



European Union Aviation Safety Agency

# Comment-Response Document (CRD) to Deviation Request ETSO.Dev.C112e#2

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**Comment-Response Document (CRD) to Proposed Deviation on “Deviation Request ETSO-C112e#2 for an ETSO approval for CS-ETSO applicable to Secondary Surveillance Radar Mode S Transponder (ETSO-C112e)”**

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## 1. Summary of the outcome of the consultation

During the public consultation of the above referenced proposed Deviation from 03 October 2024 to 25 October 2024, EASA has received:

- 3 comments.
- from 3 different commenters.



**2. Individual comments (and responses)**

In responding to comments, EASA states its position as follows:

- (a) **Accepted** — EASA agrees with the comment and any proposed change is incorporated into the text.
- (b) **Partially accepted** — EASA either partially agrees with the comment or agrees with it but the proposed change is partially incorporated into the text.
- (c) **Noted** — EASA acknowledges the comment, but no change to the text is considered necessary.
- (d) **Not accepted** — EASA does not agree with the comment or proposed change.

**(General Comments)** -

comment	1		comment by: <i>Collins Aerospace</i>								
<p>It is agreed that this deviation should be granted, but this is not a complete list of requirements that are needed for this deviation. Any requirement that includes references to an "ATCRBS/Mode S All-Call" should be included.</p> <p>Not all of these requirements may be applicable to this particular transponder, but many will be.</p> <p>Unfortunately, the section numbers I can provide are from DO-181E and not from ED-73E. Hopefully you can do the translation.</p> <ul style="list-style-type: none"> <li>• 2.2.2.4: The MTL for ATCRBS and ATCRBS/Mode S All-Call interrogations <b>shall</b> be -73 dBm ±4 dB.</li> <li>• 2.2.2.4: The reply ratio <b>shall</b> be at least 90 percent for ATCRBS and ATCRBS/Mode S All- Call interrogations between MTL +3 dB and -21 dBm.</li> <li>• 2.2.4.2.5: The reply ratio <b>shall</b> be at least 90 percent for ATCRBS and ATCRBS/Mode S All- Call interrogations between MTL +3 dB and -21 dBm.</li> <li>• 2.2.6.1.1: If the equipment receives a valid ATCRBS interrogation at any signal level from MTL +1 dB to -21 dBm followed by a 1.6 microsecond pulse in the P4 position:             <ul style="list-style-type: none"> <li>a. it <b>shall</b> accept the interrogation as an ATCRBS/Mode S All-Call interrogation if the received amplitude of P4 is above the amplitude of P3 minus 1 dB;</li> </ul> </li> <li>• 2.2.7.3.1: Sensitivity reduction <b>shall</b> apply only to the receipt of ATCRBS, ATCRBS/Mode S All-Call, and ATCRBS-Only All-Call interrogations.</li> <li>• 2.2.18.2.2: ATCRBS/Mode S All-Call – An ATCRBS/Mode S All-Call interrogation (1.6 microseconds P 4 ) <b>shall</b> be accepted unless the TD timer is running or side lobe suppression is in effect or when in the "on-the-ground" state (consistent with the CA, VS and FS fields).</li> <li>• 2.2.18.2.3: The transponder <b>shall</b> generate replies as follows, except when in the on-the-ground state:</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="text-align: left;">Interrogations</th> <th style="text-align: left;">Replies</th> </tr> </thead> <tbody> <tr> <td>ATCRBS Mode A</td> <td>4096 Codes</td> </tr> <tr> <td>ATCRBS Mode C</td> <td>Altitude Codes</td> </tr> <tr> <td>ATCRBS Mode A/Mode S All-Call</td> <td>Reply is DF = 11</td> </tr> </tbody> </table>				Interrogations	Replies	ATCRBS Mode A	4096 Codes	ATCRBS Mode C	Altitude Codes	ATCRBS Mode A/Mode S All-Call	Reply is DF = 11
Interrogations	Replies										
ATCRBS Mode A	4096 Codes										
ATCRBS Mode C	Altitude Codes										
ATCRBS Mode A/Mode S All-Call	Reply is DF = 11										



ATCRBS Mode C/Mode S All-Call	Reply is DF = 11
Mode S-only All-Call (UF=11)	Reply is DF = 11

- 2.2.18.2.9: Upon acceptance of an ATCRBS/Mode S All-Call interrogations the transponder **shall** generate the PI field using II=0.
- 2.2.19.1.4: The transponder **shall** generate replies to interrogations as follows:

Interrogations	Replies
ATCRBS Mode A (see Note)	4096 Codes
ATCRBS Mode C (see Note)	Altitude Codes
ATCRBS/Mode S All-Calls (see Note)	DF = 11
UF=4 and UF=5	as below
UF=11 (see Note)	DF = 11
UF=20 and UF=21	as below
Broadcast	None

response

**Accepted.** The Deviation proposal has been rewritten including references to all the relevant EUROCAE ED-73E Mode A/C/S All-Call interrogations requirements that shall be replaced by the new EUROCAE ED-73F Mode A/C-Only All-Call interrogations requirements.

comment 3

comment by: ATR

As per NPA\_2024\_03 'Regular update of CS-ETSO' dated 04/04/2024

2.2.1. Recognition of the latest industry standards Issue 1: ETSO-C112 'Secondary Surveillance Radar Mode S Transponder' — The EUROCAE standard ED-73E, referenced currently in ETSO-C112e, has been superseded by ED-73F Change 1 which is proposed to be referenced in ETSO-C112f. This update also addresses the harmonisation with FAA TSO-C112f that is already published.

1 - What is at issue for CS ACNS according to ETSO-C112f for XPDR?

2 - Does ETSO-C112f concern the new XPDR or the old XPDR as well?

response

**Noted.** CS-ACNS will be amended after official publication of the new ETSO-C112f which is based on ED-73F MOPS.

ETSO-C112f will be applicable to new ETSO Authorizations only. Existing designs based on previous revisions of the standard can be manufactured until the relevant ETSOA Certificate is Surrendered or Revoked. However, CS-ACNS or other ATM regulations may specify the minimum ETSO/MOPS to comply for the installation and operational approval.

comment 4

comment by: Luftfahrt-Bundesamt



	<p>2.4 Equivalent level of safety</p> <p>second paragraph typo: "The new EUROCAE ED-73F"?</p>
response	<p><b>Accepted.</b> Thank you for highlighting this typo that has been corrected in the final revision.</p>

