Comparison Matrix of the Outline of DO-181C versus DO-181D v2.0

DO-181C			DO-181D	
Requirements Section	**Section Title**	**Status in DO-181D**	**Requirements Section**	**Section Title**
1	PURPOSE AND SCOPE	Title unchanged ▼		
1.1	Introduction			
1.2	System Overview			
1.2.1	The Function of Mode S			
1.2.2	Major Operating Characteristics			
1.2.3	System Performance			
1.2.3.1	Surveillance Performance			
1.2.3.2	Data Link Performance			
1.2.4	Basic System Protocol			
1.2.5	Mode S Message Content			
1.2.5.1	Address/Parity			
1.2.5.2	Surveillance			
1.2.5.3	Data Link Communications			
1.3	Operational Goals			
1.4	Operational Applications			
1.4.1	The ATCRBS Environment			
1.4.2	The Mode S Environment	Title unchanged ▲		
1.4.3	Mode S Transponder Capability Levels	Renamed	1.4.3	Mode S Transponder Levels
1.4.3.1	The Basic Transponder	Renamed	1.4.3.1	Level 1 Transponders
1.4.3.2	The Minimum Data Link Transponder	Renamed	1.4.3.2	Level 2 Transponders
1.4.3.2.1	The Uplink ELM Capability	Renamed and renumbered	1.4.3.3	Level 3 Transponders (Uplink ELM Capability)
1.4.3.2.2	The Full ELM Capability	Renamed and renumbered	1.4.3.4	Level 4 Transponders (Full ELM Capability)
1.4.3.2.3	The Enhanced Data Link Protocol Capability	Renamed and renumbered	1.4.3.5	Level 5 Transponders (Enhanced Data Link Protocol Capability)
1.4.3.3	Additional Features	Renamed and renumbered	1.4.4	Optional Additional Features
			1.4.5	Minimum Output Power Level Designation
			1.4.6	Transponder Labeling
1.4.4	Use of the Mode S Data Link	Renumbered 1.4.7	1.4.7	Use of the Mode S Data Link
1.4.5	Airborne Equipment	Renumbered 1.4.8	1.4.8	Airborne Equipment
1.5	Assumptions	Title unchanged ▼		
1.6	Test Procedures			
1.6.1	Environmental Tests			
1.6.2	Detailed Test Procedures			
1.6.3	Installed System Tests	Title unchanged ▲		
1.7	Definitions of Terms	Renamed	1.7	Definitions of Key Acronyms and Terms
			1.8	Mode S Specific Services (Defines Appendix B)
			1.9	Dataflash (Defines Appendix C)
2	Mode S Transponder Equipment Performance Requirements and Test Procedures	Title unchanged ▼		
2.1	General Requirements for All Equipment			
2.1.1	Airworthiness			
2.1.2	General Performance			
2.1.3	Federal Communications Commission Rules			

DO-181C			DO-181D	
Requirements Section	**Section Title**	**Status in DO-181D**	**Requirements Section**	**Section Title**
2.1.4	Fire Protection			
2.1.5	Operation of Controls			
2.1.6	Accessibility of Controls			
2.1.7	Flight Crew Control Functions			
2.1.8	Optional Crew Control Functions			
2.1.9	Effects of Tests			
2.1.10	Equipment Configuration			
2.1.11	Interrogation Signals			
2.1.11.1	Interrogation Carrier Frequency			
2.1.11.2	Measurement Convention			
2.1.11.3	Received PAM Signals			
2.1.11.3.1	Pulse Shapes			
2.1.11.3.2	Pulse Patterns			
2.1.11.3.3	Relative Pulse Amplitudes			
2.1.11.4	Received DPSK Signals			
2.1.11.4.1	Pulse Shapes			
2.1.11.4.2	Relative Pulse Amplitudes			
2.1.11.4.3	Phase Reversals			
2.1.11.4.4	Spacings			
2.1.11.4.5	Information Content			
2.2	Minimum Performance Standards — Standard Conditions and Signals			
2.2.1	Definition of Standard Conditions			
2.2.2	Receiver Characteristics			
2.2.2.1	Interrogation Tolerances			
2.2.2.2	Sensitivity Variation With Frequency			
2.2.2.3	Bandwidth			
2.2.2.4	Sensitivity and Dynamic Range			
2.2.3	Transmitter Characteristics			
2.2.3.1	Reply Transmission Frequency			
2.2.3.2	RF Peak Output Power			
2.2.3.3	Unwanted Output Power			
2.2.3.4	Reply Rate Capability			
2.2.3.4.1	ATCRBS Reply Rate Capability			
2.2.3.4.2	Mode S Reply Rate Capability			
2.2.3.5	Mode S ELM Peak Reply Rate			
2.2.4	Reply Pulse Characteristics			
2.2.4.1	ATCRBS Replies			
2.2.4.1.1	Framing Pulses			
2.2.4.1.2	Information Pulses			
2.2.4.1.3	ATCRBS-SPI			
2.2.4.1.4	ATCRBS Reply Pulse Shape			
2.2.4.1.5	ATCRBS Reply Pulse Spacing Tolerance			
2.2.4.1.6	ATCRBS Reply Delay and Jitter			
2.2.4.2	Mode S Replies			

DO-181C			DO-181D	
Requirements Section	**Section Title**	**Status in DO-181D**	**Requirements Section**	**Section Title**
2.2.4.2.1	Mode S Preamble			
2.2.4.2.2	Mode S Data Pulses			
2.2.4.2.3	Mode S Reply Pulse Shape			
2.2.4.2.4	Mode S Reply Pulse Spacing Tolerance			
2.2.4.2.5	Mode S Reply Delay and Jitter			
2.2.5	Side Lobe Suppression Characteristics			
2.2.5.1	Side Lobe Suppression, ATCRBS, ATCRBS-Only All-Call, and ATCRBS/Mode S All-Call			
2.2.5.2	Side Lobe Suppression, Mode S Formats			
2.2.6	Pulse Decoder Characteristics			
2.2.6.1	Pulse Level Tolerances			
2.2.6.1.1	ATCRBS/Mode S All-Call			
2.2.6.1.2	ATCRBS-Only All-Call			
2.2.6.2	Pulse Position Tolerances			
2.2.6.3	Pulse Duration Tolerances			
2.2.6.4	Sync Phase Reversal Position Tolerance			
2.2.7	Desensitization and Recovery Characteristics			
2.2.7.1	Echo Suppression			
2.2.7.1.1	Echo Suppression Desensitization			
2.2.7.1.2	Narrow Pulse Performance			
2.2.7.2	Recovery			
2.2.7.2.1	Recovery From a Mode S Interrogation If No Reply Is Required	Title unchanged ▲		
2.2.7.2.2	Not Used	Deleted	2.2.7.2.2	Recovery From a Suppression Pair
2.2.7.2.3	Recovery From a Suppression Pair	Becomes 2.2.7.2.2	2.2.7.2.3	Recovery From a Mode S Interrogation Which Has Not Been Accepted
2.2.7.2.4	Recovery From a Mode S Interrogation Which Has Not Been Accepted	Becomes 2.2.7.2.3	2.2.7.2.4	Recovery From Unaccepted ATCRBS/Mode S and ATCRBS-Only All-Calls
2.2.7.2.5	Recovery From Unaccepted ATCRBS/Mode S and ATCRBS-Only All-Calls	Becomes 2.2.7.2.4	2.2.7.2.5	Dead Time
2.2.7.2.6	Dead Time	Becomes 2.2.7.2.5		
2.2.7.3	Reply Rate Limiting	Title unchanged ▼		
2.2.7.3.1	ATCRBS Reply Rate Limiting			
2.2.7.3.2	Mode S Reply Rate Limiting			
2.2.8	Response in the Presence of Interference			
2.2.8.1	Response in the Presence of Low Level Asynchronous Interference			
2.2.8.2	Response in the Presence of a Standard Interfering Pulse			
2.2.8.3	Response in the Presence of Pulse Pair Interference			
2.2.8.4	Response in the Presence of TACAN/DME and JTIDS Interference			
2.2.8.5	Simultaneous Interrogation of Mode A and Mode C	Title unchanged ▲		
			2.2.8.6	Response in the Presence of CW Interference
			2.2.8.7	Compatibility with TCAS ATCRBS Surveillance

