English Translation Version for Reference Only

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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.

Fire Containment Covers (FCC)

1. Purpose.

This China Civil Aviation Technical Standard Order (CTSO) is for manufacturers applying for fire containment covers (FCC) CTSO authorization (CTSOA). This CTSO prescribes the minimum performance standards (MPS) that fire containment covers (FCC) 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-21R4.

3. Requirements

New models of Type I FCC or Type II FCC, identified and

manufactured on or after the effective date of this CTSO must meet the MPS qualification and documentation requirements in SAE International AS6453, Fire Containment Cover Design, Performance, and Testing Requirements, August 2013, as modified by the Appendix of this CTSO.

a. Functionality. This CTSO's design, performance and testing requirements apply to fire containment covers intended to be used to cover unitized cargo contained/restrained in an air cargo pallet and net assembly to improve fire protection in aircraft cargo compartments. Type I FCC requires separate devices be installed over a pallet's load below a net. Type II FCC requires devices permanently attached to a pallet net.

b. Failure Condition Classifications. There is no standard minimum failure condition classification for this CTSO. The failure condition classification appropriate for the equipment will depend on the intended use of the equipment in a specific aircraft. Document the loss of function and malfunction failure condition classification for which the equipment is designed

c. Functional Qualification. Demonstrate the required performance under the test conditions specified in SAE AS6453 Sections 4, 5 and 6 as modified in the appendix of this CTSO.

d. Environmental Qualification. Demonstrate the required performance under the test conditions specified in SAE AS6453 Section 4.6 and Sections 6.1.2 through 6.1.5 as modified in the appendix of this

CTSO.

e. Deviations. We have provisions for using alternate or equivalent means of compliance to the criteria in the MPS of this CTSO. If the applicant invokes these provisions, applicant must show that his equipment maintains an equivalent level of safety. Apply for a deviation under the provision of section 21.368(a) of CCAR -21R4.

4. Marking

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

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 you determined may be interchangeable.

c. Each fire containment cover conforming to this Standard shall bear at least the following markings near the bottom edges on the two opposite long sides:

(1) “FIRE CONTAINMENT COVER”, in bold characters at least

150 mm (6 in) high,

(2) Substantiated protection time (e.g. “Minimum protection duration 6 hours”),

(3) The IATA ULD ID (size) codes for the pallets and nets with which the FCC can be used.

(4) Expiration date in the format “EXP YYYY-MM”.

d. In addition each fire containment cover conforming to this Standard shall bear the markings identified in SAE AS6453 Section 7.3 and Section7.4 as modified in the appendix of this CTSO.

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-21R4 and one copy each of the following technical data:

a. A manual(s) containing the following:

(1) Operating instructions and article limitations sufficient to describe the equipment’s operational capability.

(2) Describe in detail any deviations.

(3) Installation procedures and limitations sufficient to ensure that the FCC, when installed according to the installation or operational

procedures, still meets this CTSO's requirements. Limitations must identify any unique aspects of the installation.

The limitations must include a note with the following statement:

"This article meets the minimum performance and quality control standards required by a CTSO. Installation of this article requires separate approval."

b. Instructions covering periodic maintenance, and repair, for the functional performance of the FCC. Include recommended inspection intervals and service life, as appropriate.

c. A drawing depicting how the article will be marked with the information required by paragraph 4 of this CTSO.

d. Identify functionality or performance contained in the article not evaluated under paragraph 3 of this CTSO (that is, non-CTSO functions). Non-CTSO functions are accepted in parallel with the CTSO authorization. For those non-CTSO functions to be accepted, the applicant must declare these functions and include the following information with the CTSO application:

(1) Description of the non-CTSO function(s), such as performance specifications, failure condition classifications, software, hardware, and environmental qualification levels. Include a statement confirming that the non-CTSO function(s) don't interfere with the article's compliance with the requirements of paragraph 3.

(2) Installation procedures and limitations sufficient to ensure that the non-CTSO function(s) meets the declared functions and performance specification(s) described in paragraph 5.d (1).

(3) Instructions for continued performance applicable to the non-CTSO function(s) described in paragraph 5.d (1).

(4) Interface requirements and applicable installation test procedures to ensure compliance with the performance data defined in paragraph 5.d.(1).

(5) Test plans, analysis and results, as appropriate, to verify that performance of the hosting CTSO article is not affected by the non-CTSO function(s).

(6) Test plans, analysis and results, as appropriate, to verify the function and performance of the non-CTSO function(s) as described in paragraph 5.d.(1).

e. The quality system description required by section 21.358 of CCAR-21R4, including functional test specifications. The quality system should ensure that you will detect any change to the approved design that could adversely affect compliance with the CTSO MPS, and reject the article accordingly.

f. Material and process specifications list.

g. List of all drawings and processes (including revision level) that define the article’s design.

h. Manufacturer's CTSO qualification report showing results of testing accomplished according to paragraph 3.c of this CTSO.

