AVX-10K

Flight Line Test Set

This document defines the performance specifications for the AVX-10K Flight Line Test Set. A 5 minute warm-up period is required for full compliance to all specifications.

Transponder Mode

Signal Generator	
A 5-minute warm-up period is required for all specifications.	
RF Output Frequency	
Interrogation Frequency	1030 MHz
Accuracy	±10 kHz
RF Output Level	
Antenna Port	MTL + 6 dB typical, automatically controlled for a MTL range of -83 to -68 dBm
Range	-67 to -2 dBm at antenna port
Resolution	0.5 dB
Accuracy	±2 dB
Distance to UUT Antenna	6 to 200 ft with supplied antenna



RF I/O Connector	MTL + 6 dB typical, automatically controlled
Range	-115 to -47 dBm
Resolution	0.5 dB
Accuracy	-95 to –47 dBm (±1 dB)
Accuracy	-115 to <-95 dBm (±2 dB)
ATCRBS/SIF/MODE S Interrogation Pulse Spacing	
Mode 1	
P1 to P2	2.00 µs ± 25 ns
P1 to P3	3.00 µs ± 25 ns
Mode 2	
P1 to P2	2.00 µs ± 25 ns
P1 to P3	5.00 µs ± 25 ns
Mode 3A	
P1 to P2	2.00 µs (±25 ns)
P1 to P3	8.00 µs (±25 ns)
Mode C	
P1 to P2	2.00 µs (±25 ns)
P1 to P3	21.00 µs (±25 ns)
Mode S	
P1 to P2	2.00 µs (±25 ns)
P1 to P6	3.50 µs (±25 ns)
P1 to SPR	4.75 µs (±25 ns)
P5 to SPR	0.40 µs (±50 ns)

Transponder Mode (continued)

Intermode Interrogation Pulse Spacing	
Mode A	
P1 to P3	8.00 µs (±25 ns)
P1 to P4	10.00 µs (±25 ns)
Mode C	
P1 to P3	21.00 µs (±25 ns)
P1 to P4	23.00 µs (±25 ns)
Interrogation Pulse Widths	
Modes A, C, S, Intermode	
P1, P2, P3	0.80 µs (±50 ns)
Mode S	
P6 (Short DPSK Block)	16.25 µs (±50 ns)
P6 (Long DPSK Block)	30.25 µs (±50 ns)
P5	0.80 µs (±50 ns)
Intermode	
P4 (Short)	0.80 µs (±50 ns)
P4 (Long)	1.60 µs (±50 ns)
Interrogation Pulse Rise and Fall Times (All Modes)	
Rise Time	50 to 100 ns
Fall Time	50 to 200 ns
Phase Modulation (All Modes)	
Transition Time	<80 ns
Phase Shift	180° ±10°
SLS Levels (Automatically controlled in the SLS LEVEL test)	
ATCRBS	
SLS Level (P2)	-9 dB, -1 to +0 dB relative to P1 level
	0 dB, -0 to +1 dB relative to P1 level
	OFF
Mode S	
SLS Level (P5)	-12 dB, -1 to +0 dB relative to P6 level
	+3 dB, -0 to +1 dB relative to P6 level
	OFF

Interrogation Test Signals	
Mode S	PRF: 50 Hz (±5 Hz)
ATCRBS	PRF: 235 Hz (±5 Hz)
UUT Measurements	
ERP (@ 1090 MHz)	
Range	+45.5 to +59 dBm (35.5 to 800 watts)
Resolution	0.1 dB
Accuracy	±2 dB
Direct Connection Peak Pulse Power (@ 1090 MHz)	
Range	+46.5 to +59 dBm (45 to 800 Watts)
Resolution	0.1 dB
Accuracy	±1 dB
Transmitter Frequency	
Range	1087.000 to 1093.000 MHz
Resolution	10 kHz
Accuracy	±50 kHz
Receiver Sensitivity, Radiated MTL	
Range	-79 to -67 dBm into 0 dBi antenna
Resolution	0.1 dB
Accuracy	±2 dB, typical
Receiver Sensitivity, Direct Connection MTL	
Range	-79 to -67 dBm
Resolution	0.1 dB
Accuracy	±2 dB
Reply Delay	
ATCRBS	
Range	1.80 to 7.00 µs
Resolution	10 ns
Accuracy	±50 ns
Reply Delay, Mode S and ATCRBS Mode S ALL-CALL	
Range	125.00 to 131.00 µs
Resolution	10 ns
Accuracy	±50 ns

Transponder Mode (continued)

