

# The Total Solution for Your EMC and RF Testing Needs





AR is a multi-national corporation that's made up of a family of companies, each providing innovative solutions and exceptional support and service. These companies include—

#### AR RF/Microwave Instrumentation

AR RF/Microwave Instrumentation provides Total RF Test Solutions by offering customers RF test instrumentation, RF test systems, EMC test software, and chambers. In addition to the complete array of product solutions also comes world-class, customer-facing service and applications support.

#### AR Modular RF

AR modular RF designs and manufactures Rack Mount and Amplifier Systems that cover a wide frequency spectrum and offer diverse ranges of power. Some of the most innovative, dependable, and durable RF Amplifier Modules and broadband solid-state RF amplifier systems in the world, these systems are used for communications and medical, scientific, and industrial applications.

#### SunAR RF Motion

SunAR RF Motion, a division of AR, manufactures turntables, motorized and manual antenna positioning towers, a system controller, distributed antenna systems (DAS), emission antennas, and reverberation chamber tuners for EMC and wireless testing.

#### AR Europe

AR Europe represents AR's deep commitment to the European marketplace. Through a network of partners strategically located throughout Europe, the company supplies systems, antennas, chambers, modules, and power amplifiers for EMC testing and wireless, medical, and industrial applications.

With the combined resources of the AR companies, we're able to offer our customers more options, more solutions, and more innovations. In the world of EMC, wireless, and beyond, AR is the one company with infinite solutions.





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Up to 20,000 watts. 10 kHz to 50 GHz	
Log periodic, high-gain RF horns, microwave horns, E-field generators, tripods, and stands	
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Individual specification sheets for all models are available for download from our website: [www.arworld.us](http://www.arworld.us)

# Find It Fast. RF Solid State Amplifiers

OUTPUT POWER (WATTS)	FREQUENCY										FREQUENCY									
	DC	kHz					MHz					MHz					MHz			
	10	100	500	1	5	80	100	200	300	400	500	600	700	800	900	1000				
1																	1U1000: 10 kHz—1000 MHz, page 11			
2.5																	2.5U1000: 10 kHz—1000 MHz, page 11			
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125																	125A250: 10 kHz—250 MHz, page 22			
150																	150A100D: 10 kHz—100 MHz, page 19			
150																	150W1000B: 80 MHz—1 GHz, page 25			
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1.2k																	1200A225: 10 kHz—225 MHz, page 19			
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2.5k																	2500A225B: 10 kHz—225 MHz, page 19			
3k																	3000W1000B: 80 MHz—1 GHz, page 27			
4k																	4000W1000B: 80 MHz—1 GHz, page 28			
5k																	5000A225A: 10 kHz—225 MHz, page 20			
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10k																	10000A225A-A: 10 kHz—225 MHz, page 20			
10k																	10000W1000A: 80 MHz—1 GHz, page 28			
12.5k																	12500A225A-L: 10 kHz—225 MHz, page 20			
16k																	16000A225A-A: 10 kHz—225 MHz, page 21			
20k																	20000A225A-L: 10 kHz—225 MHz, page 21			



# Find It Fast. Microwave Solid State Amplifiers—"S" Series

Output Power (Watts)	Frequency (GHz)					
	0.7	1	2	3	4.2	7.5
15	15S1G6: 0.7–6 GHz, page 32					
20	20S6G18-L: 6–18 GHz, page 36					
30	30S1G6: 0.7–6 GHz, page 32					
40	40S6G18-L: 6–18 GHz, page 36					
50	50S1G6AB: 1–6 GHz, page 41					
60	60S1G6: 0.7–6 GHz, page 32					
100	100S1G6AB: 1–6 GHz, page 41					
125	125S1G6: 0.7–6 GHz, page 33					
125	125S1G2z5: 1–2.5 GHz, page 34					
250	250S1G6: 0.7–6 GHz, page 33					
250	250S1G2z5B: 1–2.5 GHz, page 34					
350	350S1G6A: 0.7–6 GHz, page 33					
500	500S1G6A: 0.7–6 GHz, page 34					
500	500S1G2z5A: 1–2.5 GHz, page 35					
1000	1000S1G2z5B: 1–2.5 GHz, page 35					
1000	1000SP2G4: 2–4 GHz, Pulse Only, page 46					
1000	1000SP2z7G3z1: 2.7–3.1 GHz, Pulse Only, page 47					
1300	1300SP1G2: 1–2 GHz, Pulse Only, page 44					
1500	1500SP1z2G1z4: 1.2–1.4 GHz, Pulse Only, page 45					
2000	2000S1G2z5: 1–2.5 GHz, page 35					
2000	2000SP2G4: 2–4 GHz, Pulse Only, page 47					
3000	3000S1G2z5: 1–2.5 GHz, page 36					
3000	3000SP2z7G3z1: 2.7–3.1 GHz, Pulse Only, page 48					
4000	4000SP1G2: 1–2 GHz, Pulse Only, page 44					
4000	4000SP1z2G1z4: 1.2–1.4 GHz, Pulse Only, page 45					
6000	6000SP2z7G3z1: 2.7–3.1 GHz, Pulse Only, page 48					
8000	8000SP1z2G1z4: 1.2–1.4 GHz, Pulse Only, page 46					
8000	8000SP1G2: 1–2 GHz, Pulse Only, page 45					
10,000	10000SP2G4: 2–4 GHz, Pulse Only, page 47					
12,000	12000SP2z7G3z1: 2.7–3.1 GHz, Pulse Only, page 48					
15,000	15000SP1z2G1z4: 1.2–1.4 GHz, Pulse Only, page 46					

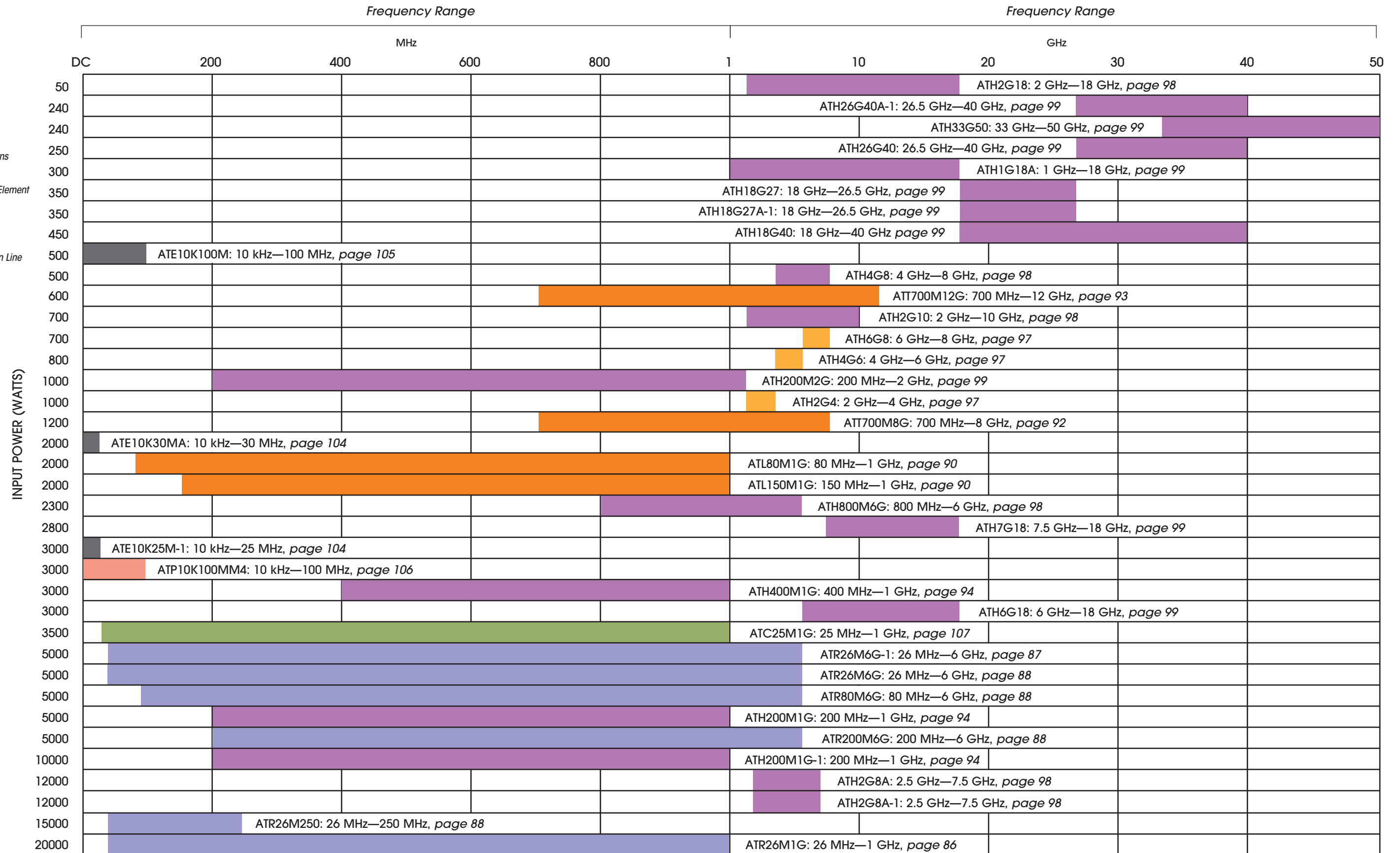
"S" Series Dual Band Amplifiers On Page 38 (10 kHz–18 GHz)



# Find It Fast. Microwave Traveling Wave Tube Amplifiers—"T" Series

		Frequency (GHz)									
		1	2	3	4.2	7.5	18	26.5	40	50	
OUTPUT POWER (WATTS)	40										40T18G26A: 18—26.5 GHz, page 54
	40										40T26G40A: 26.5—40 GHz, page 55
	70										70T40G50: 40—50 GHz, page 56
	100										100T40G50: 40—50 GHz, page 56
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	250										250T8G18: 7.5—18 GHz, page 53
	300										300T2G8: 2.5—7.5 GHz, page 51
	500										500T2G8: 2.5—7.5 GHz, page 51
	500										500T8G18: 7.5—18 GHz, page 53
	1000										1000T2G8B: 2.5—7.5 GHz, page 51
	1000										1000T8G18B: 7.5—18 GHz, page 53
	1000										1000TP8G18: 7.5—18 GHz, Pulse Only, page 60
	1500										1500T2G8A: 2.5—7.5 GHz, page 52
	1500										1500T8G18: 7.5—18 GHz, page 54
	2000										2000TP2G8B: 2.5—7.5 GHz, Pulse Only, page 58
	2000										2000TP8G18: 7.5—18 GHz, Pulse Only, page 60
	3000										3000TP12G18: 12—18 GHz, Pulse Only, page 62
	4000										4000TP2G4: 2—4 GHz, Pulse Only, page 57
	4000										4000TP4G8: 4—8 GHz, Pulse Only, page 59
	4000										4000TP8G12: 8—12 GHz, Pulse Only, page 61
	5700										5700TP12G18: 12—18 GHz, Pulse Only, page 62
	6500										6500TP1z5G2: 1.5—2 GHz, Pulse Only, page 57
	6900										6900TP2G4: 2—4 GHz, Pulse Only, page 58
	7400										7400TP4G8: 4—8 GHz, Pulse Only, page 59
	8000										8000TP1G1z5: 1—1.5 GHz, Pulse Only, page 57
8000										8000TP2z7G3z1: 2.7—3.1 GHz, Pulse Only, page 59	
8300										8300TP8G12: 8—12 GHz, Pulse Only, page 61	
10,000										10000TP8G10: 8—10 GHz, Pulse Only, page 61	
12,000										12000TP2G4: 2—4 GHz, Pulse Only, page 58	
12,000										12000TP4G8: 4—8 GHz, Pulse Only, page 60	
20,000										20000TP8G12: 8—12 GHz, Pulse Only, page 62	







# “U” Series Amplifiers

# RF Solid State Amplifiers 10 kHz–1,000 MHz

## Single-Band Amplifier Covers 10 kHz–1,000 MHz Frequency Band



### AR “U” (Universal) Series Amplifiers 10 kHz-1,000 MHz

AR has done it. We figured out a way to take a single amplifier and enable it to span the entire frequency range of 10 kHz–1,000 MHz. We did it with our 1, 2.5, 5, 10, 25, and 50 RF amplifiers and our 100, 250, and 500 watts have a frequency range of 100 kHz–1,000 MHz.

They’re compact, affordable, high performance, and very reliable. These “U” Series amplifiers can serve unlimited applications across multiple industries. Just imagine the possibilities.

### 1U1000



#### 1 watt CW, 10 kHz–1,000 MHz

Rated Output Power	1 watt min. 1.0 milliwatt max.
Input for Rated Output	
Power Output @ 3 dB compression	Typ. 1.5 watts / min. 1 watt
Power Output @ 1 dB compression	Typ. 1.5 watts / min. 1 watt
Flatness	±0.8 dB typ., ±1.0 dB max.
Frequency Response	10 kHz–1,000 MHz instantaneously
Gain (at max. setting)	30 dB min.
Gain Adjustment (continuous range)	20 dB min.
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.
Modulation Capability	Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.
Third Order Intercept Point	42 dBm typ.
Noise Figure	8 dB max., 6 dB typ.
Harmonic Distortion	Minus 20 dBc max. at 1 watt, minus 30 dBc typ.
Spurious	Minus 73 dBc typ.
Primary Power (selected automatically)	90–264 VAC 50/60 Hz, 50 watts
Connectors	RF Input: Type N female on front panel RF Output: Type N female on front panel
Cooling	Forced air (self-contained fans)
Weight	4.5 kg (11 lb.)
Size (WxHxD)	26.0 x 11.4 x 28.2 cm / 10.25 x 4.5 x 11.1 in.
Export classification	EAR99

### 2.5U1000



#### 2.5 watts CW, 10 kHz–1,000 MHz

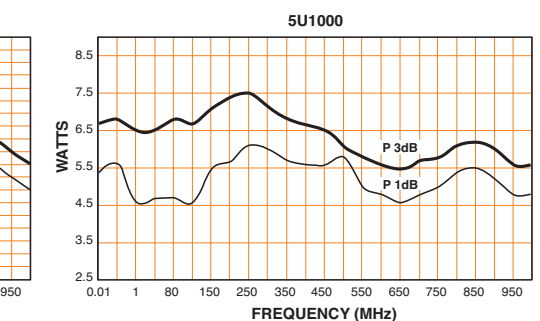
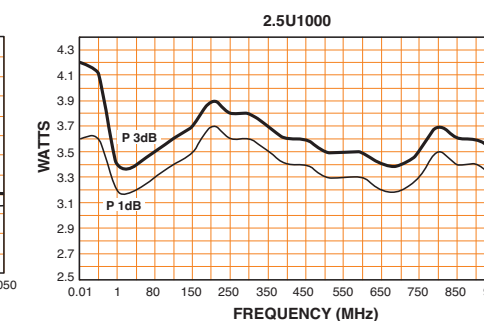
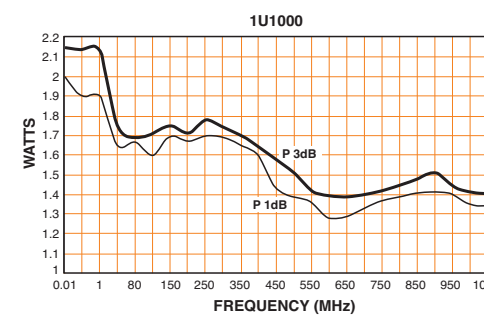
Rated Output Power	2.5 watts min. 1.0 milliwatt max.
Input for Rated Output	
Power Output @ 3 dB compression	Typ. 3.0 watts / min. 2.5 watts
Power Output @ 1 dB compression	Typ. 2.5 watts / min. 2 watts
Flatness	±0.8 dB typ., ±1.0 dB max.
Frequency Response	10 kHz–1,000 MHz instantaneously
Gain (at max. setting)	33 dB min.
Gain Adjustment (continuous range)	20 dB min.
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.
Modulation Capability	Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.
Third Order Intercept Point	45 dBm typ.
Noise Figure	8 dB max., 6 dB typ.
Harmonic Distortion	Minus 20 dBc max. at 2 watts
Spurious	Minus 73 dBc typ.
Primary Power (selected automatically)	90–264 VAC 50/60 Hz, 50 watts
Connectors	RF Input: Type N female on front panel RF Output: Type N female on front panel
Cooling	Forced air (self-contained fans)
Weight	4.5 kg (11 lb.)
Size (WxHxD)	26.0 x 11.4 x 28.2 cm / 10.25 x 4.5 x 11.1 in.
Export classification	EAR99

### 5U1000



#### 5 watts CW, 10 kHz–1,000 MHz

Rated Output Power	5 watts min. 1.0 milliwatt max.
Input for Rated Output	
Power Output @ 3 dB compression	Typ. 5.0 watts / min. 4.5 watts
Power Output @ 1 dB compression	Typ. 4 watts / min. 3.5 watts
Flatness	±1.3 dB typ., ±1.5 dB max.
Frequency Response	10 kHz–1,000 MHz instantaneously
Gain (at max. setting)	37 dB min.
Gain Adjustment (continuous range)	20 dB min.
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.
Modulation Capability	Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.
Third Order Intercept Point	46 dBm typ.
Noise Figure	8 dB max., 6 dB typ.
Harmonic Distortion	Minus 20 dBc max. at 3.5 watts
Spurious	Minus 73 dBc typ.
Primary Power (selected automatically)	90–264 VAC 50/60 Hz, 70 watts
Connectors	RF Input: Type N female on front panel RF Output: Type N female on front panel
Cooling	Forced air (self-contained fans)
Weight	4.5 kg (11 lb.)
Size (WxHxD)	26.0 x 11.4 x 28.2 cm / 10.25 x 4.5 x 11.1 in.
Export classification	EAR99



# RF Solid State Amplifiers

## 10 kHz–1,000 MHz

10U1000



**10 watts CW, 10 kHz–1,000 MHz**

Rated Output Power	15 watts typ., 10 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	Typ. 15 watts / min. 10 watts
Power Output @ 1 dB compression	Typ. 12 watts / min. 10 watts
Flatness	±1.0 dB typ., ±1.5 dB max.
Frequency Response	10 kHz–1,000 MHz instantaneously
Gain (at max. setting)	40 dB min.
Gain Adjustment (continuous range)	20 dB min.
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.
Modulation Capability	Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.
Third Order Intercept Point	50 dBm typ.
Noise Figure	8 dB typ.
Harmonic Distortion	Minus 20 dBc max. at 10 watts
Spurious	Minus 73 dBc typ.
Primary Power (selected automatically)	100–240 VAC 50/60 Hz, 150 watts
Connectors	RF Input Type N female RF Output Type N female
Remotes Package	IEEE-488 24-pin female RS-232 9-pin subminiature D (female) Fiber optic ST Conn Tx and Rx RS-232 USB 2.0 Type B Ethernet RJ-45 Safety Interlock 15-pin subminiature D
Cooling	Forced air (self-contained fans)
Weight	With Cabinet 17.7 kg (41 lb.) Without Cabinet 9.5 kg (23 lb.)
Size (WxHxD)	With Cabinet 50.3 x 15.5 x 55.1 cm / 19.8 x 6.1 x 21.7 in. Without Cabinet 48.3 x 13.2 x 55.1 cm / 19 x 5.2 x 21.7 in.
Export classification	EAR99

25U1000



**25 watts CW, 10 kHz–1,000 MHz**

Rated Output Power	30 watts typ., 25 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	Typ. 30 watts / min. 25 watts
Power Output @ 1 dB compression	Typ. 25 watts / min. 20 watts
Flatness	±1.0 dB typ., ±1.5 dB max.
Frequency Response	10 kHz–1,000 MHz instantaneously
Gain (at max. setting)	44 dB min.
Gain Adjustment (continuous range)	20 dB min.
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.
Modulation Capability	Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.
Third Order Intercept Point	52 dBm typ.
Noise Figure	8 dB typ.
Harmonic Distortion	Minus 20 dBc max. at 20 watts
Spurious	Minus 73 dBc typ.
Primary Power (selected automatically)	100–240 VAC 50/60 Hz, 200 watts
Connectors	RF Input Type N female RF Output Type N female
Remotes Package	IEEE-488 24-pin female RS-232 9-pin subminiature D (female) Fiber optic ST Conn Tx and Rx RS-232 USB 2.0 Type B Ethernet RJ-45 Safety Interlock 15-pin subminiature D
Cooling	Forced air (self-contained fans)
Weight	With Cabinet 17.7 kg (41 lb.) Without Cabinet 9.5 kg (23 lb.)
Size (WxHxD)	With Cabinet 50.3 x 15.5 x 55.1 cm / 19.8 x 6.1 x 21.7 in. Without Cabinet 48.3 x 13.2 x 55.1 cm / 19 x 5.2 x 21.7 in.
Export classification	EAR99

50U1000



**50 watts CW, 10 kHz–1,000 MHz**

Rated Output Power	70 watts typ., 50 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	Typ. 70 watts / min. 50 watts
Power Output @ 1 dB compression	Typ. 60 watts / min. 45 watts
Flatness	±1.5 dB typ., ±2.0 dB max.
Frequency Response	10 kHz–1,000 MHz instantaneously
Gain (at max. setting)	47 dB min.
Gain Adjustment (continuous range)	20 dB min.
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.
Modulation Capability	Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.
Third Order Intercept Point	57 dBm typ.
Noise Figure	8 dB typ.
Harmonic Distortion	Minus 20 dBc max. at 45 watts
Spurious	Minus 73 dBc typ.
Primary Power (selected automatically)	100–240 VAC 50/60 Hz, 250 watts
Connectors	RF Input Type N female RF Output Type N female
Remotes Package	IEEE-488 24-pin female RS-232 9-pin subminiature D (female) Fiber optic ST Conn Tx and Rx RS-232 USB 2.0 Type B Ethernet RJ-45 Safety Interlock 15-pin subminiature D
Cooling	Forced air (self-contained fans)
Weight	With Cabinet 17.7 kg (41 lb.) Without Cabinet 9.5 kg (23 lb.)
Size (WxHxD)	With Cabinet 50.3 x 15.5 x 55.1 cm / 19.8 x 6.1 x 21.7 in. Without Cabinet 48.3 x 13.2 x 55.1 cm / 19 x 5.2 x 21.7 in.
Export classification	EAR99

100U1000



**100 watts CW, 100 kHz to 1,000 MHz**

Rated Output Power	120 watts typ., 100 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	Typ. 120 watts / min. 100 watts
Power Output @ 1 dB compression	Typ. 100 watts / min. 85 watts
Flatness	±1.5 dB typ., ±2.0 dB max.
Frequency Response	100 kHz–1,000 MHz instantaneously
Gain (at max. setting)	50 dB min.
Gain Adjustment (continuous range)	20 dB min.
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.
Modulation Capability	Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.
Third Order Intercept Point	60 dBm typ.
Noise Figure	8.5 dB typ.
Harmonic Distortion	Minus 20 dBc max. at 100 watts Minus 30 dBc typical at 100 watts
Spurious	Minus 73 dBc typ.
Primary Power (selected automatically)	100–240 VAC 50/60 Hz, 700 watts
Connectors	RF Input Type N female RF Output Type N female
Remotes Package	IEEE-488 24-pin female RS-232 9-pin subminiature D (female) Fiber optic ST Conn Tx and Rx RS-232 USB 2.0 Type B Ethernet RJ-45 Safety Interlock 15-pin subminiature D
Cooling	Forced air (self-contained fans)
Weight	With Cabinet 35 kg (77 lb.) Without Cabinet 24 kg (52 lb.)
Size (WxHxD)	With Cabinet 50.3 x 20.5 x 74.9 cm / 19.8 x 8.1 x 29.5 in. Without Cabinet 48.3 x 17.7 x 74.9 cm / 19 x 7.0 x 29.5 in.
Export classification	EAR99

250U1000



**250 watts CW, 100 kHz to 1,000 MHz**

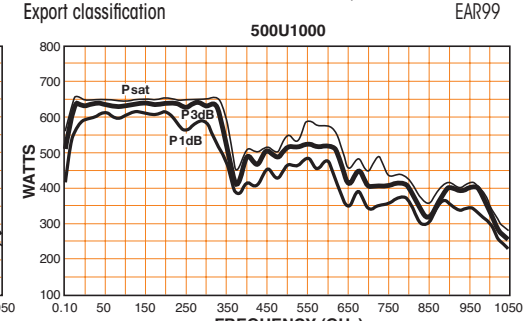
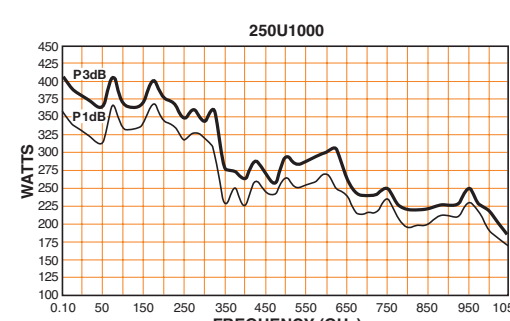
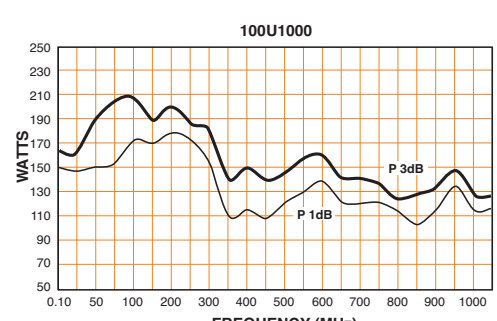
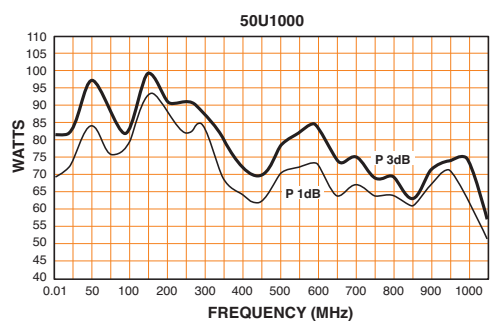
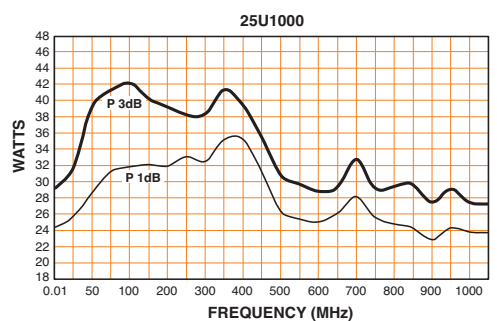
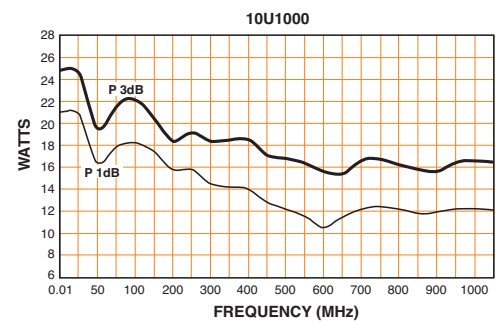
Rated Output Power	275 watts typ., 250 watts min.
0.1–650 MHz:	225 watts typ., 200 watts min.
650–1,000 MHz:	1.0 milliwatt max.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	265 watts typ., 240 watts min.
0.1–650 MHz:	215 watts typ., 190 watts min.
650–1,000 MHz:	250 watts typ., 210 watts min.
Power Output @ 1 dB compression	200 watts typ., 175 watts min.
0.1–650 MHz:	±1.5 dB typ., ±2.0 dB max.
650–1,000 MHz:	250 watts typ., 210 watts min.
Frequency Response	100 kHz–1,000 MHz instantaneously
Gain (at max. setting)	54 dB min.
Gain Adjustment (continuous range)	20 dB min.
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.
Modulation Capability	Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.
Third Order Intercept Point	62 dBm typ.
Noise Figure	8.5 dB typ.
Harmonic Distortion	Minus 20 dBc max. at 200 watts Minus 30 dBc typical at 200 watts
Spurious	Minus 73 dBc typ.
Primary Power (selected automatically)	100–240 VAC 50/60 Hz, 1,100 watts
Connectors	RF Input Type N female RF Output Type N female
Remotes Package	IEEE-488 24-pin female RS-232 9-pin subminiature D (female) Fiber optic ST Conn Tx and Rx RS-232 USB 2.0 Type B Ethernet RJ-45 Safety Interlock 15-pin subminiature D
Cooling	Forced air (self-contained fans)
Weight	With Cabinet 45 kg (99 lb.) Without Cabinet 34 kg (74 lb.)
Size (WxHxD)	With Cabinet 50.3 x 20.5 x 74.9 cm / 19.8 x 8.1 x 29.5 in. Without Cabinet 48.3 x 17.7 x 74.9 cm / 19 x 7.0 x 29.5 in.
Export classification	EAR99

500U1000



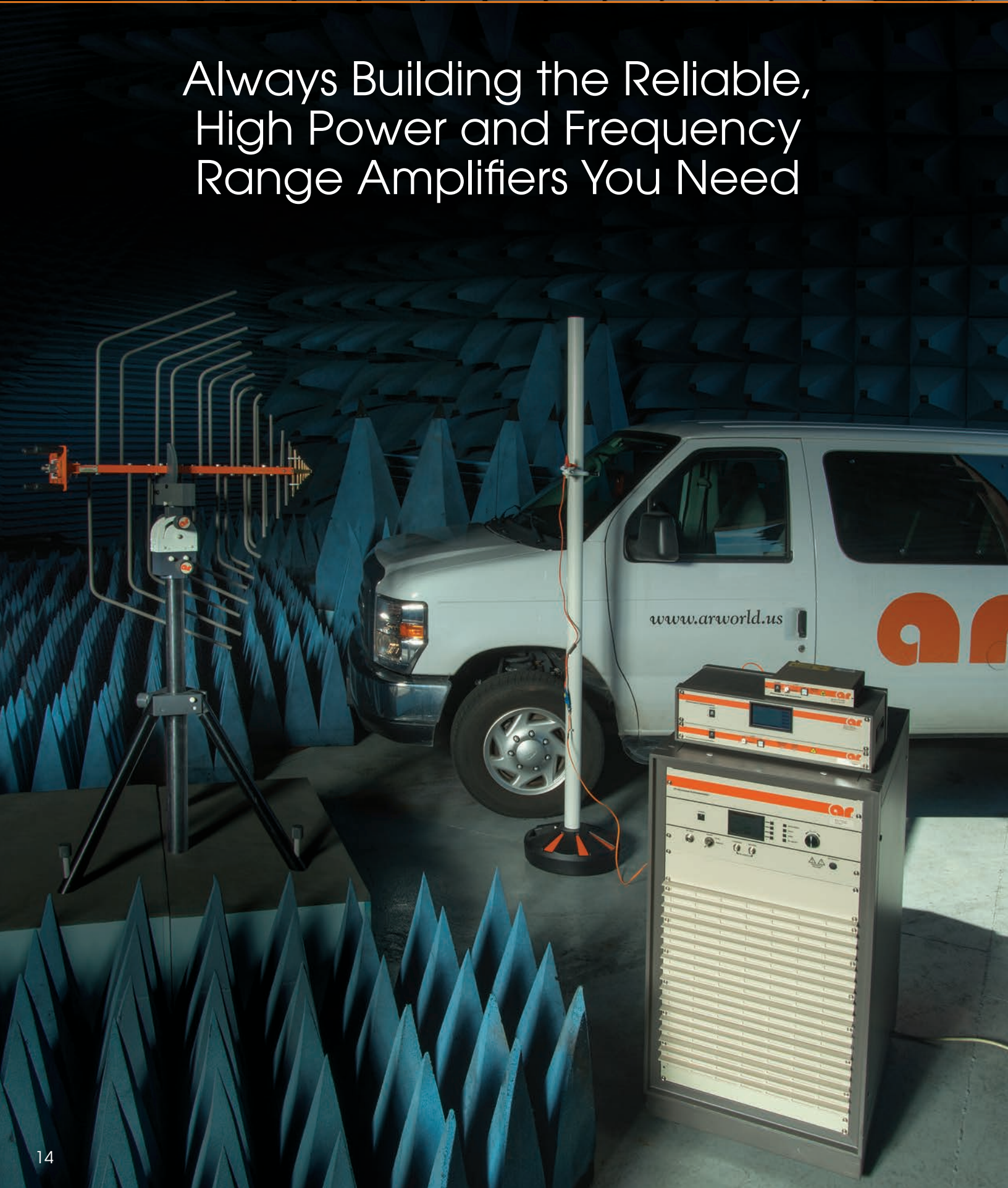
**500 watts CW, 100 kHz to 1,000 MHz**

Rated Output Power	650 watts typ., 500 watts min.
0.1–350 MHz:	525 watts typ., 400 watts min.
350–650 MHz:	400 watts typ., 325 watts min.
650–1,000 MHz:	1.0 milliwatt max.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	650 watts typ., 500 watts min.
0.1–350 MHz:	500 watts typ., 375 watts min.
350–650 MHz:	500 watts typ., 375 watts min.
650–1,000 MHz:	550 watts typ., 400 watts min.
Power Output @ 1 dB compression	450 watts typ., 325 watts min.
0.1–350 MHz:	350 watts typ., 275 watts min.
350–650 MHz:	±2.0 dB typ., ±2.5 dB max.
650–1,000 MHz:	100 kHz–1,000 MHz instantaneously
Frequency Response	57 dB min.
Gain (at max. setting)	20 dB min.
Gain Adjustment (continuous range)	50 ohms, VSWR 2.0:1 max.
Input Impedance	50 ohms, nominal
Output Impedance	50 ohms, nominal
Mismatch Tolerance	100% of rated power without foldback up to 6.0:1 mismatch above which may limit to 250 watts reflected power. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. See Application Note—Importance of Mismatch Tolerance for Amplifiers Used in Susceptibility Testing.
Modulation Capability	Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.
Third Order Intercept Point	65 dBm typ.
Noise Figure	8 dB typ.
Harmonic Distortion	<-20 dBc for the output power at 1 dB compression min. limit <-17 dBc for the output power at 3 dB compression min. limit
Spurious	Minus 73 dBc typ.
Primary Power (selected automatically)	200–240 VAC 50/60 Hz, 2,100 watts max.
Connectors	RF Input Type N female RF Output Type N female
Remotes Package	IEEE-488 24-pin female RS-232 9-pin subminiature D (female) Fiber optic ST Conn Tx and Rx RS-232 USB 2.0 Type B Ethernet RJ-45 Safety Interlock 15-pin subminiature D
Cooling	Forced air (self-contained fans)
Weight	With Cabinet 79.4 kg (175 lb.) Without Cabinet 60.8 kg (134 lb.)
Size (WxHxD)	With Cabinet 50.3 x 38.1 x 74.9 cm / 19.8 x 15.0 x 29.5 in. Without Cabinet 48.3 x 35.6 x 74.9 cm / 19 x 14.0 x 29.5 in.
Export classification	EAR99





# Always Building the Reliable, High Power and Frequency Range Amplifiers You Need



## AR Ultra High Power Amplifier Capabilities

AR's history of providing broadband, high power amplifiers has remained constant through the years. Applying the latest technology has enabled us to break new ground in very high power, solid state amplifier design.

### Facility

We made an investment in 2016 to create a large amplifier integration and test area. Not only did this open up floor space to support the building of multiple systems, but it also brought added HVAC capabilities for the amplifiers and primary AC power to properly conduct factory testing. Engineers now have the freedom to create designs to accommodate multiple configurations and optimize performance. The area also supports customer factory acceptance testing as required.

### Air vs. Liquid Cooling

Liquid cooling of the amplifier's solid-state transistors has a number of advantages. First, it allows for precise temperature control of the devices. The number-one factor determining the reliability of solid state devices is temperature. By carefully controlling the temperature, engineers can optimize the performance of the amplifier without sacrificing reliability.

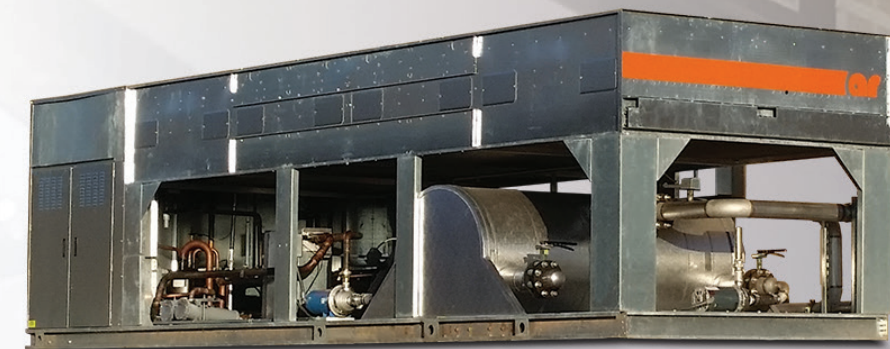
Second, it reduces the size of the amplifier. Air-cooled amplifiers use large metal heat sinks over which air is forced to carry away heat. In a liquid-cooled amplifier, the transistors are mounted on cooling plates through which water flows. The plates are much smaller than heat sinks, and because you don't have to accommodate air flow, they can be built closer together.

Third, it reduces the heat load on the amplifier room and its resulting HVAC requirements. Since most of the heat generated is carried away by the cooling liquid, room HVAC requirements are reduced.

Fourth, it allows for fewer fans. This makes the amplifier audibly quieter. By reducing the noise, operators can work in a safer, more pleasant environment without fatigue.

Fifth, it gives customers the option of using existing cooling infrastructure to save costs. Liquid cooling options include an external chiller or the use of chilled water supplied by the customer's facility. By utilizing existing infrastructure, operating costs can be reduced.

Visit <http://bit.ly/CoolAR> for more information on AR's Liquid Cooling capabilities.





## “A” and “W” Series Amplifiers Provide a Wide Range of Features and Benefits

AR’s complete in-house approach allows for a holistic view of amplifier design and production. This approach with the “A” and “W” series allows AR to focus improvements on the most critical features, and in turn, offers customers what is most important to them. As a result, “A” and “W” series amplifiers offer customers the advantages shown below:

- Highest output power in the class of broadband amplifiers
- Global service, support, and warranty
- Rugged
- Highly efficient
- Mismatch capability—will operate into any load
- Lower acoustical noise
- Smaller footprint than competition’s
- Modular designs to reduce cost

10000W1000A  
10,000 watts CW, 80 MHz–1,000 MHz



## Liquid Cooling for Large High-Power RF Amplifiers

Temperature is a major factor in determining the reliability of solid state devices used in high-power RF amplifiers. Reducing the temperature that the semiconductor devices see greatly improves reliability, longevity, and performance.

Liquid cooling not only allows for lower overall temperatures resulting in the benefits, but also offers a number of other important advantages:

- Liquid-cooled amplifiers are smaller than air-cooled amplifiers. Air-cooled amplifiers use large metal heat sinks over which air is forced to carry away heat. In a liquid-cooled amplifier, the transistors are mounted on cooling plates through which liquid coolant flows. The plates are much smaller than heat sinks, and because you don’t have to accommodate airflow, they can be built closer together.
- HVAC requirements are reduced. Liquid cooling reduces the heat load on the Amplifier Room. Most of the heat generated is carried away by the liquid coolant, which results in reduced utility bills and more comfortable surroundings.
- Quieter amplifiers. Fans are the noisiest component of an amplifier. Liquid cooling an amplifier reduces the need for fans, and as a result, noise is decreased. By reducing the noise, operators can work in a safer, more pleasant environment without fatigue.
- Using existing cooling infrastructure. Often, labs with larger amplifiers have existing liquid cooling available to them. The cooling options include an external chiller or the use of chilled water supplied by the customer’s facility. By utilizing one’s existing infrastructure, operating costs are greatly reduced.

