

DME Mode Specifications

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 1 dB
Accuracy ± 2 dB
Distance to UUT antenna 6 to 300 ft. with supplied antenna

RF I/O Port

Range -115 to -47 dBm
Resolution 1 dB
Accuracy -95 dBm to -47 dBm, ± 1 dB
Accuracy -115 dBm to <-95 dBm, ± 2 dB

Reply Pulse Spacing

P1 to P2 12 μ s (± 100 ns) (X Channel) @ 50% peak
P1 to P2 30 μ s (± 100 ns) (Y Channel) @ 50% peak

Reply Pulse Width

P1/P2 3.5 μ s (± 0.5 μ s)

Echo Reply

Control On/Off
Position 30 nmi (± 1 nmi)
Amplitude level -11 dB (± 1 dB) relative to reply level

Reply Pulse Rise and Fall Times

All Pulses

Rise Time 2.5 μ s (± 0.25 μ s) (10% to 90%)
Fall Time 2.5 μ s (± 0.25 μ s) (90% to 10%)

Reply Delay

X Channel

Fixed Reply Delay 50 μ s (± 100 ns)

Y Channel

Fixed Reply Delay 56 μ s (± 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 $\pm 0.01\%$ typical, tested to $\pm 0.5\%$

Squitter

PRF 2700 Hz
Accuracy $\pm 2\%$
Distribution Per ARINC 568

Reply Efficiency

Range 0 to 100%
Resolution 1% increments
Accuracy $\pm 0.5\%$

Ident Tone

Selection Selectable 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 ms
Resolution 1 ns
Accuracy ± 50 ns

Interrogation Pulse Spacing

<i>P1 to P2 Spacing</i>	<i>10 to 14 μs (X Channel)</i>
<i>P1 to P2 Spacing</i>	<i>34 to 38 μs (Y Channel)</i>
<i>Resolution</i>	<i>10 ns</i>
<i>Accuracy</i>	<i>±20 ns</i>

Interrogation PRF

<i>Range</i>	<i>1 to 300 Hz</i>
<i>Resolution</i>	<i>1 Hz</i>
<i>Accuracy</i>	<i>±2 Hz</i>

Transponder Mode Specifications

SIGNAL GENERATOR

RF Output Frequency

<i>Interrogation Frequency</i>	<i>1030 MHz</i>
<i>Accuracy</i>	<i>±10 kHz</i>

RF Output Level

Antenna Connector

(MTL + 6 dB typical, automatically controlled for a MTL range of -83 to -68 dBm)

<i>Range</i>	<i>-67 to -2 dBm at antenna connector</i>
<i>Resolution</i>	<i>0.5 dB</i>
<i>Accuracy</i>	<i>±2 dB</i>
<i>Distance to UUT antenna</i>	<i>6 to 200 ft. with supplied antenna</i>

RF I/O Connector

(MTL + 6 dB typical, automatically controlled)

<i>Range</i>	<i>-115 to -47 dBm</i>
<i>Resolution</i>	<i>0.5 dB</i>
<i>Accuracy</i>	<i>-95 to -47 dBm, ±1 dB</i>
<i>Accuracy</i>	<i>-115 to <-95 dBm, ±2 dB</i>

ATCRBS/MODE S Interrogation Pulse Spacing

Mode A

<i>P1 to P2</i>	<i>2.00 μs (±25 ns)</i>
<i>P1 to P3</i>	<i>8.00 μs (±25 ns)</i>

Mode C

<i>P1 to P2</i>	<i>2.00 μs (±25 ns)</i>
<i>P1 to P3</i>	<i>21.00 μs (±25 ns)</i>

Mode S

<i>P1 to P2</i>	<i>2.00 μs (±25 ns)</i>
<i>P1 to P6</i>	<i>3.50 μs (±25 ns)</i>
<i>P1 to SPR</i>	<i>4.75 μs (±25 ns)</i>
<i>P5 to SPR</i>	<i>0.40 μs (±50 ns)</i>