Reply Delay Jitter	
ATCRBS	
Range	0.00 to 2.30 µs
Resolution	1 ns
Accuracy	±20 ns
Mode S and ATCRBS Mode S ALL-CALL	
Range	0.00 to 6.00 µs
Resolution	1 ns
Accuracy	±20 ns
Pulse Spacing	
F1 to F2	
Range	19.70 to 21.60 µs
Resolution	1 ns
Accuracy	±20 ns
Mode S Preamble	
Range, P1 to P2	0.8 to 1.2 µs
Range, P1 to P3	3.3 to 3.7 µs
Range, P1 to P4	4.3 to 4.7 µs
Resolution	1 ns
Accuracy	±20 ns
Pulse Widths	
F1 to F2	
Range	0.25 to 0.75 µs
Resolution	1 ns
Accuracy	±20 ns
Mode S Preamble	
Range	0.25 to 0.75 µs
Resolution	1 ns
Accuracy	±20 ns
PULSE Amplitude Variation	
Range	
Mode S (Relative to P1)	-3 to +3 dB
ATCRBS (Relative to F1)	-3 to +3 dB
Resolution	0.1 dB (0.01 dB via RCI)
Accuracy	±0.5 dB

DF 11 Squitter Period	
Range	0.10 to 4.88 sec
Resolution	10 ms
Accuracy	±10 ms
Diversity Isolation	
Range	0 to >20 dB (depending on test distance)
Test Distance	1.83 m (6ft) to 28.96 m (95 ft)
Resolution	0.1 dB
Accuracy	±3 dB

TCAS/E-TCAS Mode

Signal Generator	
Output Frequency	
Reply Frequency	1090 MHz
Accuracy	±10 kHz
Output Level (simulated ERP)	
Antenna Port[1,2]	
Radiated power at 0 dBi UUT antenna	-68 dBm typical @ 10 nmi range (automatically controlled)
Range	-67 to -2 dBm at antenna port
Resolution	0.5 dB
Accuracy	±2 dB
Distance to UUT antenna	6 to 300 ft. with supplied antenna
RF I/O Connector	
Automatic Mode	-68 dBm typical @ 10 nmi range (automatically controlled)
Manual Mode Range	-115 to -47 dBm
Resolution	0.5 dB
Accuracy	-95 to –47 dBm (±1 dB)
	-115 to <-95 dBm (±2 dB)

TCAS/E-TCAS Mode (continued)

Reply Pulse Spacing	
Mode C	
F1 to F2	20.30 µs ±25 ns
F1 to C1	1.45 µs ±25 ns
F1 to A1	2.90 µs ±25 ns
F1 to C2	4.35 µs ±25 ns
F1 to A2	5.80 µs ±25 ns
F1 to C4	7.25 µs ±25 ns
F1 to A4	8.70 µs ±25 ns
F1 to B1	11.60 µs ±25 ns
F1 to D1	13.05 µs ±25 ns
F1 to B2	14.50 µs ±25 ns
F1 to D2	15.95 µs ±25 ns
F1 to B4	17.40 µs ±25 ns
F1 to D4	18.85 µs ±25 ns
Mode S	
P1 to P2	1.00 µs ±25 ns
P1 to P3	3.50 µs ±25 ns
P1 to P4	4.50 µs ±25 ns
P1 to D1	8.00 µs ±25 ns
D1 to Dn (n=2 to 112)	1.00 µs times (n-1) ±25 ns
Reply Pulse Widths	
Mode C	
All pulses	0.45 µs ±50 ns
Mode S	
P1 through P4	0.50 µs ±50 ns
D1 through D112	0.50 µs (±50 ns), 1 µs chip width
Reply Modes	TCAS I / II Mode C (with altitude reporting)
	TCAS II Mode S formats 0, 11, 16
	E-TCAS Modes formats 0, 4, 5, 11, 16, 20, 21
Reply Pulse Amplitudes	
ATCRBS	±1 dB relative to F1
Mode S	±1 dB relative to P1

Reply Pulse Rise and Fall Times (All Modes)	
Rise Time	30 to 100 ns
Fall Time	30 to 200 ns
Percent Reply	
Range	0 to 100%
Resolution	1%
Accuracy	±1%
Reply Delay	
ATCRBS	3.0 µs ±50 ns
Mode S	128 µs ±50 ns
Range Delay	
Range	0 to 260 nmi
Resolution	0.1 nmi
Accuracy	±0.02 nmi
Range Rate	
Range	-1200 to +1200 kts
Resolution	10 kts
Accuracy	10%
Altitude Range	
Range	-1000 to 126,000 ft.
Resolution, Mode C	100 ft.
Resolution, Mode S	25 ft.
Altitude Rate	
Range	-10,000 to +10,000 fpm
Resolution	100 fpm
Accuracy	10%
Squitter	
Control	On/Off
Rate	0.8 to 1.2 seconds, randomly distributed

TCAS/E-TCAS Mode (continued)

