

RTCA Special Committee 186, Working Group 5

ADS-B UAT MOPS (DO-282), Revision A

Meeting #19

Teleconference on 1.12.04

**Proposed Changes to the Mutual Suppression Section §2.2.12
And Proposed Associated Test Procedures**

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SUMMARY
This Working Paper contains a proposed change to text that has already been approved by the Working Group for §2.2.12 and additionally proposes a test procedure for §2.4.12 and an Installed Equipment test for section 3.

INTRODUCTION

(Out With The Old)

During the discussion related to the UAT SARPS Technical Manual, it was suggested by the ICAO ACP WG-C UAT Subgroup that the section on Mutual Suppression be revised.

As published in the UAT MOPS, RTCA DO-282, section 2.2.12 contained only two (2) sentences and two (2) notes, as follows:

UAT equipment **shall not** provide suppression signals.

***Note:** Appropriate compatibility to other systems is achieved because of the power levels, frequency separation and duty factor of UAT transmissions without providing suppression signals.*

UAT equipment **shall not** respond to suppression signals.

***Note:** Adequate compatibility from other on-board systems is provided by the requirement of §2.2.8.2.4.*

(In With The New)

As agreed to by the UAT Subgroup during their meeting in Brussels in June 2003, and by Working Group 5 during Meeting 18 on 12/8/03, section 2.2.12 was to be re-titled as “Mutual Suppression Pulses,” and changed to include the following two (2) sentences and a single note:

UAT equipment **shall** provide an output suitable for sending suppression signals.

UAT equipment **shall not** respond to suppression signals

***Note:** UAT equipment is not to inhibit or delay its transmissions based on suppression signals. There is no need to desensitize the UAT receiver based on suppression signals.*

PROPOSAL
(Now For Something Better)

Upon reflection of the need for a test procedure for the newly agreed upon version of §2.2.12, we suggest the following changes to §2.2.12 and a test procedure in §2.4.12 and a new paragraph §3.2.2 in order to adequately test this requirement.

Modify section 2.2.12 to read as follows:

2.2.12 Mutual Suppression Pulses

UAT equipment **shall** provide an output signal suitable for sending suppression signals. The suppression duration **shall** begin no later than the start of the ADS-B Message Transmission Interval defined in section 2.2.2.5 and no earlier than 2 microseconds prior to the start of the ADS-B Message Transmission Interval. The suppression duration **shall** end 10 +/- 1 microseconds from the end of the ADS-B Message Transmission interval.

UAT equipment **shall not** respond to suppression signals.

***Note:** UAT equipment is not to inhibit or delay its transmissions based on suppression signals. There is no need to desensitize the UAT receiver based on suppression signals.*

Replace the old §2.4.12 with the following new section:

2.4.12 Verification of Mutual Suppression Pulses (§2.2.12)

Purpose/Introduction:

UAT equipment **shall** provide an output signal suitable for sending suppression signals. The suppression duration **shall** begin no later than the start of the ADS-B Message Transmission Interval defined in section 2.2.2.5 and no earlier than 2 microseconds prior to the start of the ADS-B Message Transmission Interval. The suppression duration **shall** end 10 +/- 1 microseconds from the end of the ADS-B Message Transmission interval.

UAT equipment **shall not** respond to suppression signals.

***Note:** UAT equipment is not to inhibit or delay its transmissions based on suppression signals. There is no need to desensitize the UAT receiver based on suppression signals.*

Measurement Procedure:

Step 1: ADS-B Basic Message Suppression Interval

Configure the UAT equipment to transmit a valid ADS-B Basic Message. Determine the start of the suppression interval commencing 9.68 microseconds prior to the start of the first bit of the synchronization sequence and ending 7.68 microseconds prior to the start of the first bit of the synchronization sequence. Verify that the lead edge of the suppression signal occurs within the 2 microsecond window.

Configure the UAT equipment to transmit a valid ADS-B Basic Message. Determine the start of the suppression interval commencing 16.68 microseconds from the end of the Active State and ending 18.68 microseconds from the end of the Active State. Verify that the trail edge of the suppression signal occurs within the 2 microsecond window.

Step 2: ADS-B Long Message Suppression Interval

Configure the UAT equipment to transmit a valid ADS-B Long Message. Determine the start of the suppression interval commencing 9.68 microseconds prior to the start of the first bit of the synchronization sequence and ending 7.68 microseconds prior to the start of the first bit of the synchronization sequence. Verify that the lead edge of the suppression signal occurs within the 2 microsecond window.

Configure the UAT equipment to transmit a valid ADS-B Long Message. Determine the start of the suppression interval commencing 16.68 microseconds from the end of the Active State and ending 18.68 microseconds from the end of the Active State. Verify that the trail edge of the suppression signal occurs within the 2 microsecond window.

Additionally add the following section:

3.2.2 Mutual Suppression Bus

This test verifies that the UAT equipment and the on-board SSR transponder and TCAS, if applicable, operate properly on the mutual suppression bus.

Verify the following:

During a UAT transmission as defined by the ADS-B Message Transmission interval in §2.2.2.5, demonstrate that the UAT transmission does not cause the SSR transponder to generate spurious signals.

During a UAT transmission as defined by the ADS-B Message Transmission interval in §2.2.2.5, demonstrate that the UAT transmission does not cause TCAS to generate spurious signals.