## CoolAR Chillers

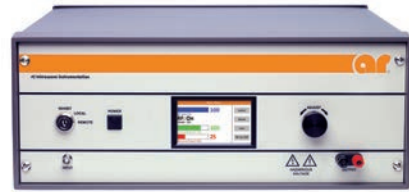
Another great addition to AR’s product offerings, CoolAR chillers can accompany any liquid-cooled amplifier AR offers. AR also offers custom solutions to meet customers’ requirements.

In addition, AR chillers are provisioned to handle the unique requirements of test amplifiers and to interface with the amplifier controller for fault monitoring. Support and service are provided through a well-established, worldwide network of distributors.





350AH1A



350 watts CW, 10 Hz–1 MHz

Operation	Class AB Linear
Power Output (1.79 Ohm load) CW, min.	350 watts, 10 Hz–300 kHz 350–55 watts, 300 kHz–1 MHz
Voltage Output, min.	25 Vrms, 10 Hz–300 kHz 25–10 Vrms, 300 kHz–1 MHz
Current Output, min.	14 Arms, 10 Hz–300 kHz 14–5.5 Arms, 300 kHz–1 MHz
Flatness	±1.0 dB, 10 Hz–300 kHz ±4.0 dB, 300 kHz–1 MHz
Frequency Response	10 Hz–1 MHz instantaneously
Input Signal	0–2 Vrms
Gain (Power)	47 dB min., 10 Hz–300 kHz 39 dB min., 300 kHz–1 MHz
Power Gain Control Range	48 dB min.
Input Impedance	600 ohms typ.
Output Impedance	<1Ω typ.
Mismatch Tolerance	100% of rated power without fail
Modulation Capability	Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal
Primary Power	90–260 VAC 47–63 Hz, single phase, 1,200 watts max.
Connectors	RF Input: Type BNC female on front panel RF Output: 5-way binding posts on front panel
Remote Control	IEEE-488: 24-pin female RS-232: 9-pin subminiature D female USB: Type B female Ethernet: RJ-45
Safety Interlock	15-pin subminiature D
Cooling	Forced air (self-contained fans)
Weight	With cabinet: 25 kg (55 lb.) Without cabinet: 18.2 kg (40 lb.)
Size (WxHxD)	With cabinet: 50.3 x 19.9 x 37.6 cm / 19.8 x 7.85 x 14.8 in. Without cabinet: 48.3 x 17.8 x 37.6 cm / 19.0 x 7 x 14.8 in.
Export classification	EAR99

100A400AM20



100 watts CW, 4 kHz–400 MHz

Rated Output Power Into 50Ω:	4 kHz–100 kHz: 10 watts min. rising to 100 watts min. at 100 kHz 100 kHz–400 MHz: 125 watts typ.; 100 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB Compression Into 50Ω:	4 kHz–100 kHz: 10 watts min. rising to 100 watts min. at 100 kHz 100 kHz–400 MHz: 125 watts typ.; 100 watts min.
Power Output @ 1 dB Compression Into 50Ω:	4 kHz–100 kHz: 10 watts min. rising to 75 watts at 100 kHz 100 kHz–400 MHz: 85 watts typ.; 75 watts min.
Flatness	±1.0 dB typ. / ±1.5 dB max, 100 kHz–400 MHz
Frequency Response	4 kHz–400 MHz instantaneously
Gain (at max. setting)	<50 dB below 100 kHz
Gain Adjustment (continuous range)	20 dB min.
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance*	100% of rated power without foldback. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
Harmonic Distortion	Minus 20 dBc max. at 75 watts, Minus 30 dBc typical at 50 watts (.01–400 MHz)
Spurious	Minus 73 dBc typ.
Third Order Intercept Point	55 dBm typ.
Noise Figure	8 dB typ.
Primary Power	100–240 VAC, 50 / 60 Hz, 500 watts
Connectors	RF Input: Type N female RF Output: Type N female
Remote Interfaces	IEEE-488: 24-pin female RS-232: 9-pin Subminiature D female Fiber optic: ST Conn Tx and Rx RS-232 USB 2.0: Type B Ethernet: RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	With cabinet: 18.5 kg (41 lb.) Without cabinet: 10.4 kg (23 lb.)
Size (WxHxD)	With cabinet: 50.3 x 15.5 x 55.1 cm / 19.8 x 6.1 x 21.7 in. Without cabinet: 48.3 x 13.2 x 55.1 cm / 19.0 x 5.2 x 21.7 in.
Export classification	EAR99

800A3B



800 watts CW, 10 kHz–3 MHz

Rated Output Power	800 watts
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	Nominal 800 watts
Power Output @ 1 dB compression	Nominal 500 watts / min. 400 watts
Flatness	±1.0 dB max.
Frequency Response	10 kHz–3 MHz instantaneously
Gain (at max. setting)	60 dB min.
Gain Adjustment (continuous range)	23 dB min.
Input Impedance	50 ohms, nominal
Output Impedance (switch select; manual)	12.5, 25, 50, 100, 150, 200, 400 ohms nominal (10 kHz–3 MHz) on front panel
Mismatch Tolerance*	Will operate without damage or oscillation with any magnitude and phase of source and load impedance. 100% of rated power without foldback up to 6.0:1 mismatch above which may limit to 400 watts reflected power.
Harmonic Distortion	Minus 20 dBc max. at 400 watts power output
Connectors	RF Input: Type N female on front panel RF Output: Type N female on front panel Remote Control: IEEE-488/RS-232, USB ability to remote control and power an external impedance transformer.
RF Power Display	0–1,000 watts full scale. Directional power monitor allows separate display of forward and reflected power.
Cooling	Forced air (self-contained fans)
Primary Power	190–240 VAC 50–60 Hz, 2,500 watts max.
Weight (max.)	With cabinet: 36.4 kg (80 lb.) Without cabinet: 29.4 kg (65 lb.)
Size (WxHxD)	With cabinet: 50.3 x 34 x 55.1 cm / 19.8 x 13.4 x 21.7 in. Without cabinet: 48.3 x 30.5 x 54.4 cm / 19.0 x 12 x 21.4 in.
Export classification	EAR99

150A100D



150 watts CW, 10 kHz–100 MHz

Rated Output Power	180 watts typ., 150 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	Typical: 165 watts / min. 140 watts
Power Output @ 1 dB compression	Typical: 135 watts / min. 110 watts
Flatness	±1.0 dB typ., ±1.5 dB max.
Frequency Response	10 kHz–100 MHz instantaneously
Gain (at max. setting)	51.8 dB min.
Gain Adjustment (continuous range)	20 dB min.
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms nominal
Mismatch Tolerance*	100% of rated power without foldback. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
Noise Figure	9 dB typ.
Harmonic Distortion	Minus 20 dBc max. at 100 watts Minus 30 dBc typ. at 70 watts
Third Order Intercept Point	55 dBm typ.
Spurious	Minus 73 dBc typ.
Primary Power	100–240 VAC 50/60 Hz 500 watts
Connectors	RF Input: Type N female RF Output: Type N female
Remote Interfaces	IEEE-488: 24-pin female RS-232: 9-pin subminiature D (female) Fiber optic: ST Conn Tx and Rx RS-232 USB 2.0: Type B Ethernet: RJ-45
Safety Interlock	15-pin subminiature D
Cooling	Forced air (self-contained fans)
Weight	With cabinet: 18.5 kg (41 lb.) Without cabinet: 10.4 kg (23 lb.)
Size (WxHxD)	With cabinet: 50.3 x 15.5 x 55.1 cm / 19.8 x 6.1 x 21.7 in. Without cabinet: 48.3 x 13.2 x 55.1 cm / 19.0 x 5.2 x 21.7 in.
Export classification	EAR99

1200A225



1,200 watts CW, 10 kHz–225 MHz

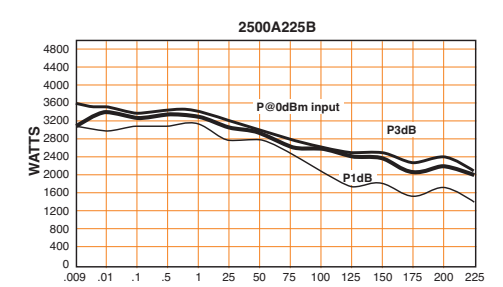
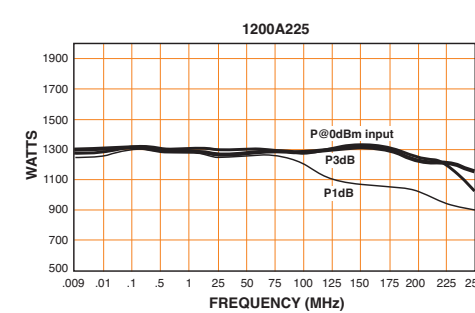
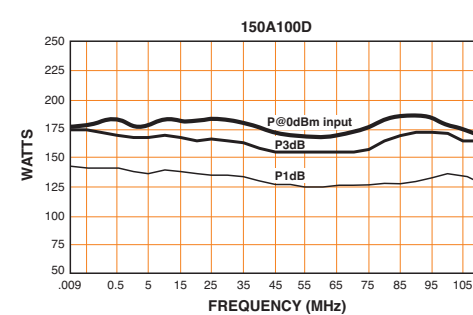
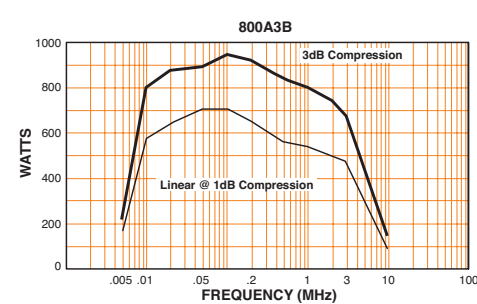
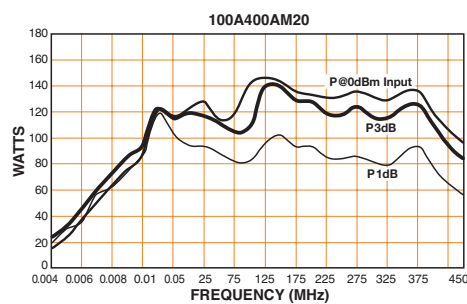
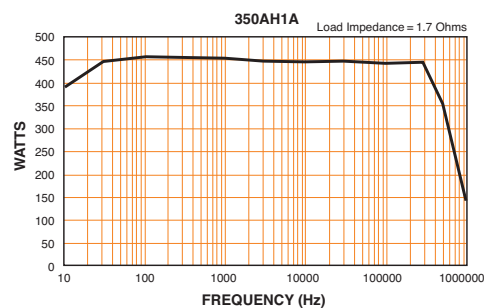
Rated Output Power	Typ.: 1,300 watts, min. 1,200 watts, .01–100 MHz Typ.: 1,200 watts, min. 1,100 watts, 100–225 MHz
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	Typ.: 1,300 watts, min. 1,200 watts, .01–100 MHz Typ.: 1,200 watts, min. 1,100 watts, 100–225 MHz
Power Output @ 1 dB compression	Typ.: 1,250 watts, min. 1,100 watts, .01–100 MHz Typ.: 1,050 watts, min. 800 watts, 100–225 MHz
Flatness	±2.0 dB typ., ±2.5 dB max.
Frequency Response	10 kHz–225 MHz instantaneously
Gain (at max. setting)	61.8 dB min.
Gain Adjustment (continuous range)	20 dB
Input Impedance	50 ohms, VSWR 1.5:1 max.
Output Impedance	50 ohms nominal
Mismatch Tolerance	100% of rated power without foldback up to 6.0:1 mismatch, above which may limit to 600W reflected power.
Harmonic Distortion	Minus 30 dBc typical, minus 20 dBc maximum at 750 watts
Third Order Intercept Point	78 dBm typ.
Primary Power	200–240 VAC single-phase 50/60 Hz 4.6 ks
Connectors	RF Input: N female RF Output: 7/16 DIN female
Remote Control	IEEE-488: 24-pin female RS-232: 9-pin subminiature D (female) Fiber optic: ST Conn Tx and Rx RS-232 USB 2.0: Type B Ethernet: RJ-45
Safety Interlock	15-pin subminiature D
Cooling	Forced air (self-contained fans with internal self-contained liquid cooling)
Weight	139 kg (305 lb.)
Size (WxHxD)	56.1 x 115.0 x 88.9 cm / 22.1 x 45.25 x 35 in.
Export classification	EAR99

2500A225B



2,500 watts CW, 10 kHz–225 MHz

Rated Output Power	Typ.: 2,800 watts, min. 2,500 watts, .01–100 MHz Typ.: 2,300 watts, min. 2,000 watts, 100–225 MHz
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	Typ.: 2,800 watts, min. 2,500 watts, .01–100 MHz Typ.: 2,300 watts, min. 2,000 watts, 100–225 MHz
Power Output @ 1 dB compression	Typ.: 2,400 watts, min. 2,000 watts, .01–100 MHz Typ.: 1,900 watts, min. 1,500 watts, 100–225 MHz
Flatness	±2.0 dB typ., ±2.5 dB max.
Frequency Response	10 kHz–225 MHz instantaneously
Gain (at max. setting)	64 dB min.
Gain Adjustment (continuous range)	20 dB
Input Impedance	50 ohms, VSWR 1.5:1 max.
Output Impedance	50 ohms nominal
Mismatch Tolerance	Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.
Mismatch Capability	Will faithfully reproduce AM, FM, or pulse modulation appearing on input signal.
Harmonic Distortion	Minus 30 dBc typical, minus 20 dBc maximum at 1,750 watts
Third Order Intercept Point	74 dBm typ.
Spurious	Minus 70 dBc typ.
Primary Power (user must specify):	200–240 VAC or 380–415 VAC 3-phase 50/60 Hz 8.5 kWatts
Connectors	RF Input: N female RF Output: 7/16 DIN female
Remote Package	IEEE-488: 24-pin female RS-232: 9-pin subminiature D (female) Fiber optic: ST Conn Tx and Rx RS-232 USB 2.0: Type B Ethernet: RJ-45
Safety Interlock	15-pin subminiature D
Cooling	Forced air (self-contained fans with internal self-contained liquid cooling)
Weight	159 kg (350 lb.)
Size (WxHxD)	56.1 x 132.1 x 82.4 cm / 22.1 x 52 x 32.5 in.
Export classification	EAR99





5000A225A



10000A225A-A



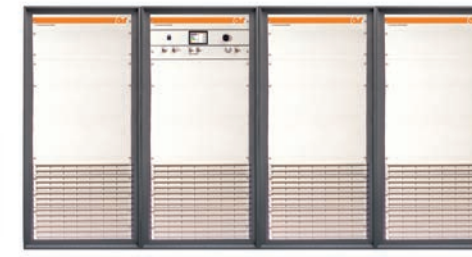
12500A225A-L



16000A225A-A



20000A225A-L



25A250B



5,000 watts CW, 10 kHz–225 MHz

**Rated Output Power**  
Typ.: 5,500 watts, min. 5,000 watts, .01–100 MHz  
Typ.: 4,500 watts, min. 3,500 watts, 100–225 MHz

**Input for Rated Output**  
1.0 milliwatt max.

**Power Output @ 3 dB compression**  
Typ.: 5,500 watts, min. 5,000 watts, .01–100 MHz  
Typ.: 4,500 watts, min. 3,500 watts, 100–225 MHz

**Power Output @ 1 dB compression**  
Typ.: 5,000 watts, min. 4,000 watts, .01–100 MHz  
Typ.: 4,000 watts, min. 3,000 watts, 100–225 MHz

**Flatness**  
±2.0 dB typ., ±2.5 dB max.

**Frequency Response**  
10 kHz–225 MHz instantaneously

**Gain (at max. setting)**  
67 dB min.

**Gain Adjustment (continuous range)**  
20 dB

**Input Impedance**  
50 ohms, VSWR 2.0:1 max.

**Output Impedance**  
50 ohms nominal

**Mismatch Tolerance**  
100% of rated power without foldback up to 6.0:1 mismatch, above which may limit to 2,500W reflected power.

**Harmonic Distortion**  
Minus 30 dBc typ., minus 20 dBc max. at 3,000 watts

**Third Order Intercept Point**  
74 dBm typ.

**Spurious**  
Minus 70 dBc typ.

**Primary Power (user must specify):**  
200–240 VAC or 380–415 VAC 3-phase  
50/60 Hz  
20 kWatts

**Connectors**  
RF Input: N female  
RF Output: EIA 1-5/8 male, rear  
Remote Control: IEEE-488 24-pin female  
RS-232 9-pin subminiature D (female)  
Fiber optic ST Conn Tx and Rx RS-232  
USB 2.0 Type B  
Ethernet RJ-45  
Safety Interlock 15-pin subminiature D

**Cooling**  
Forced air (self-contained fans with internal self-contained liquid cooling)

**Weight**  
250 kg (550 lb.)

**Size (WxHxD)**  
56.1 x 173.0 x 88.9 cm / 22.1 x 68.15 x 35 in.

**Export classification**  
EAR99

10,000 watts CW, 10 kHz–225 MHz

**Rated Output Power**  
Nominal 11,000 watts  
Minimum 10,000 watts, .01–100 MHz  
6,000 watts, 100–225 MHz

**Input for Rated Output**  
1.0 milliwatt max.

**Power Output for 1 dB compression**  
Nominal 8,000 watts  
Minimum 7,000 watts, .01–100 MHz  
4,000 watts, 100–225 MHz

**Flatness**  
±1.0 dB with internal leveling

**Frequency Response**  
10 kHz–225 MHz instantaneously

**Gain (at max. setting)**  
70 dB min.

**Gain Adjustment (continuous range)**  
20 dB min.

**Input Impedance**  
50 ohms, VSWR 2.0:1 max.

**Output Impedance**  
50 ohms, nominal

**Mismatch Tolerance**  
100% rated power without foldback up to 6.0:1 mismatch above which may limit to 5,000 watts reflected power, from 10 kHz to 100 MHz. Limited to 3,000 watts reflected power from 100 MHz to 225 MHz.

**Harmonic Distortion**  
Minus 20 dBc max. at 6,000 watts

**Third Order Intercept Point**  
77 dBm typ.

**RF Power Display**  
0–15,000 watts full scale

**RF Rise/Fall Time**  
150 nanoseconds max.

**Primary Power (user must specify):**  
190–240 VAC, Delta (4 wire)  
380–480 VAC, Delta (4 wire)  
47–63 Hz, 3-phase  
40,000 watts max. at .95 P.F. typ.

**Connectors**  
RF Input: Type N female on rear panel  
RF Output: Type EIA 1-5/8 male on rear panel  
Forward Sample: Type N female on front panel (coupling factor 80 dB typ.)  
Reverse Sample: Type N female on front panel (coupling factor 80 dB typ.)  
Pulse Modulation Input: Type BNC female on rear panel  
Safety Interlock: 15-pin female Type D on rear panel  
Remote Control: IEEE-488 24-pin female on rear panel  
RS-232 9-pin female Type D on rear panel  
RS-232 (fiber optic): Type ST, rear panel  
USB 2.0: Type B female, rear panel  
Ethernet: RJ-45

**Cooling**  
Liquid cooled via external chilled water supply

**Weight (max.)**  
500 kg (1,100 lb.)

**Size (WxHxD)**  
112.1 x 82.4 x 165.3 cm / 44.12 x 32.43 x 65.1 in.

**Export classification**  
EAR99

12,500 watts CW, 10 kHz–225 MHz

**Rated Output Power**  
Nominal 12,500 watts  
Minimum 10,000 watts, .01–100 MHz  
6,000 watts, 100–225 MHz

**Input for Rated Output**  
1.0 milliwatt max.

**Power Output for 1 dB compression**  
Nominal 11,000 watts  
Minimum 10,000 watts, .01–100 MHz  
5,000 watts, 100–225 MHz

**Flatness**  
±3.0 dB max.  
±1.0 dB with internal leveling

**Frequency Response**  
10 kHz–225 MHz instantaneously

**Gain (at max. setting)**  
71 dB min.

**Gain Adjustment (continuous range)**  
20 dB min.

**Input Impedance**  
50 ohms, VSWR 2.0:1 max.

**Output Impedance**  
50 ohms, nominal

**Mismatch Tolerance**  
100% rated power without foldback up to 6.0:1 mismatch above which may limit to 5,000 watts reflected power, from 10 kHz to 100 MHz. Limited to 7,000 watts reflected power from 100 MHz to 225 MHz.

**Harmonic Distortion**  
Minus 20 dBc max. at 8,000 watts

**Third Order Intercept Point**  
77 dBm typ.

**RF Power Display**  
0–15,000 watts full scale

**RF Rise/Fall Time**  
150 nanoseconds max.

**Primary Power (user must specify):**  
190–240 VAC Delta (4 wire)  
380–480 VAC, Delta (4 wire)  
47–63 Hz, 3-phase  
45,000 watts max. at .95 P.F. typ.

**Connectors**  
RF Input: Type N female on rear panel  
RF Output: Type EIA 1-5/8 male on rear panel  
Forward Sample: Type N female on front panel (coupling factor 80 dB typical)  
Reverse Sample: Type N female on front panel (coupling factor 80 dB typical)  
Pulse Modulation Input: Type BNC female, rear panel  
Safety Interlock: 15-pin female Type D on rear panel  
Remote Control: IEEE-488 24-pin female on rear panel  
RS-232 9-pin female Type D on rear panel  
USB 2.0: Type B female, rear panel  
Ethernet: RJ-45

**Cooling**  
Liquid cooled via external chilled water supply

**Weight (max.)**  
500 kg (1,100 lb.)

**Size (WxHxD)**  
112.1 x 82.4 x 165.3 cm / 44.12 x 32.43 x 65.1 in.

**Export classification**  
EAR99

16,000 watts CW, 10 kHz–225 MHz

**Rated Output Power**  
Nominal 17,000 watts  
Minimum 16,000 watts, .01–100 MHz  
12,000 watts, 100–225 MHz

**Input for Rated Output**  
1.0 milliwatt max.

**Power Output for 1 dB compression**  
Nominal 15,000 watts  
Minimum 14,000 watts, .01–100 MHz  
8,000 watts, 100–225 MHz

**Flatness**  
±3.0 dB max.  
±1.0 dB with internal leveling

**Frequency Response**  
10 kHz–225 MHz instantaneously

**Gain (at max. setting)**  
72.05 dB min.

**Gain Adjustment (continuous range)**  
20 dB min.

**Input Impedance**  
50 ohms, VSWR 2.0:1 max.

**Output Impedance**  
50 ohms, nominal

**Mismatch Tolerance\***  
100% rated power without foldback up to 6.0:1 mismatch above which may limit to 8,000 watts reflected power from 10 kHz–100 MHz. Limited to 7,000 watts reflected power from 100 MHz–225 MHz.

**Modulation Capability**  
Will faithfully reproduce AM, FM or pulse modulation appearing on the input signal.

**Harmonic Distortion**  
Minus 20 dBc max. at 10,000 watts

**Third Order Intercept Point**  
77 dBm typ.

**RF Power Display**  
0–20,000 watts full scale

**RF Rise/Fall Time**  
150 nanoseconds max.

**Primary Power (user must specify):**  
190–240 VAC, Delta (4 wire)  
380–480 VAC, Delta (4 wire)  
47–63 Hz, 3-phase  
75,000 watts max. at .95 P.F. typ.

**Connectors**  
RF Input: Type N female on rear panel  
RF Output: Type EIA 3-1/8 male on rear panel  
Forward Sample: N female, front (coupling factor 84 dB typ.)  
Reverse Sample: N female, front (coupling factor 84 dB typ.)  
Pulse Modulation Input: BNC female on rear panel  
Safety Interlock: 15-pin female Type D on rear panel  
Remote Control: IEEE-488 24-pin female, rear  
RS-232 9-pin female D, rear  
RS-232 (fiber optic): Type ST, rear  
USB 2.0: Type B female, rear  
Ethernet: RJ-45

**Cooling**  
Forced air (self-contained fans with internal liquid cooling)

**Weight**  
997 kg (2,200 lb.)

**Size (WxHxD)**  
226.7 x 99.1 x 177.8 cm / 89.25 x 39 x 70 in.

**Export classification**  
EAR99

20,000 watts CW, 10 kHz–225 MHz

**Rated Output Power**  
Nominal 20,000 watts  
Minimum 18,000 watts, .01–100 MHz  
13,000 watts, 100–225 MHz

**Input for Rated Output**  
1.0 milliwatt max.

**Power Output for 1 dB compression**  
Nominal 17,000 watts  
Minimum 16,000 watts, .01–100 MHz  
10,000 watts, 100–225 MHz

**Flatness**  
±3.0 dB max.  
±1.0 dB with internal leveling

**Frequency Response**  
10 kHz–225 MHz instantaneously

**Gain (at max. setting)**  
72.5 dB min.

**Gain Adjustment (continuous range)**  
20 dB min.

**Input Impedance**  
50 ohms, VSWR 2.0:1 max.

**Output Impedance**  
50 ohms, nominal

**Mismatch Tolerance\***  
100% rated power without foldback up to 6.0:1 mismatch above which may limit to 9,000 watts reflected power from 100 MHz–225 MHz.

**Modulation Capability**  
Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.

**Harmonic Distortion**  
Minus 20 dBc max. at 12,000 watts

**Third Order Intercept Point**  
77 dBm typ.

**RF Power Display**  
0–25,000 watts full scale

**RF Rise/Fall Time**  
150 nanoseconds max.

**Primary Power (user must specify):**  
380–480 VAC, Delta (4 wire)  
47–63 Hz, 3-phase  
85,000 watts max. at .95 P.F. typ.

**Connectors**  
RF Input: Type N female on rear panel  
RF Output: Type EIA 3-1/8 male on rear panel  
Forward Sample: N female, front (coupling factor 84 dB typ.)  
Reverse Sample: N female, front (coupling factor 84 dB typ.)  
Pulse Modulation Input: BNC female on rear panel  
Safety Interlock: 15-pin female Type D on rear panel  
Remote Control: IEEE-488 24-pin female, rear  
RS-232 9-pin female D, rear  
RS-232 (fiber optic): Type ST, rear  
USB 2.0: Type B female, rear  
Ethernet: RJ-45

**Cooling**  
Liquid cooled via external chilled water supply

**Weight**  
997 kg (2,200 lb.)

**Size (WxHxD)**  
226.7 x 99.1 x 177.8 cm / 89.25 x 39 x 70 in.

**Export classification**  
EAR99

25 watts CW, 10 kHz–250 MHz

**Rated Output Power**  
35 watts typ., 25 watts min.  
1.0 milliwatt max.

**Power Output @ 3 dB compression**  
Typ. 35 watts / min. 25 watts

**Power Output @ 1 dB compression**  
Typ. 30 watts / min. 20 watts

**Flatness**  
±1.0 dB typ. / ±1.5 dB max.

**Frequency Response**  
10 kHz–250 MHz instantaneously

**Gain (at max. setting)**  
44 dB min.

**Gain Adjustment (continuous range)**  
20 dB min.

**Input Impedance**  
50 ohms, VSWR 2.0:1 max.

**Output Impedance**  
50 ohms, nominal

**Mismatch Tolerance\***  
100% of rated power without foldback. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.

**Modulation Capability**  
Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.

**Harmonic Distortion**  
Minus 20 dBc max. at 20 watts,  
Minus 35 dBc typ. at 15 watts

**Spurious**  
Minus 73 dBc typ.

**Third Order Intercept Point**  
55 dBm typ.

**Noise Figure**  
8 dB typ.

**Primary Power**  
100–240 VAC  
50 / 60 Hz, 200 watts

**Connectors**  
RF Input: Type N female  
RF Output: Type N female

**Remote Interfaces**  
IEEE-488 24-pin female  
RS-232 9-pin Subminiature D female  
Fiber optic ST Conn Tx and Rx RS-232  
USB 2.0 Type B  
Ethernet RJ-45

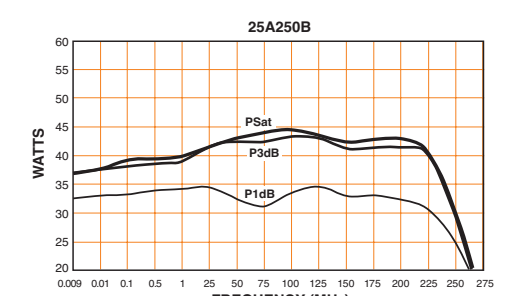
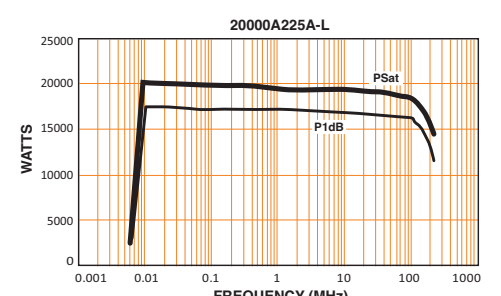
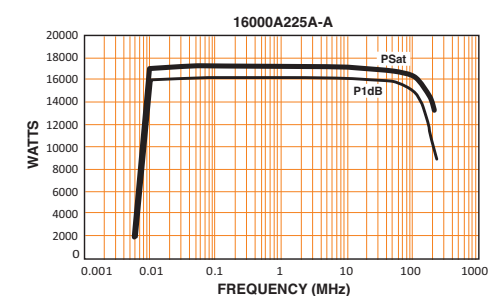
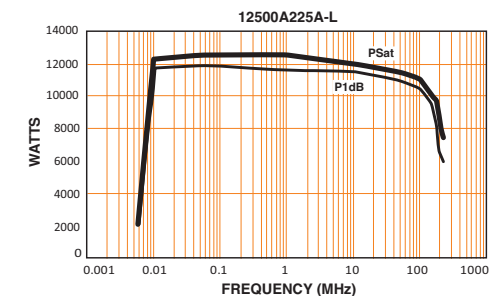
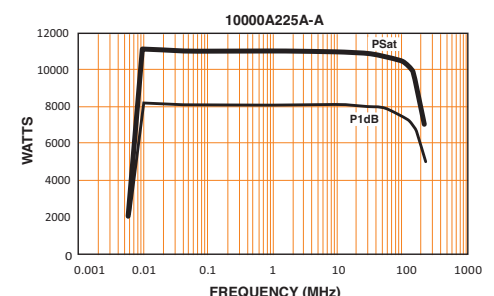
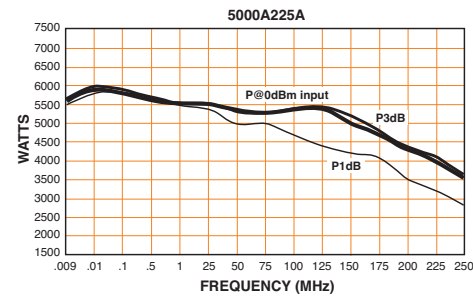
**Safety Interlock**  
15-pin Subminiature D

**Cooling**  
Forced air (self-contained fans)

**Weight**  
With cabinet 16.7 kg (37 lb.)  
Without cabinet 8.6 kg (19 lb.)

**Size (WxHxD)**  
With cabinet 50.3 x 15.5 x 55.1 cm / 19.8 x 6.1 x 21.7 in.  
Without cabinet 48.3 x 13.2 x 55.1 cm / 19 x 5.2 x 21.7 in.

**Export classification**  
EAR99





50A250



50 watts CW, 10 kHz–250 MHz.

Rated Output Power	70 watts typ., 50 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	Typ. 70 watts / min. 50 watts
Power Output @ 1 dB compression	Typ. 55 watts / min. 40 watts
Flatness	±1.0 dB typ. / ±1.5 dB max.
Frequency Response	10 kHz–250 MHz instantaneously
Gain (at max. setting)	47 dB min.
Gain Adjustment (continuous range)	20 dB min.
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance*	100% of rated power without foldback. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
Harmonic Distortion	Minus 20 dBc max. at 40 watts, Minus 30 dBc typ. at 30 watts
Spurious	Minus 73 dBc typ.
Third Order Intercept Point	55 dBm typ.
Noise Figure	8 dB typ.
Primary Power	100–240 VAC 50 / 60 Hz, 250 watts
Connectors	RF Input: Type N female RF Output: Type N female
Remote Interfaces	IEEE-488: 24-pin female RS-232: 9-pin Subminiature D female Fiber optic: ST Conn Tx and Rx RS-232 USB 2.0: Type B Ethernet: RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	With cabinet: 16.7 kg (37 lb.) Without cabinet: 8.6 kg (19 lb.)
Size (WxHxD)	With cabinet: 50.3 x 15.5 x 55.1 cm / 19.8 x 6.1 x 21.7 in. Without cabinet: 48.3 x 13.2 x 55.1 cm / 19 x 5.2 x 21.7 in.
Export classification	EAR99

125A250



125 watts CW, 10 kHz–250 MHz

Rated Output Power	150 watts typ., 125 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	Typical: 145 watts / min. 125 watts
Power Output @ 1 dB compression	Typical: 110 watts / min. 90 watts
Flatness	±1.0 dB typ. / ±1.5 dB max.
Frequency Response	10 kHz–250 MHz instantaneously
Gain (at max. setting)	50 dB min.
Gain Adjustment (continuous range)	20 dB min.
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms nominal
Mismatch Tolerance*	100% of rated power without foldback. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
Noise Figure	8 dB typ.
Harmonic Distortion	Minus 20 dBc max. at 90 watts, Minus 30 dBc typ. at 70 watts
Spurious	Minus 73 dBc typ.
Third Order Intercept Point	55 dBm typ.
Primary Power	100–240 VAC 50/60 Hz, 500 watts
Connectors	RF Input: Type N female RF Output: Type N female
Remote Interfaces	IEEE-488: 24-pin female RS-232: 9-pin subminiature D (female) Fiber optic: ST Conn Tx and Rx RS-232 USB 2.0: Type B Ethernet: RJ-45
Safety Interlock	15-pin subminiature D
Cooling	Forced air (self-contained fans)
Weight	With cabinet: 18.5 kg (41 lb.) Without cabinet: 10.4 kg (23 lb.)
Size (WxHxD)	With cabinet: 50.3 x 15.5 x 55.1 cm / 19.8 x 6.1 x 21.7 in. Without cabinet: 48.3 x 13.2 x 55.1 cm / 19.0 x 5.2 x 21.7 in.
Export classification	EAR99

500A250D



500 watts CW, 10 kHz–250 MHz

Rated Output Power	600 watts typ., 500 watts min., .01–250 MHz
Power Output @ 3 dB compression	600 watts typ., 500 watts min., .01–200 MHz 550 watts typ., 475 watts min., 200 MHz–250 MHz
Power Output @ 1 dB compression	525 watts typ., 400 watts min., .01–200 MHz 425 watts typ., 375 watts min., 200 MHz–250 MHz
Flatness	±1.5 dB typ. / ±2.0 dB max.
Frequency Response	10 kHz–250 MHz instantaneously
Gain (at max. setting)	57 dB min.
Gain Adjustment (continuous range)	20 dB min.
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms nominal
Mismatch Tolerance*	100% of rated power without foldback. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
Noise Figure	7 dB typ.
Harmonic Distortion	Minus 20 dBc max. at 400 watts; <-20 dBc typ. at 500 watts
Spurious	Minus 73 dBc typ.
Third Order Intercept Point	68 dBm typ.
Primary Power	200–240 VAC 50 / 60 Hz, 2,400 watts
Connectors	RF Input: Type N female RF Output: Type N female RF Sample Ports: Type N female (optional)
Remote Interfaces	IEEE-488: 24-pin female RS-232: 9-pin subminiature D (female) Fiber optic: ST Conn Tx and Rx RS-232 USB 2.0: Type B Ethernet: RJ-45
Safety Interlock	15-pin subminiature D
Cooling	Forced air (self-contained fans)
Weight	With Cabinet: 78 kg (171 lb.) Without Cabinet: 58 kg (128 lb.)
Size (WxHxD)	With Cabinet: 50.3 x 38.1 x 75.5 cm / 19.8 x 15.0 x 29.7 in. Without Cabinet: 48.3 x 35.6 x 75.5 cm / 19 x 14.0 x 29.7 in.
Export classification	EAR99

100A400A



100 watts CW, 10 kHz–400 MHz

Rated Output Power	130 watts typ., 100 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	Typ. 125 watts / min. 100 watts
Power Output @ 1 dB compression	Typ. 85 watts / min. 75 watts
Flatness	±1.0 dB typ. / ±1.5 dB max.
Frequency Response	10 kHz–400 MHz instantaneously
Gain (at max. setting)	50 dB min.
Gain Adjustment (continuous range)	20 dB min.
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance*	100% of rated power without foldback. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
Harmonic Distortion	Minus 20 dBc max. at 75 watts, Minus 30 dBc typical at 50 watts
Spurious	Minus 73 dBc typ.
Third Order Intercept Point	55 dBm typ.
Noise Figure	8 dB typ.
Primary Power	100–240 VAC 50 / 60 Hz, 500 watts
Connectors	RF Input: Type N female RF Output: Type N female
Remote Interfaces	IEEE-488: 24-pin female RS-232: 9-pin Subminiature D female Fiber optic: ST Conn Tx and Rx RS-232 USB 2.0: Type B Ethernet: RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	With cabinet: 18.5 kg (41 lb.) Without cabinet: 10.4 kg (23 lb.)
Size (WxHxD)	With cabinet: 50.3 x 15.5 x 55.1 cm / 19.8 x 6.1 x 21.7 in. Without cabinet: 48.3 x 13.2 x 55.1 cm / 19.8 x 5.2 x 21.7 in.
Export classification	EAR99

175A400



175 watts CW, 10 kHz–400 MHz

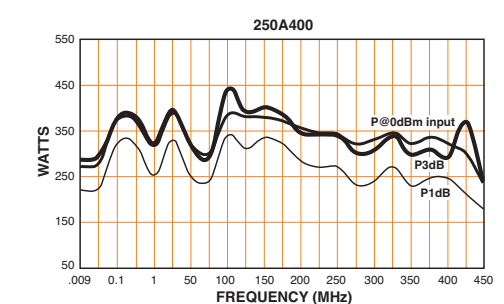
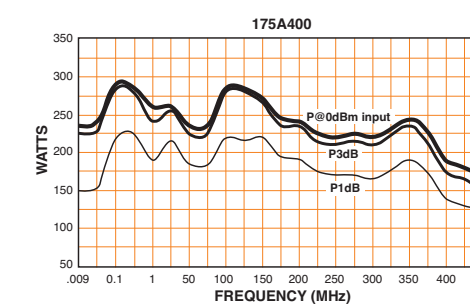
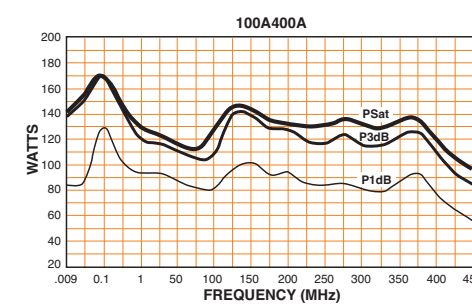
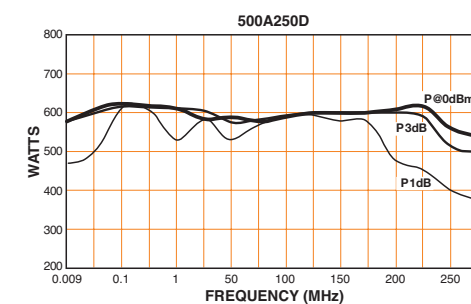
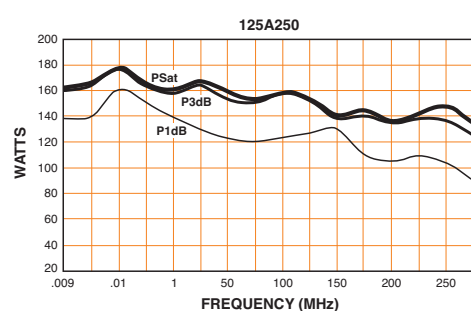
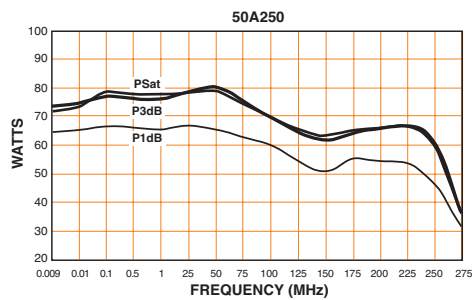
Rated Output Power	225 watts typ., 175 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	Typ. 210 watts / min. 165 watts
Power Output @ 1 dB compression	Typ. 165 watts / min. 125 watts
Flatness	±0.9 dB typ. / ±1.5 dB max.
Frequency Response	10 kHz–400 MHz instantaneously
Gain (at max. setting)	52.5 dB min.
Gain Adjustment (continuous range)	20 dB min.
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance*	100% of rated power without foldback. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
Harmonic Distortion	Minus 20 dBc max. at 150 watts
Spurious	Minus 73 dBc typ.
Third Order Intercept Point	60 dBm typ.
Noise Figure	8.5 dB typ.
Primary Power	100–240 VAC 50 / 60 Hz, 770 watts
Connectors	RF Input: Type N female RF Output: Type N female
Remote Interfaces	IEEE-488: 24-pin female RS-232: 9-pin Subminiature D female Fiber optic: ST Conn Tx and Rx RS-232 USB 2.0: Type B Ethernet: RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	With cabinet: 33 kg (73 lb.) Without cabinet: 22 kg (48 lb.)
Size (WxHxD)	With cabinet: 50.3 x 20.5 x 74.9 cm / 19.8 x 8.1 x 29.5 in. Without cabinet: 48.3 x 17.7 x 74.9 cm / 19 x 7 x 29.5 in.
Export Classification	EAR99