Receiver	
Pulse Spacing (ATCRBS, Mode C ALL CALL)	
S1 to P1	2.0 µs
Accepts	< ±200 ns
Rejects	> ±1.0 µs
P1 to P3	21.0 µs
Accepts	< ±200 ns
Rejects	(<10% Replies) >±1.0 µs
P1 to P4	23.0 µs
Accepts	< ±200 ns
Rejects	(<10% Replies) > ±1.0 µs
Mode S	
P1 to P2	2.0 µs
Accepts	<±200 ns
Rejects	(<10% Replies) >±1.0 µs
P1 to SPR	4.75 µs
Accepts	<±200 ns
Rejects	(<10% Replies) >±1.5 µs
Suppression	
ATCRBS (P2 or S1)	
>0.5 dB above level of P1	<10% Replies
UUT Measurements	
ERP (@ 1030 MHz)	
ATCRBS	
Range	+43 to +58 dBm (20 to 631 watts)
Resolution	0.1 dB
Accuracy	±2 dB
Mode S	
Range	+43 to +58 dBm (20 to 631 watts)
Resolution	0.1 dB
Accuracy	±2 dB
Direct Connection Peak Pulse Power (@ 1030 MHz)	
ATCRBS	
Range	+43 to +58 dBm (20 to 631 watts)
Resolution	0.1 dB
Accuracy	±1 dB
Mode S	
Range	+43 to +58 dBm (20 to 631 watts)
Resolution	0.1 dB
Accuracy	±1 dB
Frequency	
Range	1029.900 to 1030.100 MHz
Resolution	1 kHz
Accuracy	±10 kHz
TCAS Broadcast Interval	
Range	1.0 to 12.0 sec
Resolution	0.1 sec
Accuracy	±0.2 sec

UAT Mode

Signal Generator	
RF Output Frequency	
Transmit Frequency	978 MHz
Accuracy	±10 kHz
Output Level	
Antenna Port	
Radiated power at 0 dbi UUT antenna	-85 dBm, automatically controlled
Range	-67 to -2 dBm at antenna port
Resolution	0.5 dB
Accuracy	±2 dB
Distance to UUT antenna	6 to 150 ft. with supplied antenna
RF I/O Port	
Automatic mode	-85 dBm
Accuracy	±1 dB
Modulation	
Type	BPFSK per RTCA DO-282B
Deviation	±312.5kHz typical

UAT Mode (continued)

UUT Measurements	
ERP (@ 978 MHz)	
Range	+35 to +57 dBm (3.16 to 500 watts)
Resolution	0.1 dB
Accuracy	±2 dB
Test distance	6 to 150 ft with supplied antenna
Direct Connection Peak Pulse Power (@978 MHz)	
Range	+35 to +57 dBm (3.16 to 500 watts)
Resolution	0.1 dB
Accuracy	±1 dB
Frequency	
Range	977.96 to 978.04 MHz
Resolution	1 kHz
Accuracy	±10 kHz

NAV/COMM

RF Output Frequency	
Mode: Single	10.0 MHz to 400.0 MHz in 100 kHz steps
ILS and VOR Mode	
Marker Beacon Channel	72.0 MHz to 78.0 MHz in 25 kHz steps
Marker Beacon Preset	74.5 MHz, 75.0 MHz, 75.5 MHz
Marker Beacon Variable	72.0 MHz to 78.0 MHz in 1 kHz steps
VOR Channel	108.0 MHz to 117.95 MHz in 50 kHz steps
VOR Preset	108.0 MHz, 108.05 MHz, 117.95 MHz
VOR Variable	107.0 MHz to 118.0 MHz in 1 kHz steps
LOC Channel	108.1 MHz to 111.95 MHz in 50 kHz steps
LOC Preset	108.1 MHz, 108.15 MHz, 110.15 MHz
LOC Variable	107.0 MHz to 113.0 MHz in 1 kHz steps
G/S Channel	329.15 MHz to 335.0 MHz in 50 kHz steps
G/S Preset	334.25 MHz, 334.55 MHz, 334.70 MHz
G/S Variable	327.0 MHz to 337.0 MHz in 1 kHz steps
Comm AM Channel	10.0 MHz to 512.0 MHz in 25 kHz steps (8.33 kHz steps available 118.0 to 156.0 MHz)
Comm AM Preset	118.0 MHz, 137.0 MHz, 156 MHz
	225.0 MHz. 312.0 MHz, 400 MHz
Comm AM Variable	10.0 MHz to 512.0 MHz in 1 kHz steps
Comm FM Channel	10.0 MHz to 512.0 MHz in 12.5 or 25 kHz steps
Comm FM Preset	156.0 MHz, 165.0 MHz, 174.0 MHz
Comm FM Variable	10.0 MHz to 512.0 MHz in 1 kHz steps
Comm SSB Variable	10.0 MHz to 30.0 MHz in 100 Hz steps
SELCAL Channel	10.0 MHz to 30.0 MHz, 118.0 MHz to 156.0 MHz in 25 kHz steps
SELCAL Preset	10.045 MHz, 21.0 MHz, 30 MHz, 118.0 MHz, 137.0 MHz, 156 MHz
SELCAL Variable	10.0 MHz to 30.0 MHz, 118.0 MHz to 157.0 MHz in 1 kHz steps
Output Level	
Antenna Port (75 MHz to 512.0 MHz)	
Single Carrier	+13 dBm to –67 dBm in 0.5 dB steps
Accuracy	±3 dB
Dual Mode LOC	0 dBm fixed
Accuracy	±2.5 dB
Dual Mode G/S	0 dBm to –76 dBm in 0.5 dB steps
Accuracy	±3 dB (0 to –60 dBm)
Tri-Mode Marker	+13 dBm fixed
Accuracy	±2 dB
Tri-Mode LOC	–9 dBm fixed
Accuracy	±2 dB
Tri-Mode G/S	–9 dBm to –83 dBm in 0.5 dB steps
Accuracy	±3 dB (-9 to -60dBm)