Intermode Interrogation Pulse Spacing

Mode A

<i>P1 to P3</i>	<i>8.00 μs (±25 ns)</i>
<i>P1 to P4</i>	<i>10.00 μs (±25 ns)</i>

Mode C

<i>P1 to P3</i>	<i>21.00 μs (±25 ns)</i>
<i>P1 to P4</i>	<i>23.00 μs (±25 ns)</i>

Interrogation Pulse Widths

Modes A, C, S, Intermode

<i>P1,P2,P3</i>	<i>0.80 μs (±50 ns)</i>
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Mode S

<i>P6 (Short DPSK Block)</i>	<i>16.25 μs (±50 ns)</i>
<i>P6 (Long DPSK Block)</i>	<i>30.25 μs (±50 ns)</i>
<i>P5</i>	<i>0.80 μs (±50 ns)</i>

Intermode

<i>P4 (Short)</i>	<i>0.80 μs (±50 ns)</i>
<i>P4 (Long)</i>	<i>1.60 μs (±50 ns)</i>

Interrogation Pulse Rise and Fall Times

All Modes

<i>Rise Time</i>	<i>50 to 100 ns</i>
<i>Fall Time</i>	<i>50 to 200 ns</i>

Phase Modulation

All Modes

<i>Transition Time</i>	<i><80 ns</i>
<i>Phase Shift</i>	<i>180° (±10°)</i>

SLS Levels

ATCRBS

<i>SLS Level (P2)</i>	<i>-9 dB, -1 to +0 dB relative to P1 level</i>
	<i>0 dB, -0 to +1 dB relative to P1 level</i>
	<i>OFF</i>

MODE S

<i>SLS Level (P5)</i>	<i>-12 dB, -1 to +0 dB relative to P6 level</i>
	<i>+3 dB, -0 to +1 dB relative to P6 level</i>
	<i>OFF</i>

Note: SLS level is automatically controlled in the SLS LEVEL test.

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

Reply Delay

ATCRBS

Range 1.80 to 7.00 μ s
 Resolution 10 ns
 Accuracy ± 50 ns

Reply Delay, Mode S and ATCRBS Mode S ALL-CALL

Range 125.00 to 131.00 μ s
 Resolution 10 ns
 Accuracy ± 50 ns

Reply Delay Jitter

ATCRBS

Range 0.00 to 2.30 μ s
 Resolution 1 ns
 Accuracy ± 20 ns

Mode S and ATCRBS Mode S ALL-CALL

Range 0.00 to 6.00 μ s
 Resolution 1 ns
 Accuracy ± 20 ns

Pulse Spacing

F1 to F2

Range 19.70 to 21.60 μ s
 Resolution 1 ns
 Accuracy ± 20 ns

Mode S Preamble

Range, P1 to P2 0.8 to 1.2 μ s
 Range, P1 to P3 3.3 to 3.7 μ s
 Range, P1 to P4 4.3 to 4.7 μ s
 Resolution 1 ns
 Accuracy ± 20 ns

Pulse Widths

F1 and F2

Range 0.25 to 0.75 μ s
 Resolution 1 ns
 Accuracy ± 20 ns

Mode S Preamble

Range 0.25 to 0.75 μ s
 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 μ s
 Accuracy ± 10 μ s

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 Mode Specifications

SIGNAL GENERATOR

Output Frequency

Reply Frequency	1090 MHz
Accuracy	±10 kHz

Output Level (simulated ERP)

Antenna Connector NOTE 1

Radiated power at 0dBi UUT antenna	
	-68 dBm typical @ 10 Nmi (Range, automatically controlled)
Range	-67 to -2 dBm at Antenna connector
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 @ 10 Nmi range, automatically controlled
Manual Mode Range	-115 to -47 dBm
Resolution	0.5 dB
Accuracy	-95 to -47 dBm, ±1 dB
Accuracy	-115 to <-95 dBm, ±2 dB

