

RTCA Special Committee 186, Working Group 3

ADS-B 1090 MOPS, Revision A

Meeting #14

**Draft #1 of
A Matrix to Compare the Structure of
DO-260 versus DO-260A**

Presented by Gary Furr

SUMMARY

This is the 1st draft of a matrix which is intended to assist reviewers of the original DO-260 versus the “to-be-approved” DO-260A, and manufacturers who may have based test procedures and documentation on the original DO-260, to better understand where sections of the two documents differ. This matrix will evolve as all sections 1 through 4 become more clearly defined in DO-260A.

| DO-260 | | DO-260A | |
|----------------------|--|----------------------|--|
| Requirements Section | Section Title | Requirements Section | Section Title |
| 1.0 | Purpose and Scope | 1.0 | Purpose and Scope |
| 1.1 | Introduction | 1.1 | Introduction |
| 1.2 | System Overview | 1.2 | System Overview |
| 1.2.1 | Definition of ADS-B | 1.2.1 | Definition of ADS-B and TIS-B |
| 1.2.2 | 1090 MHz ADS-B System | 1.2.2 | 1090 MHz ADS-B System |
| 1.2.3 | ADS-B Avionics Integrity | 1.2.3 | ADS-B Avionics Integrity |
| 1.2.4 | 1090 MHz ADS-B Subsystem Implementations | 1.2.4 | 1090 MHz ADS-B Subsystem Implementations |
| 1.2.4.1 | Source 1090 MHz ADS-B Transmitting Subsystem | 1.2.4.1 | Source 1090 MHz ADS-B Transmitting Subsystem |
| 1.2.4.1.1 | Transponder-Based Subsystems | 1.2.4.1.1 | Transponder-Based Subsystems |
| 1.2.4.1.2 | Non-Transponder-Based Subsystems | 1.2.4.1.2 | Non-Transponder-Based Subsystems |
| 1.2.4.2 | User 1090 MHz ADS-B Receiving Subsystem | 1.2.4.2 | User 1090 MHz ADS-B Receiving Subsystem |
| 1.2.4.2.1 | Type 1 Report Assembler Function | 1.2.4.2.1 | Type 1 Report Assembler Function |
| 1.2.4.2.2 | Type 2 Report Assembler | 1.2.4.2.2 | Type 2 Report Assembler |
| 1.2.4.3 | Major Operating Characteristics | 1.2.4.3 | Major Operating Characteristics |
| 1.2.5 | Typical System Operation | 1.2.5 | Typical System Operation |
| 1.2.6 | ADS-B Message Content | 1.2.6 | ADS-B Message Content |
| 1.2.7 | ADS-B Report Content | 1.2.7 | ADS-B Report Content |
| 1.2.7.1 | State Vector Report | 1.2.7.1 | State Vector Report |
| 1.2.7.2 | Mode Status Report | 1.2.7.2 | Mode Status Report |
| 1.2.7.3 | TCP+1 Report | 1.2.7.3 | Target State Report |
| | | 1.2.7.4 | Air Referenced Velocity Report |
| 1.3 | Operational Applications | 1.3 | Operational Applications |
| 1.3.1 | General Support for Surveillance | 1.3.1 | General Support for Surveillance |
| 1.3.2 | Cockpit Display of Traffic Information (CDTI) | 1.3.2 | Cockpit Display of Traffic Information (CDTI) |
| 1.3.2.1 | Aid to Visual Acquisition | 1.3.2.1 | Aid to Visual Acquisition |
| 1.3.2.2 | Enhanced Traffic Situational Awareness | 1.3.2.2 | Enhanced Traffic Situational Awareness |
| 1.3.3 | Improvements to Aircraft-based Collision Avoidance | 1.3.3 | Improvements to Aircraft-based Collision Avoidance |
| 1.3.4 | Conflict Management and Airspace Deconfliction | 1.3.4 | Conflict Management and Airspace Deconfliction |
| 1.3.5 | ATS Conformance Monitoring | 1.3.5 | ATS Conformance Monitoring |
| 1.3.5.1 | Simultaneous Approaches | 1.3.5.1 | Simultaneous Approaches |
| 1.3.5.2 | Incursion Monitoring | 1.3.5.2 | Incursion Monitoring |
| 1.3.6 | Other Applications | 1.3.6 | Other Applications |
| 1.4 | ADS-B Functions | 1.4 | ADS-B Functions |
| 1.4.1 | ADS-B Message Generation Function | 1.4.1 | ADS-B Message Generation Function |
| 1.4.1.1 | Avionics Input Bus | 1.4.1.1 | Avionics Input Bus |
| 1.4.1.2 | Input Interface | 1.4.1.2 | Input Interface |
| 1.4.1.3 | Message Assembly/Encoder | 1.4.1.3 | Message Assembly/Encoder |
| 1.4.2 | ADS-B Message Exchange Function | 1.4.2 | ADS-B Message Exchange Function |
| 1.4.2.1 | Modulation/Transmission Subfunction | 1.4.2.1 | Modulation/Transmission Subfunction |
| 1.4.2.2 | Transmit/Receive/Antenna Subfunction | 1.4.2.2 | Transmit/Receive/Antenna Subfunction |
| 1.4.2.3 | Receiver/Demodulator Subfunction | 1.4.2.3 | Receiver/Demodulator Subfunction |
| 1.4.3 | ADS-B Report Assembler Function | 1.4.3 | ADS-B Report Assembler Function |
| 1.4.3.1 | Decoder/Report Assembly | 1.4.3.1 | Decoder/Report Assembly |
| 1.4.3.2 | Output Interface | 1.4.3.2 | Output Interface |
| 1.4.3.3 | Avionics Output Bus | 1.4.3.3 | Avionics Output Bus |
| 1.5 | Operational Goals | 1.5 | Operational Goals |
| 1.6 | Assumptions and Rationale | 1.6 | Assumptions and Rationale |