NAV/COMM (continued)

Antenna Port (10 MHz to 75 MHz)	
Single Carrier	–17 dBm to –67 dBm in 0.5 dB steps
Accuracy	±3 dB
RF I/O Port (75 MHz to 512.0 MHz)	
Single Carrier	–12 dBm to –130 dBm in 0.5 dB steps
Accuracy	–12 dBm to –39.5 dBm (±2.5 dB)
	–40 dBm to –94.5 dBm (±2.0 dB)
	–95 dBm to –120 dBm (±3 dB)
Dual Mode LOC	–25 dBm fixed
Accuracy	±2 dB
Dual Mode G/S	–22 dBm to –101 dBm in 0.5 dB steps
Accuracy	±2.5 dB
RF I/O Port (10 MHz to 75 MHz)	
Single Carrier	–40 dBm to –130 dBm in 0.5 dB steps
Accuracy	–40 dBm to –94.5 dBm (±2.0 dB)
	–95 dBm to –120 dBm (±3.0 dB)

VOR Mode

VOR Tone Frequency Accuracy	
30 Hz Reference	±0.02%
30 Hz Variable	±0.02%
1020 Hz	±0.02%
9960 Hz	±0.02%
AM Modulation	
CAL	
30 and 9960 Hz Tones	30% AM, each tone
Accuracy	1% modulation
1020 Hz Tone	30% AM
1020 Hz Morse Code	10% AM
Accuracy	±2% modulation
Variable Range	0 to 55% AM
	30, 9960, and 1020 Hz Tones
Distortion	<2.0% in CAL position
FM Modulation	30 Hz reference at ±480 Hz peak deviation on 9960 Hz sub-carrier
Accuracy	±25 Hz peak deviation
Bearing	To – From Selectable
Preset Bearing	0°, 30°, 60°, 90°, 120°, 150°, 180°, 210°, 240°, 270°, 300° and 330°
Variable Bearing	3600 digitally derived courses in 0.1° increments.
Accuracy	±0.1°

LOC Mode

LOC Tone Frequency Accuracy	
90 Hz	±0.02%
150 Hz	±0.02%
1020 Hz	±0.02%
Modulation	
CAL	
90 and 150 Hz tones	20% AM, each tone
1020 Hz Audio tone	30% AM
1020 Hz Morse code	10% AM
Accuracy	±2% modulation
Variable Range	0 to 28% AM, 90 and 150 Hz tones
	0 to 42% AM, 1020 Hz tone
Distortion	<2.5% in CAL position
LOC DDM	
Fixed Range	±0, 0.093, 0.155, 0.200 DDM and Tone Delete
Accuracy	±0.0015 DDM (±1.5 µA) ±3% of setting
	(≤+10 dBm Output Level)
Variable Range	±0.4 in 0.001 DDM steps
Accuracy	±0.0025 DDM (±2.5 µA) ±3% of setting
	(≤+10 dBm Output Level)

LOC Mode (continued)

Variable Sweep (Available only in dual and tri-modes)	
Range	0 to ±30 µA
Sweep Rates	5 to 40 sec.
Step Size	5 sec.
Accuracy	±0.5 sec./sweep
Phase Shift	
Range	0 to 120 degrees in 5 degree increments (150 Hz phase relative to 90 Hz)
Accuracy	±0.5°

G/S Mode

G/S Tone Frequency Accuracy	
90 Hz	±0.02%
150 Hz	±0.02%
Modulation	
CAL	
90 and 150 Hz tones	40% AM, each tone
Accuracy	±2% modulation
Variable Range	0 to 50% AM
	90 and 150 Hz tones
Distortion	<2.5% in CAL position
G/S DDM	
Fixed Range	±0, 0.091, 0.175, 0.400 DDM and Tone Delete
Accuracy	±0.003 DDM (±2.5 µA) ±3% of setting (≤+10 dBm Output Level)
Variable Range	±0.8 DDM in 0.001 DDM steps
Accuracy	±0.0048 DDM (±4.0 µA) ±3% of setting (≤+10 dBm Output Level)
Phase Shift	
Range	0 to 120 degrees in 5 degree increments (150 Hz phase relative to 90 Hz)
Accuracy	±0.5°

Marker Mode

Marker Tone Frequency Accuracy	
400 Hz	±0.02%
1300 Hz	±0.02%
3000 Hz	±0.02%
Modulation	
CAL	
Setting	95% AM
Accuracy	±5% modulation
Variable (Single Carrier Only)	
Range	0 to 95% AM
Distortion	
Single Carrier	0 to 95% AM
Tri-Mode	<2.5% in CAL position, –67 to +10dBm
	<5% in CAL position

