

## APPENDIX G - SPECIFICATIONS

### 1. RD-301A Radar Test Set Specifications

NOTE: Specifications and features are subject to change without notice.

#### A. RF Signal Generator:

Frequency: Variable from 9.295 to 9.500 GHz

Tracking:

UUT Frequency: 9.295 to 9.500 GHz

UUT Power: 0.25 to 12 kW

Accuracy:

| UUT PULSE WIDTH      | ACCURACY      |
|----------------------|---------------|
| 2 to 30 $\mu$ s      | $\pm$ 25 kHz  |
| 0.5 to <2 $\mu$ s    | $\pm$ 60 kHz  |
| 0.1 to <0.5 $\mu$ s  | $\pm$ 600 kHz |
| 0.05 to <0.1 $\mu$ s | $\pm$ 2 MHz   |

$\Delta$ F Offset:  $\pm$  MHz from tracking frequency

Accuracy:  $\pm$ 20 kHz + 10% of  $\Delta$ F offset PANEL Meter reading

Output Power: Variable from -127 to -50 dBm (at UUT)

Step: 1 or 10 dB

Accuracy:  $\pm$ 2 dB

Contour Boost: Variable from 0 to 20 dB above selected RF Output level between -127 to -75 dBm

Accuracy:  $\pm$ 1 dB from 9.310 to 9.410 GHz

Range 2 Attenuation: Variable from 0 to 59 dB below selected RF Output level (Range 1) ( $\geq$ -127 dBm)

Step: 1 dB

Accuracy:  $\pm$ 1.5 dB

RF Pulse Width: Variable from 0.05  $\mu$ s to 2.5 ms

RF ON/OFF Ratio:  $\geq$ 70 dB

Source VSWR at Waveguide Coupler:  $\leq$ 1.25:1

## B. IF Signal Generator

|                   |                                       |
|-------------------|---------------------------------------|
| Frequency:        | Variable from 20 to 70 MHz            |
| Sweep Width:      | Variable from 0 to 4 MHz              |
| Marker Frequency: | Variable from 20 to 70 MHz            |
| Power:            | Variable from -130 to +20 dBm         |
| Step:             | 1 or 10 dB                            |
| Accuracy:         | $\pm > 2.5$ dB + 1% of selected level |
| Pulse Width:      | Variable from 0.05 $\mu$ s to 2.5 ms  |
| ON/OFF Ratio:     | $\geq 48$ dB                          |

## C. Modulation

|                            |  |
|----------------------------|--|
| Track:                     | PRF same as UUT (50 Hz to 20 kHz)  |
| INTL (Internal):           | Variable PRF from 50 to 5000 Hz  |
| Internal AM (Square Wave): |  |
| Frequency:                 | Variable from 50 Hz to 5 kHz   |
| Square Wave Duty Cycle:    | 50%  |
| Accuracy:                  | $\pm 2.5\%$  |
| Amplitude:                 |  |
| Up Modulation:             | Variable from 0 to +20 dB  |
| Step:                      | 1 or 10 dB   |
| Accuracy:                  | $\pm 1$ dB for selected RF Output level between -127 to -75 dBm (9.295 to 9.500 GHz) |
| Down Modulation:           | Variable from 0 to -59 dB  |
| Step:                      | 1 or 10 dB   |
| Accuracy:                  | $\pm 1.5$ dB for selected RF Output level above -127 dBm (9.295 to 9.500 GHz)        |

D. Range

Range 1: 0.1 to 999.9  $\mu$ s or nmi (NM) referenced to leading edge of detected UUT pulse at 50% point

Residual Delay: 0 to 0.2  $\mu$ s

Range 2: 0.1 to 999.9  $\mu$ s or nmi (NM) referenced to leading edge of detected UUT pulse at 50% point

Residual delay: 0.3 to 0.5  $\mu$ s

Range Accuracy: Residual delay  $\pm 0.01\%$  of selected range delay (Range delay is referenced to 12.3589  $\mu$ s/nmi.)

Modes:

CONTOUR: Refer to RF Signal Generator, Contour Boost.

RINGS 1 through 5: Selectable multiples of Range 1

R2 ON: Range 1 and Range 2 active.

R2 ALT: Range 1 active with Range 2 active every other detected Radar transmitter pulse.

R1,R2 AUTO: Range 1 or Range 2 active according to detected radar transmitter pulse width. Range 1 active when Radar transmitter pulse width is  $<$ Threshold. Range 2 active when Radar transmitter pulse width is  $\geq$  Threshold.

Threshold: Variable from 0.2 to 1.0  $\mu$ s (Preset for 0.4  $\mu$ s)

E. Frequency Counter

RF:

Resolution: 10 kHz

Accuracy:  $\pm 250$  kHz

IF:

Resolution: 1 kHz

Accuracy:  $\pm 0.01\%$  of FREQUENCY Hz/MHz Digital Display reading

PRF:

Resolution: 1 Hz

Accuracy:  $\pm 1$  Hz + 0.01% of FREQUENCY Hz/MHz Digital Display reading

F. Power Meter

|            |  |
|------------|--|
| Range:     | 0.25 kW to 12 kW peak (standard) 1.0 kW to 120 kW peak (option with external 10 dB Attenuator, not calibrated in system) |
| Accuracy:  | ±0.6 dB from 1 to 12 kW peak (standard) (at UUT)   |
| Load VSWR: | ≤1.25:1  |

G. Outputs

ANLYZER RF X-BAND XMTR  
Connector:

Radar transmitter signal

Level:

56 to 68 dB below radar transmitter level

DLYD SYNC Connector:

Positive pulse coincident with reply pulse  
(Range 1 and/or Range 2)

XMTR DET Connector:

Detected Radar transmitter pulse

Level:

0 to +3 Vdc peak Video into 50 Ω

XMTR DSCRM .1V/MHz Connector:

0.1 V/MHz (±10%) into 50 Ω

XMTR HET MON Connector:

Level:

0 to <+0.5 Vdc peak into 50 Ω

SYNC Connector:

Positive pulse

Position:

Dependent on MODULATION MODE Pushbutton  
Switches selection:

|                |   |
|----------------|---|
| <b>TRACK</b>   | Coincident with Radar transmitter pulse |
| <b>INTL</b>    | Coincident with internal pulse          |
| <b>EXT (+)</b> | Coincident with external trigger        |
| <b>EXT (-)</b> | Coincident with external trigger        |

H. Inputs

AM EXT INPUT Connector: External AM

Input Impedance: >10 k $\Omega$ , ac coupled

Input Voltage: 3 VP-P for 28 to 32% modulation

3 dB Bandwidth at 30% AM:  $\geq$ 4970 Hz (30 Hz to 5 kHz)

AM Percent Limit: 0% to 50%

Square Wave Modulation  
(typical values):

| FREQUENCY | MODULATION  | RISE TIME  | FALL TIME  |
|-----------|-------------|------------|------------|
| 500 Hz    | 50% (10 dB) | 28 $\mu$ s | 60 $\mu$ s |
| 500 Hz    | 30% (6 dB)  | 24 $\mu$ s | 40 $\mu$ s |

EXT TRIG Connector: ac coupled, + or -

Level: 2 to 25 VP

Frequency: 50 Hz to 20 kHz

I. Power

AC INPUT Connector:

Voltage: 103 to 253 VAC

Frequency: 50 to 440 Hz

Power Consumption  $\leq$ 150 W