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ADS-B 1090ES MOPS Maintenance

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Requirements and Considerations for an Optional Squitter Inhibit Capability
In Response to Action Item 28-01

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Summary
This Working Paper addresses the requirements and considerations in the event that the manufacturer of 1090ES ADS-B equipment adds an optional Squitter Inhibit capability. This capability is considered an “optional” feature since the ability of the flight crew to turn off (or place in standby) the 1090ES output is not expected to be mandated for ADS-B operation in either the United States or European airspace.

Introduction

Unlike the transponder, where the output of Mode C must be capable of being deactivated at the direction of ATC (reference 14 CFR § 91.217(a)), there is no minimum performance requirement in DO-260B to provide a means for the pilot/flight crew to inhibit the 1090ES ADS-B output. However, should a manufacturer of 1090ES ADS-B equipment decide to add an optional Squitter Inhibit capability, care must be taken to ensure that the 1090 Mode S transponder performance required by RTCA DO-181D (and TSO-C112c) is not impacted. In addition, the manufacturer must consider a means to annunciate this “off” status to the pilot/flight crew when activated. This Working Paper presents a means to address these concerns in RTCA DO-260B.

Discussion

It is recommended that the following be added to Section §2.1.5 of DO-260B:

2.1.5 Operation of Controls

The equipment **shall** be designed so that controls intended for use in flight cannot be operated in any position, combination or sequence that would result in a condition detrimental to the reliability of the equipment or operation of the aircraft. **If the optional Extended Squitter inhibit capability per §2.1.5.1 is included, a means shall be provided to annunciate this status to the pilot.**

2.1.5.1 Optional Extended Squitter Inhibit

There is no requirement to include a control to allow pilot entry to inhibit the transmission of Extended Squitters. However, if Extended Squitter capability is supported as per RTCA/DO-181D, Minimum Operational Performance Standards for Air Traffic Control Radar Beacon System/Mode Select (ATCRBS/Mode S) Airborne Equipment, dated October 2, 2008, Section §2.2.23, the requirements of Section §2.2 of RTCA DO-181D apply, including the loading and servicing of the Extended Squitter related ground initiated Comm-B registers identified in Section §2.2.23, but with the following exceptions:

1. The RF transmission of Extended Squitter messages is disabled when Extended Squitters are inhibited by pilot entry, consistent with the power limit requirements of Section §2.2.3.3 of DO-181D.
2. The transponder is not considered failed, as per Section §2.2.10.2 of DO-181D, when Extended Squitters are not transmitted as a result of Extended Squitter being inhibited by pilot entry.
3. For the purposes of determining whether to transmit the acquisition squitter as per Section §2.2.18.2.6 of DO-181D, acquisition squitters are always transmitted when Extended Squitters are inhibited by pilot entry.

It is recommended that the following be added to Section 3 of DO-260B:

3.2.4 Display Visibility

If there is a control panel display, then appropriate flight crew member(s) must have an unobstructed view of displayed data when in the seated position. The brightness of any display must be adjustable to levels suitable for data interpretation under all cockpit ambient lighting conditions ranging from total darkness to reflected sunlight.

***Note:** Visors, glare shields or filters may be an acceptable means of obtaining daylight visibility.*

3.2.5 Indicators

If visual indicators are installed, they **shall** be visible and readable from the pilot's normal seated position. If two pilots are required to operate the aircraft, indicators **shall** be visible from each pilot's seated position. The brightness of any indicator must be adjustable to levels suitable under all cockpit ambient lighting conditions ranging from total darkness to reflected sunlight. If an indication is distracting, a means to cancel it should be provided. [If the optional Extended Squitter Inhibit capability per §2.1.5.1 is provided, the indication when activated shall be annunciated to the pilot.](#)

3.2.6 Alerts

If appropriate to an application, a means to alert the crew **shall** be provided. Aural alerts **shall** provide a mechanism by which they can be prioritized with respect to other aircraft system alerts (e.g. audio inhibit input and output discretes). Aural alerts **shall** include a means by which they can be silenced.

3.2.7 Failure Protection

Probable failures of the ADS-B equipment must not degrade the normal operation of equipment or systems connected to it. The failure of connected equipment or systems must not degrade normal operation of the ADS-B equipment except for loss of functions that are directly dependent upon the failed equipment.

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