Reply Pulse Spacing

Mode C

F1 to F2	20.30 μ s (±25 ns)
F1 to C1	1.45 μ s (±25 ns)
F1 to A1	2.90 μ s (±25 ns)
F1 to C2	4.35 μ s (±25 ns)
F1 to A2	5.80 μ s (±25 ns)
F1 to C4	7.25 μ s (±25 ns)
F1 to A4	8.70 μ s (±25 ns)
F1 to B1	11.60 μ s (±25 ns)
F1 to D1	13.05 μ s (±25 ns)
F1 to B2	14.50 μ s (±25 ns)
F1 to D2	15.95 μ s (±25 ns)
F1 to B4	17.40 μ s (±25 ns)
F1 to D4	18.85 μ s (±25 ns)

Mode S

P1 to P2	1.00 μ s (±25 ns)
P1 to P3	3.50 μ s (±25 ns)
P1 to P4	4.50 μ s (±25 ns)
P1 to D1	8.00 μ s (±25 ns)
D1 to Dn (n=2 to 112)	1.00 μ s times (n-1) (±25 ns)

Reply Pulse Widths

Mode C

All Pulses	0.45 μ s (±50 ns)
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Mode S

P1 through P4	0.50 μ s (±50 ns)
D1 through D112	0.50 μ s (±50 ns), 1 μ s chip width
Reply Modes	TCAS I / II Mode C (with altitude reporting) TCAS II Mode S formats 0, 11, 16

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	50 to 100 ns
Fall Time	50 to 200 ns

Percent Reply

Range	0 to 100%
Resolution	10%
Accuracy	±1%

Reply Delay

ATCRBS	3.0 μ s (±50 ns)
Mode S	128 μ s (±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

Receiver

Pulse Spacing

ATCRBS (Mode C All Call)

S1 to P1 2.0 μ s
 Accepts < ± 200 ns
 Rejects > ± 1.0 μ s
 P1 to P3 21.0 μ s
 Accepts < ± 200 ns
 Rejects (<10% Replies) > ± 1.0 μ s
 P1 to P4 23.0 μ s
 Accepts < ± 200 ns
 Rejects (<10% Replies) > ± 1.0 μ s

Mode S

P1 to P2 2.0 μ s
 Accepts < ± 200 ns
 Rejects (<10% Replies) > ± 1.0 μ s
 P1 to SPR 4.75 μ s
 Accepts < ± 200 ns
 Rejects (<10% Replies) > ± 1.5 μ s

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 Specifications

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 ± 312.5 kHz typical

UUT MEASUREMENTS

ERP (@978MHZ)

Range +35 to +57 dBm (3.16 to 500 watts)
 Resolution 0.1 dB
 Accuracy ± 2 dB

Direct Connection 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 978.04MHz
Resolution	1 kHz
Accuracy	±10 kHz

Misc. Inputs/Outputs Specifications

RF I/O

Type	Input/Output
Impedance	50 Ω typical
Maximum Input Level	4 kW peak, 10 W average
VSWR	<1.3:1

Antenna

Type	Input/Output
Impedance	50 Ω typical
Maximum Input Level	10 W peak, 0.5 W average

Video

Type	Output
Impedance	50 Ω typical
Generate Video Level	500 mV peak to peak typical into 50 Ω
Receive Video Level	Proportional to IF level
Baseline	±0.5 V referenced to ground

GPS Antenna

Type	Output
Impedance	50 Ω typical, DC short

Test Antenna

VSWR	<1.5:1
Gain	7.5 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 >6 hrs, Typical

Input Power (Test Set)

Input Range	11 to 32 Vdc
Power Consumption	55 W Maximum 16 W Nominal at 18 Vdc with charged battery
Fuse Requirements	5 A, 32 Vdc, Type F

Input Power (Supplied External AC to DC Converter)

Input Range	100 to 250 VAC, 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