DO-181C			DO-181D	
Requirements Section	**Section Title**	**Status in DO-181D**	**Requirements Section**	**Section Title**
2.2.9	Undesired Replies	Title unchanged ▼		
2.2.9.1	ATCRBS			
2.2.9.2	Mode S			
2.2.10	Self Test and Monitor(s)			
2.2.10.1	Self Test			
2.2.10.2	Squitter Monitor			
2.2.10.3	Mode S Address Verification			
2.2.10.4	Failure Annunciation			
2.2.11	Response to Mutual Suppression Pulses			
2.2.12	Diversity Operations			
2.2.12.1	Diversity Antenna Selection and Selection Threshold			
2.2.12.2	Received Signal Delay Tolerance			
2.2.12.3	Diversity Transmission Channel Isolation			
2.2.12.4	Reply Delay of Diversity Transponders			
2.2.12.5	Squitter Antenna Selection			
2.2.12.5.1	Acquisition Squitter			
2.2.12.5.2	Extended Squitter			
2.2.13	Data Handling and Interfaces			
2.2.13.1	Direct Data			
2.2.13.1.1	Fixed Direct Data			
2.2.13.1.2	Variable Direct Data			
2.2.13.2	Indirect Data			
2.2.13.2.1	Interfaces for Indirect Data			
2.2.13.2.2	Integrity of Interface Data Transfer			
2.2.13.3	Standard Transaction Interfaces			
2.2.13.3.1	Uplink Interface			
2.2.13.3.2	Downlink Interface			
2.2.13.4	ELM Service Interfaces			
2.2.13.4.1	Uplink Interface – Data Rate			
2.2.13.4.2	Downlink Interface – Data Rate			
2.2.13.4.3	Uplink Interface – Interrogator Identity			
2.2.13.5	Downlink Message Cancellation			
2.2.14	Description of the Mode S Signal Format			
2.2.14.1	Format Structure, Interrogation and Reply			
2.2.14.2	Bit Numbering and Sequence			
2.2.14.3	Fields			
2.2.14.3.1	Essential Fields			
2.2.14.3.2	Mission Fields			
2.2.14.3.3	Subfields	Title unchanged ▲		
2.2.14.4	Field Descriptions		2.2.14.4	Field Descriptions
2.2.14.4.1	AA Address, Announced		2.2.14.4.1	AA Address, Announced
2.2.14.4.2	AC Altitude Code		2.2.14.4.2	AC Altitude Code
2.2.14.4.3	AP Address/Parity	Reorged alphabetically ▼	2.2.14.4.3	AF Application Field

DO-181C			DO-181D	
Requirements Section	**Section Title**	**Status in DO-181D**	**Requirements Section**	**Section Title**
2.2.14.4.4	AQ Acquisition Special		2.2.14.4.4	AP Address/Parity
2.2.14.4.5	CA Transponder Capability		2.2.14.4.5	AQ Acquisition Special
2.2.14.4.6	DF Downlink Format		2.2.14.4.6	CA Transponder Capability
2.2.14.4.7	DI Designator Identification		2.2.14.4.7	CC: Crosslink Capability
2.2.14.4.8	DR Downlink Request		2.2.14.4.8	CF Control Field
2.2.14.4.9	FS Flight Status		2.2.14.4.9	CL Code Label
2.2.14.4.10	ID Identification (4096 code		2.2.14.4.10	DF Downlink Format
2.2.14.4.11	II Interrogator Identification		2.2.14.4.11	DI Designator Identification
2.2.14.4.12	KE Control, ELM		2.2.14.4.12	DR Downlink Request
2.2.14.4.13	MA Message, Comm-A		2.2.14.4.13	DS: Comm-B Data Selector
2.2.14.4.14	MB Message, Comm-B and BDS B-Definition Subfield		2.2.14.4.14	FS Flight Status
2.2.14.4.15	MC Message, Comm-C		2.2.14.4.15	IC Interrogator Code
2.2.14.4.16	MD Message, Comm-D		2.2.14.4.16	ID Identification (4096 code
2.2.14.4.17	MU Message, Comm-U		2.2.14.4.17	II Interrogator Identification
2.2.14.4.18	MV Message, Comm-V		2.2.14.4.18	KE Control, ELM
2.2.14.4.19	NC Number of C-Segment		2.2.14.4.19	MA Message, Comm-A
2.2.14.4.20	ND Number of D-Segment		2.2.14.4.20	MB Message, Comm-B and BDS B-Definition Subfield
2.2.14.4.21	PC Protocol		2.2.14.4.21	MC Message, Comm-C
2.2.14.4.22	PI Parity/Interrogator Identity		2.2.14.4.22	MD Message, Comm-D
2.2.14.4.23	PR Probability of Reply		2.2.14.4.23	ME Message, Extended Squitter
2.2.14.4.24	RC Reply Control		2.2.14.4.24	MSP Channel Header
2.2.14.4.25	RI Reply Information, Air-To-Air		2.2.14.4.25	MU Message, Comm-U
2.2.14.4.26	RL Reply Length		2.2.14.4.26	MV Message, Comm-V
2.2.14.4.27	RR Reply Request		2.2.14.4.27	NC Number of C-Segment
2.2.14.4.28	SD Special Designator and IIS, Subfield in SD		2.2.14.4.28	ND Number of D-Segment
2.2.14.4.29	SL TCAS Sensitivity Level Report		2.2.14.4.29	PC Protocol
2.2.14.4.30	UF Uplink Format		2.2.14.4.30	PI Parity/Interrogator Identity
2.2.14.4.31	UM Utility Message in DF=4, 5, 20, 21		2.2.14.4.31	PR Probability of Reply
2.2.14.4.32	VS Vertical Status		2.2.14.4.32	RC Reply Control
2.2.14.4.33	DS: Comm-B Data Selector		2.2.14.4.33	RI Reply Information, Air-To-Air
2.2.14.4.34	CC: Crosslink Capability		2.2.14.4.34	RL Reply Length
2.2.14.4.35	CL Code Label		2.2.14.4.35	RR Reply Request
2.2.14.4.36	IC Interrogator Code		2.2.14.4.36	SD Special Designator and IIS, Subfield in SD
2.2.14.4.37	ME Message, Extended Squitter		2.2.14.4.37	SI Surveillance Identifier
2.2.14.4.38	SI Surveillance Identifier		2.2.14.4.38	SL TCAS Sensitivity Level Report
2.2.14.4.39	CF Control Field		2.2.14.4.39	TMS Field
2.2.14.4.40	AF Application Field		2.2.14.4.40	UF Uplink Format
2.2.14.4.41	Free and Unassigned Coding Space		2.2.14.4.41	UM Utility Message in DF=4, 5, 20, 21
2.2.14.4.42	Future Coding	Reorged alphabetically ▲	2.2.14.4.42	VS Vertical Status
			2.2.14.4.43	Free and Unassigned Coding Space
			2.2.14.4.44	Future Coding
			2.2.15	Antenna
			2.2.15.1	Frequency Requirements