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| Requirements Section | Section Title | Requirements Section | Section Title |
| 1.7 | Test Procedures | 1.7 | Test Procedures |
| 1.7.1 | Environmental Tests | 1.7.1 | Environmental Tests |
| 1.7.2 | Qualification Tests | 1.7.2 | Qualification Tests |
| 1.7.3 | Installed Tests | 1.7.3 | Installed Tests |
| 1.8 | MASPS Compliance | 1.8 | MASPS Compliance |
| 1.9 | Definition of Terms | 1.9 | Definition of Terms |
| 2.0 | Equipment Performance Requirements and Test Procedures | 2.0 | Equipment Performance Requirements and Test Procedures |
| 2.1 | General Requirements | 2.1 | General Requirements |
| 2.1.1 | Airworthiness | 2.1.1 | Airworthiness |
| 2.1.2 | Intended Function | 2.1.2 | Intended Function |
| 2.1.3 | Federal Communications Commission Rules | 2.1.3 | Federal Communications Commission Rules |
| 2.1.4 | Fire Protection | 2.1.4 | Fire Protection |
| 2.1.5 | Operation of Controls | 2.1.5 | Operation of Controls |
| 2.1.6 | Accessibility of Controls | 2.1.6 | Accessibility of Controls |
| 2.1.7 | Equipment Interfaces | 2.1.7 | Equipment Interfaces |
| 2.1.8 | Effects of Test | 2.1.8 | Effects of Test |
| 2.1.9 | Design Assurance | 2.1.9 | Design Assurance |
| 2.1.10 | Integration and Interoperability with a Mode S Transponder | 2.1.10 | Integration and Interoperability with a Mode S Transponder |
| 2.1.11 | Equipage Class Application Coverage | 2.1.11 | Equipage Class Application Coverage |
| 2.1.11.1 | Transmitting Subsystem | 2.1.11.1 | Transmitting Subsystem |
| 2.1.11.2 | Receiving Subsystem | 2.1.11.2 | Receiving Subsystem |
| 2.2 | Minimum Performance Standards | 2.2 | Minimum Performance Standards |
| 2.2.1 | Definition of Standard Conditions | 2.2.1 | Definition of Standard Conditions |
| 2.2.2 | Transponder Based Transmitters | 2.2.2 | Transponder Based Transmitters |
| 2.2.2.1 | Transponder Based TX | 2.2.2.1 | Transponder Based Transmitters |
| 2.2.2.1.1 | RF Peak Output Power | 2.2.2.1.1 | RF Peak Output Power |
| 2.2.2.1.1.1 | Class A0 TX Power | 2.2.2.1.1.1 | Class A0 Transponder Based Transmitter Power |
| 2.2.2.1.1.2 | Class A1 TX Power | 2.2.2.1.1.2 | Class A1 Transponder Based Transmitter Power |
| 2.2.2.1.1.3 | Class A2 TX Power | 2.2.2.1.1.3 | Class A2 Transponder Based Transmitter Power |
| 2.2.2.1.1.4 | Class A3 TX Power | 2.2.2.1.1.4 | Class A3 Transponder Based Transmitter Power |
| 2.2.2.1.1.5 | Class B TX Power | 2.2.2.1.1.5 | Class B Transponder Based Transmitter Power |
| 2.2.2.1.2 | RF Peak Power (max) | 2.2.2.1.2 | RF Peak Power (max) |
| 2.2.2.2 | Stand Alone TX | 2.2.2.2 | Stand Alone Transmitters |
| 2.2.2.2.1 | TX Frequency | 2.2.2.2.1 | Transmission Frequency |
| 2.2.2.2.2 | TX Spectrum | 2.2.2.2.2 | Transmission Spectrum |
| 2.2.2.2.3 | Modulation | 2.2.2.2.3 | Modulation |
| 2.2.2.2.4 | Pulse Shapes | 2.2.2.2.4 | Pulse Shapes |
| 2.2.2.2.5 | Message Structure | 2.2.2.2.5 | Message Structure |
| 2.2.2.2.6 | Pulse Intervals | 2.2.2.2.6 | Pulse Intervals |
| 2.2.2.2.7 | Preamble | 2.2.2.2.7 | Preamble |
| 2.2.2.2.8 | Data Pulses | 2.2.2.2.8 | Data Pulses |
| 2.2.2.2.9 | Pulse Amplitude | 2.2.2.2.9 | Pulse Amplitude |
| 2.2.2.2.10 | RF Peak Output Power | 2.2.2.2.10 | RF Peak Output Power |
| 2.2.2.2.10.1 | Class A0 RF Peak Out | 2.2.2.2.10.1 | Class A0 RF Peak Output Power |
| 2.2.2.2.10.2 | Class B RF Peak Out | 2.2.2.2.10.2 | Class B RF Peak Output Power |
| 2.2.2.2.10.3 | RF Peak Output (max) | 2.2.2.2.10.3 | RF Peak Output Power (maximum) |
| 2.2.2.2.11 | Unwanted Output Power | 2.2.2.2.11 | Unwanted Output Power |

