

RTCA Special Committee 209 / EUROCAE WG49

ATCRBS / Mode S Transponder MOPS

Joint Meeting #12

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**Altitude Value Recommended for Transponders Testing.
Potential Change to EUROCAE ED 73**

Kevin Hallworth

EASA

SUMMARY

This Working Paper discusses the value of altitude used for transponder testing (minus 1000 feet). This value differs from the altitude value suggested by the ICAO Letter to States dated 02 December 2009 which recommends 60,000 feet or higher.

1. Introduction

Eurocae Document (ED) 73C, paragraph 6.4.2.2 provides guidance for ground testing of transponders. This guidance is a list of precautions which an operator should follow and is mainly aimed at aircraft maintenance organisations. These precautions were previously agreed by Eurocae WG 49 during the formulation of ED 73C.

In a letter to States dated 02 December 2009, ICAO also provided guidance on ground testing of SSR transponders. This guidance, although similar to the guidance provided in ED 73C para 6.4.2.2, recommended manually setting the altitude to an 'unrealistically high value (i.e. over 60 000 feet).

In practical terms, high altitudes (e.g. 60 000 feet or high) are difficult to achieve using ramp test equipment. ED 73D, para 6.4.2.2. recommends setting the altitude to minus 1000 feet, if testing transponder parameters other than 'altitude'

An extract of ED 73D para 6.4.2.2 is listed below:

6.4.2.2 Ground Testing Guidance

a. When not required, ensure all transponders are selected to 'OFF' or 'Standby'.

b. Before starting any test, contact the local Air Traffic Control Unit and advise them of your intention to conduct transponder testing. Advise the Air Traffic Unit of your start time and test duration. Also inform them of the altitude(s) at which you will be testing, your intended Aircraft Identification (Flight Id) and your intended Mode A code. See para 6.4.2.2c and d. Note: Certain altitudes may not be possible due to over flying aircraft.

c. Set the Mode A code to 7776 (or other Mode A code agreed with Air Traffic Control Unit). *Note: The Mode A code 7776 is assigned as a test code by the ORCAM Users Group, specifically for the testing of transponders.*

d. Set the Aircraft Identification (Flight Id) with the first 8 characters of the company name. This is the name of the company conducting the tests.

e. Where possible, perform the testing inside a hanger to take advantage of any shielding properties it may provide.

f. As a precaution, use antenna transmission covers whether or not testing is performed inside or outside.

g. When testing the altitude (Mode C or S) parameter, radiate directly into the ramp test set via the prescribed attenuator.

h. In between testing, i.e. to transition from one altitude to another, select the transponder to 'standby' mode.

i. If testing transponder parameters other than 'altitude', set altitude to -1000 feet (minus 1000 feet) or less. This will minimise the possibility of ACAS warning to airfield and overflying aircraft.

j. When testing is complete select the transponder(s) to 'OFF' or 'Standby'.

2. Comparison with RTCA DO 181D

This document does not contain a comparable paragraph to ED 73 C para 6.4.2.2.

3. Action

The meeting is invited to review this working paper and decide if any change is required to ED 73C regarding the altitude, which should be used, when ground testing transponders parameters (other than for altitude input testing).