ENGINEERING SPECIFICATION

SECURITY NOTATION	SPEC NO.	CAGE CODE	REV LTR
	IT4066010-910	55939	D

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TITLE

INTEGRATED TEST SPECIFICATION FOR THE TCAS II CHANGE 7 COMPUTER UNIT, PART NO. 4066010-910

PREPARED BY:	DATE	APPROVED BY TECHNICAL MANAGER	DATE	APPROVED BY ENGINEERING DEPARTMENT MANAGER	DATE
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FOR PAGE INDEX, SEE PAGE CR-2. REVISION RECORD FOLLOWS PAGE INDEX.

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THE LATEST REVISION OF EACH SHEET IS INDICATED ON THE PAGE INDEX.

Page	Rev Ltr	Page	Rev Ltr	Page	Rev Ltr	Page	Rev Ltr	Page	Rev Ltr
Title		31	A	76	A	121	-		
CR-1	D	32	A	77	A	122	-		
Page Index		33	-	78	A	123	-		
		34	-	79	A	124	-		
CR-2	D	35	-	80	-	125	-		
Revision Record		36	-	81	-	126	-		
		37	A	82	-	127	-		
CR-3	D	38	-	83	-	128	-		
		39	A	84	-	129	-		
Table of Contents		40	A	85	-	130	-		
i	-	41	-	86	-	131	-		
		42	A	87	A	132	-		
1	A	43	-	88	A	133	-		
2	-	44	-	89	A	134	-		
3	D	45	-	90	A	135	-		
4	D	46	-	91	-	136	-		
5	-	47	-	92	-	137	-		
6	-	48	-	93	-	138	-		
7	-	49	-	94	-	139	-		
8	-	50	-	95	-	140	-		
9	C	51	-	96	-	141	-		
10	-	52	-	97	-	142	-		
11	-	53	-	98	-	143	-		
12	-	54	A	99	-	144	-		
13	A	55	A	100	-	145	-		
14	-	56	A	101	-	146	-		
15	-	57	A	102	-	147	-		
16	B	58	-	103	-	148	-		
17	A	59	-	104	-	149	-		
18	B	60	-	105	-	150	A		
19	-	61	-	106	-	Appendix A			
20	A	62	-	107	-	A-0	-		
21	-	63	-	108	-	A-1	-		
22	-	64	-	109	-	A-2	C		
23	-	65	A	110	-	A-3	A		
24	A	66	A	111	-	A-4	A		
25	-	67	A	112	-	A-5	A		
26	A	68	A	113	-				
27	-	69	-	114	-	TOTAL PAGES: 160			
28	-	70	-	115	-				
29	-	71	-	116	-				
30	-	72	-	117	-				
		73	-	118	-				
		74	-	119	-				
		75	-	120	-				

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		CAGE CODE 55939	

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REV LTR	PAGE	DESCRIPTION	DATE AND APPROVAL
A	SEE PAGE INDEX SHEET CR-2	C.O. 26299 (NA)	L. Keefer 11 July 00
B	SEE PAGE INDEX SHEET CR-2	C.O. 26219 (NA)	L. Keefer 25 Oct 00
C	SEE PAGE INDEX SHEET CR-2	C.O. 25598 (NA)	L. Keefer 09 Jan 01
D	SEE PAGE INDEX SHEET CR-2	C.O. 25238 (MAKE)	N. Ickes 17 Oct 01

Table of Contents

REV LTR

TITLE: INTEGRATED TEST SPECIFICATION FOR THE TCAS II CHANGE 7 COMPUTER UNIT, PART NO. 4066010-910

1. SCOPE

This Integrated Test Specification (IT) establishes the manufacturing and operational requirements that the TCAS II Change 7 Computer Unit, Part No. 4066010-910, must meet to ensure that the unit is in proper operating condition.

2. REFERENCE DOCUMENTS

These documents are not required for performance of the test procedure. The purpose of listing these documents is to provide an aid for troubleshooting should any discrepancies occur during the performance of the test procedure.

	EB7517973	Top Level Requirements Specification for the TCAS II Change 7
	MT4066010-910	Manufacturing Test Specification for the TCAS II Change 7 Computer Unit, Part No. 4066010-910
	IT4066010-910	Integrated Test Specification for the TCAS Computer Unit,Part No. 4066010-910
	T336255	TCAS 2000 MTS
	4066010-910	End Item Drawing – TCAS II Change 7 Computer Unit
	4066009	Outline and Installation Drawing
	64980-90912	HP6400 System Overview Reference
	64980-90928	HP64000 System Software Reference
A	4066017-905	A2 CAS/SURV CPU Components CCA Drawing
	4066019-xxxx	A3 SURV Components CCA Drawing
	4066021-9xx	A1 Power Supply Components CCA Drawing
	7514218-9xx	A6 Transmitter Components CCA Drawing
	7514217-9xx	A7 Receiver Components Receiver Drawing
	7514216-9xx	A4 I/O Components CCA Drawing
	41-5310-00	SDP-185 High Performance 16-Bit CMOS Microprocessor Chip
	4061754-400	Specification Control Drawing, SDP-185 Processor Chip

3. GENERAL INFORMATION

3.1 General Requirements

3.1.1 All tests shall be performed under the following conditions:

Temperature = 25 ± 5 °C

Relative humidity = 95% maximum

Pressure = between 20 and 32 inHg

3.1.2 Power to the UUT should be removed before attaching or removing any interconnecting systems.

3.1.3 Perform calibration procedure in Appendix B before testing unit.

3.2 General RF Test Requirements

3.2.1 All antenna ports must be terminated in 50 ohms while power is applied to the UUT.

3.2.2 Test equipment connected to the antenna ports must have a voltage standing wave ratio (VSWR) of less than 1.5:1.

3.2.3 Test equipment connected to the antenna ports shall withstand peak power levels of at least 1000 W and average power levels of at least 2 W.

3.2.4 RF power values are specified as measured at the rear connector of the UUT. If cabling or test equipment introduces losses into the measurement, these losses shall be allowed for in the values reported by the test equipment.

3.2.5 Figures 2 through 6 provide information about pulse identification and the method of measuring pulse parameters for the RF measurements. The actual specification values for these parameters are listed in the RF test procedure tables.

REV LTR

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4. POWER REQUIREMENTS

115 V ac, 400 ± 10 Hz, 200 W minimum, voltage variable from 90 to 140 V ac.

A

5. TEST EQUIPMENT

5.1 Honeywell Test Equipment

A TCAS 2000 MTS - Part No. T336255 MOD A (This is equivalent to JCAir P/N 01-0956-00 MOD 1. Only one of these is required)

A
- Aircraft interface unit - Part No. T336253 MOD A (see figure 7)
- RF interface unit - Part No. T336254 (see figure 8)

A
- PDL panel - Part No. T336259 MOD A
- Tray assembly - Part No. T336255-26

A TCAS PC Test Software - Part No. M4066010-910

- Identified equipment is included in TCAS 2000 MTS, P/N T336255 MOD A

5.2 Commercial Test Equipment

D Oscilloscope - TDS420 or equivalent

A JCAir 01-0956-00 MOD 1 TCAS 2000 MTS (This is equivalent to Honeywell P/N T336255 MOD A. Only one of these is required.)

A
- HP 8648B signal generator
- HP 8990A peak power analyzer
- HP 84815A peak power sensor
- HP 6032A DC power supply
- Cal Instruments AC power supply 2001L
- Personal Computer requirements or equivalent:
  - Intel Pentium 200 based system
  - Desk top case
  - 32 megabytes of memory
  - IEEE488 card, National Instruments P/N AT-GPIB/TNT
  - ARINC 429 card, Pacific Aviation Corp. P/N PAC-42C-2X4/H-I
  - with option PAC-429-S-NTIDLL
  - Hard drive EIDE, Western Digital P/N AC22100AB

D

- 3.5” floppy drive
- 8X CD ROM IDE
- Microsoft Windows NT 4.0/3.51 (Software operation system)
- 1 parallel, 2 serial ports
- Keyboard
- Microsoft 2 button PS2 mouse

- IEEE-488 interface cables - HP Part No. 10833A (seven required)

A

Identified equipment is included in TCAS 2000 MTS, JCAir P/N 01-0956-00 MOD 1).

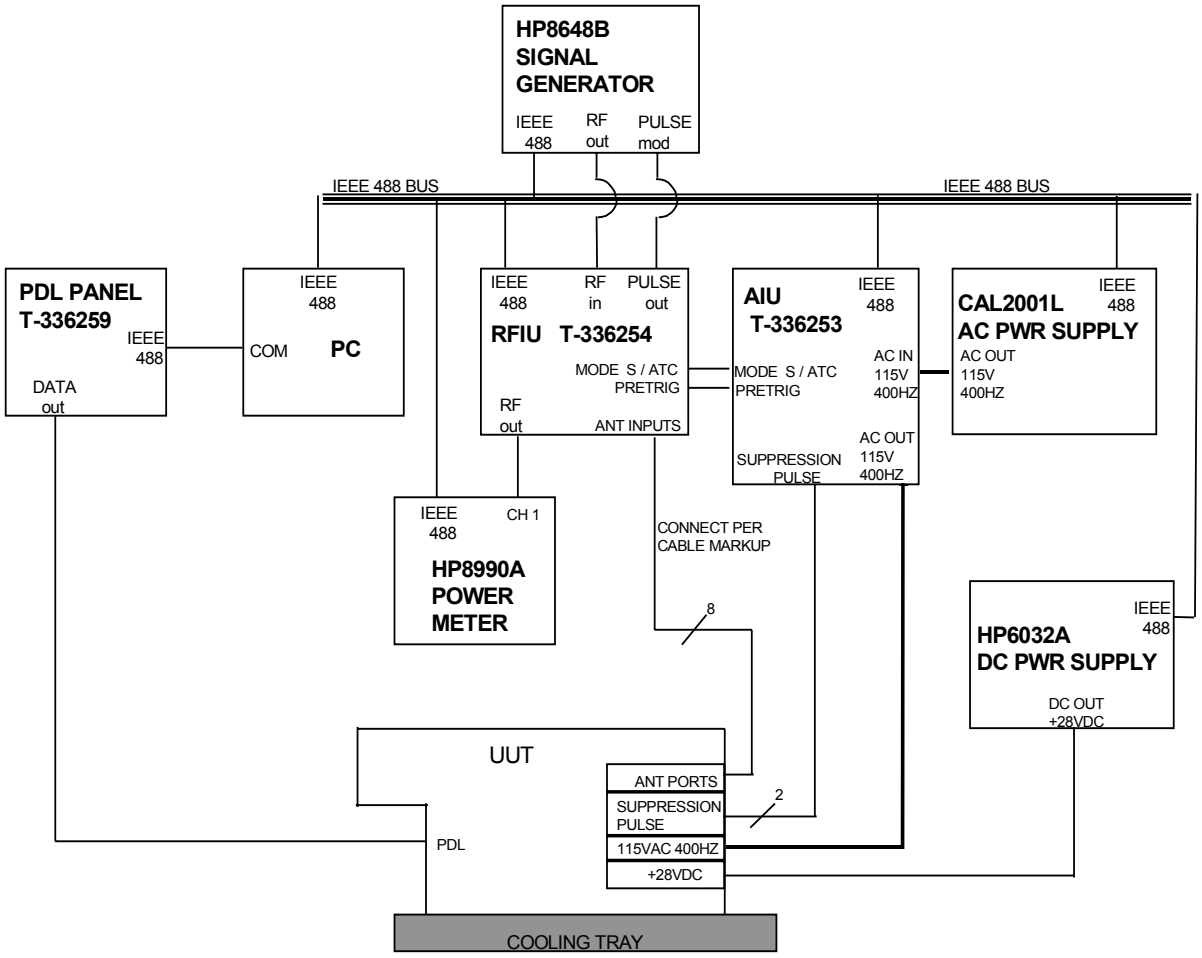

Figure 1. MTS Test Equipment Setup

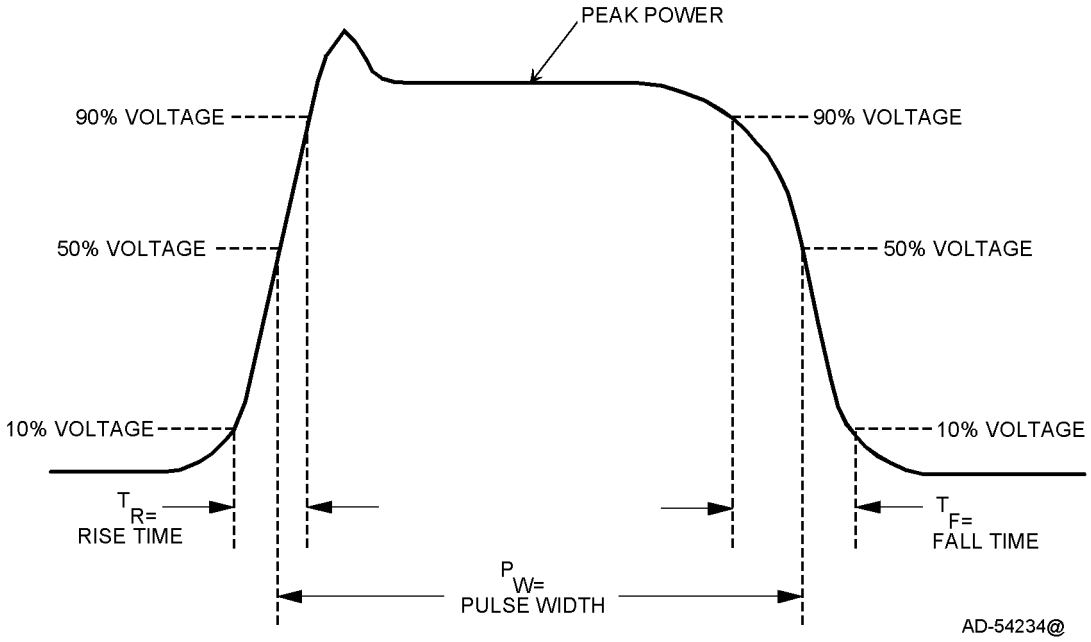

Figure 2. Basic Pulse Measurements

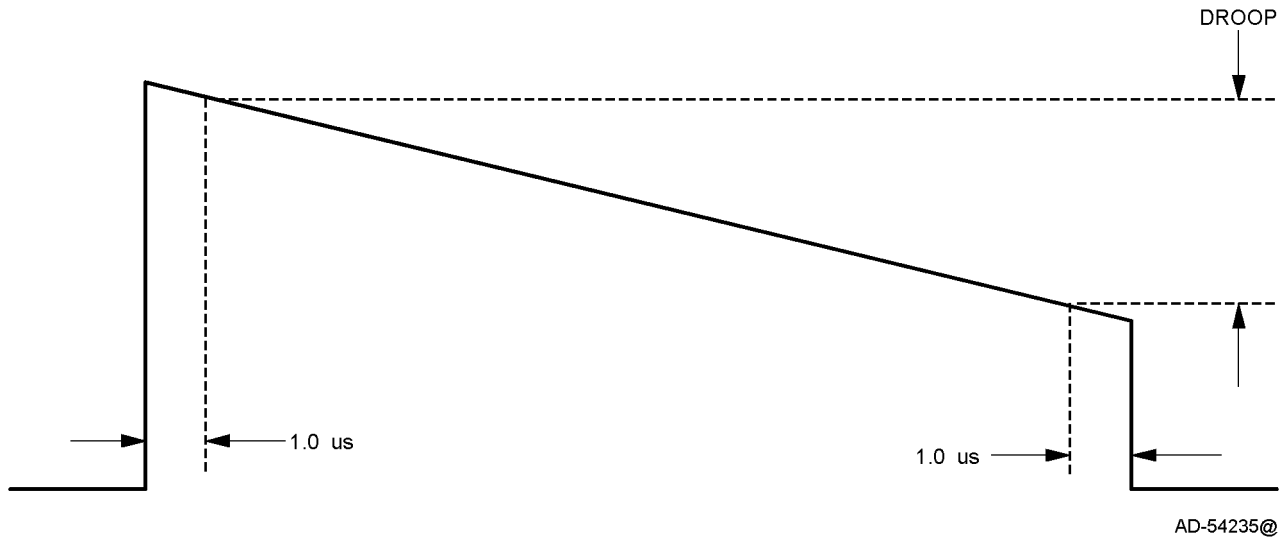

Figure 3. Pulse Droop Measurements

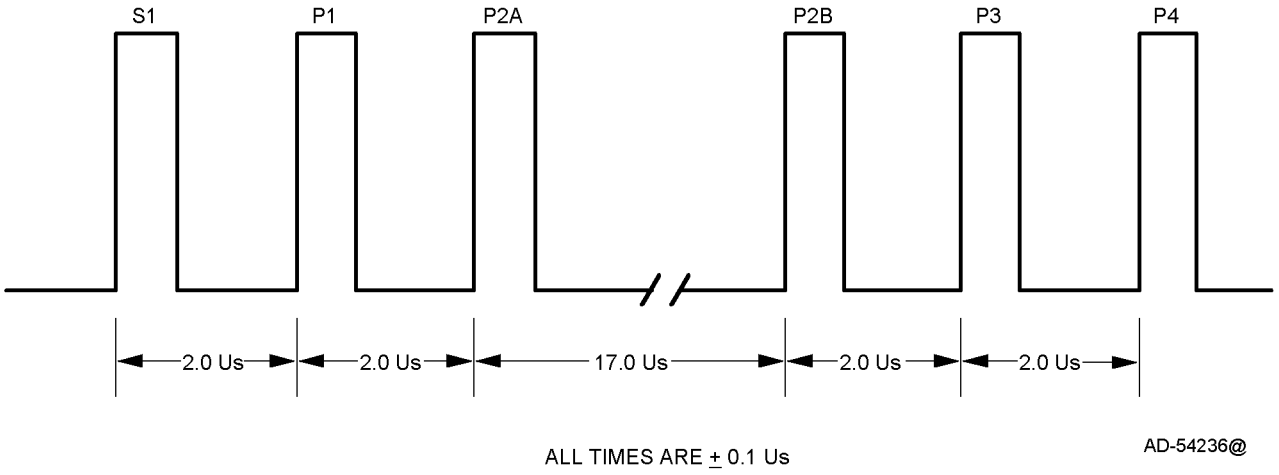

Figure 4. ATCRBS Pulse Format

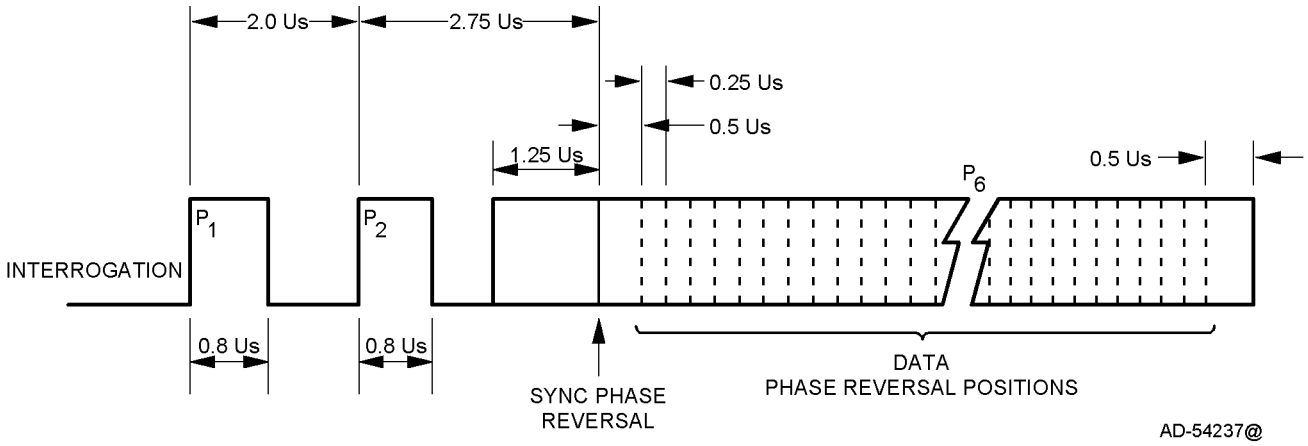

Figure 5. Mode S Pulse Format

Bit
1514131211109 8 7 6 5 4 3 2 1 0
| Z | N | S |<-------- PD --------->|<--------- CV ---------->|

NOTES:

Z = 1 Power at 0 degree port > Power at 180 degree port
Z = 0 Power at 0 degree port < Power at 180 degree port

N = 1 Power at 90 degree port > Power at 270 degree port
N = 0 Power at 90 degree port < Power at 270 degree port

S = 1 Power at 0 or 180 degree port < Power at 90 or 270 degree port
S = 0 Power at 0 or 180 degree port > Power at 90 or 270 degree port

PD = Power Difference in dB, 00 =0.000 dB
3F = 18.207 dB

Multiply the PD (Power Difference in dB) by -1 if:

Z = 1 and N = 1 and S = 1
or Z = 0 and N = 1 and S = 0
or Z = 0 and N = 0 and S = 1
or Z = 1 and N = 0 and S = 0

C CV = Composite Video (Overall Power Level) in dBm, 00 = -95.3790 dBm
C 7F = -21.9984 dBm

Figure 6. AOA Word Format

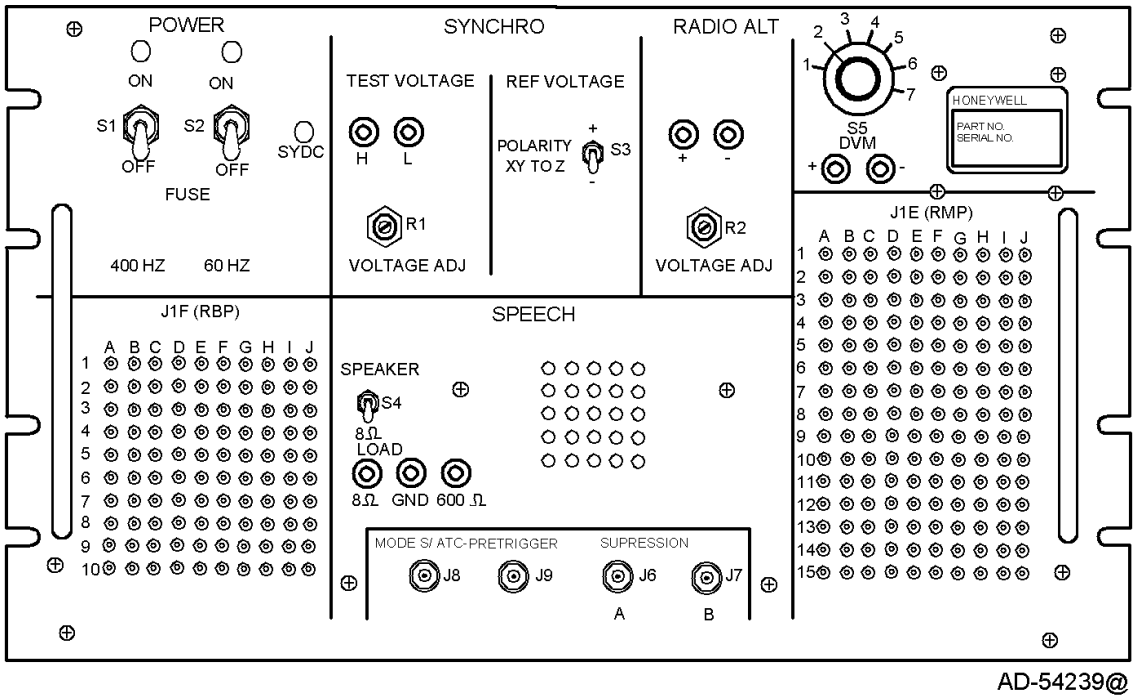

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Figure 7. Aircraft Interface Unit

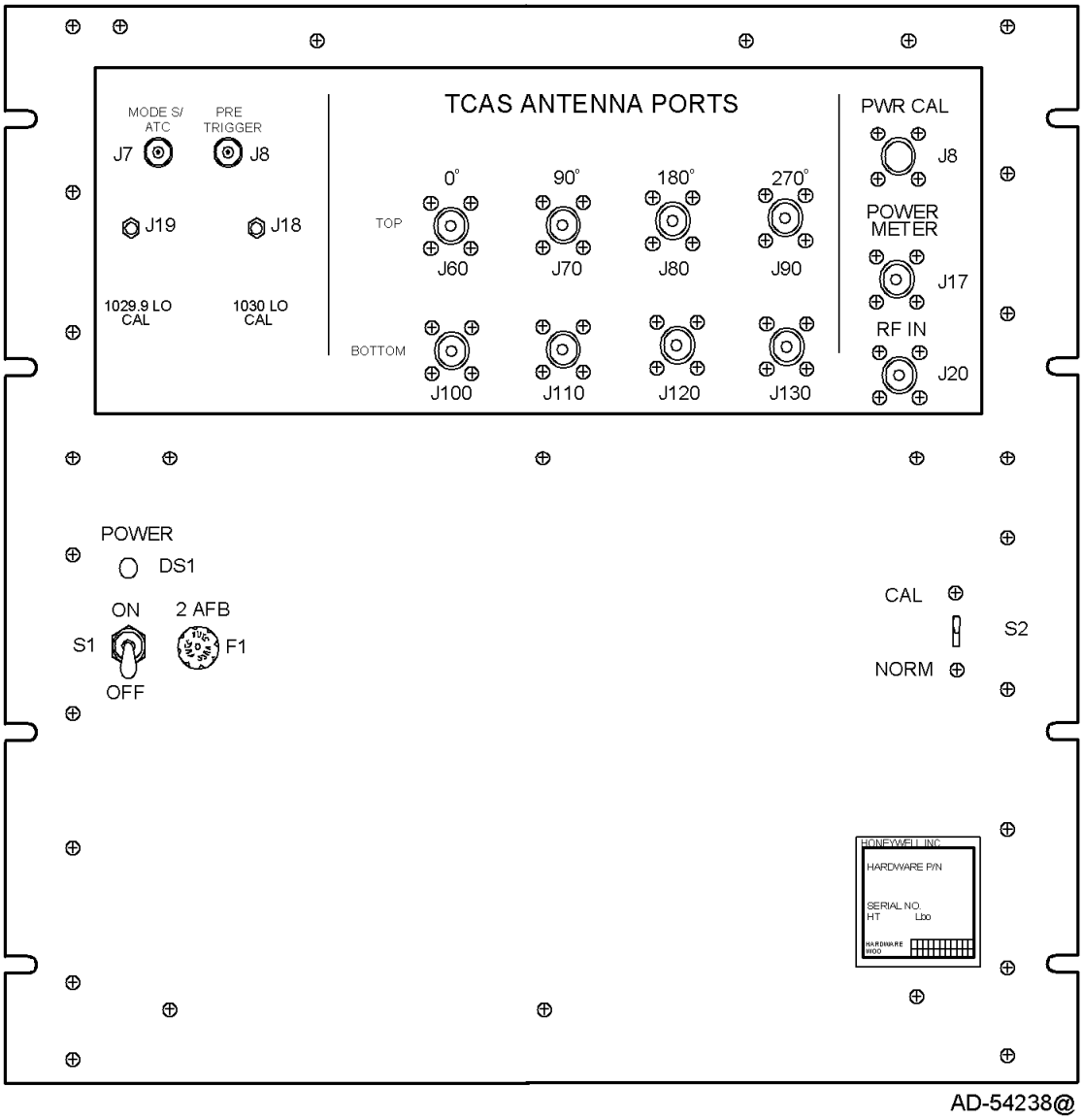

Figure 8. RF Interface Unit

6. TEST SETUP

6.1 Power up Honeywell and commercial test equipment and allow it to warm up appropriately. Verify that test equipment used is calibrated and functioning properly.

6.2 Connect the test equipment to the UUT (see figure 1). Set IEEE-488 addresses as follows (in Hex):

Aircraft interface unit:	16
RF interface unit:	25
HP 8648B signal generator:	19
Cal Instruments AC power supply 2001L	01
HP 8990A peak power analyzer:	07
HP 6032A DC power supply	05

7. TEST REQUIREMENTS

7.1 Within each section of the test procedure (indicated by an underlined title in the Test Description and Work Steps columns), the test steps shall be performed in the order listed. In the event of failure and repair, the section must be performed again from the beginning. It is allowable for the sections requiring user interaction to be grouped together and run in a different order than that specified.

7.2 All control settings or external connections that are altered during the course of a section of the procedure shall be returned to their initial settings before starting a new section of the procedure.

7.3 This procedure is intended to be performed by a knowledgeable technician or engineer. It is assumed that the equipment will be energized and deenergized as appropriate when changing connections and setups.

7.4 For the end item dash number (4066010-910) and minimum hardware mod level, the corresponding CAS PDL part number, SURV PDL part number and FPGA truth table part number are shown in Table 7-1.

Table 7-1. CAS PDL, SURV PDL and FPGA Part Numbers

Dash No.	Minimum Hardware Mod	CAS PDL Part Number	SURV PDL Part Number	FPGA TT Part Number
910	J	PS4084562-102	PS4084562-102	TT7517989-121

A

A 7.5 For the end item dash number (4066010-910) and software mod level, the corresponding operational software part number is shown in the column labeled “Displayed P/N” of Table 1 of drawing 4066010-910.

