



Deviations request #93 for an ETSO approval for CS-ETSO applicable to Traffic Alert and Collision Avoidance System, TCAS II (ETSO-C119c) Consultation Paper

1. Introductory note

The hereby presented deviation requests shall be subject to public consultation, in accordance with EASA Management Board Decision No 7-2004 as amended by EASA Management Board Decision No 12-2007¹ products certification procedure dated 11th September 2007, 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-C119c#19 Traffic Alert and Collision Avoidance System, TCAS II Equipment

Deviate from EUROCAE ED-143/RTCA DO-185B, Section 2.2.4.5.4.1.1 and 2.2.4.5.4.1.2 and do not apply interrogation in a beam cyclic method in the context of interference limitation.

Industry:

DO-185B MOPS sections 2.2.4.5.4.1.1 and 2.2.4.5.4.1.2 specify the order in which Mode C interrogations should be eliminated when interference limiting has been invoked. Those requirements mentions “Five distinct sub-sequences are defined for use in the four beams on the top-mounted antenna and for the bottom-mounted omnidirectional antenna in accordance with 2.2.4.5.4.1.4. The interrogations may be transmitted in any order”. The method described specifies that one interrogation is being dropped at a time in a beam cyclic method (the first interrogation is dropped, and then top right, top aft, etc...)

With the deviation requested, the interference limiting priority order defined in the MOPS is applied, but the system does not apply them in the beam cyclic method. When a power reduction is required due to interference limiting, a whisper-shout interrogation is dropped at once in each of the antenna sectors for the high-resolution sequence defined Figure 2-9. For example the first power limiting step in the high-resolution sequence would be to eliminate whisper shout step 1 (forward sector), 25 (left sector), 26 (right sector), and 65 (aft sector) all at one time.

If the minimum basic sequence as defined in the DO-185B would be used, the power level of the interrogations in each sector is reduced by 1 dB at a time. For example: The first interference limiter power reduction to occur if all antenna sectors were using the

¹ Cf. EASA Web: <http://easa.europa.eu/management-board/docs/management-board-meetings/2007/04/MB%20Decision%2012-2007%20amending%20the%20certification%20procedure.pdf>

minimum basic sequence would be to reduce the power in step 1 (forward sector) from 52 dBm to 51 dBm first, then reduce the power in steps 7 & 8 (left and right sectors) from 48 dBm to 47 dBm and then reduce in step 17 (aft sector) from 43 dBm to 42 dBm.

Equivalent level of Safety:

This deviation is simplifying the design of the interference limiter while the interference limiter equations are always adhered to, thus there are no performance compromises with this design change. It is also expected that there will be less fluctuation with interference limiting levels.

EASA:

Even though not further elaborated, the channel load is limited in an equivalent way by this design, the equivalent performance of the equipment is accepted and therefore EASA accepts the deviation.