DO-181C			DO-181D	
Requirements Section	**Section Title**	**Status in DO-181D**	**Requirements Section**	**Section Title**
			2.2.15.2	Impedance and VSWR
			2.2.15.3	Polarization
			2.2.15.4	Radiation Pattern
			2.2.16	Power Interruption
2.2.15	Mode S Transponders	Becomes 2.2.17	2.2.17	Mode S Transponders
2.2.16	The Basic Transponder	Becomes 2.2.18	2.2.18	Level 1 Mode S Transponder
2.2.16.1	Mode S Formats	Becomes 2.2.18.1	2.2.18.1	Mode S Formats
2.2.16.2	Mode S Protocols	Becomes 2.2.18.2	2.2.18.2	Mode S Protocols
2.2.16.2.1	Error Protection (Figure 2-9 and Figure 2-10)	Becomes 2.2.18.2.1	2.2.18.2.1	Error Protection (Figure 2-9 and Figure 2-10)
2.2.16.2.2	Interrogation Acceptance Protocol (Figure 2-11)	Becomes 2.2.18.2.2	2.2.18.2.2	Interrogation Acceptance Protocol (Figure 2-11)
2.2.16.2.3	Interrogation Reply Coordination	Becomes 2.2.18.2.3	2.2.18.2.3	Interrogation Reply Coordination
2.2.16.2.4	Lockout Protocol (Figure 2-12)	Becomes 2.2.18.2.4	2.2.18.2.4	Lockout Protocol (Figure 2-12)
2.2.16.2.5	Multisite Lockout Protocol (Figure 2-12)	Becomes 2.2.18.2.5	2.2.18.2.5	Multisite Lockout Protocol (Figure 2-12)
2.2.16.2.6	Squitter Protocols	Blank Header Deleted		
2.2.16.2.6.1	Acquisition Squitter	Becomes 2.2.18.2.6	2.2.18.2.6	Acquisition Squitter Protocols
2.2.16.2.6.2	Extended Squitter	Moved to 2.2.23.1		
2.2.16.2.6.2.1	Extended Squitter Format	Moved to 2.2.23.1.1		
2.2.16.2.6.2.2	Extended Squitter Types	Moved to 2.2.23.1.2		
2.2.16.2.6.2.3	Extended Squitter Rate	Moved to 2.2.23.1.3		
2.2.16.2.6.2.4	Transponder Support for Extended Squitter Registers	Moved to 2.2.23.1.4		
2.2.16.2.6.2.4.1	Data Insertion	Moved to 2.2.23.1.4.1		
2.2.16.2.6.2.4.2	Register Timeout	Moved to 2.2.23.1.4.2		
2.2.16.2.6.2.5	Airborne/Surface Format Selection	Moved to 2.2.23.1.5		
2.2.16.2.6.2.5.1	Automatic Format Selection	Moved to 2.2.23.1.5.1		
2.2.16.2.6.2.5.2	Ground Controlled Format Selection	Moved to 2.2.23.1.5.2		
2.2.16.2.6.2.6	Surface Squitter Rate Control	Moved to 2.2.23.1.6		
2.2.16.2.6.2.7	Subfields in SD for Extended Squitter	Moved to 2.2.23.1.7		
2.2.16.2.6.2.8	Subfields in ME for Extended Squitter	Moved to 2.2.23.1.8		
2.2.16.2.6.2.9	Subfields in MB for Extended Squitter	Moved to 2.2.23.1.9		
2.2.16.2.6.3	Extended Squitter/Non Transponder (ES/NT)	Deleted from DO-181D		
2.2.16.2.6.3.1	ES/NT Format	Deleted from DO-181D		
2.2.16.2.6.3.2	ES/NT Squitter Types	Deleted from DO-181D		
2.2.16.2.6.3.3	ES/NT Squitter Rate	Deleted from DO-181D		
2.2.16.2.6.3.4	Delayed Transmission	Deleted from DO-181D		
2.2.16.2.6.3.5	ES/NT Antenna Selection	Deleted from DO-181D		
2.2.16.2.6.3.6	Register Timeout	Deleted from DO-181D		
2.2.16.2.6.3.7	Airborne/Surface State Determination	Deleted from DO-181D		
2.2.16.2.6.3.8	Surface Squitter Rate Control	Deleted from DO-181D		
2.2.16.2.6.3.9	ES/NT RF Signals	Deleted from DO-181D		
2.2.16.2.6.4	Extended Squitter Military Application	Moved to 2.2.23.2		
2.2.16.2.6.4.1	Military Format	Absorbed into 2.2.23.2		
2.2.16.2.6.5	Extended Squitter Maximum Transmission Rate	Moved to 2.2.23.3		