A

7.6 The following is a description of the intended interpretation of the column headings:

Column	Description
Rev Ltr	Revision letters are used to identify revised material.
Test No.	Tests are numbered in sequence.
Opr Limits	Unit under test (UUT) shall meet these limits when tested at other than the manufacturing facility. When an item is marked OPTIONAL, the corresponding test is not required except as an aid in troubleshooting.
Test Description	These items are the parameters to which the UUT was designed and aid in troubleshooting by specifying the input and output signal terminals. All conditions required are not repeated for each test, and conditions established in previous tests also apply.
Switch Pos	Positions to which switches must be set are listed in required order and are grouped to correspond to applicable Work Steps.
Work Steps	This column defines the operations necessary to perform a test and achieve a result. Set switches to designated positions before performing corresponding work step.
Mfg Limits	UUT shall meet these limits at final buyoff before customer delivery.

7.7 Naming Convention for Integrated Test Specification works steps:

Equipment	Reference Name	Descriptions
T336253 Aircraft Interface Unit	AIU	Precedes instructions sent via the IEEE 488 to the AIU as specified
T336254 Radio Frequency Interface Unit	RFIU	Precedes instructions sent via the IEEE 488 to the AIU as specified
T336259 Program Data Link Unit	PDL	Precedes instructions to use inputs/outputs on the Program Data Loader panel
T336255 Manual Test Station	MTS	Precedes instructions to make measurements or manual changes on the Station.
Personal Computer Keyboard	PC	Precedes instructions to use the personal computer keyboard input.
Personal Computer Monitor	CRT	Precedes instructions to view a value on the personal computer video screen or evaluate a return from the UUT.
Unit Under Test	UUT1	Precedes instructions sent to the Unit Under Test via RS-422. The instruction notation is defined in EB7517909
Unit Under Test	UUT2	Precedes instructions sent to the Unit Under Test via ARINC-429
+28 VDC Power Supply	PSDC	Precedes instructions sent to DC power supply via IEEE 488 Bus.
115 VAC 400 Hz Supply	PSAC	Precedes instructions sent to AC power supply via IEEE 488 Bus.

7.8 The TCAS 1500/2000 Computer Unit shall be tested using product test software as specified in EB7517987.

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	1.0			AC/DC POWER SUPPLY TEST	Initial Setup: Per Figure 1.		AC/DC POWER SUPPLY TEST	
							MTS: Insert UUT into mount.	
				Apply 115 ± 5 V ac power to unit.			**PSAC:** Adjust to 115 ± 5 V AC 3 AMPS.	
				P1C-1 115 V AC(H)				
				P1C-7 115 V AC(C)				
B	1.1	0.35 to 1.15 Amps (RMS)		With the voltage applied and the unit not transmitting the current draw shall be as specified.			**PSAC:** The amp meter shall be as specified.	0.35 to 1.15 Amps (RMS)
							WARNING - LETHAL VOLTAGES ARE PRESENT ON THESE PINS	
	1.2	107 to 123 V ac		Verify that 115 V ac is present on the ARINC 615 PDL Connector pins.			**PDL:** Connect an AC DVM to TP1 (H) and TP2 (L). The voltmeter shall read as specified.	107 to 123 V ac
				P2-20 115 V AC(H)				
				P2-22 115 V AC(C)				
	1.3	C1234NC S1234NC		Verify that the unit initializes as a cold start with no errors.			**CRT:** Shall return the following data.	C1234NC S1234NC

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	3.0			FRONT PANEL TEST			FRONT PANEL TEST	
	3.1	PASS		Verify that the LEDs are turned on and off according to the following repetitive sequence, approximately 1 second per item: 1. All LEDs on. 2. Only TCAS PASS on. 3. Only TCAS FAIL on. 4. Only TOP ANT on. 5. Only BOT ANT on. 6. Only HDG on. 7. Only TA DISP on. 8. Only RA DISP on. 9. Only RAD ALT on. 10. Only XPDR BUS on. 11. Only ATT on. 12. All LEDs off.			Verify that the LEDs are turned on and off according to the following repetitive sequence, approximately 1 second per item: 1. All LEDs on. 2. Only TCAS PASS on. 3. Only TCAS FAIL on. 4. Only TOP ANT on. 5. Only BOT ANT on. 6. Only HDG on. 7. Only TA DISP on. 8. Only RA DISP on. 9. Only RAD ALT on. 10. Only XPDR BUS on. 11. Only ATT on. 12. All LEDs off.	PASS
A	3.2	0000		With the front panel switch in the normal position, verify IDW0 bit 15 is a 0.	**AIU:** **"**P1X D00ZX" "P3X D00ZX" "P4X D00ZX" **UUT1:** "DIN"		Type on PC: Port 1 Select Send 00 HEX DATA Port 3 Select Send 00 HEX DATA Port 4 Select Send 00 HEX DATA "DIN" **CRT:** The first 4 digit word shall read:	0000
	3.3	8000		With the front panel switch in the depressed position, verify IDW0 bit 15 is a 1.	**UUT1:** "DIN"		**UUT:**Depress & hold the front panel test switch. Release the switch. **CRT:** The first of the 4-digit word shall read:	8000
	3.4	DELETED						
	3.5	DELETED						

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
A	4.0			VOICE OUTPUT	Initial Test Setup **AIU:** "S1:OFF"		VOICE OUTPUT	
B	4.1	13.7 to 18.5 Vpp		Generate a 1 kHz audio tone for 0.5 seconds at the maximum amplitude and verify the 8Ω output has the correct level. J1E-2F VOICE-8(H) J1E-2G VOICE-8(L)	**AIU:** "S4-8 OHMS" **UUT1:** "VOICE 13 F0 FF"		**AIU:** Connect the PPM oscilloscope input port (+) to the AIU 8Ω test point and oscilloscope (-) GND to the AIU GND test point. **PPM:** The voltage shall be as specified.	13.7 to 18.5 Vpp
B	4.2	10.7 to 14.4 Vpp		Generate 1 kHz audio tone with amplitude control DAC set to alternating 1 and 0 patterns and verify the 8Ω output has the correct level.	**UUT1:** "VOICE 13 AA FF"		**PPM:** The voltage shall be as specified.	10.7 to 14.4 Vpp
B	4.3	5.3 to 7.2 Vpp		Generate 1 kHz audio tone with amplitude control DAC set to complementary alternating 1 and 0 patterns and verify the 8Ω output has the correct level.	**UUT1:** "VOICE 13 55 FF"		**PPM:** The voltage shall be as specified.	5.3 to 7.2 Vpp
B	4.4	10.0 to 13.5 Vpp		Generate 1 kHz audio tone with amplitude control DAC set to alternating 1 and 0 patterns and verify the 600Ω output has the correct level.	**UUT1:** "VOICE 13 00 AA"		**PPM:** The voltage shall be as specified.	10.0 to 13.5 Vpp
B	4.5	5.0 to 6.8 vpp		Generate 1 kHz audio tone with amplitude control DAC set to alternating 1 and 0 patterns and verify the 600Ω output has the correct level	**UUT1:** "VOICE 13 00 55"		**PPM:** The voltage shall be as specified.	5.0 to 6.8 vpp

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	4.6	Less than 0.5 Vpp		Generate 1 kHz audio tone with the reset discrete active and verify the 600Ω output has the correct level	**UUT1:** "VOICE 13 00 55 R"		**PPM:** The voltage shall be as specified. **PPM:** Remove oscilloscope leads from speech test points.	Less than 0.5 Vpp
	4.7			Generate voices and verify they are clear and recognizable.	A/C Interface Panel Speaker switch to ON Remove 8 Ohm 10W resistor across 8 Ohm output **UUT1:** "VOICE 100 80 80"		Type on PC: Verify the following voices are output: MALE TCAS Test Pass FEMALE: TCAS Test Pass	Female and Male voices are correct and recognizable

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
A	5.0			PROCESSOR TESTS	Initial Test Setup **AIU:** "S1:OFF"		PROCESSOR TESTS	
	5.1	PASS		Compute the CRC of CAS Flash Program Memory and verify the computed and stored CRC are equal and match the CRC for the specified product test software.	**UUT1:** "MC"		**CRT:** shall read: 00000000 YYYYYYYY where Y is the CAS Flash Program Memory CRC specified in EB7517987.	PASS
	5.2	PASS		Compute the CRC of SURV Flash Program Memory and verify the computed and stored CRC are equal and match the CRC for the specified product test software.	**UUT1:** "MS"		**CRT:** shall read: 00000000 YYYYYYYY where Y is the SURV Flash Program Memory CRC specified in EB7517987.	PASS
	5.3	PASS		Compute the CRC of CAS Flash Audio Memory and verify the computed and stored CRC are equal.	**UUT1:** "MA"		**CRT:** shall read: 00000000 XXXXXXXX where X is a don't care parameter	PASS
	5.4	Computed and Programmed CRC matches		Compute the CRC of CAS Flash FPGA Memory and verify the computed and stored CRC are equal, and the CRC is correct for the unit hardware part number.	**UUT1:** "MX"		**CRT:** shall read:	Computed and Programmed CRC matches
	5.5	P		Test CAS EEPROM memory and fill all memory locations except calibration memory with FFFF's.	**UUT1:** "EE"		**CRT:** shall read:	P
	5.6	Computed and Programmed CRC matches		Compute the CRC of EEPROM calibration data and verify the computed and stored CRC are equal.	**UUT1:** "ME"		**CRT:** shall read:	Computed and Programmed CRC matches
	5.7	111		Test the 3 CAS General Purpose Timers for all operating modes.	**UUT1:** "TC"		**CRT:** shall read:	111

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	5.8	111		Test the 3 SURV General Purpose Timers for all operating modes.	**UUT1:** "TS"		**CRT:** shall read:	111
	5.9	C1234NC S1234NC		Test the CAS Heartbeat Monitor to verify it generates a reset if it is written to with a period of less than 10 milliseconds.	**UUT1:** "HBC F"		**CRT:** shall read:	C1234NC S1234NC
	5.10	C1234NC S1234NC		Test the CAS Heartbeat Monitor to verify it generates a reset if it is written to with a period of greater than 74 milliseconds.	**UUT1:** "HBC S"		**CRT:** shall read:	C1234NC S1234NC
	5.11	S1234NC		Test the SURV Heartbeat Monitor to verify it generates a reset if it is written to with a period of less than 10 milliseconds.	**UUT1:** "HBS F"		**CRT:** shall read:	S1234NC
	5.12	S1234NC		Test the SURV Heartbeat Monitor to verify it generates a reset if it is written to with a period of greater than 74 milliseconds.	**UUT1:** "HBS S"		**CRT:** shall read:	S1234NC
				Clear CAS interrupt flags	**UUT1:** "IC"			
	5.13	100000		Generate a CAS MINT0 (RCDR-INT*) by pulsing the 422 External Reply Inputs. P2-12 422 Reply In(+) P2-13 422 Reply In(-)	**AIU:** "P3X D04ZX" "P3X D03ZX" **UUT1:** "IC"		PORT 3 Select Send 04 HEX DATA Send 03 HEX DATA **CRT:** shall read:	100000
	5.14	010000		Generate a CAS MINT1 (SURV-CAS-INT*) by performing a write to the SURV processor at address C0E00H	**UUT1:** "WS C0E00 0000" "IC"		**CRT:** shall read:	010000

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	5.15	001000		Generate a CAS MINT2 (SG-SPCH-INT*) by generating a voice command.	**UUT1:** "VOICE 0 FF FF" "IC"		Wait a minimum of 1 second. **CRT:** shall read:	001000
	5.16	000100		Generate a CAS MINT3 (GATD-429-INT*) by transmitting a 429 word.	**UUT1:** "AL 8 0 H 00000001 FF01" "IC"		**CRT:** shall read:	000100
	5.17	000001		Set CAS ID0 status to a 1 (422-FIFO-EMPTY*) by transmitting a 422 Data Word with an external clock source (no clock present).	**UUT1:** "WC C0411 4000" "WC C0417 0001" "WC C0415 5555" "IC"		**CRT:** shall read:	000001
				Clear SURV interrupt flags	**UUT1:** "IS"		Clear SURV interrupt flags	
	5.18	010000		Generate a SURV MINT1 (CAS-SURV-INT*) by performing a write to the CAS processor at address C0414H.	**UUT1:** "WC C0414 0000" "IS"		**CRT:** shall read:	010000
	5.19	001000		Generate a SURV MINT2 (SURV-TMR1*) by causing Timer 1 to time out.	**UUT1:** "WS C0004 0182" "IS"		**CRT:** shall read:	001000
	5.20	000100		Generate a SURV MINT3 (SURV-TMR2*) by causing Timer 2 to time out.	**UUT1:** "WS C0006 0182" "IS"		**CRT:** shall read:	000100
	5.21	000010		Generate a SURV MINT4 (REPLY-FIFO-EMPTY*) by generating an internal self-test word.	**UUT1:** "ASIC 1" "WS C020E 0060" "WS C0213 0000" "WS C0213 8000" "IS"		**CRT:** shall read:	000010

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	5.22	000011		Set SURV ID0 status to a 1 (REPLY-FIFO-EMPTY*) by generating an internal self-test word.	**UUT1:** "ASIC 1" "WS C0213 0000" "WS C0213 8000" "WS C020E 0060" "IS" "WS C0213 0000"		**CRT:** shall read:	000011
	5.23	See Table 7-1		Read CAS DL part number from UUT.	**UUT1:** "RC 00028 0E"		Read CAS DL part number from CAS memory at specified location.	See Table 7-1
	5.24	See Table 7-1		Read SURV DL part number from UUT.	**UUT1:** "RS 00028 0E"		Read SURV DL part number from SURV memory at specified location.	See Table 7-1
	5.25	See Table 7-1		Read FPGA part number from UUT.	**UUT1:** "RC 68008 10"		Read FPGA part number from CAS memory at specified location.	See Table 7-1

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
A	6.0			DISCRETE INPUT TESTS	Initial Test Setup **AIU:** "S1:OFF"		DISCRETE INPUT TESTS	
	6.1	0101 0001 1010 0000		Apply a ground to the following discrete inputs: P1F-9F P1F-9D P1F-7H P1F-6B P1E-13F Leave the remaining discretes open. Verify the inputs are correctly read by the CAS processor.	**AIU:** Set P3X to AA		The IDWO shall read:	0101 0001 1010 0000
	6.2	0010 1110 0100 0000		Apply a ground to the following discrete inputs: P1F-9G P1F-9E P1E-12B P1F-7H P1F-6A P1E-5K Leave the remaining discretes open. Verify the inputs are correctly read by the CAS processor.	**AIU:** Set P3X to 55		The IDW0 shall read:	0010 1110 0100 0000

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	6.3	1001 0101 0110 1010		Apply a ground to the following “WORD 1” discrete inputs: P1E-1J P1F-5J P1F-5E P1F-5G P1E-7E P1E-14C Apply +15V dc to: RBP-3C RMP-6C Leave the remaining discretes open. Verify the inputs are correctly read by the CAS processor.	**AIU:** Set P3X to AA Set P4X to AA		The IDW1 shall read:	1001 0101 0110 1010
	6.4	0110 1010 1001 0101		Apply a ground to the following “WORD 1” discrete inputs: P1E-13G P1F-5K P1F-5F P1F-5H P1E-7J P1E-13E Apply +15V dc to: RMP-2K RMP-4k Leave the remaining discretes open. Verify the inputs are correctly read by the CAS processor.	**AIU:** Set P3X to 55 Set P4X to 55		The IDW1 shall read:	0110 1010 1001 0101

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
A	6.5	1110 1010 1001 0011		Apply a ground to the following “WORD 2” discrete inputs: P1E-6J P1E-6G P1E-6E P1F-7D P1F-5A P1F-5B Leave the remaining discretes open. Verify the inputs are correctly read by the CAS processor.	**AIU:** Set P3X to AA		The IDW2 shall read:	1110 1010 1001 0011
A	6.6	1101 0101 1010 1100		Apply a ground to the following “WORD 2” discrete inputs: P1E-6D P1E-6H P1E-6F P1E-3D P1F-5C P1F-5D Leave the remaining discretes open. Verify the inputs are correctly read by the CAS processor.	**AIU:** Set P3X to 55		The IDW2 shall read:	1101 0101 1010 1100

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	6.7	0010 1010 1010 1100		Apply a ground to the following “WORD 3” discrete inputs: P1F-6D P1E-12A P1E-10D P1E-10F P1F-7F P1F-8G P1F-8J P1E-10B P1E-12C Leave the remaining discretes open. Verify the inputs are correctly read by the CAS processor.	**AIU:** Set P3X to AA		The IDW3 shall read:	0010 1010 1010 1100
	6.8	1101 0101 0101 0011		Apply a ground to the following “WORD 3” discrete inputs: P1E-10C P1E-10E P1F-7E P1F-8F P1F-8H P1F-8K P1E-10A Leave the remaining discretes open. Verify the inputs are correctly read by the CAS processor.	**AIU:** Set P3X to 55		The IDW3 shall read:	1101 0101 0101 0011

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	6.9	1010 1010 1010 1010		Apply a ground to the following “WORD 4” discrete inputs: P1F-8D P1F-8B P1F-7C P1F-7A P1F-4G P1F-4E P1F-4C P1F-4A Leave the remaining discretes open. Verify the inputs are correctly read by the CAS processor.	**AIU:** Set P3X to AA		The IDW4 shall read:	1010 1010 1010 1010
	6.10	0101 0101 0101 0101		Apply a ground to the following “WORD 4” discrete inputs: P1F-8E P1F-8C P1F-8A P1F-7B P1F-6C P1F-4F P1F-4D P1F-4B Leave the remaining discretes open. Verify the inputs are correctly read by the CAS processor.	**AIU:** Set P3X to 55		The IDW4 shall read:	0101 0101 0101 0101

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	6.11	1010 1010 0001 0101		Apply a ground to the following “WORD 5” discrete inputs: P1E-11D P1E-11B P1E-10K P1E-10H P1E-12K P1E-12H P1E-12D Leave the remaining discretes open. Verify the inputs are correctly read by the CAS processor.	**AIU:** Set P3X to AA		The IDW5 shall read:	1010 1010 0001 0101
	6.12	0101 0101 0000 1010		Apply a ground to the following “WORD 5” discrete inputs: P1E-11C P1E-11A P1E-10J P1E-10G P1E-12J P1F-10K P1E-12E Leave the remaining discretes open. Verify the inputs are correctly read by the CAS processor.	**AIU:** Set P3X to 55		The IDW5 shall read:	0101 0101 0000 1010

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	6.13	XX10 XXXX XXXX 0XXX XX8X XXXX		Apply a ground to the following discrete inputs, with the remaining inputs set to an open: P1E-6A P2-7 P2-12 Verify the inputs are correctly read by the CAS processor.	**AIU:** "P1X D55ZX" "P2X D08ZX" "P3X D00ZX" **UUT1:** "DIN"		Port 1 Select Send 55 HEX DATA Port 2 Select Send 08 HEX DATA Port 3 Select Send 00 HEX DATA **CRT:** IDW0 through IDW5 shall read: (X is a don't care parameter	XX10 XXXX XXXX 0XXX XX8X XXXX
	6.14	XX0E XXXX XXXX 8XXX XX0X XXXX		Apply a ground to the following discrete inputs, with the remaining inputs set to an open: P1E-5K P1E-6B P1E-13F P2-9 P2-6 Verify the inputs are correctly read by the CAS processor.	**AIU:** "P1X D2AZX" "P2X 040ZX" **UUT1:** "DIN"		Port 1 Select Send 2A HEX DATA Port 2 Select Send 40 HEX DATA **CRT:** IDW0 through IDW5 shall read: (X is a don't care parameter).	XX0E XXXX XXXX 8XXX XX0X XXXX

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
A	7.0			DISCRETE OUTPUT TESTS	Initial Test Setup **AIU:** "S1:OFF:"		DISCRETE OUTPUT TESTS	
	7.1	AA AA AA XX		Set the output ODW0 port to A555H and ODW1 port to 8055H and verify the discrete outputs are correctly set.	**UUT1:** "DOUT 0 A555" "DOUT 1 8055" "MTSDIN"		The PC display shall read:	AA AA AA XX
	7.2	55 55 55 XX		Set the output ODW0 port to 5AAAH and ODW1 port to 80AAH and verify the discrete outputs are correctly set.	**UUT1:** "DOUT 0 5AAA" "DOUT 1 80AA" "MTSDIN"		The PC display shall read:	55 55 55 XX

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
A	8.0			ARINC 429 INPUT / OUTPUT TESTS	Initial Test Setup **AIU:** "S1:OFF" **AIU:** "M4X" "C4X"		ARINC 429 INPUT / OUTPUT TESTS Set ports 1-4 as outputs	
				Activate the PDL Link A discrete to select the PDL receiver channel.	**AIU:** "P1X D01ZX" "P3X D00ZX"			
	8.1	VVVVVVVV VNVNNNNN		Set the ARINC 429 receivers to the internal loop-back mode with the receiver mask registers set to FF55 hex, low speed. Transmit D5555555 and verify data is received. by all receiver channels.	**UUT1:** "AL 8 L D5555555 FF55"		The PC display shall read:	VVVVVVVV VNVNNNNN
	8.2	VVVVVVVV VNVNNNNN		Set the ARINC 429 receivers to the internal loop-back mode with the receiver mask registers set to FFAA hex, low speed. Transmit 2AAAAAAA and verify data is received. by all receiver channels.	**UUT1:** **"**AL 8 L 2AAAAAAA FFAA"		The PC display shall read:	VVVVVVVV VNVNNNNN
				Deactivate the PDL Link A discrete to select the ADL receiver channel.	**AIU:** "P1X D00ZX"			
	8.3	VVVVVVVV VNVNNNNN		Set the ARINC 429 receivers to the internal loop-back mode with the receiver mask registers set to 55FF hex, low speed. Transmit D5555555 and verify data is received. by all receiver channels.	**UUT1:** "AL 8 L D5555555 55FF"		The PC display shall read:	VVVVVVVV VNVNNNNN

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	8.4	VVVVVVVV VNVNNNNN		Set the ARINC 429 receivers to the internal loop-back mode with the receiver mask registers set to AAFF hex, low speed. Transmit 2AAAAAAA and verify data is received. by all receiver channels.	**UUT1:** "AL 8 L 2AAAAAAA AAFF"		The PC display shall read:	VVVVVVVV VNVNNNNN
	8.5	NNVNNNNN NNNNNNNN		Transmit 55555501 from RA DISP #1 bus (P1E-13A/B) set to low speed operation and verify the data is received by the RAD ALT #1 bus receiver (P1E-13H/J).	**UUT1:** "AL 0 H 55555501 FF01"		The PC display shall read:	NNVNNNNN NNNNNNNN
	8.6	NNVNNNNN NNNNNNNN		Transmit AAAAAAFE from RA DISP #1 bus set to low speed operation and verify the data is received by the RAD ALT #1 bus receiver.	**UUT1:** "AL 0 H AAAAAAFE FFFE"		The PC display shall read:	NNVNNNNN NNNNNNNN
	8.7	NNVNNNNN NNVNNNNN		Transmit 55555502 from RA DISP #1 and #2 bus (P1E-13A/B and 13C/D) set to low speed operation and verify the data is received by the RAD ALT #1 bus and RAD ALT #2 bus receiver (P1F-3D/E).	**UUT1:** "AL 1 H 55555502 FF02"		The PC display shall read:	NNVNNNNN NNVNNNNN
	8.8	NNVNNNNN NNVNNNNN		Transmit AAAAAAFD from RA DISP #1 and #2 busses set to low speed operation and verify the data is received by the RAD ALT #1 and RAD ALT #2 bus receivers.	**UUT1:** "AL 1 H AAAAAAFD FFFD"		The PC display shall read:	NNVNNNNN NNVNNNNN

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	8.9	NVNNNNVN NNNNNNNN		Transmit 55555504 from TA/RA DISP #1 bus (P1E-7C/D) and (P2-33/34) set to high speed operation and verify the data is received by the MAG HDG/ATT bus (P1E-7A/B), ALTITUDE ALERT (P1E-8C/D) receivers.	**UUT1:** "AL 2 H 55555504 FF04"		The PC display shall read:	NVNNNNVN NNNNNNNN
	8.10	NVNNNNVN NNNNNNNN		Transmit AAAAAAFB from TA/RA DISP #1 bus (P1E-7C/D) and (P2-33/34) set to high speed operation and verify the data is received by the MAG HDG/ATT bus (P1E-7A/B), ALTITUDE ALERT (P1E-8C/D) receivers.	**UUT1:** "AL 2 H AAAAAAFB FFFB"		The PC display shall read:	NVNNNNVN NNNNNNNN
	8.11	VNNNNNNN NNNNNNNN		Transmit 55555508 from TA/RA DISP #2 bus (P1E-7G/H) set to high speed operation and verify the data is received by the SPARE #1 bus (P1E-14D/E) receivers.	**UUT1:** "AL 3 H 55555508 FF08"		The PC display shall read:	VNNNNNNN NNNNNNNN
	8.12	VNNNNNNN NNNNNNNN		Transmit AAAAAAF7from TA/RA DISP #2 bus (P1E-7G/H) set to high speed operation and verify the data is received by the SPARE #1 bus (P1E-14D/E) receivers.	**UUT1:** "AL 3 H AAAAAAF7 FFF7"		The PC display shall read:	VNNNNNNN NNNNNNNN
	8.13	NNNNNVNV NNNNNNNN		Transmit 55555510 from CFDS OUT bus (P1F-6E/F) set to low speed operation and verify the data is received by the CFDS IN bus (P1F-6G/H) and PERF LIMIT (P1E-6A/B) receivers.	**UUT1:** "AL 4 L 55555510 FF10"		The PC display shall read:	NNNNNVNV NNNNNNNN

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	8.14	NNNNNVNV NNNNNNNN		Transmit AAAAAAEF from CFDS OUT bus (P1F-6E/F) set to low speed operation and verify the data is received by the CFDS IN bus (P1F-6G/H) and PERF LIMIT (P1E-6A/B) receivers.	**UUT1:** "AL 4 L AAAAAAEF FFEF"		The PC display shall read:	NNNNNVNV NNNNNNNN
	8.15	NNNNNNNN VNNNNNNN		Transmit 55555520 from ADL OUT bus (P1E-9A/B) set to high speed operation and verify the data is received by the ADL IN bus (P1E-8A/B)	**UUT1:** "AL 5 H 55555520 FF20"		The PC display shall read:	NNNNNNNN VNNNNNNN
	8.16	NNNNNNNN VNNNNNNN		Transmit AAAAAADF from ADL OUT bus (P1E-9A/B) set to high speed operation and verify the data is received by the ADL IN bus (P1E-8A/B)	**UUT1:** "AL 5 H AAAAAADF FFDF"		The PC display shall read:	NNNNNNNN VNNNNNNN
	8.17	NNNVNNNN NNNNNNNN		Transmit 55555540 from TX COORD #1 bus (P1E-15J/K) set to high speed operation and verify the data is received by the XT COORD #1 bus (P1E-14F/G)	**UUT1:** "AL 6 H 55555540 FF40"		The PC display shall read:	NNNVNNNN NNNNNNNN
	8.18	NNNVNNNN NNNNNNNN		Transmit AAAAAABF from TX COORD #1 bus (P1E-15J/K) set to high speed operation and verify the data is received by the XT COORD #1 bus (P1E-14F/G)	**UUT1:** "AL 6 H AAAAAABF FFBF"		The PC display shall read:	NNNVNNNN NNNNNNNN
	8.19	NNNNVNNN NNNNNNNN		Transmit 55555580 from TX COORD #2 bus (P1E-14A/B) set to high speed operation and verify the data is received by the XT COORD #2 bus (P1E-14H/J)	**UUT1:** "AL 7 H 55555580 FF80"		The PC display shall read:	NNNNVNNN NNNNNNNN

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	8.20	NNNNVNNN NNNNNNNN		Transmit AAAAAA7F from TX COORD #2 bus (P1E-14A/B) set to high speed operation and verify the data is received by the XT COORD #2 bus (P1E-14H/J)	**UUT1:** "AL 7 H AAAAAA7F FF7F"		The PC display shall read:	NNNNVNNN NNNNNNNN
	8.21	DELETED						
	8.22	DELETED						
	8.23	DELETED						
	8.24	DELETED						
	8.25	DELETED						

