



Deviations requests #12 for an ETSO approval for CS-ETSO applicable to Data Loader (ETSO-C109) Consultation Paper

1. Introductory note

The hereby presented deviation requests shall be subject to public consultation, in accordance with EASA Management Board Decision No 7-2004¹ products certification procedure dated 30 March 2004, Article 3 (2.) of which states:

“2. Deviations from the applicable airworthiness codes, environmental protection certification specifications and/or acceptable means of compliance with Part 21, as well as important special conditions and equivalent safety findings, shall be submitted to the panel of experts and be subject to a public consultation of at least 3 weeks, except if they have been previously agreed and published in the Official Publication of the Agency. The final decision shall be published in the Official Publication of the Agency.”

2. ETSO-C109#1 –Airborne Navigation Data Storage System

Use of a bi-directional data bus instead of two independent data buses one for data request and the other for data delivery.

Requirement:

Global Systems, Inc., document „Minimum Performance Standard for the Airborne Navigation Data Storage Systems“, dated March 31 1983:

1.2.3 Interface to Navigation System

If the navigation data storage system is contained in a separate box from the Navigation System(s), or if the navigation data is transferred between navigation systems, then a data transfer bus is required.

The data bus interconnects the Navigation Data Base Storage System and the Navigation System(s). This will consist of a two bus interface; one bus for data requests from the NAV system, and one bus for data response from the data storage system back to the NAV system.

Industry:

The Data Loader contains a 100 Mbits/Sec Ethernet data bus interface used to provide communications with other devices (FMS, EFB, etc.). The Ethernet data bus complies with the intent of section 1.2.3. A means to place request to the Data Loader and to receive data from the unit is provided. Any data link anomalies that may occur are detected and displayed on the receiving system.

Industry seeks a deviation for the 100 Mbits/Sec Ethernet data bus interface to operate as a single data bus to the associated systems rather than the required dual data bus specified in section 1.2.3 of the MPS.

The Ethernet data bus provides the same bi-directional communication functionality without the necessity of having two independent bus systems.

¹ Cf. EASA Web: http://www.easa.europa.eu/doc/About_EASA/Manag_Board/2004/mb_decision_0704.pdf

EASA:

We accept the deviation as alternate means to meet the intent of the requirement. The requirement is written in a too prescriptive way and does not reflect currently available technology. The deviation has already been accepted by the FAA.

3. ETSO-C109#2 –Airborne Navigation Data Storage System

Exclude the Disk Drive Unit and the embedded Disk Controller (Commercial of the Shelf subcomponents) from the 100% screening requirement applying if the specified equipment performance exceeds the component manufacturer's specified performance.

Requirement:

Global Systems, Inc., document „Minimum Performance Standard (MPS) for the Airborne Navigation Data Storage Systems“, dated March 31 1983:

2.5 Rating of Components

The equipment shall not incorporate in its design a component of such rating that, when the equipment is operated throughout the range of specified environmental tests (reference section 4.0), the rating established by the manufacturer of the component is exceeded except as follows. Components may be screened to different environmental characteristics from the manufacturer's ratings, but 100 percent of the screened components must be tested to every characteristic exceeding the manufacturer's ratings.

Industry:

The Data Loader employs a Commercial Off-The-Shelf (COTS) Disk Drive Unit. Industry has selected this disk drive unit for its performance specification and as the result of in-house testing to the defined requirements for the Data Loader. No visibility into the parts de-rating employed in the COTS Disk Drive and embedded Disk Controller design is available.

Industry seeks a deviation for the COTS Disk Drive and embedded Disk Controller to exclude it from the rating of components requirement under section 2.5 of the MPS.

EASA:

It is a general principle that during certification the performance is demonstrated once on a dedicated sample. During production the applicant has to take measures to ensure that the produced unit is a representative of the approved sample. This typically involves some testing of dedicated parameters either on a 100% or a statistical basis but does not require a 100% retesting of all parameters.

The requirement may have been introduced on the experience that the performance of such a COTS product may change due to the introduction of changes by the supplier. The applicant stays responsible for the performance of the COTS subcomponent and all changes introduced by the supplier within the approved equipment. This obligation does not justify a 100% retesting requirement.

Based on the above we accept the deviation to have not a specific 100% testing requirements on COTS products.

The deviation has already been accepted by the FAA.