DO-181C			DO-181D	
Requirements Section	**Section Title**	**Status in DO-181D**	**Requirements Section**	**Section Title**
2.2.16.2.7	Flight Status and Vertical Status Protocols (Figure 2-13)	Becomes 2.2.18.2.7	2.2.18.2.7	Flight Status and Vertical Status Protocols
2.2.16.2.8	Capability Reporting	Becomes 2.2.18.2.8	2.2.18.2.8	Capability Reporting
2.2.16.2.9	All-Call Reply Protocol	Becomes 2.2.18.2.9	2.2.18.2.9	All-Call Reply Protocol
2.2.16.2.10	Reply Content (Figure 2-14)	Becomes 2.2.18.2.10	2.2.18.2.10	Reply Content (Figure 2-14)
2.2.16.2.11	Data Handling and Interfaces	Becomes 2.2.18.2.11	2.2.18.2.11	Data Handling and Interfaces
2.2.17	Data Link Transponder Description	Becomes 2.2.19, renamed	2.2.19	Minimum Level 2 Transponder Description
2.2.17.1	The Minimum Data Link Transponder	Becomes 2.2.19.1, renamed	2.2.19.1	Minimum Level 2 Transponder Requirements
2.2.17.1.1	Interrogation Acceptance Protocol (Figure 2-16)	Becomes 2.2.19.1.1	2.2.19.1.1	Interrogation Acceptance Protocol (Figure 2-16)
2.2.17.1.2	Error Protection	Becomes 2.2.19.1.2	2.2.19.1.2	Error Protection
2.2.17.1.3	Information Transfer	Becomes 2.2.19.1.3	2.2.19.1.3	Information Transfer
2.2.17.1.4	Interrogation-Reply Coordination (Figure 2-17)	Becomes 2.2.19.1.4	2.2.19.1.4	Interrogation-Reply Coordination (Figure 2-17)
2.2.17.1.5	Lockout Protocols (Figure 2-12)	Becomes 2.2.19.1.5	2.2.19.1.5	Lockout Protocols (Figure 2-12)
2.2.17.1.6	Flight and Vertical Status Protocols (Figure 2-13)	Becomes 2.2.19.1.6	2.2.19.1.6	Flight and Vertical Status Protocols (Figure 2-13)
2.2.17.1.7	Capability Report	Becomes 2.2.19.1.7	2.2.19.1.7	Capability Report
2.2.17.1.8	Reply Content (Figure 2-14)	Becomes 2.2.19.1.8	2.2.19.1.8	Reply Content (Figure 2-14)
2.2.17.1.9	UM Protocol (Figure 2-18)	Becomes 2.2.19.1.9	2.2.19.1.9	UM Protocol (Figure 2-18)
2.2.17.1.10	Comm-A Protocol	Becomes 2.2.19.1.10	2.2.19.1.10	Comm-A Protocol
2.2.17.1.11	Broadcast Protocol	Becomes 2.2.19.1.11	2.2.19.1.11	Broadcast Protocol
2.2.17.1.12	Comm-B Protocol (Figure 2-19)	Becomes 2.2.19.1.12	2.2.19.1.12	Comm-B Protocol (Figure 2-19)
2.2.17.1.12.1	Data Source Designators	Becomes 2.2.19.1.12.1	2.2.19.1.12.1	Data Source Designators
2.2.17.1.12.2	Extended Data Source Designators	Becomes 2.2.19.1.12.2	2.2.19.1.12.2	Extended Data Source Designators
2.2.17.1.12.3	Ground-Initiated Comm-B	Becomes 2.2.19.1.12.3	2.2.19.1.12.3	Ground-Initiated Comm-B
2.2.17.1.12.4	Air-Initiated Comm-B	Becomes 2.2.19.1.12.4	2.2.19.1.12.4	Air-Initiated Comm-B
2.2.17.1.12.4.1	Comm-B Broadcast	Becomes 2.2.19.1.12.5	2.2.19.1.12.5	Comm-B Broadcast
2.2.17.1.12.5	Data Link Capability Report	Becomes 2.2.19.1.12.6	2.2.19.1.12.6	Data Link Capability Report
2.2.17.1.12.6	Subfields in MB for Data Link Capability Report	Becomes 2.2.19.1.12.6.1	2.2.19.1.12.6.1	Subfields in MB for Data Link Capability Report
2.2.17.1.12.7	Coding of the Data Link Capability Report	Becomes 2.2.19.1.12.6.2	2.2.19.1.12.6.2	Coding of the Data Link Capability Report
2.2.17.1.12.8	Updating of the Data Link Capability Report	Becomes 2.2.19.1.12.6.3	2.2.19.1.12.6.3	Updating of the Data Link Capability Report
2.2.17.1.13	Aircraft Identification Reporting and AIS Aircraft Identification Subfield in MB	Becomes 2.2.19.1.13	2.2.19.1.13	Aircraft Identification Reporting and AIS Aircraft Identification Subfield in MB
2.2.17.1.14	Linked Comm-A Coding	Becomes 2.2.19.1.14	2.2.19.1.14	Linked Comm-A Coding
2.2.17.1.15	Multisite Message Protocol	Becomes 2.2.19.1.15	2.2.19.1.15	Multisite Message Protocol
2.2.17.1.16	Comm-U/V Protocol	Becomes 2.2.19.1.16	2.2.19.1.16	Comm-U/V Protocol
2.2.17.1.17	Data Handling and Interfaces	Becomes 2.2.19.1.17	2.2.19.1.17	Data Handling and Interfaces
2.2.17.1.18	TCAS Crosslink Protocol	Becomes 2.2.19.1.18	2.2.19.1.18	TCAS Crosslink Protocol
2.2.17.2	The Multisite Message Protocol	Becomes 2.2.19.2	2.2.19.2	The Multisite Message Protocol
2.2.17.2.1	Multisite Data Formats	Becomes 2.2.19.2.1	2.2.19.2.1	Multisite Data Formats
2.2.17.2.1.1	Subfields in SD	Becomes 2.2.19.2.1.1	2.2.19.2.1.1	Subfields in SD
2.2.17.2.1.2	Subfields in UM for Multisite Protocols	Becomes 2.2.19.2.1.2	2.2.19.2.1.2	Subfields in UM for Multisite Protocols
2.2.17.2.2	Multisite Common Protocols	Becomes 2.2.19.2.2	2.2.19.2.2	Multisite Common Protocols
2.2.17.2.2.1	Multisite Timers	Becomes 2.2.19.2.2.1	2.2.19.2.2.1	Multisite Timers
2.2.17.2.2.2	Interrogator Identity Report	Becomes 2.2.19.2.2.2	2.2.19.2.2.2	Interrogator Identity Report
2.2.17.2.3	Multisite Comm-B Protocol (Figure 2-19)	Becomes 2.2.19.2.3	2.2.19.2.3	Multisite Comm-B Protocol (Figure 2-19)

DO-181C			DO-181D	
Requirements Section	**Section Title**	**Status in DO-181D**	**Requirements Section**	**Section Title**
2.2.17.2.3.1	Multisite Comm-B Reservation	Becomes 2.2.19.2.3.1	2.2.19.2.3.1	Multisite Comm-B Reservation
2.2.17.2.3.2	Multisite Directed Comm-B Transmissions	Becomes 2.2.19.2.3.2	2.2.19.2.3.2	Multisite Directed Comm-B Transmissions
2.2.17.2.3.3	Multisite Comm-B Closeout	Becomes 2.2.19.2.3.3	2.2.19.2.3.3	Multisite Comm-B Closeout
2.2.17.2.3.4	Automatic Comm-B Closeout	Becomes 2.2.19.2.3.4	2.2.19.2.3.4	Automatic Comm-B Closeout
2.2.17.2.3.5	Significance of PC Command	Becomes 2.2.19.2.3.5	2.2.19.2.3.5	Significance of PC Command
2.2.17.2.4	Multisite Uplink ELM Protocol (Figure 2-20 and Figure 2-21)	Moved to 2.2.20.1.3		
2.2.17.2.4.1	Multisite Comm-C Reservations	Moved to 2.2.20.1.3.1		
2.2.17.2.4.2	Multisite Comm-C Delivery	Moved to 2.2.20.1.3.2		
2.2.17.2.4.3	Multisite Comm-C Closeout	Moved to 2.2.20.1.3.3		
2.2.17.2.4.4	Automatic Comm-C Closeout	Moved to 2.2.20.1.3.4		
2.2.17.2.4.5	Significance of PC Command	Moved to 2.2.20.1.3.5		
2.2.17.2.5	Multisite Downlink ELM Protocol	Moved to 2.2.20.2.3		
2.2.17.2.5.1	Multisite Comm-D Reservation	Moved to 2.2.20.2.3.1		
2.2.17.2.5.2	Multisite Directed Comm-D Transmissions	Moved to 2.2.20.2.3.2		
2.2.17.2.5.3	Multisite Comm-D Delivery	Moved to 2.2.20.2.3.3		
2.2.17.2.5.4	Multisite Comm-D Closeout	Moved to 2.2.20.2.3.4		
2.2.17.2.5.5	Automatic Comm-D Closeout	Moved to 2.2.20.2.3.5		
2.2.17.2.5.6	Significance of PC Command	Moved to 2.2.20.2.3.6		
2.2.17.3	Uplink ELM Capability	Moved to 2.2.20.1.1		
2.2.17.3.1	Comm-C/ELM Protocol (Figure 2-20 and Figure 2-21)	Moved to 2.2.20.1.1.1		
2.2.17.3.1.1	Initializing Segment Transfer	Moved to 2.2.20.1.1.1.1		
2.2.17.3.1.2	Intermediate Segment Transfer	Moved to 2.2.20.1.1.1.2		
2.2.17.3.1.3	Final Segment Transfer	Moved to 2.2.20.1.1.1.3		
2.2.17.3.1.4	Completed Message	Moved to 2.2.20.1.1.1.4		
2.2.17.3.1.5	Acknowledgment Reply	Moved to 2.2.20.1.1.1.5		
2.2.17.3.1.6	TAS Transmission Acknowledgment, Subfield in MD	Moved to 2.2.20.1.1.1.6		
2.2.17.3.1.7	Closeout	Moved to 2.2.20.1.1.1.7		
2.2.17.3.1.8	Information Transfer	Moved to 2.2.20.1.1.1.8		
2.2.17.4	Full ELM Capability (Figure 2-22 and Figure 2-23)	Moved to 2.2.20.2.1		
2.2.17.4.1	The Comm-D/ELM Protocol (Figure 2-23)	Moved to 2.2.20.2.1.1		
2.2.17.4.1.1	Initialization	Moved to 2.2.20.2.1.1.1		
2.2.17.4.1.2	Authorization and Transmission	Moved to 2.2.20.2.1.1.2		
2.2.17.4.1.3	SRS Segment Request Subfield in MC	Moved to 2.2.20.2.1.1.3		
2.2.17.4.1.4	Closeout	Moved to 2.2.20.2.1.1.4		
2.2.17.4.1.5	Information Transfer	Moved to 2.2.20.2.1.1.5		
2.2.17.5	Enhanced Data Link Transponder	Becomes 2.2.21		
2.2.17.5.1	Enhanced Air-Initiated Comm-B Protocol	Moved to 2.2.21.1		
2.2.17.5.1.1	General	Moved to 2.2.21.1.1		
2.2.17.5.1.2	Enhanced Multisite Air-Initiated Comm-B Protocol	Moved to 2.2.21.1.2		
2.2.17.5.1.2.1	Initiation	Moved to 2.2.21.1.2.1		
2.2.17.5.1.2.2	Announcement and Extraction	Moved to 2.2.21.1.2.2		

