



RTCA, Inc.



SC-186 Working Group 3
1090-WP19-03
1090 MHz Extended Squitter
MOPS History





1090ES ADS-B Standards Timeline

- DO-242 – ADS-B MASPS published – 2/18/1998
- DO-260 – 1090ES MOPS published – 9/13/2000
- DO-242A – ADS-B MASPS revised – 6/25/2002
- DO-260A – 1090ES MOPS revised – 4/10/2003
- TSO C166 – modifications to both DO-260 and DO-260A published – 9/20/2004
- TSO C166A – eliminates certification of DO-260 systems, further mods to DO-260A – in draft

Changes between DO-260 & DO-260A

- Addition of Requirements for Enhanced Processing Techniques
- Addition of materials defining TIS-B Message formats
- Change of NUC_p and NUC_v into NIC, NAC, SIL
- Changed the structure of the Operational Status Message Capability Class (CC) and Operational Mode (OM) subfields to reflect changes in DO-242A
- Deleted TCP/TCP+1 Messages, added Target State and Status Message, and added placeholders for Target Change Reports to reflect requirements in DO-242A
- Deleted the Operational Coordination Message
- Updated all messages and report structures dealing with State Vector, Mode Status, ARV and Target State Reports to reflect changes made in DO-242A
- Other minor changes called for in DO-242A
- Performed all changes in a way that ensured interoperability between DO-260 and DO-260A equipment

TSO C166 changes to DO-260

- Changes to the Air/Ground Determination to correct errors discovered during ICAO review of draft UAT SARPs. Identical changes also made in ASA MASPS (DO-289) and UAT MOPS (DO-282A).
- Change the definition of how to encode NUC if HPL is not available, because of problems encountered in Australia 1090ES trials.
- Direction to manufacturers not to implement any Aircraft Trajectory Intent Messages.
- Direction to manufacturers not to implement any Aircraft Operational Coordination Messages.
- Defined the optional transmission of the TEST Message (TYPE Code=23) for the purpose of transmitting the Mode 3/A (4096) Code.
- Modified all test procedures involved with testing the Air/Ground Determination.
- Added a test procedure if the manufacturer optionally implements transmission of the TEST Message.

TSO C166 Changes to DO-260A

- Changes to the Air/Ground Determination to correct errors discovered during ICAO review of draft UAT SARPs. Identical changes also made in ASA MASPS (DO-289) and UAT MOPS (DO-282A).
- Addition of the definition of a DF=18, CF=6 as the Rebroadcast of an ADS-B Message from an alternate data link using the same TYPE Codes and Message Formats as are defined for DF=17 ADS-B Messages.
- Renamed the TIS-B Airborne Velocity Message to “TIS-B Velocity Message” throughout.
- Hard wire the Vertical and Horizontal Mode Indicators to ZERO because of inconsistencies with how onboard data sources represent the data associated with these parameters.
- Made changes to the Aircraft/Vehicle Length and Width Code Encoding to correct problems identified during ICAO review of draft UAT SARPs. Identical changes also made in ASA MASPS (DO-289) and UAT MOPS (DO-282A).
- Added notes indicating that it is not necessary to perform a Globally Unambiguous CPR Decode if a participant is already in a Track File as either an Airborne or Surface participant.
- Specified that TIS-B Messages, including the Management Message be reported as transmitted.
- Modified all test procedures involved with preceding changes.
- Specified all corresponding changes in Appendix A.
- Added a new §A.1.7.8 entitled “Globally Unambiguous CPR Decoding of Surface Position.”
- Corrected several typographical errors throughout the entire document.



Changes Between TSO C166 & TSO C166A

- 1) All references to RTCA/DO-260 have been removed.
- 2) The following changes have been added in addition to the original TSO C166 changes for RTCA/DO-260A, and the Appendix 1, Section number of the change was changed from (2) to (1):
 - Corrected entries in the “Operation” column of Table 2-6 left over from a cut-and-paste error
 - Corrected errors in Table 2-51 for Binary and Decimal values for Zero and +100 feet encoding
 - Added a Note in Operational Status Message to caution that SIL not to be set to ZERO
 - Added section §2.2.18 as the definition of Re-Broadcast Messages with changed bit definitions for IMF
 - Changed Test Procedure for TYPE Code - Airborne
 - Changed Test Procedure for TYPE Code - Surface
 - Removing Test Procedure and pointing to the one in §2.4.3.2.4.1 (change to TYPE Code for Surface)
 - Fixed a problem reported by Rockwell Collins with testing Target State on-the-ground
 - Fixed several typos in Table 2-188 - NUCp → NIC – NAC – SIL
 - Added section §2.4.18 for a Test Procedure for the Re-Broadcast Messages with changed bits for IMF
 - Corrected a reference in Appendix A
 - Corrected a reference in Appendix A
 - Added a Note in Appendix A, Target State and Status Message to caution that SIL not to be set to ZERO
 - Corrected a reference in Appendix A
 - Added a Note in Appendix A, Operational Status Message to caution that SIL not to be set to ZERO
 - Corrected a reference in Appendix A
 - Correction to problem noted by Australia for Non-Transponder Devices to be consistent with SARPs
 - Added section §A.3 as the Appendix A definition of Re-Broadcast Messages with changed bits for IMF
 - Removed the 95% column from Table N-4 and delete Note #3
 - Fix Typos in Appendix O, Table O-3, reported by Ron Jones



Future Plans for WG-3

- Publish a set of changes to DO-260 as “Change 1” so that International manufacturers interested only in DO-260 transmitting systems would have the proper guidance.
- Publish a set of changes that are identified in the draft of the TSO C166A Appendix as “Change 1” to DO-260A.