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| 2.2.2.2.12 | Broadcast Rate Capability | 2.2.2.2.12 | Broadcast Rate Capability |
| 2.2.3 | Broadcast Message Characteristics | 2.2.3 | Broadcast Message Characteristics |
| 2.2.3.1 | ADS-B Message Characteristic | 2.2.3.1 | ADS-B Message Characteristic |
| 2.2.3.1.1 | ADS-B Message Preamble | 2.2.3.1.1 | ADS-B Message Preamble |
| 2.2.3.1.2 | ADS-B Message Data Pulses | 2.2.3.1.2 | ADS-B Message Data Pulses |
| 2.2.3.1.3 | ADS-B Message Pulse Shape | 2.2.3.1.3 | ADS-B Message Pulse Shape |
| 2.2.3.1.4 | ADS-B Message Pulse Spacing | 2.2.3.1.4 | ADS-B Message Pulse Spacing |
| 2.2.3.2 | ADS-B Message Format Structure | 2.2.3.2 | ADS-B and TIS-B Message Baseline Format and Structure |
| 2.2.3.2.1 | ADS-B Msg. Baseline Format | 2.2.3.2.1 | ADS-B Msg. Baseline Field Descriptions |
| 2.2.3.2.1.1 | ADS-B Msg. Baseline Field Description | 2.2.3.2.1.1 | "DF" Downlink Format Field |
| 2.2.3.2.1.1.1 | "AA" Address Field, Announced | | |
| 2.2.3.2.1.1.2 | "CA" Capability Field (DF=17) | | |
| 2.2.3.2.1.1.3 | "CF" (DF=18) | | |
| 2.2.3.2.1.1.4 | "DF" Downlink Format Field | | |
| 2.2.3.2.1.1.5 | "ME" Message, Extended Squitter | | |
| 2.2.3.2.1.1.6 | "PI" Parity / Identity | | |
| | | 2.2.3.2.1.2 | "CA" Capability Field (DF=17) |
| | | 2.2.3.2.1.3 | "CF" Field (used in DF=18) |
| | | 2.2.3.2.1.4 | "AF" Field (used in DF=19) |
| | | 2.2.3.2.1.5 | "AA" Address Field, Announced |
| | | 2.2.3.2.1.6 | "ME" Message, Extended Squitter |
| | | 2.2.3.2.1.7 | "PI" Parity / Identity |
| 2.2.3.2.2 | DF=17 and 18 Format Structures | 2.2.3.2.2 | Determining ADS-B and TIS-B Message Types |
| 2.2.3.2.3 | ADS-B Airborne Position Messages | 2.2.3.2.3 | ADS-B Airborne Position Messages |
| 2.2.3.2.3.1 | "TYPE" Subfield | 2.2.3.2.3.1 | "TYPE" Subfield |
| 2.2.3.2.3.1.1 | Type Code if HPL is Available | 2.2.3.2.3.1.1 | Type Code if Containment Radius is Available |
| 2.2.3.2.3.1.2 | Type Code if HPL is Not Available | 2.2.3.2.3.1.2 | Type Code if Containment Radius is Not Available |
| 2.2.3.2.3.1.3 | Special Processing for Type = 0 | 2.2.3.2.3.1.3 | Special Processing for Type = 0 |
| 2.2.3.2.3.1.3.1 | Significance of Type = 0 | 2.2.3.2.3.1.3.1 | Significance of Type = 0 |
| 2.2.3.2.3.1.3.2 | Broadcast of Type = 0 | 2.2.3.2.3.1.3.2 | Broadcast of Type = 0 |
| 2.2.3.2.3.1.4 | Type based on Hor. Position and Altitude | 2.2.3.2.3.1.4 | Type based on Horiz. Position and Altitude |
| 2.2.3.2.3.2 | "Surveillance Status" | 2.2.3.2.3.2 | "Surveillance Status" |
| 2.2.3.2.3.3 | "Single Antenna" | 2.2.3.2.3.3 | "Single Antenna" |
| 2.2.3.2.3.4 | "Altitude" | 2.2.3.2.3.4 | "Altitude" |
| 2.2.3.2.3.4.1 | "Barometric Altitude" | 2.2.3.2.3.4.1 | "Barometric Altitude" |
| 2.2.3.2.3.4.2 | "GNSS HAE" | 2.2.3.2.3.4.2 | "GNSS HAE" |
| 2.2.3.2.3.4.3 | "Altitude Encoding" | 2.2.3.2.3.4.3 | "Altitude Encoding" |
| 2.2.3.2.3.5 | "Time" | 2.2.3.2.3.5 | "Time" |
| 2.2.3.2.3.6 | "CPR Format (F)" | 2.2.3.2.3.6 | "CPR Format (F)" |
| 2.2.3.2.3.7 | "Encoded Latitude" | 2.2.3.2.3.7 | "Encoded Latitude" |
| 2.2.3.2.3.7.1 | Airborne Latitude Data Encoding | 2.2.3.2.3.7.1 | Airborne Latitude Data Encoding |
| 2.2.3.2.3.7.2 | Airborne Lat. Pos. Ex/Es. —Precision | 2.2.3.2.3.7.2 | Airborne Lat. Pos. Ex/Es. —Precision |
| 2.2.3.2.3.7.2.1 | GPS/GNSS Coupled | 2.2.3.2.3.7.2.1 | GPS/GNSS Coupled |
| 2.2.3.2.3.7.2.2 | Non-Coupled | 2.2.3.2.3.7.2.2 | Non-Coupled |
| 2.2.3.2.3.7.3 | Airborne Lat. Pos. Extrap.—Non-Precision | 2.2.3.2.3.7.3 | Airborne Lat. Pos. Extrap.—Non-Precision |
| 2.2.3.2.3.7.3.1 | Airborne Lat. Pos. Extrap.—Non-Precision | 2.2.3.2.3.7.3.1 | Airborne Lat. Pos. Extrap.—Non-Precision |
| 2.2.3.2.3.7.3.2 | Airborne Lat. Pos. Est. --- Non-Precision | 2.2.3.2.3.7.3.2 | Airborne Lat. Pos. Est. --- Non-Precision |