250A400



250 watts CW, 10 kHz–400 MHz

Rated Output Power	325 watts typ., 250 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	Typ. 325 watts / min. 250 watts
Power Output @ 1 dB compression	Typ. 250 watts / min. 200 watts
Flatness	±1.5 dB typ. / ±2.0 dB max.
Frequency Response	10 kHz–400 MHz instantaneously
Gain (at max. setting)	54 dB min.
Gain Adjustment (continuous range)	20 dB min.
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance*	100% of rated power without foldback. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
Harmonic Distortion	Minus 20 dBc max. at 200 watts
Spurious	Minus 73 dBc typ.
Third Order Intercept Point	65 dBm typ.
Noise Figure	8.5 dB typ.
Primary Power	100–240 VAC 50 / 60 Hz, 1,350 watts
Connectors	RF Input: Type N female RF Output: Type N female
Remote Interfaces	IEEE-488: 24-pin female RS-232: 9-pin Subminiature D female Fiber optic: ST Conn Tx and Rx RS-232 USB 2.0: Type B Ethernet: RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	With cabinet: 45 kg (98 lb.) Without cabinet: 33 kg (73 lb.)
Size (WxHxD)	With cabinet: 50.3 x 20.5 x 74.9 cm / 19.8 x 8.1 x 29.5 in. Without cabinet: 48.3 x 17.7 x 74.9 cm / 19 x 7 x 29.5 in.
Export Classification	EAR99



350A400



350 watts CW, 10 kHz–400 MHz

Rated Output Power	425 watts typ., 350 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	Typ. 400 watts / min. 325 watts
Power Output @ 1 dB compression	Typ. 325 watts / min. 225 watts
Flatness	±1.5 dB typ. / ±2.0 dB max.
Frequency Response	10 kHz–400 MHz instantaneously
Gain (at max. setting)	55.5 dB min.
Gain Adjustment (continuous range)	20 dB min.
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance*	100% of rated power without foldback. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
Harmonic Distortion	Minus 20 dBc max. at 300 watts
Spurious	Minus 73 dBc typ.
Third Order Intercept Point	65 dBm typ.
Noise Figure	8.5 dB typ.
Primary Power	100–240 VAC
	50 / 60 Hz, 1,750 watts
Connectors	
RF Input	Type N female
RF Output	Type N female
Remote Interfaces	
IEEE-488	24-pin female
RS-232	9-pin Subminiature D female
Fiber optic	ST Conn Tx and Rx RS-232
USB 2.0	Type B
Ethernet	RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	
With cabinet	48 kg (104 lb.)
Without cabinet	35 kg (78 lb.)
Size (WxHxD)	
With cabinet	50.3 x 20.5 x 74.9 cm / 19.8 x 8.1 x 29.5 in.
Without cabinet	48.3 x 17.7 x 74.9 cm / 19 x 7 x 29.5 in.
Export Classification	EAR99

600A400



600 watts CW, 10 kHz–400 MHz

Rated Output Power	700 watts typ., 600 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	Typ. 600 watts / min. 500 watts
Power Output @ 1 dB compression	Typ. 500 watts / min. 400 watts
Flatness	±1.5 dB typ. / ±2.0 dB max.
Frequency Response	10 kHz–400 MHz instantaneously
Gain (at max. setting)	57.8 dB min.
Gain Adjustment (continuous range)	20 dB min.
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance*	100% of rated power without foldback. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
Harmonic Distortion	Minus 20 dBc max. at 500 watts
Spurious	Minus 73 dBc typ.
Third Order Intercept Point	67 dBm typ.
Noise Figure	7.5 dB typ.
Primary Power	200–240 VAC
	50 / 60 Hz, 2,950 watts
Connectors	
RF Input	Type N female
RF Output	Type 7/16 DIN
RF Sample Ports:	Type N female (optional)
Remote Interfaces	
IEEE-488	24-pin female
RS-232	9-pin Subminiature D female
Fiber optic	ST Conn Tx and Rx RS-232
USB 2.0	Type B
Ethernet	RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	
With cabinet	87 kg (191 lb.)
Without cabinet	68 kg (148 lb.)
Size (WxHxD)	
With cabinet	50.3 x 38.1 x 75.5 cm / 19.8 x 15.0 x 29.7 in.
Without cabinet	48.3 x 35.6 x 75.5 cm / 19 x 14.0 x 29.7 in.
Export Classification	EAR99

1000A400



1,000 watts CW, 10 kHz–400 MHz

Rated Output Power	1,200 watts typ., 1,000 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	Typ. 1,200 watts / min. 1,000 watts
Power Output @ 1 dB compression	Typ. 1,000 watts / min. 800 watts
Flatness	±1.5 dB typ. / ±2.0 dB max.
Frequency Response	10 kHz–400 MHz instantaneously
Gain (at max. setting)	60 dB min.
Gain Adjustment (continuous range)	25 dB min.
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.
Modulation Capability	Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.
Harmonic Distortion	Minus 20 dBc max. at 1,000 watts
Spurious	Minus 73 dBc typ.
Third Order Intercept Point	68 dBm typ.
Noise Figure	8 dB typ.
Primary Power	200–240 VAC
	3-phase, 50/60 Hz, 5.2 kW
Connectors	
RF Input	Type N female
RF Output	7-16 DIN female, rear
Remote Interfaces	
IEEE-488	24-pin female
RS-232	9-pin Subminiature D female
Fiber optic	ST Conn Tx and Rx RS-232
USB 2.0	Type B
Ethernet	RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	124.8 kg (275 lb.)
Size (WxHxD)	56.1 x 97.8 x 82.5 cm / 22.1 x 38.5 x 32.5 in.
Environmental	
Operating Temperature:	5°C / +40°C
Operating Altitude:	Up to 2,000 M
Shock and vibration:	Normal Truck Transport
Regulatory Compliance	
EMC	EN 61326-1
Safety	UL 61010-1, CAN/CSA C22.2 #61010-1 CENELEC EN 61010-1
RoHS	DIRECTIVE 2011/65/EU
Export Classification	EAR99

50W1000D



50 watts CW, 50–1,000 MHz

Rated Output Power	70 watts typ., 50 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	Typ. 70 watts / min. 60 watts
Power Output @ 1 dB compression	Typ. 60 watts / min. 45 watts
Flatness	±1.0 dB typ. / ±1.5 dB max.
Frequency Response	50 MHz–1,000 MHz instantaneously
Gain (at max. setting)	48 dB min.
Gain Adjustment (continuous range)	20 dB min.
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.
Modulation Capability	Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.
Harmonic Distortion	Minus 20 dBc max. at 50 watts, Minus 30 dBc typ. at 50 watts
Spurious	Minus 73 dBc typ.
Third Order Intercept Point	55 dBm typ.
Noise Figure	8 dB typ.
Primary Power	100–240 VAC
	50 / 60 Hz, 250 watts
Connectors	
RF Input	Type N female
RF Output	Type N female
Remote Interfaces	
IEEE-488	24-pin female
RS-232	9-pin Subminiature D female
Fiber optic	ST Conn Tx and Rx RS-232
USB 2.0	Type B
Ethernet	RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	
With cabinet	17.7 kg (39 lb.)
Without cabinet	9.5 kg (21 lb.)
Size (WxHxD)	
With cabinet	50.3 x 15.5 x 55.1 cm / 19.8 x 6.1 x 21.7 in.
Without cabinet	48.3 x 13.2 x 55.1 cm / 19.8 x 5.2 x 21.7 in.
Export classification	EAR99

150W1000B



150 watts CW, 80–1,000 MHz

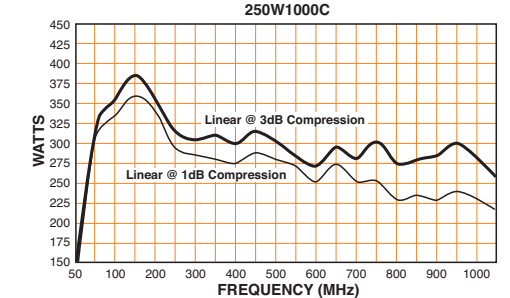
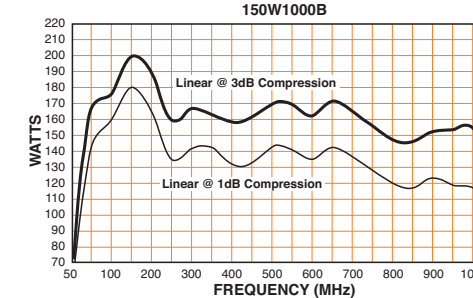
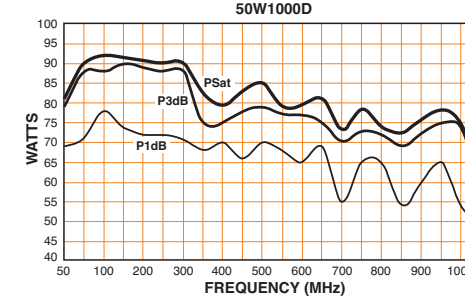
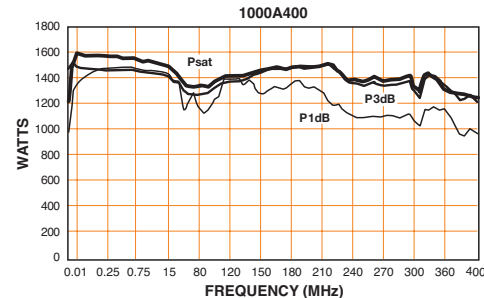
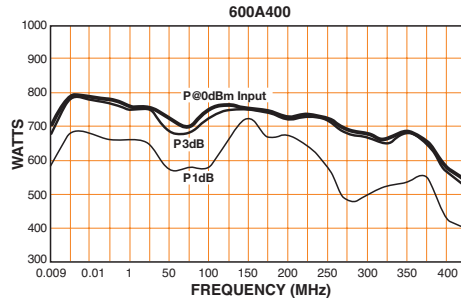
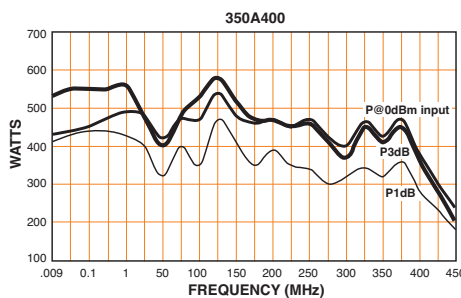
Rated Output Power	160 watts typical, 130 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	Nominal 150 watts / min. 125 watts
Power Output @ 1 dB compression	Nominal 125 watts / min. 100 watts
Flatness	±1.5 dB typ. / ±2.0 dB max.
Frequency Response	80–1,000 MHz instantaneously
Gain (at max. setting)	52 dB min.
Gain Adjustment (continuous range)	20 dB min.
Input Impedance	50 ohms, VSWR 1.5:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.
Modulation Capability	Will faithfully reproduce AM, FM, or pulse modulation appearing on input signal.
Noise Figure	8 dB max.; 6 dB typ.
Harmonic Distortion	Minus 20 dBc maximum at 100 watts; minus 30 dBc typical at 100 watts
Third Order Intercept Point	58 dBm typ.
Spurious	Minus 73 dBc typ.
Primary Power	100–240 VAC
	50/60 Hz, 650 watts
Connectors	
RF Input	Type N female on front panel
RF Output	Type N female on front panel
Remote Interfaces	
IEEE-488	24-pin female
RS-232	9-pin Subminiature D (female)
Fiber Optic	ST Conn Tx and Rx RS-232
USB 2.0	Type B
Ethernet	RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	
With cabinet	36.7 kg (81 lb.)
Without cabinet	25.4 kg (56 lb.)
Size (WxHxD)	
With cabinet	50.3 x 20.5 x 74.9 cm / 19.8 x 8.1 x 29.5 in.
Without cabinet	48.3 x 17.7 x 74.9 cm / 19 x 7.0 x 29.5 in.
Export Classification	EAR99

250W1000C



250 watts CW, 80–1,000 MHz

Rated Output Power	300 watts typ., 250 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	Typical: 300 watts, Minimum: 275 watts up to 500 MHz; 250 watts 500–1,000 MHz
Power Output @ 1 dB compression	Typical: 250 watts, Minimum: 225 watts up to 500 MHz; 200 watts 500–1,000 MHz
Flatness	±2.0 dB max. / 1.5 dB typ.
Frequency Response	80–1,000 MHz instantaneously
Gain (at max. setting)	54 dB min.
Gain Adjustment (continuous range)	20 dB min.
Input Impedance	50 ohms, VSWR 1.5:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.
Modulation Capability	Will faithfully reproduce AM, FM, or pulse modulation appearing on input signal.
Noise Figure	8 dB max.; 6 dB typ.
Harmonic Distortion	Minus 20 dBc maximum at 200 watts; minus 30 dBc typical at 200 watts
Third Order Intercept Point	62 dBm typ.
Spurious	Minus 73 dBc typ.
Primary Power	100–240 VAC
	50/60 Hz, 1,000 watts
Connectors	
RF Input	Type N female on front panel
RF Output	Type N female on front panel
Remote Interfaces	
IEEE-488	24-pin female
RS-232	9-pin Subminiature D (female)
Fiber Optic	ST Conn Tx and Rx RS-232
USB 2.0	Type B
Ethernet	RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	
With cabinet	42.6 kg (94 lb.)
Without cabinet	31.3 kg (69 lb.)
Size (WxHxD)	
With cabinet	50.3 x 20.5 x 74.9 cm / 19.8 x 8.1 x 29.5 in.
Without cabinet	48.3 x 17.7 x 74.9 cm / 19 x 7.0 x 29.5 in.
Export Classification	EAR99





# RF Solid State Amplifiers

## 80 to 1,000 MHz

500W1000C



**500 watts CW, 80–1,000 MHz**

<b>Rated Output Power</b>	600 watts typ., 500 watts minimum
<b>Input for Rated Output</b>	1.0 mW max.
<b>Power Output @ 3 dB compression</b>	Typical: 575 watts, Minimum: 525 watts up to 700 MHz; 475 watts 700–1,000 MHz
<b>Power Output @ 1 dB compression</b>	Typical: 500 watts, Minimum: 450 watts up to 700 MHz; 425 watts 700–1,000 MHz
<b>Flatness</b>	±1.0 dB max. / 1.5 dB typ.
<b>Frequency Response</b>	80–1,000 MHz instantaneously
<b>Gain (at max. setting)</b>	57 dB min.
<b>Gain Adjustment (continuous range)</b>	25 dB min.
<b>Input Impedance</b>	50 ohms, VSWR 1.5:1 max.
<b>Output Impedance</b>	50 ohms, nominal
<b>Mismatch Tolerance</b>	Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.
<b>Modulation Capability</b>	Will faithfully reproduce AM, FM, or pulse modulation appearing on input signal.
<b>Noise Figure</b>	8 dB max.; 6 dB typ.
<b>Harmonic Distortion</b>	Minus 20 dBc maximum at 425 watts; minus 30 dBc typical at 425 watts
<b>Third Order Intercept Point</b>	63 dBm typ.
<b>Spurious</b>	Minus 73 dBc typ.
<b>Primary Power</b>	100–240 VAC 50/60 Hz, 1,800 watts
<b>Connectors</b>	RF Input: Type N female RF Output: Type N female
<b>Remote Interfaces</b>	IEEE-488: 24-pin female RS-232: 9-pin Subminiature D (female) Fiber Optic: ST Conn Tx and Rx RS-232 USB 2.0: Type B Ethernet: RJ-45
<b>Safety Interlock</b>	15-pin Subminiature D
<b>Cooling</b>	Forced air (self-contained fans)
<b>Weight</b>	With cabinet: 69.4 kg (153 lb.) Without cabinet: 50.8 kg (112 lb.)
<b>Size (WxHxD)</b>	With cabinet: 50.3 x 38.1 x 74.9 cm / 19.8 x 15 x 29.5 in. Without cabinet: 48.3 x 35.6 x 74.9 cm / 19 x 14.0 x 29.5 in.
<b>Export Classification</b>	EAR99

750W1000B



**750 watts CW, 80–1,000 MHz**

<b>Rated Output Power</b>	850 watts typ., 750 watts min.
<b>Input for Rated Output</b>	1.0 milliwatt max.
<b>Power Output @ 3 dB compression</b>	Typical: 900 watts, Minimum: 775 watts up to 700 MHz; 725 watts 700–1,000 MHz
<b>Power Output @ 1 dB compression</b>	Typical: 750 watts, Minimum: 700 watts up to 700 MHz; 650 watts 700–1,000 MHz
<b>Flatness</b>	±1.5 dB max. / 1.0 dB typ.
<b>Frequency Response</b>	80–1,000 MHz instantaneously
<b>Gain (at max. setting)</b>	58.8 dB min.
<b>Gain Adjustment (continuous range)</b>	25 dB min.
<b>Input Impedance</b>	50 ohms, VSWR 1.5:1 max.
<b>Output Impedance</b>	50 ohms, nominal
<b>Mismatch Tolerance</b>	Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.
<b>Modulation Capability</b>	Will faithfully reproduce AM, FM, or pulse modulation appearing on input signal.
<b>Noise Figure</b>	8 dB max.; 6 dB typ.
<b>Harmonic Distortion</b>	Minus 20 dBc maximum at 700 watts; minus 20 dBc typical at 750 watts
<b>Third Order Intercept Point</b>	64 dBm typ.
<b>Spurious</b>	Minus 73 dBc typ.
<b>Primary Power</b>	200–240 VAC 50/60 Hz, 2,800 watts
<b>Connectors</b>	RF Input: Type N female on front panel RF Output: Type 7-16 DIN female on rear panel
<b>Remote Interfaces</b>	IEEE-488: 24-pin female RS-232: 9-pin Subminiature D (female) Fiber Optic: ST Conn Tx and Rx RS-232 USB 2.0: Type B Ethernet: RJ-45
<b>Safety Interlock</b>	15-pin Subminiature D
<b>Cooling</b>	Forced air (self-contained fans)
<b>Weight</b>	113.4 kg (250 lb.)
<b>Size (WxHxD)</b>	56.1 x 97.8 x 82.5 cm / 22.1 x 38.5 x 32.5 in.
<b>Export Classification</b>	EAR99

1000W1000G



**1,000 watts CW, 80–1,000 MHz**

<b>Rated Output Power</b>	1,200 watts typ., 1,000 watts min.
<b>Input for Rated Output</b>	1.0 milliwatt max.
<b>Power Output @ 3 dB compression</b>	Typical: 1,200 watts / 1,100 watts min. up to 700 MHz; 950 watts from 700 to 1,000 MHz
<b>Power Output @ 1 dB compression</b>	Typical: 1,000 watts / 975 watts min. up to 700 MHz; 900 watts from 700 to 1,000 MHz
<b>Flatness</b>	±1.5 dB max; ±1.0 dB typ.
<b>Frequency Response</b>	80–1,000 MHz instantaneously
<b>Gain (at max. setting)</b>	60 dB min.
<b>Gain Adjustment (continuous range)</b>	25 dB min.
<b>Input Impedance</b>	50 ohms, VSWR 1.5:1 max.
<b>Output Impedance</b>	50 ohms, nominal
<b>Mismatch Tolerance</b>	Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.
<b>Modulation Capability</b>	Will faithfully reproduce AM, FM, or pulse modulation appearing on input signal.
<b>Harmonic Distortion</b>	Minus 20 dBc max. at 900 watts Minus 20 dBc typ. @ 1,000 watts
<b>Third Order Intercept Point</b>	66 dBm typ.
<b>Spurious</b>	Minus 73 dBc typ.
<b>Noise Figure</b>	8 dB max., 6 dB typ.
<b>Primary Power</b>	200–240 VAC 50 / 60 Hz, 3,400 watts
<b>Connectors</b>	RF Input: Type N female RF Output: Type 7-16 DIN female on rear panel
<b>Remote Interfaces</b>	IEEE-488: 24-pin female RS-232: 9-pin Subminiature D (female) Fiber Optic: ST Conn Tx and Rx RS-232 USB 2.0: Type B Ethernet: RJ-45
<b>Safety Interlock</b>	15-pin Subminiature D
<b>Cooling</b>	Forced air (self-contained fans)
<b>Weight</b>	124.8 kg (275 lb.)
<b>Size (WxHxD)</b>	56.1 x 97.8 x 82.5 cm / 22.1 x 38.5 x 32.5 in.
<b>Export Classification</b>	EAR99

1500W1000A



**1,500 watts CW, 80–1,000 MHz**

<b>Rated Output Power</b>	1,600 watts typ., 1,500 watts min.
<b>Input for Rated Output</b>	1.0 milliwatt max.
<b>Power Output @ 3 dB compression</b>	Nominal 1,600 watts / 1,500 watts min. up to 700 MHz; 1,400 watts from 700 to 1,000 MHz
<b>Power Output @ 1 dB compression</b>	Nominal 1,450 watts / 1,400 watts min. up to 700 MHz; 1,250 watts min. from 700 to 1,000 MHz
<b>Flatness</b>	±2.0 dB max. / ±1.5 dB typ.
<b>Frequency Response</b>	80–1,000 MHz instantaneously
<b>Gain (at max. setting)</b>	61.8 dB min.
<b>Gain Adjustment (continuous range)</b>	25 dB min.
<b>Input Impedance</b>	50 ohms, VSWR 1.5:1 max.; 1.3:1 typ.
<b>Output Impedance</b>	50 ohms, nominal
<b>Mismatch Tolerance</b>	Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.
<b>Harmonic Distortion</b>	Minus 20 dBc max. at 1,250 watts, -20 dBc typ. at 1,500 watts
<b>Third Order Intercept Point</b>	68 dBm typ.
<b>Spurious</b>	Minus 73 dBc typ.
<b>Noise Figure</b>	8 dB max., 6 dB typ.
<b>Primary Power (user must specify)</b>	200–240 VAC, Delta-connected (4-wire) 380–415 VAC, Wye-connected (5-wire) 50 / 60 Hz, 3 phase, 7,000 watts
<b>Connectors</b>	RF Input: Type N female on rear panel RF Output: Type 1 5/8 female on rear panel Forward Sample: Type N female, front (-63 dBc) Reverse Sample: Type N female, front (-63 dBc) Remote Interfaces: IEEE-488: 24-pin female RS-232: 9-pin Subminiature D, female Fiber Optic: ST Conn Tx and Rx RS-232 USB 2.0: Type B Ethernet: RJ-45 Safety Interlock: 15-pin female subminiature D, rear panel
<b>Cooling</b>	Forced air (self-contained fans), enters front and bottom
<b>Weight (approximate)</b>	182 kg (400 lb.)
<b>Size (WxHxD)</b>	56.1 x 175.3 x 97.6 cm / 22.1 x 69 x 38.4 in.
<b>Export Classification</b>	EAR99

2000W1000D



**2,000 watts CW, 80–1,000 MHz**

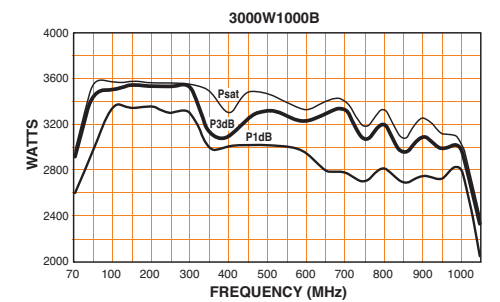
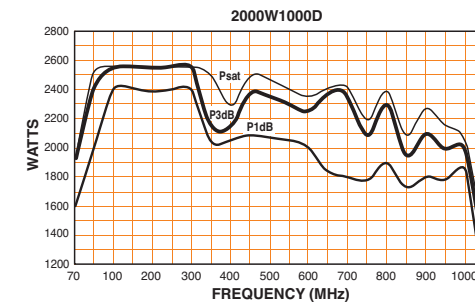
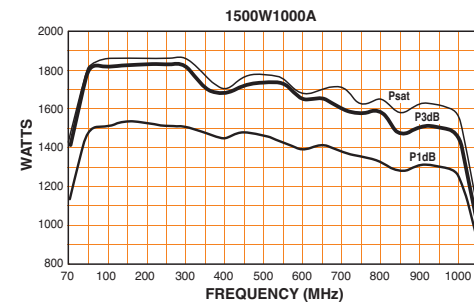
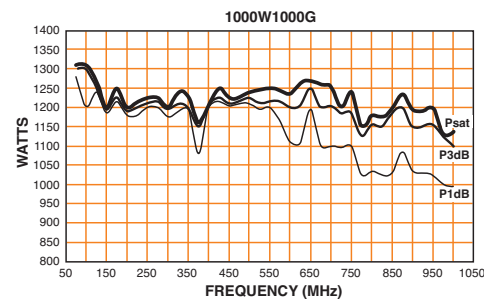
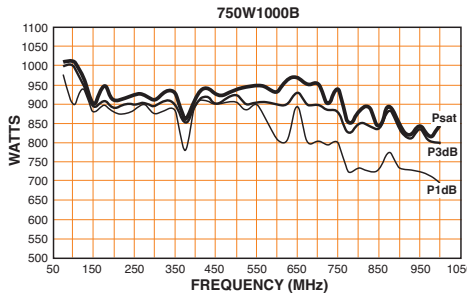
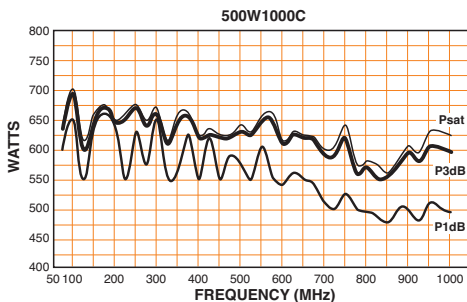
<b>Rated Output Power</b>	2,200 watts typ., 2,000 watts min.
<b>Input for Rated Output</b>	1.0 milliwatt max.
<b>Power Output @ 3 dB compression</b>	Nominal 2,200 watts / 2,000 watts min. up to 700 MHz; 1,800 watts from 700 to 1,000 MHz
<b>Power Output @ 1 dB compression</b>	Nominal 1,850 watts / 1,750 watts min. up to 700 MHz; 1,600 watts min. from 700 to 1,000 MHz
<b>Flatness</b>	±2.0 dB max. / ±1.5 dB typ.
<b>Frequency Response</b>	80–1,000 MHz instantaneously
<b>Gain (at max. setting)</b>	63 dB min.
<b>Gain Adjustment (continuous range)</b>	25 dB min.
<b>Input Impedance</b>	50 ohms, VSWR 1.5:1 max.; 1.3:1 typ.
<b>Output Impedance</b>	50 ohms, nominal
<b>Mismatch Tolerance</b>	Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.
<b>Harmonic Distortion</b>	Minus 20 dBc max. at 1,800 watts, -20 dBc typ. at 2,000 watts
<b>Third Order Intercept Point</b>	70 dBm typ.
<b>Spurious</b>	Minus 73 dBc typ.
<b>Noise Figure</b>	8 dB max., 6 dB typ.
<b>Primary Power (user must specify)</b>	200–240 VAC, Delta-connected (4-wire) 380–415 VAC, Wye-connected (5-wire) 50 / 60 Hz, 3 phase, 9,000 watts
<b>Connectors</b>	RF Input: Type N female on rear panel RF Output: Type 1 5/8 female on rear panel Forward Sample: N female, front (-63 dBc) Reverse Sample: N female, front (-63 dBc) Remote Interfaces: IEEE-488: 24-pin female RS-232: 9-pin Subminiature D, female Fiber Optic: ST Conn Tx and Rx RS-232 USB 2.0: Type B Ethernet: RJ-45 Safety Interlock: 15-pin female subminiature D, rear panel
<b>Cooling</b>	Forced air (self-contained fans)
<b>Weight (approximate)</b>	218 kg (480 lb.)
<b>Size (WxHxD) (3 cabinets)</b>	56.1 x 175.3 x 97.6 cm / 22.1 x 69 x 38.4 in.
<b>Export Classification</b>	EAR99

3000W1000B



**3,000 watts CW, 80–1,000 MHz**

<b>Rated Output Power</b>	2,800 watts min.
<b>Input for Rated Output</b>	1.0 milliwatt max.
<b>Power Output @ 3 dB compression</b>	Nominal 3,000 watts / 2,600 watts min. up to 500 MHz; 2,400 watts from 500 to 1,000 MHz
<b>Power Output @ 1 dB compression</b>	Nominal 2,500 watts / 2,250 watts min. up to 500 MHz; 1,850 watts from 500 to 1,000 MHz
<b>Flatness</b>	±2.0 dB max. / ±1.5 dB typ.
<b>Frequency Response</b>	80–1,000 MHz instantaneously
<b>Gain (at max. setting)</b>	64.8 dB min.
<b>Gain Adjustment (continuous range)</b>	25 dB min.
<b>Input Impedance</b>	50 ohms, VSWR 1.5:1 max.; 1.3:1 typ.
<b>Output Impedance</b>	50 ohms, nominal
<b>Mismatch Tolerance</b>	Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry. However, mismatch above 6.0:1 may limit output to 1,500 watts reflected power.
<b>Harmonic Distortion</b>	Minus 20 dBc max. at 2,400 watts, -20 dBc typ. at 3,000 watts
<b>Third Order Intercept Point</b>	72 dBm typ.
<b>Noise Figure</b>	8 dB max., 6 dB typ.
<b>Primary Power (user must specify)</b>	200–240 VAC, Delta connected (4-wire) 360–435 VAC, Wye connected (5-wire) 50 / 60 Hz, 3 phase, 14 kVA
<b>Connectors</b>	RF Input: Type N female on rear panel RF Output: Type 1 5/8 female on rear panel Forward Sample: Type N female, front (-70 dBc) Reverse Sample: Type N female, front (-70 dBc) Remote Interfaces: IEEE-488: 24-pin female RS-232: 9-pin Subminiature D, female Fiber Optic: ST Conn Tx and Rx RS-232 USB 2.0: Type B Ethernet: RJ-45 Safety Interlock: 15-pin female subminiature D, rear panel
<b>Cooling</b>	Forced air (self-contained fans), enters front and bottom
<b>Weight (approximate)</b>	364 kg (800 lb.)
<b>Size (WxHxD) (2 joined cabinets)</b>	111.8 x 177.8 x 97.6 cm / 44 x 70 x 38.4 in.
<b>Export classification</b>	EAR99





4000W1000B



4,000 watts CW, 80–1,000 MHz

Rated Output Power	3,700 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	
Nominal 4,000 watts / 3,600 watts min. up to 500 MHz;	
3,400 watts from 500 to 1,000 MHz	
Power Output @ 1 dB compression	
Nominal 3,500 watts / 3,000 watts min. up to 500 MHz;	
2,500 watts from 500 to 1,000 MHz	
Flatness	±2.0 dB max. / ±1.5 dB typ.
Frequency Response	80–1,000 MHz instantaneously
Gain (at max. setting)	66 dB min.
Gain Adjustment (continuous range)	25 dB min.
Input Impedance	50 ohms, VSWR 1.5:1 max.; 1.3:1 typ.
Output Impedance	50 ohms, nominal
Mismatch Tolerance*	
Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry. However, mismatch above 6.0:1 may limit output to 2,000 watts reflected power.	
Harmonic Distortion	Minus 20 dBc max. at 3,400 watts, -20 dBc typ. at 4,000 watts
Third Order Intercept Point	73 dBm typ.
Noise Figure	8 dB max., 6 dB typ.
Primary Power (user must specify)	
200–240 VAC, Delta connected (4-wire)	
360–435 VAC, Wye connected (5-wire)	
50 / 60 Hz, 3 phase, 17.5 kVA	
Connectors	
RF Input	Type N female on rear panel
RF Output	Type 1 5/8 female on rear panel
Forward Sample	Type N female, front (-70 dBc)
Reverse Sample	Type N female, front (-70 dBc)
Remote Interfaces:	
IEEE-488	24-pin female
RS-232	9-pin Subminiature D, female
Fiber Optic	ST Conn Tx and Rx RS-232
USB 2.0	Type B
Ethernet	RJ-45
Safety Interlock	15-pin female subminiature D, rear panel
Cooling	Forced air (self-contained fans), enters front and bottom
Weight (approximate)	432 kg (950 lb.)
Size (WxHxD) (2 joined cabinets)	111.8 x 177.8 x 82.3 cm / 44 x 70 x 38.4 in.
Export classification	EAR99

6000W1000



6,000 watts CW, 80–1,000 MHz

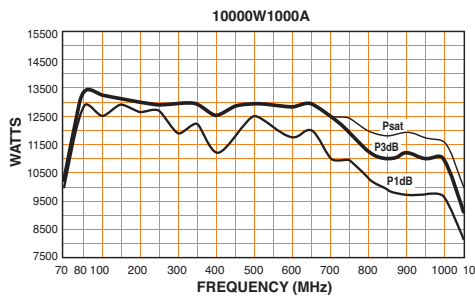
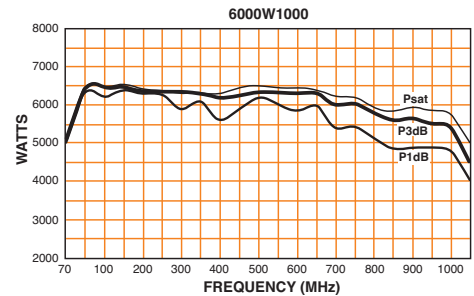
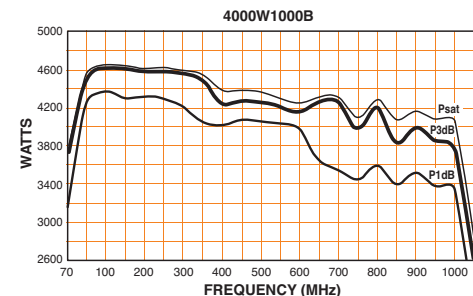
Rated Output Power	6,000 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	
Nominal 6,000 watts / 5,500 watts min. up to 700 MHz;	
5,100 watts from 700 to 1,000 MHz	
Power Output @ 1 dB compression	
Nominal 5,500 watts / 5,000 watts min. up to 700 MHz;	
4,500 watts from 700 to 1,000 MHz	
Flatness	±2.0 dB max. / ±1.5 dB typ.
Frequency Response	80–1,000 MHz instantaneously
Gain (at max. setting)	67.8 dB min.
Gain Adjustment (continuous range)	25 dB min.
Input Impedance	50 ohms, VSWR 1.5:1 max.; 1.3:1 typ.
Output Impedance	50 ohms, nominal
Mismatch Tolerance*	
Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry. However, mismatch above 6.0:1 may limit output to 3,000 watts reflected power.	
Harmonic Distortion	Minus 20 dBc max. at 5,500 watts, -20 dBc typ. at 6,000 watts
Third Order Intercept Point	75 dBm typ.
Noise Figure	8 dB max., 6 dB typ.
Primary Power (user must specify)	
200–240 VAC, Delta connected (4-wire)	
360–435 VAC, Wye connected (5-wire)	
50 / 60 Hz, 3 phase, 24 kVA	
Connectors	
RF Input	Type N female on rear panel
RF Output	Type 3 1/8 EIA female on rear panel
Forward Sample	Type N female, front (-70 dBc)
Reverse Sample	Type N female, front (-70 dBc)
Remote Interfaces:	
IEEE-488	24-pin female
RS-232	9-pin Subminiature D, female
Fiber Optic	ST Conn Tx and Rx RS-232
USB 2.0	Type B
Ethernet	RJ-45
Safety Interlock	15-pin female subminiature D, rear panel
Cooling	Forced air (self-contained fans), enters front and bottom
Weight (approximate)	703 kg (1,550 lb.)
Size (WxHxD) (3 joined cabinets)	170.0 x 183.0 x 99.0 cm / 67 x 72 x 39 in.
Export classification	EAR99

10000W1000A



10,000 watts CW, 80–1,000 MHz

Rated Output Power	Nominal, 12,500 watts
12,000 watts min. up to 700 MHz	
10,500 watts min., 700 to 1,000 MHz	
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	
Nominal 12,500 watts / 12,000 watts min. up to 700 MHz;	
10,000 watts from 700 to 1,000 MHz	
Power Output @ 1 dB compression	
Nominal 11,000 watts / 10,500 watts min. up to 700 MHz;	
9,500 watts from 700 to 1,000 MHz	
Flatness	±2.0 dB max. / ±1.5 dB typ.
Frequency Response	80–1,000 MHz instantaneously
Gain (at max. setting)	70 dB min.
Gain Adjustment (continuous range)	25 dB min.
Input Impedance	50 ohms, VSWR 1.5:1 max.; 1.3:1 typ.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	
Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry. However, mismatch above 6.0:1 may limit output to 6,000 watts reflected power.	
Modulation Capability	Faithfully reproduces AM, FM, or pulse modulation appearing on input signal.
Harmonic Distortion	Minus 20 dBc max. at 10,000 watts, -25 dBc typ. at 10,000 watts
Third Order Intercept Point	78 dBm typ.
Noise Figure	8 dB max., 6 dB typ.
Primary Power (specify voltage)	
200–240 VAC, Delta connected (4-wire),	
360–435 VAC, Wye connected (5-wire)	
50 / 60 Hz, three phase, 48,000W	
Connectors	
RF Input	Type N female on rear panel
RF Output	Type 4-1/16 EIA, rear panel
Forward Sample	N female, front (-70 dBc)
Reverse Sample	N female, front (-70 dBc)
Remote Interfaces:	
IEEE-488	24-pin female
RS-232	9-pin Subminiature D, female
Fiber Optic	ST Conn Tx and Rx RS-232
USB 2.0	Type B
Ethernet	RJ-45
Safety Interlock	15-pin female subminiature D, rear panel
Cooling	Forced air (self-contained fans), enters front and bottom
SYSTEM (2 3-bay racks):	
Weight (approximate)	1,407 kg (3,100 lb.)
Size (WxHxD)	340.0 x 183.0 x 99.0 cm / 134 x 72 x 39 in.
Export classification	EAR99



ampwebARe  
Built-In Web Control

AR's web enabled amplifiers give you the ability to monitor and control your amplifier remotely without the need for any other software. When the user switches to remote, the front panel locks, and the user can control the amplifier from a web page via an ethernet connection. Through this web page, the operator can view the hours of operation and the amplifier's output power, the hours of operation, manage all the controls remotely that are normally done from the front panel of the amplifier, and much more. AR has embedded this ampwebARe feature in our CW Solid State amplifiers. Benefits include—

- All information shown on one web page
- Simple user interface
- Allows for remote diagnostics
- Monitor status from anywhere
- Multiple simultaneous browser connections
- Support for many web browsers

Whether the amplifier is in a lab or on a remote location, the user has an alternative method of controlling and viewing AR's solid state CW amplifiers features.