DME Mode

Signal Generator	
A 5-minute warm-up period is required for all specifications.	
Output Frequency	
Reply Frequency	
Range	962 to 1213 MHz
Accuracy	±10 kHz
Output Level	
Antenna Port	
Range	-67 to -2 dBm at Antenna port
Resolution	0.1 dB
Accuracy	±2 dB
Distance to UUT antenna (ref only)	6 to 300 ft with supplied antenna
RF I/O Port	
Range	-115 to -47 dBm
Resolution	0.1 dB
Accuracy, -95 dBm to -50 dBm	±1 dB
Accuracy, -115 dBm to <-95 dBm	±2 dB

DME Mode (continued)

Reply Pulse Spacing	
P1 to P2	12 µs ±100 ns (X Channel) @ 50% peak
P1 to P2	30 µs ±100 ns (Y Channel) @ 50% peak
Reply Pulse Width	
P1/P2	3.5 µs ±0.5 µs
Echo Reply	
Control	On/Off
Position	30 nmi ±1 nmi
Amplitude	-11 dB ±1 dB relative to reply level
Reply Pulse Rise and Fall Times	
All Pulses	
Rise Time	2.5 µs ±0.25 µs (10% to 90%)
Fall Time	2.5 µs ±0.25 µs (90% to 10%)
Reply Delay	
X Channel	
Fixed Reply Delay	50 µs ±100 ns
Y Channel	
Fixed Reply Delay	56 µs ±100 ns
Range Delay	
X and Y Channel	
Range	0 to 450.00 nmi
Resolution	0.01 nmi
Accuracy	±0.01 nmi
Range Rate	
X and Y Channel	
Range	10 to 6500 kts
Resolution	1 kts
Accuracy	±0.01 % typical, tested to ±0.5%
Squitter	
PRF	2700 Hz
Accuracy	±2%
Distribution	Per ARINC 568

Reply Efficiency	
Range	0 to 100%
Resolution	1% increments
Accuracy	±0.5%
Ident Tone	
Selection	Selectable two to three letter code
Frequency	1350 Hz
Accuracy	±2 Hz
UUT Measurements	
ERP	
Range	+47 to +64 dBm
Resolution	0.1 dB
Accuracy	±2 dB
Direct Connection Peak Pulse Power	
Range	+47 to +64 dBm
Resolution	0.1 dB
Accuracy	±1 dB
Frequency	
Range	1025.00 to 1150.00 MHz
Resolution	10 kHz
Accuracy	±20 kHz
Interrogation Pulse Width	
P1 and P2 Pulse Widths	
Range	2.00 to 5.00 µs
Resolution	1 ns
Accuracy	±50 ns
Interrogation Pulse Spacing	
P1 to P2 Spacing	10 to 14 µs (X Channel)
P1 to P2 Spacing	34 to 38 µs (Y Channel)
Resolution	10 ns
Accuracy	±20 ns
Interrogation PRF	
Range	1 to 300 Hz
Resolution	1 Hz
Accuracy	±2 Hz

TACAN Mode

Signal Generator	
A 5-minute warm-up period is required for all specifications.	
Output Frequency	
Reply Frequency	Range: 962 to 1213 MHz
	Accuracy: ±10 kHz
	Variable Channel Selection: 1 to 126 (X & Y)
Preset Channel Selection	
Preset 1 (DoD)	
T/R Mode: 17X, 18X	
A/A Mode: 17X, 17Y	
Preset 2 (AN/ASM-663): 5X, 5Y, 47X, 47Y, 89X, 89Y	
Preset 3 (AN/ARM-184): 1 to 126 (X or Y)	
Preset 4 (2650/2655): 18X, 18Y, 47X, 47Y, 100X, 100Y, 123X, 123Y	
Output Level	
Antenna Port	
Range	-67 to -5 dBm (T/R Norm, A/A Beacon)
	-67 to -2 dBm (T/R Rng Only, A/A Rng Only)
Resolution	0.1 dB
Accuracy	±2 dB
Distance to UUT antenna	6 to 250 ft. with supplied antenna
RF I/O Port	
Range	-115 to -50 dBm (T/R Norm, A/A Beacon)
	-115 to -47 dBm (T/R Rng Only, A/A Rng Only)
Resolution	0.1 dB
Accuracy	-95 dBm to -50 dBm @ ±1 dB
	-115 dBm to <-95 dBm @ ±2 dB
Reply Pulse Spacing	
P1 to P2	12 µs ±0.1 µs (T/R X Channel) @ 50% peak
P1 to P2	30 µs ±0.1 µs (T/R Y Channel) @ 50% peak
Reply Pulse Width	
P1/P2	3.5 µs ±0.5 µs
Echo Reply	
Control	On/Off
Position	30 nmi ±1 nmi
Amplitude	-11 dB ±1 dB relative to reply level
Reply Pulse Rise and Fall Times	
DME Pulses	Rise Time: 2.5 µs ±0.25 µs (10% to 90%)
	Fall Time: 2.5 µs ±0.25 µs (90% to 10%)
TACAN Pulses	Rise Time: 2.0 µs ±0.25 µs (10% to 90%)
	Fall Time: 2.5 µs ±0.25 µs (90% to 10%)
Reply Delay	
T/R X Channel	Fixed Reply Delay: 50 µs ±100 ns
T/R Y Channel	Fixed Reply Delay: 56 µs ±100 ns
A/A X Channel	Fixed Reply Delay: 62 µs ±100 ns
A/A Y Channel	Fixed Reply Delay: 74 µs ±100 ns
Variable Range Delay	
X and Y Channel	
Range	0 to 450.00 nmi
Resolution	0.01 nmi
Accuracy	±0.01 nmi
Range Delay	
X and Y Channel	
Preset 1 (DoD) Range	0, 3, 10, 30, 100, 200, 300, 400 nmi
Preset 2 (AN/ASM-663) Range	0, 10, 150, 297 nmi
Preset 3 (AN/ARM-184) Range	0, 50, 100, 150, 200, 250, 300, 350, 400 nmi
Preset 4 (2650/2655) Range	0, 5, 125, 283 nmi
Resolution	0.01 nmi
Accuracy	±0.01 nmi