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| 2.2.3.2.3.7.4 | Airborne Lat. Pos. Data Retention | 2.2.3.2.3.7.4 | Airborne Lat. Pos. Data Retention |
| 2.2.3.2.3.8 | “Encoded Longitude” | 2.2.3.2.3.8 | “Encoded Longitude” |
| 2.2.3.2.3.8.1 | Airborne Longitude Data Encoding | 2.2.3.2.3.8.1 | Airborne Longitude Data Encoding |
| 2.2.3.2.3.8.2 | Airborne Lon. Pos. Ex/Es --- Precision | 2.2.3.2.3.8.2 | Airborne Lon. Pos. Ex/Es --- Precision |
| 2.2.3.2.3.8.2.1 | GPS/GNSS Time Coupled | 2.2.3.2.3.8.2.1 | GPS/GNSS Time Coupled |
| 2.2.3.2.3.8.2.2 | Non-Coupled | 2.2.3.2.3.8.2.2 | Non-Coupled |
| 2.2.3.2.3.8.3 | Airborne Lon. Pos. Ex/Es---Non-Precision | 2.2.3.2.3.8.3 | Airborne Lon. Pos. Ex/Es---Non-Precision |
| 2.2.3.2.3.8.3.1 | Airborne Lon. Pos. Ex --- Non-Precision | 2.2.3.2.3.8.3.1 | Airborne Lon. Pos. Ex --- Non-Precision |
| 2.2.3.2.3.8.3.2 | Airborne Lon. Pos. Es --- Non-Precision | 2.2.3.2.3.8.3.2 | Airborne Lon. Pos. Es --- Non-Precision |
| 2.2.3.2.3.8.4 | Airborne Lon. Pos. Data Retention | 2.2.3.2.3.8.4 | Airborne Lon. Pos. Data Retention |
| 2.2.3.2.4 | ADS-B Surface Position Messages | 2.2.3.2.4 | ADS-B Surface Position Messages |
| 2.2.3.2.4.1 | “Type” Subfield | 2.2.3.2.4.1 | “Type” Subfield |
| 2.2.3.2.4.1.1 | Surface Pos. Type if HPL is Available | 2.2.3.2.4.1.1 | Surface Pos. Type if HPL is Available |
| 2.2.3.2.4.1.2 | Sur. Pos. Type if HPL is Not Available | 2.2.3.2.4.1.2 | Sur. Pos. Type if HPL is Not Available |
| 2.2.3.2.4.1.3 | Special Processing for Type = 0 | 2.2.3.2.4.1.3 | Special Processing for Type = 0 |
| 2.2.3.2.4.1.3.1 | Significance of Type = 0 | 2.2.3.2.4.1.3.1 | Significance of Type = 0 |
| 2.2.3.2.4.1.3.2 | Broadcast of Type = 0 | 2.2.3.2.4.1.3.2 | Broadcast of Type = 0 |
| 2.2.3.2.4.1.4 | Type based on HPL or Est. Pos. Accuracy | 2.2.3.2.4.1.4 | Type based on HPL or Est. Pos. Accuracy |
| 2.2.3.2.4.2 | “Movement” Subfield | 2.2.3.2.4.2 | “Movement” Subfield |
| 2.2.3.2.4.3 | “Status Bit for Ground Track” | 2.2.3.2.4.3 | “Status Bit for Ground Track” |
| 2.2.3.2.4.4 | “Ground Track” | 2.2.3.2.4.4 | “Ground Track” |
| 2.2.3.2.4.5 | “Time” | 2.2.3.2.4.5 | “Time” |
| 2.2.3.2.4.6 | “CPR” Format | 2.2.3.2.4.6 | “CPR” Format |
| 2.2.3.2.4.7 | “Encoded Latitude” | 2.2.3.2.4.7 | “Encoded Latitude” |
| 2.2.3.2.4.7.1 | Surface Latitude Data Encoding | 2.2.3.2.4.7.1 | Surface Latitude Data Encoding |
| 2.2.3.2.4.7.2 | Sur. Lat. Pos. Ex/Es --- Precision | 2.2.3.2.4.7.2 | Sur. Lat. Pos. Ex/Es --- Precision |
| 2.2.3.2.4.7.2.1 | GPS/GNSS Coupled | 2.2.3.2.4.7.2.1 | GPS/GNSS Coupled |
| 2.2.3.2.4.7.2.2 | Non-Coupled | 2.2.3.2.4.7.2.2 | Non-Coupled |
| 2.2.3.2.4.7.3 | Sur. Lat. Pos. Ex/Es---Non-Precision | 2.2.3.2.4.7.3 | Sur. Lat. Pos. Ex/Es---Non-Precision |
| 2.2.3.2.4.7.3.1 | Sur. Lat. Pos. Ex – Non-Precision | 2.2.3.2.4.7.3.1 | Sur. Lat. Pos. Ex – Non-Precision |
| 2.2.3.2.4.7.3.2 | Sur. Lat. Pos. Es – Non-Precision | 2.2.3.2.4.7.3.2 | Sur. Lat. Pos. Es – Non-Precision |
| 2.2.3.2.4.7.4 | Surface Lat. Pos. Data Retention | 2.2.3.2.4.7.4 | Surface Lat. Pos. Data Retention |
| 2.2.3.2.4.8 | Encoded Longitude | 2.2.3.2.4.8 | Encoded Longitude |
| 2.2.3.2.4.8.1 | Surface Longitude Data Encoding | 2.2.3.2.4.8.1 | Surface Longitude Data Encoding |
| 2.2.3.2.4.8.2 | Sur. Lon. Pos. Ex/Ex---Precision | 2.2.3.2.4.8.2 | Sur. Lon. Pos. Ex/Ex---Precision |
| 2.2.3.2.4.8.2.1 | GPS/GNSS Coupled | 2.2.3.2.4.8.2.1 | GPS/GNSS Coupled |
| 2.2.3.2.4.8.2.2 | Non-Coupled | 2.2.3.2.4.8.2.2 | Non-Coupled |
| 2.2.3.2.4.8.3 | Sur. Lon. Pos. Ex/Es---Non-Precision | 2.2.3.2.4.8.3 | Sur. Lon. Pos. Ex/Es---Non-Precision |
| 2.2.3.2.4.8.3.1 | Sur. Lon. Pos. Ex---Non-Precision | 2.2.3.2.4.8.3.1 | Sur. Lon. Pos. Ex---Non-Precision |
| 2.2.3.2.4.8.3.2 | Sur. Lon. Pos. Es---Non-Precision | 2.2.3.2.4.8.3.2 | Sur. Lon. Pos. Es---Non-Precision |
| 2.2.3.2.4.8.4 | Surface Lon. Pos. Data Retention | 2.2.3.2.4.8.4 | Surface Lon. Pos. Data Retention |
| 2.2.3.2.5 | ADS-B A/C Ident. & Type Message | 2.2.3.2.5 | ADS-B A/C Ident. & Type Message |
| 2.2.3.2.5.1 | “Type” Subfield | 2.2.3.2.5.1 | “Type” Subfield |
| 2.2.3.2.5.2 | “ADS-B Emitter Category” | 2.2.3.2.5.2 | “ADS-B Emitter Category” |
| 2.2.3.2.5.3 | “Character” Subfield | 2.2.3.2.5.3 | “Character” Subfield |
| 2.2.3.2.6 | ADS-B Airborne Velocity Message | 2.2.3.2.6 | ADS-B Airborne Velocity Message |
| 2.2.3.2.6.1 | Velocity Message - Subtype 1 | 2.2.3.2.6.1 | Velocity Message - Subtype 1 |
| 2.2.3.2.6.1.1 | “Type” Subfield | 2.2.3.2.6.1.1 | “Type” Subfield |