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
A	9.0			422 DATA RECORDER TESTS	Initial Test Setup **AIU:** "S1:OFF" **AIU:** "M4X" "C4X"		422 DATA RECORDER TESTS	
	9.1	AA55		Transmit data words AA55 on the RS-422 data recorder port using an internal clock and verify the data is correct. P2-29 422 Data Out(+) P2-30 422 Data Out(-) P2-31 422 Clk Out(+) P2-32 422 Clk Out(-) P2-10 422 Clk In(+) P2-11 422 Clk In(-)	**UUT1:** "D422 E I AA55"		Apply an open to RBP-9K and RBP-10E. The PC display shall read: Write data to UUT memory locations: Address Data 1E411 4000 1E415 AA55 Wait 0.5 ms Read AIU bus feedback. The data shall be as specified.	AA55
	9.2	55AA		Transmit data words 55AA on the RS-422 data recorder port using an internal clock and verify the data is correct.	**UUT1:** "D422 E I 55AA"		Write data to UUT memory locations Address Data 1E415 55AA Wait .05 ms Read AIU bus feedback. The data shall be as specified.	55AA

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	9.3	0123		Transmit data words 0123 on the RS-422 data recorder port using an external clock and verify the data is correct.	**UUT1:** "D422 E E 0123" "MTS422 CLK 16"		Apply a low to RBP-9K. Apply a 19.2 kHz clock to RBP-10H and RBP10J. Write data to UUT memory location: Address 1E415 Data 0123 Wait 2.5 ms Clock the AIU 16 cycles. Read AIU bus feedback. The data shall be as specified.	0123
	9.4	0123		Disable the output port and transmit data word CDEF on the RS-422 data recorder port and verify no data is present.	**UUT1:** "D422 D I CDEF"		Write data to UUT memory location: Address 1E415 Data CDEF Read AIU bus feedback. The data shall be as specified.	0123

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
A	10.0			SUPPRESSION PULSE	Initial Test Setup **AIU:** "S1:OFF" **AIU:** "M4X" "C4X"		SUPPRESSION PULSE	
	10.1	8000 0000 0000 0080 0000 0000 0X00 0000		Generate a Mode S self-test RF wrap test with the suppression pulse disabled and verify a message is received by the receiver.	**UUT1:** "RXMSRF 1000"		**CRT:** The UUT shall report back.	8000 0000 0000 0080 0000 0000 0X00 0000
	10.2	XXXXX0		Generate a Mode S self-test RF wrap test with the suppression pulse enabled and verify no message is received by the receiver.	**UUT1:** "RXMSRFS 1000" "IS"		**CRT:** The UUT shall report back.	XXXXX0
	10.3	125 to 131 μs		Generate a Mode S self-test RF wrap test with the suppression pulse enabled and verify the suppression bus pulse width on P1C-12 is 128 ± 3 μs.	**UUT1:** "RXMSRFS 1000"		**PPM:** Using a x10 probe connect the oscilloscope channel 3 to AIU J6 (SUPPRESSION A)[P1C-12]. The pulse width shall be as specified.	125 to 131 μs
	10.4	24 to 33 V dc		Generate a Mode S self-test RF wrap test with the suppression pulse enabled and verify the suppression bus pulse amplitude on P1C-13 is 28.5 ± 4.5 V dc.	**UUT1:** "RXMSRFS 1000"		**PPM:** Using a x10 probe connect the oscilloscope channel 3 to AIU J7 (SUPPRESSION B)[P1C-13]. The pulse amplitude shall be as specified.	24 to 33 V dc

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
A	11.0			ANALOG MONITOR TESTS	Initial Test Setup **AIU:** "S1:OFF" **AIU:** "M4X" "C4X"		ANALOG MONITOR TESTS	
	11.1	9.70 to 10.30 V dc		Set the Radio Altitude Input #1 to +10V dc and verify the signal is read by the processor. P1E-2H Rad Alt #1 (+) P1E-2J Rad Alt #1 (-)	**UUT1:** "ADC"		Send command to UUT for reading A/D converter. Connect DVM (+) to TP254 and DVM (-) to TP253. Adjust R2 for 10.00 V dc. The UUT A/D converter shall read as specified.	9.70 to 10.30 V dc
	11.2	9.70 to 10.30 V dc		Set the Radio Altitude Input #2 to +10 V dc and verify the signal is read by the processor. P1F-3A Rad Alt #2 (+) P1F-3B Rad Alt #2 (-)			The UUT A/D converter shall read as specified.	9.70 to 10.30 V dc
	11.3	1.0 to 4.0 V dc		Generate a 2 second 1 kHz tone and verify the 600 Ohm audio output monitor reads the correct voltage.	**UUT1:** "VOICE 13 F0 AA ADC"		Generate a 2 second 1 kHz tone from UUT.	1.0 to 4.0 V dc
	11.4	1.0 to 4.0 V dc		Generate a 2 second 1 kHz tone and verify the 8 Ohm audio output monitor reads the correct voltage.	**UUT1:** "VOICE 13 F0 AA ADC"		Generate a 2 second 1 kHz tone from UUT.	1.0 to 4.0 V dc
	11.5	+15 to +45 Degrees C		Verify the internal temperature sensor is in the acceptable range at room temperature			The fifth parameter in the display shall be:	+15 to +45 Degrees C
	11.6	38.25 to 51.75 V dc		Verify the +45 volt monitor voltage reads the correct voltage			The sixth parameter in the display shall be:	38.25 to 51.75 V dc
	11.7	2.00 to 2.10 V dc		Verify the A/D Reference monitor reads the correct voltage.			The seventh parameter in the display shall be:	2.00 to 2.10 V dc

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	11.8	0 to 0.05 V dc		Verify the ground Reference monitor reads the correct voltage			The eighth parameter in the display shall be	0 to 0.05 V dc

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
A	12.0			ASIC TEST	Initial Test Setup **AIU:** "S1:OFF" **AIU:** "M4X" "C4X"		ASIC TEST	
	12.1	7FFF0000 002A002A 002A002A 3FFF		Generate a single, nongarbled ATCRBS internal ASIC self-test reply and verify the reply is decoded. This applies to tests 12.1 through 12.3.	**UUT1:** "ASIC 1"		**CRT:**The display shall read:	7FFF0000 002A002A 002A002A 3FFF
	12.2	7FFF0000 002A002A 002A002A 5FFF					**CRT:**The display shall read:	7FFF0000 002A002A 002A002A 5FFF
	12.3	7FFF0000 002A002A 002A002A 7FFF					**CRT:**The display shall read:	7FFF0000 002A002A 002A002A 7FFF
	12.4	60043FFF 002A0000 0000002A 3FFF		Generate a single, garbled ATCRBS internal ASIC self-test reply and verify the reply is decoded. This applies to tests 12.4 and 12.5.	**UUT1:** "ASIC 2"		**CRT:**The display shall read:	60043FFF 002A0000 0000002A 3FFF
	12.5	6200DFFF 002A0000 0000002A 5FFF					**CRT:**The display shall read:	6200DFFF 002A0000 0000002A 5FFF
	12.6	60043FFF 002A0000 0000002A 3FFF		Generate a single, garbled ATCRBS internal ASIC self-test reply and verify the reply is decoded. Tests degarbler #1 and #3 interaction. This applies to tests 12.6 through 12.8.	**UUT1:** "ASIC 3"		**CRT:**The display shall read:	60043FFF 002A0000 0000002A 3FFF
	12.7	60000000 002A0000 0000002A 5FFF					**CRT:**The display shall read:	60000000 002A0000 0000002A 5FFF

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	12.8	6200DFFF 002A0000 0000002A 7FFF					**CRT:**The display shall read:	6200DFFF 002A0000 0000002A 7FFF
	12.9	11112222 44448888		Test Transmitter Control ASIC Data Bus test applies to tests 12.9 and 12.10.	**UUT1:** "ASIC 4"		**CRT:**The display shall read:	11112222 44448888
	12.10	A50F5AF0 0FA5F05A					**CRT:**The display shall read:	A50F5AF0 0FA5F05A
	12.11	00000101 02020303 04040505 0606		Test Transmitter Control ASIC Address Bus tests apply to tests 12.11 through 12.15.	**UUT1:** "ASIC 5"		**CRT:**The display shall read:	00000101 02020303 04040505 0606
	12.12	07070800 09000A00 0B000C00 0D00					**CRT:**The display shall read:	07070800 09000A00 0B000C00 0D00
	12.13	XXXXFCXX 10101111 12121313 1414					**CRT:**The display shall read: (where X is a don't care parameter)	XXXXFCXX 10101111 12121313 1414
	12.14	XXXX160X XXXXXXXX 1XXX1AXX 1BXX					**CRT:**The display shall read: (X is a don't care parameter)	XXXX160X XXXXXXXX 1XXX1AXX 1BXX
	12.15	1CXX1DXX 1EXX1FXX					**CRT:**The display shall read: (X is a don't care parameter)	1CXX1DXX 1EXX1FXX
	12.16	80000000 00000080 00000000 0100		Generate a Mode S internal ASIC self-test reply and verify the reply is decoded. This applies to tests 12.16 through 12.21.	**UUT1:** "ASIC 6"		**CRT:**The display shall read:	80000000 00000080 00000000 0100
	12.17	0000002A 002A002A 002A1FFF					**CRT:**The display shall read:	0000002A 002A002A 002A1FFF
	12.18	55555555 00000055 55555500 0155					**CRT1:**The display shall read:	55555555 00000055 55555500 0155

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	12.19	5555002A 002A002A 002A1FFF					**CRT:**The display shall read:	5555002A 002A002A 002A1FFF
	12.20	AAAAAAAA 000000AA AAAAAA00 01AA					**CRT:**The display shall read:	AAAAAAAA 000000AA AAAAAA00 01AA
	12.21	AAAA002A 002A002A 002A1FFF					**CRT:**The display shall read:	AAAA002A 002A002A 002A1FFF
	12.22	55555555 00000055 55555500 05AA		Generate a Mode S Confidence test. This applies to tests 12.22 through 12.61.	**UUT1:** "ASIC 7"		**CRT:**The display shall read:	55555555 00000055 55555500 05AA
	12.23	51C40042 00420042 00421FFF					**CRT:**The display shall read:	51C40042 00420042 00421FFF
	12.24	AAAAAAAA 000000AA AAAAAA00 05AB					**CRT1:**The display shall read:	AAAAAAAA 000000AA AAAAAA00 05AB
	12.25	57810042 00420042 00421FFF					**CRT:**The display shall read:	57810042 00420042 00421FFF
	12.26	55555555 00000055 55555500 05AA					**CRT:**The display shall read:	55555555 00000055 55555500 05AA
	12.27	51C40042 00420042 00421FFF					**CRT:**The display shall read:	51C40042 00420042 00421FFF
	12.28	55555555 00000055 55555500 05AA					**CRT:**The display shall read:	55555555 00000055 55555500 05AA
	12.29	51C40042 00420042 00421FFF					**CRT:**The display shall read:	51C40042 00420042 00421FFF
	12.30	55550000 00000055 55000000 06A9					**CRT1:**The display shall read:	55550000 00000055 55000000 06A9

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	12.31	C0840042 00420042 00421FFF					**CRT:**The display shall read:	C0840042 00420042 00421FFF
	12.32	AAAA8080 000000AA AA808000 06D2					**CRT:**The display shall read:	AAAA8080 000000AA AA808000 06D2
	12.33	E3650042 00420042 00421FFF					**CRT:**The display shall read:	E3650042 00420042 00421FFF
	12.34	00000000 00000000 00000000 0600					**CRT:**The display shall read:	00000000 00000000 00000000 0600
	12.35	55550042 00420042 00421FFF					**CRT:**The display shall read:	55550042 00420042 00421FFF
	12.36	80808080 00000080 80808000 0695					**CRT1:**The display shall read:	80808080 00000080 80808000 0695
	12.37	C27B0042 00420042 00421FFF					**CRT:**The display shall read:	C27B0042 00420042 00421FFF
	12.38	55555555 00000055 55555500 02FE					**CRT:**The display shall read:	55555555 00000055 55555500 02FE
	12.39	51D10042 00420042 00421FFF					**CRT:**The display shall read:	51D10042 00420042 00421FFF
	12.40	AAAAAAAA 000000AA AAAAAA00 0201					**CRT:**The display shall read:	AAAAAAAA 000000AA AAAAAA00 0201
	12.41	57AB0042 00420042 00421FFF					**CRT:**The display shall read:	57AB0042 00420042 00421FFF
	12.42	01554055 00000001 55405500 0293					**CRT1:**The display shall read:	01554055 00000001 55405500 0293

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	12.43	B6940042 00420042 00421FFF					**CRT:**The display shall read:	B6940042 00420042 00421FFF
	12.44	00AA80AA 00000000 AA80AA00 028F					**CRT:**The display shall read:	00AA80AA 00000000 AA80AA00 028F
	12.45	63870042 00420042 00421FFF					**CRT:**The display shall read:	63870042 00420042 00421FFF
	12.46	AAAAAAAA 000000AA AAAAAA00 01AB					**CRT:**The display shall read:	AAAAAAAA 000000AA AAAAAA00 01AB
	12.47	57810042 00420042 00421FFF					**CRT:**The display shall read:	57810042 00420042 00421FFF
	12.48	55555555 00000055 55555500 01AA					**CRT1:**The display shall read:	55555555 00000055 55555500 01AA
	12.49	51C40042 00420042 00421FFF					**CRT:**The display shall read:	51C40042 00420042 00421FFF
	12.50	AAAAAAAA 000000AA AAAAAA00 01AB					**CRT:**The display shall read:	AAAAAAAA 000000AA AAAAAA00 01AB
	12.51	57810042 00420042 00421FFF					**CRT:**The display shall read:	57810042 00420042 00421FFF
	12.52	55555555 00000055 55555500 01AA					**CRT:**The display shall read:	55555555 00000055 55555500 01AA
	12.53	51C40042 00420042 00421FFF					**CRT:**The display shall read:	51C40042 00420042 00421FFF
	12.54	01554055 00000001 55405500 0293					**CRT1:**The display shall read:	01554055 00000001 55405500 0293

REV LTR	TEST NO.	SPECIFICATION OPR LIMITS	C	TEST DESCRIPTION	PROCEDURE SWITCH POS	C	WORK STEPS	SPECIFICATION MFG LIMITS
	12.55	B6940042 00420042 00421FFF					**CRT:**The display shall read:	B6940042 00420042 00421FFF
	12.56	02AAA02A 00000002 AAA02A00 02E1					**CRT:**The display shall read:	02AAA02A 00000002 AAA02A00 02E1
	12.57	DBE80042 00420042 00421FFF					**CRT:**The display shall read:	DBE80042 00420042 00421FFF
	12.58	AAAAAAAA 000000AA AAAAAA00 0203					**CRT:**The display shall read:	AAAAAAAA 000000AA AAAAAA00 0203
	12.59	57AB0042 00420042 00421FFF					**CRT:**The display shall read:	57AB0042 00420042 00421FFF
	12.60	55555554 00000055 55555400 0205					**CRT1:**The display shall read:	55555554 00000055 55555400 0205
	12.61	A5D80042 00420042 00421FFF					**CRT:**The display shall read:	A5D80042 00420042 00421FFF

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.0			RF RECEIVER TESTS Tests 13.1 - 13.52 - Reference: Figure 6 The following tests use replies injected into various antenna ports of the UUT to verify receiver characteristics and reply processing capability.	Initial Test Setup **AIU:** "S1:OFF" **AIU:** "M4X" "C4X"		RF RECEIVER TESTS **NOTE:** The actual output of the signal generator must be adjusted to account for the losses between the signal generator port and the unit antenna port.	

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.1			**ATCRBS REJECTION: 0/90 (SURV)** Initialize MTS reply generator.	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate ATCRBS data string.	
				Replies are injected on the Top 0 and Top 90 antenna ports simultaneously. The reply format is as follows:	**RFIU:** "Program"		Program selects Top 0 and Top 90 ports on T336254.	
				Type: ATCRBS Pattern: F1, A1, A2, A3, B1, B2, B3, and F2 pulses are present.	**SGEN:** "Freq: 1090.0 MHz" "Lev: -81.0 dBm"		Set the signal generator to apply a signal to the Top 0/90 antenna ports which is 2 dB below the lowest acceptable MTL amplitude.	
				Pulse Width: 500 ± 50 ns Power: -81.0 dBm on Top 0 -81.0 dBm on Top 90 Frequency: 1090 ± 0.1 MHz	**RFIU:** "OFFSET SEL LEV: 0 dB"		Set the RF level into the Top 90 antenna port equal to the RF level into the Top 0 antenna port.	
				Set UUT to receive appropriate reply type	**UUT1:** "RXATC T 1111"		Set UUT to receive ATCRBS replies in a test mode.	
				Set UUT to receive 10 replies	"RDATC 10"		Receive a fixed number of ATCRBS replies.	
		PASS 9 or 10		Analyze the reply UUT file	**UUT1:** "RXCHK 6"		Check unit for replies. **CRT:** FIFO EMPTY MISSED REPLIES	PASS 9 or 10

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.2			**ATCRBS 1090 MHz MTL: 0/90 RCVRS (SURV)**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate ATCRBS data string	
				Replies are injected on the Top 0 and Top 90 antenna ports simultaneously. The reply format is as follows:	**RFIU:** "Program"		Program selects Top 0 and Top 90 ports on T336254.	
				Type: ATCRBS Pattern: F1, A1, A2, A3, B1, B2, B3, and F2 pulses are present.	**SGEN:** "Freq: 1090.0 MHz" "Lev: -75.0 dBm"		Set the signal generator to apply a signal to the Top 0 antenna port which is equal to the largest acceptable MTL amplitude.	
				Pulse Width: 500±50 ns Power: -75.0 dBm on Top 0; -78.0 dBm on Top 90 Frequency: 1090.0 ± 0.1 MHz	**RFIU:** "OFFSET SEL LEV: -3.0 dB"		Select an attenuation which causes the signal on the Top 90 antenna port to be 3 dB less than the signal on the Top 0 antenna port.	
					UUT1: "RXATC T 1111"		Set UUT to receive ATCRBS replies in a test mode.	
					"RDATC 100"		Receive a fixed number of ATCRBS replies.	
				Inject 100 replies into the UUT	**RFIU:** "MTSTRIG 100"		Generate 100 replies at a nominal spacing of 10 msec.	
		PASS PASS 1 1 10 MAX		Verify the reply data	**UUT1:** "RXCHK 6"		**CRT:** FIFO EMPTY DATA Z N MISSED REPLIES	PASS PASS 1 1 10 MAX

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.3			**ATCRBS 1087 MHz MTL: 0/90 RCVRS (SURV)**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate ATCRBS data string	
				Replies are injected on the Top 0 and Top 90 antenna ports. The reply format is as follows:	**RFIU:** "Program"		Program selects Top 0 and Top 90 ports on T336254.	
				Type: ATCRBS	**SGEN:**		Set the signal generator to apply a signal to the Top 0 antenna port which is equal to the largest acceptable MTL amplitude.	
				Pattern: F1, A1, A2, A3, B1, B2, B3, and F2 pulses are present.	"Freq: 1087.0 MHz"			
					"Lev: -75.0 dBm"			
				Pulse Width: 500 ± 50 ns	**RFIU:** "OFFSET SEL LEV: -3.0 dB"		Select an attenuation which causes the signal on the Top 90 antenna port to be 3 dB less than the signal on the Top 0 antenna port.	
				Power: -75.0 dBm on Top 0 -78.0 dBm on Top 90				
				Frequency: 1087.0 ± 0.1 MHz				
					UUT1: "RXATC T 1111"		Set UUT to receive ATCRBS replies in a test mode.	
					"RDATC 100"		Receive a fixed number of ATCRBS replies.	
				Inject 100 replies into the UUT	**RFIU:** "MTSTRIG 100"		Generate 100 replies at a nominal spacing of 10 msec.	
				Verify the reply data.	**UUT1:** "RXCHK 6"		**CRT:**	
		PASS					FIFO EMPTY	PASS
		PASS					DATA	PASS
		1					Z	1
		1					N	1
		10 MAX					MISSED REPLIES	10 MAX

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.4			**ATCRBS 1093 MHz MTL: 0/90 RCVRS (SURV)**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate ATCRBS data string	
				Replies are injected on the Top 0 and Top 90 antenna ports. The reply format is as follows:	**RFIU:** "Program"		Program selects Top 0 and Top 90 ports on T336254.	
				Type: ATCRBS	**SGEN:**		Set the signal generator to apply a signal to the Top 0 antenna port which is equal to the largest acceptable MTL amplitude.	
				Pattern: F1, A1, A2, A3, B1, B2, B3, and F2 pulses are present.	"Freq: 1093.0 MHz" "Lev: -75.0 dBm"			
				Pulse Width: 500± 50 ns	**RFIU:** "OFFSET SEL LEV: -3.0 dB"		Select an attenuation which causes the signal on the Top 90 antenna port to be 3 dB less than the signal on the Top 0 antenna port.	
				Power: -75.0 dBm on Top 0 -78.0 dBm on Top 90				
				Frequency: 1093.0 ± 0.1 MHz				
					UUT1: "RXATC T 1111"		Set UUT to receive ATCRBS replies in a test mode.	
					"RDATC 100"		Receive a fixed number of ATCRBS replies.	
				Inject 100 replies into the UUT	**RFIU:** "MTSTRIG 100"		Generate 100 replies at a nominal spacing of 10 msec.	
				Verify the reply data.	**UUT1:** "RXCHK 6"		**CRT:**	
		PASS					FIFO EMPTY	PASS
		PASS					DATA	PASS
		1					Z	1
		1					N	1
		10 MAX					MISSED REPLIES	10 MAX

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.5			**ATCRBS 1090 MHz 0/90 RCVRS (SURV)**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate ATCRBS data string	
				Replies are injected on the Top 0 and Top 90 antenna ports. The reply format is as follows:	**RFIU:** "Program"		Program selects Top 0 and Top 90 ports on T336254.	
				Type: ATCRBS	**SGEN:**		Set the signal generator to apply a signal to the Top 0 antenna port which is 3 dB higher than the largest acceptable MTL amplitude.	
				Pattern: F1, A1, A2, A3, B1, B2, B3, and F2 pulses are present.	"Freq: 1090.0 MHz" "Lev: -72.0 dBm"			
				Pulse Width: 500± 50 ns	**RFIU:** "OFFSET SEL LEV: -3.0 dB"		Select an attenuation which causes the signal on the Top 90 antenna port to be 3 dB less than the signal on the Top 0 antenna port.	
				Power: -72.0 dBm on Top 0 -75.0 dBm on Top 90				
				Frequency: 1090.0 ± 0.1 MHz				
					UUT1: "RXATC T 1111"		Set UUT to receive ATCRBS replies in a test mode.	
					"RDATC 100"		Receive a fixed number of ATCRBS replies.	
				Inject 100 replies into the UUT	**RFIU:** "MTSTRIG 100"		Generate 100 replies at a nominal spacing of 10 msec.	
				Verify the reply data	**UUT1:** "RXCHK 6"		**CRT:**	
		PASS					FIFO EMPTY	PASS
		PASS					DATA	PASS
		-72.0±3.0 dBm					CV	-72.0±2.5 dBm
		3.0 ± 2.3 dB					PD	3.0 ± 2.3 dB
		1					Z	1
		1					N	1
		1 MAX					MISSED REPLIES	1 MAX

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.6			**ATCRBS 1090 MHz 0/90 RCVRS (SURV)**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate ATCRBS data string	
				Replies are injected on the Top 0 and Top 90 antenna ports. The reply format is as follows:	**RFIU:** "Program"		Program selects Top 0 and Top 90 ports on T336254.	
				Type: ATCRBS	**SGEN:** "Freq: 1090.0 MHz" "Lev: -60.0 dBm"		Set the signal generator to apply a RF signal to the Top 0 antenna port.	
				Pattern: F1, A1, A2, A3, B1, B2, B3, and F2 pulses are present.				
A				Pulse Width: 400± 50 ns	**RFIU:**		Select an attenuation which causes the signal on the Top 90 antenna port to be 6 dB less than the signal on the Top 0 antenna port.	
				Power: -60.0 dBm on Top 0 -66.0 dBm on Top 90	"OFFSET SEL LEV: -6.0 dB"			
				Frequency: 1090.0 ± 0.1 MHz				
					UUT1: "RXATC T 1111"		Set UUT to receive ATCRBS replies in a test mode.	
					"RDATC 100"		Receive a fixed number of ATCRBS replies.	
				Inject 100 replies into the UUT.	**RFIU:** "MTSTRIG 100"		Generate 100 replies at a nominal spacing of 10 msec.	
				Verify the reply data	**UUT1:** "RXCHK 6"		**CRT:**	
		PASS					FIFO EMPTY	PASS
		PASS					DATA	PASS
		-60.0±2.5 dBm					CV	-60.0±2.0 dBm
		6.0 ± 2.3 dB					PD	6.0 ± 2.3 dB
		1					Z	1
		1					N	1
		0					S	0
		1 MAX					MISSED REPLIES	1 MAX

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
A	13.7			**MODE S PATTERN 1 0/90 RCVR**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate a MODE S data string.	
				Replies are injected on the Top 0 and Top 90 antenna ports. The reply format is as follows:	**RFIU:** "Program"		Program selects Top 0 and Top 90 ports on T336254.	
				Type: Mode S Pattern: 80000000018567	**SGEN:** "Freq: 1090.0 MHz" "Lev: -48.0 dBm"		Set the signal generator to apply a RF signal to the Top 0 antenna port.	
				Pulse Width: 500± 50 ns Power: -48.0 dBm on Top 0 -57.0 dBm on Top 90 Frequency: 1090.0 ± 0.1 MHz	**RFIU:** "OFFSET SEL LEV: -9.0 dB"		Select an attenuation which causes the signal on the Top 90 antenna port to be 9 dB less than the signal on the Top 0 antenna port.	
					UUT1: "RXMS T 1111 45 W"		Set UUT to receive MODE S replies in a test mode.	
					"RDMS 10"		Receive a fixed number of MODE S replies.	
				Inject 10 replies into the UUT	**RFIU:** "MTSTRIG 10"		Generate 10 replies at a nominal spacing of 10 msec.	
		PASS PASS -48.0±2.5 dBm 9.0 ± 2.3 dB 1 1 0 0		Verify the reply data	**UUT1:** "RXCHK 1"		**CRT:** FIFO EMPTY DATA CV PD Z N S MISSED REPLIES	PASS PASS -48.0±2.0 dBm 9.0 ± 2.3 dB 1 1 0 0

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
A	13.8			**MODE-S PATTERN 2 0/90 RCVRS**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate a MODE S data string.	
				Replies are injected on the Bottom 0 and Bottom 90 antenna ports. The reply format is as follows	**RFIU:** "Program"		Program selects Bottom 0 and Bottom 90 ports on T336254.	
				Type: Mode S Pattern: 55555555AA51C4	**SGEN:** "Freq: 1090.0 MHz" "Lev: -36.0 dBm"		Set the signal generator to apply a RF signal to the Bottom 0 antenna port.	
				Pulse Width: 500± 50 ns Power: -36.0 dBm on Bot 0 -48.0 dBm on Bot 90 Frequency: 1090.0 ± 0.1 MHz	**RFIU:** "OFFSET SEL LEV: -12.0 dB"		Select an attenuation which causes the signal on the Bottom 90 antenna port to be 12 dB less than the signal on the Bottom 0 antenna port.	
					UUT1: "RXMS B 1111 45 W"		Set UUT to receive MODE S replies in a test mode.	
					"RDMS 10"		Receive a fixed number of MODE S replies.	
				Inject 10 replies into the UUT	**RFIU:** "MTSTRIG 10"		Generate 10 replies at a nominal spacing of 10 msec.	
		PASS PASS -36.0±2.5 dBm 12.0 ± 2.3 dB 1 1 0 0		Verify the reply data	**UUT1:** "RXCHK 2"		**CRT:** FIFO EMPTY DATA CV PD Z N S MISSED REPLIES	PASS PASS -36.0±2.0 dBm 12.0 ± 2.3 dB 1 1 0 0

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
A	13.9			**MODE-S PATTERN 3 0/90 RCVRS**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate a MODE S data string.	
				Replies are injected on the Bottom 0 and Bottom 90 antenna ports. The reply format is as follows:	**RFIU:** "Program"		Program selects Bottom 0 and Bottom 90 ports on T336254.	
				Type: Mode S Pattern: AAAAAAAAAB5781	**SGEN:** "Freq: 1090.0 MHz" "Lev: -24.0 dBm"		Set the signal generator to apply a RF signal to the Bottom 0 antenna port.	
				Pulse Width: 500± 50 ns Power: -24.0 dBm on Bot 0 -25.0 dBm on Bot 90 Frequency: 1090.0 ± 0.1 MHz	**RFIU:** "OFFSET SEL LEV: -1.0 dB"		Select an attenuation which causes the signal on the Bottom 90 antenna port to be 1 dB less than the signal on the Bottom 0 antenna port.	
					UUT1: "RXMS B 1111 45 W"		Set UUT to receive MODE S replies in a test mode.	
					"RDMS 10"		Receive a fixed number of MODE S replies.	
				Inject 10 replies into the UUT	**RFIU:** "MTSTRIG 10"		Generate 10 replies at a nominal spacing of 10 msec.	
		PASS PASS -24.0±2.5 dBm 1.0 ± 2.3 dB 1 1 0		Verify the reply data	**UUT1:** "RXCHK 3"		**CRT:** FIFO EMPTY DATA CV PD Z N MISSED REPLIES	PASS PASS -24.0±2.0 dBm 1.0 ± 2.3 dB 1 1 0