TACAN Mode (continued)

Variable Range Rate	
X and Y Channel	
Range	0 to 6500 kts
Resolution	1 kts
Accuracy	±0.01% typical, tested to ±0.5%

Range Rate	
X and Y Channel	
Preset 1 (DoD) Rate	0, 250 kts (1000 kts in A/A modes)
Preset 2 (AN/ASM-663) Rate	No rate
Preset 3 (AN/ARM-184) Rate	0, 2400 kts
Preset 4 (2650/2655) Rate	No rate
Resolution	1 kts
Accuracy	±0.01% typical, tested to ±0.5%

Squitter PRF	
T/R(X) & T/R(Y) NORM, INVERSE, RNG ONLY	2700 Hz
A/A RNG ONLY, BEACON, INVERSE	1350 Hz
Accuracy	±2%
Distribution	Per MIL STD 291C and ARINC 568

Reply Efficiency	
Range	0 to 100%
Resolution	1% increments
Accuracy	±0.5%

Ident Tone Pulse Pair	
T/R(X) & T/R(Y) Modes Selection (Selectable two to four letter code or tone)	
Frequency	1350 Hz
Accuracy	±2 Hz
Equalizer pulse pair	Spacing from Ident pair 100 µs ±10 µs

Ident Tone Single Pulse	
A/A(X) & A/A(Y) Modes Selection (Selectable two to four letter code or tone)	
Frequency	1350 Hz
Accuracy	±2 Hz

A/A Mode Interrogation	
P1 to P2	12 µs ±0.1 µs (A/A X Channel) @ 50% peak
P1 to P2	24 µs ±0.1 µs (A/A Y Channel) @ 50% peak
Interrogation Rate	150 PPS, ±5 Hz

15/135 HZ Bearing Signal	
Modulation Levels	15 Hz: 20% ±2.5%
	135 Hz: 20% ±2.5%
Frequency	15/135 Hz: <±0.2%
Distortion	<2.5%

Bearing	
Variable	0 to 359.5° in 0.5° increments
Accuracy	±0.1°

Preset	
Preset 1 (DoD) Range	0°, 45°, 90°, 135°, 180°, 225°, 270°, 315°
Preset 2 (AN/ASM-663) Range	0°, 45°, 180°, 225°
Preset 3 (AN/ARM-184) Range	0°, 90°, 180°, 337.5°
Preset 4 (2650/2655) Range	90°, 230°, 320°

TACAN Mode (continued)

Interrogation Pulse Decoding	
Must Reply nominal code pair spacing	< ±0.5 µs from nominal spacing
Must Not Reply nominal code pair spacing	> ±1.0 µs from nominal spacing
MRB T/R(X)	
Group	12 pairs of pulses
Pulse Spacing	12 µs ±0.1 µs
Pulse Pair Spacing	30 µs ±0.1 µs
MRB T/R(Y)	
Group	13 single pulses
Pulse Spacing	30 µs ±0.1 µs
MRB A/A Beacon (X & Y)	
Group	10 single pulses
Pulse Spacing	30 µs ±0.1 µs
ARB T/R(X)	
Group	6 pairs of pulses
Pulse Spacing	12 µs ±0.1 µs
Pulse Pair Spacing	24 µs ±0.1 µs
ARB T/R(Y)	
Group	13 single pulses
Pulse Spacing	15 µs ±0.1 µs
UUT Measurements	
ERP	
Range	+47 to +64 dBm
Resolution	0.1 dB
Accuracy	±2 dB
Direct Connection Peak Pulse Power	
Range	+47 to +64 dBm
Resolution	0.1 dB
Accuracy	±1 dB
Frequency	
Range	1025.00 to 1150.00 MHz
Resolution	10 kHz
Accuracy	±20 kHz
Interrogation Pulse Width	
P1 and P2 Pulse Widths	
Range	2.00 to 5.00 µs
Resolution	1 ns
Accuracy	±50 ns
Interrogation Pulse Spacing	
P1 to P2 Spacing	10 to 14 µs (T/R X and A/A X Channel)
P1 to P2 Spacing	22 to 26 µs (A/A Y Channel)
P1 to P2 Spacing	34 to 38 µs (T/R Y Channel)
Resolution	10 ns
Accuracy	±20 ns
Interrogation PRF	
Range	1 to 300 Hz
Resolution	1 Hz
Accuracy	±2 Hz
A/A Reply Delay	
A/A(X)	60 to 66 µs
A/A(Y)	72 to 78 µs
Resolution	10 ns
Accuracy	±100 ns