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| 2.2.3.2.6.1.2 | “Subtype” Subfield | 2.2.3.2.6.1.2 | “Subtype” Subfield |
| 2.2.3.2.6.1.3 | “Intent Change Flag” | 2.2.3.2.6.1.3 | “Intent Change Flag” |
| 2.2.3.2.6.1.4 | “IFR Capability Flag” | 2.2.3.2.6.1.4 | “IFR Capability Flag” |
| 2.2.3.2.6.1.5 | “NUC-R” Subfield | 2.2.3.2.6.1.5 | “NAC _V ” Subfield |
| 2.2.3.2.6.1.6 | “East/West Direction Bit” | 2.2.3.2.6.1.6 | “East/West Direction Bit” |
| 2.2.3.2.6.1.7 | “East/West Velocity” | 2.2.3.2.6.1.7 | “East/West Velocity” |
| 2.2.3.2.6.1.8 | “North/South Direction Bit” | 2.2.3.2.6.1.8 | “North/South Direction Bit” |
| 2.2.3.2.6.1.9 | “North/South Velocity” | 2.2.3.2.6.1.9 | “North/South Velocity” |
| 2.2.3.2.6.1.10 | “Source Bit for Vertical Rate” | 2.2.3.2.6.1.10 | “Source Bit for Vertical Rate” |
| 2.2.3.2.6.1.11 | “Sign Bit for Vertical Rate” | 2.2.3.2.6.1.11 | “Sign Bit for Vertical Rate” |
| 2.2.3.2.6.1.12 | “Vertical Rate” | 2.2.3.2.6.1.12 | “Vertical Rate” |
| 2.2.3.2.6.1.13 | “Turn Indicator” | 2.2.3.2.6.1.13 | “Reserved Bits” |
| 2.2.3.2.6.1.14 | Diff. from Baro. Alt. Sign Bit | 2.2.3.2.6.1.14 | Diff. from Baro. Alt. Sign Bit |
| 2.2.3.2.6.1.15 | Diff. From Baro. Alt. | 2.2.3.2.6.1.15 | Diff. From Baro. Alt. |
| 2.2.3.2.6.2 | Velocity Message – Subtype 2 | 2.2.3.2.6.2 | Velocity Message – Subtype 2 |
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| 2.2.5.1.11 | Aircraft Identification Data | 2.2.5.1.11 | Aircraft Identification Data |
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| 2.2.7 | ADS-B Message Processor Character. | 2.2.7 | ADS-B Message Processor Char. |
| 2.2.7.1 | ADS-B RX Msg. Reception | 2.2.7.1 | ADS-B Receiving Device Message Reception |
| 2.2.7.1.1 | Receipt of Type = 0 | 2.2.7.1.1 | Receipt of Type Code = 0 |
| 2.2.8 | ADS-B Report Characteristics | 2.2.8 | ADS-B Report Characteristics |
| 2.2.8.1 | ADS-B State Vector Rpt. Char. | 2.2.8.1 | ADS-B State Vector Report Char. |
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| 2.2.8.1.5 | NUC_P, - Position Component | 2.2.8.1.5 | Latitude (WGS-84) |
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| 2.2.8.1.7 | Geometric Position Valid (Horizontal) | 2.2.8.1.7 | Altitude, Geometric (WGS-84) |
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| 2.2.8.1.9 | North / South Velocity | 2.2.8.1.9 | East / West Velocity |
| 2.2.8.1.10 | East / West Velocity | 2.2.8.1.10 | Ground Speed While on the Surface |
| 2.2.8.1.11 | Vertical Rate, Geometric (WGS-84) | 2.2.8.1.11 | Heading While on the Surface |
| 2.2.8.1.12 | Altitude, Barometric (Pressure Alt.) | 2.2.8.1.12 | Altitude, Barometric (Pressure Alt.) |
| 2.2.8.1.13 | Barometric Altitude Rate | 2.2.8.1.13 | Vertical Rate, Geometric/Barometric |
| 2.2.8.1.14 | True Airspeed (TAS) | 2.2.8.1.14 | Vertical Rate, Geometric (WGS-84) |
| 2.2.8.1.15 | Indicated Airspeed (IAS) | 2.2.8.1.15 | Barometric Altitude Rate |
| 2.2.8.1.16 | Ground Speed | 2.2.8.1.16 | NIC |
| 2.2.8.1.17 | Ground Track | 2.2.8.1.17 | Estimated Latitude (WGS-84) |
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| 2.2.8.1.20 | Position Time of Applicability | 2.2.8.1.20 | Estimated East / West Velocity |
| 2.2.8.1.21 | Velocity Time of Applicability | 2.2.8.1.21 | Surveillance Status / Discretes |
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| 2.2.8.2.1.1 | MS Report Type and Structure ID | 2.2.8.2.1.1 | MS Report Type and Structure ID |
| 2.2.8.2.1.2 | MS Report Validity Flags | 2.2.8.2.1.2 | MS Report Validity Flags |
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| 2.2.8.2.3 | Participant Category | 2.2.8.2.3 | Address Qualifier |
| 2.2.8.2.4 | Emergency / Priority Status | 2.2.8.2.4 | Report Time of Applicability |
| 2.2.8.2.5 | TCP Latitude | 2.2.8.2.5 | Version Number |
| 2.2.8.2.6 | TCP Longitude | 2.2.8.2.6 | Call Sign |
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| 2.2.8.2.12 | Runway Threshold Speed | 2.2.8.2.12 | SV Quality – NAC _P |
| 2.2.8.2.13 | Roll Angle | 2.2.8.2.13 | SV Quality – NAC _V |
| 2.2.8.2.14 | Discrete Data | 2.2.8.2.14 | SV Quality – SIL |
| 2.2.8.2.15 | Current Traj. Point / Leg Type | 2.2.8.2.15 | SV Quality – BAQ Reserved |
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| 2.2.8.3 | ADS-B TCP+1 Report Characteristics | 2.2.8.3 | ADS-B On-Condition Report Characteristics |
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| 2.2.8.3.1.1 | TCP+1 Report Type & Structure ID | 2.2.8.3.1.1 | TSR Type and Structure ID |
| 2.2.8.3.1.2 | TCP+1 Report Validity Flags | 2.2.8.3.1.2 | TSR Participant Address |
| | | 2.2.8.3.1.3 | TSR Address Qualifier |
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| | | 2.2.8.3.1.8 | TSR Horiz Intent: Horiz Mode Indicator |
| | | 2.2.8.3.1.9 | TSR Horiz Intent: Reserved for Horiz Conform. |
| | | 2.2.8.3.1.10 | TSR Vertical Intent: Vertical Data Available and Vertical Target Source Indicator |
| | | 2.2.8.3.1.11 | TSR Vertical Intent: Target Altitude |
| | | 2.2.8.3.1.12 | TSR Vertical Intent: Target Altitude Type |
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| | | 2.2.8.3.1.14 | TSR Vertical Intent: Vertical Mode Indicator |
| | | 2.2.8.3.1.15 | TSR Vertical Intent: Reserved for Vertical Conformance |
| 2.2.8.3.2 | TCP+1 Latitude | 2.2.8.3.2 | Air Referenced Velocity (ARV) Report |
| | | 2.2.8.3.2.1 | ARV Type and Structure ID and Validity Flags |
| | | 2.2.8.3.2.1.1 | ARV Report Type and Structure ID |
| | | 2.2.8.3.2.1.2 | ARV Validity Flags |
| | | 2.2.8.3.2.2 | ARV Participant Address |
| | | 2.2.8.3.2.3 | ARV Address Qualifier |
| | | 2.2.8.3.2.4 | ARV Report Time of Applicability |
| | | 2.2.8.3.2.5 | ARV Airspeed |