DO-181C			DO-181D	
Requirements Section	**Section Title**	**Status in DO-181D**	**Requirements Section**	**Section Title**
2.2.17.5.1.2.3	Closeout	Moved to 2.2.21.1.2.3		
2.2.17.5.1.2.4	Announcement of the Next Message Waiting	Moved to 2.2.21.1.2.4		
2.2.17.5.1.3	Enhanced Multisite Directed Comm-B Protocol	Moved to 2.2.21.1.3		
2.2.17.5.1.3.1	Initiation	Moved to 2.2.21.1.3.1		
2.2.17.5.1.3.2	Announcement	Moved to 2.2.21.1.3.2		
2.2.17.5.1.3.3	Closeout	Moved to 2.2.21.1.3.3		
2.2.17.5.1.3.4	Announcement of the Next Message Waiting	Moved to 2.2.21.1.3.4		
2.2.17.5.1.4	Enhanced Broadcast Comm-B Protocol	Moved to 2.2.21.1.4		
2.2.17.5.2	Enhanced Uplink ELM Protocol	Moved to 2.2.21.2		
2.2.17.5.2.1	General	Moved to 2.2.21.2.1		
2.2.17.5.2.2	Reservation Processing	Moved to 2.2.21.2.2		
2.2.17.5.2.3	Enhanced Uplink ELM Delivery and Closeout	Moved to 2.2.21.2.3		
2.2.17.5.3	Enhanced Downlink ELM Protocol	Moved to 2.2.21.3		
2.2.17.5.3.1	General	Moved to 2.2.21.3.1		
2.2.17.5.3.2	Enhanced Multisite Downlink ELM Protocol	Moved to 2.2.21.3.2		
2.2.17.5.3.2.1	Initiation	Moved to 2.2.21.3.2.1		
2.2.17.5.3.2.2	Announcement and Extraction	Moved to 2.2.21.3.2.2		
2.2.17.5.3.2.3	Closeout	Moved to 2.2.21.3.2.3		
2.2.17.5.3.2.4	Announcement of the Next Message Waiting	Moved to 2.2.21.3.2.4		
2.2.17.5.3.3	Enhanced Multisite Directed Downlink ELM Protocol	Moved to 2.2.21.3.3		
2.2.17.5.3.3.1	Initiation	Moved to 2.2.21.3.3.1		
2.2.17.5.3.3.2	Announcement	Moved to 2.2.21.3.3.2		
2.2.17.5.3.3.3	Delivery	Moved to 2.2.21.3.3.3		
2.2.17.5.3.3.4	Closeout	Moved to 2.2.21.3.3.4		
2.2.17.5.3.3.5	Announcement of the Next Message Waiting	Moved to 2.2.21.3.3.5		
2.2.17.5.3.4	Enhanced Non-selective Downlink ELM Protocol	Moved to 2.2.21.3.4		
2.2.17.6	Additional Features	Becomes 2.2.19.3	2.2.19.3	Additional Features
2.2.17.6.1	Diversity	Becomes 2.2.19.3.1	2.2.19.3.1	Diversity
2.2.17.6.2	Mutual Suppression System	Becomes 2.2.19.3.2	2.2.19.3.2	Mutual Suppression System
2.2.18	Antenna	Moved to 2.2.15		
2.2.18.1	Frequency Requirements	Moved to 2.2.15.1		
2.2.18.2	Impedance and VSWR	Moved to 2.2.15.2		
2.2.18.3	Polarization	Moved to 2.2.15.3		
2.2.18.4	Radiation Pattern	Moved to 2.2.15.4		
2.2.19	Power Interruption	Moved to 2.2.16		
2.2.20	TCAS-Compatible Mode S Transponder	Becomes 2.2.22		
2.2.20.1	Message Fields and Protocols	Becomes 2.2.22.1		
2.2.20.1.1	MA Message, Comm-A Used by TCAS	Becomes 2.2.22.1.1		
2.2.20.1.2	MB Message, Comm-B Used by TCAS	Becomes 2.2.22.1.2		
2.2.20.1.2.1	Air-Initiated Downlink of RA Report	Becomes 2.2.22.1.2.1		
2.2.20.1.2.1.1	Air-Initiated Downlink of RA Report for All Transponder/TCAS Systems	Becomes 2.2.22.1.2.1.1		

DO-181C			DO-181D	
Requirements Section	**Section Title**	**Status in DO-181D**	**Requirements Section**	**Section Title**
2.2.20.1.2.1.2	Air-Initiated Downlink of RA Report for FAA TSO-C119A Compatible Systems	Becomes 2.2.22.1.2.1.2		
2.2.20.1.2.1.3	Air-Initiated Downlink of RA Report for RTCA/DO-185A Compatible Systems	Becomes 2.2.22.1.2.1.3		
2.2.20.1.2.2	Data Link Capability Codes in MB	Becomes 2.2.22.1.2.2		
2.2.20.1.2.2.1	Data Link Capability Codes in MB for All Transponder/TCAS Systems	Becomes 2.2.22.1.2.2.1		
2.2.20.1.2.2.2	Data Link Capability Codes in MB for FAA TSO-C119A Compatible Systems	Becomes 2.2.22.1.2.2.2		
2.2.20.1.2.2.3	Data Link Capability Codes in MB for RTCA/DO-185A Compatible Systems	Becomes 2.2.22.1.2.2.3		
2.2.20.1.2.3	Additional MB Message Reserved for RTCA/DO-185A Compatible Systems	Becomes 2.2.22.1.2.3		
2.2.20.1.3	MU Message, Comm-U Used by TCAS	Becomes 2.2.22.1.3		
2.2.20.1.4	MV Message, Comm-V Used by TCAS	Becomes 2.2.22.1.4		
2.2.20.1.4.1	MV Message, Comm-V Used by FAA TSO-C119A Compatible Systems	Becomes 2.2.22.1.4.1		
2.2.20.1.4.2	MV Message, Comm-V Used by RTCA/DO-185A Compatible Systems	Becomes 2.2.22.1.4.2		
2.2.20.1.5	RI Air-to-Air Reply Information	Becomes 2.2.22.1.5		
2.2.20.2	General Requirements of the Mode S Interface to the TCAS Equipment	Becomes 2.2.22.2		
2.2.20.2.1	Delivery of Messages	Becomes 2.2.22.2.1		
2.2.20.2.2	Data Integrity	Becomes 2.2.22.2.2		
2.2.20.2.3	TCAS Failure Data Handling	Becomes 2.2.22.2.3		
2.2.20.2.4	Communication Timing	Becomes 2.2.22.2.4		
2.2.20.3	Data Provided by TCAS Equipment to the Mode S Transponder	Becomes 2.2.22.3		
2.2.20.3.1	Data Contained in the Special Surveillance Replies (DF=0, 16)	Becomes 2.2.22.3.1		
2.2.20.3.2	Data Contained in the Long Special Surveillance Reply (DF=16)	Becomes 2.2.22.3.2		
2.2.20.3.3	Data Contained in Altitude and Identity Surveillance and Comm-B Replies (DF=4, 5, 20, 21)	Becomes 2.2.22.3.3		
2.2.20.3.4	Data Contained in the Altitude and Identity Comm-B Reply (DF=20, 21)	Becomes 2.2.22.3.4		
2.2.20.4	Data Provided by the Mode S Transponder to the TCAS Equipment	Becomes 2.2.22.4		
2.2.20.5	TCAS-Compatible Transponder Automatic Performance Monitoring	Becomes 2.2.22.5		
			2.2.20	Level 3 & Level 4 Transponders – ELM Protocols
			2.2.20.1	Level 3 Uplink ELM
			2.2.20.1.1	Uplink ELM Capability
			2.2.20.1.1.1	Comm-C/ELM Protocol (Figure 2-20 and Figure 2-21)

