European Aviation Safety Agency

European Technical Standard Order

Subject: EXTENDED SQUIRTER AUTOMATIC DEPENDENT SURVEILLANCE-BROADCAST (ADS-B) AND TRAFFIC INFORMATION SERVICES-BROADCAST (TIS-B) EQUIPMENT OPERATING ON THE RADIO FREQUENCY OF 1090 MEGAHERTZ (MHz)

1 — Applicability
This ETSO provides the requirements which Extended Squitter Automatic Dependent Surveillance-Broadcast (ADS-B) and Traffic Information Services-Broadcast (TIS-B) Equipment Operating on the Radio Frequency of 1090 Megahertz (MHz) that are 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
Applicable procedures are detailed in CS-ETSO, Subpart A.
2.2 — Specific
None.

3 — Technical conditions
3.1 — Basic
3.1.1 — Minimum performance standard

This ETSO supports two major classes of 1090 MHz ADS-B and TIS-B equipment:
(a) Class A equipment, consisting of transmit and receive subsystems; and
(b) Class B equipment, containing a transmit subsystem only.

Class A equipment includes Classes A0, A1, A1S, A2 and A3. This standard requires 1090 MHz airborne Class A equipment to include the capability of receiving both ADS-B and TIS-B messages and delivering both ADS-B and TIS-B reports, as well as transmitting ADS-B messages. A receive-only Class of equipment is allowed.

Class B equipment includes Classes B0, B1, and B1S. Classes B0, B1, and B1S are the same as A0, A1, and A1S, except they do not have receive subsystems. Note that Classes B2 and B3 are not for aircraft use.

3.1.2 — Environmental standard
See CS-ETSO, Subpart A, paragraph 2.1. The required performance under test conditions is defined in
EUROCAE ED-102A, section 2.4.

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.

Failure of the function defined in paragraph 3.1.1 of this ETSO resulting in misleading information is a hazardous failure condition.

Failure of the function defined in paragraph 3.1.1 of this ETSO resulting in loss of function is a major failure condition.

Note: The major failure condition for transmission of incorrect ADS-B messages is based on use of the data by other aircraft or Air Traffic Control for separation services.

4 — Marking

4.1 — General
Marking as detailed in CS-ETSO, Subpart A, paragraph 1.2.

4.2 — Specific
Transmitting and receiving components must be permanently and legibly marked.

The following table explains how to mark components.
EUROCAE ED-102A provides the equipment class in section 2.1.11, and the receiving equipment type in section 2.2.6.

<table>
<thead>
<tr>
<th>If component can:</th>
<th>Mark it with:</th>
<th>Sample marking pattern:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmit and receive</td>
<td>Equipment class it supports, and</td>
<td>Class A0/Type 1</td>
</tr>
<tr>
<td></td>
<td>Receiving equipment type</td>
<td></td>
</tr>
<tr>
<td>Transmit, but not receive</td>
<td>Equipment class it supports</td>
<td>Class B1, or Class A3-Transmitting only</td>
</tr>
<tr>
<td>Receive, but not transmit</td>
<td>Equipment class it supports, and</td>
<td>Class A2/Type 2-Receiving only</td>
</tr>
<tr>
<td></td>
<td>Receiving equipment type</td>
<td></td>
</tr>
</tbody>
</table>

5 — Availability of referenced document
See CS-ETSO, Subpart A, paragraph 3.