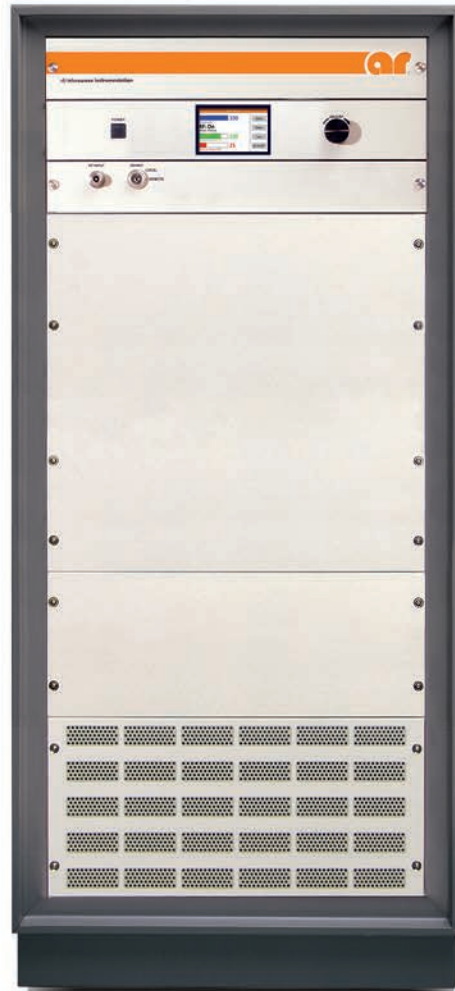




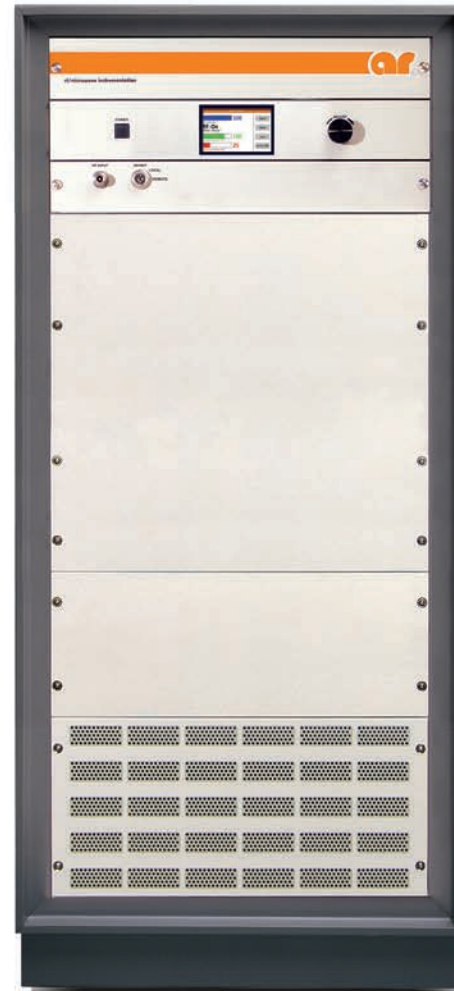
## Performance and Reliability That Exceed Your Highest Expectations

Our "S" Series Solid State Amplifiers Span Numerous  
Industrial and Technology Applications

500S1G6A  
500 Watts Class A CW  
0.7-6.0 GHz



350S1G6A  
350 Watts Class A CW  
0.7-6.0 GHz



Others talk about advanced technology. AR delivers. We created the first single band 0.7 to 6 GHz power amplifiers with output powers from 15 to 500 watts. There's no need to switch between amplifiers/bands to provide power to the load. You use less power and save more money.

These innovative Class A amplifiers offer low harmonic distortion,  $\infty$ :1 mismatch capability, and excellent noise figures for your most demanding EMC or wireless applications.

Extensive control and status reporting capabilities are available both locally and remotely. The touch-screen panels are intuitive, convenient, and easy to use.

### AR Amplifiers Use the Latest Technology

- Produce more power in a smaller package compared to the competition
- Internal self-contained liquid cooling technology

### Reduced Power Consumption

- This results in a greener product with savings on input power and lower cooling needs

### AR Quality Built into Every Amplifier

- Designed for years of use

### Wide Instantaneous Bandwidth

- Allows for continuous testing without interruption associated with switching of amplifiers while providing the user with a lower overall cost when compared to two amplifiers and a switch

### Low Spurious Signal Levels

- Makes these amplifiers ideal for use as a driver amplifier for wireless, communication-component, and subsystem testing

3000S1G2z5  
3,000 Watts CW  
1.0-2.5 GHz





15S1G6 Solid State Amplifier



15 watts CW, 0.7–6.0 GHz

Rated Power Output	15 watts min.
Input for Rated Output	1 milliwatt max.
Power Output @ 3 dB compression	
Nominal 20 watts / min. 15 watts	
Power Output @ 1 dB compression	
Nominal 15 watts / min. 12 watts	
Flatness	±1.5 dB typ. / ±2.0 dB max.
Frequency Response	0.7–6 GHz instantaneously
Gain (at max. setting)	43 dB min.
Gain Adjustment (continuous range)	10 dB min.
(4096 steps remote)	
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance*	
Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.	
Modulation Capability	
Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.	
Third Order Intercept Point	48 dBm typ.
Noise Figure	10 dB typ.
Harmonic Distortion	Minus 20 dBc max. at 15 watts (1–6 GHz) Minus 20 dBc max. at 15 watts (0.7–6 GHz)
Spurious	Minus 73 dBc typ.
Primary Power (selected automatically)	
90–132, 180–264 VAC	
50/60 Hz, single phase	
210 watts max.	
Connectors	
RF input	Type N female on front panel
RF output	Type N female on front panel
Standard Remote Interfaces Included	
Remote Interfaces	
IEEE-488	24-pin female
RS-232	9-pin Subminiature D (female)
RS-232 (fiber optic)	Type ST
USB 2.0	Type B
Ethernet	RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	
With Cabinet	15.9 kg (35 lb.)
Without Cabinet	10.2 kg (22.5 lb.)
Size (WxHxD)	
With Cabinet	50.3 x 15.5 x 37.6 cm / 19.8 x 6.1 x 14.8 in.
Without Cabinet	48.3 x 12.7 x 37.6 cm / 19.0 x 5.0 x 14.8 in.
Export Classification:	EAR99

30S1G6 Solid State Amplifier



30 watts CW, 0.7–6.0 GHz

Rated Power Output	30 watts min.
Input for Rated Output	1 milliwatt max.
Power Output @ 3 dB compression	
Nominal 35 watts / min. 26 watts	
Power Output @ 1 dB compression	
Nominal 30 watts / min. 22 watts	
Small Signal Gain Flatness	±1.5 dB typ. / ±2.0 dB max.
Frequency Response	0.7–6 GHz instantaneously
Gain (at max. setting)	44 dB min.
Gain Adjustment (continuous range)	10 dB min.
(4096 steps remote)	
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	
Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.	
Modulation Capability	
Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.	
Third Order Intercept Point	50 dBm typ.
Noise Figure	10 dB typ.
Harmonic Distortion	Minus 20 dBc max. at 30 watts Minus 73 dBc typ.
Spurious	
Primary Power (selected automatically)	
90–132, 180–264 VAC	
50/60 Hz, single phase	
300 watts max.	
Connectors	
RF input	Type N female on front panel
RF output	Type N female on front panel
Remote Interfaces	
IEEE-488	24-pin female
RS-232	9-pin Subminiature D (female)
RS-232 (fiber optic)	Type ST
USB 2.0	Type B
Ethernet	RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	
With Cabinet	18.2 kg (40 lb.)
Without Cabinet	12.5 kg (27.5 lb.)
Size (WxHxD)	
With Cabinet	50.3 x 15.5 x 37.6 cm / 19.8 x 6.1 x 14.8 in.
Without Cabinet	48.3 x 12.7 x 37.6 cm / 19.0 x 5.0 x 14.8 in.
Export Classification:	EAR99

60S1G6 Solid State Amplifier



60 watts CW, 0.7–6.0 GHz

Rated Power Output	60 watts min. (0.7–6 GHz)
Input for Rated Output	1 milliwatt max.
Power Output @ 3 dB compression	
Nominal 80 watts / min. 65 watts	
Power Output @ 1 dB compression	
Nominal 60 watts / min. 50 watts	
Flatness	±1.5 dB typ. / ±2.5 dB max.
Frequency Response	0.7–6 GHz instantaneously
Gain (at max. setting)	48 dB min.
Gain Adjustment (continuous range)	10 dB min.
(4096 steps remote)	
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	
Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.	
Modulation Capability	
Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.	
Third Order Intercept Point	56 dBm typ.
Noise Figure	10 dB typ.
Harmonic Distortion	Minus 20 dBc max. at 60 watts (0.7–6 GHz) Minus 73 dBc typ.
Spurious	±1 deg/100 MHz, typ.
Phase Linearity	
Primary Power (selected automatically)	
90–132, 180–250 VAC	
50/60 Hz, single phase	
550 watts max.	
Connectors	
RF	Type N female on front panel
Remote Interfaces	
IEEE-488	24-pin
RS-232	9-pin Subminiature D
RS-232 (fiber optic)	Type ST
USB 2.0	Type B
Ethernet	RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	
With Cabinet	28.4 kg (62.5 lb.)
Without Cabinet	20.2 kg (44.5 lb.)
Size (WxHxD)	
With Cabinet	50.3 x 20.3 x 54.6 cm / 19.8 x 8.0 x 21.5 in.
Without Cabinet	48.3 x 17.8 x 54.6 cm / 19.0 x 7.0 x 21.5 in.
Export Classification:	3A001

125S1G6 Solid State Amplifier



125 watts CW, 0.7–6.0 GHz

Rated Power Output	125 watts min.
Input for Rated Output	1 milliwatt max.
Power Output @ 3 dB compression	
Nominal 125 watts / min. 120 watts	
Power Output @ 1 dB compression	
Nominal 120 watts / min. 100 watts	
Flatness	±1.5 dB typ. / ±2.5 dB max.
Frequency Response	0.7–6 GHz instantaneously
Gain (at max. setting)	52 dB min.
Gain Adjustment (continuous range)	10 dB min.
(4096 steps remote)	
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	
Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.	
Modulation Capability	
Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.	
Third Order Intercept Point	58 dBm typ.
Noise Figure	10 dB typ.
Harmonic Distortion	Minus 20 dBc max. at 125 watts (0.7–6 GHz) Minus 73 dBc typ.
Spurious	±1 deg/100 MHz, typ.
Phase Linearity	
Primary Power (selected automatically)	
90–132, 180–264 VAC	
50/60 Hz, single phase	
1,200 watts max.	
Connectors	
RF	Type N female on front panel
Remote Interfaces	
IEEE-488	24-pin
RS-232	9-pin Subminiature D
RS-232 (fiber optic)	Type ST
USB 2.0	Type B
Ethernet	RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	
With Cabinet	45 kg (100 lb.)
Without Cabinet	34.5 kg (76 lb.)
Size (WxHxD)	
With Cabinet	50.3 x 30 x 61.0 cm / 19.8 x 11.8 x 24 in.
Without Cabinet	48.3 x 26.7 x 61.0 cm / 19.0 x 10.5 x 24 in.
Export Classification:	3A001

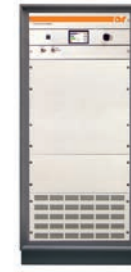
250S1G6 Solid State Amplifier



250 watts CW, 0.7–6.0 GHz

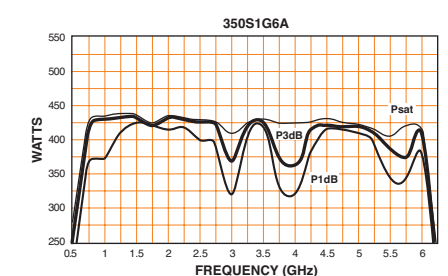
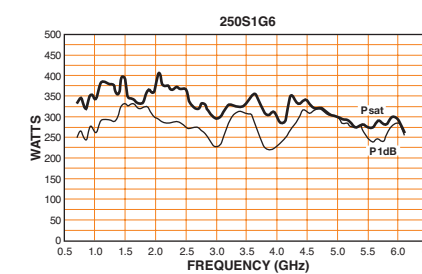
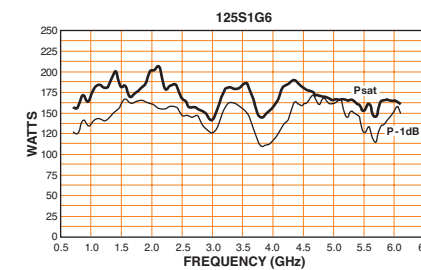
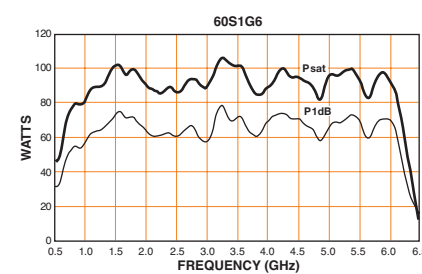
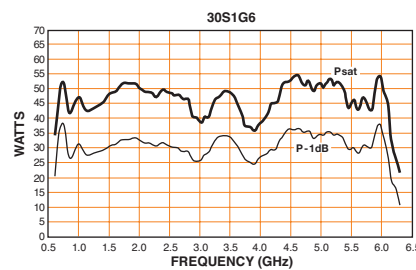
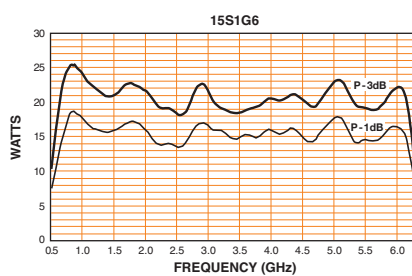
Rated Power Output	250 watts min.
Input for Rated Output	1 milliwatt max.
Power Output @ 3 dB compression	
Nominal 250 watts / min. 225 watts	
Power Output @ 1 dB compression	
Nominal 220 watts / min. 200 watts	
Flatness	±1.5 dB typ. / ±2.5 dB max.
Frequency Response	0.7–6 GHz instantaneously
Gain (at max. setting)	54 dB min.
Gain Adjustment (continuous range)	10 dB min.
(4096 steps remote)	
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	
Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.	
Modulation Capability	
Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.	
Third Order Intercept Point	60 dBm typ.
Noise Figure	10 dB typ.
Harmonic Distortion	Minus 20 dBc max. at 250 watts (0.75–6.0 GHz); 18 dBc typ. (0.7–0.75 GHz)
Spurious	Minus 73 dBc typ.
Phase Linearity	±1 deg/100 MHz, typ.
Primary Power (selected automatically)	
200–250 VAC	
50/60 Hz, single phase	
2,500 watts max.	
Connectors	
RF	Type N female on front panel
Remote Interfaces	
IEEE-488	24-pin
RS-232	9-pin Subminiature D
RS-232 (fiber optic)	Type ST
USB 2.0	Type B
Ethernet	RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	
With Cabinet	64 kg (140 lb.)
Without Cabinet	12.5 kg (27.5 lb.)
Size (WxHxD)	
With Cabinet	50.3 x 47 x 61.0 cm / 19.8 x 18.5 x 24 in.
Without Cabinet	48.3 x 44.3 x 58.5 cm / 19.0 x 17.3 x 23 in.
Export Classification:	3A001

350S1G6A Solid State Amplifier



350 watts CW, 0.7–6.0 GHz

Rated Power Output	350 watts min.
Input for Rated Output	1 milliwatt max.
Power Output @ 3 dB compression	
Nominal 370 watts / min. 315 watts	
Power Output @ 1 dB compression	
Nominal 300 watts / min. 250 watts	
Flatness	±1.5 dB typ. / ±2.5 dB max.
Frequency Response	0.7–6 GHz instantaneously
Gain (at max. setting)	56 dB min.
Gain Adjustment (continuous range)	10 dB min.
(4096 steps remote)	
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	
Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry. However, mismatch above 6.0:1 may limit output to 175 watts reflected power.	
Modulation Capability	
Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.	
Third Order Intercept Point	58 dBm typ.
Harmonic Distortion	Minus 20 dBc maximum at 300 watts (1.0–6.0 GHz); Minus 20 dBc typical at 300 watts (0.7–1.0 GHz).
Spurious	
Primary Power (selected automatically)	
200–260 VAC	
50/60 Hz, single phase	
3,600 watts max.	
Connectors	
RF input	Type N female on rear panel
RF output	Type 7-16 DIN female on rear panel
Safety Interlock	15-pin female subminiature D, rear
Remote computer interface	
IEEE-488 (GPIB) and RS-232 connector, rear	
Remote Computer Interface (Fiber Optic)	
ST Conn Tx, RS-232 Rx	
USB 2.0	Type B
Ethernet	RJ-45
Cooling	Forced air (self-contained fans)
Weight	136 kg (300 lb.)
Size (WxHxD)	50.3 x 127.0 x 61.0 cm / 19.8 x 50 x 24 in.
Export Classification:	3A001





500S1G6A Solid State Amplifier



500 watts CW, 0.7–6.0 GHz

Rated Power Output	500 watts min.
Input for Rated Output	1 milliwatt max.
Power Output @ 3 dB compression	
Nominal	525 watts / min. 475 watts
Power Output @ 1 dB compression	
Nominal	450 watts / min. 400 watts
Flatness	±1.5 dB typ. / ±2.5 dB max.
Frequency Response	0.7–6 GHz instantaneously
Gain (at max. setting)	57 dB min.
Gain Adjustment (continuous range)	10 dB min.
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry. However, mismatch above 6.0:1 may limit output to 250 watts reflected power.
Modulation Capability	Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.
Third Order Intercept Point	63 dBm typ.
Harmonic Distortion	Minus 20 dBc max. at 400 watts (1–6 GHz); Minus 20 dBc typ. at 400 watts (0.7–1 GHz)
Primary Power (selected automatically)	200–260 VAC 50/60 Hz, single phase 3,800 watts
Connectors	RF Input Type N female on rear panel RF Output Type 7-16 DIN female on rear panel
Remote Interfaces	IEEE-488 24-pin female RS-232 9-pin Subminiature D (female) Fiber optic: ST Conn Tx, RS-232 Rx (fiber optic) USB 2.0 Type B Ethernet RJ-45
Safety Interlock	15-pin Subminiature D, rear
IEEE-488 (GPIB) Interface and RS-232	Allows control and monitoring of all front panel controls except keylock position control
Cooling	Forced air (self-contained fans)
Weight	136 kg (300 lb.)
Size (WxHxD)	50.3 x 127.0 x 61.0 cm / 19.8 x 50 x 24 in.
Export Classification:	3A001

125S1G2z5 Solid State Amplifier



125 watts CW, 1.0–2.5 GHz

Rated Power Output	140 watts typ., 125 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	
Typ.	130 watts, min. 115 watts
Power Output @ 1 dB compression	
Typ.	110 watts, min. 90 watts
Flatness	±1.5 dB typ. / ±2.0 dB max.
Frequency Response	1.0–2.5 GHz instantaneously
Gain (at max. setting)	54 dB min.
Gain Adjustment (continuous range)	20 dB min.
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.
Modulation Capability	Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.
Third Order Intercept Point	60 dBm typ.
Noise Figure	12 dB max.; 10 dB typ.
Harmonic Distortion	Minus 20 dBc max. at 100 watts Minus 30 dBc typ. at 100 watts Minus 73 dBc typ.
Spurious	Minus 73 dBc typ.
Primary Power (selected automatically)	100–240 VAC 50/60 Hz 650 watts
Connectors	RF input Type N female RF output Type N female
Remote Interfaces	IEEE-488 24-pin female RS-232 9-pin Subminiature D (female) Fiber optic: ST Conn Tx and Rx RS-232 USB 2.0 Type B Ethernet RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Acoustical Noise @ 1 Meter	Front: 60 dBA Side: 59 dBA Rear: 66 dBA
Weight	With Cabinet 36.7 kg (81 lb.) Without Cabinet 25.4 kg (56 lb.)
Size (WxHxD)	With cabinet 50.3 x 20.5 x 74.9 cm / 19.8 x 8.1 x 29.5 in. Without Cabinet 48.3 x 17.7 x 74.9 cm / 19 x 7.0 x 29.5 in.
Environmental	Storage Temperature -20°C/+50°C
Export Classification:	EAR99

250S1G2z5B Solid State Amplifier



250 watts CW, 1.0–2.5 GHz

Rated Power Output	300 watts typ., 250 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	
Typ.	275 watts, min. 250 watts
Power Output @ 1 dB compression	
Typ.	225 watts, min. 200 watts
Flatness	±1.5 dB typ. / ±2.0 dB max.
Frequency Response	1.0–2.5 GHz instantaneously
Gain (at max. setting)	58 dB min.
Gain Adjustment (continuous range)	20 dB min.
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.
Modulation Capability	Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.
Third Order Intercept Point	62 dBm typ.
Noise Figure	12 dB max.; 10 dB typ.
Harmonic Distortion	Minus 20 dBc max. at 200 watts Minus 30 dBc typ. at 200 watts Minus 73 dBc typ.
Spurious	Minus 73 dBc typ.
Primary Power (selected automatically)	100–240 VAC 50/60 Hz, single phase 1,200 watts max.
Connectors	RF input Type N female on front panel RF output Type N female on front panel
Remote Interfaces	IEEE-488 24-pin female RS-232 9-pin Subminiature D (female) Fiber optic: ST Conn Tx and Rx RS-232 USB 2.0 Type B Ethernet RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	With Cabinet 42.6 kg (94 lb.) Without Cabinet 31.3 kg (69 lb.)
Size (WxHxD)	With cabinet 50.3 x 20.5 x 74.9 cm / 19.8 x 8.1 x 29.5 in. Without Cabinet 48.3 x 17.7 x 74.9 cm / 19 x 7.0 x 29.5 in.
Export Classification:	EAR99

500S1G2z5A Solid State Amplifier



500 watts CW, 1.0–2.5 GHz

Rated Power Output	550 watts nominal, 500 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	
Nominal	550 watts / min. 450 watts
Power Output @ 1 dB compression	
Nominal	400 watts / min. 350 watts
Flatness	±1.5 dB typ. / ±2.0 dB max. ±0.5 dB typ. with internal leveling
Frequency Response	1.0–2.5 GHz instantaneously
Gain (at max. setting)	57 dB min.
Gain Adjustment (continuous range)	20 dB min.
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.
Modulation Capability	Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.
Third Order Intercept Point	66 dBm typ.
Noise Figure	10 dB typ.
Harmonic Distortion	Minus 20 dBc max. at 350 watts Minus 20 dBc typ. at 500 watts Minus 73 dBc typ.
Spurious	Minus 73 dBc typ.
Phase Linearity	±1.0 deg/100 MHz, typ.
Primary Power (selected automatically)	100–240 VAC 50/60 Hz 2,250 watts max.
Connectors	RF input Type N female RF output Type 7/16 female
Remote Interfaces	IEEE-488 24-pin female RS-232 9-pin Subminiature D (female) Fiber Optic ST Conn Tx and Rx RS-232 USB 2.0 Type B Ethernet RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Acoustical Noise @ 1 Meter	Front: 56 dBA Side: 57 dBA Rear: 64 dBA
Weight	With Cabinet 64.9 kg (143 lb.) Without Cabinet 50.3 kg (111 lb.)
Size (WxHxD)	With cabinet 50.3 x 20.5 x 74.9 cm / 19.8 x 8.1 x 29.5 in. Without Cabinet 48.3 x 17.7 x 74.9 cm / 19 x 7.0 x 29.5 in.
Environmental	Storage Temperature -20°C/+50°C
Export Classification:	EAR99

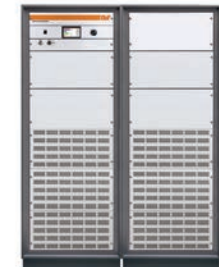
1000S1G2z5B Solid State Amplifier



1,000 watts CW, 1.0–2.5 GHz

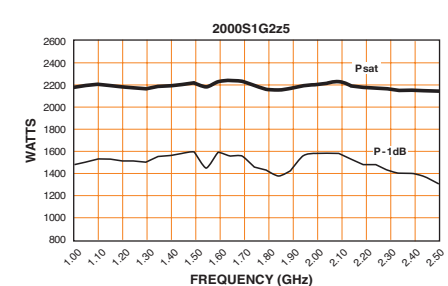
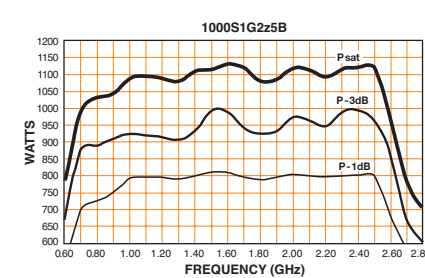
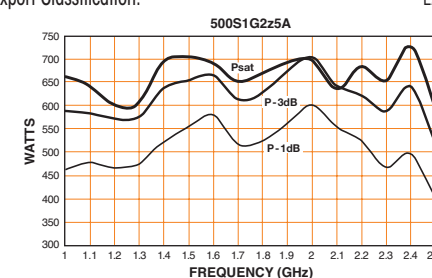
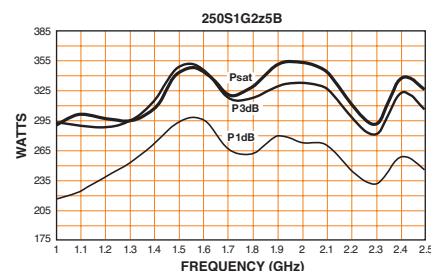
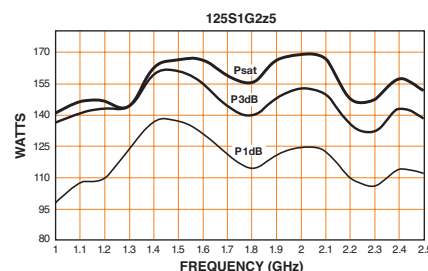
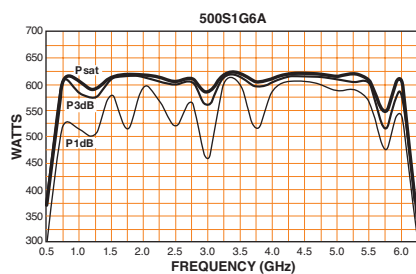
Rated Power Output	1,000 watts min.
Input for Rated Output (0 dBm)	1 milliwatt max.
Power Output @ 3 dB compression	
Nominal	1,000 watts / min. 925 watts
Power Output @ 1 dB compression	
Nominal	850 watts / min. 725 watts
Flatness	±1.5 dB typ. / ±2.0 dB max.
Frequency Response	1–2.5 GHz instantaneously
Gain (at max. setting)	60 dB min.
Gain Adjustment (continuous range)	20 dB min.
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.
Modulation Capability	Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.
Third Order Intercept Point	69 dBm typ.
Noise Figure	10 dB typ.
Harmonic Distortion	Minus 20 dBc max. at 800 watts Minus 20 dBc typ. at 1,000 watts Minus 73 dBc typ.
Spurious	Minus 73 dBc typ.
Primary Power (selected automatically)	200–240 VAC 50/60 Hz, single phase 4,200 watts max.
Connectors	RF input Type N female on rear panel RF output Type 7/8 EIA female on rear panel
Remote Interfaces	IEEE-488 24-pin female RS-232 9-pin Subminiature D (female) RS-232 (fiber optic) Type ST USB 2.0 Type B Ethernet RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Acoustical Noise @ 1 Meter	Front: 44 dBA Side: 68 dBA Rear: 72 dBA
Weight	131.5 kg (290 lb.)
Size (WxHxD)	56.1 x 97.8 x 82.5 cm / 22.1 x 38.5 x 32.5 in.
Environmental	Storage Temperature -20°C/+50°C
Export Classification:	EAR99

2000S1G2z5 Solid State Amplifier



2,000 watts CW, 1.0–2.5 GHz

Rated Power Output	2,100 watts min.
Input for Rated Output	1 milliwatt max.
Power Output @ 3 dB compression	
Nominal	1,850 watts / min. 1,750 watts
Power Output @ 1 dB compression	
Nominal	1,500 watts / min. 1,300 watts
Average Output Power @ 3.2 GHz and Above:	Less than 60 watts
Flatness	±1.5 dB typ. / ±2.0 dB max.
Frequency Response	1–2.5 GHz instantaneously
Gain (at max. setting)	63 dB min.
Gain Adjustment (continuous range)	20 dB min.
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance*	Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry. *100% of rated power without foldback up to 6.0:1 mismatch above which may limit to 1,000 watts reflected power. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
Modulation Capability	Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.
Third Order Intercept Point	70 dBm typ.
Noise Figure	10 dB typ.
Harmonic Distortion	Minus 20 dBc max. at 1,400 watts
Spurious	Minus 73 dBc typ.
Primary Power (selected automatically)	208 VAC, WYE (5-wire) 50/60 Hz, 3-phase, 12 kVA
Connectors	RF input Type N female on rear panel RF output Type 1-5/8 EIA female on rear panel
Remote computer interfaces	IEEE-488 24-pin RS-232 9-pin subminiature D RS-232 Fiber Optic Type ST USB 2.0 Type B Ethernet RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	296 kg (650 lb.)
Size (WxHxD)	2 joined cabinets: 111.8 x 123.7 x 83 cm / 44.0 x 48.7 x 32.4 in.
Base Requirements:	3-in. diameter/2-in. wide casters, height adjustable over 1 in.; must accommodate forklift.
Export Classification:	EAR99





3000S1G2z5 Solid State Amplifier

20S6G18-L Solid State Amplifier

40S6G18-L Solid State Amplifier



3,000 watts CW, 1.0–2.5 GHz

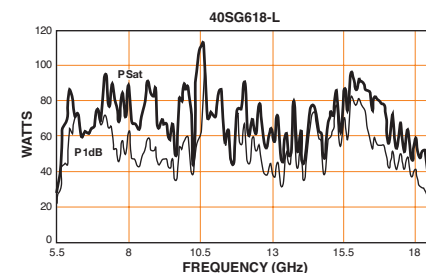
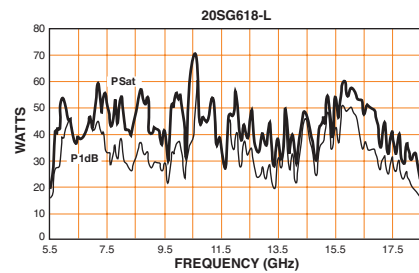
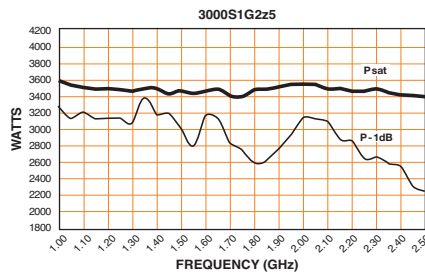
**Rated Power Output** 3,000 watts min.  
**Input for Rated Output** 1 milliwatt max.  
**Power Output @ 3 dB compression**  
 Nominal 2,750 watts / min. 2,600 watts  
**Power Output @ 1 dB compression**  
 Nominal 2,300 watts / min. 2,000 watts  
**Average Output Power @ 3.2 GHz And Above:**  
 Less than 60 watts  
**Flatness** ±1.5 dB typ. / ±2.0 dB max.  
**Frequency Response** 1–2.5 GHz instantaneously  
**Gain (at max. setting)** 64 dB min.  
**Gain Adjustment (continuous range)** 20 dB min.  
 (4096 steps remote)  
**Input Impedance** 50 ohms, VSWR 2.0:1 max.  
**Output Impedance** 50 ohms, nominal  
**Mismatch Tolerance\***  
 100% of rated power without foldback up to 6.0:1 mismatch above which may limit to 1,500 watts reflected power. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.  
 \*See Application Note—Importance of Mismatch Tolerance for Amplifiers Used in Susceptibility Testing.  
**Modulation Capability**  
 Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.  
**Third Order Intercept Point** 72 dBm typ.  
**Noise Figure** 10 dB typ.  
**Harmonic Distortion** Minus 20 dBc max. at 2,200 watts  
**Spurious** Minus 73 dBc typ.  
**Primary Power (selected automatically)**  
 208 VAC, WYE (5-wire)  
 50/60 Hz, 3-phase, 17.5 kVA  
**Connectors**  
 RF input Type N female on rear panel  
 RF output Type 1-5/8 EIA female on rear panel  
**Remote computer interfaces**  
 IEEE-488 24-pin  
 RS-232 9-pin subminiature D  
 RS-232 Fiber Optic Type ST  
 USB 2.0 Type B  
 Ethernet RJ-45  
**Safety Interlock** 15-pin Subminiature D  
**Cooling** Forced air (self-contained fans)  
**Weight** 432 kg (950 lb.)  
**Size (WxHxD)** 2 joined cabinets:  
 111.8 x 149.9 x 83 cm / 44.0 x 59 x 32.4 in.  
**Base Requirements:** 3 in. diameter/2 in. wide casters, height adjustable over 1 in. Must accommodate forklift.  
**Export Classification:** EAR99

20 watts CW, 6.0–18 GHz

**Rated Power Output** 20 watts min.  
**Input for Rated Output** 1 milliwatt max., 0 dBm  
**Power Output @ 3 dB compression**  
 Nominal 25 watts / min. 18 watts  
**Power Output @ 1 dB compression**  
 Nominal 22 watts / min. 15 watts  
**Power Gain Flatness (0 dBm IN)** ±2 dB typ. / ±3 dB max.  
**Frequency Response** 6.0–18 GHz instantaneously  
**Gain (at max. setting)** 43 dB min.  
**Gain Adjustment (continuous range)** 10 dB min.  
**Input Impedance** 50 ohms, VSWR 2.5:1 max.  
**Output Impedance** 50 ohms, nominal  
**Mismatch Tolerance**  
 Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.  
**Modulation Capability**  
 Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.  
**Third Order Intercept Point** 49 dBm typ.  
**Harmonic Distortion** Minus 20 dBc max. at 20 watts  
**Primary Power (selected automatically)**  
 90–132, 180–264 VAC  
 50/60 Hz, single phase  
 <700 watts max.  
**Connectors**  
 RF input Precision N female on front panel  
 RF output Precision N female on front panel  
**Remote Interfaces**  
 IEEE-488 24-pin female  
 RS-232 9-pin Subminiature D (female)  
 RS-232 (fiber optic) Type ST  
 USB 2.0 Type B  
 Ethernet RJ-45  
**Safety Interlock** 15-pin Subminiature D  
**Cooling** Forced air (internal self-contained liquid)  
**Weight** w/cabinet: 31.75 kg (70 lb.)  
 w/o cabinet: 20.4 kg (45 lb.)  
**Size (WxHxD)**  
 w/cabinet: 50.3 x 20.6 x 62.2 cm / 19.8 x 8.1 x 24.5 in.  
 w/o cabinet: 48.3 x 17.8 x 62.2 cm / 19.0 x 7.0 x 24.5 in.  
**Export Classification:** 3A001

40 watts CW, 6.0–18 GHz

**Rated Power Output** 40 watts min.  
**Input for Rated Output** 1 milliwatt max., 0 dBm  
**Power Output @ 3 dB compression**  
 Nominal 45 watts / min. 35 watts  
**Power Output @ 1 dB compression**  
 Nominal 30 watts / min. 22 watts  
**Power Gain Flatness (0 dBm IN)** ±2 dB typ. / ±3 dB max.  
**Frequency Response** 6.0–18 GHz instantaneously  
**Gain (at max. setting)** 46 dB min.  
**Gain Adjustment (continuous range)** 10 dB min.  
**Input Impedance** 50 ohms, VSWR 2.5:1 max.  
**Output Impedance** 50 ohms, nominal  
**Mismatch Tolerance**  
 Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.  
**Modulation Capability**  
 Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal.  
**Third Order Intercept Point** 52 dBm typ.  
**Harmonic Distortion** Minus 20 dBc max. at 40 watts  
**Primary Power (selected automatically)**  
 100–240 VAC  
 50/60 Hz, single phase  
 <1,200 watts max.  
**Connectors**  
 RF input Precision N female on front panel  
 RF output Precision N female on front panel  
**Remote Interfaces**  
 IEEE-488 24-pin female  
 RS-232 9-pin Subminiature D (female)  
 RS-232 (fiber optic) Type ST  
 USB 2.0 Type B  
 Ethernet RJ-45  
**Safety Interlock** 15-pin Subminiature D  
**Cooling** Forced air (internal self-contained liquid)  
**Weight** w/cabinet: 35 kg (77 lb.)  
 w/o cabinet: 25.9 kg (57 lb.)  
**Size (WxHxD)**  
 w/cabinet: 50.2 x 20.6 x 63.2 cm / 19.8 x 8.1 x 24.9 in.  
 w/o cabinet: 48.3 x 18.0 x 62.5 cm / 19.0 x 7.1 x 24.6 in.  
**Export Classification:** 3A001





## Dual-Band, Class A Solid State Amplifiers

We put two of our state-of-the-art Class A CW amplifiers in a single chassis to address your needs and provide an easy to use amplifier system. With AR's dual-band amplifiers, you have freedom like never before.

The dual-band amplifiers combine two amplifiers in one package, enabling you to cover a wider frequency with one dual-band amplifier that requires less space and costs and weighs less than two individual solid state amplifiers.

Our dual-band amplifiers are mismatch tolerant, so they provide damage and oscillation protection when connected to any load impedance. These amplifiers can be used for EMC, EW, and other applications because they are linear and extremely load tolerant. They operate without damage or oscillation with any magnitude and phase of source and load impedance.

All our amplifiers have modulation capability that faithfully reproduces AM, FM, or pulse modulation that appears on the input signal. The AM peak envelope power is limited to specified power.

### Some Benefits To Our Customers:

- Single unit eliminates need for external switches, resulting in less complexity and lower unit cost
- Simplify setup and improve throughput by not having to change antenna, coupler, or control interface
- Single unit more compact when space is an issue
- Less bulk and weight results in easier handling
- No foldback provides the maximum power to the load—you get the power you paid for
- Future upgradability results in lower upgrade costs on select models

### From 700 MHz To 18 GHz "S" Series Solid State Dual-Band Amplifiers

These dual-band units supply you with up to 60 watts in the first 0.7–6 GHz band split and up to 40 watts output power in the 6–18 GHz split. A few of the applications benefiting from these models include immunity testing, EW, calibration, R&D, and material testing.

These versatile dual-band amplifiers also have the flexibility to be upgraded to higher power levels for each specific frequency range.

### From 10 kHz To 1,000 MHz Solid State Dual-Band Amplifiers

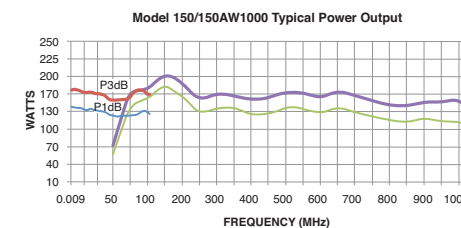
Applications specific dual-band amplifiers are ready for the job! With AR's state-of-the-art design capabilities, these dual-band amplifiers help the user be more productive while watching the bottom line. Capabilities allow us to combine the best of our single band amplifiers to exceed requirements of standards such as near-field immunity, IEC EN61000, and MIL-STD 461 CS114 Navy.