DO-181C			DO-181D	
Requirements Section	**Section Title**	**Status in DO-181D**	**Requirements Section**	**Section Title**
			2.2.20.1.1.1.1	Initializing Segment Transfer
			2.2.20.1.1.1.2	Intermediate Segment Transfer
			2.2.20.1.1.1.3	Final Segment Transfer
			2.2.20.1.1.1.4	Completed Message
			2.2.20.1.1.1.5	Acknowledgment Reply
			2.2.20.1.1.1.6	TAS Transmission Acknowledgment, Subfield in MD
			2.2.20.1.1.1.7	Closeout
			2.2.20.1.1.1.8	Information Transfer
			2.2.20.1.2	Uplink Interface – Interrogator Identity
			2.2.20.1.3	Multisite Uplink ELM Protocol
			2.2.20.1.3.1	Multisite Comm-C Reservations
			2.2.20.1.3.2	Multisite Comm-C Delivery
			2.2.20.1.3.3	Multisite Comm-C Closeout
			2.2.20.1.3.4	Automatic Comm-C Closeout
			2.2.20.1.3.5	Significance of PC Command
			2.2.20.1.4	Uplink Interface – Data Rate
			2.2.20.2	Level 4 Downlinlk ELM
			2.2.20.2.1	Full ELM Capability (Figure 2-22 and Figure 2-23)
			2.2.20.2.1.1	The Comm-D/ELM Protocol (Figure 2-23)
			2.2.20.2.1.1.1	Initialization
			2.2.20.2.1.1.2	Authorization and Transmission
			2.2.20.2.1.1.3	SRS Segment Request Subfield in MC
			2.2.20.2.1.1.4	Closeout
			2.2.20.2.1.1.5	Information Transfer
			2.2.20.2.2	Downlink Message Cancellation
			2.2.20.2.3	Multisite Downlink ELM Protocol
			2.2.20.2.3.1	Multisite Comm-D Reservation
			2.2.20.2.3.2	Multisite Directed Comm-D Transmissions
			2.2.20.2.3.3	Multisite Comm-D Delivery
			2.2.20.2.3.4	Multisite Comm-D Closeout
			2.2.20.2.3.5	Automatic Comm-D Closeout
			2.2.20.2.3.6	Significance of PC Command
			2.2.20.2.4	Downlink Interface – Data Rate
			2.2.21	Level 5 Transponders – Enhanced Protocols
			2.2.21.1	Enhanced Air-Initiated Comm-B Protocol
			2.2.21.1.1	General
			2.2.21.1.2	Enhanced Multisite Air-Initiated Comm-B Protocol
			2.2.21.1.2.1	Initiation
			2.2.21.1.2.2	Announcement and Extraction
			2.2.21.1.2.3	Closeout
			2.2.21.1.2.4	Announcement of the Next Message Waiting
			2.2.21.1.3	Enhanced Multisite Directed Comm-B Protocol
			2.2.21.1.3.1	Initiation
			2.2.21.1.3.2	Announcement

DO-181C			DO-181D	
Requirements Section	**Section Title**	**Status in DO-181D**	**Requirements Section**	**Section Title**
			2.2.21.1.3.3	Closeout
			2.2.21.1.3.4	Announcement of the Next Message Waiting
			2.2.21.1.4	Enhanced Broadcast Comm-B Protocol
			2.2.21.2	Enhanced Uplink ELM Protocol
			2.2.21.2.1	General
			2.2.21.2.2	Reservation Processing
			2.2.21.2.3	Enhanced Uplink ELM Delivery and Closeout
			2.2.21.3	Enhanced Downlink ELM Protocol
			2.2.21.3.1	General
			2.2.21.3.2	Enhanced Multisite Downlink ELM Protocol
			2.2.21.3.2.1	Initiation
			2.2.21.3.2.2	Announcement and Extraction
			2.2.21.3.2.3	Closeout
			2.2.21.3.2.4	Announcement of the Next Message Waiting
			2.2.21.3.3	Enhanced Multisite Directed Downlink ELM Protocol
			2.2.21.3.3.1	Initiation
			2.2.21.3.3.2	Announcement
			2.2.21.3.3.3	Delivery
			2.2.21.3.3.4	Closeout
			2.2.21.3.3.5	Announcement of the Next Message Waiting
			2.2.21.3.4	Enhanced Non-selective Downlink ELM Protocol
			2.2.22	TCAS-Compatible Mode S Transponder
			2.2.22.1	Message Fields and Protocols
			2.2.22.1.1	MA Message, Comm-A Used by TCAS
			2.2.22.1.2	MB Message, Comm-B Used by TCAS
			2.2.22.1.2.1	Air-Initiated Downlink of RA Report
			2.2.22.1.2.1.1	Air-Initiated Downlink of RA Report for All Transponder/TCAS Systems
			2.2.22.1.2.1.2	Air-Initiated Downlink of RA Report for FAA TSO-C119A Compatible Systems
			2.2.22.1.2.1.3	Air-Initiated Downlink of RA Report for RTCA/DO-185A Compatible Systems
			2.2.22.1.2.2	Data Link Capability Codes in MB
			2.2.22.1.2.2.1	Data Link Capability Codes in MB for All Transponder/TCAS Systems
			2.2.22.1.2.2.2	Data Link Capability Codes in MB for FAA TSO-C119A Compatible Systems
			2.2.22.1.2.2.3	Data Link Capability Codes in MB for RTCA/DO-185A Compatible Systems
			2.2.22.1.2.2.4	Data Link Capability Codes in MB for RTCA/DO-185B Compatible Systems
			2.2.22.1.2.3	Additional MB Message Reserved for RTCA/DO-185A/B Compatible Systems
			2.2.22.1.3	MU Message, Comm-U Used by TCAS
			2.2.22.1.4	MV Message, Comm-V Used by TCAS