Environmental

Test Set

Use	Pollution Degree 2
Altitude	<4800 meters
Operating Temp. ^{NOTE 2}	-20°C to 55°C
Storage Temp. ^{NOTE 3}	-30°C to 71°C
Relative Humidity	95% (±5%) from 5° to 30°C 75% (±5%) from 30° to 40°C 45% (±5%) from 40° to 55°C

Supplied External AC to DC Converter

Use	Indoors
Altitude	<10,000 meters
Operating Temperature	0° to 40°C
Storage Temperature	-20°C to 71°C

Physical Characteristics

Height

11.2 in. (28.5 cm)

Width

9.1 in. (23.1 cm)

Depth

2.7 in. (6.9 cm)

Weight (Test set only)

8 lbs. (3.6 kg)

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
Relative Humidity	MIL-PRF-28800F, Class 2
Shock, Functional	MIL-PRF-28800F, Class 2
Vibration Limits	MIL-PRF-28800F, Class 2
Temp, operating ^{NOTE 4}	MIL-PRF-28800F, Class 2
Temp, not operating ^{NOTE 5}	MIL-PRF-28800F, Class 2
Transit Drop	MIL-PRF-28800F, Class 2

Safety Compliance	UL-61010B-1 EN 61010-1 CSA 22.2 No 61010-1
EMC	EN 61326

External AC-DC Converter

Safety Compliance	UL 1950 DS CSA 22.2 No. 234 VDE EN 60 950
EMI/RFI Compliance EMC	FCC Docket 20780 Curve "B" EN 61326

Transit Case

Drop Test	FED-STD-101C, Method 5007.1 Paragraph 6.3, Procedure A, Level A
Falling Dart Impact	ATA 300, Category I
Vibration, Loose Cargo	FED-STD-101C, Method 5019
Vibration, Sweep	ATA 300, Category I
Simulated Rainfall	MIL-STD-810F, Method 506.4 Procedure II of 4.1.2
FED-STD-101C Immersion	Method 5009.1, Sec 6.7.1 MIL-STD-810F, Method 512.4

NOTES

- NOTE 1 - Simulates a 50.5 dBm XPDR ERP at 10 nMi range.
 NOTE 2 - Battery charging temperature range: 5°C to 40°C (controlled by internal charger).
 NOTE 3 - Li Ion Battery must be removed below -20°C and above 60°C.
 NOTE 4 - Temperature range extended to -20°C to 55°C.
 NOTE 5 - Temperature range reduced to -30°C to 71°C.

Versions, Options and Accessories

Order Number	Description
72422	IFR6000 Mode A/C/S Transponder and DME Ramp Test Set NSN: 6625-01-069-5582
83410	6000OPT2 TCAS (TIS)
83411	6000OPT3 ADS-B 1090 MHz
112795	6000OPT5 UAT 978 MHz

Extended Standard Warranties with Calibration

84366	Extended standard warranty 36 months with scheduled calibration
84368	Extended standard warranty 60 months with scheduled calibration

Standard Accessories

10241	Transit case
62302	Power cord, 110 V
64020	Power cord set, 220 V
62401	TNC/TNC COAX, 72 in.
62402	TNC/TNC COAX, 12 in.
56080	Fuse, 5 Amp, 32 V
91771	Antenna
64749	Antenna shield
64580	Breakout box
67366	Power supply
6096	Getting Started Manual
6093	Operation Manual - CD

Optional Accessories

63656	Desk Top Stand
67474	Tripod
82553	Tripod, Dolly, Stand
62462	25 ft TNC/TNC COAX
86336	50 ft TNC/TNC COAX
86931	UC-584 Universal Transponder Antenna Coupler
112349	UC-584 Coupler Kit, dual antenna
112350	UC-584 Coupler Kit, single antenna
6095	Maintenance Manual - CD

For further information please contact:

Cobham AvComm
 10200 West York Street
 Wichita, KS 67215-8935 [USA]
 Phone: (316) 522-4981
 Fax: (316) 524-2623
 E: info-test@aeroflex.com

or contact your Cobham AvComm sales office