### 150/150AW1000 Dual-Band Solid State Amplifier



#### 150/130 watts, 10 kHz–1,000 MHz

Rated Power Output	150 watts min (10 kHz–100 MHz) 130 watts min (80–1,000 MHz)
Input for Rated Output	1.0 milliwatt max., 0 dBm
Power Output @ 3 dB compression	Nominal 165 watts (10 kHz–100 MHz) 150 watts (80–1,000 MHz) Minimum 140 watts (10 kHz–100 MHz) 125 watts (80–1,000 MHz)
Power Output @ 1 dB compression	Nominal 135 watts (10 kHz–100 MHz) 125 watts (80–1,000 MHz) Minimum 110 watts (10 kHz–100 MHz) 100 watts (80–1,000 MHz)
Power Gain Flatness (0 dBm IN)	±1.0 dB typ., ±1.5 dB max. (10 kHz–100 MHz) ±1.5 dB typ., ±2.0 dB max. (80–1,000 MHz)
Frequency Response	10 kHz–100 MHz instantaneously 80–1,000 MHz instantaneously
Power Gain (at max. setting)	51.8 dB min. (10 kHz–100 MHz) 52 dB min. (80–1,000 MHz)
Gain Adjustment (continuous range)	20 dB min.
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.
Spurious	Minus 73 dBc typ.
Harmonic Distortion	Minus 20 dBc max. at 100 watts -30 dBc typ. at 70 watts (10 kHz–100 MHz) -30 dBc typ. at 100 watts (80–1,000 MHz)
Third Order Intercept Point	55 dBm typ. (10 kHz–100 MHz) 58 dBm typ. (80–1,000 MHz)
Noise Figure	8 dB typ. (10 kHz–100 MHz) 8 dB max., 6 dB typ. (80–1,000 MHz)
Primary Power (Universal; selected automatically)	100–240 VAC, 50/60 Hz 500 watts (10 kHz–100 MHz) 650 watts max. (80–1,000 MHz)
Connectors	RF input Type N female RF output Type N female
Standard Remote Interfaces	IEEE-488 24-pin female RS-232 9-pin Subminiature D Female RS-232 (fiber optic) Type ST USB 2.0 Type B Ethernet RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (internal self-contained liquid)
Weight	With Cabinet 42.6 kg (94 lb.) Without Cabinet 31.3 kg (69 lb.)
Size (WxHxD)	With Cabinet 50.3 x 20.5 x 74.9 cm / 19.8 x 8.1 x 29.5 in. Without Cabinet 48.3 x 17.7 x 74.9 cm / 19.0 x 7.0 x 29.5 in.
Export Classification:	EAR99

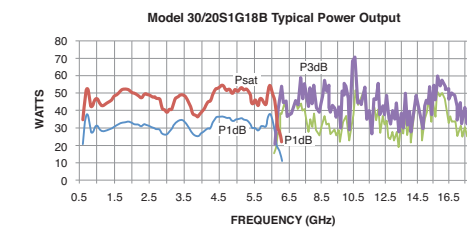


### 30/20S1G18B Dual-Band Solid State Amplifier



#### 30/20 watts, 0.7 GHz–18 GHz

Rated Power Output	30 watts min (0.7–6 GHz), 20 watts min (6–18 GHz)
Input for Rated Output	1.0 milliwatt max., 0 dBm
Power Output @ 3 dB compression	Nominal 35 watts (0.7–6 GHz), 25 watts (6–18 GHz) Minimum 26 watts (0.7–6 GHz), 18 watts (6–18 GHz)
Power Output @ 1 dB compression	Nominal 30 watts (0.7–6 GHz), 22 watts (6–18 GHz) Minimum 22 watts (0.7–6 GHz), 15 watts (6–18 GHz)
Power Gain Flatness (0 dBm IN)	±1.5 dB typ., ±2.0 dB max. (0.7–6 GHz) ±2.0 dB typ., ±3.0 dB max. (6–18 GHz)
Frequency Response	0.7–6 GHz instantaneously 6–18 GHz instantaneously
Power Gain (at max. setting)	44 dB min. (0.7–6 GHz) 43 dB min. (6–18 GHz)
Input Impedance	50 ohms, VSWR 2.5:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.
Spurious	Minus 73 dBc typ.
Harmonic Distortion	Minus 20 dBc max. at 30 watts (0.7–6 GHz) Minus 20 dBc max. at 20 watts (6–18 GHz)
Third Order Intercept Point	50 dBm typ. (0.7–6 GHz) 49 dBm typ. (6–18 GHz)
Noise Figure	10 dB typ.
Primary Power	90–264 VAC 50/60 Hz, single phase 300 watts max. (0.7–6 GHz) 600 watts max. (6–18 GHz)
Connectors	RF input Type N female front panel RF output Type N female front panel
Standard Remote Interfaces	IEEE-488 24-pin female RS-232 9-pin Subminiature D Female RS-232 (fiber optic) Type ST USB 2.0 Type B Ethernet RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	With Cabinet 42 kg (93 lb.) Without Cabinet 31 kg (68 lb.)
Size (WxHxD)	With Cabinet 50.3 x 34 x 62.2 cm / 19.8 x 13.4 x 24.5 in. Without Cabinet 48.3 x 31.2 x 62.2 cm / 19.0 x 12.3 x 24.5 in.
Export Classification:	3A001

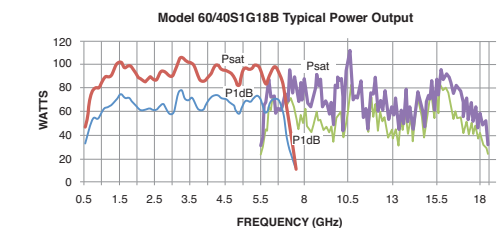


### 60/40S1G18B Dual-Band Solid State Amplifier



#### 60/40 watts, 0.7 GHz–18 GHz

Rated Power Output	60 watts min (0.7–6 GHz), 40 watts min (6–18 GHz)
Input for Rated Output	1.0 milliwatt max., 0 dBm
Power Output @ 3 dB compression	Nominal 60 watts (0.7–6 GHz), 46 watts (6–18 GHz) Minimum 55 watts (0.7–6 GHz), 35 watts (6–18 GHz)
Power Output @ 1 dB compression	Nominal 57 watts (0.7–6 GHz), 30 watts (6–18 GHz) Minimum 50 watts (0.7–6 GHz), 22 watts (6–18 GHz)
Power Gain Flatness (0 dBm IN)	±1.5 dB typ., ±2.0 dB max. (0.7–6 GHz) ±2.0 dB typ., ±3.0 dB max. (6–18 GHz)
Frequency Response	0.7–6 GHz instantaneously 6–18 GHz instantaneously
Power Gain (at max. setting)	48 dB min (0.7–6 GHz), 46 dB min (6–18 GHz)
Input Impedance	50 ohms, VSWR 2.5:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.
Spurious	Minus 73 dBc typ.
Harmonic Distortion	Minus 20 dBc max. at 60 watts (0.7–6 GHz) Minus 20 dBc max. at 40 watts (6–18 GHz)
Third Order Intercept Point	54 dBm typ. (0.7–6 GHz) 52 dBm typ. (6–18 GHz)
Noise Figure	10 dB typ.
Primary Power	90–264 VAC 50/60 Hz, single phase 550 watts max. (0.7–6 GHz) <1,000 watts max. (6–18 GHz)
Connectors	RF input Type N female front panel RF output Type N female front panel
Standard Remote Interfaces	IEEE-488 24-pin female RS-232 9-pin Subminiature D Female RS-232 (fiber optic) Type ST USB 2.0 Type B Ethernet RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	With Cabinet 52.2 kg (115 lb.) Without Cabinet 40.1 kg (88 lb.)
Size (WxHxD)	With Cabinet 50.3 x 34 x 62.2 cm / 19.8 x 13.4 x 24.5 in. Without Cabinet 48.3 x 31.2 x 62.2 cm / 19.0 x 12.3 x 24.5 in.
Export Classification:	3A001





# AR's Class AB Solid State Power Amplifiers

AR is now offering a choice between our world-renowned Class A amplifiers in the 1–6 GHz frequency range and our Class AB designs when there are stringent demands for a combination of power, size, and cost.

These amplifiers feature a very cost effective solution for various applications where the linearity and extreme ruggedness of Class A designs are not required. The Class AB configuration affords almost twice the output power as a Class A approach in the same footprint in addition to providing higher efficiency at a substantially lower unit price.

Applications that can benefit from these products:

- Military jammers
- Wireless testing
- TWT replacements
- Calibration
- Laboratory general testing
- Limited EMC testing

### Features and Benefits

- Wideband power—One amplifier does the work of two of our competitors
- Higher power capability than Class A designs at minimal price increase
- Higher efficiency—Less current draw for critical requirements
- Versatility—Can be used for wireless and EW applications

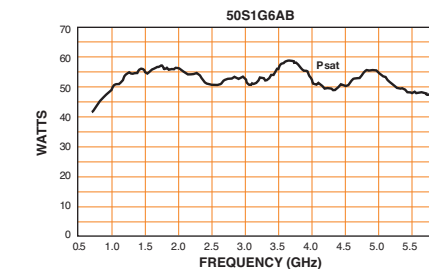


50S1G6AB Solid State Amplifier



### 50 watts CW, 1.0–6.0 GHz

Rated Power Output	50 watts min. (1–6 GHz)
Small signal gain flatness	±1.0 dB typical / ±2.0 dB maximum
Frequency Response	1.0–6 GHz instantaneously
Gain (at max. setting)	47 dB min.
Gain Adjustment (continuous range)	15 dB min. (4096 steps remote)
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance @ rated $P_{out}$	3:1 at all load phase
Modulation Capability	Faithfully reproduce AM, FM, or pulse modulation appearing on the input signal
Third Order Intercept Point	56 dBm typ.
Noise Figure	10 dB typ.
Harmonic Distortion	-20 dBc typ. at 40W, -15 dBc max. at 40W
Spurious	Minus 73 dBc typ.
Phase linearity	1.0 deg/100 MHz, typical
Primary Power (selected automatically)	90–132, 180–250 VAC; 50–400 Hz, single phase; 500 watts maximum
Connectors	RF input: Type N female on front panel; RF output: Type N female on front panel
Remote interfaces	IEEE-488: 24-pin; RS-232: 9-pin Subminiature D; RS-232 (fiber optic): Type ST; USB 2.0: Type B; Ethernet: RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	With cabinet: 15.9 kg (35 lb.); Without cabinet: 10.2 kg (22.5 lb.)
Size (WxHxD)	With cabinet: 50.3 x 15.5 x 37.6 cm / 19.8 x 6.1 x 14.8 in.; Without cabinet: 48.3 x 12.7 x 37.6 cm / 19.0 x 5.25 x 14.8 in.
Export Classification	EAR99

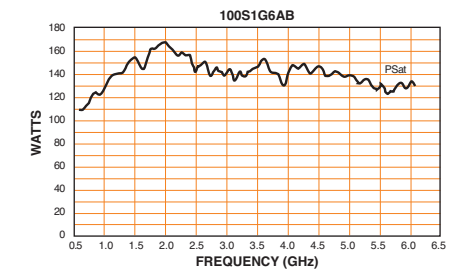


100S1G6AB Solid State Amplifier



### 100 watts CW, 1.0–6.0 GHz

Rated Power Output	100 watts min. (1–6 GHz)
Input for Rated Output	1 milliwatt max.
Small signal gain flatness	±1.5 dB typical / ±2.5 dB maximum
Frequency Response	1.0–6 GHz instantaneously
Gain (at max. setting)	50 dB min.
Gain Adjustment (continuous range)	10 dB min. (4096 steps remote)
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance @ rated $P_{out}$	Infinite VSWR. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
Modulation Capability	Faithfully reproduce AM, FM, or pulse modulation appearing on the input signal
Third Order Intercept Point	56 dBm typ.
Noise Figure	10 dB typ.
Harmonic Distortion	-15 dBc typical at rated power
Spurious	Minus 73 dBc typ.
Phase linearity	1.0 deg/100 MHz, typical
Primary Power (selected automatically)	90–132, 180–250 VAC; 50/60 Hz, single phase; 525 watts maximum
Connectors	RF input: Type N female on front panel; RF output: Type N female on front panel
Remote interfaces	IEEE-488: 24-pin; RS-232: 9-pin Subminiature D; RS-232 (fiber optic): Type ST; USB 2.0: Type B; Ethernet: RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	With cabinet: 28.4 kg (62.5 lb.); Without cabinet: 20.2 kg (44.5 lb.)
Size (WxHxD)	With cabinet: 50.3 x 20.3 x 54.6 cm / 19.8 x 8.0 x 21.5 in.; Without cabinet: 48.3 x 17.8 x 54.6 cm / 19.0 x 7.0 x 21.5 in.
Export classification	3A001







## Why AR Solid State Pulsed Amplifiers Should Be on Your Radar

For automotive and military EMC radiated immunity susceptibility testing, as well as radar and communication applications, there is now a very attractive alternative to Traveling Wave Tube Amplifiers (TWTAs).

AR's offerings include various frequency ranges and output power levels to meet several standards. Designs can be tailored to suit your specific application. These amplifiers feature a touchscreen control panel, GPIB interface, TTL gating, fault monitoring, and forced air cooling.

### Features and Benefits for These Rugged Amplifiers:

- Octave Frequencies: 1-2 GHz and 2-4 GHz
- Narrowband Frequencies: 1.2-1.4 GHz and 2.7-3.1 GHz
- Power Levels: 1 kW to 15 kW
- Harmonic Distortion of -18 dBc @ 1 dB compression point
- Pulse Widths to 100  $\mu$ sec. and Duty Cycles to 10%
- High Mean Time To Failure (MTTF)
- Mismatch Tolerance—Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.
- Numerous Applications Possible—Automotive, MIL STD 464, DO-160 and Military Radar

Call AR Applications Engineers at 800.933.8181 for specific needs not covered by these amplifiers.





# 1 to 2 GHz Pulse

# 1.2 to 1.4 GHz Pulse

1300SP1G2 Pulsed Amplifier

2000SP1G2 Pulsed Amplifier

4000SP1G2 Pulsed Amplifier

8000SP1G2 Pulsed Amplifier

1500SP1z2G1z4 Pulsed Amplifier

4000SP1z2G1z4 Pulsed Amplifier



**1,300 watts, 1–2 GHz Pulse**

Rated Power Output	1,300 watts min.
Input for Rated Output	1 milliwatt max.
Flatness	±1.5 dB typ. / ±2.5 dB max.
Frequency Response	1–2 GHz instantaneously
Gain (at max. setting)	61.2 dB min.
Gain Adjustment	Continuous Range 20 dB min., (4096 steps remote)
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Output pulse width foldback protection at peak reflected power exceeding 650 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
Pulse Capability	
Pulse Width	0.1–50 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	6% max.
RF Rise and Fall	30 ns max. (10%–90%)
Delay	1 µs max. from pulse input to RF 90%
Pulse Width Distortion	±25 ns max. (difference between TTL Input Gate and RF pulse)
Pulse Off Isolation	60 dB min.
Pulse Input	TTL level, 50 ohm nominal termination
Noise Figure	12 dB typ.
Harmonic Distortion	15 dBc max. up to 1.2 GHz@800W; -20 dBc max. 1.2 GHz–2.0 GHz
Spurious	Minus 60 dBc typ.
Primary Power	100–264 VAC 50/60 Hz, single phase 500 watts max.
Connectors	
RF input	Type N female on front panel
RF output	Type 7-16 DIN female on front panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
Remote Interfaces	
IEEE-488	24-pin
Ethernet	RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	40 kg (88 lb.)
Size (WxHxD)	50.3 x 27.6 x 75 cm / 19.8 x 10.8 x 27 in.
Export Classification	3A999.d

**2,000 watts, 1–2 GHz Pulse**

Rated Power Output	2,000 watts min.
Input for Rated Output	1 milliwatt max.
Flatness	±1.5 dB typ. / ±2.5 dB max.
Frequency Response	1–2 GHz instantaneously
Gain (at max. setting)	63 dB min.
Gain Adjustment	Continuous Range 20 dB min., (4096 steps remote)
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Output pulse width foldback protection at peak reflected power exceeding 1,000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
Pulse Capability	
Pulse Width	0.1–50 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	6% max.
RF Rise and Fall	30 ns max. (10%–90%)
Delay	1 µs max. from pulse input to RF 90%
Pulse Width Distortion	±25 ns max. (difference between TTL Input Gate and RF pulse)
Pulse Off Isolation	60 dB min.
Pulse Input	TTL level, 50 ohm nominal termination
Noise Figure	12 dB typ.
Harmonic Distortion	-15 dBc max. up to 1.2 GHz; -20 dBc max. 1.2 GHz–2.0 GHz
Spurious	Minus 60 dBc typ.
Primary Power	100–264 VAC 50/60 Hz, single phase 800 watts max.
Connectors	
RF input	Type N female on front panel
RF output	Type 7-16 DIN female on front panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
Remote Interfaces	
IEEE-488	24-pin
Ethernet	RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	42 kg (93 lb.)
Size (WxHxD)	50.3 x 20.3 x 76.2 cm / 19.8 x 8.0 x 30 in.
Export Classification	3A999.d

**4,000 watts, 1–2 GHz Pulse**

Rated Power Output	4,000 watts min.
Input for Rated Output	1 milliwatt max.
Flatness	±1.5 dB typ. / ±2.5 dB max.
Frequency Response	1–2 GHz instantaneously
Gain (at max. setting)	66 dB min.
Gain Adjustment	Continuous Range 20 dB min., (4096 steps remote)
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Output pulse width foldback protection at peak reflected power exceeding 2,000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
Pulse Capability	
Pulse Width	0.1–50 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	6% max.
RF Rise and Fall	30 ns max. (10%–90%)
Delay	1 µs max. from pulse input to RF 90%
Pulse Width Distortion	±20 ns max. (difference between TTL Input Gate and RF pulse)
Pulse Off Isolation	60 dB min.
Pulse Input	TTL level, 50 ohm nominal termination
Noise Figure	12 dB typ.
Harmonic Distortion	-15 dBc up to 1.2 GHz@2,500W; -20 dBc up to 2.0 GHz
Spurious	Minus 60 dBc typ.
Primary Power	100–264 VAC 50/60 Hz, single phase 1,500 watts max.
Connectors	
RF input	Type N female on front panel
RF output	Type 7-16 DIN female on front panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
Remote Interfaces	
IEEE-488	24-pin
Ethernet	RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	170 kg (375 lb.)
Size (WxHxD)	50.3 x 55.0 x 72.0 cm / 19.8 x 21.7 x 28.3 in.
Export Classification	3A999.d

**8,000 watts, 1–2 GHz Pulse**

Rated Power Output	8,000 watts min.
Input for Rated Output	1 milliwatt max.
Flatness	±1.5 dB typ. / ±2 dB max.
Frequency Response	1–2 GHz instantaneously
Gain (at max. setting)	69 dB min.
Gain Adjustment	Continuous Range 20 dB min., (4096 steps remote)
Input Impedance	50 ohms
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Output pulse width foldback protection above 3,800W minimum reflected power. No foldback or automatic leveling control on reflected power. If protection is activated, RF output is forced "off".
Pulse Capability	
Pulse Width	0.1–50 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	6% max.
RF Rise and Fall	30 ns max. (10%–90%)
Delay	1 µs max. from pulse input to RF 90%
Pulse Width Distortion	±25 ns max. (difference between TTL Input Gate and RF pulse)
Pulse Off Isolation	60 dB min.
Pulse Input	TTL level, 50 ohm nominal termination
Noise Figure	12 dB typ.
Harmonic Distortion	Minus 20 dBc max. at 5,000 watts Minus 15 dBc max. at 5,000 watts < 1.2 GHz Minus 20 dBc max. at 5,000 watts ≥ 1.2 GHz
Spurious	Minus 60 dBc typ.
Primary Power	100–264 VAC 50/60 Hz, single phase 2,500 watts max.
Connectors	
RF input	Type N female on front panel
RF output	7/16 DIN female on front panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
Remote Interfaces	
IEEE-488	24-pin
Ethernet	RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	120 kg (265 lb.)
Size (WxHxD)	50.3 x 52.0 x 96.5 cm / 19.8 x 20.5 x 38 in.
Export Classification	3A999.d

**1,500 watts, 1.2–1.4 GHz Pulse**

Rated Power Output	1,500 watts min.
Input for Rated Output	1 milliwatt max.
Flatness	±1.0 dB typ. / ±2.0 dB max.
Frequency Response	1.2–1.4 GHz instantaneously
Gain (at max. setting)	61.8 dB min.
Gain Adjustment	Continuous Range 20 dB min., (4096 steps remote)
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Output pulse width foldback protection at peak reflected power exceeding 500 watts. Will operate without damage or oscillation when connected to any load impedance.
Pulse Capability	
Pulse Width	0.1–50 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	6% max.
RF Rise and Fall	30 ns max. (10%–90%)
Delay	< 1 µs max. from pulse input to RF 90%
Pulse Width Distortion	±25 ns max. (difference between TTL Input Gate and RF pulse)
Pulse Off Isolation	60 dB min.
Pulse Input	TTL level, 50 ohm nominal termination
Noise Figure	8 dB max.
Harmonic Distortion	Minus 30 dBc max.
Spurious	Minus 60 dBc typ.
Primary Power	100–264 VAC 50/60 Hz, single phase 500 watts max.
Connectors	
RF input	Type N female on front panel
RF output	Type 7-16 DIN female on front panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
Remote Interfaces	
IEEE-488	24-pin
Ethernet	RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	26 kg (58 lb.)
Size (WxHxD)	50.3 x 15 x 78 cm / 19.8 x 5.9 x 30.7 in.
Export Classification	3A999.d

**4,000 watts, 1.2–1.4 GHz Pulse**

Rated Power Output	4,000 watts min.
Input for Rated Output	1 milliwatt max.
Flatness	±1.0 dB typ. / ±2.0 dB max.
Frequency Response	1.2–1.4 GHz instantaneously
Gain (at max. setting)	66 dB min.
Gain Adjustment	Continuous Range 20 dB min., (4096 steps remote)
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Output pulse width foldback protection at peak reflected power exceeding 2,000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
Pulse Capability	
Pulse Width	0.1–50 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	6% max.
RF Rise and Fall	30 ns max. (10%–90%)
Delay	1 µs max. from pulse input to RF 90%
Pulse Width Distortion	±25 ns max. (difference between TTL Input Gate and RF pulse)
Pulse Off Isolation	60 dB min.
Pulse Input	TTL level, 50 ohm nominal termination
Noise Figure	15 dB typ.
Harmonic Distortion	Minus 30 dBc max.
Spurious	Minus 60 dBc typ.
Primary Power	100–264 VAC 50/60 Hz, single phase 600 watts max.
Connectors	
RF input	Type N female on front panel
RF output	Type 7-16 DIN female on front panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
Remote Interfaces	
IEEE-488	24-pin
Ethernet	RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	35 kg (76 lb.)
Size (WxHxD)	50.3 x 20.8 x 68.2 cm / 19.8 x 8.2 x 24.7 in.
Export Classification	3A999.d



# 1.2 to 1.4 GHz Pulse

# 2 to 4 GHz Pulse

# 2.7 to 3.1 GHz Pulse

8000SP1z2G1z4 Pulsed Amplifier

15000SP1z2G1z4 Pulsed Amplifier

1000SP2G4 Pulsed Amplifier

2000SP2G4 Pulsed Amplifier

10000SP2G4 Pulsed Amplifier

1000SP2z7G3z1 Pulsed Amplifier



## 8,000 watts, 1.2-1.4 GHz Pulse

Rated Power Output	8,000 watts min.
Input for Rated Output	1 milliwatt max.
Flatness	±1.0 dB typ. / ±2.0 dB max.
Frequency Response	1.2-1.4 GHz instantaneously
Gain (at max. setting)	69 dB min.
Gain Adjustment	Continuous Range 20 dB min., (4096 steps remote)
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Output pulse width foldback protection at peak reflected power exceeding 4,000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
Pulse Capability	
Pulse Width	0.1-50 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	6% max.
RF Rise and Fall	30 ns max. (10%-90%)
Delay	≤1 μs max. from pulse input to RF 90%
Pulse Width Distortion	±25 ns max. (difference between TTL Input Gate and RF pulse)
Pulse Off Isolation	60 dB min.
Pulse Input	TTL level, 50 ohm nominal termination
Noise Figure	8 dB typ.
Harmonic Distortion	Minus 30 dBc max.
Spurious	Minus 60 dBc typ.
Primary Power	100-264 VAC 50/60 Hz, single phase 4,000 watts max.
Connectors	
RF input	Type N female on front panel
RF output	Type 7-16 DIN female on front panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
Remote Interfaces	
IEEE-488	24-pin
Ethernet	RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	117 kg (258 lb.)
Size (WxHxD)	50.3 x 51.1 x 80 cm / 19.8 x 20.4 x 31.5 in.
Export Classification	3A999

## 15,000 watts, 1.2-1.4 GHz Pulse

Rated Power Output	1,500 watts min.
Input for Rated Output	1 milliwatt max.
Flatness	±1.0 dB typ. / ±2.0 dB max.
Frequency Response	1.2-1.4 GHz instantaneously
Gain (at max. setting)	72 dB min.
Gain Adjustment	Continuous Range 20 dB min., (4096 steps remote)
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Output pulse width foldback protection at peak reflected power exceeding 7,500 watts. Will operate without damage or oscillation when connected to any load impedance.
Pulse Capability	
Pulse Width	0.1-50 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	6% max.
RF Rise and Fall	30 ns max. (10%-90%)
Delay	≤1 μs max. from pulse input to RF 90%
Pulse Width Distortion	±25 ns max. (difference between TTL Input Gate and RF pulse)
Pulse Off Isolation	60 dB min.
Noise Figure	8 dB typ.
Harmonic Distortion	30 dBc max.
Spurious	Minus 60 dBc typ.
Primary Power	100-264 VAC 50/60 Hz, single phase 7,500 watts max.
Connectors	
RF input	Type N female on front panel
RF output	Type 7-16 DIN female on front panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
Remote Interfaces	
IEEE-488	24-pin
Ethernet	RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	117 kg (258 lb.)
Size (WxHxD)	50.3 x 51.1 x 80 cm / 19.8 x 20.4 x 31.5 in.
Export Classification	3A999

## 1,000 watts, 2-4 GHz Pulse

Rated Power Output	1,000 watts min.
Input for Rated Output	1 milliwatt max.
Flatness	±1.5 dB typ. / ±2.5 dB at rated power
Frequency Response	2.0-4.0 GHz instantaneously
Gain (at max. setting)	60 dB min.
Gain Adjustment	Continuous Range 20 dB min., (4096 steps remote)
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Output pulse width foldback protection at peak reflected power exceeding 500 watts. Will operate without damage or oscillation when connected to any load impedance.
Pulse Capability	
Pulse Width	0.1-50 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	6% max.
RF Rise and Fall	30 ns max. (10%-90%)
Delay	≤1 μs from pulse input to RF 90%
Pulse Width Distortion	±25 ns max. (difference between TTL input gate and RF pulse)
Pulse Off Isolation	60 dB min.
Pulse Input	TTL level, 50 ohm nominal termination
Noise Figure	15 dB typ.
Harmonic Distortion	Minus 30 dBc max.
Spurious	Minus 60 dBc typ.
Primary Power	100-264 VAC 50/60 Hz, single phase 500 watts max.
Connectors	
RF input	Type N female on front panel
RF output	Type 7-16 DIN female on front panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
Remote Interfaces	
IEEE-488	24-pin
Ethernet	RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	37 kg (82 lb.)
Size (WxHxD)	50.3 x 22.9 x 68 cm / 19.8 x 9 x 26.8 in.
Export Classification	3A999.d

## 2,000 watts, 2-4 GHz Pulse

Rated Power Output	2,000 watts min.
Input for Rated Output	1 milliwatt max.
Flatness	±1.5 dB typ. / ±2.5 dB at rated power
Frequency Response	2.0-4.0 GHz instantaneously
Gain (at max. setting)	63 dB min.
Gain Adjustment	Continuous Range 20 dB min., (4096 steps remote)
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Output pulse width foldback protection at peak reflected power exceeding 1,000 watts. Will operate without damage or oscillation when connected to any load impedance.
Pulse Capability	
Pulse Width	.1-50 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	6% max.
RF Rise and Fall	30 ns max. (10%-90%)
Delay	1 μs max. from pulse input to RF 90%
Pulse Width Distortion	±25 ns max. (difference between TTL Input Gate and RF pulse)
Pulse Off Isolation	60 dB min.
Pulse Input	TTL level, 50 ohm nominal termination
Noise Figure	15 dB typ.
Harmonic Distortion	Minus 22 dBc max. at 1,800 watts
Spurious	Minus 60 dBc typ.
Primary Power	100-264 VAC 50/60 Hz, single phase 1,000 watts max.
Connectors	
RF input	Type N female on front panel
RF output	Type 7-16 DIN female on front panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
Remote Interfaces	
IEEE-488	24-pin
Ethernet	RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	45 kg (99 lb.)
Size (WxHxD)	50.3 x 19.8 x 88.4 cm / 19.8 x 7.8 x 34.8 in.
Export Classification	3A999.d

## 10,000 watts, 2-4 GHz Pulse

Rated Power Output	10,000 watts
Input for Rated Output	1 milliwatt max.
Flatness	±2.5 dB typ. / ±1.5 dB max.
Frequency Response	2-4 GHz instantaneously
Gain (at max. setting)	70 dB min.
Gain Adjustment	Continuous Range 20 dB min., (4096 steps remote)
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Output pulse width foldback protection at peak reflected power exceeding 5,000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
Pulse Capability	
Pulse Width	1 μs-50 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	6% max.
RF Rise and Fall	50 ns max. (10%-90%)
Delay	600 ns max. from pulse input to RF 90%
Pulse Width Distortion	±100 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
Pulse Off Isolation	60 dB min.
Pulse Input	TTL level, 50 ohm nominal termination
Noise Figure	15 dB typ.
Harmonic Distortion	≤-15 dBc up to 2.3 GHz @ ≥6,400 W; ≤-20 dBc up to 4 GHz
Spurious	Minus 60 dBc typ.
Primary Power	100-264 VAC 50/60 Hz, single phase 3,800 watts max.
Connectors	
RF input	Type N female on rear panel
RF output	Type 7-16 DIN female on rear panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
Remote Interfaces	
IEEE-488	24-pin
Ethernet	RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	125 kg (276 lb.)
Size (WxHxD)	60.0 x 68.0 x 90.0 cm / 23.6 x 26.8 x 35.4 in.
Export Classification	3A999.d

## 1,000 watts, 2.7-3.1 GHz Pulse

Rated Power Output	1,000 watts min.
Input for Rated Output	1 milliwatt max.
Flatness	±1.0 dB typ.; ±2.0 dB max.
Frequency Response	2.7-3.1 GHz instantaneously
Gain (at max. setting)	60 dB min.
Gain Adjustment	Continuous Range 20 dB min., (4096 steps remote)
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Output pulse width foldback protection at peak reflected power exceeding 500 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
Pulse Capability	
Pulse Width	0.1-50 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	6% max.
RF Rise and Fall	30 ns max. (10% to 90%)
Delay	1 μs max. from pulse input to RF 90%
Pulse Width Distortion	±25 ns maximum (difference between TTL Input Gate and RF pulse)
Pulse Off Isolation	60 dB min.
Pulse Input	TTL level, 50 ohm nominal termination
Harmonic Distortion	Minus 30 dBc max.s
Spurious	Minus 60 dBc typ.
Primary Power	100-264 VAC 50/60 Hz, single phase 500 watts max.
Connectors	
RF input	Type N female on front panel
RF output	Type 7-16 DIN female on front panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
Remote Interfaces	
IEEE-488	24-pin
RS-232	9-pin subminiature D
Ethernet	RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	26 kg (58 lb.)
Size (WxHxD)	50.3 x 15 x 68.0 cm / 19.8 x 5.9 x 26.8 in.
Export Classification	3A999.d



# Solid State Pulsed Amplifiers

## 2.7 to 3.1 GHz Pulse

3000SP2z7G3z1 Pulsed Amplifier    6000SP2z7G3z1 Pulsed Amplifier    12000SP2z7G3z1 Pulsed Amplifier



3,000 watts, 2.7-3.1 GHz Pulse

Rated Power Output	3,000 watts min. 1 milliwatt max.
Flatness	±1.5 dB typ. / ±2.5 dB max.
Frequency Response	2.7-3.1 GHz instantaneously
Gain (at max. setting)	65 dB min.
Gain Adjustment	Continuous Range 20 dB min., (4096 steps remote)
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Output pulse width foldback protection at peak reflected power exceeding 1,500 watts. Will operate without damage or oscillation when connected to any load impedance.
Pulse Capability	
Pulse Width	0.1-50 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	6% max.
RF Rise and Fall	30 ns max. (10%-90%)
Delay	1 μs max. from pulse input to RF 90%
Pulse Width Distortion	±20 ns max. (difference between TTL Input Gate and RF pulse)
Pulse Off Isolation	60 dB min.
Noise Figure	8 dB typ.
Spurious	Minus 60 dBc typ.
Primary Power	100-264 VAC
50/60 Hz, single phase	1,500 watts max.
Connectors	
RF input	Type N female on front panel
RF output	Type 7-16 DIN female on front panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
Remote Interfaces	
IEEE-488	24-pin
Ethernet	RJ-45
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	40 kg (88 lb.)
Size (WxHxD)	50.3 x 20.3 x 75 cm / 19.8 x 8.0 x 26.9 in.
Export Classification	3A999.d



6,000 watts, 2.7-3.1 GHz Pulse

Rated Power Output	6,000 watts min. 1 milliwatt max.
Flatness	±1.0 dB typ. / ±2.0 dB max.
Frequency Response	2.7-3.1 GHz instantaneously
Gain (at max. setting)	68 dB min.
Gain Adjustment	Continuous Range 20 dB min., (4096 steps remote)
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Output pulse width foldback protection at peak reflected power exceeding 3,000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
Pulse Capability	
Pulse Width	0.1-50 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	6% max.
RF Rise and Fall	30 ns max. (10%-90%)
Delay	1 μs max. from pulse input to RF 90%
Pulse Width Distortion	±20 ns max. (difference between TTL Input Gate and RF pulse)
Pulse Off Isolation	60 dB min.
Noise Figure	8 dB typ.
Harmonic Distortion	30 dBc max.
Spurious	Minus 60 dBc typ.
Primary Power	100-264 VAC
50/60 Hz, single phase	3,000 watts max.
Connectors	
RF input	Type N female on front panel
RF output	Type 7-16 DIN female on front panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
Remote Interfaces	
IEEE-488	24-pin
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	88 kg (195 lb.)
Size (WxHxD)	50.3 x 51.6 x 79 cm / 19.8 x 20.3 x 31 in.
Export Classification	3A999.d



12,000 watts, 2.7-3.1 GHz Pulse

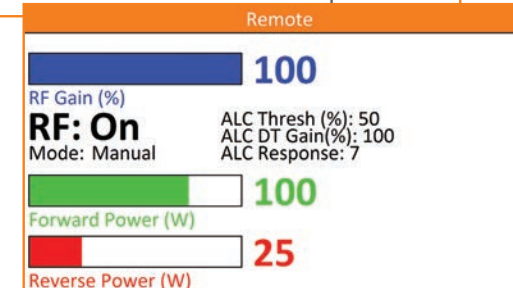
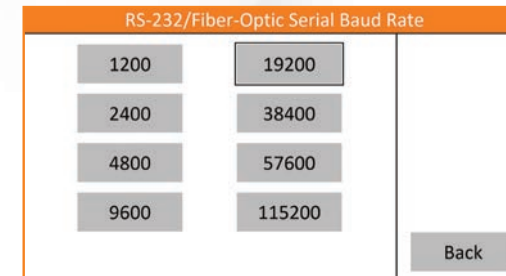
Rated Power Output	12,000 watts min. 1 milliwatt max.
Flatness	±1.0 dB typ. / ±2.0 dB max.
Frequency Response	2.7-3.1 GHz instantaneously
Gain (at max. setting)	71 dB min.
Gain Adjustment	Continuous Range 20 dB min., (4096 steps remote)
Input Impedance	50 ohms, VSWR 2.0:1 max.
Output Impedance	50 ohms, nominal
Mismatch Tolerance	Output pulse width foldback protection at peak reflected power exceeding 500 watts. Will operate without damage or oscillation when connected to any load impedance.
Pulse Capability	
Pulse Width	0.1-50 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	6% max.
RF Rise and Fall	30 ns max. (10%-90%)
Delay	1 μs max. from pulse input to RF 90%
Pulse Width Distortion	±20 ns max. (difference between TTL Input Gate and RF pulse)
Pulse Off Isolation	60 dB min.
Noise Figure	8 dB typ.
Harmonic Distortion	30 dBc max.
Spurious	Minus 60 dBc typ.
Phase Linearity	±4 deg/100 MHz, typ.
Primary Power	100-264 VAC
50/60 Hz, single phase	6,000 watts max.
Connectors	
RF input	Type N female on front panel
RF output	Type 7-16 DIN female on front panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
Remote Interfaces	
IEEE-488	24-pin
Safety Interlock	15-pin Subminiature D
Cooling	Forced air (self-contained fans)
Weight	114 kg (252 lb.)
Size (WxHxD)	50.3 x 53.3 x 81.3 cm / 19.8 x 21 x 32 in.
Export Classification	3A999.d

## AR's Amplifier Control System



AR's latest Touch Panel amplifier control system represents a number of significant advancements. We've expanded its abilities and made it easier to control and monitor important functions. Included features:

- Fiber-optic link between control system modules
- Self-addressing control system
- 32 general-purpose I/O, two analog outputs, and four analog inputs in each control system
- Expandable system by up to 4,096 modules
- Color touch screen display
- Standard remote ports: GPIB, RS-232, USB, F/O Serial, and ethernet.
- Remote port settings controlled through touchscreen menus
- Special system module for monitoring sub-system forward and reverse power levels to determine if they are balanced
- ALC for output leveling
- Ability to monitor full-system and sub-system power levels
- Easy integration with systems using an external chiller
- Module firmware upgradeable through USB port using a PC
- VSWR indication on "A" Series amplifiers
- Safety keep-alive system for remote communication on high-powered amplifiers



These screen shots and the explanations of the screens' functions provide a look at just how intuitive and powerful the AR Touch Panel control system is.



## CW and Pulsed Microwave TWTAs

### Highest Available Power (Up to 10,000 watts)

- Complies with the most stringent standards
- Operation up to 50 GHz
- Faithfully reproduces AM, FM, or pulse modulation that appears on the input signal

### Intelligent Display

- Monitor forward and reverse power and more.

### VSWR Protection

- Each amplifier is designed with output foldback protection.