COMM Mode (AM)

COMM Tone Frequency Accuracy	
1020 Hz	±0.02%
Modulation	
CAL	
1020 Hz Tone	30% AM
150 Hz Squelch Tone	10% AM (fixed, selectable on/off)
Accuracy	±2% modulation
Variable	
Range	0 to 95% AM
Distortion	< 2.5% in CAL position

COMM Mode (FM)

COMM Tone Frequency Accuracy	
1000 Hz	±0.02%
Modulation	
CAL	
1000 Hz Tone	5 kHz deviation
150 Hz Squelch Tone	3 kHz deviation (fixed, selectable on/off)
Accuracy	±5%
Variable	
Deviation Range	1 kHz to 80 kHz
Distortion	< 10% typical in CAL position (136 to 512 MHz)

COMM Mode (SSB)

COMM Tone Frequency Accuracy	
1000 Hz	±6.25Hz referenced to carrier
Modulation	
Variable	
Range Upper or Lower SB	25 Hz to 3000 Hz in 25 Hz steps

COMM Mode (SELCAL)

Provides amplitude modulation with SELCAL (SELective CALling) tones per DO-093A standard.	
SELCAL Tone Frequency Accuracy	±0.02%
Transmit Modes	
Single	Single transmission
Continuous	7.5 sec. interval (typical)
Modulation	
CAL	
Per SELCAL tone	40% AM
Accuracy	±2% modulation
Variable	
Range	0 to 55% AM
Distortion	< 2.5% in CAL position

SELCAL32 ARINC 714A Tone Frequencies	
Designator	**Audio Frequency (Hz)**
A	312.6
B	346.7
C	384.6
D	426.6
E	473.2
F	524.8
G	582.1
H	645.7
J	716.1
K	794.3
L	881.0
M	977.2
P	1083.9
Q	1202.3
R	1335.5
S	1479.1
T	329.2
U	365.2
V	405.0
W	449.3
X	498.3
Y	552.7
Z	613.1
1	680.0
2	754.2
3	836.6
4	927.9
5	1029.2
6	1141.6
7	1266.2
8	1404.4
9	1557.8

Meter Functions

Power Meter (RF I/O Port)	
Frequency Range	10.0 MHz to 512.0 MHz
Power Range	0.1 to <1 W Resolution: 0.01 W
	1 to <100 W Resolution: 0.1 W[3]
	100 to 1999 W Resolution: 1 W[3]
Accuracy	±8% of reading ±1 count (100 to 400 MHz)[4]
	±12% of reading ±1 count (<100 MHz and >400 MHz) CW only[4]
Duty Cycle	
≤10 W	Continuous
>10 W to ≤20 W	3 minutes on, 2 minutes off
>20 W to ≤30 W	1 minute on, 2 minutes off
Power Measurement (ANT Port)	
Frequency Range	10.0 MHz to 512.0 MHz
Power Range	-35 to +30 dBm
Accuracy	±2.0 dB
Frequency Measurement (COMM mode)	
Antenna and RF I/O Port	
Range	10.0 MHz to 512.0 MHz (depending on Mode)
Resolution	100 Hz
Accuracy	Same as time base ±1 count
Sensitivity	
Antenna Port	≥-35 dBm
RF I/O Port	≥ 0 dBm
AM Meter	
Audio Range	50 Hz to 3000 Hz
Percent Modulation Range	10 to 99%
Accuracy	±10% of reading
Sensitivity	
Antenna Port	≥ -20 dBm
RF I/O Port	≥+15 dBm

FM Meter	
RF Frequency Range	136.0 to 512.0 MHz
Audio Range	50 Hz to 3000 Hz
Deviation Range	1 to 15 kHz
Accuracy	±(0. 4 kHz + 8% of reading)
Sensitivity	
Antenna Port	≥-35 dBm
RF I/O Port	≥ 0 dBm

Enhanced Comms

Headset Output	
Audio Tone Range	300 to 3000 Hz
Headset Output Level (Playback level = 100)	165 mVrms ±50 mVrms @30% AM, 1 kHz tone
	165 mVrms ±50 mVrms @5 kHz Deviation FM, 1 kHz tone
Distortion	≤5%
Microphone Input	
Audio Tone Range	300 to 3000 Hz
Headset Input Sensitivity (Record level = 8)	20 mVpp for 25% AM nominal, 1 kHz tone
	20 mVpp for 4kHz Deviation FM nominal, 1 kHz tone
Distortion	≤5% typical