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.10			**RX SELF-TEST 0/90 RCVRS** This test verifies the RF wrap capability of the UUT. This is a self-test that is "wrapped" through the RF. No externally injected replies are used. For this test, the 0 and 90 degree receivers are enabled. The self-test CV limits are read from memory for this test				
					UUT1: "RXMSRF 1100 10"		Set unit to generate RF Mode S wraparound replies in a test mode without the suppression bus activated during the self-test reply.	
				Write self-test lower limit to DTH register.	**UUT1:** "WC C0607 <lower limit>"		Write self-test lower limit to DTH register at this location.	
					"RDMSRF 10"		Receive 10 Mode S self-test replies	
				Read self-test lower limit.	**UUT1:** "RC 97F0D 01"		Read word from the CAS CPU memory at this location.	
				Read self-test upper limit.	**UUT1:** "RC 97F0E 01"		Read word from CAS CPU memory at this location.	
		PASS PASS ≤ upper limit ≥ lower limit		The CV value shall be below the self-test upper limit stored in memory.	**UUT1:** "RXCHK 1"		**CRT:** FIFO EMPTY DATA CV	PASS PASS ≤ upper limit -3 dB ≥ lower limit +3 dB
		0 ± 3 dB 1 1 0					PD Z N MISSED REPLIES	0 ± 3 dB 1 1 0

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.11	DELETED						
	13.12	DELETED						
	13.13	DELETED						

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.14			**ATCRBS REJECTION: 90/180 (SURV)**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate ATCRBS data string.	
				Replies are injected on the Top 90 and Top 180 antenna ports simultaneously. The reply format is as follows:	**RFIU:** "Program"		Program selects Top 90 and Top 180 ports on T336254.	
				Type: ATCRBS	**SGEN:** "Freq: 1090.0 MHz" "Lev: -81.0 dBm"		Set the signal generator to apply a signal to the Top 90/180 antenna ports which is 2 dB below the lowest acceptable MTL amplitude.	
				Pattern: F1, A1, A2, A3, B1, B2, B3, and F2 pulses are present.				
				Pulse Width: 500 ± 50 ns	**RFIU:** "OFFSET SEL LEV: 0 dB"		Set the RF level into the Top 180 antenna port equal to the RF level into the Top 90 antenna port.	
				Power: -81.0 dBm on Top 90 -81.0 dBm on Top 180				
				Frequency: 1090 ± 0.1 MHz				
				Set UUT to receive appropriate replies	**UUT1:** "RXATC T 1111"		Set UUT to receive ATCRBS replies in a test mode.	
				Set UUT to receive 10 replies	"RDATC 10"		Receive a fixed number of ATCRBS replies.	
				Generate 10 replies	**RFIU:** "MTSTRIG 10"		Generate 10 replies at a nominal spacing of 10 msec.	
				Analyze the reply UUT file				
		PASS 9 or 10		Verify the UUT replies.	**UUT1:** "RXCHK 6"		**CRT:** FIFO EMPTY MISSED REPLIES	PASS 9 or 10

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.15			**ATCRBS 1090 MHz MTL: 90/180 RCVRS (SURV)**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate ATCRBS data string.	
				Replies are injected on the Top 90 and Top 180 antenna ports simultaneously. The reply format is as follows:	**RFIU:** "Program"		Program selects Top 90 and Top 180 ports on T336254.	
				Type: ATCRBS	**SGEN:** "Freq: 1090.0 MHz" "Lev: -75.0 dBm"		Set the signal generator to apply a RF signal to the Top 90/180 antenna ports.	
				Pattern: F1, A1, A2, A3, B1, B2, B3, and F2 pulses are present.				
				Pulse Width: 500±50 ns	**RFIU:** "OFFSET SEL LEV: -3.0 dB"		Select an attenuation which causes the signal on the Top 180 antenna port to be 3 dB less than the signal on the Top 90 antenna port.	
				Power: -75.0 dBm on Top 90 -78.0 dBm on Top 180				
				Frequency: 1090.0 ± 0.1 MHz				
					UUT1: "RXATC T 1111"		Set UUT to receive ATCRBS replies in a test mode.	
					"RDATC 100"		Receive a fixed number of ATCRBS replies.	
				Inject 100 replies into the UUT	**RFIU:** "MTSTRIG 100"		Generate 100 replies at a nominal spacing of 10 msec.	
				Verify the reply data.	**UUT1:** "RXCHK 6"		**CRT:**	
		PASS					FIFO EMPTY	PASS
		PASS					DATA	PASS
		0					Z	0
		1					N	1
		10 MAX					MISSED REPLIES	10 MAX

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.16			**ATCRBS 1087 MHz MTL: 90/180 RCVRS (SURV)**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate ATCRBS data string.	
				Replies are injected on the Top 90 and Top 180 antenna ports simultaneously. The reply format is as follows:	**RFIU:** "Program"		Program selects Top 90 and Top 180 ports on T336254.	
				Type: ATCRBS	**SGEN:** "Freq: 1087.0 MHz" "Lev: -75.0 dBm"		Set the signal generator to apply a RF signal to the Top 90/180 antenna ports.	
				Pattern: F1, A1, A2, A3, B1, B2, B3, and F2 pulses are present.				
				Pulse Width: 500±50 ns	**RFIU:** "OFFSET SEL LEV: -3.0 dB"		Select an attenuation which causes the signal on the Top 180 antenna port to be 3 dB less than the signal on the Top 90 antenna port.	
				Power: -75.0 dBm on Top 90 -78.0 dBm on Top 180				
				Frequency: 1087.0 ± 0.1 MHz				
					UUT1: "RXATC T 1111"		Set UUT to receive ATCRBS replies in a test mode.	
					"RDATC 100"		Receive a fixed number of ATCRBS replies.	
				Inject 100 replies into the UUT	**RFIU:** "MTSTRIG 100"		Generate 100 replies at a nominal spacing of 10 msec.	
				Verify the reply data.	**UUT1:** "RXCHK 6"		**CRT:**	
		PASS					FIFO EMPTY	PASS
		PASS					DATA	PASS
		0					Z	0
		1					N	1
		10 MAX					MISSED REPLIES	10 MAX

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.17			**ATCRBS 1093 MHz MTL: 90/180 RCVRS (SURV)**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate ATCRBS data string.	
				Replies are injected on the Top 90 and Top 180 antenna ports simultaneously. The reply format is as follows:	**RFIU:** "Program"		Program selects Top 90 and Top 180 ports on T336254.	
				Type: ATCRBS	**SGEN:** "Freq: 1093.0 MHz" "Lev: -75.0 dBm"		Set the signal generator to apply a RF signal to the Top 90/180 antenna ports.	
				Pattern: F1, A1, A2, A3, B1, B2, B3, and F2 pulses are present.				
				Pulse Width: 500±50 ns	**RFIU:** "OFFSET SEL LEV: -3.0 dB"		Select an attenuation which causes the signal on the Top 180 antenna port to be 3 dB less than the signal on the Top 90 antenna port.	
				Power: -75.0 dBm on Top 90 -78.0 dBm on Top 180				
				Frequency: 1093.0 ± 0.1 MHz				
					UUT1: "RXATC T 1111"		Set UUT to receive ATCRBS replies in a test mode.	
					"RDATC 100"		Receive a fixed number of ATCRBS replies.	
				Inject 100 replies into the UUT	**RFIU:** "MTSTRIG 100"		Generate 100 replies at a nominal spacing of 10 msec.	
				Verify the reply data.	**UUT1:** "RXCHK 6"		**CRT:**	
		PASS					FIFO EMPTY	PASS
		PASS					DATA	PASS
		0					Z	0
		1					N	1
		10 MAX					MISSED REPLIES	10 MAX

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.18			**ATCRBS 1090 MHz 90/180 RCVRS (SURV)**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate ATCRBS data string.	
				Replies are injected on the Top 90 and Top 180 antenna ports simultaneously. The reply format is as follows:	**RFIU:** "Program"		Program selects Top 90 and Top 180 ports on T336254.	
				Type: ATCRBS	**SGEN:** "Freq: 1090.0 MHz" "Lev: -72.0 dBm"		Set the signal generator to apply a RF signal to the Top 90/180 antenna ports.	
				Pattern: F1, A1, A2, A3, B1, B2, B3, and F2 pulses are present.				
				Pulse Width: 500±50 ns	**RFIU:** "OFFSET SEL LEV: -3.0 dB"		Select an attenuation which causes the signal on the Top 180 antenna port to be 3 dB less than the signal on the Top 90 antenna port.	
				Power: -72.0 dBm on Top 90 -75.0 dBm on Top 180				
				Frequency: 1090.0 ± 0.1 MHz				
					UUT1: "RXATC T 1111"		Set UUT to receive ATCRBS replies in a test mode.	
					"RDATC 100"		Receive a fixed number of ATCRBS replies.	
				Inject 100 replies into the UUT	**RFIU:** "MTSTRIG 100"		Generate 100 replies at a nominal spacing of 10 msec.	
				Verify the reply data.	**UUT1:** "RXCHK 6"		**CRT:**	
		PASS					FIFO EMPTY	PASS
		PASS					DATA	PASS
		-72.0±3.0 dBm					CV	-72.0±2.5 dBm
		3.0 ± 2.3 dB					PD	3.0 ± 2.3 dB
		0					Z	0
		1					N	1
		1 MAX					MISSED REPLIES	1 MAX

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.19			**ATCRBS 1090 MHz 90/180 RCVRS (SURV)**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate ATCRBS data string.	
				Replies are injected on the Top 90 and Top 180 antenna ports simultaneously. The reply format is as follows:	**RFIU:** "Program"		Program selects Top 90 and Top 180 ports on T336254.	
				Type: ATCRBS	**SGEN:** "Freq: 1090.0 MHz" "Lev: -60.0 dBm"		Set the signal generator to apply a RF signal to the Top 90/180 antenna ports.	
A				Pattern: F1, A1, A2, A3, B1, B2, B3, and F2 pulses are present.				
				Pulse Width: 400±50 ns	**RFIU:** "OFFSET SEL LEV: -6.0 dB"		Select an attenuation which causes the signal on the Top 180 antenna port to be 6 dB less than the signal on the Top 90 antenna port.	
				Power: -60.0 dBm on Top 90 -66.0 dBm on Top 180				
				Frequency: 1090.0 ± 0.1 MHz				
					UUT1: "RXATC T 1111"		Set UUT to receive ATCRBS replies in a test mode.	
					"RDATC 100"		Receive a fixed number of ATCRBS replies.	
				Inject 100 replies into the UUT	**RFIU:** "MTSTRIG 100"		Generate 100 replies at a nominal spacing of 10 msec.	
				Verify the reply data.	**UUT1:** "RXCHK 6"		**CRT:**	
		PASS					FIFO EMPTY	PASS
		PASS					DATA	PASS
		-60.0±2.5 dBm					CV	-60.0±2.0 dBm
		6.0 ± 2.3 dB					PD	6.0 ± 2.3 dB
		0					Z	0
		1					N	1
		1					S	1
		1 MAX					MISSED REPLIES	1 MAX

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.20			**MODE-S PATTERN 1 90/180 RCVRS**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate a MODE S string.	
				Replies are injected on the Top 90 and Top 180 antenna ports. The reply format is as follows:	**RFIU:** "Program"		Program selects Top 90 and Top 180 ports on T336254.	
				Type: Mode S Pattern: 80000000018567	**SGEN:** "Freq: 1090.0 MHz" "Lev: -48.0 dBm"		Set the signal generator to apply a RF signal to the Top 90/180 antenna ports.	
				Pulse Width: 500± 50 ns Power: -48.0 dBm on Top 90 -57.0 dBm on Top 180 Frequency: 1090.0 ± 0.1 MHz	**RFIU:** "OFFSET SEL LEV: -9.0 dB"		Select an attenuation which causes the signal on the Top 180 antenna port to be 9 dB less than the signal on the Top 90 antenna port.	
A					**UUT1:** "RXMS T 1111 45 W"		Set UUT to receive MODE S replies in a test mode.	
					"RDMS 10"		Receive a fixed number of MODE S replies.	
				Inject 10 replies into the UUT	**RFIU:** "MTSTRIG 10"		Generate 10 replies at a nominal spacing of 10 msec.	
		PASS PASS -48.0±2.5 dBm 9.0 ± 2.3 dB 0 1 1 0		Verify the reply data.	**UUT1:** "RXCHK 1"		**CRT:** FIFO EMPTY DATA CV PD Z N S MISSED REPLIES	PASS PASS -48.0±2.0 dBm 9.0 ± 2.3 dB 0 1 1 0

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
A	13.21			**MODE-S PATTERN 2 90/180 RCVRS**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate a MODE S string.	
				Replies are injected on the Bottom 90 and Bottom 180 antenna ports. The reply format is as follows:	**RFIU:** "Program"		Program selects Bottom 90 and Bottom 180 ports on T336254.	
				Type: Mode S Pattern: 55555555AA51C4	**SGEN:** "Freq: 1090.0 MHz" "Lev: -36.0 dBm"		Set the signal generator to apply a RF signal to the Bottom 90/180 antenna ports.	
				Pulse Width: 500± 50 ns Power: -36.0 dBm on Bot 90 -48.0 dBm on Bot 180 Frequency: 1090.0 ± 0.1 MHz	**RFIU:** "OFFSET SEL LEV: -12.0 dB"		Select an attenuation which causes the signal on the Bottom 180 antenna port to be 12 dB less than the signal on the Bottom 90 antenna port.	
					UUT1: "RXMS B 1111 45 W"		Set UUT to receive MODE S replies in a test mode.	
					"RDMS 10"		Receive a fixed number of MODE S replies.	
				Inject 10 replies into the UUT.	**RFIU:** "MTSTRIG 10"		Generate 10 replies at a nominal spacing of 10 msec.	
		PASS PASS -36.0±2.5 dBm 12.0 ± 2.3 dB 0 1 1 0		Verify the reply data.	**UUT1:** "RXCHK 2"		**CRT:** FIFO EMPTY DATA CV PD Z N S MISSED REPLIES	PASS PASS -36.0±2.0 dBm 12.0 ± 2.3 dB 0 1 1 0

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
A	13.22			**MODE-S PATTERN 3 90/180 RCVRS**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate a MODE S string.	
				Replies are injected on the Bottom 90 and Bottom 180 antenna ports. The reply format is as follows:	**RFIU:** "Program"		Program selects Bottom 90 and Bottom 180 ports on T336254.	
				Type: Mode S Pattern: AAAAAAAAAB5781	**SGEN:** "Freq: 1090.0 MHz" "Lev: -24.0 dBm"		Set the signal generator to apply a RF signal to the Bottom 90/180 antenna ports.	
				Pulse Width: 500± 50 ns Power: -24.0 dBm on Bot 90 -25.0 dBm on Bot 180 Frequency: 1090.0 ± 0.1 MHz	**RFIU:** "OFFSET SEL LEV: -1.0 dB"		Select an attenuation which causes the signal on the Bottom 180 antenna port to be 1 dB less than the signal on the Bottom 90 antenna port.	
					UUT1: "RXMS B 1111 45 W"		Set UUT to receive MODE S replies in a test mode.	
					"RDMS 10"		Receive a fixed number of MODE S replies.	
				Inject 10 replies into the UUT	**RFIU:** "MTSTRIG 10"		Generate 10 replies at a nominal spacing of 10 msec.	
		PASS PASS -24.0±2.5 dBm 1.0 ± 2.3 dB 0 1 0		Verify the reply data.	**UUT1:** "RXCHK 3"		**CRT:** FIFO EMPTY DATA CV PD Z N MISSED REPLIES	PASS PASS -24.0±2.0 dBm 1.0 ± 2.3 dB 0 1 0

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.23			**RX SELF-TEST 90/180 RCVRS**				
				This test verifies the RF wrap capability of the UUT. This is a self-test that is "wrapped" through the RF. No externally injected replies are used. For this test, the 90 and 180 degree receivers are enabled. The self-test CV limits are read from memory for this test.	**UUT1:** "RXMSRF 0110 10"		Set unit to generate RF Mode S wraparound replies in a test mode without the suppression bus activated during the self-test reply.	
					UUT1: **"**RDMSRF 10"		Generate and receive 10 Mode S replies.	
				Read self-test lower limit.	**UUT1:** "RC 97F0D 01"		Read words from the CAS CPU memory at this location.	
				Read self-test upper limit.	**UUT1:** "RC 97F0E 01"		Read words from CAS CPU memory at this location.	
				Write self-test lower limit to DTH register.	**UUT1:** "WC C0607 <lower limit>"		Write self-test lower limit to DTH register at this location.	
		PASS PASS ≤ upper limit ≥ lower limit		The CV value shall be below the upper limit stored in memory.	**UUT1:** "RXCHK 1"		FIFO EMPTY DATA CV	PASS PASS ≤ upper limit -3 dB ≥ lower limit +3 dB
		0 ± 3 dB 0 1 0					PD Z N MISSED REPLIES	0 ± 3 dB 0 1 0

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.24	DELETED						
	13.25	DELETED						
	13.26	DELETED						

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.27			**ATCRBS REJECTION: 180/270 (SURV)**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate ATCRBS data string.	
				Replies are injected on the Top 180 and Top 270 antenna ports simultaneously. The reply format is as follows:	**RFIU:** "Program"		Program selects Top 180 and Top 270 ports on T336254.	
				Type: ATCRBS Pattern: F1, A1, A2, A3, B1, B2, B3, and F2 pulses are present.	**SGEN:** "Freq: 1090.0 MHz" "Lev: -81.0 dBm"		Set the signal generator to apply a signal to the Top 180/270 antenna ports which is 2 dB below the lowest acceptable MTL amplitude.	
				Pulse Width: 500 ± 50 ns Power: -81.0 dBm on Top 180 -81.0 dBm on Top 270 Frequency: 1090 ± 0.1 MHz	**RFIU:** "OFFSET SEL LEV: 0 dB"		Set the RF level into the Top 180 antenna port equal to the RF level into the Top 270 antenna port.	
				Set UUT to receive appropriate replies	**UUT1:** "RXATC T 1111"		Set UUT to receive ATCRBS replies in a test mode.	
				Set UUT to receive 10 replies.	"RDATC 10"		Receive a fixed number of ATCRBS replies.	
				Generate 10 replies.	**RFIU:** "MTSTRIG 10"		Generate 10 replies at a nominal spacing of 10 msec.	
		PASS 9 or 10		Verify the UUT replies.	**UUT1:** "RXCHK 6"		**CRT:** FIFO EMPTY MISSED REPLIES	PASS 9 or 10

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.28			**ATCRBS 1090 MHz MTL: 180/270 RCVRS (SURV)**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate ATCRBS data string.	
				Replies are injected on the Top 180 and Top 270 antenna ports simultaneously. The reply format is as follows:	**RFIU:** "Program"		Program selects Top 180 and Top 270 ports on T336254.	
				Type: ATCRBS	**SGEN:** "Freq: 1090.0 MHz" "Lev: -75.0 dBm"		Set the signal generator to apply a RF signal to the Top 180/270 antenna ports.	
				Pattern: F1, A1, A2, A3, B1, B2, B3, and F2 pulses are present.				
				Pulse Width: 500±50 ns	**RFIU:** "OFFSET SEL LEV: -3.0 dB"		Select an attenuation which causes the signal on the Top 270 antenna port to be 3 dB less than the signal on the Top 180 antenna port.	
				Power: -75.0 dBm on Top 180 -78.0 dBm on Top 270				
				Frequency: 1090.0 ± 0.1 MHz				
					UUT1: "RXATC T 1111"		Set UUT to receive ATCRBS replies in a test mode.	
					"RDATC 100"		Receive a fixed number of ATCRBS replies.	
				Inject 100 replies into the UUT	**RFIU:** "MTSTRIG 100"		Generate 100 replies at a nominal spacing of 10 msec.	
				Verify the reply data.	**UUT1:** "RXCHK 6"		**CRT:**	
		PASS					FIFO EMPTY	PASS
		PASS					DATA	PASS
		0					Z	0
		0					N	0
		10 MAX					MISSED REPLIES	10 MAX

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.29			**ATCRBS 1087 MHz MTL: 180/270 (SURV)**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate ATCRBS data string.	
				Replies are injected on the Top 180 and Top 270 antenna ports simultaneously. The reply format is as follows:	**RFIU:** "Program"		Program selects Top 180 and Top 270 ports on T336254.	
				Type: ATCRBS Pattern: F1, A1, A2, A3, B1, B2, B3, and F2 pulses are present.	**SGEN:** "Freq: 1087.0 MHz" "Lev: -75.0 dBm"		Set the signal generator to apply a RF signal to the Top 180/270 antenna ports.	
				Pulse Width: 500±50 ns Power: -75.0 dBm on Top 180 -78.0 dBm on Top 270 Frequency: 1087.0 ± 0.1 MHz	**RFIU:** "OFFSET SEL LEV: -3.0 dB"		Select an attenuation which causes the signal on the Top 270 antenna port to be 3 dB less than the signal on the Top 180 antenna port.	
					UUT1: "RXATC T 1111"		Set UUT to receive ATCRBS replies in a test mode.	
					"RDATC 100"		Receive a fixed number of ATCRBS replies.	
				Inject 100 replies into the UUT	**RFIU:** "MTSTRIG 100"		Generate 100 replies at a nominal spacing of 10 msec.	
				Verify the reply data.	**UUT1:** "RXCHK 6"		**CRT:**	
		PASS					FIFO EMPTY	PASS
		PASS					DATA	PASS
		0					Z	0
		0					N	0
		10 MAX					MISSED REPLIES	10 MAX

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.30			**ATCRBS 1093 MHz MTL: 180/270 RCVRS (SURV)**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate ATCRBS data string.	
				Replies are injected on the Top 180 and Top 270 antenna ports simultaneously. The reply format is as follows:	**RFIU:** "Program"		Program selects Top 180 and Top 270 ports on T336254.	
				Type: ATCRBS Pattern: F1, A1, A2, A3, B1, B2, B3, and F2 pulses are present.	**SGEN:** "Freq: 1093.0 MHz" "Lev: -75.0 dBm"		Set the signal generator to apply a RF signal to the Top 180/270 antenna ports.	
				Pulse Width: 500±50 ns Power: -75.0 dBm on Top 180 -78.0 dBm on Top 270 Frequency: 1093.0 ± 0.1 MHz	**RFIU:** "OFFSET SEL LEV: -3.0 dB"		Select an attenuation which causes the signal on the Top 270 antenna port to be 3 dB less than the signal on the Top 180 antenna port.	
					UUT1: "RXATC T 1111"		Set UUT to receive ATCRBS replies in a test mode.	
					"RDATC 100"		Receive a fixed number of ATCRBS replies.	
				Inject 100 replies into the UUT	**RFIU:** "MTSTRIG 100"		Generate 100 replies at a nominal spacing of 10 msec.	
		PASS PASS 0 0 10 MAX		Verify the reply data.	**UUT1:** "RXCHK 6"		**CRT:** FIFO EMPTY DATA Z N MISSED REPLIES	PASS PASS 0 0 10 MAX

REV LTR	TEST NO.	SPECIFICATION OPR LIMITS	C	TEST DESCRIPTION	PROCEDURE SWITCH POS	C	WORK STEPS	SPECIFICATION MFG LIMITS
	13.31			**ATCRBS 1090 MHz 180/270 RCVRS (SURV)**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate ATCRBS data string.	
				Replies are injected on the Top 180 and Top 270 antenna ports simultaneously. The reply format is as follows:	**RFIU:** "Program"		Program selects Top 180 and Top 270 ports on T336254.	
				Type: ATCRBS	**SGEN:** "Freq: 1090.0 MHz" "Lev: -72.0 dBm"		Set the signal generator to apply a RF signal to the Top 180/270 antenna ports.	
				Pattern: F1, A1, A2, A3, B1, B2, B3, and F2 pulses are present.				
				Pulse Width: 500±50 ns	**RFIU:** "OFFSET SEL LEV: -3.0 dB"		Select an attenuation which causes the signal on the Top 270 antenna port to be 3 dB less than the signal on the Top 180 antenna port.	
				Power: -72.0 dBm on Top 180 -75.0 dBm on Top 270				
				Frequency: 1090.0 ± 0.1 MHz				
					UUT1: "RXATC T 1111"		Set UUT to receive ATCRBS replies in a test mode.	
					"RDATC 100"		Receive a fixed number of ATCRBS replies.	
				Inject 100 replies into the UUT	**RFIU:** "MTSTRIG 100"		Generate 100 replies at a nominal spacing of 10 msec.	
		PASS PASS -72.0±3.0 dBm 3.0 ± 2.3 dB 0 0 1 MAX		Verify the reply data.	**UUT1:** "RXCHK 6"		**CRT:** FIFO EMPTY DATA CV PD Z N MISSED REPLIES	PASS PASS -72.0±2.5 dBm 3.0 ± 2.3 dB 0 0 1 MAX

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.32			**ATCRBS 1090 MHz 180/270 RCVRS (SURV)**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate ATCRBS data string.	
				Replies are injected on the Top 180 and Top 270 antenna ports simultaneously. The reply format is as follows:	**RFIU:** "Program"		Program selects Top 180 and Top 270 ports on T336254.	
				Type: ATCRBS	**SGEN:** "Freq: 1090.0 MHz" "Lev: -60.0 dBm"		Set the signal generator to apply a RF signal to the Top 180/270 antenna ports.	
				Pattern: F1, A1, A2, A3, B1, B2, B3, and F2 pulses are present.				
A				Pulse Width: 400±50 ns	**RFIU:** "OFFSET SEL LEV: -6.0 dB"		Select an attenuation which causes the signal on the Top 270 antenna port to be 6 dB less than the signal on the Top 180 antenna port.	
				Power: -60.0 dBm on Top 180 -66.0 dBm on Top 270				
				Frequency: 1090.0 ± 0.1 MHz				
					UUT1: "RXATC T 1111"		Set UUT to receive ATCRBS replies in a test mode.	
					"RDATC 100"		Receive a fixed number of ATCRBS replies.	
				Inject 100 replies into the UUT	**RFIU:** "MTSTRIG 100"		Generate 100 replies at a nominal spacing of 10 msec.	
				Verify the reply data.	**UUT1:** "RXCHK 6"		**CRT:**	
		PASS					FIFO EMPTY	PASS
		PASS					DATA	PASS
		-60.0±2.5 dBm					CV	-60.0±2.0 dBm
		6.0 ± 2.3 dB					PD	6.0 ± 2.3 dB
		0					Z	0
		0					N	0
		0					S	0
		1 MAX					MISSED REPLIES	1 MAX

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.33			**MODE-S PATTERN 1 180/270 RCVRS**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate a MODE S string.	
				Replies are injected on the Top 180 and Top 270 antenna ports. The reply format is as follows:	**RFIU:** "Program"		Program selects Top 180 and Top 270 ports on T336254.	
				Type: Mode S	**SGEN:** "Freq: 1090.0 MHz" "Lev: -48.0 dBm"		Set the signal generator to apply a RF signal to the Top 180/270 antenna ports.	
				Pattern: 80000000018567				
				Pulse Width: 500± 50 ns	**RFIU:** "OFFSET SEL LEV: -9.0 dB"		Select an attenuation which causes the signal on the Top 270 antenna port to be 9 dB less than the signal on the Top 180 antenna port.	
				Power: -48.0 dBm on Top 180 -57.0 dBm on Top 270				
				Frequency: 1090.0 ± 0.1 MHz				
A					**UUT1:** "RXMS T 1111 45 W"		Set UUT to receive MODE S replies in a test mode.	
					"RDMS 10"		Receive a fixed number of MODE S replies.	
				Inject 10 replies into the UUT	**RFIU:** "MTSTRIG 10"		Generate 10 replies at a nominal spacing of 10 msec.	
				Verify the reply data.	**UUT1:** "RXCHK 1"		**CRT:**	
		PASS					FIFO EMPTY	PASS
		PASS					DATA	PASS
		-48.0±2.5 dBm					CV	-48.0±2.0 dBm
		9.0 ± 2.3 dB					PD	9.0 ± 2.3 dB
		0					Z	0
		0					N	0
		0					S	0
		0 MAX					MISSED REPLIES	0 MAX