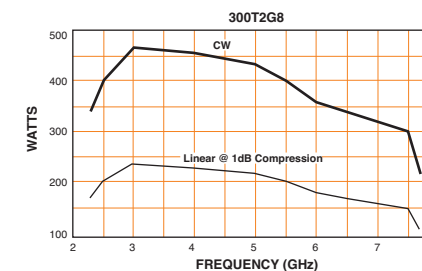


### 300T2G8 TWT Amplifier



#### 300 watts CW, 2.5-7.5 GHz

<b>Power (fundamental), CW/Pulse @ Output Connector</b>	
Nominal	350 watts / min. 300 watts
Linear @ 1 dB Compression	75 watts min.
<b>Flatness</b> ±12 dB max, equalized for ±5 dB max. at rated power	
<b>Frequency Response</b> 2.5-7.5 GHz instantaneously	
<b>Input for Rated Output</b> 1 milliwatt max.	
<b>Gain (at max. setting)</b> 55 dB min.	
<b>Gain Adjustment (continuous range)</b> 35 dB min.	
<b>Input Impedance</b> 50 ohms, VSWR 2.0:1 max.	
<b>Output Impedance</b> 50 ohms, VSWR 2.5:1 typ.	
<b>Mismatch Tolerance</b>	
Output power foldback protection at reflected power exceeding 60 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.	
<b>Video Pulse Capability</b>	
Pulse Width	0.05 microseconds min.
Pulse Rate (PRF)	100 kHz max.
RF Rise and Fall	30 ns max. (10% to 90%)
Delay	300 ns max. from pulse input to RF 90%
<b>Pulse width distortion</b>	
±30 ns max. (50% points of output pulse width compared to 50% points of input pulse width)	
<b>Noise Power Density</b>	
(pulse on)	Minus 75 dBm/Hz max., Minus 80 dBm/Hz typ.
(pulse off)	Minus 140 dBm/Hz typ.
<b>Harmonic Distortion</b> Minus 3 dBc max., Minus 4.5 dBc typ.	
<b>Primary Power</b>	
190-260 VAC	
50/60 Hz, single phase	
3 kVA max.	
<b>Connectors</b>	
RF input	Type N female on rear panel
RF output	Type N female on rear panel
RF output sample port	Type N female on rear panel
Interlock	DB-15 female on rear panel
Video	BNC-female on rear panel
GPIB	IEEE-488 female on rear panel
<b>Cooling</b>	
Forced air (self-contained fans), air entry and exit in rear.	
<b>Weight</b> 54 kg (120 lb.)	
<b>Size (WxHxD)</b>	
50.3 x 29.7 x 68.6 cm / 19.8 x 11.7 x 27 in.	

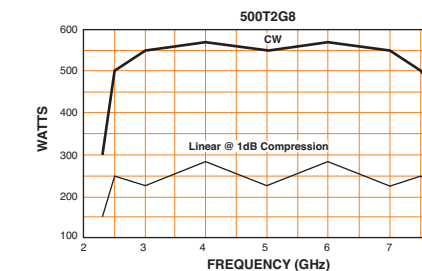


### 500T2G8 TWT Amplifier



#### 500 watts CW, 2.5-7.5 GHz

<b>Power (fundamental), CW/Pulse @ Output Connector</b>	
Nominal	541 watts / min. 500 watts
Linear @ 1 dB Compression	125 watts min.
<b>Flatness</b> ±8 dB max, equalized for ±5 dB max. at rated power	
<b>Frequency Response</b> 2.5-7.5 GHz instantaneously	
<b>Input for Rated Output</b> 1 milliwatt max.	
<b>Gain (at max. setting)</b> 57 dB min.	
<b>Gain Adjustment (continuous range)</b> 35 dB min.	
<b>Input Impedance</b> 50 ohms, VSWR 2.0:1 max.	
<b>Output Impedance</b> 50 ohms, VSWR 2.5:1 typ.	
<b>Mismatch Tolerance</b>	
Output power foldback protection at reflected power exceeding 100 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.	
<b>Video Pulse Capability</b>	
Pulse Width	0.05 microseconds min.
Pulse Rate (PRF)	100 kHz max.
RF Rise and Fall	30 ns max. (10% to 90%)
Delay	300 ns max. from pulse input to RF 90%
<b>Pulse width distortion</b>	
±30 ns max. (50% points of output pulse width compared to 50% points of input pulse width)	
<b>Noise Power Density</b>	
(pulse on)	Minus 85 dBm/Hz max., Minus 95 dBm/Hz typ.
(pulse off)	Minus 140 dBm/Hz typ.
<b>Harmonic Distortion</b> Minus 3 dBc max., Minus 3.5 dBc typ.	
<b>Primary Power</b>	
208 VAC ± 10%	
50/60 Hz, three phase	
3.5 kVA max.	
<b>Connectors</b>	
RF input	Type N female on rear panel
RF output	7-16 DIN female on rear panel
RF output sample port	Type N female on rear panel
Interlock	DB-15 female on rear panel
Video	BNC-female on rear panel
GPIB	IEEE-488 female on rear panel
<b>Cooling</b>	
Forced air (self-contained fans), air entry and exit in rear.	
<b>Weight</b> 55 kg (120 lb.)	
<b>Size (WxHxD)</b>	
50.8 x 25.4 x 68.6 cm / 20 x 10 x 27 in.	

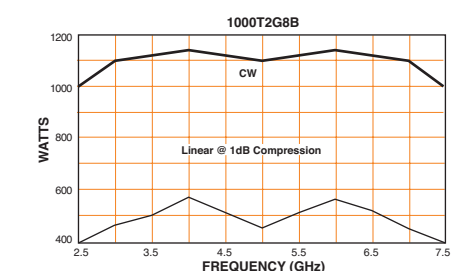


### 1000T2G8B TWT Amplifier



#### 1,000 watts CW, 2.5-7.5 GHz

<b>Power (fundamental), CW, @ Output Connector</b>	
Nominal	1,100 watts / min. 900 watts, 2.5-2.7 GHz
Linear @ 1 dB Compression	1,000 watts, 2.7-7.5 GHz
<b>Flatness</b> ±8 dB max., equalized for ±3 dB max. at rated power	
<b>Frequency Response</b> 2.5-7.5 GHz instantaneously	
<b>Input for Rated Output</b> 1 milliwatt max.	
<b>Gain (at max. setting)</b> 60 dB min.	
<b>Gain Adjustment (continuous range)</b> 35 dB min.	
<b>Input Impedance</b> 50 ohms, VSWR 2.0:1 max.	
<b>Output Impedance</b> 50 ohms, VSWR 2.5:1 typ.	
<b>Mismatch Tolerance</b>	
Output power foldback protection at reflected power exceeding 200 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.	
<b>Noise Power Density</b>	
Minus 80 dBm/Hz max., Minus 90 dBm/Hz typ.	
<b>Harmonic Distortion</b>	
Minus 15 dBc max., Minus 17 dBc typ.	
<b>Primary Power</b>	
190-255 VAC	
50/60 Hz, three phase, delta (4 wire)	
8.0 kVA max.	
<b>Connectors</b>	
RF input	Type N female on rear panel
RF output	Type WRD-250 d30 waveguide flange on rear panel
RF output sample port	Type N female on rear panel
Interlock	DB-15 female on rear panel
GPIB	IEEE-488 female on rear panel
<b>Cooling</b>	
Forced air (self-contained fans), air entry and exit in rear.	
<b>Weight</b> 295 kg (650 lb.)	
<b>Size (WxHxD)</b>	
56 x 160.0 x 82.3 cm / 22.1 x 63 x 32.4 in.	





1500T2G8A TWT Amplifier



1,700 watts CW, 2.5–7.5 GHz

**Power (fundamental), CW, @ Output Connector**  
 Nominal 2,000 watts / min. 1,600 watts, 2.5–3 GHz, 1,700 watts, 3–7.5 GHz  
 Linear @ 1 dB Compression 400 watts min.

**Flatness**  
 ±8 dB max., equalized for ±6 dB max. at rated power

**Frequency Response**  
 2.5–7.5 GHz instantaneously

**Input for Rated Output** 1 milliwatt max.

**Gain (at max. setting)** 62 dB min.

**Gain Adjustment (continuous range)** 35 dB min.

**Input Impedance** 50 ohms, VSWR 2.0:1 max.

**Output Impedance** 50 ohms, VSWR 2.5:1 typ.

**Mismatch Tolerance**  
 Output power foldback protection at reflected power exceeding 300 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.

**Noise Power Density**  
 Minus 85 dBm/Hz max., Minus 95 dBm/Hz typ.

**Harmonic Distortion**  
 Minus 15 dBc max., Minus 17 dBc typ.

**Primary Power**  
 190–255 VAC  
 50/60 Hz, three phase, delta (4 wire)  
 11 kVA max.

**Connectors**  
 RF input Type N female on rear panel  
 RF output Type WRD-250 d30 waveguide flange on rear panel  
 RF output sample ports (forward and reflected) Type N female on rear panel

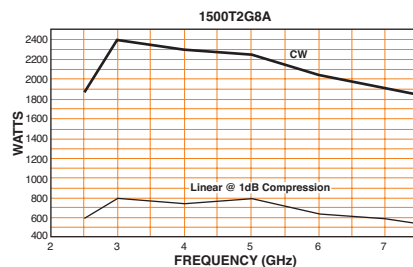
**Interlock** DB-15 female on rear panel

**GPIB** IEEE-488 female on rear panel

**Cooling**  
 Forced air (self-contained fans), air entry and exit in rear.

**Weight** 296 kg (650 lb.)

**Size (WxHxD)**  
 56.0 x 160.0 x 82.3 cm / 22.1 x 63 x 32.4 in.



200T4G8 TWT Amplifier



200 watts CW, 4.0–8.0 GHz

**Power (fundamental), CW, @ Output Connector**  
 Nominal 262 watts / min. 200 watts  
 Linear @ 1 dB Compression 100 watts min.

**Flatness**  
 ±6 dB max. at rated power

**Frequency Response**  
 4.0–8.0 GHz instantaneously

**Input for Rated Output** 1 milliwatt max.

**Gain (at max. setting)** 53 dB min.

**Gain Adjustment (continuous range)** 35 dB min.

**Input Impedance** 50 ohms, VSWR 2.0:1 max.

**Output Impedance** 50 ohms, VSWR 2.5:1 typ.

**Mismatch Tolerance**  
 Output power foldback protection at reflected power exceeding 40 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.

**Noise Power Density**  
 Minus 64 dBm/Hz max., Minus 70 dBm/Hz typ.

**Harmonic Distortion**  
 Minus 4 dBc max., Minus 7 dBc typ.

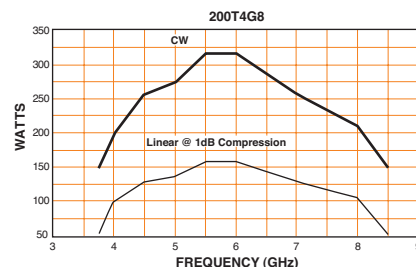
**Primary Power**  
 190–260 VAC  
 50/60 Hz, single phase  
 2.0 kVA max.

**Connectors**  
 RF input Type N female on rear panel  
 RF output Type N female on rear panel  
 RF output sample port Type N female on rear panel  
 Interlock DB-15 female on rear panel  
 GPIB IEEE-488 female on rear panel

**Cooling**  
 Forced air (self-contained fans), air entry and exit in rear.

**Weight** 54 kg (120 lb.)

**Size (WxHxD)**  
 50.3 x 29.7 x 68.6 cm / 19.8 x 11.7 x 27 in.



250T6G18 TWT Amplifier



250 watts CW, 6–18 GHz

**Power (fundamental), CW/Pulse @ Output Connector**  
 Nominal 300 watts / min. 250 watts  
 Flatness ±6 dB max. at rated power  
 Frequency Response 6–18 GHz instantaneously  
 Input for Rated Output 1 milliwatt max.  
 Gain (at max. setting) 54 dB min.  
 Gain Adjustment (continuous range) 35 dB min.  
 Input Impedance 50 ohms, VSWR 2.5:1 max.  
 Output Impedance 50 ohms, VSWR 2.5:1 typ.

**Mismatch Tolerance**  
 Output power foldback protection at reflected power exceeding 50 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.

**Video Pulse Capability**  
 Pulse Width 1 microsecond min.  
 Pulse Rate (PRF) 100 kHz max.  
 RF Rise and Fall 30 ns max. (10% to 90%)  
 Delay 300 ns max. from pulse input to RF 90%  
 Pulse width distortion ±30 ns max. (50% points of output pulse width compared to 50% points of input pulse width)

**Noise Power Density**  
 (pulse on) Minus 65 dBm/Hz max., Minus 70 dBm/Hz typ.  
 (pulse off) Minus 140 dBm/Hz typ.

**Harmonic Distortion**  
 Minus 5 dBc max., Minus 8 dBc typ.

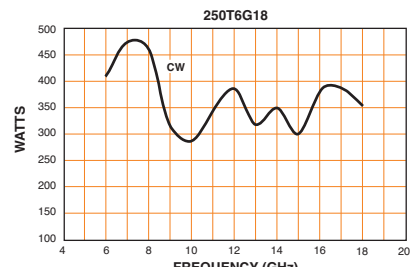
**Primary Power**  
 190–260 VAC, 50/60 Hz, single phase, 2.0 kVA max.

**Connectors**  
 RF input Type N female on rear panel  
 RF output Type WRD-650 waveguide flange on rear panel  
 RF output sample port Type N female on rear panel  
 Interlock DB-15 female on rear panel  
 Video BNC-female on rear panel  
 GPIB IEEE-488 female on rear panel

**Cooling**  
 Forced air (self-contained fans), air entry and exit in rear.

**Weight** 53 kg (115 lb.)

**Size (WxHxD)**  
 50.3 x 29.7 x 68.6 cm / 19.8 x 11.7 x 27 in.



250T8G18 TWT Amplifier



250 watts CW, 7.5–18 GHz

**Power (fundamental), CW/Pulse @ Output Connector**  
 Nominal 300 watts / min. 250 watts  
 Linear @ 1 dB Compression 70 watts min.

**Flatness**  
 ±12 dB max., equalized for ±5 dB max. at rated power

**Frequency Response**  
 7.5–18 GHz instantaneously

**Input for Rated Output** 1 milliwatt max.

**Gain (at max. setting)** 54 dB min.

**Gain Adjustment (continuous range)** 35 dB min.

**Input Impedance** 50 ohms, VSWR 2.0:1 max.

**Output Impedance** 50 ohms, VSWR 2.5:1 typ.

**Mismatch Tolerance**  
 Output power foldback protection at reflected power exceeding 50 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.

**Video Pulse Capability**  
 Pulse Width 0.05 microsecond min.  
 Pulse Rate (PRF) 100 kHz max.  
 RF Rise and Fall 30 ns max. (10% to 90%)  
 Delay 300 ns max. from pulse input to RF 90%  
 Pulse width distortion ±30 ns max. (50% points of output pulse width compared to 50% points of input pulse width)

**Noise Power Density**  
 (pulse on) Minus 70 dBm/Hz max., Minus 72 dBm/Hz typ.  
 (pulse off) Minus 140 dBm/Hz typ.

**Harmonic Distortion**  
 Below 10 GHz, Minus 5 dBc max., Minus 7 dBc typ.  
 10–12 GHz, Minus 8 dBc max., Minus 12 dBc typ.  
 Above 12 GHz, Minus 20 dBc max., Minus 30 dBc typ.

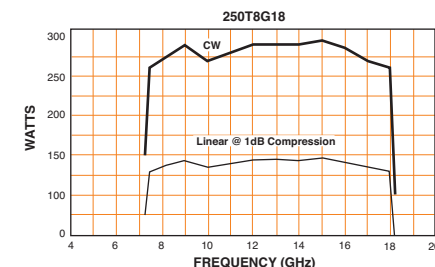
**Primary Power**  
 190–260 VAC, 50/60 Hz, single phase, 2.5 kVA max.

**Connectors**  
 RF input Type N female on rear panel  
 RF output Type WRD-750D24 waveguide flange on rear panel  
 RF output sample port Type N female on rear panel  
 Interlock DB-15 female on rear panel  
 Video BNC-female on rear panel  
 GPIB IEEE-488 female on rear panel

**Cooling**  
 Forced air (self-contained fans), air entry and exit in rear.

**Weight** 53 kg (115 lb.)

**Size (WxHxD)**  
 50.3 x 29.7 x 68.6 cm / 19.8 x 11.7 x 27 in.



500T8G18 TWT Amplifier



500 watts CW, 7.5–18 GHz

**Power (fundamental), CW, @ Output Connector**  
 Nominal 543 watts / min. 500 watts  
 Linear @ 1 dB Compression 125 watts min.

**Flatness**  
 ±11 dB max., equalized for ±3 dB max. at rated power

**Frequency Response**  
 7.5–18 GHz instantaneously

**Input for Rated Output** 1 milliwatt max.

**Gain (at max. setting)** 57 dB min.

**Gain Adjustment (continuous range)** 35 dB min.

**Input Impedance** 50 ohms, VSWR 2.0:1 max.

**Output Impedance** 50 ohms, VSWR 2.5:1 typ.

**Mismatch Tolerance**  
 Output power foldback protection at reflected power exceeding 100 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.

**Noise Power Density**  
 Minus 70 dBm/Hz max., Minus 72 dBm/Hz typ.

**Harmonic Distortion**  
 Minus 20 dBc/Hz max., Minus 22 dBc/Hz typ.

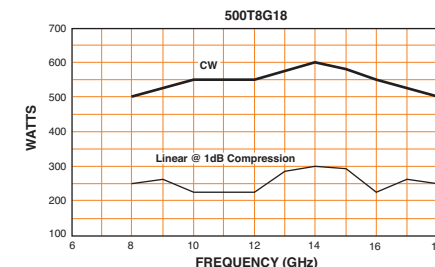
**Primary Power**  
 208 VAC ± 10%, 50/60 Hz, three phase, 4 kVA max.

**Connectors**  
 RF input Type N female on rear panel  
 RF output Type WRD-750D24 waveguide flange on rear panel  
 RF output sample port Type N female on rear panel  
 GPIB IEEE-488 female on rear panel  
 Interlock DB-15 female on rear panel

**Cooling**  
 Forced air (self-contained fans), air entry and exit in rear.

**Weight** 91 kg (200 lb.)

**Size (WxHxD)**  
 50.3 x 40.6 x 68.6 cm / 19.8 x 16.0 x 27 in.



1000T8G18B TWT Amplifier



1,000 watts CW, 7.5–18 GHz

**Power (fundamental), CW, @ Output Connector**  
 Nominal 1,100 watts  
 Minimum 1,000 watts 7.5–17 GHz, 925 watts 17–18 GHz  
 Linear @ 1 dB Compression 250 watts min.

**Flatness**  
 ±11 dB max., equalized for ±3 dB max. at rated power

**Frequency Response**  
 7.5–18 GHz instantaneously

**Input for Rated Output** 1 milliwatt max.

**Gain (at max. setting)** 60 dB min.

**Gain Adjustment (continuous range)** 35 dB min.

**Input Impedance** 50 ohms, VSWR 2.0:1 max.

**Output Impedance** 50 ohms, VSWR 2.5:1 typ.

**Mismatch Tolerance**  
 Output power foldback protection at reflected power exceeding 200 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.

**Noise Power Density**  
 Minus 70 dBm/Hz max., Minus 72 dBm/Hz typ.

**Harmonic Distortion**  
 Minus 20 dBc max., Minus 27 dBc typ.

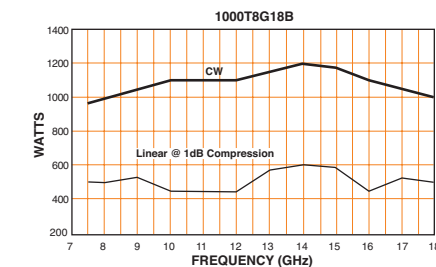
**Primary Power**  
 190–255 VAC  
 50/60 Hz, three phase, delta (4 wire)  
 8 kVA max.

**Connectors**  
 RF input Type N female on rear panel  
 RF output Type WRD-750D24 waveguide flange on rear panel  
 RF output sample port Type N female on rear panel  
 Interlock DB-15 female on rear panel  
 GPIB IEEE-488 female on rear panel

**Cooling**  
 Forced air (self-contained fans), air entry and exit in rear.

**Weight** 295 kg (650 lb.)

**Size (WxHxD)**  
 56.0 x 160.0 x 82.3 cm / 22.1 x 63 x 32.4 in.





1500T8G18 TWT Amplifier



1,500 watts CW, 7.5–18 GHz

**Power (fundamental), CW, @ Output Connector**  
 Nominal 2,000 watts / min. 1,500 watts  
 Linear @ 1 dB Compression 375 watts min.

**Flatness**  
 ±11 dB max., equalized for ±6 dB max. at rated power

**Frequency Response** 7.5–18 GHz instantaneously

**Input for Rated Output** 1 milliwatt max.

**Gain (at max. setting)** 62 dB min.

**Gain Adjustment (continuous range)** 35 dB min.

**Input Impedance** 50 ohms, VSWR 2.0:1 max.

**Output Impedance** 50 ohms, VSWR 2.5:1 typ.

**Mismatch Tolerance**  
 Output power foldback protection at reflected power exceeding 300 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.

**Noise Power Density**  
 Minus 70 dBm/Hz max., Minus 72 dBm/Hz typ.

**Harmonic Distortion**  
 Minus 20 dBc max., Minus 27 dBc typ.

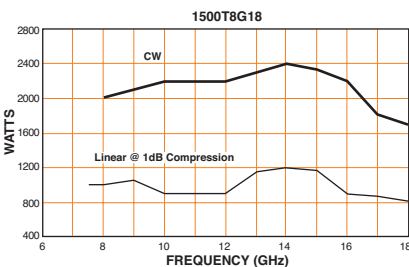
**Primary Power**  
 190–255 VAC  
 50/60 Hz, three phase, delta (4 wire)  
 16 kVA max.

**Connectors**  
 RF input Type N female on rear panel  
 RF output Type WRD-750D24 waveguide flange on rear panel  
 RF output sample ports (forward and reverse) Type N female on rear panel  
 Interlock DB-15 female on rear panel  
 GPIB IEEE-488 female on rear panel

**Cooling**  
 Forced air (self-contained fans), air entry and exit in rear.

**Weight** 546 kg (1,200 lb.)

**Size (WxHxD)** (2 cabinets)  
 56.0 x 160.0 x 84.0 cm / 22.1 x 63 x 33 in. per cabinet



40T18G26A TWT Amplifier



40 watts CW, 18–26.5 GHz

**Power (fundamental), CW, @ Output Connector**  
 Nominal 45 watts / min. 40 watts  
 Linear @ 1 dB Compression 10 watts min.

**Flatness** ±8 dB max.

**Frequency Response** 18–26.5 GHz instantaneously

**Input for Rated Output** 1 milliwatt max.

**Gain (at max. setting)** 46 dB min.

**Gain Adjustment (continuous range)** 35 dB min.

**Input Impedance** 50 ohms, VSWR 2.0:1 max.

**Output Impedance** 50 ohms, VSWR 2.5:1 typ.

**Mismatch Tolerance**  
 Output power foldback protection at reflected power exceeding 10 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.

**Video Pulse Capability**  
 Pulse Width 0.1 microseconds min.  
 Pulse Rate (PRF) 10 kHz max.  
 Duty Cycle  
 Some restrictions apply. Contact AR with application requirements.

**RF Rise and Fall** 30 ns max. (10% to 90%)

**Delay** 300 ns max from pulse input to RF90%

**Pulse Width Distortion**  
 30 ns max (50% points of output pulse width compared to 50% points of input pulse width)

**Noise Power Density (pulse off)** Minus 140 dBm/Hz typ.

**Pulse Off Isolation** 80 dB min., 90 dB typ.

**Pulse Input**  
 TTL Level, 50 Ohm nominal termination, high level enables RF when video pulsing mode is selected.

**Noise Power Density**  
 Minus 60 dBm/Hz max., Minus 65 dBm/Hz typ.

**Harmonic Distortion** -15 dBc max.

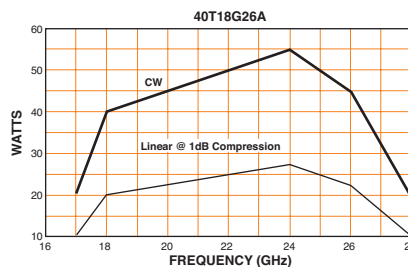
**Primary Power**  
 99–260 VAC  
 50/60 Hz, single phase  
 850 VA max.

**Connectors**  
 RF input Type K female on rear panel  
 RF output Type WR-42 waveguide flange on rear panel  
 RF output sample port Type K female on rear panel  
 Interlock DB-15 female on rear panel  
 GPIB IEEE-488 female on rear panel

**Cooling**  
 Forced air (self-contained fans), air entry and exit in rear.

**Weight** 30 kg (65 lb.)

**Size (WxHxD)**  
 50.3 x 16.5 x 68.6 cm / 19.8 x 6.5 x 27 in.



130T18G26z5B TWT Amplifier



130 watts CW, 18–26.5 GHz

**Power (fundamental), CW, @ Output Connector**  
 Nominal 150 watts / min. 130 watts  
 Linear @ 1 dB Compression 30 watts min.

**Flatness** ±9 dB max.

**Frequency Response** 18–26.5 GHz instantaneously

**Input for Rated Output** 1 milliwatt max.

**Gain (at max. setting)** 52 dB min.

**Gain Adjustment (continuous range)** 35 dB min.

**Input Impedance** 50 ohms, VSWR 2.0:1 max.

**Output Impedance** 50 ohms, VSWR 2.5:1 typ.

**Mismatch Tolerance**  
 Output power foldback protection at reflected power exceeding 20 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.

**Noise Power Density**  
 Minus 70 dBm/Hz max., Minus 75 dBm/Hz typ.

**Harmonic Distortion**  
 Minus 15 dBc max., Minus 20 dBc typ.

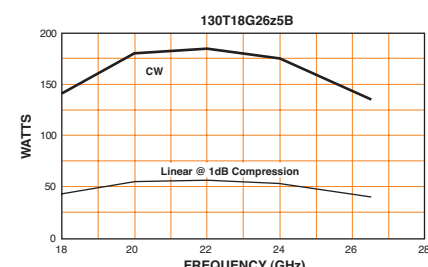
**Primary Power**  
 190–260 VAC  
 50/60 Hz, single phase  
 0.8 kVA max.

**Connectors**  
 RF input Type K female on rear panel  
 RF output Type WR-42 waveguide flange on rear panel  
 RF output sample port Type K female on rear panel  
 Interlock DB-15 female on rear panel  
 GPIB IEEE-488 on rear panel  
 Video BNC female on rear panel

**Cooling**  
 Forced air (self-contained fans), air entry and exit in rear.

**Weight** 36 kg (80 lb.)

**Size (WxHxD)**  
 50.3 x 16.5 x 68.6 cm / 19.8 x 6.5 x 27 in.



200T18G26z5A TWT Amplifier



200 watts CW, 18–26.5 GHz

**Power (fundamental), CW, @ Output Connector**  
 Nominal 225 watts / min. 200 watts  
 Linear @ 1 dB Compression 50 watts min.

**Flatness** ±10 dB max.

**Frequency Response** 18–26.5 GHz instantaneously

**Input for Rated Output** 1 milliwatt max.

**Gain (at max. setting)** 53 dB min.

**Gain Adjustment (continuous range)** 35 dB min.

**Input Impedance** 50 ohms, VSWR 2.0:1 max.

**Output Impedance** 50 ohms, VSWR 2.5:1 typ.

**Mismatch Tolerance**  
 Output power foldback protection at reflected power exceeding 40 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.

**Video Pulse Capability**  
 Pulse Width 0.1 microseconds min.  
 Pulse Rate (PRF) 10 kHz max.  
 Duty Cycle  
 Some restrictions apply. Contact AR with application requirements.

**RF Rise and Fall** 100 ns max. (10% to 90%)

**Delay** 500 ns max from pulse input to RF90%

**Pulse Width Distortion**  
 200 ns max (50% points of output pulse width compared to 50% points of input pulse width)

**Noise Power Density (pulse off)** Minus 140 dBm/Hz typ.

**Pulse Off Isolation** 80 dB min., 90 dB typ.

**Pulse Input**  
 TTL Level, 50 Ohm nominal termination, high level enables RF when video pulsing mode is selected.

**Noise Power Density**  
 Minus 70 dBm/Hz max., Minus 75 dBm/Hz typ.

**Harmonic Distortion**  
 Minus 20 dBc max., Minus 30 dBc typ.

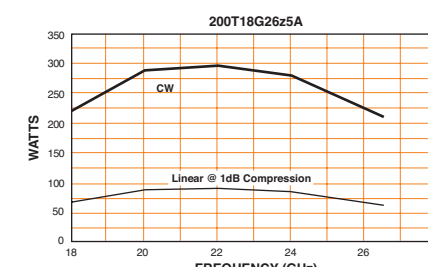
**Primary Power**  
 190–260 VAC  
 50/60 Hz, single phase  
 3 kVA max.

**Connectors**  
 RF input Type K female on rear panel  
 RF output Type WR-42 waveguide flange on rear panel  
 RF output sample port Type K female on rear panel  
 Interlock DB-15 female on rear panel  
 GPIB IEEE-488 on rear panel

**Cooling**  
 Forced air (self-contained fans), air entry and exit in rear.

**Weight** 91 kg (200 lb.)

**Size (WxHxD)**  
 50.3 x 43.0 x 81.0 cm / 19.8 x 17 x 32 in.



40T26G40A TWT Amplifier



40 watts CW, 26.5–40 GHz

**Power (fundamental), CW, @ Output Connector**  
 Nominal 45 watts / min. 40 watts  
 Linear @ 1 dB Compression 10 watts min.

**Flatness** ±8 dB max.

**Frequency Response** 26.5–40 GHz instantaneously

**Input for Rated Output** 1 milliwatt max.

**Gain (at max. setting)** 46 dB min.

**Gain Adjustment (continuous range)** 35 dB min.

**Input Impedance** 50 ohms, VSWR 2.0:1 max.

**Output Impedance** 50 ohms, VSWR 2.5:1 typ.

**Mismatch Tolerance**  
 Output power foldback protection at reflected power exceeding 10 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.

**Noise Power Density**  
 Minus 60 dBm/Hz max., Minus 70 dBm/Hz typ.

**Harmonic Distortion** -15 dBc max.

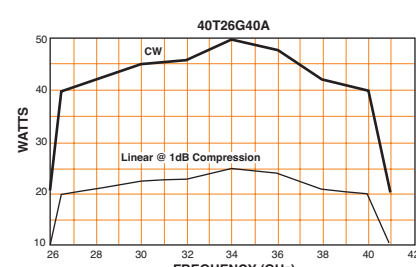
**Primary Power**  
 99–260 VAC  
 50/60 Hz, single phase  
 850 VA max.

**Connectors**  
 RF input Type K female on rear panel  
 RF output Type WR-28 waveguide flange on rear panel  
 RF output sample port Type K female on rear panel  
 Interlock DB-15 female on rear panel  
 GPIB IEEE-488 on rear panel

**Cooling**  
 Forced air (self-contained fans), air entry and exit in rear.

**Weight** 30 kg (65 lb.)

**Size (WxHxD)**  
 50.3 x 16.5 x 68.6 cm / 19.8 x 6.5 x 27 in.



130T26z5G40B TWT Amplifier



130 watts CW, 26.5–40 GHz

**Power (fundamental), CW, @ Output Connector**  
 Nominal 150 watts / min. 130 watts  
 Linear @ 1 dB Compression 30 watts min.

**Flatness** ±10 dB max.

**Frequency Response** 26.5–40 GHz instantaneously

**Input for Rated Output** 1 milliwatt max.

**Gain (at max. setting)** 52 dB min.

**Gain Adjustment (continuous range)** 35 dB min.

**Input Impedance** 50 ohms, VSWR 2.0:1 max.

**Output Impedance** 50 ohms, VSWR 2.5:1 typ.

**Mismatch Tolerance**  
 Output power foldback protection at reflected power exceeding 20 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.

**Noise Power Density**  
 Minus 70 dBm/Hz max., Minus 75 dBm/Hz typ.

**Harmonic Distortion**  
 Minus 15 dBc max., Minus 20 dBc typ.

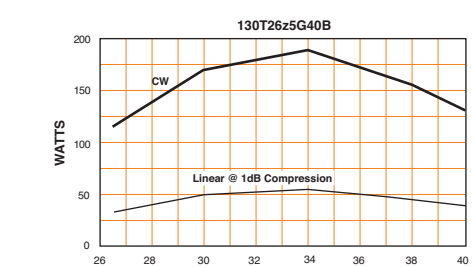
**Primary Power**  
 190–260 VAC  
 50/60 Hz, single phase  
 0.8 kVA max.

**Connectors**  
 RF input Type K female on rear panel  
 RF output Type WR-28 waveguide flange on rear panel  
 RF output sample port Type K female on rear panel  
 Interlock DB-15 female on rear panel  
 GPIB IEEE-488 on rear panel

**Cooling**  
 Forced air (self-contained fans), air entry and exit in rear.

**Weight** 36 kg (80 lb.)

**Size (WxHxD)**  
 50.3 x 16.5 x 68.6 cm / 19.8 x 6.5 x 27 in.





200T26z5G40A TWT Amplifier



200 watts CW, 26.5-40 GHz

**Power (fundamental), CW, @ Output Connector**  
 Nominal 225 watts / min. 200 watts  
 Linear @ 1 dB Compression 50 watts min.

**Flatness** ±10 dB max.

**Frequency Response** 26.5-40 GHz instantaneously

**Input for Rated Output** 1 milliwatt max.

**Gain (at max. setting)** 53 dB min.

**Gain Adjustment (continuous range)** 35 dB min.

**Input Impedance** 50 ohms, VSWR 2.0:1 max.

**Output Impedance** 50 ohms, VSWR 2.5:1 typ.

**Mismatch Tolerance**  
 Output power foldback protection at reflected power exceeding 40 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.

**Video Pulse Capability**  
 Pulse Width 0.1 microseconds min.  
 Pulse Rate (PRF) 10 kHz max.  
 Duty Cycle  
 Some restrictions apply. Contact AR with application requirements.

**RF Rise and Fall** 100 ns max. (10% to 90%)

**Delay** 500 ns max from pulse input to RF90%

**Pulse Width Distortion**  
 200 ns max (50% points of output pulse width compared to 50% points of input pulse width)

**Noise Power Density (pulse off)** Minus 140 dBm/Hz typ.

**Pulse Off Isolation** 80 dB min., 90 dB typ.

**Pulse Input**  
 TTL Level, 50 Ohm nominal termination, high level enables RF when video pulsing mode is selected.

**Noise Power Density**  
 Minus 70 dBm/Hz max., Minus 75 dBm/Hz typ.

**Harmonic Distortion**  
 Minus 20 dBc max., Minus 30 dBc typ.

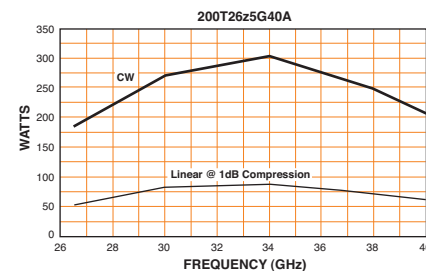
**Primary Power**  
 190-260 VAC  
 50/60 Hz, single phase  
 3 kVA max.

**Connectors**  
 RF input Type K female on rear panel  
 RF output Type WR-42 waveguide flange on rear panel  
 RF output sample port Type K female on rear panel  
 Interlock DB-15 female on rear panel  
 GPIB IEEE-488 on rear panel

**Cooling**  
 Forced air (self-contained fans), air entry and exit in rear.

**Weight** 91 kg (200 lb.)

**Size (WxHxD)** 50.3 x 43.0 x 81.0 cm / 19.8 x 17 x 32 in.



70T40G50 TWT Amplifier



70 watts CW, 40-50 GHz

**Power (fundamental), CW, @ Output Flange**  
 Minimum 70 watts, 40 GHz-45 GHz  
 50 watts, 45 GHz-50 GHz

**Flatness** ±3 dB max. at rated power

**Frequency Response** 40-50 GHz instantaneously

**Input for Rated Output** 1 milliwatt max.

**Gain (at maximum setting)** 47 dB min.

**Gain Adjustment (continuous range)** 35 dB min.

**Input Impedance** 50 ohms, VSWR 2.0:1 max.

**Output Impedance** 50 ohms, VSWR 2.5:1 typ.

**Mismatch Tolerance**  
 Output power foldback protection at reflected power exceeding 20 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.

**Harmonic Distortion** Minus 15 dBc typ.

**Spurious Response (non-harmonic)**  
 Minus 15 dBc typ. (excluding harmonics)

**Primary Power**  
 190-260 VAC  
 50/60 Hz, single phase  
 1.5 kVA max.

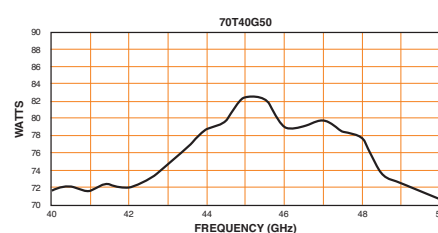
**Connectors**  
 RF input Type 2.4 mm female on rear panel  
 RF output Type WR-22 waveguide flange on rear panel, all tapped  
 RF output sample ports (forward and reflected) Type 2.4 mm female on rear panel  
 Remote Interface IEEE-488  
 Interlock DB-15 female on rear panel

**Cooling**  
 Forced air (self-contained fans), air entry and exit in rear.

**Weight** 42 kg (93 lb.)

**Size (WxHxD)** 48.26 x 16.5 x 76.2 cm / 19 x 6.5 x 30 in.

**Export Classification** EAR99



100T40G50 TWT Amplifier



100 watts CW, 40-50 GHz

**Power (fundamental), CW, @ Output Connector**  
 Minimum 100 watts

**Flatness** ±8 dB max.

**Frequency Response** 40-50 GHz instantaneously

**Input for Rated Output** 1 milliwatt max.

**Gain Adjustment (continuous range)** 35 dB min.

**Input Impedance** 50 ohms, VSWR 2.0:1 max.

**Output Impedance** 50 ohms, VSWR 2.5:1 typ.

**Harmonic Distortion** Minus 22 dBc typ.

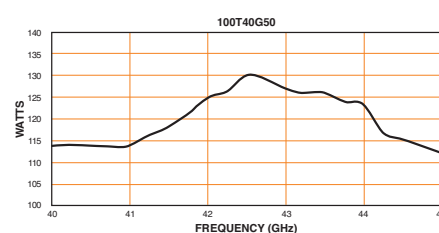
**Primary Power**  
 190-260 VAC  
 50/60 Hz, single phase  
 1.5 kVA max.

**Connectors**  
 RF input Type 2.4 mm female on rear panel  
 RF output Type WR-22 waveguide flange on rear panel  
 RF output sample ports Type 2.4 mm female on rear panel  
 Interlock DB-15 female on rear panel  
 GPIB IEEE-488 female on rear panel

**Cooling**  
 Forced air (self-contained fans), air entry and exit in rear.

**Weight** 82 kg (180 lb.)

**Size (WxHxD)** 50.3 x 43.0 x 76.0 cm / 19.8 x 17 x 30 in.



8000TP1G1z5 Pulse TWT Amplifier



8,000 watts, 1-1.5 GHz Pulse

**Power (fundamental), Peak Pulse, @ Output**  
 Nominal 10,000 watts / min. 8,000 watts

**Flatness** ±6 dB min.

**Frequency Response** 1-1.5 GHz

**Input for Rated Output** 1 milliwatt max.

**Gain (at max. setting)** 69 dB min.

**Gain Adjustment (continuous range)** 35 dB min.

**Input Impedance** 50 ohms, VSWR 2.5:1 max.

**Output Impedance** 50 ohms, VSWR 2.5:1 typ.

**Mismatch Tolerance**  
 Output pulse width foldback protection at peak reflected power exceeding 2,000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.

