SUBPART A — GENERAL

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.   ENVIRONMENTAL AND SOFTWARE STANDARDS TO MEET TECHNICAL CONDITIONS

2.1   Environmental standards

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

It is not permissible to mix versions within a given qualification programme.

2.2   Software standards

When the equipment includes airborne software
Unless otherwise stated o 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 on software considerations in Airborne Systems and Equipment Certification.

Software level also called 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 complex programmable logic (e.g. Programmable Array Logic components (PAL), Field-Programmable Gate Array components (FPGA), General Array Logic components (GAL), or Erasable Programmable Logic Devices) summarised 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 other Airborne Electronic hardware (including boards, SEH, 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.

Design Assurance Level also called 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 equipment, consideration should be given to failure conditions, the equipment should then be developed in accordance with their possible effects at system and aircraft level (see AMC CSxx.1309 for further guidance).

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 equipment level 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 equipment, software and AEH. The document may be used as well as guidance to ensure a proper development, validation and verification of the ETSO and the functional equipment requirements.

The equipment shall be developed according to, at least, the development assurance level appropriate to the failure condition classifications.

3.   ADDITIONAL INFORMATION

3.1 In some ETSO's, reference is made to an associated FAA standard. In these cases the corresponding FAA technical standard order (TSO) can be consulted on http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgTSO.nsf/Frameset?OpenPage.

3.2 The following addresses are provided below:

— EUROCAE documents may be purchased from:
     European Organisation for Civil Aviation Equipment
     102 rue Etienne Dolet, 92240 Malakoff, France
     Telephone: +33 1 40 92 79 30; Fax +33 1 46 55 62 65;
     (E-mail: eurocae@eurocae.net, website: 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)

— SAE documents may be purchased from:
     Society of Automotive Engineers, Inc.
     400 Commonwealth Drive, WARRENDALE, PA 15096-001, USA
     (Website: 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)

— FAA Standards may be purchased from:
     Superintendent of Documents, Government Printing Office

732N Capitol Street NW, Washington DC 20401, USA
(Website: www.gpoaccess.gov)

— MIL Specifications may be obtained from:
DODSSP, Standardization Documents Order Desk
Building 4D, 700 Robbins Avenue, PHILADELPHIA, PA 19111-5094, USA
(Website: http://dodssp.daps.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)