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
A	13.34			**MODE-S PATTERN 2 180/270 RCVRS** Replies are injected on the Bottom 180 and Bottom 270 antenna ports. The reply format is as follows: Type: Mode S Pattern: 55555555AA51C4 Pulse Width: 500± 50 ns Power: -36.0 dBm on Bot 180 -48.0 dBm on Bot 270 Frequency: 1090.0 ± 0.1 MHz Inject 10 replies into the UUT Verify the reply data.	**RFIU:** "Program" **RFIU:** "Program" **SGEN:** "Freq: 1090.0 MHz" "Lev: -36.0 dBm" **RFIU:** "OFFSET SEL LEV: -12.0 dB" **UUT1:** "RXMS B 1111 45 W" "RDMS 10" **RFIU:** "MTSTRIG 10" **UUT1:** "RXCHK 2"		Program loads FIFO with data pattern to simulate a MODE S string. Program selects Bottom 180 and Bottom 270 ports on T336254. Set the signal generator to apply a RF signal to the Bottom 180/270 antenna ports. Select an attenuation which causes the signal on the Bottom 270 antenna port to be 12 dB less than the signal on the Bottom 180 antenna port. Set UUT to receive MODE S replies in a test mode. Receive a fixed number of MODE S replies. Generate 10 replies at a nominal spacing of 10 msec. **CRT:** FIFO EMPTY DATA CV PD Z N S MISSED REPLIES	

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
A	13.35			**MODE-S PATTERN 3 180/270 RCVRS** Replies are injected on the Bottom 180 and Bottom 270 antenna ports. The reply format is as follows: Type: Mode S Pattern: AAAAAAAAAB5781 Pulse Width: 500± 50 ns Power: -24.0 dBm on Bot 180 -25.0 dBm on Bot 270 Frequency: 1090.0 ± 0.1 MHz Inject 10 replies into the UUT Verify the reply data.	**RFIU:** "Program" **RFIU:** "Program" **SGEN:** "Freq: 1090.0 MHz" "Lev: -24.0 dBm" **RFIU:** "OFFSET SEL LEV: -1.0 dB" **UUT1:** "RXMS B 1111 45 W" "RDMS 10" **RFIU:** "MTSTRIG 10" **UUT1:** "RXCHK 3"		Program loads FIFO with data pattern to simulate a MODE S string. Program selects Bottom 180 and Bottom 270 ports on T336254. Set the signal generator to apply a RF signal to the Bottom 180/270 antenna ports. Select an attenuation which causes the signal on the Bottom 270 antenna port to be 1 dB less than the signal on the Bottom 180 antenna port. Set UUT to receive MODE S replies in a test mode. Receive a fixed number of MODE S replies. Generate 10 replies at a nominal spacing of 10 msec. **CRT:** FIFO EMPTY DATA CV PD Z N MISSED REPLIES	PASS PASS -24.0±2.0 dBm 1.0 ± 2.3 dB 0 0 0
		PASS PASS -24.0±2.5 dBm 1.0 ± 2.3 dB 0 0 0						

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.36			**RX SELF-TEST 180/270 RCVRS**				
				This test verifies the RF wrap capability of the UUT. This is a self-test that is "wrapped" through the RF. No externally injected replies are used. For this test, the 180 and 270 degree receivers are enabled. The self-test CV limits are read from memory for this test.	**UUT1:** "RXMSRF 0011 10"		Set unit to generate RF Mode S wraparound replies in a test mode without the suppression bus activated during the self-test reply.	
					UUT1: "RDMSRF 10"		Generate and receive 10 Mode S replies	
				Read self-test lower limit.	**UUT1:** "RC 97F0D 01"		Read words from the CAS CPU memory at this location.	
				Read self-test upper limit.	**UUT1:** "RC 97F0E 01"		Read words from CAS CPU memory at this location	
				Write self-test lower limit to DTH register.	**UUT1:** "WC C0607 <lower limit>"		Write self-test lower limit to DTH register at this location.	
		PASS PASS ≤ upper limit ≥ lower limit		The CV value shall be below the upper limit stored in memory.	**UUT1:** "RXCHK 1"		FIFO EMPTY DATA CV	PASS PASS ≤ upper limit -3 dB ≥ lower limit +3 dB
		0 ± 3 dB 0 0 0					PD Z N MISSED REPLIES	0 ± 3 dB 0 0 0

REV LTR	TEST NO.	SPECIFICATION OPR LIMITS	C	TEST DESCRIPTION	PROCEDURE SWITCH POS	C	WORK STEPS	SPECIFICATION MFG LIMITS
	13.37	DELETED						
	13.38	DELETED						
	13.39	DELETED						

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.40			**ATCRBS REJECTION: 270/0 (SURV)**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate ATCRBS data string.	
				Replies are injected on the Top 270 and Top 0 antenna ports simultaneously. The reply format is as follows:	**RFIU:** "Program"		Program selects Top 270 and Top 0 ports on T336254.	
				Type: ATCRBS Pattern: F1, A1, A2, A3, B1, B2, B3, and F2 pulses are present.	**SGEN:** "Freq: 1090.0 MHz" "Lev: -81.0 dBm"		Set the signal generator to apply a signal to the Top 270/0 antenna ports which is 2 dB below the lowest acceptable MTL amplitude.	
				Pulse Width: 500 ± 50 ns Power: -81.0 dBm on Top 270 -81.0 dBm on Top 0 Frequency: 1090 ± 0.1 MHz	**RFIU:** "OFFSET SEL LEV: 0 dB"		Set the RF level into the Top 0 antenna port equal to the RF level into the Top 270 antenna port.	
				Set UUT to receive appropriate replies	**UUT1:** "RXATC T 1111"		Set UUT to receive ATCRBS replies in a test mode.	
				Set UUT to receive 10 replies	"RDATC 10"		Receive a fixed number of ATCRBS replies.	
				Generate 10 replies	**RFIU:** "MTSTRIG 10"		Generate 10 replies at a nominal spacing of 10 msec.	
		PASS 9 or 10		Verify the UUT replies.	**UUT1:** "RXCHK 6"		**CRT:** FIFO EMPTY MISSED REPLIES	PASS 9 or 10

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.41			**ATCRBS 1090 MHz MTL: 270/0 RCVRS (SURV)**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate ATCRBS data string.	
				Replies are injected on the Top 270 and Top 0 antenna ports simultaneously. The reply format is as follows:	**RFIU:** "Program"		Program selects Top 270 and Top 0 ports on T336254.	
				Type: ATCRBS	**SGEN:** "Freq: 1090.0 MHz" "Lev: -75.0 dBm"		Set the signal generator to apply a RF signal to the Top 270/0 antenna ports.	
				Pattern: F1, A1, A2, A3, B1, B2, B3, and F2 pulses are present.				
				Pulse Width: 500±50 ns	**RFIU:** "OFFSET SEL LEV: -3.0 dB"		Select an attenuation which causes the signal on the Top 0 antenna port to be 3 dB less than the signal on the Top 270 antenna port.	
				Power: -75.0 dBm on Top 270 -78.0 dBm on Top 0				
				Frequency: 1090.0 ± 0.1 MHz				
					UUT1: "RXATC T 1111"		Set UUT to receive ATCRBS replies in a test mode.	
					"RDATC 100"		Receive a fixed number of ATCRBS replies.	
				Inject 100 replies into the UUT	**RFIU:** "MTSTRIG 100"		Generate 100 replies at a nominal spacing of 10 msec.	
				Verify the reply data.	**UUT1:** "RXCHK 6"		**CRT:**	
		PASS					FIFO EMPTY	PASS
		PASS					DATA	PASS
		1					Z	1
		0					N	0
		10 MAX					MISSED REPLIES	10 MAX

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.42			**ATCRBS 1087 MHz 270/0 (SURV)**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate ATCRBS data string.	
				Replies are injected on the Top 270 and Top 0 antenna ports simultaneously. The reply format is as follows:	**RFIU:** "Program"		Program selects Top 270 and Top 0 ports on T336254.	
				Type: ATCRBS	**SGEN:** "Freq: 1087.0 MHz" "Lev: -75.0 dBm"		Set the signal generator to apply a RF signal to the Top 270/0 antenna ports.	
				Pattern: F1, A1, A2, A3, B1, B2, B3, and F2 pulses are present.				
				Pulse Width: 500±50 ns	**RFIU:** "OFFSET SEL LEV: -3.0 dB"		Select an attenuation which causes the signal on the Top 0 antenna port to be 3 dB less than the signal on the Top 270 antenna port.	
				Power: -75.0 dBm on Top 270 -78.0 dBm on Top 0				
				Frequency: 1090.0 ± 0.1 MHz				
					UUT1: "RXATC T 1111"		Set UUT to receive ATCRBS replies in a test mode.	
					"RDATC 100"		Receive a fixed number of ATCRBS replies.	
				Inject 100 replies into the UUT	**RFIU:** "MTSTRIG 100"		Generate 100 replies at a nominal spacing of 10 msec.	
				Verify the reply data.	**UUT1:** "RXCHK 6"		**CRT:**	
		PASS					FIFO EMPTY	PASS
		PASS					DATA	PASS
		1					Z	1
		0					N	0
		10 MAX					MISSED REPLIES	10 MAX

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.43			**ATCRBS 1093 MHz 270/0 RCVRS (SURV)**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate ATCRBS data string.	
				Replies are injected on the Top 270 and Top 0 antenna ports simultaneously. The reply format is as follows:	**RFIU:** "Program"		Program selects Top 270 and Top 0 ports on T336254.	
				Type: ATCRBS	**SGEN:** "Freq: 1093.0 MHz" "Lev: -75.0 dBm"		Set the signal generator to apply a RF signal to the Top 270/0 antenna ports.	
				Pattern: F1, A1, A2, A3, B1, B2, B3, and F2 pulses are present.				
				Pulse Width: 500±50 ns	**RFIU:** "OFFSET SEL LEV: -3.0 dB"		Select an attenuation which causes the signal on the Top 0 antenna port to be 3 dB less than the signal on the Top 270 antenna port.	
				Power: -75.0 dBm on Top 270 -78.0 dBm on Top 0				
				Frequency: 1093.0 ± 0.1 MHz				
					UUT1: "RXATC T 1111"		Set UUT to receive ATCRBS replies in a test mode.	
					"RDATC 100"		Receive a fixed number of ATCRBS replies.	
				Inject 100 replies into the UUT	**RFIU:** "MTSTRIG 100"		Generate 100 replies at a nominal spacing of 10 msec.	
				Verify the reply data.	**UUT1:** "RXCHK 6"		**CRT:**	
		PASS					FIFO EMPTY	PASS
		PASS					DATA	PASS
		1					Z	1
		0					N	0
		10 MAX					MISSED REPLIES	10 MAX

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.44			**ATCRBS 1090 MHz 270/0 RCVRS (SURV)**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate ATCRBS data string.	
				Replies are injected on the Top 270 and Top 0 antenna ports simultaneously. The reply format is as follows:	**RFIU:** "Program"		Program selects Top 270 and Top 0 ports on T336254.	
				Type: ATCRBS	**SGEN:** "Freq: 1090.0 MHz" "Lev: -72.0 dBm"		Set the signal generator to apply a RF signal to the Top 270/0 antenna ports.	
				Pattern: F1, A1, A2, A3, B1, B2, B3, and F2 pulses are present.				
				Pulse Width: 500±50 ns	**RFIU:** "OFFSET SEL LEV: -3.0 dB"		Select an attenuation which causes the signal on the Top 0 antenna port to be 3 dB less than the signal on the Top 270 antenna port.	
				Power: -72.0 dBm on Top 270 -75.0 dBm on Top 0				
				Frequency: 1090.0 ± 0.1 MHz				
					UUT1: "RXATC T 1111"		Set UUT to receive ATCRBS replies in a test mode.	
					"RDATC 100"		Receive a fixed number of ATCRBS replies.	
				Inject 100 replies into the UUT.	**RFIU:** "MTSTRIG 100"		Generate 100 replies at a nominal spacing of 10 msec.	
		PASS PASS -72.0±3.0 dBm 3.0 ± 2.3 dB 1 0 1 MAX		Verify the reply data.	**UUT1:** "RXCHK 6"		**CRT:** FIFO EMPTY DATA CV PD Z N MISSED REPLIES	PASS PASS -72.0±2.5 dBm 3.0 ± 2.3 dB 1 0 1 MAX

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.45			**ATCRBS 1090 MHz 270/0 RCVRS (SURV)**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate ATCRBS data string.	
				Replies are injected on the Top 270 and Top 0 antenna ports simultaneously. The reply format is as follows:	**RFIU:** "Program"		Program selects Top 270 and Top 0 ports on T336254.	
				Type: ATCRBS	**SGEN:** "Freq: 1090.0 MHz" "Lev: -60.0 dBm"		Set the signal generator to apply a RF signal to the Top 270/0 antenna ports.	
				Pattern: F1, A1, A2, A3, B1, B2, B3, and F2 pulses are present.				
A				Pulse Width: 400±50 ns	**RFIU:** "OFFSET SEL LEV: -6.0 dB"		Select an attenuation which causes the signal on the Top 0 antenna port to be 6 dB less than the signal on the Top 270 antenna port.	
				Power: -60.0 dBm on Top 270 -66.0 dBm on Top 0				
				Frequency: 1090.0 ± 0.1 MHz				
					UUT1: "RXATC T 1111"		Set UUT to receive ATCRBS replies in a test mode.	
					"RDATC 100"		Receive a fixed number of ATCRBS replies.	
				Inject 100 replies into the UUT	**RFIU:** "MTSTRIG 100"		Generate 100 replies at a nominal spacing of 10 msec.	
				Verify the reply data.	**UUT1:** "RXCHK 6"		**CRT:**	
		PASS					FIFO EMPTY	PASS
		PASS					DATA	PASS
		-60.0±2.5 dBm					CV	-60.0±2.0 dBm
		6.0 ± 2.3 dB					PD	6.0 ± 2.3 dB
		1					Z	1
		0					N	0
		1					S	1
		1 MAX					MISSED REPLIES	1 MAX

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
A	13.46			**MODE-S PATTERN 1 270/0 RCVRS**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate a MODE S string.	
				Replies are injected on the Top 270 and Top 0 antenna ports. The reply format is as follows:	**RFIU:** "Program"		Program selects Top 270 and Top 0 ports on T336254.	
				Type: Mode S Pattern: 80000000018567	**SGEN:** "Freq: 1090.0 MHz" "Lev: -48.0 dBm"		Set the signal generator to apply a RF signal to the Top 270/0 antenna ports.	
				Pulse Width: 500± 50 ns Power: -48.0 dBm on Top 270 -57.0 dBm on Top 0 Frequency: 1090.0 ± 0.1 MHz	**RFIU:** "OFFSET SEL LEV: -9.0 dB"		Select an attenuation which causes the signal on the Top 0 antenna port to be 9 dB less than the signal on the Top 270 antenna port.	
					UUT1: "RXMS T 1111 45 W"		Set UUT to receive MODE S replies in a test mode.	
					"RDMS 10"		Receive a fixed number of MODE S replies.	
				Inject 10 replies into the UUT	**RFIU:** "MTSTRIG 10"		Generate 10 replies at a nominal spacing of 10 msec.	
		PASS PASS -48.0±2.5 dBm 9.0 ± 2.3 dB 1 0 1 0 MAX		Verify the reply data.	**UUT1:** "RXCHK 1"		**CRT:** FIFO EMPTY DATA CV PD Z N S MISSED REPLIES	PASS PASS -48.0±2.0 dBm 9.0 ± 2.3 dB 1 0 1 0 MAX

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
A	13.47			**MODE-S PATTERN 2 270/0 RCVRS**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate a MODE S string.	
				Replies are injected on the Bottom 270 and Bottom 0 antenna ports. The reply format is as follows:	**RFIU:** "Program"		Program selects Bottom 270 and Bottom 0 ports on T336254.	
				Type: Mode S	**SGEN:** "Freq: 1090.0 MHz" "Lev: -36.0 dBm"		Set the signal generator to apply a RF signal to the Bottom 270/0 antenna ports.	
				Pattern: 55555555AA51C4				
				Pulse Width: 500± 50 ns	**RFIU:** "OFFSET SEL LEV: -12.0 dB"		Select an attenuation which causes the signal on the Bottom 0 antenna port to be 12 dB less than the signal on the Bottom 270 antenna port.	
				Power: -36.0 dBm on Bot 270 -48.0 dBm on Bot 0				
				Frequency: 1090.0 ± 0.1 MHz				
					UUT1: "RXMS B 1111 45 W"		Set UUT to receive MODE S replies in a test mode.	
					"RDMS 10"		Receive a fixed number of MODE S replies.	
				Inject 10 replies into the UUT	**RFIU:** "MTSTRIG 10"		Generate 10 replies at a nominal spacing of 10 msec.	
				Verify the reply data.	**UUT1:** "RXCHK 2"		**CRT:**	
		PASS					FIFO EMPTY	PASS
		PASS					DATA	PASS
		-36.0±2.5 dBm					CV	-36.0±2.0 dBm
		12.0 ± 2.3 dB					PD	12.0 ± 2.3 dB
		1					Z	1
		0					N	0
		1					S	1
		0					MISSED REPLIES	0

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.48			**MODE-S PATTERN 3 270/0 RCVRS**	**RFIU:** "Program"		Program loads FIFO with data pattern to simulate a MODE S string.	
				Replies are injected on the Bottom 270 and Bottom 0 antenna ports. The reply format is as follows:	**RFIU:** "Program"		Program selects Bottom 270 and Bottom 0 ports on T336254.	
				Type: Mode S	**SGEN:** "Freq: 1090.0 MHz" "Lev: -24.0 dBm"		Set the signal generator to apply a RF signal to the Bottom 270/0 antenna ports.	
				Pattern: AAAAAAAAAB5781				
				Pulse Width: 500± 50 ns	**RFIU:** "OFFSET SEL LEV: -1.0 dB"		Select an attenuation which causes the signal on the Bottom 0 antenna port to be 1 dB less than the signal on the Bottom 270 antenna port.	
				Power: -24.0 dBm on Bot 270 -25.0 dBm on Bot 0				
				Frequency: 1090.0 ± 0.1 MHz				
A					**UUT1:** "RXMS B 1111 45 W"		Set UUT to receive MODE S replies in a test mode.	
					"RDMS 10"		Receive a fixed number of MODE S replies.	
				Inject 10 replies into the UUT	**RFIU:** "MTSTRIG 10"		Generate 10 replies at a nominal spacing of 10 msec.	
				Verify the reply data.	**UUT1:** "RXCHK 3"		**CRT:**	
		PASS					FIFO EMPTY	PASS
		PASS					DATA	PASS
		-24.0±2.5 dBm					CV	-24.0±2.0 dBm
		1.0 ± 2.3 dB					PD	1.0 ± 2.3 dB
		1					Z	1
		0					N	0
A		0					MISSED REPLIES	0

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.49			**RX SELF-TEST 270/0 RCVRS**				
				This test verifies the RF wrap capability of the UUT. This is a self-test that is "wrapped" through the RF. No externally injected replies are used. For this test, the 270 and 0 degree receivers are enabled. The self-test CV limits are read from memory for this test.	**UUT1:** "RXMSRF 1001 10"		Set unit to generate RF Mode S wraparound replies in a test mode without the suppression bus activated during the self-test reply.	
					UUT1: "RDMSRF 10"		Generate and receive 10 Mode S replies	
				Read self-test lower limit.	**UUT1:** "RC 97F0D 01"		Read words from the CAS CPU memory at this location.	
				Read self-test upper limit.	**UUT1:** "RC 97F0E 01"		Read words from CAS CPU memory at this location	
				Write self-test lower limit to DTH register.	**UUT1:** "WC C0607 <lower limit>"		Write self-test lower limit to DTH register at this location.	
		PASS PASS ≤ upper limit ≥ lower limit 0 ± 3 dB 1 0 0		The CV value shall be below the upper limit stored in memory.	**UUT1:** "RXCHK 1"		FIFO EMPTY DATA CV PD Z N MISSED REPLIES	PASS PASS ≤ upper limit -3 dB ≥ lower limit +3 dB 0 ± 3 dB 1 0 0

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	13.50	DELETED						
	13.51	DELETED						
	13.52	DELETED						

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	14.0	See Figures 2 and 4.		<u>TRANSMITTER AND WHISPER/SHOUT TESTS (0-4dB steps)</u> This test causes the UUT to generate six-pulse ATCRBS interrogations out the Top 0 antenna port. Whisper Shout step size measurements shall be made by comparing the P2A pulse amplitudes of the appropriate interrogations. The six-pulse interrogation may be repeated at a maximum rate of once every 25 ms for averaging.	Initial Test Setup **RFIU:** "Program"		<u>TRANSMITTER AND WHISPER/SHOUT TESTS (0-4dB steps)</u> **XATCS:** Generate a single whisper/shout interrogation with each pulse set individually. **R:** repeat 40 times per second. **T:** TOP ANTENNA **Angle**: 0 deg. **Port which pulse is transmitted from:** 0,0,0,0,0,0 **Whisper/Shout step:** All pulses are at the same power level. Connect Power meter to TOP 0 antenna port.	
	14.1	+54 to +58.5 dBm		Verify that the peak power of the P2A pulse when invoking the 0 dB Whisper/Shout attenuation level is within specified limits.	**UUT1:** "XATCSR T 0 0 0 0 0 0 00 00 00 00 00 00 40"		**PPM:** Measure and record peak power of the P2A pulse when invoking the 0 dB Whisper/Shout attenuation level. The Peak power shall be as specified. **Note:** Losses from the antenna port to the peak power meter must be calibrated into the reading.	+55 to +58.5 dBm
	14.2	50 to 100 ns		Measure the rise time of the P2A pulse (time between the 10% to 90% voltage points on the leading edge of the pulse) when invoking the 0 dB Whisper/Shout attenuation level.			**PPM:** Measure the rise time of the P2A pulse when invoking the 0 dB Whisper/Shout attenuation level. The rise time between the 10% to 90% voltage points of the leading edge of the pulse shall be as specified.	50 to 100 ns

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	14.3	50 to 200 ns		Measure the fall time of the P2A pulse (time between the 90% to 10% voltage points on the falling edge of the pulse) when invoking the 0 dB Whisper/Shout attenuation level.			**PPM:** Measure the fall time of the P2A pulse when invoking the 0 dB Whisper/Shout attenuation level. The fall time between the 90% to 10% voltage points of the falling edge of the pulse shall be as specified.	50 to 175 ns
	14.4	DELETED						
	14.5	0.5 to 1.5 dB		Verify that the step size between the 0 dB and 1 dB Whisper/Shout attenuation levels is within specified limits.	**UUT1:** "XATCSR T 0 0 0 0 0 0 01 01 01 01 01 01 40"		**PPM:** Measure and record peak power of the P2A pulse when invoking the 1 dB Whisper/Shout attenuation level. Subtract this measurement from the measurement recorded in test 14.1. The difference shall be as specified.	0.5 to 1.5 dB
	14.6	50 to 100 ns		Measure the rise time of the P2A pulse (time between the 10% to 90% voltage points on the leading edge of the pulse) when invoking the 1 dB Whisper/Shout attenuation level.			**PPM:** Measure the rise time of the P2A pulse when invoking the 1 dB Whisper/Shout attenuation level. The rise time between the 10% to 90% voltage points of the leading edge of the pulse shall be as specified.	50 to 100 ns
	14.7	50 to 200 ns		Measure the fall time of the P2A pulse (time between the 90% to 10% voltage points on the falling edge of the pulse) when invoking the 1 dB Whisper/Shout attenuation level.			**PPM:** Measure the fall time of the P2A pulse when invoking the 1 dB Whisper/Shout attenuation level. The fall time between the 90% to 10% voltage points of the falling edge of the pulse shall be as specified.	50 to 175 ns
	14.8	DELETED						

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	14.9	0.5 to 1.5 dB		Verify that the step size between the 1 dB and 2 dB Whisper/Shout attenuation levels is within specified limits.	**UUT1:** "XATCSR T 0 0 0 0 0 0 02 02 02 02 02 02 40"		**PPM:** Measure and record peak power of the P2A pulse when invoking the 2 dB Whisper/Shout attenuation level. Subtract this measurement from the measurement recorded in test 14.5. The difference shall be as specified.	0.5 to 1.5 dB
	14.10	50 to 100 ns		Measure the rise time of the P2A pulse (time between the 10% to 90% voltage points on the leading edge of the pulse) when invoking the 2 dB Whisper/Shout attenuation level.			**PPM:** Measure the rise time of the P2A pulse when invoking the 2 dB Whisper/Shout attenuation level. The rise time between the 10% to 90% voltage points of the leading edge of the pulse shall be as specified.	50 to 100 ns
	14.11	DELETED						
	14.12	DELETED						
	14.13	DELETED						
	14.14	DELETED						
	14.15	0.5 to 1.5 dB		Verify that the step size between the 2 dB and 3 dB Whisper/Shout attenuation levels is within specified limits.	**UUT1:** "XATCSR T 0 0 0 0 0 0 03 03 03 03 03 03 40"		**PPM:** Measure and record peak power of the P2A pulse when invoking the 3 dB Whisper/Shout attenuation level. Subtract this measurement from the measurement recorded in test 14.9. The difference shall be as specified.	0.5 to 1.5 dB
	14.16	50 to 100 ns		Measure the rise time of the P2A pulse (time between the 10% to 90% voltage points on the leading edge of the pulse) when invoking the 3 dB Whisper/Shout attenuation level.			**PPM:** Measure the rise time of the P2A pulse when invoking the 3 dB Whisper/Shout attenuation level. The rise time between the 10% to 90% voltage points of the leading edge of the pulse shall be as specified.	50 to 100 ns

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	14.17	DELETED						
	14.18	0.5 to 1.5 dB		Verify that the step size between the 3 dB and 4 dB Whisper/Shout attenuation levels is within specified limits.	**UUT1:** "XATCSR T 0 0 0 0 0 0 04 04 04 04 04 40"		**PPM:** Measure and record peak power of the P2A pulse when invoking the 4 dB Whisper/Shout attenuation level. Subtract this measurement from the measurement recorded in test 14.15. The difference shall be as specified.	0.5 to 1.5 dB
	14.19	50 to 100 ns		Measure the rise time of the P2A pulse (time between the 10% to 90% voltage points on the leading edge of the pulse) when invoking the 4 dB Whisper/Shout attenuation level.			**PPM:** Measure the rise time of the P2A pulse when invoking the 4 dB Whisper/Shout attenuation level. The rise time between the 10% to 90% voltage points of the leading edge of the pulse shall be as specified.	50 to 100 ns
				Turn off the interrogation format.	**UUT1:** "XOFF"		Turn off the Whisper Shout interrogation format.	

REV LTR	TEST NO.	SPECIFICATION OPR LIMITS	C	SPECIFICATION TEST DESCRIPTION	PROCEDURE SWITCH POS	C	PROCEDURE WORK STEPS	SPECIFICATION MFG LIMITS
	15.0	See Figures 2 and 4.		<u>TRANSMITTER AND WHISPER/SHOUT TESTS (5-8dB steps)</u> This test causes the UUT to generate six-pulse ATCRBS interrogations out the Top 0 antenna port. Whisper Shout step size measurements shall be made by comparing the P2A pulse amplitudes of the appropriate interrogations. The six-pulse interrogation may be repeated at a maximum rate of once every 25 ms for averaging	Initial Test Setup **RFIU:** "Program"		<u>TRANSMITTER AND WHISPER/SHOUT TESTS (5-8dB steps)</u> **XATCS:** Generate a single whisper/shout interrogation with each pulse set individually. **R:** repeat 40 times per second. **T:** TOP ANTENNA **Angle**: 0 deg. **Port which pulse is transmitted from:** 0,0,0,0,0,0 **Whisper/Shout step:** All pulses are at the same power level. Connect Power meter to TOP 0 antenna port.	
	15.1	DELETED						
	15.2	DELETED						
	15.3	0.5 to 1.5 dB		Verify that the step size between the 4 dB and 5 dB Whisper/Shout attenuation levels is within specified limits.	**UUT1:** "XATCSR T 0 0 0 0 0 0 05 05 05 05 05 40"		**PPM:** Measure and record peak power of the P2A pulse when invoking the 5 dB Whisper/Shout attenuation level. Subtract this measurement from the measurement recorded in test 14.18. The difference shall be as specified.	0.5 to 1.5 dB
	15.4	50 to 100 ns		Measure the rise time of the P2A pulse (time between the 10% to 90% voltage points on the leading edge of the pulse) when invoking the 5 dB Whisper/Shout attenuation level.			**PPM:** Measure the rise time of the P2A pulse when invoking the 5 dB Whisper/Shout attenuation level. The rise time between the 10% to 90% voltage points of the leading edge of the pulse shall be as specified.	50 to 100 ns

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	15.5	0.5 to 1.5 dB		Verify that the step size between the 5 dB and 6 dB Whisper/Shout attenuation levels is within specified limits.	**UUT1:** "XATCSR T 0 0 0 0 0 0 06 06 06 06 06 40"		**PPM:** Measure and record peak power of the P2A pulse when invoking the 6 dB Whisper/Shout attenuation level. Subtract this measurement from the measurement recorded in test 15.3. The difference shall be as specified.	0.5 to 1.5 dB
	15.6	50 to 100 ns		Measure the rise time of the P2A pulse (time between the 10% to 90% voltage points on the leading edge of the pulse) when invoking the 6 dB Whisper/Shout attenuation level.			**PPM:** Measure the rise time of the P2A pulse when invoking the 6 dB Whisper/Shout attenuation level. The rise time between the 10% to 90% voltage points of the leading edge of the pulse shall be as specified.	50 to 100 ns
	15.7	DELETED						
	15.8	DELETED						
	15.9	0.5 to 1.5 dB		Verify that the step size between the 6 dB and 7 dB Whisper/Shout attenuation levels is within specified limits.	**UUT1:** "XATCSR T 0 0 0 0 0 0 07 07 07 07 07 40"		**PPM:** Measure and record peak power of the P2A pulse when invoking the 7 dB Whisper/Shout attenuation level. Subtract this measurement from the measurement recorded in test 15.5. The difference shall be as specified.	0.5 to 1.5 dB
	15.10	50 to 100 ns		Measure the rise time of the P2A pulse (time between the 10% to 90% voltage points on the leading edge of the pulse) when invoking the 7 dB Whisper/Shout attenuation level.			**PPM:** Measure the rise time of the P2A pulse when invoking the 7 dB Whisper/Shout attenuation level. The rise time between the 10% to 90% voltage points of the leading edge of the pulse shall be as specified.	50 to 100 ns

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	15.11	0.5 to 1.5 dB		Verify that the step size between the 7 dB and 8 dB Whisper/Shout attenuation levels is within specified limits.	**UUT1:** "XATCSR T 0 0 0 0 0 0 08 08 08 08 08 40"		**PPM:** Measure and record peak power of the P2A pulse when invoking the 8 dB Whisper/Shout attenuation level. Subtract this measurement from the measurement recorded in test 15.9. The difference shall be as specified.	0.5 to 1.5 dB
	15.12	50 to 100 ns		Measure the rise time of the P2A pulse (time between the 10% to 90% voltage points on the leading edge of the pulse) when invoking the 8 dB Whisper/Shout attenuation level.			**PPM:** Measure the rise time of the P2A pulse when invoking the 8 dB Whisper/Shout attenuation level. The rise time between the 10% to 90% voltage points of the leading edge of the pulse shall be as specified.	50 to 100 ns
				Turn off the interrogation format.	**UUT1:** "XOFF"		Turn off the Whisper Shout interrogation format.	