DO-181C			DO-181D	
Requirements Section	**Section Title**	**Status in DO-181D**	**Requirements Section**	**Section Title**
			2.2.22.1.4.1	MV Message, Comm-V Used by FAA TSO-C119A Compatible Systems
			2.2.22.1.4.2	MV Message, Comm-V Used by RTCA/DO-185A Compatible Systems
			2.2.22.1.5	RI Air-to-Air Reply Information
			2.2.22.2	General Requirements of the Mode S Interface to the TCAS Equipment
			2.2.22.2.1	Delivery of Messages
			2.2.22.2.2	Data Integrity
			2.2.22.2.3	TCAS Failure Data Handling
			2.2.22.2.4	Communication Timing
			2.2.22.3	Data Provided by TCAS Equipment to the Mode S Transponder
			2.2.22.3.1	Data Contained in the Special Surveillance Replies (DF=0, 16)
			2.2.22.3.2	Data Contained in the Long Special Surveillance Reply (DF=16)
			2.2.22.3.3	Data Contained in Altitude and Identity Surveillance and Comm-B Replies (DF=4, 5, 20, 21)
			2.2.22.3.4	Data Contained in the Altitude and Identity Comm-B Reply (DF=20, 21)
			2.2.22.4	Data Provided by the Mode S Transponder to the TCAS Equipment
			2.2.22.5	TCAS-Compatible Transponder Automatic Performance Monitoring
			2.2.23	Extended Squitter (ES)
			2.2.23.1	ADS-B Extended Squitter
			2.2.23.1.1	Extended Squitter Format
			2.2.23.1.2	Extended Squitter Types
			2.2.23.1.3	Extended Squitter Rate
			2.2.23.1.4	Transponder Support for Extended Squitter Registers
			2.2.23.1.4.1	Data Insertion
			2.2.23.1.4.2	Register Timeout
			2.2.23.1.5	Airborne/Surface Format Selection
			2.2.23.1.5.1	Automatic Format Selection
			2.2.23.1.5.2	Ground Controlled Format Selection
			2.2.23.1.6	Surface Squitter Rate Control
			2.2.23.1.7	Subfields in SD for Extended Squitter
			2.2.23.1.8	Subfields in ME for Extended Squitter
			2.2.23.1.9	Subfields in MB for Extended Squitter
			2.2.23.2	Event Driven Squitter
			2.2.23.3	Extended Squitter Military Application and Formats
			2.2.23.4	Extended Squitter Maximum Transmission Rate
			2.2.24	Elementary Surveillance (ELS) Compliant Transponder
			2.2.25	Enhanced Surveillance (EHS) Compliant Transponder
2.3	Equipment Performance – Environmental Conditions	Title unchanged ▼		
2.3.1	Environmental Test Conditions			

DO-181C			DO-181D	
Requirements Section	**Section Title**	**Status in DO-181D**	**Requirements Section**	**Section Title**
2.3.2	Detailed Environmental Test Procedures			
2.3.2.1	Receiver Characteristics (§2.2.2)			
2.3.2.2	Transmitter Characteristics (§2.2.3)			
2.3.2.2.1	Reply Transmission Frequency (§2.2.3.1)			
2.3.2.2.2	RF Peak Power Output (§2.2.3.2)			
2.3.2.2.3	Reply Rate Capability			
2.3.2.3	Reply Pulse Characteristics (§2.2.4)			
2.3.2.3.1	ATCRBS Reply Pulse Characteristics (§2.2.4.1)			
2.3.2.3.2	Mode S Replies (§2.2.4.2)			
2.3.2.4	Side Lobe Suppression (§2.2.5)			
2.3.2.5	Pulse Decoder Characteristics (§2.2.6)			
2.3.2.6	Transponder Recovery and Desensitization (§2.2.7)			
2.3.2.7	Standard Interference Pulse (§2.2.8.2) and Mode S SLS (§2.2.5.2)			
2.3.2.8	Undesired Replies (§2.2.9)			
2.3.2.9	Self-Test and Monitors (§2.2.10)			
2.3.2.10	Diversity Operation (§2.2.12)			
2.3.2.11	Data Handling and Interfaces (§2.2.13)			
2.3.2.11.1	Fixed Direct Data (§2.2.13.1.1)			
2.3.2.11.2	Variable Direct Data (§2.2.13.1.2)			
2.3.2.11.3	Standard Transaction Interfaces (§2.2.13.3)			
2.3.2.11.4	ELM Service Interfaces (§2.2.13.4)			
2.3.2.11.5	Interface Integrity Tests (§2.2.13.2.2)			
2.3.2.12	Restoration of Power (§2.2.19)	Title unchanged ▲		
			2.3.2.13	Acquisition Squitter (§2.2.12.5.1 and §2.2.18.2.6)
			2.3.2.14	Extended Squitter (§2.2.12.5.2 and §2.2.23)
2.4	Equipment Test Procedures	Title unchanged ▼		
2.4.1	Definitions of Terms and Conditions of Test			
2.4.2	Detailed Test Procedures			
2.4.2.1	Receiver Characteristics (§2.2.2)			
2.4.2.2	Transmitter Characteristics (§2.2.3)			
2.4.2.2.1	Reply Transmission Frequency (§2.2.3.1)			
2.4.2.2.2	RF Peak Power Output (§2.2.3.2)			
2.4.2.2.3	Unwanted Power Output (§2.2.3.3 and §2.2.20.f)			
2.4.2.2.4	Reply Rate Capability			
2.4.2.2.5	ATCRBS Reply Rate Limiting (§2.2.7.3.1)			
2.4.2.3	Reply Pulse Characteristics			
2.4.2.3.1	ATCRBS Reply Pulse Characteristics (§2.2.4.1)			
2.4.2.3.2	ATCRBS Reply Delay and Jitter (§2.2.4.1.6)			
2.4.2.3.3	Mode S Replies (§2.2.4.2)			
2.4.2.3.4	Frequency Spectrum of Mode S Replies (§2.2.4.2.3.d)			
2.4.2.4	Side Lobe Suppression (§2.2.5 and §2.2.8.5)			
2.4.2.5	Pulse Decoder Characteristics (§2.2.6)			

DO-181C			DO-181D	
Requirements Section	**Section Title**	**Status in DO-181D**	**Requirements Section**	**Section Title**
2.4.2.6	Transponder Desensitization and Recovery (§2.2.7)			
2.4.2.7	Response to Interference (§2.2.8)			
2.4.2.8	Undesired Replies (§2.2.9)			
2.4.2.9	Self-Test and Monitors (§2.2.10)			
2.4.2.9.1	Squitter Monitor (§2.2.10.2)			
2.4.2.9.2	Failure Annunciator (§2.2.10.4)			
2.4.2.10	Interference Suppression Pulse Response (§2.2.11)			
2.4.2.11	Diversity Operation (§2.2.12 and §2.2.20.d)			
2.4.2.12	Data Handling and Interfaces (§2.2.13)			
2.4.2.12.1	Fixed Direct Data (§2.2.13.1.1)			
2.4.2.12.2	Variable Direct Data (§2.2.13.1.2)			
2.4.2.12.3	Standard Transaction Interfaces (§2.2.13.3)			
2.4.2.12.4	ELM Service Interfaces (§2.2.13.4.1 and §2.2.13.4.3)			
2.4.2.12.5	Interface Integrity Testing (§2.2.13.2.2)			
2.4.2.12.6	Comm-B Downlink Interface, Message Cancellation (§2.2.13.5)			
2.4.2.12.7	Downlink ELM Interface, Message Cancellation (§2.2.13.5)	Title unchanged ▲		
			2.4.2.13	Acquisition Squitters (§2.2.12.5.1 and §2.2.18.2.6)
			2.4.2.14	Extended Squitters (§2.2.12.5.2 and §2.2.23)
2.5	Test Procedures for the Surveillance and Communications Protocols	Title unchanged ▼		
2.5.1	Introduction			
2.5.2	Required Test Equipment			
2.5.2.1	Automatic Test Controller			
2.5.2.2	Signal Generator			
2.5.2.3	Reply Receiver			
2.5.2.4	Interface Adapter			
2.5.3	Selection and Use of the Test Procedures			
2.5.4	Test Procedures			
2.5.4.1	Procedure #1 Error Protection			
2.5.4.2	Procedure #2 Interrogation Acceptance Test			
2.5.4.3	Procedure #3 CA Verification			
2.5.4.4	Procedure #4 Non-Selective Lockout Tests			
2.5.4.4.1	Positive Tests			
2.5.4.4.2	Required Negative Tests			
2.5.4.5	Procedure #5 Selective Lockout Tests			
2.5.4.6	Procedure #6 Squitter Verification			
2.5.4.6.1	Acquisition Squitter Verification			
2.5.4.6.2	Extended Squitter Verification			
2.5.4.6.2.1	Extended Squitter Rate Verification			
2.5.4.6.2.2	Extended Squitter Protocol Verification			
2.5.4.6.3	Squitter Control Verification			