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| 2.2.8.3.3 | TCP+1 Longitude | 2.2.8.3.2.5.1 | ARV True Airspeed (TAS) |
| 2.2.8.3.4 | TCP+1 Altitude | 2.2.8.3.2.5.2 | ARV Indicated Airspeed (IAS) |
| 2.2.8.3.5 | TCP+1 Time-to-Go | 2.2.8.3.2.6 | ARV Airspeed Type |
| 2.2.8.3.6 | Next Trajectory Point / Leg Type | 2.2.8.3.2.7 | ARV Heading While Airborne |
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| 2.2.8.4.3.1 | Precision Installations | | |
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| 2.2.9 | ADS-B Report Type Requirements | 2.2.9 | ADS-B Report Type Requirements |
| 2.2.9.1 | Rpt. Content for Class A | 2.2.9.1 | Receiver Reporting Rqt. for Class A |
| 2.2.9.1.1 | ADS-B SV Reports for Class A | 2.2.9.1.1 | ADS-B SV Reports for Class A |
| 2.2.9.1.2 | ADS-B MS Reports for Class A | 2.2.9.1.2 | ADS-B MS Reports for Class A |
| 2.2.9.1.3 | ADS-B TCP+1 Reports for Class A | 2.2.9.1.3 | ADS-B TS Reports for Class A |
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| 2.2.9.2 | RX Rpt. Content for Class B | 2.2.9.2 | Receiver Reporting Rqt. Content for Class B |
| 2.2.10 | ADS-B RX Rpt. Assembly & Delivery | 2.2.10 | ADS-B RX Rpt. Assembly & Delivery |
| 2.2.10.1 | Fundamental Principals of Rpt. Assembly | 2.2.10.1 | Fundamental Principals of Rpt. Assembly |
| 2.2.10.1.1 | General Data Flow | 2.2.10.1.1 | General Data Flow |
| 2.2.10.1.2 | ADS-B Report Organization | 2.2.10.1.2 | ADS-B Report Organization |
| 2.2.10.1.3 | ADS-B Msg. Temporary Retention | 2.2.10.1.3 | ADS-B Msg. Temporary Retention |
| 2.2.10.1.4 | Participant ADS-B Track Files | 2.2.10.1.4 | Participant ADS-B Track Files |
| 2.2.10.2 | Rpt. Assy. Acq. State Initialization | 2.2.10.2 | Rpt. Assy. Acq. State Initialization |
| 2.2.10.3 | Report Assembly Acquisition State | 2.2.10.3 | Report Assembly Acquisition State |
| 2.2.10.3.1 | Rpt. Assy. Acq. State—Airborne | 2.2.10.3.1 | Rpt. Assy. Acq. State—Airborne |
| 2.2.10.3.1.1 | Latency, Rpt. Assy. Acq. --- Airborne | 2.2.10.3.1.1 | Latency, Rpt. Assy. Acq. --- Airborne |
| 2.2.10.3.2 | Rpt. Assy. Acq. State – Surface | 2.2.10.3.2 | Rpt. Assy. Acq. State – Surface |
| 2.2.10.3.2.1 | Latency, Rpt. Assy. Acq. --- Surface | 2.2.10.3.2.1 | Latency, Rpt. Assy. Acq. --- Surface |
| 2.2.10.3.3 | Acquisition State Data Retention | 2.2.10.3.3 | Acquisition State Data Retention |
| 2.2.10.4 | Report Assembly Track State | 2.2.10.4 | Report Assembly Track State |
| 2.2.10.4.1 | Rpt. Assy. Track State --- Airborne | 2.2.10.4.1 | Rpt. Assy. Track State --- Airborne |
| 2.2.10.4.1.1 | Rpt. Assy. Track State Init. – Air. | 2.2.10.4.1.1 | Rpt. Assy. Track State Init. – Air. |
| 2.2.10.4.1.2 | Rpt. Assy. Track State Maint. – Air. | 2.2.10.4.1.2 | Rpt. Assy. Track State Maint. – Air. |
| 2.2.10.4.1.3 | Rpt. Assy. Track State Term. – Air. | 2.2.10.4.1.3 | Rpt. Assy. Track State Term. – Air. |
| 2.2.10.4.2 | Report Assy. Track State – Surface | 2.2.10.4.2 | Report Assy. Track State – Surface |
| 2.2.10.4.2.1 | Rpt. Assy. Track State Init. – Surface | 2.2.10.4.2.1 | Rpt. Assy. Track State Init. – Surface |
| 2.2.10.4.2.2 | Rpt. Assy. Track State Maint. – Surface | 2.2.10.4.2.2 | Rpt. Assy. Track State Maint. – Surface |
| 2.2.10.4.2.3 | Rpt. Assy. Track State Term. – Surface | 2.2.10.4.2.3 | Rpt. Assy. Track State Term. – Surface |
| 2.2.10.5 | Minimum # of Participant Track Files | 2.2.10.5 | Minimum # of Participant Track Files |
| 2.2.10.6 | Participant Track File Maint. In Interf. Env. | | |
| 2.2.11 | Self Test and Monitors | 2.2.11 | Self Test and Monitors |
| 2.2.11.1 | Self Test | 2.2.11.1 | Self Test |