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	16.0	See Figures 2 and 4.		<u>TRANSMITTER AND WHISPER/SHOUT TESTS (9-12 dB steps)</u> This test causes the UUT to generate six-pulse ATCRBS interrogations out the Top 0 antenna port. Whisper Shout step size measurements shall be made by comparing the P2A pulse amplitudes of the appropriate interrogations. The six-pulse interrogation may be repeated at a maximum rate of once every 25 ms for averaging.	Initial Test Setup **RFIU:** "Program"		<u>TRANSMITTER AND WHISPER/SHOUT TESTS (9-12 dB steps)</u> **XATCS:** Generate a single whisper/shout interrogation with each pulse set individually. **R:** repeat 40 times per second. **T:** TOP ANTENNA **Angle**: 0 deg. **Port which pulse is transmitted from:** 0,0,0,0,0,0 **Whisper/Shout step:** All pulses are at the same power level.	
	16.1	DELETED						
	16.2	DELETED						
	16.3	0.5 to 1.5 dB		Verify that the step size between the 8 dB and 9 dB Whisper/Shout attenuation levels is within specified limits.	**UUT1:** "XATCSR T 0 0 0 0 0 0 09 09 09 09 09 40"		**PPM:** Measure and record peak power of the P2A pulse when invoking the 9 dB Whisper/Shout attenuation level. Subtract this measurement from the measurement recorded in test 15.11. The difference shall be as specified.	0.5 to 1.5 dB
	16.4	50 to 100 ns		Measure the rise time of the P2A pulse (time between the 10% to 90% voltage points on the leading edge of the pulse) when invoking the 9 dB Whisper/Shout attenuation level.			**PPM:** Measure the rise time of the P2A pulse when invoking the 9 dB Whisper/Shout attenuation level. The rise time between the 10% to 90% voltage points of the leading edge of the pulse shall be as specified.	50 to 100 ns

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	16.5	0.5 to 1.5 dB		Verify that the step size between the 9 dB and 10 dB Whisper/Shout attenuation levels is within specified limits.	**UUT1:** "XATCSR T 0 0 0 0 0 0 10 10 10 10 10 40"		**PPM:** Measure and record peak power of the P2A pulse when invoking the 10 dB Whisper/Shout attenuation level. Subtract this measurement from the measurement recorded in test 16.3. The difference shall be as specified.	0.5 to 1.5 dB
	16.6	50 to 100 ns		Measure the rise time of the P2A pulse (time between the 10% to 90% voltage points on the leading edge of the pulse) when invoking the 10 dB Whisper/Shout attenuation level.			**PPM:** Measure the rise time of the P2A pulse when invoking the 10 dB Whisper/Shout attenuation level. The rise time between the 10% to 90% voltage points of the leading edge of the pulse shall be as specified.	50 to 100 ns
	16.7							
	16.8							
	16.9	0.5 to 1.5 dB		Verify that the step size between the 10 dB and 11 dB Whisper/Shout attenuation levels is within specified limits.	**UUT1:** "XATCSR T 0 0 0 0 0 0 11 11 11 11 11 40"		**PPM:** Measure peak power of the P2A pulse when invoking the 11 dB Whisper/Shout attenuation level. Subtract this measurement from the measurement recorded in test 16.5. The difference shall be as specified.	0.5 to 1.5 dB
	16.10	50 to 100 ns		Measure the rise time of the P2A pulse (time between the 10% to 90% voltage points on the leading edge of the pulse) when invoking the 11 dB Whisper/Shout attenuation level.			**PPM:** Measure the rise time of the P2A pulse when invoking the 11 dB Whisper/Shout attenuation level. The rise time between the 10% to 90% voltage points of the leading edge of the pulse shall be as specified.	50 to 100 ns

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	16.11	0.5 to 1.5 dB		Verify that the step size between the 11 dB and 12 dB Whisper/Shout attenuation levels is within specified limits.	**UUT1:** "XATCSR T 0 0 0 0 0 0 12 12 12 12 12 40"		**PPM:** Measure and record peak power of the P2A pulse when invoking the 12 dB Whisper/Shout attenuation level. Subtract this measurement from the measurement recorded in test 16.9. The difference shall be as specified.	0.5 to 1.5 dB
	16.12	50 to 100 ns		Measure the rise time of the P2A pulse (time between the 10% to 90% voltage points on the leading edge of the pulse) when invoking the 12 dB Whisper/Shout attenuation level.			**PPM:** Measure the rise time of the P2A pulse when invoking the 12 dB Whisper/Shout attenuation level. The rise time between the 10% to 90% voltage points of the leading edge of the pulse shall be as specified.	50 to 100 ns
				Turn off the interrogation format.	**UUT1:** "XOFF"		Turn off the Whisper Shout interrogation format.	

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	17.0	See Figures 2 and 4.		<u>TRANSMITTER AND WHISPER/SHOUT TESTS (13-16 dB steps)</u> This test causes the UUT to generate six-pulse ATCRBS interrogations out the Top 0 antenna port. Whisper Shout step size measurements shall be made by comparing the P2A pulse amplitudes of the appropriate interrogations. The six-pulse interrogation may be repeated at a maximum rate of once every 25 ms for averaging	Initial Test Setup **RFIU:** "Program"		<u>TRANSMITTER AND WHISPER/SHOUT TESTS (13-16 dB steps)</u> **XATCS:** Generate a single whisper/shout interrogation with each pulse set individually. **R:** repeat 40 times per second. **T:** TOP ANTENNA **Angle**: 0 deg. **Port which pulse is transmitted from:** 0,0,0,0,0,0 **Whisper/Shout step:** All pulses are at the same power level.	
	17.1	DELETED						
	17.2	DELETED						
	17.3	0.5 to 1.5 dB		Verify that the step size between the 12 dB and 13 dB Whisper/Shout attenuation levels is within specified limits.	**UUT1:** "XATCSR T 0 0 0 0 0 0 13 13 13 13 13 40"		**PPM:** Measure and record peak power of the P2A pulse when invoking the 13 dB Whisper/Shout attenuation level. Subtract this measurement from the measurement recorded in test 16.11. The difference shall be as specified.	0.5 to 1.5 dB
	17.4	50 to 100 ns		Measure the rise time of the P2A pulse (time between the 10% to 90% voltage points on the leading edge of the pulse) when invoking the 13 dB Whisper/Shout attenuation level.			**PPM:** Measure the rise time of the P2A pulse when invoking the 13 dB Whisper/Shout attenuation level. The rise time between the 10% to 90% voltage points of the leading edge of the pulse shall be as specified.	50 to 100 ns

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	17.5	0.5 to 1.5 dB		Verify that the step size between the 13 dB and 14 dB Whisper/Shout attenuation levels is within specified limits.	**UUT1:** "XATCSR T 0 0 0 0 0 0 14 14 14 14 14 40"		**PPM:** Measure and record peak power of the P2A pulse when invoking the 14 dB Whisper/Shout attenuation level. Subtract this measurement from the measurement recorded in test 17.3. The difference shall be as specified.	0.5 to 1.5 dB
	17.6	50 to 100 ns		Measure the rise time of the P2A pulse (time between the 10% to 90% voltage points on the leading edge of the pulse) when invoking the 14 dB Whisper/Shout attenuation level.			**PPM:** Measure the rise time of the P2A pulse when invoking the 14 dB Whisper/Shout attenuation level. The rise time between the 10% to 90% voltage points of the leading edge of the pulse shall be as specified.	50 to 100 ns
	17.7	DELETED						
	17.8	DELETED						
	17.9	0.5 to 1.5 dB		Verify that the step size between the 14 dB and 15 dB Whisper/Shout attenuation levels is within specified limits.	**UUT1:** "XATCSR T 0 0 0 0 0 0 15 15 15 15 15 40"		**PPM:** Measure and record peak power of the P2A pulse when invoking the 15 dB Whisper/Shout attenuation level. Subtract this measurement from the measurement recorded in test 17.5. The difference shall be as specified.	0.5 to 1.5 dB
	17.10	50 to 100 ns		Measure the rise time of the P2A pulse (time between the 10% to 90% voltage points on the leading edge of the pulse) when invoking the 15 dB Whisper/Shout attenuation level.			**PPM:** Measure the rise time of the P2A pulse when invoking the 15 dB Whisper/Shout attenuation level. The rise time between the 10% to 90% voltage points of the leading edge of the pulse shall be as specified.	50 to 100 ns

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	17.11	0.5 to 1.5 dB		Verify that the step size between the 15 dB and 16 dB Whisper/Shout attenuation levels is within specified limits.	**UUT1:** "XATCSR T 0 0 0 0 0 0 16 16 16 16 16 40"		**PPM:** Measure and record peak power of the P2A pulse when invoking the 16 dB Whisper/Shout attenuation level. Subtract this measurement from the measurement recorded in test 17.9. The difference shall be as specified.	0.5 to 1.5 dB
	17.12	50 to 100 ns		Measure the rise time of the P2A pulse (time between the 10% to 90% voltage points on the leading edge of the pulse) when invoking the 16 dB Whisper/Shout attenuation level.			**PPM:** Measure the rise time of the P2A pulse when invoking the 16 dB Whisper/Shout attenuation level. The rise time between the 10% to 90% voltage points of the leading edge of the pulse shall be as specified.	50 to 100 ns
				Turn off the interrogation format.	**UUT1:** "XOFF"		Turn off the Whisper Shout interrogation format.	

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	18.0	See Figures 2 and 4.		<u>TRANSMITTER AND WHISPER/SHOUT TESTS (17-20 dB steps)</u> This test causes the UUT to generate six-pulse ATCRBS interrogations out the Top 0 antenna port. Whisper Shout step size measurements shall be made by comparing the P2A pulse amplitudes of the appropriate interrogations. The six-pulse interrogation may be repeated at a maximum rate of once every 25 ms for averaging.	Initial Test Setup **RFIU:** "Program"		<u>TRANSMITTER AND WHISPER/SHOUT TESTS (17-20 dB steps)</u> **XATCS:** Generate a single whisper/shout interrogation with each pulse set individually. **R:** repeat 40 times per second. **T:** TOP ANTENNA **Angle**: 0 deg. **Port which pulse is transmitted from:** 0,0,0,0,0,0 **Whisper/Shout step:** All pulses are at the same power level.	
	18.1	DELETED						
	18.2	DELETED						
	18.3	0.5 to 1.5 dB		Verify that the step size between the 16 dB and 17 dB Whisper/Shout attenuation levels is within specified limits.	**UUT1:** "XATCSR T 0 0 0 0 0 0 17 17 17 17 17 40"		**PPM:** Measure and record peak power of the P2A pulse when invoking the 17 dB Whisper/Shout attenuation level. Subtract this measurement from the measurement recorded in test 17.11. The difference shall be as specified.	0.5 to 1.5 dB
	18.4	50 to 100 ns		Measure the rise time of the P2A pulse (time between the 10% and 90% voltage points on the leading edge of the pulse) when invoking the 17 dB Whisper/Shout attenuation level.			**PPM:** Measure the rise time of the P2A pulse when invoking the 17 dB Whisper/Shout attenuation level. The rise time between the 10% and 90% voltage points on the leading edge of the pulse shall be as specified.	50 to 100 ns

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	18.5	0.5 to 1.5 dB		Verify that the step size between the 17 dB and 18 dB Whisper/Shout attenuation levels is within specified limits.	**UUT1:** "XATCSR T 0 0 0 0 0 0 18 18 18 18 18 40"		**PPM:** Measure and record peak power of the P2A pulse when invoking the 18 dB Whisper/Shout attenuation level. Subtract this measurement from the measurement recorded in test 18.3. The difference shall be as specified.	0.5 to 1.5 dB
	18.6	50 to 100 ns		Measure the rise time of the P2A pulse (time between the 10% and 90% voltage points on the leading edge of the pulse) when invoking the 18 dB Whisper/Shout attenuation level.			**PPM:** Measure the rise time of the P2A pulse when invoking the 18 dB Whisper/Shout attenuation level. The rise time between the 10% and 90% voltage points on the leading edge of the pulse shall be as specified.	50 to 100 ns
	18.7	DELETED						
	18.8	DELETED						
	18.9	0.5 to 1.5 dB		Verify that the step size between the 18 dB and 19 dB Whisper/Shout attenuation levels is within specified limits.	**UUT1:** "XATCSR T 0 0 0 0 0 0 19 19 19 19 19 40"		**PPM:** Measure and record peak power of the P2A pulse when invoking the 19 dB Whisper/Shout attenuation level. Subtract this measurement from the measurement recorded in test 18.5. The difference shall be as specified.	0.5 to 1.5 dB
	18.10	50 to 100 ns		Measure the rise time of the P2A pulse (time between the 10% and 90% voltage points on the leading edge of the pulse) when invoking the 19 dB Whisper/Shout attenuation level.			**PPM:** Measure the rise time of the P2A pulse when invoking the 19 dB Whisper/Shout attenuation level. The rise time between the 10% and 90% voltage points on the leading edge of the pulse shall be as specified.	50 to 100 ns

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	18.11	0.5 to 1.5 dB		Verify that the step size between the 19 dB and 20 dB Whisper/Shout attenuation levels is within specified limits.	**UUT1:** "XATCSR T 0 0 0 0 0 0 20 20 20 20 20 40"		**PPM:** Measure and record peak power of the P2A pulse when invoking the 20 dB Whisper/Shout attenuation level. Subtract this measurement from the measurement recorded in test 18.9. The difference shall be as specified.	0.5 to 1.5 dB
	18.12	50 to 100 ns		Measure the rise time of the P2A pulse (time between the 10% and 90% voltage points on the leading edge of the pulse) when invoking the 20 dB Whisper/Shout attenuation level.			**PPM:** Measure the rise time of the P2A pulse when invoking the 20 dB Whisper/Shout attenuation level. The rise time between the 10% and 90% voltage points on the leading edge of the pulse shall be as specified.	50 to 100 ns
	18.13	18 to 22 dB		Verify that the absolute power level of the P2A pulse when invoking the 20 dB Whisper/Shout attenuation level is within the specified limits.			Subtract the peak power of the P2A pulse in test 18.11 from the peak power of the test in 14.1. The difference shall be as specified.	18.5 to 21.5 dB
				Turn off the interrogation format	**UUT1:** "XOFF"		Turn off the Whisper/ Shout interrogation format	

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	19.0	See Figures 2 and 4.		<u>TRANSMITTER AND WHISPER/SHOUT TESTS (21-27 dB steps)</u> This test causes the UUT to generate six-pulse ATCRBS interrogations out the Top 0 antenna port. Whisper Shout step size measurement shall be made by comparing the P2A pulse amplitudes of the appropriate interrogations. The six-pulse interrogation may be repeated at a maximum rate of once every 25 ms for averaging	Initial Test Setup **RFIU:** "Program"		<u>TRANSMITTER AND WHISPER/SHOUT TESTS (21-27 dB steps)</u> **XATCS:** Generate a single whisper/shout interrogation with each pulse set individually. **R:** repeat 40 times per second. **T:** TOP ANTENNA **Angle**: 0 deg. **Port which pulse is transmitted from:** 0,0,0,0,0,0 **Whisper/Shout step:** All pulses are at the same power level.	
	19.1	0.5 to 1.5 dB		Verify that the step size between the 20 dB and 21 dB Whisper/Shout attenuation levels is within specified limits.	**UUT1:** "XATCSR T 0 0 0 0 0 0 21 21 21 21 21 40"		**PPM:** Measure and record peak power of the P2A pulse when invoking the 21 dB Whisper/Shout attenuation level. Subtract this measurement from the measurement recorded in test 18.11. The difference shall be as specified.	0.5 to 1.5 dB
	19.2	0.5 to 1.5 dB		Verify that the step size between the 21 dB and 22 dB Whisper/Shout attenuation levels is within specified limits.	**UUT1:** "XATCSR T 0 0 0 0 0 0 22 22 22 22 22 40"		**PPM:** Measure and record peak power of the P2A pulse when invoking the 22 dB Whisper/Shout attenuation level. Subtract this measurement from the measurement recorded in test 19.1. The difference shall be as specified.	0.5 to 1.5 dB

REV LTR	TEST NO.	SPECIFICATION OPR LIMITS	C	SPECIFICATION TEST DESCRIPTION	PROCEDURE SWITCH POS	C	PROCEDURE WORK STEPS	SPECIFICATION MFG LIMITS
	19.3	0.5 to 1.5 dB		Verify that the step size between the 22 dB and 23 dB Whisper/Shout attenuation levels is within specified limits.	**UUT1:** "XATCSR T 0 0 0 0 0 0 23 23 23 23 23 40"		**PPM:** Measure and record peak power of the P2A pulse when invoking the 23 dB Whisper/Shout attenuation level. Subtract this measurement from the measurement recorded in test 19.2. The difference shall be as specified.	0.5 to 1.5 dB
	19.4	0.5 to 1.5 dB		Verify that the step size between the 23 dB and 24 dB Whisper/Shout attenuation levels is within specified limits.	**UUT1:** "XATCSR T 0 0 0 0 0 0 24 24 24 24 24 40"		**PPM:** Measure and record peak power of the P2A pulse when invoking the 24 dB Whisper/Shout attenuation level. Subtract this measurement from the measurement recorded in test 19.3. The difference shall be as specified.	0.5 to 1.5 dB
	19.5	0.5 to 1.5 dB		Verify that the step size between the 24 dB and 25 dB Whisper/Shout attenuation levels is within specified limits.	**UUT1:** "XATCSR T 0 0 0 0 0 0 25 25 25 25 25 40"		**PPM:** Measure and record peak power of the P2A pulse when invoking the 25 dB Whisper/Shout attenuation level. Subtract this measurement from the measurement recorded in test 19.4. The difference shall be as specified.	0.5 to 1.5 dB
	19.6	0.5 to 1.5 dB		Verify that the step size between the 25 dB and 26 dB Whisper/Shout attenuation levels is within specified limits.	**UUT1:** "XATCSR T 0 0 0 0 0 0 26 26 26 26 26 40"		**PPM:** Measure and record peak power of the P2A pulse when invoking the 26 dB Whisper/Shout attenuation level. Subtract this measurement from the measurement recorded in test 19.5. The difference shall be as specified.	0.5 to 1.5 dB

REV LTR	TEST NO.	SPECIFICATION OPR LIMITS	C	TEST DESCRIPTION	PROCEDURE SWITCH POS	C	WORK STEPS	SPECIFICATION MFG LIMITS
	19.7	0.5 to 1.5 dB		Verify that the step size between the 26 dB and 27 dB Whisper/Shout attenuation levels is within specified limits.	**UUT1:** "XATCSR T 0 0 0 0 0 27 27 27 27 27 40"		**PPM:** Measure and record peak power of the P2A pulse when invoking the 27 dB Whisper/Shout attenuation level. Subtract this measurement from the measurement recorded in test 19.6. The difference shall be as specified.	0.5 to 1.5 dB
				Turn off the interrogation format.	**UUT1:** "XOFF"		Turn off the Whisper Shout interrogation format.	

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	20.0	See Figures 2 and 4.		<u>ATCRBS DEVIATION AND SPACING TESTS</u> This test causes the UUT to generate six-pulse ATCRBS interrogations out the Top 0 antenna port. All pulses are at full power. The six-pulse interrogation may be repeated at a maximum rate of once every 25 ms for averaging	Initial Test Setup **UUT1:** "XATCSR T 0 0 0 0 0 0 00 00 00 00 00 40" **RFIU:** "Program"		<u>ATCRBS DEVIATION AND SPACING TESTS</u> **XATCS:** Generate a single whisper/shout interrogation with each pulse set individually. **R:** repeat 40 times per second. **T:** TOP ANTENNA **Angle**: 0 deg. **Port which pulse is transmitted from:** 0,0,0,0,0,0 **Whisper/Shout step:** All pulses are at the same power level.	
	20.1	0 to 0.5 dB		Measure the amplitude deviation within the ATCRBS six-pulse sequence.			**PPM:** Measure the amplitude of each pulse within the ATCRBS six-pulse sequence. Subtract the peak power amplitude of the lowest amplitude pulse from the peak power amplitude of the highest amplitude pulse. The difference shall be as specified.	0 to 0.5 dB
	20.2	2.0 ± 0.1 us		Measure the spacing between the leading edge of the S1 pulse to the leading edge of the P1 pulse (time between the 50% voltage points of the leading edge of each pulse).	.		**PPM:** Measure spacing between S1 and P1. The time between the 50% voltage points of the leading edges of the S1 and P1 pulses shall be as specified.	2.0 ± 0.1 us

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	20.3	2.0 ± 0.1 us		Measure the spacing between the leading edge of the P1 pulse to the leading edge of the P2A pulse (time between the 50% voltage points of the leading edge of each pulse).			**PPM:** Measure the spacing between the leading edge of the P1 pulse to the leading edge of the P2A pulse. The time between the 50% voltage points of the leading edges of the P1 and P2A pulses shall be as specified.	2.0 ± 0.1 us
	20.4	17.0 ± 0.1 us		Measure the spacing between the leading edge of the P2A pulse to the leading edge of the P2B pulse (time between the 50% voltage points of the leading edge of each pulse).			**PPM:** Measure the spacing between the leading edge of the P2A pulse and the leading edge of the P2B pulse. The time between the 50% voltage points of the leading edges of the P2A and P2B pulses shall be as specified.	17.0 ± 0.1 us
	20.5	2.0 ± 0.1 us		Measure the spacing between the leading edge of the P2B pulse to the leading edge of the P3 pulse (time between the 50% voltage points of the leading edge of each pulse).			**PPM:** Measure the spacing between the leading edge of the P2B pulse and the leading edge of the P3 pulse. The time between the 50% voltage points of the leading edges of the P2B and P3 pulses shall be as specified.	2.0 ± 0.1 us
	20.6	2.0 ± 0.1 us		Measure the spacing between the leading edge of the P3 pulse to the leading edge of the P4 pulse (time between the 50% voltage points of the leading edge of each pulse).			**PPM:** Measure the spacing between the leading edge of the P3 pulse and the leading edge of the P4 pulse. The time between the 50% voltage points of the leading edges of the P3 and P4 pulses shall be as specified.	2.0 ± 0.1 us
				Turn off the interrogation format.	**UUT1:** "XOFF"		Turn off the Whisper Shout interrogation format.	

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	21.0	See Figures 2 and 4.		<u>TRANSMITTER AND WHISPER/SHOUT TESTS (Missing P1/P3)</u> This test causes the UUT to generate an ATCRBS interrogation, with the P1 and P3 pulses missing, out the Top 0 antenna port. The format of the interrogation is as follows: S1 full power, P1 missing, P2A full power, P2B full power, P3 missing, P4 full power. The interrogation may be repeated at a maximum rate of once every 25 ms for averaging.	Initial Test Setup **UUT1:** "XATCSR T 0 0 0 0 0 0 00 99 00 00 99 00 40"		<u>TRANSMITTER AND WHISPER/SHOUT TESTS (Missing P1/P3)</u> **XATCS:** Generate a single whisper/shout interrogation with each pulse set individually. **R:** repeat 40 times per second. **T:** TOP ANTENNA **Angle**: 0 deg. **Port which pulse is transmitted from:** 0,0,0,0,0,0 **Whisper/Shout step:** S1 full power, P1 missing, P2A full power, P2B full power, P3 missing, P4 full power.	
	21.1	+54 dBm or greater		Verify that the peak power of the S1 pulse is within specified limits.			**PPM:** Measure the peak power of the S1 pulse. Peak power shall be as specified.	+55 dBm or greater
	21.2	less than +35 dBm		Verify that the peak power of the P1 pulse is within specified limits.			**PPM:** Measure the peak power of the P1 pulse. Peak power shall be as specified.	less than +35 dBm
	21.3	+54 dBm or greater		Verify that the peak power of the P2A pulse is within specified limits.			**PPM:** Measure the peak power of the P2A pulse. Peak power shall be as specified.	+55 dBm or greater
	21.4	+54 dBm or greater		Verify that the peak power of the P2B pulse is within specified limits.			**PPM:** Measure the peak power of the P2B pulse. Peak power shall be as specified.	+55 dBm or greater
	21.5	less than +35 dBm		Verify that the peak power of the P3 pulse is within specified limits.			**PPM:** Measure the peak power of the P3 pulse. Peak power shall be as specified.	less than +35 dBm

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	21.6	+54 dBm or greater		Verify that the peak power of the P4 pulse is within specified limits. Turn off the interrogation format.	**UUT1:** "XOFF"		**PPM:** Measure the peak power of the P4 pulse. Peak power shall be as specified. Turn off the Whisper Shout interrogation format.	+55 dBm or greater

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	22.0			TRANSMITTER AND WHISPER/SHOUT TESTS (Missing S1, P2A, P2B, P4)	Initial Test Setup		TRANSMITTER AND WHISPER/SHOUT TESTS (Missing S1, P2A, P2B, P4)	
		See Figures 2 and 4.		This test causes the UUT to generate an ATCRBS interrogation out the Top 0 antenna port. The format of the interrogation is as follows: S1 missing, P1 full power, P2A missing, P2B missing, P3 full power, P4 missing. The interrogation may be repeated at a maximum rate of once every 25 ms for averaging.	**UUT1:** "XATCSR T 0 0 0 0 0 99 00 99 99 00 99 40"		**XATCS:** Generate a single whisper/shout interrogation with each pulse set individually. **R:** repeat 40 times per second. **T:** TOP ANTENNA **Angle**: 0 deg. **Port which pulse is transmitted from:** 0,0,0,0,0,0 **Whisper/Shout step:** S1 missing, P1 full power, P2A missing, P2B missing, P3 full power, P4 missing.	
	22.1	less than +35 dBm		Verify that the peak power of the S1 pulse is within specified limits.			**PPM:** Measure the peak power of the S1 pulse. Peak power shall be as specified.	less than +35 dBm
	22.2	+54 dBm or greater		Verify that the peak power of the P1 pulse is within specified limits.			**PPM:** Measure the peak power of the P1 pulse. Peak power shall be as specified.	+55 dBm or greater
	22.3	less than +35 dBm		Verify that the peak power of the P2A pulse is within specified limits.			**PPM:** Measure the peak power of the P2A pulse. Peak power shall be as specified.	less than +35 dBm
	22.4	less than +35 dBm		Verify that the peak power of the P2B pulse is within specified limits.			**PPM:** Measure the peak power of the P2B pulse. Peak power shall be as specified.	less than +35 dBm
	22.5	+54 dBm or greater		Verify that the peak power of the P3 pulse is within specified limits.			**PPM:** Measure the peak power of the P3 pulse. Peak power shall be as specified.	+55 dBm or greater

REV LTR	TEST NO.	SPECIFICATION OPR LIMITS	C	SPECIFICATION TEST DESCRIPTION	PROCEDURE SWITCH POS	C	PROCEDURE WORK STEPS	SPECIFICATION MFG LIMITS
	22.6	less than +35 dBm		Verify that the peak power of the P4 pulse is within specified limits. Turn off the interrogation format.	**UUT1:** "XOFF"		**PPM:** Measure the peak power of the P4 pulse. Peak power shall be as specified. Turn off the Whisper Shout interrogation format.	less than +35 dBm

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	23.0			TRANSMITTER AND WHISPER SHOUT TEST (TOP ANTENNA, UNMODULATED P6 PULSE, LONG REPLY)			TRANSMITTER AND WHISPER SHOUT TEST (TOP ANTENNA, UNMODULATED P6 PULSE, LONG REPLY)	
		See Figures 2, 3, and 5.		This test causes the UUT to generate a Mode S interrogation out the Top 0 antenna port. The format of the interrogation is as follows: Long P6 pulse, no data. The interrogation may be repeated at a maximum rate of once every 25 ms for averaging.	**UUT1:** "XMS0R T 0 L 00 40"		**XMSO:**Generate a Mode S interrogation with an unmodulated P6 pulse. **R:** repeat at 40 per second. **T:** TOP 0 antenna **L:** Long reply **Whisper/Shout step:** is 00	
	23.1	1030 MHz ± 10 kHz		Verify that the transmitter frequency is within the specified limits.	**RFIU:** "Program"		Connect TOP 0 antenna to the peak power meter. **PPM:** The transmitter frequency shall be as specified.	1030 MHz ± 5 kHz
	23.2	+54 dBm or greater		Verify that the peak power of the P1 pulse is within specified limits.			**PPM:** Measure the peak power of the P1 pulse. Peak power shall be as specified.	+55 dBm or greater
	23.3	800 ± 50 ns		Measure the pulse width of the P1 pulse (time between the 50% to 50% voltage points on the pulse).			**PPM:** The pulse width between the 50% to 50% voltage points of the P1 pulse shall be as specified.	800 ± 50 ns
	23.4	2.0 ± 0.1 us		Measure the spacing between the leading edge of the P1 pulse to the leading edge of the P2 pulse (time between the 50% voltage points of the leading edge of each pulse).			**PPM:** The time between the 50% voltage points of the leading edges of the P1 and P2 pulses shall be as specified.	2.0 ± 0.1 us
	23.5	+54 dBm or greater		Verify that the peak power of the P2 pulse is within specified limits.			**PPM:** Peak power of the P2 pulse shall be as specified.	+55 dBm or greater

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	23.6	800 ± 50 ns		Measure the pulse width of the P2 pulse (time between the 50% to 50% voltage points on the pulse).			**PPM:** The pulse width of the P2 pulse, between the 50% to 50% voltage points of the pulse, shall be as specified.	800 ± 50 ns
	23.7	+54 dBm or greater		Verify that the peak power of the P6 pulse is within specified limits.			**PPM:** Peak power of the P6 pulse shall be as specified.	+55 dBm or greater
	23.8	1.0 dB or less		Measure the droop of the P6 pulse (difference in amplitude sampled at a rate faster than 2μs/ sample from 1 μsec in from the leading edge of the P6 pulse to 1 μsec before the end of the P6 pulse). No measurement along the pulse shall be outside the specified limit.			**PPM:** The droop of the P6 pulse shall be as specified. The droop is the (difference in amplitude sampled at a rate faster than 2μs/ sample from 1 μsec in from the leading edge of the P6 pulse to 1 μsec before the end of the P6 pulse). No measurement along the pulse shall be outside the specified limit.	1.0 dB or less
	23.9	30.250 ± 0.125 us		Measure the pulse width of the P6 pulse (time between the 50% to 50% voltage points on the pulse).			**PPM:** The pulse width of the P6 pulse between the 50% to 50% voltage points of the pulse shall be as specified.	30.250 ± 0.125 us
	23.10	1.250 ± 0.040 us		Measure the delay between the leading edge of the P6 pulse and the SPR position.			**PPM:** The delay between the leading edge of the P6 pulse and the position of the SPR shall be as specified.	1.250 ± 0.035 us
				Turn off the interrogation format.	**UUT1:** "XOFF"		Turn off the Whisper/ Shout Interrogation format.	