ELT

121.5/243 Beacon Monitor	
Swept Audio Tone Range	100 Hz to 3000 Hz
Accuracy	±10% of reading
Sensitivity	
Antenna Port	≥-30 dBm
RF I/O Port	≥ +10 dBm
406 MHz Beacon Monitor	
Sensitivity	
Antenna Port	≥-35 dBm
RF I/O Port	≥ 0 dBm

SWR/DTF (SWR Port)

SWR Meter	
Frequency Range	10.0 MHz to 1250.0 MHz
Measurement Range	1 to 7 for SWR
Accuracy	
SWR < 3:1	±0.2 ±20% of reading
SWR ≥ 3:1	±0.3 ±20% of reading
Distance to Fault (DTF)	
Measurement Range	3 to 300 ft, 1 to 100 M
Accuracy	±1.5 ft + 1% of distance
Cable Loss	
Frequency Range	10.0 MHz to 1250.0 MHz
Measurement Range	0 to -40 dB
Accuracy	± (0.5 dB + 0.02 dB per dB of loss) Typical, following calibration

Misc. Inputs/Outputs

RF I/O	
Type	TNC, Input/Output
Impedance	50 Ω typical
Maximum Input Level	4 kW peak, 10 W average
VSWR	<1.3:1
Antenna	
Type	TNC, Input/Output
Impedance	50 Ω typical
Maximum Input Level	10 W peak, 0.5 W average
VSWR (30 to 1213MHz)	<1.7:1
SWR	
Type	TNC, Input/Output
Impedance	50 Ω typical
Maximum Input Level	20 mW max, 0 VDC
VSWR	<1.5:1
Test Antenna	
VSWR	<1.5:1
Gain	8 dB, Typical
Time Base (TCXO)	
Temperature Stability	±1 ppm
Aging	±1 ppm per year
Accuracy	±1 ppm
Battery	
Type	Li Ion
Duration	>4 hrs continuous operation >8 hrs, Typical
Input Power (Test Set)	
Input Range	11.5 VDC to 16 VDC
Power Consumption	<60 W Max
Input Power (Supplied External AC to DC Converter)	
Input Range	100 to 250 V AC, 1.5 A Max, 47 to 63 Hz
Mains Supply Voltage Fluctuations	<10% of the nominal voltage
Transient Over-voltages	According to Installation, Category II

Cable Loss

Frequency Range	10.0 MHz to 1250.0 MHz
Measurement Range	0 to -40 dB
Accuracy	± (0.5 dB + 0.02 dB per dB of loss) Typical, following calibration

Environmental

Test Set	
Use	Pollution Degree 2
Altitude	≤4800 meters
Operating Temp.	-20°C to 45°C (-4° to 113°F) Continuous Use
	≥45°C to 55°C (113° to 131°F) Intermittent Use (protected by automatic shutdown)
Battery Charging Temp. Range	5°C to 40°C (controlled by internal charger)
Storage Temp.	-30°C to 71°C (-22° to 159.8°F)
Relative Humidity	95% (±5%) from 5° to 30°C (41° to 86°F)
	75% (±5%) from 30° to 40°C (86° to 104°F)
	45% (±5%) from 40° to 55°C (104° to 131°F)
Supplied External AC to DC Converter	
Use	Indoors
Safety Compliance	UL-61010B-1, EN 61010-1, CSA 22.2 No 61010-1
EMC	EN 61326
Relative Humidity	MIL-PRF-28800F, Class 2
Shock, Functional	MIL-PRF-28800F, Class 2
Vibration Limits	MIL-PRF-28800F, Class 2
Temp, operating	MIL-PRF-28800F, Class 2[5]
Temp, not operating	MIL-PRF-28800F, Class 2 (with battery removed)[6,7]
Transit Drop	MIL-PRF-28800F, Class 2
External AC-DC Converter	
Safety Compliance	IEC 60950-1:2006 UL/EN 62368-1:2014
EMI/RFI Compliance	FCC PART 15 CLASS B ISED ICES-003 Issue 6 CISPR32: 2012 EN55032: 2012 VCCI LEVEL II
RoHS Compliance	2011/65/EU

Certifications

Test Set	
Altitude, operating	MIL-PRF-28800F, Class 2
Altitude, not operating	MIL-PRF-28800F, Class 2
Bench Handling	MIL-PRF-28800F, Class 2
Blowing Dust	MIL-STD-810F, Method 510.4, Procedure 1
Drip-proof	MIL-PRF-28800F, Class 2
Explosive Atmosphere	MIL-STD-810F Method 511.4, Procedure 1

1. Simulates a 50.5dBm XPDR ERP at 10nMi range.
2. Level automatically controlled based on actual distance to UUT antenna.
3. External attenuator required for input power greater than 30W.
4. Accuracy specification excluding external attenuator
5. Temperature range extended to -20°C to 55°C.
6. Temperature range reduced to -30°C to 71°C.
7. Li Ion Battery must be removed below -20°C and above 60°C.

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