

SG1000B/PR1000A

High powered signal generator and Low Noise Amplifier

DISTINCTIVE SOLUTIONS

310-010111-004 / 310-010083-001

SG1000B



The SG1000B Signal Generator and PR1000A Low Noise Amplifier have been designed to simplify the measurement of shielding integrity of an RF shielded enclosure. When coupled with a high stability spectrum analyzer and an appropriate selection of test antennas, the SG1000B/PR1000A combination can measure shielding effectiveness at all of the NSA 94-106 (supersedes NSA 65-6) defined test frequencies from 1 kHz to 10 GHz.

The high stability of the SG1000B signal generator is sufficient to allow all measurements to be made with a companion spectrum analyzer operating at an IF resolution bandwidth as low as 10 Hz at 10 GHz. The narrow bandwidth coupled with a 3.5 dB preamplifier noise figure and the high signal generator output power, is sufficient to achieve measurement dynamic ranges of 160 dB or more.

The SG1000B generates output signals as outlined in DOD specification NSA 94-106. These frequencies include 1 kHz, 10 kHz, 100 kHz, 1 MHz, 10 MHz, 100 MHz, 400 MHz, 1 GHz and 10 GHz. Each frequency except 10 GHz can be varied up to +/- 5 percent in order to avoid interfering

PR1000A



signals. The 10 GHz frequency can be varied up to +/- 2 percent.

The use of a PR1000A Low Noise Amplifier is recommended to achieve proper noise figure values during testing. The PR1000A amplifies the received signal from the test antenna and masks the high noise figure of the companion test receiver or spectrum analyzer. The PR1000A, when used with an Agilent 8562E spectrum analyzer (or equivalent) will ensure that the system noise figure will be less than 4.5 dB at all test frequencies from 1 kHz to 10 GHz. When used with a spectrum analyzer measurement bandwidth of 100 Hz, the system exhibits a sensitivity of -150 dBm at the test antenna output.

To overcome high cable loss between the test antenna and the PR1000A assembly at 10 GHz, a remote low noise pre-amplifier (Praxsym PN 310-010091-001) is mounted directly onto the 10 GHz antenna.

The SG1000B and PR1000A are available on the GSA Schedule.

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SG1000B Specifications

Frequency Band	Tuning Range	Step Size	Maximum Power Out	Attenuation Range
1 kHz	.95 to 1.05 kHz (+/-5%)	1 Hz	40 dBm	0 to 90 dB
10 kHz	9.5 to 10.5 kHz (+/-5%)	10 Hz	40 dBm	0 to 90 dB
100 kHz	95 to 105 kHz (+/-5%)	100 Hz	40 dBm	0 to 110 dB
1 MHz	.95 to 1.05 MHz (+/-5%)	1 Hz	40 dBm	0 to 110 dB
10 MHz	9.5 to 10.5 MHz (+/-5%)	10 Hz	40 dBm	0 to 110 dB
100 MHz	95 to 105 MHz (+/-5%)	100 Hz	30 dBm	0 to 110 dB
400 MHz	380 to 420 MHz (+/-5%)	100 Hz	30 dBm	0 to 110 dB
1 GHz	.95 to 1.05 GHz (+/-5%)	1 Hz	30 dBm	0 to 110 dB
10 GHz	9.8 to 10.2 GHz (+/-2%)	1 Hz	30 dBm	0 to 110 dB
Attenuator Accuracy	+/- 1.2 dB			
Harmonic Spurious	< - 20 dB			
Non-Harmonic Spurious	< - 40 dBc			
Phase Noise	-90 dBc/Hz at 10kHz offset (1 GHz band) typical -115 dBc/Hz at 500 kHz (1GHz band) typical			
Front Panel Display	128 x 240 graphic white & gray			
Front Panel Control	19 buttons & vernier knob			
Operating Temperature	0 to + 40 degrees Centigrade			
Operating Humidity	95% relative humidity, non-condensing			
Power Supply	110/220 VAC (auto-adjusting), 48-63 Hz, 230 watts			
Size	19" x 5.25" x 20" (Width x Height x Depth)			
Weight	33 pounds nominal			

PR1000A Specifications

Frequency	1 kHz to 1 GHz (low frequency input) 9.8 to 10.2 GHz (high frequency input)
Gain	Low frequency input – 38 dB minimum High frequency input – 45 dB minimum (including external 10 GHz amplifier)
Noise Figure	3.5 dB maximum (1 kHz to 500 MHz) 4.5 dB maximum (500 MHz to 1 GHz) 4.5 dB maximum (9.8 to 10.2 GHz) (including remote preamp and 10 dB of cable loss between remote pre-amplifier and PR1000A)
Output Level	+ 8 dBm minimum at 1 dB gain compression (output to spectrum analyzer)
VSWR	2.0:1 maximum all ports
Maximum Safe Input Level	Low frequency input +20dBm High frequency input +20dBm
Internal Bias Tee	Provides +12 VDC via high frequency input Connector to the remote 10 GHz pre-amplifier (0.5 Ampere fast blow fuse)
Operating Temperature	0 to +40 degrees Centigrade
Operating Humidity	95% relative humidity, non-condensing
Power Supply	110/220 VAC (auto-adjusting), 48-63 Hz, 15 watts (1.0 Ampere fast blow fuse)
Size	19" x 1.75" x 10" (Width x Height x Depth)
Weight	6 pounds nominal