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	24.0			TRANSMITTER AND WHISPER SHOUT TEST (TOP 0 ANTENNA UNMODULATED P6, SHORT REPLY)			TRANSMITTER AND WHISPER SHOUT TEST (TOP 0 ANTENNA UNMODULATED P6, SHORT REPLY)	
		See Figures 2 and 5.		This test causes the UUT to generate a Mode S interrogation out the Top 0 antenna port. The format of the interrogation is as follows: Short P6 pulse, no data. The interrogation may be repeated at a maxi-mum rate of once every 25 ms for averaging.	**UUT1:** "XMS0R T 0 S 00 40"		**XMSO:**Generate a Mode S interrogation with an unmodulated P6 pulse. **R:** repeat at 40 per second. **T:** TOP 0 antenna **S:** Short reply **Whisper/Shout step:** is 00	
	24.1	16.250 ± 0.125 us		Measure the pulse width of the P6 pulse (time between the 50% to 50% voltage points on the pulse).	**RFIU:** "Program"		Connect TOP 0 antenna to the peak power meter. **PPM:** The pulse width of the P6 pulse between the 50% to 50% voltage points of the pulse shall be as specified.	16.250 ± 0.125 us
				Turn off the interrogation format.	**UUT1:** "XOFF"		Turn off the Whisper Shout interrogation format.	

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	25.0			TRANSMITTER AND WHISPER SHOUT TEST (TOP ANTENNA, MODULATED P6 PULSE, LONG REPLY, DPSK DECODING)			TRANSMITTER AND WHISPER SHOUT TEST (TOP ANTENNA, MODULATED P6 PULSE, LONG REPLY, DPSK DECODING)	
		See Figure 5.		This test causes the UUT to generate a Mode S interrogation out the Top 0 antenna port. The format of the interrogation is as follows: Long P6 pulse, maximum number of phase changes. The interrogation may be repeated at a maximum rate of once every 25 ms for averaging.	**UUT1:** "XMS1R T 0 L 00 40"		Generate a Mode S interrogation with modulation on the P6 pulse to the TOP 0 antenna using long reply, whisper shout step is 00, at a rate of 40 per sec.	
	25.1	"FFFFFFFFFF FFFFFFFFFF FFFFFFFF" (28 F's)		A Mode S interrogation with the DPSK data set to all ones (maximum phase reversals) will be transmitted. The transmitted message will be received demodulated by the test fixture. The demodulated data shall be equivalent to the transmitted data. This test will be performed 10 times in succession and must pass at least 9 times.	**RFIU:** "Program"		Generate 10 Mode S interrogations with the UUT. After each interrogation read the decoded DPSK data from the test fixture. The DPSK data shall be as specified 9 out of 10 times tested.	"FFFFFFFFFF FFFFFFFFFF FFFFFFFF" (28 F's)
				Turn off the interrogation format.	**UUT1:** "XOFF"		Turn off the Whisper Shout interrogation format.	

REV LTR	TEST NO.	SPECIFICATION OPR LIMITS	C	SPECIFICATION TEST DESCRIPTION	PROCEDURE SWITCH POS	C	PROCEDURE WORK STEPS	SPECIFICATION MFG LIMITS
	26.0			RF I/O TESTS WITH S1 AND P4 ON TOP 0 ANTENNA	Initial Test Setup.		RF I/O TESTS WITH S1 AND P4 ON TOP 0 ANTENNA	
		See Figures 2 and 4		This test causes the UUT to generate an ATCRBS interrogation out all four Top antenna ports. This test verifies the directional switching capability of the I/O. Two of the six pulses are present on the Top 0 antenna port (S1 and P4). The six-pulse interrogation may be repeated at a maximum rate of once every 25 ms for averaging.	**UUT1:** "XATCSR T 0 1 2 2 3 0 00 00 00 00 00 00 40"		**XATCS:** Generate a single whisper/shout interrogation with each pulse set individually. **R:** repeat 40 times per second. **T:** TOP ANTENNA **Angle**: 0 deg. **Port which pulse is transmitted from:** 0,1,2,2,3,0 **Whisper/Shout step:** all 0's	
					RFIU: "Program"		Connect TOP 0 antenna to the Peak Power Meter.	
	26.1	+54 dBm or greater		Verify that the peak power of the S1 pulse is within specified limits.			**PPM:** Measure the peak power of the S1 pulse. The peak power shall be as specified.	+55 dBm or greater
	26.2	800 ± 50 ns		Measure the pulse width of the S1 pulse (time between the 50% to 50% voltage points on the pulse).			**PPM:** Measure the pulse width of S1, between the 50% to 50% voltage points of the pulse. The pulse width shall be as specified.	800 ± 50 ns
	26.3	50 to 100 ns		Measure the rise time of the S1 pulse (time between the 10% to 90% voltage points on the leading edge of the pulse).			**PPM:** Measure the rise time of S1, between the 10% to 90% voltage points of the leading edge of the pulse. The rise time shall be as specified.	50 to 100 ns
	26.4	+54 dBm or greater		Verify that the peak power of the P4 pulse is within specified limits.			**PPM:** Measure the peak power of the P4 pulse. The peak power shall be as specified.	+55 dBm or greater

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	26.5	800 ± 50 ns		Measure the pulse width of the P4 pulse (time between the 50% to 50% voltage points on the pulse).			**PPM:** Measure the pulse width of P4, between the 50% to 50% voltage points of the pulse. The pulse width shall be as specified.	800 ± 50 ns
	26.6	50 to 100 ns		Measure the rise time of the P4 pulse (time between the 10% to 90% voltage points on the leading edge of the pulse).			**PPM:** Measure the rise time of P4, between the 10% to 90% voltage points of the leading edge of the pulse. The rise time shall be as specified.	50 to 100 ns
				Turn off transmitter.	**UUT1:** "XOFF"		Turn off the interrogations.	

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
B	27.0			RF I/O TESTS WITH P1 PULSE ON TOP 90 ANTENNA	Initial Test Setup.		RF I/O TESTS WITH P1 ON TOP 90 ANTENNA	
					RFIU: "Program"		Connect TOP 90 antenna to the Peak Power Meter	
		See Figures 2 and 4		This test causes the UUT to generate an ATCRBS interrogation out all four Top antenna ports. This test verifies the directional switching capability of the I/O. One of the six pulses is present on the Top 90 antenna port (P1). The six-pulse interrogation may be repeated at a maximum rate of once every 25 ms for averaging.	**UUT1:** "XATCSR T 0 1 2 2 3 0 00 00 00 00 00 00 40"		**XATCS:** Generate a single whisper/shout interrogation with each pulse set individually. **R:** repeat 40 times per second. **T:** TOP ANTENNA **Angle**: 90 deg. **Port which pulse is transmitted from:** 0,1,2,2,3,0 **Whisper/Shout step:** all 0's	
					RFIU: "Program"		Connect TOP 90 antenna to the Peak Power Meter	
	27.1	+54 dBm or greater		Verify that the peak power of the P1 pulse is within specified limits.			**PPM:** Measure the peak power of the P1 pulse. The peak power shall be as specified.	+55 dBm or greater
	27.2	800 ± 50 ns		Measure the pulse width of the P1 pulse (time between the 50% to 50% voltage points on the pulse).			**PPM:** Measure the pulse width of P1, between the 50% to 50% voltage points of the pulse. The pulse width shall be as specified.	800 ± 50 ns
	27.3	50 to 100 ns		Measure the rise time of the P1 pulse (time between the 10% to 90% voltage points on the leading edge of the pulse).			**PPM:** Measure the rise time of P1, between the 10% to 90% voltage points of the leading edge of the pulse. The rise time shall be as specified.	50 to 100 ns
				Turn off transmitter.	**UUT1:** "XOFF"		Turn off the interrogations.	

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	28.0			RF I/O TESTS WITH P2A & P2B PULSES ON TOP 180 ANTENNA	Initial Test Setup. **RFIU:** "Program"		RF I/O TESTS WITH P2A & P2B PULSES ON TOP 180 ANTENNA Connect TOP 180 antenna to the Peak Power Meter	
		See Figures 2 and 4		This test causes the UUT to generate an ATCRBS interrogation out all four Top antenna ports. This test verifies the directional switching capability of the I/O. Two of the six pulses are present on the Top 180 antenna port (P2A and P2B). The six-pulse interrogation may be repeated at a maximum rate of once every 25 ms for averaging.	**UUT1:** "XATCSR T 0 1 2 2 3 0 00 00 00 00 00 00 40"		**XATCS:** Generate a single whisper/shout interrogation with each pulse set individually. **R:** repeat 40 times per second. **T:** TOP ANTENNA **Angle**: 180 deg. **Port which pulse is transmitted from:** 0,1,2,2,3,0 **Whisper/Shout step:** all 0's	
	28.1	+54 dBm or greater		Verify that the peak power of the P2A pulse is within specified limits.			**PPM:** Measure the peak power of the P2A pulse. The peak power shall be as specified.	+55 dBm or greater
	28.2	800 ± 50 ns		Measure the pulse width of the P2A pulse (time between the 50% to 50% voltage points on the pulse).			**PPM:** Measure the pulse width of P2A, between the 50% to 50% voltage points of the pulse. The pulse width shall be as specified.	800 ± 50 ns
	28.3	50 to 100 ns		Measure the rise time of the P2A pulse (time between the 10% to 90% voltage points on the leading edge of the pulse).			**PPM:** Measure the rise time of P2A, between the 10% to 90% voltage points of the leading edge of the pulse. The rise time shall be as specified.	50 to 100 ns
	28.4	+54 dBm or greater		Verify that the peak power of the P2B pulse is within specified limits.			**PPM:** Measure the peak power of the P2B pulse. The peak power shall be as specified.	+55 dBm or greater

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	28.5	800 ± 50 ns		Measure the pulse width of the P2B pulse (time between the 50% to 50% voltage points on the pulse).			**PPM:** Measure the pulse width of P2B, between the 50% to 50% voltage points of the pulse. The pulse width shall be as specified.	800 ± 50 ns
	28.6	50 to 100 ns		Measure the rise time of the P2B pulse (time between the 10% to 90% voltage points on the leading edge of the pulse).			**PPM:** Measure the rise time of P2B, between the 10% to 90% voltage points of the leading edge of the pulse. The rise time shall be as specified.	50 to 100 ns
				Turn off transmitter.	**UUT1:** "XOFF"		Turn off the Whisper Shout interrogation format.	

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	29.0			RF I/O TESTS WITH P3 PULSE ON TOP 270 ANTENNA	Initial Test Setup. **RFIU:** "Program"		RF I/O TESTS WITH P3 PULSE ON TOP 270 ANTENNA Connect TOP 270 antenna to the Peak Power Meter	
		See Figures 2 and 4		This test causes the UUT to generate an ATCRBS interrogation out all four Top antenna ports. This test verifies the directional switching capability of the I/O. One of the six pulses is present on the Top 270 antenna port (P3). The six-pulse interrogation may be repeated at a maximum rate of once every 25 ms for averaging.	**UUT1:** "XATCSR T 0 1 2 2 3 0 00 00 00 00 00 40"		**XATCS:** Generate a single whisper/shout interrogation with each pulse set individually. **R:** repeat 40 times per second. **T:** TOP ANTENNA **Angle**: 270 deg. **Port which pulse is transmitted from:** 0,1,2,2,3,0 **Whisper/Shout step:** all 0's	
	29.1	+54 dBm or greater		Verify that the peak power of the P3 pulse is within specified limits.			**PPM:** Measure the peak power of the P3 pulse. The peak power shall be as specified.	+55 dBm or greater
	29.2	800 ± 50 ns		Measure the pulse width of the P3 pulse (time between the 50% to 50% voltage points on the pulse).			**PPM:** Measure the pulse width of P3, between the 50% to 50% voltage points of the pulse. The pulse width shall be as specified.	800 ± 50 ns
	29.3	50 to 100 ns		Measure the rise time of the P3 pulse (time between the 10% to 90% voltage points on the leading edge of the pulse).			**PPM:** Measure the rise time of P3, between the 10% to 90% voltage points of the leading edge of the pulse. The rise time shall be as specified.	50 to 100 ns
				Turn off transmitter.	**UUT1:** "XOFF"		Turn off the Whisper Shout interrogation format.	

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	30.0			RF I/O TESTS DIRECTIONAL SWITCHING WITH S1 & P4 PULSE ON BOTTOM 0 ANTENNA	Initial Test Setup. **RFIU:** "Program"		RF I/O TESTS DIRECTIONAL SWITCHING WITH S1 & P4 PULSE ON BOTTOM 0 ANTENNA Connect BOTTOM 0 antenna to the Peak Power Meter	
		See Figures 2 and 4		This test causes the UUT to generate an ATCRBS interrogation out all four Bottom antenna ports. This test verifies the directional switching capability of the I/O. Two of the six pulses are present on the Bottom 0 antenna port (S1 and P4). The six-pulse interrogation may be repeated at a maximum rate of once every 25 ms for averaging.	**UUT1:** "XATCSR B 0 3 2 2 1 0 00 00 00 00 00 00 40"		**XATCS:** Generate a single whisper/shout interrogation with each pulse set individually. **R:** repeat 40 times per second. **B:** BOTTOM ANTENNA **Angle**: 0 deg. **Port which pulse is transmitted from:** 0,3,2,2,1,0 **Whisper/Shout step:** all 0's	
	30.1	+54 dBm or greater		Verify that the peak power of the S1 pulse is within specified limits.			**PPM:** Measure the peak power of the S1 pulse. The peak power shall be as specified.	+55 dBm or greater
	30.2	800 ± 50 ns		Measure the pulse width of the S1 pulse (time between the 50% to 50% voltage points on the pulse).			**PPM:** Measure the pulse width of S1, between the 50% to 50% voltage points of the pulse. The pulse width shall be as specified.	800 ± 50 ns
	30.3	50 to 100 ns		Measure the rise time of the S1 pulse (time between the 10% to 90% voltage points on the leading edge of the pulse).			**PPM:** Measure the rise time of S1, between the 10% to 90% voltage points of the leading edge of the pulse. The rise time shall be as specified.	50 to 100 ns

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	30.4	+54 dBm or greater		Verify that the peak power of the P4 pulse is within specified limits.			**PPM:** Measure the peak power of the P4 pulse. The peak power shall be as specified.	+55 dBm or greater
	30.5	800 ± 50 ns		Measure the pulse width of the P4 pulse (time between the 50% to 50% voltage points on the pulse).			**PPM:** Measure the pulse width of P4, between the 50% to 50% voltage points of the pulse. The pulse width shall be as specified.	800 ± 50 ns
	30.6	50 to 100 ns		Measure the rise time of the P4 pulse (time between the 10% to 90% voltage points on the leading edge of the pulse).			**PPM:** Measure the rise time of P4, between the 10% to 90% voltage points of the leading edge of the pulse. The rise time shall be as specified.	50 to 100 ns
				Turn off transmitter.	**UUT1:** "XOFF"		Turn off the Whisper Shout interrogation format.	

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	31.0			RF I/O TESTS DIRECTIONAL SWITCHING WITH P1 PULSE ON BOTTOM 270 ANTENNA	Initial Test Setup. **RFIU:** "Program"		RF I/O TESTS DIRECTIONAL SWITCHING WITH P1 PULSE ON BOTTOM 270 ANTENNA Connect BOTTOM 270 antenna to the Peak Power Meter	
		See Figures 2 and 4		This test causes the UUT to generate an ATCRBS interrogation out all four Bottom antenna ports. This test verifies the directional switching capability of the I/O. One of the six pulses is present on the Bottom 270 antenna port (P1). The six-pulse interrogation may be repeated at a maximum rate of once every 25 ms for averaging.	**UUT1:** "XATCSR B 0 3 2 2 1 0 00 00 00 00 00 40"		**XATCS:** Generate a single whisper/shout interrogation with each pulse set individually. **R:** repeat 40 times per second. **B:** BOTTOM ANTENNA **Angle**: 270 deg. **Port which pulse is transmitted from:** 0,3,2,2,1,0 **Whisper/Shout step:** all 0's	
	31.1	+54 dBm or greater		Verify that the peak power of the P1 pulse is within specified limits.			**PPM:** Measure the peak power of the P1 pulse. The peak power shall be as specified.	+55 dBm or greater
	31.2	800 ± 50 ns		Measure the pulse width of the P1 pulse (time between the 50% to 50% voltage points on the pulse).			**PPM:** Measure the pulse width of P1, between the 50% to 50% voltage points of the pulse. The pulse width shall be as specified.	800 ± 50 ns
	31.3	50 to 100 ns		Measure the rise time of the P1 pulse (time between the 10% to 90% voltage points on the leading edge of the pulse).			**PPM:** Measure the rise time of P1, between the 10% to 90% voltage points of the leading edge of the pulse. The rise time shall be as specified.	50 to 100 ns
				Turn off transmitter.	**UUT1:** "XOFF"		Turn off the Whisper Shout interrogation format.	

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	32.0			RF I/O TESTS WITH P2A & P2B PULSES ON BOTTOM 180 ANTENNA	Initial Test Setup. **RFIU:** "Program"		RF I/O TESTS WITH P2A & P2B PULSES ON BOTTOM 180 ANTENNA Connect BOTTOM 180 antenna to the Peak Power Meter	
		See Figures 2 and 4		This test causes the UUT to generate an ATCRBS interrogation out all four Bottom antenna ports. This test verifies the directional switching capability of the I/O. Two of the six pulses are present on the Bottom 180 antenna port (P2A and P2B). The six-pulse interrogation may be repeated at a maximum rate of once every 25 ms for averaging.	**UUT1:** "XATCSR B 0 3 2 2 1 0 00 00 00 00 00 40"		**XATCS:** Generate a single whisper/shout interrogation with each pulse set individually. **R:** repeat 40 times per second. **B:** BOTTOM ANTENNA **Angle**: 180 deg. **Port which pulse is transmitted from:** 0,3,2,2,1,0 **Whisper/Shout step:** all 0's	
	32.1	+54 dBm or greater		Verify that the peak power of the P2A pulse is within specified limits.			**PPM:** Measure the peak power of the P2A pulse. The peak power shall be as specified.	+55 dBm or greater
	32.2	800 ± 50 ns		Measure the pulse width of the P2A pulse (time between the 50% to 50% voltage points on the pulse).			**PPM:** Measure the pulse width of P2A, between the 50% to 50% voltage points of the pulse. The pulse width shall be as specified.	800 ± 50 ns
	32.3	50 to 100 ns		Measure the rise time of the P2A pulse (time between the 10% to 90% voltage points on the leading edge of the pulse).			**PPM:** Measure the rise time of P2A, between the 10% to 90% voltage points of the leading edge of the pulse. The rise time shall be as specified.	50 to 100 ns

REV LTR	TEST NO.	SPECIFICATION OPR LIMITS	C	SPECIFICATION TEST DESCRIPTION	PROCEDURE SWITCH POS	C	PROCEDURE WORK STEPS	SPECIFICATION MFG LIMITS
	32.4	+54 dBm or greater		Verify that the peak power of the P2B pulse is within specified limits.			**PPM:** Measure the peak power of the P2B pulse. The peak power shall be as specified.	+55 dBm or greater
	32.5	800 ± 50 ns		Measure the pulse width of the P2B pulse (time between the 50% to 50% voltage points on the pulse).			**PPM:** Measure the pulse width of P2B, between the 50% to 50% voltage points of the pulse. The pulse width shall be as specified.	800 ± 50 ns
	32.6	50 to 100 ns		Measure the rise time of the P2B pulse (time between the 10% to 90% voltage points on the leading edge of the pulse).			**PPM:** Measure the rise time of P2B, between the 10% to 90% voltage points of the leading edge of the pulse. The rise time shall be as specified.	50 to 100 ns
				Turn off transmitter.	**UUT1:** "XOFF"		Turn off the Whisper Shout interrogation format.	

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	33.0			RF I/O TESTS WITH P3 PULSE ON BOTTOM 90 ANTENNA	Initial Test Setup. **RFIU:** "Program"		RF I/O TESTS WITH P3 PULSE ON BOTTOM 90 ANTENNA Connect BOTTOM 90 antenna to the Peak Power Meter	
		See Figures 2 and 4		This test causes the UUT to generate an ATCRBS interrogation out all four Bottom antenna ports. This test verifies the directional switching capability of the I/O. One of the six pulses is present on the Bottom 90 antenna port (P3). The six-pulse interrogation may be repeated at a maximum rate of once every 25 ms for averaging	**UUT1:** "XATCSR B 0 3 2 2 1 0 00 00 00 00 00 40"		**XATCS:** Generate a single whisper/shout interrogation with each pulse set individually. **R:** repeat 40 times per second. **B:** BOTTOM ANTENNA **Angle**: 90 deg. **Port which pulse is transmitted from:** 0,3,2,2,1,0 **Whisper/Shout step:** all 0's	
	33.1	+54 dBm or greater		Verify that the peak power of the P3 pulse is within specified limits.			**PPM:** Measure the peak power of the P3 pulse. The peak power shall be as specified.	+55 dBm or greater
	33.2	800 ± 50 ns		Measure the pulse width of the P3 pulse (time between the 50% to 50% voltage points on the pulse).			**PPM:** Measure the pulse width of P3, between the 50% to 50% voltage points of the pulse. The pulse width shall be as specified.	800 ± 50 ns
	33.3	50 to 100 ns		Measure the rise time of the P3 pulse (time between the 10% to 90% voltage points on the leading edge of the pulse).			**PPM:** Measure the rise time of P3, between the 10% to 90% voltage points of the leading edge of the pulse. The rise time shall be as specified.	50 to 100 ns
				Turn off transmitter.	**UUT1:** "XOFF"		Turn off the Whisper Shout interrogation format.	