DO-181C			DO-181D	
Requirements Section	**Section Title**	**Status in DO-181D**	**Requirements Section**	**Section Title**
2.5.4.7	Procedure #7 FS and VS Protocol/Code Tests			
2.5.4.8	Procedure #8 PI (Parity/Identity) Verification			
2.5.4.9	Procedure #9 Address Tests			
2.5.4.10	Procedure #10 Altitude Report Tests			
2.5.4.11	Procedure #11 4096 Code Tests			
2.5.4.12	Procedure #12 RI, Acquisition and Maximum Airspeed			
2.5.4.13	Procedure #13 PR, Probability of Reply, Stochastic Acquisition			
2.5.4.14	Procedure #14 MU for the Basic-Option Transponder			
2.5.4.15	Procedure #15 Comm-A, Interface and Information Content			
2.5.4.16	Procedure #16 Broadcast Formats			
2.5.4.17	Procedure #17 Downlink Interface, DFs 0, 16			
2.5.4.18	Procedure #18 Comm-B Protocol			
2.5.4.19	Procedure #19 AIS Flight Identification, Protocol and Interface			
2.5.4.20	Procedure #20 Extended Capability Report			
2.5.4.21	Procedure #21 Directed Comm-B			
2.5.4.22	Procedure #22 Downlink Interface, Storage Design, Buffer Rate			
2.5.4.23	Procedure #23 Downlink Interface, No-Storage Design			
2.5.4.24	Procedure #24 Comm-C Protocol			
2.5.4.25	Procedure #25 Uplink Interface, ELM-C			
2.5.4.26	Procedure #26 Comm-D Protocol			
2.5.4.27	Procedure #27 Directed Comm-D			
2.5.4.28	Procedure #28 Comm-D Interface, Rate and Content			
2.5.4.29	Not Used			
2.5.4.30	Procedure #30 Sensitivity Level Operation (§2.2.20.1.1 and §2.2.20.1.5)			
2.5.4.31	Procedure #31 Transmission of RA Report to Mode S Sensor (§2.2.20.h and §2.2.20.1.2.1)			
2.5.4.31.1	Procedure #31 Transmission of RA Report for a Transponder Operating with an FAA TSO-C119A Compatible TCAS (§2.2.20.h, §2.2.20.1.2.1, §2.2.20.1.2.1.1, and §2.2.20.1.2.1.2)	Title unchanged ▲		
2.5.4.31.2	Procedure #31 Transmission of RA Report for a Transponder Operating with an RTCA/DO-185A Compatible TCAS (§2.2.20.h, §2.2.20.1.2.1, §2.2.20.1.2.1.1, and §2.2.20.1.2.1.3)	Renamed	2.5.4.31.2	Procedure #31 Transmission of RA Report for a Transponder Operating with an RTCA/DO-185A/B Compatible TCAS (§2.2.20.h, §2.2.20.1.2.1, §2.2.20.1.2.1.1, and §2.2.20.1.2.1.3)

DO-181C			DO-181D	
Requirements Section	**Section Title**	**Status in DO-181D**	**Requirements Section**	**Section Title**
2.5.4.32	Procedure #32 Transmission of TCAS Capability Information to a Mode S Sensor (§2.2.20.h and §2.2.20.1.2.2) and to other TCAS Aircraft (§2.2.20.1.5)	Title unchanged ▼		
2.5.4.32.1	Procedure #32 Transmission of TCAS Capability Information to a Mode S Sensor (§2.2.20.h, §2.2.20.1.2.2, §2.2.20.1.2.2.1, and §2.2.20.1.2.2.2) and to other TCAS Aircraft (§2.2.20.1.5) for a Transponder Operating with an FAA TSO-C119A Compatible TCAS			
2.5.4.32.2	Procedure #32 Transmission of TCAS Capability Information to a Mode S Sensor (§2.2.20.h, §2.2.20.1.2.2, §2.2.20.1.2.2.1, and §2.2.20.1.2.2.3) and to other TCAS Aircraft (§2.2.20.1.5) for a Transponder Operating with an RTCA/DO-185A Compatible TCAS	Title unchanged ▲		
			2.5.4.32.3	Procedure #32 Transmission of TCAS Capability Information to a Mode S Sensor (§2.2.20.h, §2.2.20.1.2.2, §2.2.20.1.2.2.1, and §2.2.20.1.2.2.3) and to other TCAS Aircraft (§2.2.20.1.5) for a Transponder Operating with an RTCA/DO-185B Compatible TCAS
2.5.4.33	Procedure #33 TCAS or transponder/TCAS Interface Failure During Transmission of RA Report and Data Link Capability Report to a Mode S Sensor (§2.2.20.1.2.1.3 and §2.2.20.1.2.2.3)	Title unchanged ▼		
2.5.4.34	Procedure #34 Coordination (§2.2.20.1.3 and §2.2.20.1.4)			
2.5.4.34.1	Procedure #34 Coordination (§2.2.20.1.3 and §2.2.20.1.4.1) for a Transponder Operating with an FAA TSO-C119A Compatible TCAS			
2.5.4.34.2	Procedure #34 Coordination (§2.2.20.1.3 and §2.2.20.1.4.2) for a Transponder Operating with an RTCA/DO-185A Compatible TCAS			
2.5.4.35	Procedure #35 MU Messages To TCAS (§2.2.20.1.3)			
2.5.4.36	Procedure #36 Transponder Replies to Incoming TCAS Resolution Messages (§2.2.20.2.1)			
2.5.4.37	Procedure #37 Transponder/TCAS Throughput (§2.2.20 b and g)			
2.5.4.38	Procedure #38 Transponder Communication Timing (§2.2.20.2.4)			
2.5.4.39	Procedure #39 TCAS Crosslink (§2.2.14.4.33, §2.2.14.4.34, and §2.2.16.2.10)	Title unchanged ▲		
			2.6	Test Procedures for Elementary Surveillance (ELS) Compliant Transponders (§2.2.24)

DO-181C			DO-181D	
Requirements Section	**Section Title**	**Status in DO-181D**	**Requirements Section**	**Section Title**
			2.7	Test Procedures for Enhanced Surveillance (EHS) Compliant Transponders (§2.2.25)
			2.8	Generic Register XX Test Procedures (§2.2.26)
3	INSTALLED EQUIPMENT PERFORMANCE	Title unchanged ▼		
3.1	Equipment Installation			
3.1.1	Equipment Accessibility			
3.1.2	Inadvertent Turn Off			
3.1.3	Displays			
3.1.4	Aircraft Power Source			
3.1.5	Transmission Line(s)			
3.1.6	Antenna Location			
3.1.7	Mutual Suppression			
3.2	Conditions of Test			
3.2.1	Power Input			
3.2.2	Interference Effects			
3.2.3	Environment			
3.2.4	Adjustment of Equipment			
3.2.5	Warm-up Period			
3.2.6	Radiation Pattern			
3.3	Test Procedures for Installed Equipment Performance			
3.3.1	Conformity Inspection			
3.3.2	Bench Tests			
3.3.3	Reply Frequency			
3.3.4	Framing Pulse Spacing			
3.3.5	Reply Codes			
3.3.6	Pressure Altitude Transmissions			
3.3.7	Altitude Reporting Test			
3.3.8	Reply Pulse Width			
3.3.9	Receiver Sensitivity			
3.3.10	Transmitter Power Output			
3.3.11	Mode S Address			
3.3.12	Received Reply			
3.3.13	Airspeed Fixed Field			
3.3.14	On-the-Ground Condition			
3.3.15	Diversity Antenna Installations			
3.4	Flight Test Procedures	Title unchanged ▲		
			Appendix A	Acronyms and Definitions of Terms
			Appendix B	Aircraft Register Formats
			Appendix C	Mode S Specific Services (MSSS)
			Appendix D	For the Potential Addition of the Hijack Mode Operations