**Pulse Capability**  
 Pulse Width 0.07-40 microseconds  
 Pulse Rate (PRF) 100 kHz max.  
 Duty Cycle 1% max.  
 RF Rise and Fall 70 ns max. (10%-90%)  
 Delay 300 ns max. from pulse input to RF 90%

**Pulse Width Distortion**  
 ±30 ns max. (50% points of output pulse width compared to 50% points of input pulse width)

**Pulse Off Isolation** 80 dB min., 90 dB typ.

**Pulse Input** TTL level, 50 ohm nominal termination

**Noise Power Density**  
 (pulse on) Minus 55 dBm/Hz max., Minus 65 dBm/Hz typ.  
 (pulse off) Minus 140 dBm/Hz typ.

**Harmonic Distortion** Minus 15 dBc max.

**Primary Power**  
 190-260 VAC  
 50/60 Hz, single phase  
 1 kVA max.

**Connectors**  
 RF input Type N female on rear panel  
 RF output Type DIN 7-16 on rear panel  
 RF output forward and reflected sample ports Type N female on rear panel

**Pulse input** Type BNC female on rear panel

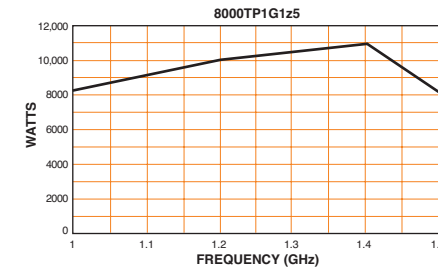
**Interlock** DB-15 female on rear panel

**GPIB** IEEE-488 female on rear panel

**Cooling**  
 Forced air (self-contained fans), air entry and exit in rear.

**Weight** 57 kg (125 lb.)

**Size (WxHxD)** 50.3 x 26.0 x 94.0 cm / 19.8 x 10.3 x 37 in.



6500TP1z5G2 Pulse TWT Amplifier



6,500 watts, 1.5-2 GHz Pulse

**Power (fundamental), Peak Pulse, @ Output**  
 Nominal 8,000 watts / min. 6,500 watts

**Flatness** ±6 dB min.

**Frequency Response** 1.5-2 GHz

**Input for Rated Output** 1 milliwatt max.

**Gain (at max. setting)** 68 dB min.

**Gain Adjustment (continuous range)** 35 dB min.

**Input Impedance** 50 ohms, VSWR 2.5:1 max.

**Output Impedance** 50 ohms, VSWR 2.5:1 typ.

**Mismatch Tolerance**  
 Output VSWR protection using internal isolator. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.

**Pulse Capability**  
 Pulse Width 0.07-40 microseconds  
 Pulse Rate (PRF) 100 kHz max.  
 Duty Cycle 1% max.  
 RF Rise and Fall 30 ns max. (10%-90%)  
 Delay 300 ns max. from pulse input to RF 90%

**Pulse Width Distortion**  
 ±30 ns max. (50% points of output pulse width compared to 50% points of input pulse width)

**Pulse Off Isolation** 80 dB min., 90 dB typ.

**Pulse Input** TTL level, 50 ohm nominal termination

**Noise Power Density**  
 (pulse on) Minus 55 dBm/Hz max., Minus 65 dBm/Hz typ.  
 (pulse off) Minus 140 dBm/Hz typ.

**Harmonic Distortion** Minus 15 dBc max.

**Primary Power**  
 190-260 VAC  
 Three phase, 50/60 Hz  
 3 kVA max.

**Connectors**  
 RF input Type N female on rear panel  
 RF output Type DIN 7-16 on rear panel  
 RF output forward and reflected sample ports Type N female on rear panel

**Pulse input** Type BNC female on rear panel

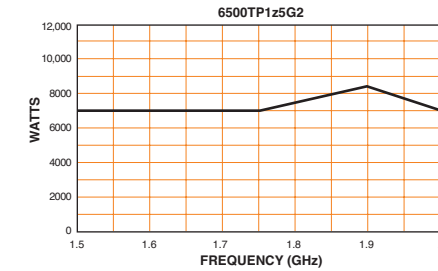
**Interlock** DB-15 female on rear panel

**GPIB** IEEE-488 female on rear panel

**Cooling**  
 Forced air (self-contained fans), air entry and exit in rear.

**Weight** 57 kg (125 lb.)

**Size (WxHxD)** 50.3 x 26.0 x 94.0 cm / 19.8 x 10.3 x 37 in.



4000TP2G4 Pulse TWT Amplifier



4,000 watts, 2-4 GHz Pulse

**Power (fundamental), Peak Pulse, @ Output**  
 Nominal 5800 watts / min. 4,700 watts

**Flatness** ±10 dB max.

**Frequency Response** 2-4 GHz

**Input for Rated Output** 1 milliwatt max.

**Gain (at max. setting)** 66 dB min.

**Gain Adjustment (continuous range)** 35 dB min.

**Input Impedance** 50 ohms, VSWR 2.5:1 max.

**Output Impedance** 50 ohms, VSWR 2.5:1 typ.

**Mismatch Tolerance**  
 Output pulse width foldback protection at peak reflected power exceeding 1,000 watts. Will operate without damage with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.

**Pulse Capability**  
 Pulse Width 0.07-50 microseconds  
 Pulse Rate (PRF) 100 kHz max.  
 Duty Cycle 4% max.  
 RF Rise and Fall 35 ns max. (10%-90%)  
 Delay 300 ns max. from pulse input to RF 90%

**Pulse Width Distortion**  
 ±50 ns max. (50% points of output pulse width compared to 50% points of input pulse width)

**Pulse Off Isolation** 80 dB min., 90 dB typ.

**Pulse Input** TTL level, 50 ohm nominal termination

**Noise Power Density**  
 (pulse on) Minus 57 dBm/Hz max., Minus 59 dBm/Hz typ.  
 (pulse off) Minus 140 dBm/Hz typ.

**Harmonic Distortion** Minus 0 dBc max.

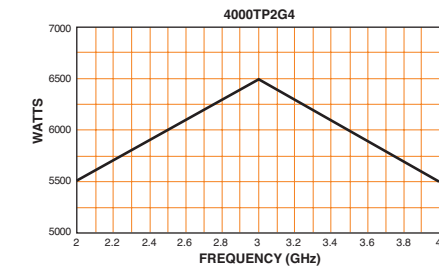
**Primary Power**  
 208 VAC ±10%  
 Three phase, 50/60 Hz  
 3 kVA max.

**Connectors**  
 RF input Type N female on rear panel  
 RF output Type N female on rear panel  
 RF output forward sample port Type N female on rear panel  
 Pulse input Type BNC female on rear panel  
 Interlock DB-15 female on rear panel  
 GPIB IEEE-488 female on rear panel

**Cooling**  
 Forced air (self-contained fans), air entry and exit in rear.

**Weight** 75 kg (165 lb.)

**Size (WxHxD)** 51.0 x 30.5 x 84.0 cm / 19.8 x 12 x 33 in.





# 2 to 4 GHz Pulse

# 2.5 to 7.5 GHz Pulse

# 2.7 to 3.1 GHz

# 4 to 8 GHz Pulse

6900TP2G4 Pulse TWT Amplifier



6,900 watts, 2-4 GHz Pulse

<b>Power (fundamental), Peak Pulse, @ Output</b>	
Nominal	9,000 watts / min. 6,900 watts
Flatness	±8 dB min., ±4 dB at rated power
Frequency Response	2-4 GHz
Input for Rated Output	1 milliwatt max.
Gain (at max. setting)	68 dB min.
Gain Adjustment (continuous range)	35 dB min.
Input Impedance	50 ohms, VSWR 2.5:1 max.
Output Impedance	50 ohms, VSWR 2.5:1 typ.
<b>Mismatch Tolerance</b>	
Output pulse width foldback protection at peak reflected power exceeding 4,000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.	
<b>Pulse Capability</b>	
Pulse Width	0.2-50 microseconds
Pulse Rate (PRF)	100 kHz max.
Duty Cycle	4% max.
RF Rise and Fall	70 ns max. (10%-90%)
Delay	300 ns max. from pulse input to RF 90%
Pulse Width Distortion	±50 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
Pulse Off Isolation	80 dB min., 90 dB typ.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Noise Power Density</b>	
(pulse on)	Minus 55 dBm/Hz max., Minus 84 dBm/Hz typ.
(pulse off)	Minus 140 dBm/Hz typ.
<b>Harmonic Distortion</b>	
Primary Power	208 VAC ±10%
	50/60 Hz, three phase, delta (4 wire)
	5 kVA max.
<b>Connectors</b>	
RF input	Type N female on rear panel
RF output	Type DIN 7-16 female on rear panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
Interlock	Type BNC female on rear panel
GPIO	IEEE-488 female on rear panel
<b>Cooling</b>	
Forced air (self-contained fans), air entry and exit in rear.	
Weight	121 kg (265 lb.)
Size (WxHxD)	50.3 x 48.0 x 89.0 cm / 19.8 x 19 x 35 in.

12000TP2G4 Pulse TWT Amplifier



12,000 watts, 2-4 GHz Pulse

<b>Power (fundamental), Peak Pulse, @ Output</b>	
Nominal	14,000 watts / min. 12,000 watts
Flatness	±10 dB max., ±6 dB at rated power
Frequency Response	2-4 GHz
Input for Rated Output	1 milliwatt max.
Gain (at max. setting)	70.8 dB min.
Gain Adjustment (continuous range)	35 dB min.
Input Impedance	50 ohms, VSWR 2.5:1 max.
Output Impedance	50 ohms, VSWR 2.5:1 typ.
<b>Mismatch Tolerance</b>	
Output pulse width foldback protection at peak reflected power exceeding 3,000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.	
<b>Pulse Capability</b>	
Pulse Width	0.1-40 microseconds
Pulse Rate (PRF)	20 kHz max.
Duty Cycle	4% max.
RF Rise and Fall	150 ns max. (10% to 90%)
Delay	500 ns max. from pulse input to RF 90%
Pulse Width Distortion	±50 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
Pulse Off Isolation	80 dB min., 90 dB typ.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Noise Power Density</b>	
(pulse on)	Minus 55 dBm/Hz max., Minus 70 dBm/Hz typ.
(pulse off)	Minus 140 dBm/Hz typ.
<b>Harmonic Distortion</b>	
Primary Power	208 VAC ±10%
	Three phase, delta (4-wire), 50/60 Hz
	9 kVA max.
<b>Connectors</b>	
RF input	Type N female on rear panel
RF output	Type 7-16 DIN female on rear panel
RF output forward sample ports (forward and reflected)	Type N female on rear panel
Pulse input	Type BNC female on rear panel
Interlock	Type BNC female on rear panel
GPIO	IEEE-488 female on rear panel
<b>Cooling</b>	
Forced air (self-contained fans), air entry and exit in rear.	
Weight	273 kg (600 lb.)
Size (WxHxD)	55.9 x 114.0 x 96.5 cm / 22 x 45 x 38 in.
Export Classification	3A999.d

2000TP2G8B Pulse TWT Amplifier



2,000 watts, 2.5-7.5 GHz Pulse

<b>Power (fundamental), Peak Pulse, @ Output Connector</b>	
Nominal	2,200 watts / min. 2,000 watts
Flatness	±13 dB max., equalized for ±4 dB max. at rated power
Frequency Response	2.5-7.5 GHz instantaneously
Input for Rated Output	1 milliwatt max.
Gain (at max. setting)	63 dB min.
Gain Adjustment (continuous range)	35 dB min.
Input Impedance	50 ohms, VSWR 2.5:1 max.
Output Impedance	50 ohms, VSWR 2.5:1 typ.
<b>Mismatch Tolerance</b>	
Output pulse width foldback protection at peak reflected power exceeding 1,000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.	
<b>Pulse Capability</b>	
Pulse Width	0.07-30 microseconds
Pulse Rate (PRF)	100 kHz max.
Duty Cycle	4% max.
RF Rise and Fall	30 ns max (10% to 90%)
Delay	300 ns max. from pulse input to RF 90%
Pulse Width Distortion	±30 ns max (50% points of output pulse width compared to 50% points of input pulse width)
Pulse Off Isolation	80 dB min., 90 dB typ.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Noise Power Density</b>	
(pulse on)	Minus 70 dBm/Hz max., Minus 72 dBm/Hz typ.
(pulse off)	Minus 140 dBm/Hz typ.
<b>Harmonic Distortion</b>	
Primary Power	190-260 VAC
	Single phase, 50/60 Hz
	1.2 kVA max.
<b>Connectors</b>	
RF input	Type N female on rear panel
RF output	Type N female on rear panel
RF output sample port	Type N female on rear panel
Pulse input	Type BNC female on rear panel
Interlock	DB-15 female on rear panel
GPIO	IEEE-488 female on rear panel
<b>Cooling</b>	
Forced air (self-contained fans), air entry and exit in rear.	
Weight	53 kg (115 lb.)
Size (WxHxD)	50.3 x 25.4 x 82.0 cm / 19.8 x 10 x 32 in.

8000TP2z7G3z1 TWT Amplifier



8,000 watts CW, 2.7-3.1 GHz

<b>Power, CW, @ Output Connector</b>	
Power (fundamental), CW, @ Output Connector	10,000 watts / min. 8,000 watts
Flatness	±6 dB max.
Frequency Response	2.7-3.1 GHz instantaneously
Input for Rated Output	1 milliwatt max.
Gain (at max. setting)	69 dB min.
Gain Adjustment (continuous range)	35 dB min.
Input Impedance	50 ohms, VSWR 2.5:1 max.
Output Impedance	50 ohms, VSWR 2.5:1 typ.
<b>Mismatch Tolerance</b>	
Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.	
<b>Pulse Capability</b>	
Pulse Width	0.1-40 microseconds
Pulse Rate (PRF)	100 kHz max.
Duty Cycle	1% max.
RF Rise and Fall	50 ns max. (10% to 90%)
Delay	500 ns max. from pulse input to RF 90%
Pulse Width Distortion	±30 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
Pulse Off Isolation	80 dB min., 90 dB typ.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Noise Power Density</b>	
(pulse on)	Minus 55 dBm/Hz max., Minus 80 dBm/Hz typ.
(pulse off)	Minus 140 dBm/Hz typ.
<b>Harmonic Distortion</b>	
Primary Power	208 VAC ±10%
	50/60 Hz, three phase, delta (4 wire)
	2 kVA max.
<b>Connectors</b>	
RF input	Type N female on rear panel
RF output	Type DIN 7-16 female on rear panel
RF output sample ports (forward and reflected)	Type N female on rear panel
Pulse input	Type BNC female on rear panel
Interlock	Type BNC female on rear panel
GPIO	IEEE-488 female on rear panel
<b>Cooling</b>	
Forced air (self-contained fans), air entry and exit in rear.	
Weight	61 kg (135 lb.)
Size (WxHxD)	50.3 x 26.0 x 88.9 cm / 19.8 x 10.3 x 35 in.

4000TP4G8 Pulse TWT Amplifier



4,000 watts, 4-8 GHz Pulse

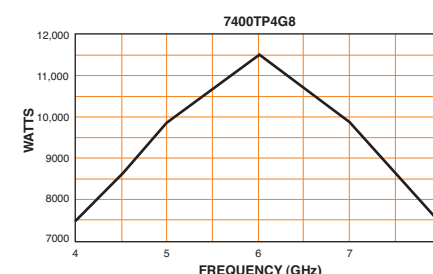
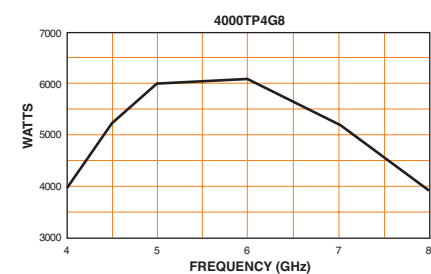
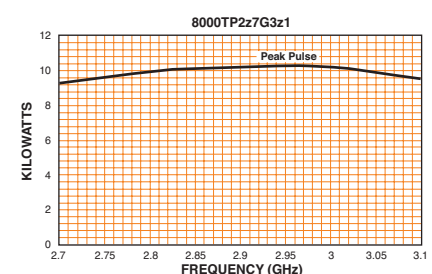
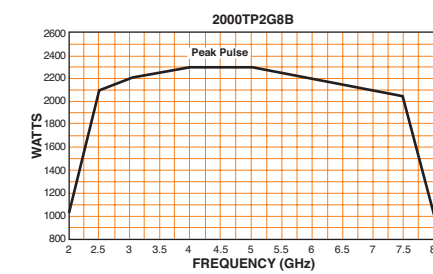
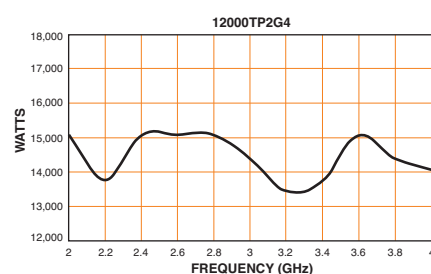
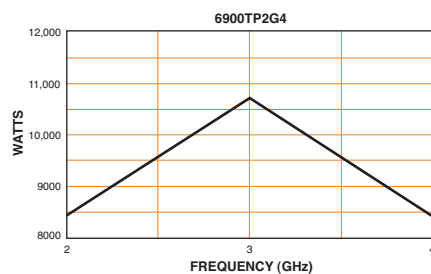
<b>Power (fundamental), Peak Pulse, @ Output</b>	
Nominal	5,000 watts / min. 3.8 kW from 4-4.5 GHz, 4 kW from 4.5-7.5 GHz, 3.8 kW from 7.5-8 GHz
Flatness	±10 dB min.
Frequency Response	4-8 GHz
Input for Rated Output	1 milliwatt max.
Gain (at max. setting)	66 dB min.
Gain Adjustment (continuous range)	35 dB min.
Input Impedance	50 ohms, VSWR 2.5:1 max.
Output Impedance	50 ohms, VSWR 2.5:1 typ.
<b>Mismatch Tolerance</b>	
Output pulse width foldback protection at peak reflected power exceeding 1,000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.	
<b>Pulse Capability</b>	
Pulse Width	0.07-50 microseconds
Pulse Rate (PRF)	100 kHz max.
Duty Cycle	4% max.
RF Rise and Fall	35 ns max. (10% to 90%)
Delay	300 ns max. from pulse input to RF 90%
Pulse Width Distortion	±50 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
Pulse Off Isolation	80 dB min., 90 dB typ.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Noise Power Density</b>	
(pulse on)	Minus 65 dBm/Hz max., Minus 75 dBm/Hz typ.
(pulse off)	Minus 140 dBm/Hz typ.
<b>Harmonic Distortion</b>	
Primary Power	208 VAC ±10%
	50/60 Hz, three phase, delta (4 wire)
	5 kVA max.
<b>Connectors</b>	
RF input	Type N female on rear panel
RF output	Type WRD-350 waveguide flange on rear panel
RF output forward sample port	Type N female on rear panel
Pulse input	Type BNC female on rear panel
Interlock	DB-15 female on rear panel
GPIO	IEEE-488 female on rear panel
<b>Cooling</b>	
Forced air (self-contained fans), air entry and exit in rear.	
Weight	71 kg (155 lb.)
Size (WxHxD)	See Model Configurations on spec sheet via www.arworld.us

7400TP4G8 Pulse TWT Amplifier



7,400 watts, 4-8 GHz Pulse

<b>Power (fundamental), Peak Pulse, @ Output</b>	
Nominal	10,000 watts / min. 7,400 watts
Flatness	±10 dB min., ±5 dB at rated power
Frequency Response	4-8 GHz
Input for Rated Output	1 milliwatt max.
Gain (at max. setting)	69 dB min.
Gain Adjustment (continuous range)	35 dB min.
Input Impedance	50 ohms, VSWR 2.5:1 max.
Output Impedance	50 ohms, VSWR 2.5:1 typ.
<b>Mismatch Tolerance</b>	
Output pulse width foldback protection at peak reflected power exceeding 2,000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.	
<b>Pulse Capability</b>	
Pulse Width	0.2-50 microseconds
Pulse Rate (PRF)	100 kHz max.
Duty Cycle	4% max.
RF Rise and Fall	70 ns max. (10%-90%)
Delay	500 ns max. from pulse input to RF 90%
Pulse Width Distortion	±50 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
Pulse Off Isolation	80 dB min., 90 dB typ.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Noise Power Density</b>	
(pulse on)	Minus 65 dBm/Hz max., Minus 85 dBm/Hz typ.
(pulse off)	Minus 140 dBm/Hz typ.
<b>Harmonic Distortion</b>	
Primary Power	208 VAC ±10%
	50/60 Hz, three phase, delta (4 wire)
	5 kVA max.
<b>Connectors</b>	
RF input	Type N female on rear panel
RF output	Type WRD-350 waveguide flange on rear panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
Interlock	Type BNC female on rear panel
GPIO	IEEE-488 female on rear panel
<b>Cooling</b>	
Forced air (self-contained fans), air entry and exit in rear.	
Weight	123 kg (270 lb.)
Size (WxHxD)	50.3 x 53.0 x 91.0 cm / 19.8 x 24 x 36 in.





12000TP4G8 Pulse TWT Amplifier



12,000 watts, 4-8 GHz Pulse

<b>Power (fundamental), Peak Pulse, @ Output</b>	
Nominal	14,000 watts / min. 12,000 watts
Flatness	±10 dB max., ±6 dB at rated power
Frequency Response	4-8 GHz
Input for Rated Output	1 milliwatt max.
Gain (at max. setting)	70.8 dB min.
Gain Adjustment (continuous range)	35 dB min.
Input Impedance	50 ohms, VSWR 2.5:1 max.
Output Impedance	50 ohms, VSWR 2.5:1 typ.
<b>Mismatch Tolerance</b>	
Output pulse width foldback protection at peak reflected power exceeding 3,000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.	
<b>Pulse Capability</b>	
Pulse Width	0.1-40 microseconds
Pulse Rate (PRF)	20 kHz max.
Duty Cycle	4% max.
RF Rise and Fall	150 ns max. (10% to 90%)
Delay	500 ns max. from pulse input to RF 90%
Pulse Width Distortion	±50 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
Pulse Off Isolation	80 dB min., 90 dB typ.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Noise Power Density</b>	
(pulse on)	Minus 55 dBm/Hz max., Minus 70 dBm/Hz typ.
(pulse off)	Minus 140 dBm/Hz typ.
<b>Harmonic Distortion</b>	
Primary Power	208 VAC ±10%
	Three phase, delta (4-wire), 50/60 Hz
	9 kVA max.
<b>Connectors</b>	
RF input	Type N female on rear panel
RF output	Type WRD-350 on rear panel
RF output forward sample ports (forward and reflected)	Type N female on rear panel
Pulse input	Type BNC female on rear panel
Interlock	DB-15 female on rear panel
GPIB	IEEE-488 female on rear panel
<b>Cooling</b>	
Forced air (self-contained fans), air entry and exit in rear.	
Weight	273 kg (600 lb.)
Size (WxHxD)	55.9 x 114.0 x 96.5 cm / 22 x 45 x 38 in.
Export Classification	3A999.d

1000TP8G18 Pulse TWT Amplifier



1,000 watts, 7.5-18 GHz Pulse

<b>Power (fundamental), Peak Pulse, @ Output Connector</b>	
Nominal	1,800 watts / min. 1,000 watts
Flatness	±8 dB max., equalized for ±3 dB max. at rated power
Frequency Response	7.5-18 GHz instantaneously
Input for Rated Output	1 milliwatt max.
Gain (at max. setting)	60 dB min.
Gain Adjustment (continuous range)	35 dB min.
Input Impedance	50 ohms, VSWR 2.5:1 max.
Output Impedance	50 ohms, VSWR 2.5:1 typ.
<b>Mismatch Tolerance</b>	
Output pulse width foldback protection at peak reflected power exceeding 500 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.	
<b>Pulse Capability</b>	
Pulse Width	0.07-100 microseconds
Pulse Rate (PRF)	100 kHz max.
Duty Cycle	4% max.
RF Rise and Fall	30 ns max. (10% to 90%)
Delay	300 ns max. from pulse input to RF 90%
Pulse Width Distortion	±30 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
Pulse Off Isolation	80 dB min. / 90 dB typ.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Noise Power Density</b>	
(pulse on)	Minus 57 dBm/Hz max., Minus 58 dBm/Hz typ.
(pulse off)	Minus 140 dBm/Hz typ.
<b>Harmonic Distortion</b>	
Primary Power	190-260 VAC
	50/60 Hz, single phase
	1.5 kVA max.
<b>Connectors</b>	
RF input	Type N female on rear panel
RF output	Type WRD-750D24 waveguide flange on rear panel
RF output forward sample port	Type N female on rear panel
Pulse input	Type BNC female on rear panel
Interlock	DB-15 female on rear panel
GPIB	IEEE-488 female on rear panel
<b>Cooling</b>	
Forced air (self-contained fans), air entry and exit in rear.	
Weight	52 kg (115 lb.)
Size (WxHxD)	50.3 x 25.4 x 69.0 cm / 19.8 x 10.0 x 27 in.
Export Classification	3A999.d

2000TP8G18 Pulse TWT Amplifier



2,000 watts, 7.5-18 GHz Pulse

<b>Power (fundamental), Peak Pulse, @ Output Connector</b>	
Nominal	2,500 watts / min. 2,000 watts
Flatness	±8 dB max., equalized for ±3 dB max. at rated power
Frequency Response	7.5-18 GHz instantaneously
Input for Rated Output	1 milliwatt max.
Gain (at max. setting)	63 dB min.
Gain Adjustment (continuous range)	35 dB min.
Input Impedance	50 ohms, VSWR 2.5:1 max.
Output Impedance	50 ohms, VSWR 2.5:1 typ.
<b>Mismatch Tolerance</b>	
Output pulse width foldback protection at average reflected power exceeding 1,000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.	
<b>Pulse Capability</b>	
Pulse Width	0.07-30 microseconds
Pulse Rate (PRF)	100 kHz max.
Duty Cycle	4% max.
RF Rise and Fall	30 ns max. (10% to 90%)
Delay	300 ns max. from pulse input to RF 90%
Pulse Width Distortion	±30 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
Pulse Off Isolation	80 dB min. / 90 dB typ.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Noise Power Density</b>	
(pulse on)	Minus 55 dBm/Hz max., Minus 58 dBm/Hz typ.
(pulse off)	Minus 140 dBm/Hz typ.
<b>Harmonic Distortion</b>	
Primary Power	190-260 VAC
	50/60 Hz, single phase
	3 kVA max.
<b>Connectors</b>	
RF input	Type N female on rear panel
RF output	Type WRD-750D24 waveguide flange on rear panel
RF output forward sample port	Type N female on rear panel
Pulse input	Type BNC female on rear panel
Interlock	DB-15 female on rear panel
GPIB	IEEE-488 female on rear panel
<b>Cooling</b>	
Forced air (self-contained fans), air entry and exit in rear.	
Weight	72 kg (170 lb.)
Size (WxHxD)	50.3 x 39.4 x 77.5 cm / 19.8 x 15.5 x 30.5 in.
Export Classification	3A999.d

10000TP8G10 Pulse TWT Amplifier



10,000 watts, 8-10 GHz Pulse

<b>Power (fundamental), Peak Pulse, @ Output</b>	
Nominal	11,000 watts / min. 10,000 watts
Flatness	±6 dB min.
Frequency Response	8-10 GHz
Input for Rated Output	1 milliwatt max.
Gain (at max. setting)	70 dB min.
Gain Adjustment (continuous range)	35 dB min.
Input Impedance	50 ohms, VSWR 2.5:1 max.
Output Impedance	50 ohms, VSWR 2.5:1 typ.
<b>Mismatch Tolerance</b>	
Output pulse width foldback protection at peak reflected power exceeding 5,000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.	
<b>Pulse Capability</b>	
Pulse Width	0.07-40 microseconds
Pulse Rate (PRF)	100 kHz max.
Duty Cycle	4% max.
RF Rise and Fall	30 ns max. (10% to 90%)
Delay	300 ns max. from pulse input to RF 90%
Pulse Width Distortion	±30 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
Pulse Off Isolation	80 dB min., 90 dB typ.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Noise Power Density</b>	
(pulse on)	Minus 65 dBm/Hz max., Minus 69 dBm/Hz typ.
(pulse off)	Minus 140 dBm/Hz typ.
<b>Harmonic Distortion</b>	
Primary Power	190-260 VAC
	50/60 Hz single phase
	2.5 kVA max.
<b>Connectors</b>	
RF input	Type N precision female on rear panel
RF output	Type WR90 waveguide flange on rear panel
RF output forward and reflected sample ports	Type N precision female on rear panel
Pulse input	Type BNC female on rear panel
Interlock	DB-15 female on rear panel
GPIB	IEEE-488 female on rear panel
<b>Cooling</b>	
Forced air (self-contained fans), air entry and exit in rear.	
Weight	107 kg (235 lb.)
Size (WxHxD)	50.3 x 49.0 x 74.0 cm / 19.8 x 19 x 29 in.

4000TP8G12 Pulse TWT Amplifier



4,000 watts, 8-12 GHz Pulse

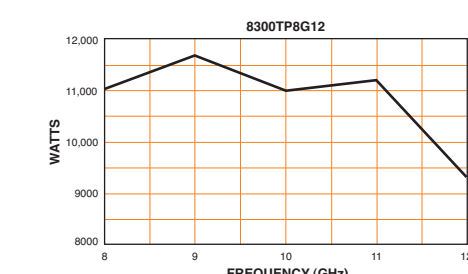
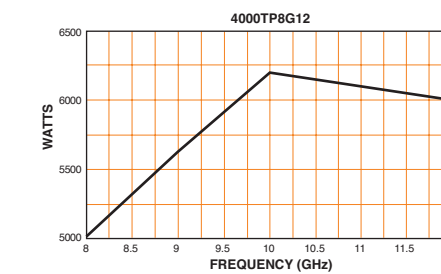
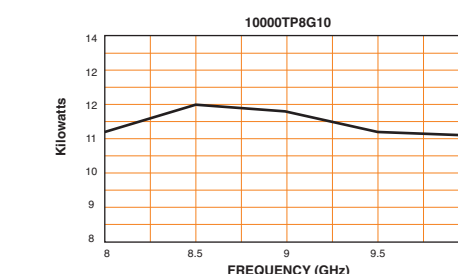
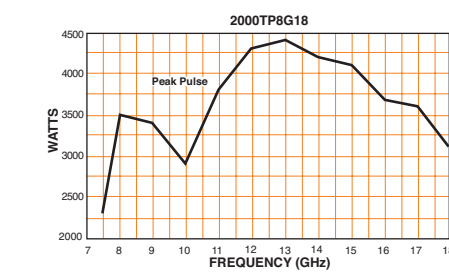
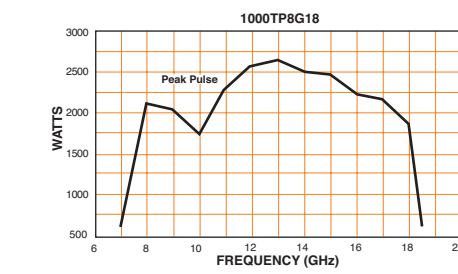
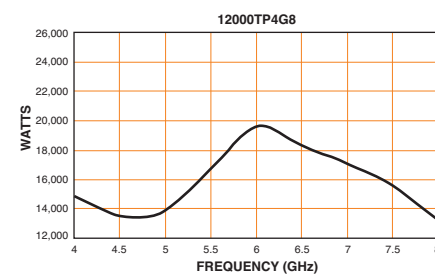
<b>Power (fundamental), Peak Pulse, @ Output</b>	
Nominal	5,500 watts / min. 4,200 watts
Flatness	±10 dB max.
Frequency Response	8-12 GHz
Input for Rated Output	1 milliwatt max.
Gain (at max. setting)	66 dB min.
Gain Adjustment (continuous range)	35 dB min.
Input Impedance	50 ohms, VSWR 2.5:1 max.
Output Impedance	50 ohms, VSWR 2.5:1 typ.
<b>Mismatch Tolerance</b>	
Output pulse width foldback protection at peak reflected power exceeding 1,000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.	
<b>Pulse Capability</b>	
Pulse Width	0.07-50 microseconds
Pulse Rate (PRF)	100 kHz max.
Duty Cycle	4% max.
RF Rise and Fall	35 ns max. (10% to 90%)
Delay	300 ns max. from pulse input to RF 90%
Pulse Width Distortion	±50 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
Pulse Off Isolation	80 dB min., 90 dB typ.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Noise Power Density</b>	
(pulse on)	Minus 57 dBm/Hz max., Minus 59 dBm/Hz typ.
(pulse off)	Minus 140 dBm/Hz typ.
<b>Harmonic Distortion</b>	
Primary Power	208 VAC ± 10% or 190-260 VAC
	50/60 Hz, three phase or single phase
	3 kVA max.
<b>Connectors</b>	
RF input	Type N female on rear panel
RF output	Type WRD-90 waveguide flange on rear panel
RF output forward sample port	Type N female on rear panel
Pulse input	Type BNC female on rear panel
Interlock	DB-15 female on rear panel
GPIB	IEEE-488 female on rear panel
<b>Cooling</b>	
Forced air (self-contained fans), air entry and exit in rear.	
Weight	75 kg (165 lb.)
Size (WxHxD)	51.0 x 44.5 x 69.0 cm / 19.8 x 17.5 x 27 in.

8300TP8G12 Pulse TWT Amplifier



8,300 watts, 8-12 GHz Pulse

<b>Power (fundamental), Peak Pulse, @ Output</b>	
Nominal	10,000 watts / min. 8,300 watts
Flatness	±10 dB max., ±5 dB at rated power
Frequency Response	8-12 GHz
Input for Rated Output	1 milliwatt max.
Gain (at max. setting)	69 dB min.
Gain Adjustment (continuous range)	35 dB min.
Input Impedance	50 ohms, VSWR 2.5:1 max.
Output Impedance	50 ohms, VSWR 2.5:1 typ.
<b>Mismatch Tolerance</b>	
Output pulse width foldback protection at peak reflected power exceeding 4,000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.	
<b>Pulse Capability</b>	
Pulse Width	0.2-50 microseconds
Pulse Rate (PRF)	100 kHz max.
Duty Cycle	4% max.
RF Rise and Fall	70 ns max. (10% to 90%)
Delay	500 ns max. from pulse input to RF 90%
Pulse Width Distortion	±50 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
Pulse Off Isolation	80 dB min., 90 dB typ.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Noise Power Density</b>	
(pulse on)	Minus 70 dBm/Hz max., Minus 73 dBm/Hz typ.
(pulse off)	Minus 140 dBm/Hz typ.
<b>Harmonic Distortion</b>	
Primary Power	208 VAC ± 10%
	50/60 Hz, three phase, delta (4 wire)
	5 kVA max.
<b>Connectors</b>	
RF input	Type N precision female on rear panel
RF output	Type WR-90 waveguide flange on rear panel
RF output forward and reflected sample ports	Type N precision female on rear panel
Pulse input	Type BNC female on rear panel
Interlock	DB-15 female on rear panel
GPIB	IEEE-488 female on rear panel
<b>Cooling</b>	
Forced air (self-contained fans), air entry and exit in rear.	
Weight	121 kg (265 lb.)
Size (WxHxD)	50.3 x 43.0 x 84.0 cm / 19.8 x 17 x 33 in.





Pulse TWT Amplifier



20,000 watts, 8-12 GHz Pulse

**Power (fundamental), Peak Pulse, @ Output**  
 Nominal 22,000 watts / min. 20,000 watts  
 Flatness  $\pm 10$  dB max.,  $\pm 6$  dB at rated power  
**Frequency Response** 8-12 GHz  
**Input for Rated Output** 1 milliwatt max.  
**Gain (at max. setting)** 73 dB min.  
**Gain Adjustment (continuous range)** 35 dB min.  
**Input Impedance** 50 ohms, VSWR 2.5:1 max.  
**Output Impedance** 50 ohms, VSWR 2.5:1 typ.  
**Mismatch Tolerance**  
 Output pulse width foldback protection at peak reflected power exceeding 5,000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.  
**Pulse Capability**  
 Pulse Width 0.1-40 microseconds  
 Pulse Rate (PRF) 20 kHz max.  
 Duty Cycle 4% max.  
 RF Rise and Fall 150 ns max. (10% to 90%)  
 Delay 500 ns max. from pulse input to RF 90%  
 Pulse Width Distortion  $\pm 50$  ns max. (50% points of output pulse width compared to 50% points of input pulse width)  
 Pulse Off Isolation 80 dB min., 90 dB typ.  
**Pulse Input** TTL level, 50 ohm nominal termination  
**Noise Power Density (pulse on)** Minus 65 dBm/Hz max., Minus 85 dBm/Hz typ.  
**(pulse off)** Minus 140 dBm/Hz typ.  
**Harmonic Distortion** Minus 19 dBc max.  
**Primary Power** 208 VAC  $\pm 10\%$   
 Three phase, delta (4-wire), 50/60 Hz  
 12 kVA max.  
**Connectors**  
 RF input Type N female on rear panel  
 RF output Type WRD-90 female on rear panel  
 RF output forward sample ports (forward and reflected) Type N female on rear panel  
 Pulse input Type BNC female on rear panel  
 Interlock DB-15 female on rear panel  
 GPIB IEEE-488 female on rear panel  
**Cooling** Forced air (self-contained fans), air entry and exit in rear.  
**Weight** 575 kg (1,250 lb.)  
**Size (WxHxD)** 57.5 x 196.0 x 82.5 cm / 22.6 x 77.2 x 32.5 in.  
**Export Classification** 3A9999.d

3000TP12G18 Pulse TWT Amplifier



3,000 watts, 12-18 GHz Pulse

**Power (fundamental), Peak Pulse, @ Output**  
 Nominal 3,800 watts / min. 3,000 watts  
 Flatness  $\pm 10$  dB max.  
**Frequency Response** 12-18 GHz  
**Input for Rated Output** 1 milliwatt max.  
**Gain (at max. setting)** 65 dB min.  
**Gain Adjustment (continuous range)** 35 dB min.  
**Input Impedance** 50 ohms, VSWR 2.5:1 max.  
**Output Impedance** 50 ohms, VSWR 2.5:1 typ.  
**Mismatch Tolerance**  
 Output pulse width foldback protection at peak reflected power exceeding 1,000 watts. Will operate without damage with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.  
**Pulse Capability**  
 Pulse Width 0.07-50 microseconds  
 Pulse Rate (PRF) 100 kHz max.  
 Duty Cycle 4% max.  
 RF Rise and Fall 30 ns max. (10% to 90%)  
 Delay 300 ns max. from pulse input to RF 90%  
 Pulse Width Distortion  $\pm 30$  ns max. (50% points of output pulse width compared to 50% points of input pulse width)  
 Pulse Off Isolation 80 dB min., 90 dB typ.  
**Pulse Input** TTL level, 50 ohm nominal termination  
**Noise Power Density (pulse on)** Minus 55 dBm/Hz max., Minus 65 dBm/Hz typ.  
**(pulse off)** Minus 140 dBm/Hz typ.  
**Harmonic Distortion** Minus 8 dBc max.  
**Primary Power** 190-260 VAC  
 50/60 Hz, single phase  
 2 kVA max.  
**Connectors**  
 RF input Type N female on rear panel  
 RF output Type WR-62 waveguide flange on rear panel  
 RF output forward sample port Type N female on rear panel  
 Pulse input Type BNC female on rear panel  
 Interlock DB-15 female on rear panel  
 GPIB IEEE-488 female on rear panel  
**Cooling** Forced air (self-contained fans), air entry and exit in rear.  
**Weight** 52 kg (115 lb.)  
**Size (WxHxD)** 50.3 x 26.0 x 81.0 cm / 19.8 x 10 x 31.9 in.

