

**DEPARTMENT OF CIVIL AVIATION
MALAYSIA
AIRWORTHINESS NOTICE**

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Date: 15 May 2005

APPROVAL OF EQUIPMENT

A. Applicability

This notice is applicable to DCA approved organization for the design and manufacture of aircraft parts, equipment or components.

B. Definitions:

1. Uncontrolled Items - Airframe parts and equipment, the installation or failure of which would **not** adversely affect the airworthiness and the safe operation of an aircraft. These items are not required to be approved together with those items specifically exempted from approval by the CAR.
2. Controlled Items - Those airframe part and equipment:
 - 2.1. prescribed in the CAR and not specifically exempted from approval;
 - 2.2. prescribed in the requirements recognized by the DCA, e.g. FAR or JAR or EASA;
 - 2.3. on which the airworthiness and safe operation of an aircraft depend;
 - 2.4. the installation or failure of which could adversely affect the airworthiness and safe operation of an aircraft.
3. TSO/JTSO - Technical Standards Order (FAA) / Joint Technical Standards Order (JAA).

C. Approval Process for TSO Product.

1. Application for the design and manufacture of any TSO product shall be made in writing to the DCA.
2. The following is required to be submitted by the applicant (minimum).
 - 2.1 Description of the product and its specifications with brief functional operation of the unit.
 - 2.2 Drawings that reflect size and weight, materials, specials processes, power supplies, system architecture complete with input and out specifications.
 - 2.3 The Technical Standards Order (TSO) of the latest revision that is applicable to the intended product with documentary evidence to show compliance.
 - 2.4 Certification Test Plan (CTP).
 - a. Unless specifically addressed in the TSO, the CTP shall consist (but not limited to) of a *Product Functional and System Tests, Failure Test and Environmental Test*.
 - b. Environmental Test shall be carried out as per the applicable TSO and in accordance with the latest revision of the Environmental Test Standard e.g. RTCA DO160 Rev. D.
 - c. No deviation will be allowed from the TSO requirements. However, in cases where it is justifiable to deviate from any required test, a justification for such deviation shall be submitted with the alternative test procedure for review and approval in the form of a Technical Deviation Justification Report (TDJR). The TDJR must show that the alternative test procedures is equivalent or exceeds the specified minimum standard.
 - d. Tests results obtained from an unapproved CTP are not acceptable and cannot be used to support the equipment approval.
 - 2.5 Software qualification per RTCA DO 178 or the equivalent EUROCAE (for JTSO) requirement as applicable.
 - 3.4 In the process of CTP evaluation, the DCA reserves the right to impose *special conditions and/or limitations* on the use of the product, particularly if the product is identified in its design to have operational limitations, predictable faults or failure modes that could affect safety during operation or in-service. The applicant will be notified and will form part of certification basis of the product. The CTP shall be revised accordingly.

Note: Any *Limitations* and/or *Special Conditions* imposed shall be established and agreed between the applicant and the DCA.

- 2.7 Applicant is required to furnish to the DCA a Safety Assessment Report of the product. Refer to Appendix 1 for reference documents for Hazard Assessment and System Safety Assessment.

3 Testing

- 3.1 All testing shall be in accordance with the approved CTP and witnessed by the DCA.
- 3.2 Units being used for testing must be appropriately labeled and parts/components shall not be cannibalized and reused to make serviceable units. Units that have been used for test purposes shall not be allowed to be released to service.
- 3.3 Testing can be carried out;
 - a. by the applicant within the limits of their organization approval.
 - b. by an approved Test House. A Statement of Declaration from the approved Test House should be obtained by the applicant declaring that the test has been carried out as per the requirement.
 - c. by an unapproved Test House, with prior approval of the DCA. The DCA will be required to audit such Test Houses to assess their facility, competency and procedures. Depending on the result of the audit and, the criticality or significance of the test, the DCA may grant once-off approval to carry out the test or other wise. The applicant should provide to such organization the Approved Test Procedures and witness the test to their satisfaction. The unapproved Test House is required to provide a statement that the test is carry out in accordance with the approved procedures provided. The applicant shall accept the work and will assume the responsibility of the test and its result. The DCA must have access to all facilities and information pertaining to the test.
- 3.4 Test to destruction - applicant should be aware that certain test procedure may require the unit to be tested to destruction. Whilst economics is not a consideration by the DCA, they (applicant) should schedule these tests in a manner where minimum units are required and in the process does not affect the certification plan. Units tested to destruction are not allowed as specimen for any other test.
- 3.5 The complete test results shall sign by the approved person of the organization, and submitted to the DCA, a Qualification Test Report as a prerequisite for the equipment approval.
- 3.6 Declaration of Design and Performance (DDP) signed by the approved person shall be submitted the DCA. The DDP is a declaration that the design of the product is in accordance with the requirements of DCA Malaysia (see Appendix 1 of this notice for DDP sample).
- 3.7 Manufacturing shall be carried out in accordance with Approved Production or Manufacturing procedures.
- 3.8 The component/equipment nameplate should contain the TSO marking as required in the Order.
- 3.9 A Component Maintenance Manual (CMM) is required to support the unit(s) in service. DCA must review and agree to the technical content of the CMM. It is the responsibility of the organization for the revision and distribution of the CMM to all its user(s).

D. Products other than TSO (Product Safety Acceptance)

1. Application shall be made in writing to the DCA.
2. Preliminary Product Assessment

The DCA will make a determination (controlled or uncontrolled) base on a complete product- definition and on the intended use of the product.

Note: If the result of this assessment results in a definition that falls within the TSO, then the approval process for TSO product applies. The applicant shall be notified and a new application for TSO will be required.

The objective of the preliminary product assessment is to establish a final product definition will form as the basis for approval.

The applicant is expected to give a detail definition of the product with at least the followings.

- 2.1 Detail description and specifications of the product including functional operation and intended usage.
- 2.2 Drawings which reflect size and weight, materials, specials processes, power supplies, system architecture complete with input and out specifications.
- 2.3 List of applicable standards and material specifications to be used during design, test and manufacture.
- 2.4 Certification Test Plan (CTP).
 - Product Functional / System-Test and Failure test procedures
 - Environmental Test as applicable, and depending on the application and installation environment, a margin of safety must be included. The applicant is recommended to apply RTCA DO 160D (or latest revision) for this test.
 - Any other test necessary for the safe in-service operation of the product deem necessary.
- 2.5 Software qualification per RTCA DO 178 or the equivalent EUROCAE requirement as applicable.
- 2.6 The applicant is expected to provide the product Potential Hazard Assessment and/or Safety Assessment Report.

3. Review and approval

Product definition and CTP shall be determined and finalized. The applicant shall be informed of any differences or additional information that is required. The established product definition and the CTP shall be the basis for approval. Changes or deviations from this basis will require DCA approval, and the CTP changes will be addressed accordingly.

4. Testing

4.1. - same as paragraph C.3.3.1 above -

4.2. Testing shall be accomplished in accordance with the approved Certification Test Plan (CTP).

4.3. Environmental Test shall be as per RTCA DO 160 latest revision or its equivalent. Tests that are not applicable may be waived and properly justified using a Technical Justification Report.

4.4. Testing procedures as per paragraph C.3.3.2 to paragraph C.3.3.7 applies.

4.5. Product markings: Each unit produced shall be appropriately marked. The marking shall consist of at least the part number, serial number and its modification status.

4.6. - same as paragraph C.3.3.9 above -

DIRECTOR GENERAL
DEPARTMENT OF CIVIL AVIATION
MALAYSIA