



Safety Warning Message

- **Safety Subject:** Airworthiness Directive - 2008 - 0158R2 for Funkwerk Avionics TRT600 Transponders, including units previously manufactured by Filser Electronic
- **Origin:** EUROCONTROL Mode S & ACAS Programme
- **Date:** 02/12/2008
- **Distribution:** Air Navigation Service Providers
- **SKYbrary Reference:** http://www.skybrary.aero/index.php/Funkwerk_Avionics_TRT600_Transponders_Safety_Alert

BACKGROUND INFORMATION

- The European Aviation Safety Agency (EASA) Airworthiness Directives (AD) 2008 - 0158R1, which revised AD 2008 - 0158 concerning a design deficiency in Funkwerk TRT-600 transponders, has been replaced by AD 2008 - 0158R2.
- Air Navigation Service Providers (ANSPs) have reported intermittent loss of detection on Mode S Secondary Surveillance Radars (SSR) of aircraft equipped with Funkwerk Avionics TRT-600 transponders.
- These transponders do, however, reply correctly to SSR Mode A/C only interrogations.

IMPACT ON ATS OPERATIONS

- In an ATC surveillance environment where there is sole use of an SSR Mode S or an SSR Mode S radar operating in mixed mode (Modes S and A/C), or a combination thereof, TRT-600 transponders may not reply correctly to interrogations, and detection of aircraft may be lost for prolonged periods.
- In an ATC surveillance environment based on interlacing of replies received by combinations of SSR Mode S operating in mixed-mode and SSR Mode A/C, TRT-600 transponders may be detected by SSR radars that operate in Mode A/C only.
- In an ATC surveillance environment based on SSR Mode A/C only, TRT-600 transponders will correctly reply to the radar interrogations.
- The performance of the ACAS safety net is also affected. TCAS II surveillance is based on Mode S active interrogation. Although TCAS II does interrogate on Mode C, Mode S transponders will not reply to these Mode C interrogations. Therefore, aircraft equipped with TRT-600 transponders might not be detected by a TCAS II equipped aircraft.

SCALE OF THE PROBLEM

- Approximately 500 Funkwerk TRT-600 Mode-S transponders have been sold in Europe, mainly to, but not limited to, operators of general aviation type aircraft.

ADDITIONAL INFORMATION

- Air Navigation Service Providers (ANSP) should be aware that AD 2008-0158R2 advises pilots of aircraft equipped with these transponders to seek authorisation, from the relevant ANSP(s), for flight within airspace where Mode S interrogation is used by the ground system, prior to entering that airspace. However, EASA document C1 (2008)/D 80838 Explanatory Note to Air Traffic Service (ATS) Authorities dated 17 October 2008, advises ATS Authorities to promulgate, by NOTAM or AIC, the airspace in which aircraft equipped with Funkwerk TRT-600 Mode-S transponders cannot or can operate.
- Investigations into a solution for this transponder problem continue.

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