

# **Certification Specifications for European Technical Standard Orders (CS-ETSO)**

Amendment 15

24 June 2020<sup>1</sup>

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<sup>1</sup> For the date of entry into force of this Amendment, kindly refer to Decision 2020/006/R in the [Official Publication](#) of the Agency.

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## PREAMBLE

*ED Decision 2020/006/R* **Amendment 15**

The following is a list of paragraphs affected by this amendment:

Subpart A	Amended (NPA 2019/01)
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## SUBPART A – GENERAL

ED Decision 2020/006/R

### 1. APPLICABILITY

- 1.1 Requirements for the issue of European Technical Standard Order (ETSO) authorisations are found in Part-21, Section A, Subpart O.
- 1.2 Marking requirements for the issue of European Technical Standard Order authorisations are found in Part-21, Section A, Subpart Q.

### 2. STANDARDS TO MEET TECHNICAL CONDITIONS

#### 2.1 Environmental standards:

Unless otherwise stated in paragraph 3.1.2 of the specific ETSO, the applicable environmental standards are contained in EUROCAE/RTCA document ED-14D change 3/DO-160D change 3 “Environmental Conditions and Test Procedures for Airborne Equipment”, dated December 2002, ED-14E/DO-160E dated March 2005, ED-14F/DO-160F dated March 2008, ED-14G/DO-160G dated December 2010 or ED-14G Change 1/DO-160G Change 1 dated January 2015.

Compliance shall be demonstrated entirely with one of the versions of the applicable environmental standards.

#### 2.2 Software standards

When the ETSO article includes airborne software, unless otherwise stated in paragraph 3.1.3 of the specific ETSO, one acceptable means of compliance for the development of the airborne software is outlined in the latest revision of AMC 20-115 entitled Software Considerations in Airborne Systems and Equipment Certification.

The software level, also known as 'item development assurance level' (IDAL) may be determined by using the guidance proposed in Section 2.4. The applicant must declare the software level(s) to which the software has been developed and verified.

#### 2.3 Airborne electronic hardware (AEH)

If the article contains a complex application-specific integrated circuit (ASIC) or a complex programmable logic device (such as a programmable array logic components (PAL), a field-programmable gate array components (FPGA), a general array logic components (GAL), or an erasable programmable logic device) all of which are known as 'complex electronic hardware' to accomplish the function, develop the component according to EUROCAE/RTCA document ED-80/DO-254 “Design Assurance Guidance for Airborne Electronic Hardware”, dated April 2000.

Supplemental guidance material for all airborne electronic hardware (including boards, simple electronic hardware, use of COTS devices) included in the ETSO article may be found in [‘EASA CM-SWCEH-001 Development Assurance of Airborne Electronic Hardware’](#) Issue 01 revision 01, dated March 2012.

The design assurance level also known as the 'item development assurance level (IDAL) for airborne electronic hardware (AEH)' may be determined by using the guidance proposed in section 2.4. The applicant must declare the design assurance level(s) to which the AEH has been developed and verified.

#### 2.4 Failure conditions classification and development assurance

During the development of an ETSO article, consideration should be given to failure conditions, and the ETSO article should then be developed in accordance with the possible effects of those failure conditions at the system and aircraft levels (see AMC CSxx.1309 for further guidance; for CS-23 aircraft, further guidance can be found in FAA AC 23.1309-1E).

The ETSO article shall be developed according to, at least, the development assurance level appropriate to the failure condition classifications expected for the intended installation.

Where the effects at system or aircraft level are not known, due to non-availability of aircraft or system design data, assumed failure classifications may be used but at a minimum to the level required in the ETSO.

Classification of failure conditions at the level of the ETSO article may change as a result of particular aircraft installation architecture and characteristics.

EUROCAE/SAE document ED-79A/ARP 4754A 'Guidelines for development of civil Aircraft and Systems' dated December 2010 may be used to assign the development assurance level of the ETSO article, software and AEH. The document may be used as well as guidance to ensure a proper development, validation and verification of the ETSO article and its functional requirements.

#### 2.5 ETSO article using an [ETSO-2C153](#)-authorised IMA platform or module

When the ETSO article implements one (or several) [ETSO-2C153](#)-authorised integrated modular avionics (IMA) platforms/modules and for which the applicant seeks compliance credit from this (these) ETSOA authorisation(s) to demonstrate compliance with one or several functional ETSO standard(s), the applicant shall apply for authorisation to the [ETSO-C214](#) standard, together with the intended functional ETSO standard(s).

Note: A functional ETSO standard is any ETSO standard of CS-ETSO describing an 'aircraft' function, i.e. typically the majority of all ETSO standards except [ETSO-2C153](#) and [ETSO-C214](#).

#### 2.6 Information security protection

An ETSO article may be designed with a security assurance level (SAL) that is appropriate for specified security measures, according to the procedure provided in AMC 20-42.

### 3. ADDITIONAL INFORMATION

3.1 In some ETSO's, reference is made to an associated FAA standard and in these cases the FAA standard is attached to the ETSO. Where in the associated "FAA" standard, reference is made to "FAA" of "FAR", it should be substituted by the equivalent reference, "Agency" or "Part/CS".

3.2 Standards documents referred to in this CS-ETSO may be purchased or obtained from the following organisations:

— EUROCAE documents may be purchased from:

European Organisation for Civil Aviation Equipment  
9-23 rue Paul Lafargue, "Le Triangle" building, 93200 Saint-Denis, France.  
Telephone: : +33 1 49 46 19 65  
(E-mail: [eurocae@eurocae.net](mailto:eurocae@eurocae.net), website: [www.eurocae.net](http://www.eurocae.net))

— RTCA documents may be purchased from:

Radio Technical Commission for Aeronautics, Inc.  
1828 L Street NW, Suite 805, Washington DC 20036, USA  
(Website: [www.rtca.org](http://www.rtca.org))

- SAE documents may be purchased from:
  - Society of Automotive Engineers, Inc.  
400 Commonwealth Drive, WARRENDALE, PA 15096-001, USA  
(Website: [www.sae.org](http://www.sae.org))
- NAS specifications may be obtained from:
  - Aerospace Industries Association (AIA)  
1327 Jones Drive, Ann Arbor, MI 48105, USA  
(Website: [www.techstreet.com](http://www.techstreet.com))
- FAA standards may be purchased from:

Superintendent of Documents, Government Printing Office  
732N Capitol Street NW, Washington DC 20401, USA  
(Website: [www.gpoaccess.gov](http://www.gpoaccess.gov))
- MIL specifications may be obtained from:

DODSSP, Standardization Documents Order Desk  
Building 4D, 700 Robbins Avenue, PHILADELPHIA, PA 19111-5094, USA  
or from the ASSIST Customer Service Desk, telephone (215) 697-6396  
(Website: <http://quicksearch.dla.mil/>)
- ASTM documents may be purchased from:

American Society for Testing and Materials, ASTM International,  
100 Barr Harbor Drive, PO Box C700, West Conshohocken, Pennsylvania 19428-2959, USA.  
(Website: [www.astm.org](http://www.astm.org))
- Global System, Inc., documents may be purchased from:

Global Systems, Inc., 2144 Michelson Drive, Irvine, California 92715, USA  
Telephone: (714) 851-0119

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**SUBPART B – LIST OF ETSO's was withdrawn from this Annex**