6. Manufacturer Data Requirements.

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

a. Functional qualification specifications for qualifying each production article to ensure compliance with this CTSO.

b. Schematic drawings.

c. Material and process specifications.

d. The results of the environmental qualification tests conducted according to paragraph 3.c of this CTSO.

e. If the article contains non-CTSO function(s), you must also make available items 6.a through 6.d as they pertain to the non-CTSO function(s).

7. Furnished Data Requirements.

a. If furnishing one or more articles manufactured under this CTSO to one entity (such as an operator or repair station), provide one copy or on-line access to the data in paragraphs 5.a and 5.b of this CTSO. Add any other data needed for the proper installation, certification, use, or for continued compliance with the CTSO, of the FCC.

b. If the article contains declared non-CTSO function(s), include one

copy of the data in paragraphs 5.d.(1) through 5.d.(4).

8. Availability of Referenced Documents.

Order SAE documents from:

Society of Automotive Engineers, Inc.

400 Commonwealth Drive, WARRENDALE, PA 15096-001, USA

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

www.sae.org.

Appendix 1. Minimum Performance Standard (MPS) for Fire Containment Covers

1. Purpose

This appendix prescribes the MPS for Fire Containment Covers. The applicable standard is SAE International AS6453, Fire Containment Cover-Design, Performance, August 2013.

2. Modification.

The standard applicable to this CTSO is SAE International AS6453, Fire Containment Cover-Design, Performance, and Testing Requirements. We modified the standard as follows:

a. General notes

It is permissible to utilize the procedures described in DOT/FAA/AR-0012 Aircraft Materials Fire Test Handbook, May 18, 2006 to show compliance with the requirements of section 25.853, 25.855 and Appendix F of CCAR-25R4.

The CAAC does not recognize EUROCAE ED-14G as an acceptable equivalent to RTCA DO-160G for requirements. The two documents cannot be alternatively applied to this CTSO. Only RTCA DO-160G is acceptable.

The CAAC does not recognize ISO TR 8647 as an acceptable equivalent to SAE International AIR 1490C for requirements. The two documents cannot be alternatively applied to this CTSO. Only AIR

1490C is acceptable. Environmental degradation data other than AIR 1490C may be used if you substantiate the data and it is approved by the authorities. An FCC must meet the minimum performance requirements of this CTSO at any time during its service life.

b. The standard is modified as follows:

AS6453 sections	**Modification**
Section 1.1 – 1.2	Disregard
Section 1.4	Disregard
Section 1.7	Disregard
Section 2	Disregard references to EASA Regulations EASA CS-25, CS-25.855/25.857 and ETSO C90d, Japanese Airworthiness Standard Part 3 and EUROCAE
Section 3.2	Disregard second sentence
Section 4.1	Disregard
Section 4.2.1	Disregard Note 4 and Note 6.
Section 4.3.1	Add to the end of the sentence “which is sufficiently flexible to allow the FCC to collapse with the fire load”.
Section 4.3.3 – 4.3.6	Disregard
Section 4.4	Disregard
Section 4.5.3	Disregard
Section 4.5.4	Disregard
Section 4.5.6 – 4.5.8	Disregard
Section 4.6.5	Disregard the phrase “as part of the required traceability code (see 7.2)”
Section 4.6.7	Disregard
Section 4.7	Disregard
Section 5.1.1	Add “seams and corners” after “The fire container cover’s material”.
Section 5.1.1	Disregard references to CS-25 and JAS Part 3
Section 5.1.2	Disregard
Section 5.1.3	Disregard
Section 5.2.2	Disregard references to CS-25 and JAS Part 3
Section 5.2.4	Disregard Section 5.3.1 Disregard second sentence
Section 5.3	Disregard
Section 6.1.1.1	Disregard references to CS-25 and JAS Part 3

Section 6.1.1.2.b	Disregard references to CS-25 and JAS Part 3
Section 6.1.1.5	Add the following sentence to the end of this section “The FAA Aircraft Materials Fire Test Handbook includes an allowance for a brief ignition on the upper surface of the test specimen as long as the 400 degree F requirement is not exceeded.”
Section 6.1.1.6 – 6.1.1.7	Disregard
Section 6.1.6	Disregard
Section 6.2.1	Replace the words in the end of the second sentence “paragraph 4.3.2 of the US DOT/FAA/AR-TN05/20 document (see reference [16] in Bibliography).” with the following, “the bulk load fire scenario section of report US DOT/FAA/TC-TN12/11.”
Section 6.2.3	Disregard references to CS-25 and JAS Part 3
Section 6.2.4	Disregard
Section 6.2.6	Disregard “then with a repaired unit in order to substantiate the retained repair method. The test record files shall be used to substantiate the defined degree of damage as allowable operational serviceability limits, and repair method approval”
Section 6.2.7	Disregard
Section 6.2.8	Disregard
Section 6.2.9	Disregard
Section 7.1	Disregard
Section 7.2	Disregard
Section 7.3	Disregard last sentence
Section 7.5	Disregard
Section 8	Disregard
Section 9	Disregard
Annex D	Disregard