

ETSO-2C177a

ED Decision 2020/011/R (applicable from 25.7.2020)

DATA LINK RECORDER EQUIPMENT

1 Applicability

This ETSO provides the requirements that new models of data link recorder systems that are designed and manufactured on or after the date of this ETSO must meet in order to be identified with the applicable ETSO marking.

2 Procedures

2.1 General

The applicable procedures are detailed in CS-ETSO, [Subpart A](#).

2.2 Specific

All the information specified in EUROCAE ED-112A, Section 2-1, 2-1.3.4, excluding item 6, shall be documented in a manual and be made available to the accident investigation authorities on request. In addition, if special tools or recovery techniques are used to retrieve recorded information from any memory device used within the crash-protected memory module removed from a crash-damaged recorder, these tools/recovery techniques shall be also made available to the accident investigation authorities on request.

Note: Requests from accident investigation authorities can be independent of any ongoing investigation.

3 Technical Conditions

3.1 Basic

3.1.1 Minimum Performance Standard

The applicable standards are those provided in the applicable sections of EUROCAE document ED-112A ‘Minimum Operational Performance Specification for Crash Protected Airborne Recorder Systems’ dated September 2013 that pertain to the types of data link recorder as defined in Table 1 below, except for the following exclusions: Chapters IV-1 and IV-6, and Sections 2-1.1, 2-1.5, 2-1.6, 2-1.11, 2-1.12, 2-3.1, 2-5, 3 and Annex IV-B and other ED-112A requirements related to aircraft-level equipment installation, flight testing and aircraft maintenance and as amended by Appendix 1 to this ETSO.

Recorder Type	ED-112A Reference
Single DLR in a non-deployable recorder	Section 2 and Part IV.
DLR function in a deployable recorder	Section 2 (except for the tests covered by ETSO-2C517) and Part IV. The recorder shall also comply with ETSO-2C517.
DLR function in a combined non-deployable recorder	Section 2, Section 4 and Part IV.
CVR function in a combined deployable recorder	Section 2 (except for the tests covered by ETSO-2C517), Section 4 and Part I. The recorder shall also comply with ETSO-2C517.

Table 1 — MPS Requirements per recorder type**3.1.2 Environmental Standard**

See CS-ETSO, [Subpart A](#), paragraph 2.1

3.1.3 Software

See CS-ETSO, [Subpart A](#), paragraph 2.2

3.1.4 Airborne Electronic Hardware

See CS-ETSO, [Subpart A](#), paragraph 2.3

3.2 Specific**3.2.1 Failure Condition Classification**

See CS-ETSO, [Subpart A](#), paragraph 2.4.

A loss or erroneous behaviour of the function defined in paragraph 3.1.1 of this ETSO has been determined to be a minor failure condition.

Note: The failure classification is driven by the use of recorders in accident investigations.

4 Marking**4.1 General**

See CS-ETSO, [Subpart A](#), paragraph 1.2

4.2 Specific

The equipment shall comply with the identification requirement in EUROCAE ED-112A Section 2-1, paragraph 2-1.16.3, if it is fixed, and those of ETSO-2C517, if it is deployable.

5 Availability of Referenced Documents

See CS-ETSO, [Subpart A](#), paragraph 3

[Amdt ETSO/6]

[Amdt ETSO/12]

[Amdt ETSO/16]

Appendix 1 to ETSO-C2177a – MPS for Crash-Protected Airborne Recorder Systems

ED Decision 2020/011/R

The standard EUROCAE ED-112A, MOPS for Crash Protected Airborne Recorder Systems, dated September 2013, shall be modified as per Table 1 below.

Table 1 — Modification of EUROCAE ED-112A

Location	Initial ED-112A text	Amending text
2-1.16.2 a. iii.	Impact shock, shear and tensile test, penetration resistance, static crush, deep sea pressure and sea water immersion.	Impact shock, shear and tensile test, penetration resistance, static crush, deep sea pressure and sea water immersion. Deep sea pressure and sea water immersion may be performed on two different units provided that both units undergo the rest of the sequence and that the period of the deep sea pressure test is 90 days.
2-4.2.7 a.	<p>Unless it can be shown that the recording medium can withstand the conditions associated with deep sea immersion and that it is unlikely to be damaged as a consequence of collapse of any protective armour, immerse the recorder in sea water at a pressure of 60 MPa (equivalent to a depth of 6 000 m (20 000 feet) for a period of 30 days.</p> <p>This period may be reduced to 24 hours provided that the methods and materials used to protect the recording medium have been shown to be unaffected by sea water. To avoid damage to the test equipment, this test may be performed using any suitable liquid in the pressure chamber itself together with a means to separate this liquid from the sea water in which the recorder is immersed.</p>	<p>Unless it can be shown that the recording medium can withstand the conditions associated with deep-sea immersion and that it is unlikely to be damaged as a consequence of collapse of any protective armour or except if the recorder is deployed during or following impact with water, immerse the recorder in seawater at a pressure of 60 MPa (equivalent to a depth of 6 000 m, i.e. 20 000 ft) for a period of 90 days.</p> <p>This period may be reduced to 24 hours provided that the test is performed once more after the sea water immersion test in 2-4.2.7 b. To avoid damage to the test equipment, this test may be performed using any suitable liquid in the pressure chamber itself together with a means to separate this liquid from the seawater in which the recorder is immersed.</p>
2-4.2.7 b.	Unless it can be shown that the recording medium and the identification required by paragraph 2-1.16.3 are resistant to the corrosive effects of sea water,	Unless it can be shown that the recording medium and the identification required by paragraph 2-1.16.3 are resistant to the corrosive effects of seawater, immerse the recorder in seawater at a depth of

Location	Initial ED-112A text	Amending text
	immerse the recorder in sea water at a depth of 3 m and nominal temperature of +25°C for a period of 30 days.	3 m and a temperature of at least + 25.0 °C for a period of 90 days.

[Amdt ETSO/16]