administration (FAA) strongly recommends that this plan be submitted as early as possible in the certification process. This will allow for early discussion and agreement between the applicant and the FAA on the software level or levels, the verification approach, and the documentation to be prepared and submitted.

b. Marking. In addition to the marking specified in Section 21.607(d), Federal Aviation Regulations (FAR), the following marking requirements apply. The specified information shall be legibly and permanently marked on the major equipment component:

(1) Each separate component of equipment that is manufactured under this TSO (timer, audio/visual annunciators, etc.) must be permanently and legibly marked with at least the name of the manufacturer, the TSO number, and part number.

(2) With regard to FAR Section 21.607(d)(2), the part number is to include hardware and software identification or a separate part number may be utilized for hardware and software. Either approach must include a means for showing the modification status.

(3) The software level or levels in accordance with RTCA/DO-178B.

NOTE: If multiple software levels are marked, then the installation instructions must clearly identify the software level for each function.

c. Data Requirements.

(1) In addition to the information required by FAR section 21.605, the manufacturer must furnish the Manager, Aircraft Certification Office (ACO), Federal Aviation Administration, having purview of the manufacturer's facilities, one copy each of the following:

- (i) Operating instructions.
- (ii) Equipment limitations.
- (iii) Installation procedures and limitations.
- (iv) Schematic drawings as applicable to the installation procedures.
- (v) Wiring diagrams as applicable to the installation procedures.
- (vi) Specifications.
- (vii) List of the major components (by part number) that make up the equipment complying with the standards prescribed in this TSO.
- (viii) An environmental qualification form as described in RTCA Document DO-160C.
- (ix) Manufacturer's TSO qualification test report.
- (x) Nameplate drawings.
- (xi) The appropriate documentation as defined in RTCA/DO-178B.

(2) In addition to those data requirements that are to be furnished directly to the FAA, each manufacturer must have available for review by the Manager of the ACO having purview of the manufacturer's facilities, the following technical data:

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

(ii) The functional test specification to be used to test each production article to ensure compliance with this TSO.

(iii) Equipment calibration procedures.

(iv) Corrective maintenance procedures (within 12 months after TSO authorization).

(v) Schematic drawings.

(vi) Wiring diagrams.

(vii) The results of the environmental qualification tests conducted in accordance with RTCA DO-160C.

(viii) The appropriate documentation as defined in RTCA/DO-178B.

d. Data to be furnished with manufactured units. One copy of the data and information specified in paragraphs c(1)(i) through c(1)(viii) of this TSO and instructions for periodic maintenance and calibration that are necessary for continued airworthiness must go to each person receiving for use one or more articles manufactured under this TSO. In addition, a note with the following statement must be included:

“The conditions and tests required for TSO approval of this article are minimum performance standards. It is the responsibility of those desiring to install this article either on or within a specific type or class of aircraft to determine that the aircraft installation conditions are within the TSO standards. The article may be installed only if further evaluation by the applicant documents an acceptable installation and is approved by the Administrator.”

e. Availability of Reference Documents.

(1) Copies of RTCA Document Nos. DO-209, DO-160C and DO-178B may be purchased from the RTCA, Inc., 1140 Connecticut Avenue, NW., Suite 1020, Washington, DC 20005.

(2) Federal Aviation Regulations Part 21, Subpart O, may be purchased from the Superintendent of Documents, Government Printing Office, Washington, DC 20402-9325. Advisory Circular 20-110, “Index of Aviation Technical Standard Orders,” may be obtained from

the U.S. Department of Transportation, General Services Section, M-443.2, Washington, DC.,  
20590.

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