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	34.0			ANTENNA FAULT SENSING This test verifies the antenna fault sensing capability of the IO CCA. Various values of dc resistance are connected between the center conductor of the antenna ports and ground, and then the RF status register is read to verify proper status.	Initial Test Setup.		ANTENNA FAULT SENSING The Resistor Protocol in the Initial Test Setup is: 'G' is ground via 50 ohms 'O' is open via 1 Megohm 'N' is nominal resistance that identifies an Ant port 'L' is below the 'N' limit 'H' is above the 'N' limit The operational limits will be of three characters: 1. Top Antenna (P)ass or (F)ail 2. Bottom Antenna (P)ass or (F)ail 3. Bottom Antenna (O)mni or (D)irectional	
	34.1			Setup the MTS antenna load resistors. Load bottom antenna ports with 50 ohms. Load top antenna ports with nominal resistance.	**RFIU:** "Program" "MTSANT Top N N N N" "MTSANT Bot G G G G"		Set T336254 RK 8, 9, 10, 11 to connect BOTTOM antennas to DCR (49.9 ohms) and TOP antennas to nominal resistance state. Top 0 = 1000 ± 50 ohms Top 90 = 2000 ± 50 ohms Top 180 = 4020 ± 50 ohms Top 270 = 8060 ± 50 ohms	
		PFD		Test antenna DC BITE. At address C0215 and compare output status against specification.			Cycle through the top and bottom antenna ports plus the omni discrete. The status register output shall be as specified.	PFD

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	34.2			Load the Top 0 degree port with 604 ± 40 ohms (L). The other Top ports shall remain at nominal values.	**RFIU:** "Program "MTSANT Top L N N N" "MTSANT Bot G G G G"		Top 0 = 604 ± 40 ohms Other Top ports at nominal values.	
		FFD		Test antenna DC BITE. At address C0215 and compare output status against specification.			Cycle through the top and bottom antenna ports plus the omni discrete. The status register output shall be as specified.	FFD
	34.3			Load the Top 0 degree port with 1650 ± 50 ohms (H). The other Top ports shall remain at nominal values.	**RFIU:** "Program "MTSANT Top H N N N" "MTSANT Bot G G G G"		Top 0 = 1650 ± 50 ohms Other Top ports at nominal values.	
		FFD		Test antenna DC BITE. At address C0215 and compare output status against specification.			Cycle through the top and bottom antenna ports plus the omni discrete. The status register output shall be as specified.	FFD
	34.4			Load the Top 90 degree port with 1240 ± 50 ohms (L). The other Top ports shall remain at nominal values.	**RFIU:** "Program "MTSANT Top N L N N" "MTSANT Bot G G G G"		Top 90 = 1240 ± 50 ohms Other Top ports at nominal values.	
		FFD		Test antenna DC BITE. At address C0215 and compare output status against specification.			Cycle through the top and bottom antenna ports plus the omni discrete. The status register output shall be as specified.	FFD

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	34.5			Load the Top 90 degree port with 3160 ± 100 ohms (H). The other Top ports shall remain at nominal values.	**RFIU:** "Program "MTSANT Top N H N N" "MTSANT Bot G G G G"		Top 90 = 3160 ± 100 ohms Other Top ports at nominal values.	
		FFD		Test antenna DC BITE. At address C0215 and compare output status against specification.			Cycle through the top and bottom antenna ports plus the omni discrete. The status register output shall be as specified.	FFD
	34.6			Load the Top 180 degree port with 2370 ± 50 ohms (L). The other Top ports shall remain at nominal values.	**RFIU:** "Program "MTSANT Top N N L N" "MTSANT Bot G G G G"		Top 180 = 2370 ± 50 ohms Other Top ports at nominal values.	
		FFD		Test antenna DC BITE. At address C0215 and compare output status against specification.			Cycle through the top and bottom antenna ports plus the omni discrete. The status register output shall be as specified.	FFD
	34.7			Load the Top 180 degree port with 6490 ± 200 ohms (H). The other Top ports shall remain at nominal values.	**RFIU:** "Program "MTSANT Top N N H N" "MTSANT Bot G G G G"		Top 180 = 6490 ± 200 ohms Other Top ports at nominal values.	
		FFD		Test antenna DC BITE. At address C0215 and compare output status against specification.			Cycle through the top and bottom antenna ports plus the omni discrete. The status register output shall be as specified.	FFD

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	34.8			Load the Top 270 degree port with 4780 ± 100 ohms (L). The other Top ports shall remain at nominal values.	**RFIU:** "Program "MTSANT Top N N N L" "MTSANT Bot G G G G"		Top 270 = 4780 ± 100 ohms Other Top ports at nominal values.	
		FFD		Test antenna DC BITE. At address C0215 and compare output status against specification.			Cycle through the top and bottom antenna ports plus the omni discrete. The status register output shall be as specified.	FFD
	34.9			Load the Top 270 degree port with 13300 ± 200 ohms (H). The other Top ports shall remain at nominal values.	**RFIU:** "Program "MTSANT Top N N N H" "MTSANT Bot G G G G"		Top 270 = 13300 ± 200 ohms Other Top ports at nominal values.	
		FFD		Test antenna DC BITE. At address C0215 and compare output status against specification.			Cycle through the top and bottom antenna ports plus the omni discrete. The status register output shall be as specified.	FFD
	34.10			Setup the MTS antenna load resistors. Load top antenna ports with 50 ohms. Load bottom antenna ports with nominal resistance.	**RFIU:** "Program" "MTSANT Top G G G G" "MTSANT Bot N N N N"		Set T336254 RK 8, 9, 10, 11 to connect TOP antennas to DCR (49.9 ohms) and BOTTOM antennas to nominal resistance state. Bot 0 = 1000 ± 50 ohms Bot 90 = 8060 ± 200 ohms Bot 180 = 4020 ± 50 ohms Bot 270 = 2000 ± 50 ohms	

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
		FPD		Test antenna DC BITE. At address C0215 and compare output status against specification.			Cycle through the top and bottom antenna ports plus the omni discrete. The status register output shall be as specified.	FPD
	34.11			Load the Bot 0 degree port with 604 ± 40 ohms (L). The other Bot ports shall remain at nominal values.	**RFIU:** "Program "MTSANT Top G G G G" "MTSANT Bot L N N N"		Bot 0 = 604 ± 40 ohms Other Bottom ports at nominal values.	
		FFD		Test antenna DC BITE. At address C0215 and compare output status against specification.			Cycle through the top and bottom antenna ports plus the omni discrete. The status register output shall be as specified.	FFD
	34.12			Load the Bot 0 degree port with 1650 ± 50 ohms (H). The other Bot ports shall remain at nominal values.	**RFIU:** "Program "MTSANT Top G G G G" "MTSANT Bot H N N N"		Bot 0 = 1650 ± 50 ohms Other Bottom ports at nominal values.	
		FFD		Test antenna DC BITE. At address C0215 and compare output status against specification.			Cycle through the top and bottom antenna ports plus the omni discrete. The status register output shall be as specified.	FFD
	34.13			Load the Bot 90 degree port with 4870 ± 100 ohms (L). The other Bot ports shall remain at nominal values.	**RFIU:** "Program "MTSANT Top G G G G" "MTSANT Bot N L N N"		Bot 90 = 4870 ± 100 ohms Other Bottom ports at nominal values.	
		FFD		Test antenna DC BITE. At address C0215 and compare output status against specification.			Cycle through the top and bottom antenna ports plus the omni discrete. The status register output shall be as specified.	FFD

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	34.14			Load the Bot 90 degree port with 13300 ± 200 ohms (H). The other Bot ports shall remain at nominal values.	**RFIU:** "Program "MTSANT Top G G G G" "MTSANT Bot N H N N"		Bot 90 = 13300 ± 200 ohms Other Bottom ports at nominal values.	
		FFD		Test antenna DC BITE. At address C0215 and compare output status against specification.			Cycle through the top and bottom antenna ports plus the omni discrete. The status register output shall be as specified.	FFD
	34.15			Load the Bot 180 degree port with 2370 ± 50 ohms (L). The other Bot ports shall remain at nominal values.	**RFIU:** "Program "MTSANT Top G G G G" "MTSANT Bot N N L N"		Bot 180 = 2370 ± 50 ohms Other Bottom ports at nominal values.	
		FFD		Test antenna DC BITE. At address C0215 and compare output status against specification.			Cycle through the top and bottom antenna ports plus the omni discrete. The status register output shall be as specified.	FFD
	34.16			Load the Bot 180 degree port with 6490 ± 200 ohms (H). The other Bot ports shall remain at nominal values.	**RFIU:** "Program "MTSANT Top G G G G" "MTSANT Bot N N H N"		Bot 180 = 6490 ± 200 ohms Other Bottom ports at nominal values.	
		FFD		Test antenna DC BITE. At address C0215 and compare output status against specification.			Cycle through the top and bottom antenna ports plus the omni discrete. The status register output shall be as specified.	FFD

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	34.17			Load the Bot 270 degree port with 1240 ± 50 ohms (L). The other Bot ports shall remain at nominal values.	**RFIU:** "Program "MTSANT Top G G G G" "MTSANT Bot N N N L"		Bot 270=1240 ± 50 ohms Other Bottom ports at nominal values.	
		FFD		Test antenna DC BITE. At address C0215 and compare output status against specification.			Cycle through the top and bottom antenna ports plus the omni discrete. The status register output shall be as specified.	FFD
	34.18			Load the Bot 270 degree port with 3160 ±100 ohms (H). The other Bot ports shall remain at nominal values.	**RFIU:** "Program "MTSANT Top G G G G" "MTSANT Bot N N N H"		Bot 270 =3160 ±100 ohms Other Bottom ports at nominal values.	
		FFD		Test antenna DC BITE. At address C0215 and compare output status against specification.			Cycle through the top and bottom antenna ports plus the omni discrete. The status register output shall be as specified.	FFD
	34.19			Load the Bottom 0 degree port with 50 ohms (G). The other Bottom ports shall be at open values	**RFIU:** "Program "MTSANT Top G G G G" "MTSANT Bot G O O O"		Bot 0 = 50 ohms Other Bottom ports at open values.	
		FFO		Test antenna DC BITE. At address C0215 and compare output status against specification.			Cycle through the top and bottom antenna ports plus the omni discrete. The status register output shall be as specified.	FFO

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	35.0			POWER VALID SENSE This test verifies the Power Valid sense capability of the RX/IO CCA. First an ATCRBS interrogation that is 8 dB down from full power is transmitted through the top 0 antenna port. The RF status register is then read to verify that the power valid bit for the 0 degree channel is set. Then an ATCRBS interrogation that is 17 dB down from full power is transmitted through the top 0 channel. The RF status register is then read to verify that the power valid bit for the 0 degree channel is not set. This sequence is then repeated for the remaining seven top and bottom antenna ports. An X in the limits column indicates a don't care condition for that bit.			POWER VALID SENSE	
	35.1			Generate an ATCRBS interrogation which is 8 dB down from full power out the top 0 antenna port. Only the S1 pulse is actually present.	**UUT1:** "XATCS T 0 0 0 0 0 0 08 99 99 99 99 99"		Generate an ATCRBS interrogation which is 8 dB down from full power out the top 0 antenna port. Only the S1 pulse is actually present.	
		1XXX0		Verify the power valid discretes are set as specified.			The power valid discrete outputs shall be as specified.	1XXX0
				Turn off transmitter.	**UUT1:** "XOFF"		Turn off the ATCRBS interrogation format.	

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	35.2			Generate an ATCRBS interrogation which is 17 dB down from full power out the top 0 antenna port. Only the S1 pulse is actually present.	**UUT1:** "XATCS T 0 0 0 0 0 0 17 99 99 99 99 99"		Generate an ATCRBS interrogation which is 17 dB down from full power out the top 0 antenna port. Only the S1 pulse is actually present.	
		0XXX0		Verify the power valid discretes are set as specified.			The power valid discrete outputs shall be as specified.	0XXX0
				Turn off transmitter.	**UUT1:** "XOFF"		Turn off the ATCRBS interrogation format.	
	35.3			Generate an ATCRBS interrogation which is 8 dB down from full power out the top 90 antenna port. Only the S1 pulse is actually present.	**UUT1:** "XATCS T 1 1 1 1 1 1 08 99 99 99 99 99"		Generate an ATCRBS interrogation which is 8 dB down from full power out the top 90 antenna port. Only the S1 pulse is actually present.	
		X1XX0		Verify the power valid discretes are set as specified.			The power valid discrete outputs shall be as specified.	X1XX0
				Turn off transmitter.	**UUT1:** "XOFF"		Turn off the ATCRBS interrogation format.	
	35.4			Generate an ATCRBS interrogation which is 17 dB down from full power out the top 90 antenna port. Only the S1 pulse is actually present.	**UUT1:** "XATCS T 1 1 1 1 1 1 17 99 99 99 99 99"		Generate an ATCRBS interrogation which is 17 dB down from full power out the top 90 antenna port. Only the S1 pulse is actually present.	
		X0XX0		Verify the power valid discretes are set as specified.			The power valid discrete outputs shall be as specified.	X0XX0
				Turn off transmitter.	**UUT1:** "XOFF"		Turn off the ATCRBS interrogation format.	
	35.5			Generate an ATCRBS interrogation which is 8 dB down from full power out the top 180 antenna port. Only the S1 pulse is actually present.	**UUT1:** "XATCS T 2 2 2 2 2 2 08 99 99 99 99 99"		Generate an ATCRBS interrogation which is 8 dB down from full power out the top 180 antenna port. Only the S1 pulse is actually present.	
		XX1X0		Verify the power valid discretes are set as specified.			The power valid discrete outputs shall be as specified.	XX1X0
				Turn off transmitter.	**UUT1:** "XOFF"		Turn off the ATCRBS interrogation format.	

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	35.6			Generate an ATCRBS interrogation which is 17 dB down from full power out the top 180 antenna port. Only the S1 pulse is actually present.	**UUT1:** "XATCS T 2 2 2 2 2 2 17 99 99 99 99 99"		Generate an ATCRBS interrogation which is 17 dB down from full power out the top 180 antenna port. Only the S1 pulse is actually present.	
		XX0X0		Verify the power valid discretes are set as specified.			The power valid discrete outputs shall be as specified.	XX0X0
				Turn off transmitter.	**UUT1:** "XOFF"		Turn off the ATCRBS interrogation format.	
	35.7			Generate an ATCRBS interrogation which is 8 dB down from full power out the top 270 antenna port. Only the S1 pulse is actually present.	**UUT1:** "XATCS T 3 3 3 3 3 3 08 99 99 99 99 99"		Generate an ATCRBS interrogation which is 8 dB down from full power out the top 270 antenna port. Only the S1 pulse is actually present.	
		XXX10		Verify the power valid discretes are set as specified.			The power valid discrete outputs shall be as specified.	XXX10
				Turn off transmitter.	**UUT1:** "XOFF"		Turn off the ATCRBS interrogation format.	
	35.8			Generate an ATCRBS interrogation which is 17 dB down from full power out the top 270 antenna port. Only the S1 pulse is actually present.	**UUT1:** "XATCS T 3 3 3 3 3 3 17 99 99 99 99 99"		Generate an ATCRBS interrogation which is 17 dB down from full power out the top 270 antenna port. Only the S1 pulse is actually present.	
		XXX00		Verify the power valid discretes are set as specified.			The power valid discrete outputs shall be as specified.	XXX00
				Turn off transmitter.	**UUT1:** "XOFF"		Turn off the ATCRBS interrogation format.	
	35.9			Generate an ATCRBS interrogation which is 8 dB down from full power out the bottom 0 antenna port. Only the S1 pulse is actually present.	**UUT1:** "XATCS B 0 0 0 0 0 0 08 99 99 99 99 99"		Generate an ATCRBS interrogation which is 8 dB down from full power out the bottom 0 antenna port. Only the S1 pulse is actually present	
		1XXX0		Verify the power valid discretes are set as specified.			The power valid discrete outputs shall be as specified.	1XXX0
				Turn off transmitter.	**UUT1:** "XOFF"		Turn off the ATCRBS interrogation format.	

REV LTR	TEST NO.	SPECIFICATION OPR LIMITS	C	SPECIFICATION TEST DESCRIPTION	PROCEDURE SWITCH POS	C	PROCEDURE WORK STEPS	SPECIFICATION MFG LIMITS
	35.10			Generate an ATCRBS interrogation which is 17 dB down from full power out the bottom 0 antenna port. Only the S1 pulse is actually present.	**UUT1:** "XATCS B 0 0 0 0 0 0 17 99 99 99 99 99"		Generate an ATCRBS interrogation which is 17 dB down from full power out the bottom 0 antenna port. Only the S1 pulse is actually present	
		0XXX0		Verify the power valid discretes are set as specified.			The power valid discrete outputs shall be as specified.	0XXX0
				Turn off transmitter.	**UUT1:** "XOFF"		Turn off the ATCRBS interrogation format.	

REV LTR	TEST NO.	SPECIFICATION OPR LIMITS	C	SPECIFICATION TEST DESCRIPTION	PROCEDURE SWITCH POS	C	PROCEDURE WORK STEPS	SPECIFICATION MFG LIMITS
	35.11			Generate an ATCRBS interrogation which is 8 dB down from full power out the bottom 90 antenna port. Only the S1 pulse is actually present.	**UUT1:** "XATCS B 1 1 1 1 1 1 08 99 99 99 99 99"		Generate an ATCRBS interrogation which is 8 dB down from full power out the bottom 90 antenna port. Only the S1 pulse is actually present	
		X1XX0		Verify the power valid discretes are set as specified.			The power valid discrete outputs shall be as specified.	X1XX0
				Turn off transmitter.	**UUT1:** "XOFF"		Turn off the ATCRBS interrogation format.	
	35.12			Generate an ATCRBS interrogation which is 17 dB down from full power out the bottom 90 antenna port. Only the S1 pulse is actually present.	**UUT1:** "XATCS B 1 1 1 1 1 1 17 99 99 99 99 99"		Generate an ATCRBS interrogation which is 17 dB down from full power out the bottom 90 antenna port. Only the S1 pulse is actually present	
		X0XX0		Verify the power valid discretes are set as specified.			The power valid discrete outputs shall be as specified.	X0XX0
				Turn off transmitter.	**UUT1:** "XOFF"		Turn off the ATCRBS interrogation format.	
	35.13			Generate an ATCRBS interrogation which is 8 dB down from full power out the bottom 180 antenna port. Only the S1 pulse is actually present.	**UUT1:** "XATCS B 2 2 2 2 2 2 08 99 99 99 99 99"		Generate an ATCRBS interrogation which is 8 dB down from full power out the bottom 180 antenna port. Only the S1 pulse is actually present	
		XX1X0		Verify the power valid discretes are set as specified.			The power valid discrete outputs shall be as specified.	XX1X0
				Turn off transmitter.	**UUT1:** "XOFF"		Turn off the ATCRBS interrogation format.	
	35.14			Generate an ATCRBS interrogation which is 17 dB down from full power out the bottom 180 antenna port. Only the S1 pulse is actually present.	**UUT1:** "XATCS B 2 2 2 2 2 2 17 99 99 99 99 99"		Generate an ATCRBS interrogation which is 17 dB down from full power out the bottom 180 antenna port. Only the S1 pulse is actually present	

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
		XX0X0		Verify the power valid discretes are set as specified.			The power valid discrete outputs shall be as specified.	XX0X0
				Turn off transmitter.	**UUT1:** "XOFF"		Turn off the ATCRBS interrogation format.	
	35.15			Generate an ATCRBS interrogation which is 8 dB down from full power out the bottom 270 antenna port. Only the S1 pulse is actually present.	**UUT1:** "XATCS B 3 3 3 3 3 3 08 99 99 99 99 99"		Generate an ATCRBS interrogation which is 8 dB down from full power out the bottom 270 antenna port. Only the S1 pulse is actually present	
		XXX10		Verify the power valid discretes are set as specified.			The power valid discrete outputs shall be as specified.	XXX10
				Turn off transmitter.	**UUT1:** "XOFF"		Turn off the ATCRBS interrogation format.	
	35.16			Generate an ATCRBS interrogation which is 17 dB down from full power out the bottom270 antenna port. Only the S1 pulse is actually present.	**UUT1:** "XATCS B 3 3 3 3 3 3 17 99 99 99 99 99"		Generate an ATCRBS interrogation which is 17 dB down from full power out the bottom 270 antenna port. Only the S1 pulse is actually present	
		XXX00		Verify the power valid discretes are set as specified.			The power valid discrete outputs shall be as specified.	XXX00
				Turn off transmitter.	**UUT1:** "XOFF"		Turn off the ATCRBS interrogation format.	

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	36.0			WHISPER/SHOUT PIN DIODE MONITOR This test verifies that the Whisper/Shout PIN diode open/short monitor is functioning. The PIN diode monitor is tested at each whisper/shout step from step 0 through step 27. The test is performed on the top 0 degree antenna port.			WHISPER/SHOUT PIN DIODE MONITOR	
	36.1	DELETED						

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	37.0			STORE SERIAL NUMBER AND HARDWARE DASH NUMBER IN MEMORY			STORE SERIAL NUMBER AND HARDWARE DASH NUMBER IN MEMORY	
	37.1			Clear all EEPROM memory locations except for calibration constants.	**UUT1:** "FC 90000 1FFF FFFF"		Fill CAS EEPROM at maintenance memory locations with FFFF	
					"FC 92000 5F00 0000"		Fill CAS EEPROM RA/TA recording memory locations with 0000.	
				Enter the 8 digit serial number of the UUT into memory.	**UUT1:** "WC 91FBF 000X" "WC 91FC0 000X" "WC 91FC1 000X" "WC 91FC2 000X" "WC 91FC3 000X" "WC 91FC4 000X" "WC 91FC5 000X" "WC 91FC6 000X"		Enter the 8 digit serial number of the UUT in CAS memory at the locations specified. The X in each command represents one digit in the serial number. A typical serial number, represented by YYMMNNNN, would be stored in the following order: The first command saves the first "Y" in the serial number, the second command saves the second "Y", the third command saves the first "M", etc.	
		PASS		Verify the serial number read from memory is the same as the serial number entered above.	**UUT1:** "RC 91FBF 8"		Read the 8 digit serial number from CAS memory at the location specified and verify that it matches the serial number entered above.	PASS
	37.2	DELETED						
	37.3	DELETED						

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	38.0			READ AND PRINT OUT CALIBRATION DATA FROM MEMORY Read and display calibration memory from the UUT. Print out the calibration data from UUT memory.	**UUT1:** "RC 97F00 30" "RC 97FFE 02"		READ AND PRINT OUT CALIBRATION DATA FROM MEMORY Read the calibration data from the CAS CPU memory at the location specified. Print out the calibration data from UUT memory.	

REV	TEST	SPECIFICATION			PROCEDURE			SPECIFICATION
LTR	NO.	OPR LIMITS	C	TEST DESCRIPTION	SWITCH POS	C	WORK STEPS	MFG LIMITS
	39.0			OPERATIONAL LOAD AND VERIFICATION SOFTWARE			OPERATIONAL LOAD AND VERIFICATION SOFTWARE	
	39.1	PASS		Load the operational software according to the UUT part number and modification status.	**UUT1:** "SWLD <filename>"		The display shall be:	PASS
A	39.2	See Table 1 on drawing 4066010-910 for number based on software part number.		Verify the operational software part number displayed on the Portable Data Loader bus matches the UUT part number and modification status.	**UUT1:** "SWPN"		The display shall be:	See Table 1 on drawing 4066010-910 for number based on software part number.
				ALTERNATE PROCEDURE FOR TEST 39.2			ALTERNATE PROCEDURE FOR TEST 39.2	
		Alternate procedure for test 39.2.		The following is an alternate procedure for reading the operational software part number using the TCAS Simulation Panel which may be substituted for test 39.2 at the discretion of the operator:	Setup per EB4077602			
				Setup and power up the equipment as described in EB4077602. Perform test 10 of EB4077602.				
A		See Table 1 on drawing 4066010-910 for number based on software part number.		Verify the operational software part number displayed on the VSI/TRA matches the UUT part number and modification status.			The display shall be:	See Table 1 on drawing 4066010-910 for number based on software part number.

APPENDIX A
4066010-910 SOFTWARE LOADING PROCEDURE AND SPR DELAY CALIBRATION

1. INTRODUCTION

The 4066010-910 TCAS II Change 7 unit contains FLASH EPROM memory which contains the CAS and SURV Dataloader and Operational code, the Audio speech segments, and the FPGA data. The content of the memory is electrically programmable and erasable, and may be modified without removal of the ICs from the CCAs. By use of the front panel connector the unit's operational code may be loaded without opening the unit.

The TCAS II Change 7 system has 3 FLASH EPROM memory ICs which are contained on the A2 Processor CCA (4066017-905). One of the ICs contains the CAS Dataloader code, CAS Operational code, and the FPGA data. The second IC contains the SURV Dataloader code and SURV Operational code. The Third IC contains the Audio speech segments. During test, the Bench test code is loaded in place of the CAS and SURV Operational code. The function of the Dataloader code (both CAS and SURV) is to allow the Operational code (or Bench test code) to be programmed through the front panel connector. The front panel connector contains an ARINC 429 bus for programming using a ARINC Portable Data Loader (PDL).

2. SOFTWARE LOADING PROCEDURE

When an A2 Processor CCA is initially manufactured, purchased from stock, or FLASH EPROM ICs are replaced, the CCA is unprogrammed. The following procedure MUST be used when bringing the unit up to an operational state:

1. Load BOOT Software using DATALOADER SOFTWARE LOADING procedure.
2. Load Product Test Software (for calibration and IT) using OPERATIONAL SOFTWARE LOADING procedure.
3. If needed, calibrate Unit SPR delay using the calibration procedure in Section 5.
4. Final Test unit and load valid OPERATIONAL code (performed as part of IT test steps).

NOTE: Do not attempt to transmit interrogations until after the end item calibration has been performed to avoid possible transmitter damage.

3. DATALOADER SOFTWARE LOADING PROCEDURE

The Dataloader software must be loaded using a Processor Boot Fixture (T336104). Perform the following procedure to load Dataloader software into the unit:

1. Remove the unit's outside top cover (if attached).
2. With power removed from the unit, put the A2 CCA on a extender and connect the Boot Fixture to J1 and J2 on the A2 Processor CCA.
3. Set all the switch settings on the Boot Fixture to point to the rear of the unit.
4. Apply power to the unit. The lower LED on the Boot Fixture should be flashing at a 1 Hz rate (approximately).

5. Depress and release the test switch on the front of the unit.
6. After approximately 10 seconds, the lower LED on the Boot Fixture should stop flashing and turn off. If the LED does not stop flashing, or remains on, the Dataloader Software did not load properly.
7. Remove power from the unit and remove the Boot Fixture. The Dataloader Program has been loaded.
8. Remove the extender, reposition the A2 CCA and connect the flexible lines connecting the CAS and SURV CCA's at the top.

3.1 Software Loading Instructions Using the MTS

A 1. Disconnect the following jumpers on the RMP section of the aircraft interface unit (AIU):

8A to 9A
8B to 9B

A 2. Place unit on MTS.

A 3. Connect the PDL ARINC 615 cable to front data loader port of unit.

A 4. Activate the CVI test executive window on the MTS PC.

A 5. Click on the ADL button.

A 6. Select the appropriate file to program into the unit by clicking on it once.

A 7. Click on the Add button.

A 8. Click on the OK button. The file should begin transfer data to the unit.

A 9. Once the file has completed transferring into the unit, the PC will indicate “Data upload complete”. Press OK to exit. The unit has been successfully programmed if the “Data upload complete” message is displayed. If the file transfer was unsuccessful, a message will be displayed which indicates “Data upload fail”.

10. Reconnect the jumpers 8A to 9A and 8B to 9B on the RMP section of the AIU.

4. OPERATIONAL OR PRODUCT TEST SOFTWARE LOADING PROCEDURE

C The following procedure as identified in EB7517987 may be used to load either OPERATIONAL (flight code) or PRODUCT TEST code (test and troubleshooting).

1. Remove power from the unit.

2. Connect the PAC-429 port of a PC to the ARINC PDL port (using the MTS or an equivalent cable).

3. Set the Dataloader Discrete #1 and #2 on the MTS (or equivalent cable harness) to ON mode to allow for software programming. Set the WEIGHT ON WHEELS switch on the MTS to GROUND. Set the Landing Gear switch on the MTS to GEAR DOWN.

4. Start the ADL Simulator on the PC. Typically the software is about 3.5 Megabytes in magnitude so the product is contained in three floppy disk files, therefore the data is loaded in a sequence of files. Select the following on the PC:

   Select ADL, then START

   Select the first file of the file set (for example only, 341X-HPN-02B-0X.001), then select OK

   Select the second file of the file set (for example only, 341X-HPN-02B-0X.002), then select OK

   Select the third file of the file set (for example only, 341X-HPN-02B-0X.003), then select OK

   Select CANCEL.

   The ADL simulator will start running and will be displaying “Send RTS” on the screen.

   NOTE: If the files have been concatenated on the PC, only one file will need to be be selected.

5. Apply power to the TCAS unit. After about 10 seconds, the ADL simulator will start transferring the data to the TCAS II Change 7 unit. The display will show the amount of data transferred.

6. When all data has been transferred, the ADL simulator will display “Closing File <third file name>“.

7. Set the Dataloader Discretes #1 and #2 on the MTS to OFF and cycle power to the unit. The program should transition to OPERATIONAL or BENCH TEST code.

5. SPR CALIBRATION - INTRODUCTION

The TCAS II Change 7 unit uses computer (electronic) adjustments for SPR delay circuitry which requires calibration. Computer adjustments are preferable to mechanical adjustments (potentiometers, variable capacitors and inductors) because they can be performed automatically by a computer remotely (without the unit opened up), and are inherently more reliable.

All adjustments can be performed from a P.C. using PS7517976. Calibration constants for parameters are stored in EEPROM memory on the A2 Processor CCA. The parameters in EEPROM have an error detection means, so that a loss of data will be detected by the computer. A loss of calibration data could result in invalid TCAS operation.

5.1 CALIBRATION PROCEDURE

The following calibration procedure should be performed in the following order to insure consistent results from the calibration. Prior to the calibration procedure, valid BOOT and PRODUCT TEST software must be loaded into the unit when calibrating at the end item level. Refer to section 2 for software loading instructions. When the calibration command is executed, the new data can be automatically saved in the EEPROM memory. For this appendix, all tests and calibrations performed on the end item require the discrete inputs RBP-9D and RBP-9F to be connected to common RBP-7K to enable test mode.

NOTE: Do not attempt to transmit interrogations unless the RF is aligned or you know the unit is already operational.

5.2 Calibration Test Setup

The calibration process must be performed at either the TCAS II Change 7 computer at the End Item level. Use section 5.3 and figure 1 for a TCAS II Change 7 computer End Item SPR Delay calibration.

A Set up the transmitter calibration equipment per figure 1 and make all necessary connections per table A-1. The P.C. must be a 386 minimum with PROCOMM software. The script file referenced in the calibration procedure is available from PS7517976.

5.3 Transmitter P6 Pulse to SPR Delay Calibration

The SPR delay calibration locates the SPR (Sync Phase Reversal) at a point 1.25 us ± 0.020 us after the leading edge of the P6 pulse. From the script file menu, execute file XMTR_MS.ASX. A series of user selections will follow to determine what type of pulse to transmit, which calibration settings to use, and which channel to select. For the MODE-S Data prompt, select all 0's. For the calibration settings for Course DPSK delay and Fine DPSK delay, select the default settings. For the Power Valid Display prompt, select the default (no). After making these selections, the transmitter will begin transmitting. Figure 5 shows the leading edge of a P6 pulse with the SPR. To turn off the interrogation transmissions, press the space bar. Measure the delay between the leading edge of the P6 pulse and the minima of the SPR on the HP8990A as shown in figure 5. Verify that the delay is 1.25 us ± 0.020 us. If the delay is not within specification, execute file XMTR_MS.ASX and adjust the course DPSK delay as required to meet the 1.25 us ± 0.020 us requirement. An increase in the course DPSK delay calibration setting by 1 bit results in an decrease in delay of 62.5 ns.

Table A-1. Calibration Test Setup Interconnections

Interconnections	
From	To
UUT LBP p.1	P.S. 115VAC (H)
UUT LBP p. 7	P.S. 115VAC (L)
UUT PDL p. 41	P.C. - Com Port p. 2
UUT PDL p. 40	P.C. - Com Port p. 3
UUT PDL p. 21	P.C. - Com Port p. 5
RBP-9D	RBP-7K
RBP-9F	RBP-7K