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| 2.2.11.2.1 | Non-Broadcast Only Equipment | 2.2.11.2.1 | Non-Broadcast Only Equipment |
| 2.2.11.2.2 | Broadcast Only Equipment | 2.2.11.2.2 | Broadcast Only Equipment |
| 2.2.11.3 | Address Verification | 2.2.11.3 | Address Verification |
| 2.2.11.3.1 | Transponder Based Equipment | 2.2.11.3.1 | Transponder Based Equipment |
| 2.2.11.3.2 | Non-Transponder Based Equipment | 2.2.11.3.2 | Non-Transponder Based Equipment |
| 2.2.11.4 | Receiver Self Test Capability | 2.2.11.4 | Receiver Self Test Capability |
| 2.2.11.5 | Failure Annunciation | 2.2.11.5 | Failure Annunciation |
| 2.2.11.5.1 | ADS-B TX Failure Annunciation | 2.2.11.5.1 | ADS-B TX Failure Annunciation |
| 2.2.11.5.2 | ADS-B RX Failure Annunciation | 2.2.11.5.2 | ADS-B RX Failure Annunciation |
| 2.2.11.5.3 | Co-Lo TX RX Failure Annunciation | 2.2.11.5.3 | Co-Lo TX RX Failure Annunciation |
| 2.2.12 | Response to Mutual Suppression | 2.2.12 | Response to Mutual Suppression |
| 2.2.12.1 | TX Response to Mutual Suppression | 2.2.12.1 | TX Response to Mutual Suppression |
| 2.2.12.2 | RX Response to Mutual Suppression | 2.2.12.2 | RX Response to Mutual Suppression |
| 2.2.13 | Antenna System | 2.2.13 | Antenna System |
| 2.2.13.1 | Transmit Pattern Gain | 2.2.13.1 | Transmit Pattern Gain |
| 2.2.13.2 | Receiver Pattern Gain | 2.2.13.2 | Receiver Pattern Gain |
| 2.2.13.3 | Frequency Req. for Tx and Rx Antenna(s) | 2.2.13.3 | Frequency Req. for Tx and Rx Antenna(s) |
| 2.2.13.4 | Impedance and VSWR | 2.2.13.4 | Impedance and VSWR |
| 2.2.13.5 | Polarization | 2.2.13.5 | Polarization |
| 2.2.13.6 | Diversity Operation | 2.2.13.6 | Diversity Operation |
| 2.2.13.6.1 | Transmitting Diversity | 2.2.13.6.1 | Transmitting Diversity |
| 2.2.13.6.1.1 | Transmitting Diversity Channel Isolation | 2.2.13.6.1.1 | Transmitting Diversity Channel Isolation |
| 2.2.13.6.2 | Receiving Diversity | 2.2.13.6.2 | Receiving Diversity |
| 2.2.14 | Interfaces | 2.2.14 | Interfaces |
| 2.2.14.1 | ADS-B TX Interfaces | 2.2.14.1 | ADS-B TX Interfaces |
| 2.2.14.1.1 | ADS-B TX Input Interfaces | 2.2.14.1.1 | ADS-B TX Input Interfaces |
| 2.2.14.1.1.1 | Discrete Input Interfaces | 2.2.14.1.1.1 | Discrete Input Interfaces |
| 2.2.14.1.1.2 | Digital Comm. Input Interfaces | 2.2.14.1.1.2 | Digital Comm. Input Interfaces |
| 2.2.14.1.1.3 | Processing Efficiency | 2.2.14.1.1.3 | Processing Efficiency |
| 2.2.14.1.2 | ADS-B TX Output Interfaces | 2.2.14.1.2 | ADS-B TX Output Interfaces |
| 2.2.14.1.2.1 | Discrete Output Interfaces | 2.2.14.1.2.1 | Discrete Output Interfaces |
| 2.2.14.1.2.2 | Digital Comm. Output Interfaces | 2.2.14.1.2.2 | Digital Comm. Output Interfaces |
| 2.2.14.2 | ADS-B RX Interfaces | 2.2.14.2 | ADS-B RX Interfaces |
| 2.2.14.2.1 | ADS-B RX Input Interfaces | 2.2.14.2.1 | ADS-B RX Input Interfaces |
| 2.2.14.2.1.1 | Discrete Input Interfaces | 2.2.14.2.1.1 | Discrete Input Interfaces |
| 2.2.14.2.1.2 | Digital Comm. Input Interfaces | 2.2.14.2.1.2 | Digital Comm. Input Interfaces |
| 2.2.14.2.1.3 | Processing Efficiency | 2.2.14.2.1.3 | Processing Efficiency |
| 2.2.14.2.2 | ADS-B RX Output Interfaces | 2.2.14.2.2 | ADS-B RX Output Interfaces |
| 2.2.14.2.2.1 | Discrete Output Interfaces | 2.2.14.2.2.1 | Discrete Output Interfaces |
| 2.2.14.2.2.2 | Digital Comm. Output Interfaces | 2.2.14.2.2.2 | Digital Comm. Output Interfaces |
| 2.2.15 | Power Interruption | 2.2.15 | Power Interruption |
| 2.2.15.1 | Power Interruptions to Transmitting Func. | 2.2.15.1 | Power Interruptions to Transmitting Func. |
| 2.2.15.2 | Power Interruptions to Receiving Func. | 2.2.15.2 | Power Interruptions to Receiving Func. |
| 2.2.16 | Compatibility with Other Systems | 2.2.16 | Compatibility with Other Systems |
| 2.2.16.1 | EMI Compatibility | 2.2.16.1 | EMI Compatibility |
| 2.2.16.2 | Compatibility with GPS Receivers | 2.2.16.2 | Compatibility with GPS Receivers |
| 2.2.16.3 | Comp. With Other Nav. Rx and ATC Trans. | 2.2.16.3 | Comp. With Other Nav. Rx and ATC Trans. |

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| | | 2.2.17.2.2 | TIS-B “CF” |
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| | | 2.2.17.2.4 | TIS-B “ME” |
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| | | 2.2.17.3.1 | TIS-B Fines Airborne Position Message |
| | | 2.2.17.3.1.1 | Relationship to ADS-B Format |
| | | 2.2.17.3.1.2 | ICAO/Mode A Flag (IMF) |
| | | 2.2.17.3.2 | TIS-B Fine Surface Position Message |
| | | 2.2.17.3.2.1 | Relationship to ADS-B Format |
| | | 2.2.17.3.2.2 | ICAO/Mode A Flag (IMF) |
| | | 2.2.17.3.3 | TIS-B Identification and Category Message |
| | | 2.2.17.3.3.1 | Relationship to ADS-B Format |
| | | 2.2.17.3.3.2 | Application |
| | | 2.2.17.3.4 | TIS-B Airborne Velocity Message |
| | | 2.2.17.3.4.1 | Relationship to ADS-B Format |
| | | 2.2.17.3.4.2 | ICAO/Mode A Flag (IMF) |
| | | 2.2.17.3.4.3 | NIC Supplement |
| | | 2.2.17.3.4.4 | NAC _P |
| | | 2.2.17.3.4.5 | NAC _V |
| | | 2.2.17.3.4.6 | SIL |
| | | 2.2.17.3.5 | TIS-B Coarse Position Message |
| | | 2.2.17.3.5.1 | Relationship to ADS-B Format |
| | | 2.2.17.3.5.2 | ICAO/Mode A Flag (IMF) |
| | | 2.2.17.3.5.3 | Service Volume ID (SVID) |
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| | | 2.2.17.3.5.5 | Ground Track Status |
| | | 2.2.17.3.5.6 | Ground Track Angle |
| | | 2.2.17.3.5.7 | Ground Speed |
| | | 2.2.17.3.5.8 | Encoded Latitude and Longitude |
| | | 2.2.17.4 | TIS-B Message Processing and Reporting |
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| | | 2.2.17.4.1.1 | TIS-B Messages with a 24-bit Address |
| | | 2.2.17.4.1.2 | TIS-B Messages with a Mode A Code and Track Number |
| | | 2.2.17.4.2 | TIS-B Position Message Decoding |
| | | 2.2.17.4.3 | TIS-B Track Update |
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