5700TP12G18 Pulse TWT Amplifier



5,700 watts, 12-18 GHz Pulse

**Power (fundamental), Peak Pulse, @ Output**  
 Nominal 7,000 watts / min. 5,700 watts  
 Flatness  $\pm 10$  dB min.,  $\pm 5$  dB at rated power  
**Frequency Response** 12-18 GHz  
**Input for Rated Output** 1 milliwatt max.  
**Gain (at max. setting)** 67 dB min.  
**Gain Adjustment (continuous range)** 35 dB min.  
**Input Impedance** 50 ohms, VSWR 2.5:1 max.  
**Output Impedance** 50 ohms, VSWR 2.5:1 typ.  
**Mismatch Tolerance**  
 Output pulse width foldback protection at peak reflected power exceeding 3,000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.  
**Pulse Capability**  
 Pulse Width 0.2-50 microseconds  
 Pulse Rate (PRF) 100 kHz max.  
 Duty Cycle 4% max.  
 RF Rise and Fall 70 ns max. (10%-90%)  
 Delay 500 ns max. from pulse input to RF 90%  
 Pulse Width Distortion  $\pm 50$  ns max. (50% points of output pulse width compared to 50% points of input pulse width)  
 Pulse Off Isolation 80 dB min., 90 dB typ.  
**Pulse Input** TTL level, 50 ohm nominal termination  
**Noise Power Density (pulse on)** Minus 55 dBm/Hz max., Minus 80 dBm/Hz typ.  
**(pulse off)** Minus 140 dBm/Hz typ.  
**Harmonic Distortion** Minus 15 dBc max.  
**Primary Power** 208  $\pm 10\%$  VAC  
 50/60 Hz, three phase, delta (4 wire)  
 5 kVA max.  
**Connectors**  
 RF input Type N precision female on rear panel  
 RF output Type WR-62 waveguide flange on rear panel  
 RF output forward and reflected sample ports Type N precision female on rear panel  
 Pulse input Type BNC female on rear panel  
 Interlock DB-15 female on rear panel  
 GPIB IEEE-488 female on rear panel  
**Cooling** Forced air (self-contained fans), air entry and exit in rear.  
**Weight** 121 kg (265 lb.)  
**Size (WxHxD)** 50.3 x 43.0 x 84.0 cm / 19.8 x 17 x 33 in.

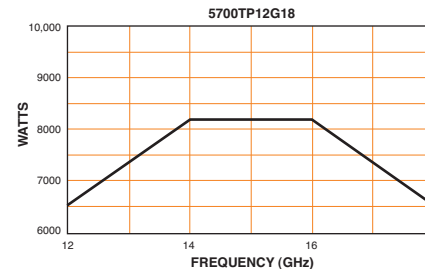
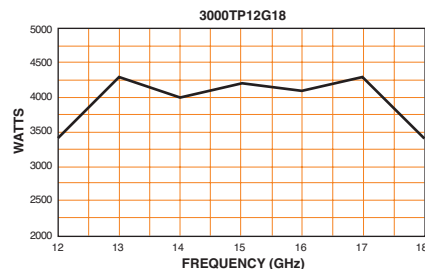
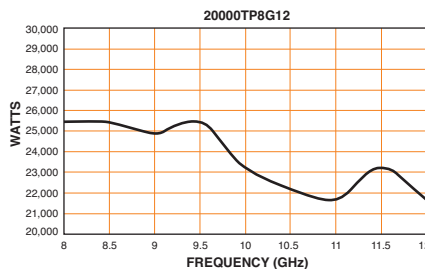


## Bargain Corner

### Low Prices, High Quality

Everyone knows AR equipment is built to last, but sometimes equipment gets traded in for a new model that has some extra features. The original AR equipment is still running strong and doing its job, which is why we created the AR Bargain Corner. Bargain Corner equipment includes trade-ins, demos, and discontinued models. New equipment is noted as such in the product description, and warranties are still included with many models.

When you get something from AR's Bargain Corner, you're getting world-class equipment that's ready to give you more than your money's worth. Call AR at 215-723-8181 for more details, or visit [www.arworld.us/bargain-corner](http://www.arworld.us/bargain-corner). European customers: Please contact your local sales associate for European pricing.



**AR Bargain Corner**  
 Low Prices, High Quality! Visit [www.arworld.us/bargain-corner](http://www.arworld.us/bargain-corner)



## The Single Source for EMC Testing

AR Systems have always made EMC testing simple, efficient, and accurate. The process is easier than ever because we provide everything you need—complete test systems, software, training, support, and chambers.

When you need a fully or semi-anechoic chamber or a shielded room, all it takes is one call to AR. If you need support on any part of your system, AR is your single source. With our expanded resources, you have the power to get exactly what you want, when you need it.





# AR Systems— Fully Integrated Test Systems from DC to 50 GHz

EMC test systems from AR are known for their dependability. The knowledge gained through the years has translated into a number of benefits that customers value: ease of use, quality of construction, reliability, and affordability.

### Why an AR System Is the Smart Choice

- Seamless integration with either emcware or Nexio software and Comtest chambers
- Developed by AR engineers with extensive experience in a wide range of EMC test standards
- Reduced test-lab downtime during system integration and training
- Performance guarantee—AR manufactures the majority of the critical system components, allowing us to match and guarantee them to meet your requirements
- Fully tested before being shipped and upon installation
- Global support and service

AR can deliver a solution that integrates all your testing needs: radiated and conducted immunity, radiated and conducted emissions, electrostatic discharge, lightning simulation... whatever you need. We have the expertise and experience to supply fully automated systems needed to test various standards, including IEC 61000, MIL-STD 461 and 464, DO-160, wireless, automotive, HIRF, HERO, and many more.



AR prides themselves on working with their customers to ensure that you get exactly what you need. By fully understanding your specifications and requirements, we are able to supply a system that meets all of them. In order to help streamline the process, AR has developed numerous *Standard Systems* to use as building blocks for meeting common requirements. We can easily tailor these or develop fully customized systems from the ground-up to satisfy whatever needs you have. During the system development process, we will—

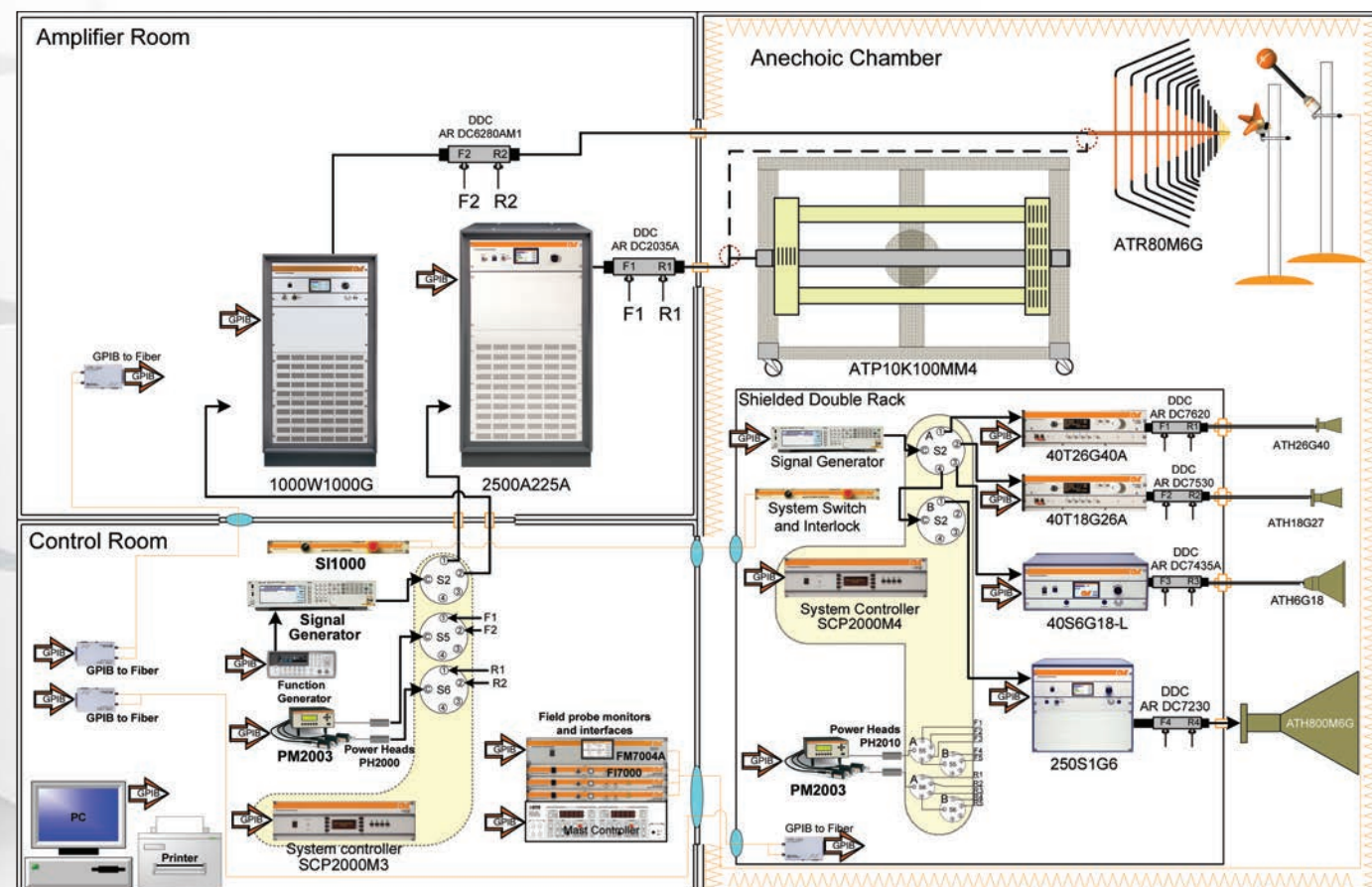
- Identify an overall solution for your specific requirements
- Match equipment with appropriate components and guarantee performance
- Evaluate all packaging options, including proper rack sizing, cooling options (air conditioning, blowers, or liquid), AC power distribution, control, and shielding
- Select the appropriate cabling, coax, or waveguide to match the amplifiers and accessories within the system
- Determine the best method of automation, including signal routing (RF switching) and the integration of emcware or Nexio EMC test software
- Propose transient test equipment
- Propose emissions test equipment
- Propose a chamber solution

After your system has been designed and developed, we provide on-site installation and training according to your schedule. Our team of experienced system integrators will go step by step, explain how your system operates, and provide support through your testing procedures.

If you have existing equipment, we can integrate it into a system or leave space for future expansion to higher frequencies and power levels.

AR has the experience and ability to take the integration as far as you are willing to go, from a simple racking of equipment to a fully integrated state of the art facility, including installation with guaranteed performance.

Schematic of a 200 V/m System  
10 kHz–40 GHz





AR Standard Turnkey Systems

We have complete test systems that perform entire tests up to 50 GHz with just the press of a few buttons. Everything you need—amplifiers, antennas, couplers, signal generators, system controllers, and more, along with the software to control it—all in one comprehensive test system.

New for 2020, AR has designed a line of Standard Systems. These systems are designed to meet the requirements of a number of today's common EMC test standards. Depending on your needs, these systems can then be tailored and customized to meet your specific requirements as well as additional test requirements.

Choose an AR Standard System...or let us customize to your specs.

IEC 61000-4-3 80 MHz - 6 GHz		Field Level (CW)		
		3 V/m	10 V/m	30 V/m
Test Distance	2 meters	SSIEC3V3M	SSIEC10V2M	SSIEC30V2M
	3 meters	SSIEC3V3M	SSIEC10V3M	SSIEC30V3M

MIL-STD-461		Field Level (CW)		
		10 V/m	50 V/m	200 V/m
Frequency Range	10 kHz to 18 GHz	SSMIL10V10K18G	SSMIL50V10K18G	SSMIL200V10K18G
	2 MHz to 18 GHz	SSMIL10V2M18G	SSMIL50V2M18G	SSMIL200V2M18G
	18 GHz to 40 GHz	SSMIL10V18G40G	SSMIL50V18G40G	SSMIL200V18G40G

\*1-meter test distance

ISO 11452-2		Field Level (CW)		
		50 V/m	100 V/m	200 V/m
Frequency Range	10 kHz to 18 GHz	SSISOC50V10K18G	SSISOC100V10K18G	SSISOC200V10K18G
	80 MHz to 18 GHz	SSISOC50V80M18G	SSISOC100V80M18G	SSISOC200V80M18G

\*1-meter test distance

ISO 11451-2		Field Level (CW)		
		50 V/m	100 V/m	200 V/m
Frequency Range	10 kHz to 18 GHz	SSISOV50V10K18G	SSISOV100V10K18G	SSISOV200V10K18G
	20 MHz to 18 GHz	SSISOV50V20M18G	SSISOV100V20M18G	SSISOV200V20M18G

\*2-meter test distance

AR's High Intensity Radiated Fields (HIRF) Equipment  
Designed To Meet Tomorrow's Needs

Inherent danger associated with High Intensity Radiated Fields (HIRF) is becoming increasingly evident with the growing complexity of military and aircraft systems. Sources of HIRF include high power radars, weapons, and naturally occurring environmental conditions. Unprotected equipment can fail with potentially devastating results. To prevent possible catastrophes, qualify them for harsh HIRF environments by testing the equipment with AR amplifiers and power-matched antennas.

AR's ability to provide test systems with the highest-power, wideband amplifiers and power-matched antennas to produce these HIRF and other high field environments is AR's claim to fame.

Through SunAR RF Motion, AR can offer a broad range of complimentary positioning equipment and reverberation tuners for EMC and HIRF testing, all from one company.

To complete the product offering, reverberation and anechoic chambers are also available through AR's partnership with Comtest.

Whether you're generating HIRF per MIL-STD-464 testing, DO-160 or recreating RF/microwave environments for intelligence, counterintelligence, or jamming measures and infrastructure susceptibility testing, AR has the range of solutions to make you feel at ease.

Available HIRF System Components

RF Power Amplifiers for CW Tests

- Model 16000A225A-L, RF Amplifier, 10 kHz–225 MHz, 16,000 watts
- Model 10000W1000A, RF Amplifier, 80 MHz–1,000 MHz, 10,000 watts
- Model 3000S1G2z5, RF Amplifier, 1–2.5 GHz, 3,000 watts
- Model 1500T2G8A, RF Amplifier, 2.5–7.5 GHz, 1,500 watts
- Model 1500T8G18, RF Amplifier, 7.5–18 GHz, 1,500 watts
- Model 200T18G26z5A, RF Amplifier, 18–26.5 GHz, 200 watts
- Model 200T26z5G40A, RF Amplifier, 26.5–40 GHz, 200 watts

RF Power Amplifiers for Pulse Tests

- Model 10000W1000A, RF Amplifier, 80 MHz–1,000 MHz, 10,000 watts
- Model 8000SP1G2, RF Amplifier, 1–2 GHz, 8,000 watts
- Model 6900TP2G4, RF Amplifier, 2–4 GHz, 6,900 watts
- Model 7400TP4G8, RF Amplifier, 4–8 GHz, 7,400 watts
- Model 8300TP8G12, RF Amplifier, 8–12 GHz, 8,300 watts
- Model 5700TP12G18, RF Amplifier, 12–18 GHz, 5,700 watts

AR Antennas

- Model ATP10K100M, Broadband Transmission Line, 10 kHz–100 MHz, 3,000 watts
- Model ATR26M1G, Log-Periodic Antenna, 26 MHz–1,000 MHz, 20,000 watts
- Model ATH800M6G, High-Gain Horn Antenna, 800 MHz–6 GHz, 2,300 watts
- Model ATH2G8A-1, Horn Antenna, 2.5–7.5 GHz, 12,000 watts
- Model ATH7G18, High-Gain Horn Antenna, 7.5–18 GHz, 2,800 watts
- Model ATH18G27, High-Gain Horn Antenna, 18–26.5 GHz, 350 watts
- Model ATH26G40, High-Gain Horn Antenna, 26.5–40 GHz, 240 watts

Other amplifiers and antennas available



## Get More, Pay Less

### Solid State Amplifier and Antenna Combos Generate up to 50 V/m Fields from 18–40 GHz for Far Less Cost than Traditional Setups

Solid State Amplifier and Antenna Combinations Generate up to 50 V/m

- 18–26.5 GHz and 26.5–40 GHz units
- 20 V/m and 50 V/m in each band

Numerous benefits over traditional Traveling Wave Tube Amplifier (TWTA) solution for low-level radiated immunity testing

- Fraction of the cost (~ 80% lower)
- Far higher MTBF (solid-state vs. TWTA)
- Improved harmonics specifications
- Longer warranty (3 vs. 1 year)

#### AA1000

- Provides RF routing, fault protection, and DC power for AA units.
- Includes RF and twinax power cable set (2 m and 4 m for each type) along with required bulkhead connectors.
- One AA1000 can be used with any AA unit

Can be used with AR's SC2000 and Keysight signal generators to create a turnkey solution from 18–40 GHz

#### Numerous Applications

- Radiated Immunity
- 5G
- Satellite and Experimental communications
- TWTA Replacements

#### "AA" Systems

Model	Frequency (GHz)	Field Strength (V/m)
AA18G26-20	18–26.5	20
AA18G26-50	18–26.5	50
AA26G50-20	26.5–40	20
AA26G50-50	26.5–40	50





# Solid State Field Generating Systems

AA1000



**Power Supply and Control**

Primary Power (Universal; Selected Automatically): 100–240 VAC, 50/60 Hz

Connectors (Rack Unit):  
 RF Input: 2.92 mm (K-type) female  
 RF Output: 2.92 mm (K-type) female  
 DC Output: Twinax

Remote Interfaces:  
 IEEE-488: 24-pin female  
 RS-232: 9-pin sub D (female)  
 Fiber optic: ST Conn Tx and Rx RS-232  
 USB 2.0: Type B  
 Ethernet: RJ-45  
 Safety Interlock: 15-pin subminiature D

Cooling: Forced air (self-contained fans)

Weight: Rack Unit: 4.5 kg (10 lb.)

Size (W x H x D): Rack Unit: 48.3 cm x 8.9 cm x 53.3 cm  
 19 in. x 3.5 in. x 21 in.

Environmental:  
 Operating Temperature: 5°C / +40°C Operating  
 Altitude: up to 2,000 M  
 Shock and vibration: Normal Truck Transport

Regulatory Compliance:  
 EMC: EN 61326-1  
 Safety: UL 61010-1  
 CAN/CSA C22.2 #61010-1  
 CENELEC EN 61010-1  
 RoHS: Directive 2011/65/EU  
 WEEE: Directive 2012/19/EU  
 Export Classification: EAR99

AA18G26-20



**18–26.5 GHz, 20 V/m**

Rated Field Strength: Minimum 20 V/m at 1 meter antenna distance

Maximum Amplifier Input: +10 dBm max

Frequency Response: 18–26.5 GHz instantaneous

3 dB Beamwidth:  
 AA18G26-20: E Plane: 17.5 degrees  
 H Plane: 17.8 degrees

3 dB Spot Size @ 1 m:  
 AA18G26-20: 0.31 m x 0.31 m

Modulation Capability: Will faithfully reproduce AM, FM, or pulse modulation appearing on input signal.

Spurious: Minus 65 dBc typical

Primary Power (Supplied by AA1000): 8 VDC @ 6 Amps max, +24 VDC @ 1 Amp max

Connectors:  
 RF Input: 2.92 mm (K-type) female  
 DC Input: Twinax

Cooling: Forced air (self-contained fans)

Weight: AA18G26-20: 2.5 kg (5.5 lb.)

Size (W x H x D): AA18G26-20: 12.1 cm x 18.4 cm x 17.8 cm  
 4.75 in. x 7.25 in. x 7 in.

Environmental:  
 Operating Temperature: 5°C/+40°C  
 Operating Altitude: up to 2,000 M  
 Shock and vibration: Normal Truck Transport

Regulatory Compliance:  
 EMC: EN 61326-1  
 Safety: UL 61010-1  
 CAN/CSA C22.2 #61010-1  
 CENELEC EN 61010-1  
 RoHS: Directive 2011/65/EU  
 WEEE: Directive 2012/19/EU  
 Export Classification: EAR99

AA18G26-50



**18–26.5 GHz, 50 V/m**

Rated Field Strength: Minimum 50 V/m at 1 meter antenna distance

Maximum Amplifier Input: +10 dBm max

Frequency Response: 18–26.5 GHz instantaneous

3 dB Beamwidth:  
 AA18G26-50: E Plane: 8.1 degrees  
 H Plane: 9.5 degrees

3 dB Spot Size @ 1 m:  
 AA18G26-50: 0.14 m x 0.17 m

Modulation Capability: Will faithfully reproduce AM, FM, or pulse modulation appearing on input signal.

Spurious: Minus 65 dBc typical

Primary Power (Supplied by AA1000): 8 VDC @ 6 Amps max, +24 VDC @ 1 Amp max

Connectors:  
 RF Input: 2.92 mm (K-type) female  
 DC Input: Twinax

Cooling: Forced air (self-contained fans)

Weight: AA18G26-50: 2.7 kg (6 lb.)

Size (W x H x D): AA18G26-50: 12.1 cm x 18.4 cm x 35.6 cm  
 4.75in x 7.25in x 14in

Environmental:  
 Operating Temperature: 5°C/+40°C  
 Operating Altitude: up to 2,000 M  
 Shock and vibration: Normal Truck Transport

Regulatory Compliance:  
 EMC: EN 61326-1  
 Safety: UL 61010-1  
 CAN/CSA C22.2 #61010-1  
 CENELEC EN 61010-1  
 RoHS: Directive 2011/65/EU  
 WEEE: Directive 2012/19/EU  
 Export Classification: EAR99

AA26G40-20



**26.5–40 GHz, 20 V/m**

Rated Field Strength: Minimum 20 V/m at 1 meter antenna distance

Maximum Amplifier Input: +10 dBm max

Frequency Response: 26.5–40 GHz instantaneous

3 dB Beamwidth:  
 AA26G40-20: E Plane: 16.7 degrees  
 H Plane: 18.3 degrees

3 dB Spot Size @ 1 m:  
 AA26G40-20: 0.29 m x 0.32 m

Modulation Capability: Will faithfully reproduce AM, FM, or pulse modulation appearing on input signal.

Spurious: Minus 65 dBc typical

Primary Power (Supplied by AA1000): 8 VDC @ 6 Amps max, +24 VDC @ 1 Amp max

Connectors:  
 RF Input: 2.92 mm (K-type) female  
 DC Input: Twinax

Cooling: Forced air (self-contained fans)

Weight: AA26G40-20: 2.5 kg (5.5 lb.)

Size (W x H x D): AA26G40-20: 12.1 cm x 18.4 cm x 15.2 cm  
 4.75 in. x 7.25 in. x 6 in..

Environmental:  
 Operating Temperature: 5°C/+40°C  
 Operating Altitude: up to 2,000 M  
 Shock and vibration: Normal Truck Transport

Regulatory Compliance:  
 EMC: EN 61326-1  
 Safety: UL 61010-1  
 CAN/CSA C22.2 #61010-1  
 CENELEC EN 61010-1  
 RoHS: Directive 2011/65/EU  
 WEEE: Directive 2012/19/EU  
 Export Classification: 3A001

AA26G40-50



**26.5–40 GHz, 50 V/m**

Rated Field Strength: Minimum 50 V/m at 1 meter antenna distance

Maximum Amplifier Input: +10 dBm max

Frequency Response: 26.5–40 GHz instantaneous

3 dB Beamwidth:  
 AA26G40-50: E Plane: 8.3 degrees  
 H Plane: 9.7 degrees

3 dB Spot Size @ 1 m:  
 AA26G40-50: 0.15 m x 0.17 m

Modulation Capability: Will faithfully reproduce AM, FM, or pulse modulation appearing on input signal.

Spurious: Minus 65 dBc typical

Primary Power (Supplied by AA1000): 8 VDC @ 6 Amps max, +24 VDC @ 1 Amp max

Connectors:  
 RF Input: 2.92 mm (K-type) female  
 DC Input: Twinax

Cooling: Forced air (self-contained fans)

Weight: AA26G40-50: 2.7 kg (6 lb.)

Size (W x H x D): AA26G40-50: 12.1 cm x 18.4 cm x 25.4 cm  
 4.75in x 7.25in x 10in

Environmental:  
 Operating Temperature: 5°C/+40°C  
 Operating Altitude: up to 2,000 M  
 Shock and vibration: Normal Truck Transport

Regulatory Compliance:  
 EMC: EN 61326-1  
 Safety: UL 61010-1  
 CAN/CSA C22.2 #61010-1  
 CENELEC EN 61010-1  
 RoHS: Directive 2011/65/EU  
 WEEE: Directive 2012/19/EU  
 Export Classification: 3A001





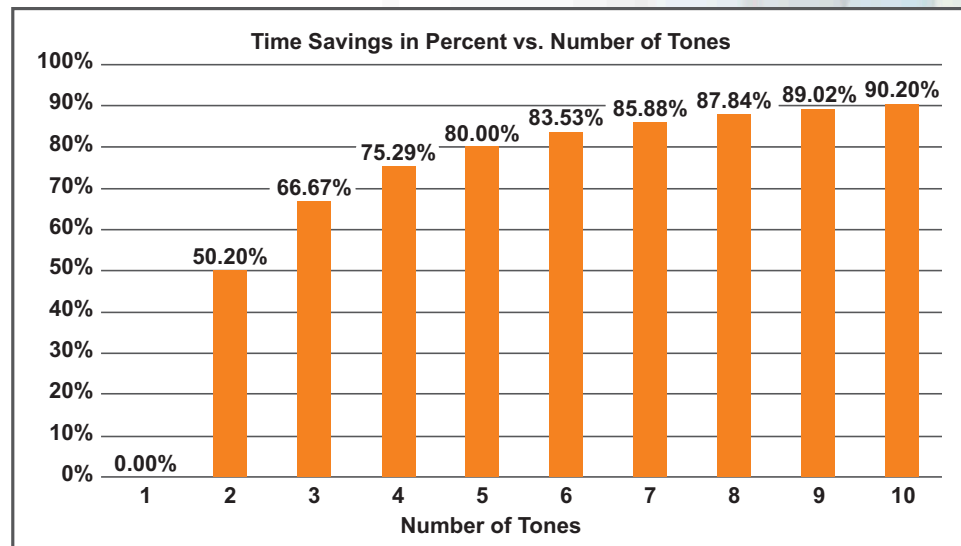
# Maximize Your RF Immunity Testing and Minimize Costs

Testing faster than ever before is now achievable with AR's MultiStar Multi-Tone Tester (MT06002). AR Engineering has created this state-of-the-art system to test in accordance with commercial, aviation, and automotive EMC RF Radiated and Conducted Immunity standards. Included is AR's proprietary software, offering users numerous test and calibration routines utilizing multiple tone methodology, to meet these standards. Additionally, the use of a PXI bus and AR's SC2000 system controller allow for seamless integration of all hardware and streamlined routing of all RF to and from the embedded vector signal transceiver and amplifiers.

The enhanced MT06002 offers testing from 10 kHz to 6 GHz, with up to 1 GHz instantaneous bandwidth, greatly expanding an EMC laboratory's opportunities beyond IEC 61000-4-3 to include conducted immunity and allow for more tones to be used during testing.

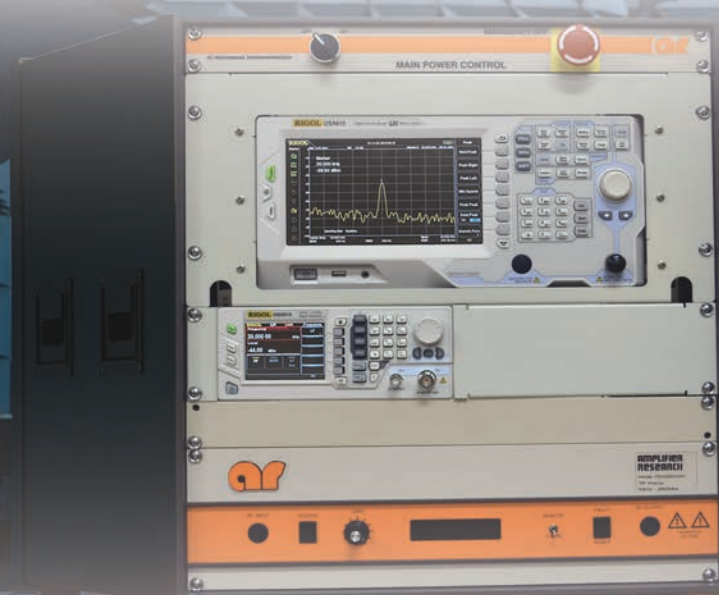
The system may control up to four RF amplifiers, antennas, and directional couplers. In addition, up to four field probes can be monitored with the MT06002 M1 option. AR's Application Engineering department is here to help you size your amplifiers, antennas, and directional couplers based on your required field levels and testing needs.

Not only does the multi-tone system significantly reduce test time, but also, in the event of an EUT failure, margin investigation (thresholding) and traditional single tone testing is easily performed through AR's software.





# RF Conducted Immunity Testing to IEC, Military and Automotive Standards



If you are tired of mixing and matching various components, try AR's complete line of RF Conducted Immunity Test Systems. We now make one fully configured and stand-alone CI System from 4 kHz to 400 MHz with output powers designed to meet the latest commercial, custom, and military standards. In addition, AR provides configurable systems to meet your specific requirements of increased power and frequency range. Each CI System has the built-in flexibility to conduct standard and customized tests, using our supplied user-friendly software that can generate reports directly into Microsoft® Word or Excel.

## CDN Testing to 250 MHz

25 watts, 10 kHz–250 MHz

Complete Testing Solutions to the following standards: EN/IEC 61000-4-6, IEC 60601-1-2, EN 50130-4, EN 61000-6-1/2, EN 55024, ISO 11452-4, and other automotive standards.

**Signal Generator Specifications**  
 Frequency Range/Resolution 9 kHz to 1.5 GHz / 0.01 Hz  
 Power Range/Resolution -110 to +13 dBm / 0.01 dB  
 Modulation AM, FM, Phase, Int Pulse, Ext Pulse

**Spectrum Analyzer Specifications**  
 Frequency Range/Resolution 9 kHz to 1.5 GHz / 1 Hz  
 RF Power CW (max) 20 dBm  
 Atten = 30 dB  
 Resolution BW 10 Hz to 1 MHz  
 Video BW 1 Hz to 3 MHz  
 Amplitude Measurement Range -110 dBm to +20 dBm in 1 dB steps

Preamplifier Gain 20 dB (nom)  
 Sweep Time, span > 100 Hz 10 msec to 1,500 sec

**RF Solid State Amplifier Specifications**  
 Frequency Range 10 kHz to 250 MHz  
 Power Rating 25 watts min.  
 At 1 dB compression the power is 75 watts min.  
 Harmonic Distortion -20 dBc at 75 watts  
 Mismatch Tolerance 100% of rated power without fold back. Will operate without damage or oscillation with any magnitude of source and load impedance.  
 Gain 50 dB min.

**Connections**  
 RF Out Type N (front)  
 Monitor Port In Type N (front)  
 Signal Generator Out Type N (rear)  
 RF Amp In/Out Type N (rear)  
 Directional Coupler In Type N (rear)  
 Pulse In BNC (rear)  
 Communication USB B (rear)  
 Directional Coupler Fwd Out Type SMA (rear)  
 Directional Coupler Fwd In Type SMA (rear)  
 Directional Coupler Rev Out Type SMA (rear)  
 Directional Coupler Rev In Type SMA (rear)

**General**  
 Power 115/230 VAC, 50/60 Hz, single phase 16 A  
 Breaker 2 pole, 20 A  
 Cooling Active cooling, air ventilation  
 Environmental Conditions 10°C–40°C (50°F–104°F)  
 Dimensions 50.3 x 53.3 x 55.1 cm (19.8 x 21.0 x 21.7 in.)  
 Weight 49.9 kg (110 lb.)

**PC Requirements**  
 Computer Intel Pentium 4, AMD Athlon 64 or better processor  
 Operating System Windows, 7, 8, or 10  
 RAM 2 GB Minimum  
 Screen Resolution 1024 x 768  
 Ports 2 available USB 2.0 ports  
 Software Requirements Microsoft Word/Excel 2007 or newer

## CDN or BCI Testing to 400 MHz

100 watts, 10 kHz–400 MHz

Complete Testing Solutions to the following standards: MIL-STD-461 and CS114, DO160 (Section 20) BCI Testing, EN/IEC 61000-4-6, IEC 60601-1-2, EN 50130-4, EN 61000-6-1/2, EN 55024, ISO 11452-4, and other automotive standards.

**Internal Test Specifications\***  
 MIL-STD-461 (CS114), DO160 (Sec 20 BCI Test), IEC/EN 60601-1-2, IEC/EN 50130-4, IEC/EN 61326, IEC/EN 61000-6-1, IEC/EN 61000-6-2, IEC/EN 61000-4-6, CISPR 24/EN 55024, ISO 11452-4, EMC-CS-2009, GM GMW3097, BMW GS95002, Chrysler DC-11224, Renault 36-00-808, and other automotive standards.

**Signal Generator Specifications**  
 Frequency Range/Resolution 9 kHz to 1.5 GHz / 0.01 Hz  
 Power Range/Resolution -110 to +13 dBm / 0.01 dB  
 Modulation AM, FM, Phase, Int Pulse, Ext Pulse

**Spectrum Analyzer Specifications**  
 Frequency Range/Resolution 9 kHz to 1.5 GHz / 1 Hz  
 RF Power CW (max) 20 dBm  
 Atten = 30 dB  
 Resolution BW 10 Hz to 1 MHz  
 Video BW 1 Hz to 3 MHz  
 Amplitude Measurement Range -110 dBm to +20 dBm in 1 dB steps

Preamplifier Gain 20 dB (nom)  
 Sweep Time, span > 100 Hz 10 msec to 1,500 sec

**RF Solid State Amplifier Specifications**  
 Frequency Range 9 kHz to 400 MHz  
 Power Rating 100 watts min.  
 At 1 dB compression the power is 75 watts min.  
 Harmonic Distortion -20 dBc at 75 watts  
 Mismatch Tolerance 100% of rated power without fold back. Will operate without damage or oscillation with any magnitude of source and load impedance.  
 Gain 50 dB min.

**Connections**  
 RF Out Type N (front)  
 Monitor Port In Type N (front)  
 Signal Generator Out Type N (rear)  
 RF Amp In/Out Type N (rear)  
 Directional Coupler In Type N (rear)  
 Pulse In BNC (rear)  
 Communication USB B (rear)  
 Directional Coupler Fwd Out Type SMA (rear)  
 Directional Coupler Fwd In Type SMA (rear)  
 Directional Coupler Rev Out Type SMA (rear)  
 Directional Coupler Rev In Type SMA (rear)

**General**  
 Power 115/230 VAC, 50/60 Hz, single phase 16 A  
 Breaker 2 pole, 20 A  
 Cooling Active cooling, air ventilation  
 Environmental Conditions 10°C–40°C (50°F–104°F)  
 Dimensions 50.3 x 53.3 x 55.1 cm (19.8 x 21.0 x 21.7 in.)  
 Weight 49.9 kg (110 lb.)

**PC Requirements**  
 Computer Intel Pentium 4, AMD Athlon 64 or better processor  
 Operating System Windows, 7, 8, or 10  
 RAM 2 GB Minimum  
 Screen Resolution 1024 x 768  
 Ports 2 available USB 2.0 ports  
 Software Requirements Microsoft Word/Excel 2007 or newer

## BCI, EM, or TWC Testing to 1 GHz

250 watts, 100 kHz–1,000 MHz

Complete Testing Solutions to the following standards: EN/IEC 61000-4-6, IEC 60601-1-2, EN 50130-4, EN 61000-6-1/2, ISO 11452-4, and other automotive standards.

**Internal Test Specifications\***  
 IEC/EN 60601-1-2, IEC/EN 50130-4, IEC/EN 61326, IEC/EN 61000-6-1, IEC/EN 61000-6-2, IEC/EN 61000-4-6, ISO 11452-4, EMC-CS-2009, GM GMW3097, BMW GS95002, Chrysler DC-11224, Renault 36-00-808, and other automotive standards.

**Signal Generator Specifications**  
 Frequency Range/Resolution 9 kHz to 1.5 GHz / 0.01 Hz  
 Power Range/Resolution -110 to +13 dBm / 0.01 dB  
 Modulation AM, FM, Phase, Int Pulse, Ext Pulse

**Spectrum Analyzer Specifications**  
 Frequency Range/Resolution 9 kHz to 1.5 GHz / 1 Hz  
 RF Power CW (max) 20 dBm  
 Atten = 30 dB  
 Resolution BW 10 Hz to 1 MHz  
 Video BW 1 Hz to 3 MHz  
 Amplitude Measurement Range -110 dBm to +20 dBm in 1 dB steps

Preamplifier Gain 20 dB (nom)  
 Sweep Time, span > 100 Hz 10 msec to 1,500 sec

**RF Solid State Amplifier Specifications**  
 Frequency Range 100 kHz to 1,000 MHz  
 Power Rating 250 watts min.  
 At 1 dB compression the power is 175 watts min.  
 Harmonic Distortion -20 dBc at rated power  
 Mismatch Tolerance 100% of rated power without fold back. Will operate without damage or oscillation with any magnitude of source and load impedance.  
 Gain 54 dB min.

**Connections**  
 RF Out Type N (front)  
 Monitor Port In Type N (front)  
 Signal Generator Out Type N (rear)  
 Directional Coupler In Type N (rear)  
 RF Amp In/Out Type N (rear)  
 Communication USB (rear)  
 Directional Coupler Fwd Out Type SMA (rear)  
 Directional Coupler Fwd In Type SMA (rear)  
 Directional Coupler Rev Out Type SMA (rear)  
 Directional Coupler Rev In Type SMA (rear)

**General**  
 Power 115/230 VAC, 50/60 Hz, single phase 16 A  
 Breaker 2 pole, 20 A  
 Cooling Active cooling, air ventilation  
 Environmental Conditions 10°C–40°C (50°F–104°F)  
 Dimensions 128.9 x 56.1 x 91.4 cm (52.5 x 22.1 x 36 in.)  
 Weight 72.6 kg (160 lb.)

**PC Requirements**  
 Computer Intel Pentium 4, AMD Athlon 64 or better processor  
 Operating System Windows, 7, 8, or 10  
 RAM 2 GB Minimum  
 Screen Resolution 1024 x 768  
 Ports 2 available USB 2.0 ports  
 Software Requirements Microsoft Word/Excel 2007 or newer

## BCI, EM, or TWC Testing to 3 GHz

100/25 watts, 10 kHz–3 GHz

Complete Testing Solutions to perform Automotive Conducted Immunity testing over the frequency range of 100 kHz–3 GHz at test levels of up to 200 mA.

**Internal Test Specifications\***  
 MIL-STD-461F and G, CS114, DO160D Section 20 BCI testing, DO160E, Section 20 BCI testing IEC/EN 60601-1-2, IEC 61000-4-6 procedure and levels IEC/EN 50130-4, IEC/EN 61326, IEC/EN 61000-6-1 IEC/EN 61000-6-2, CISPR 24/EN 55024, ISO 11452-4, GMW 3097, ES-XW77-1A278-AC, DC-11224, BMW GS95002, and other automotive standards.

**Signal Generator Specifications**  
 Frequency Range 9 kHz to 3 GHz  
 Amplitude Resolution 0.01 dB  
 Modulation AM, PM, Pulse Modulation  
 Power Range -1.44 to +26 dBm

**Spectrum Analyzer**  
 Frequency Range 9 kHz to 3 GHz  
 Frequency Resolution 1 Hz  
 Detectors Positive and negative peak, sample, normal, RMS  
 Amplitude Accuracy ± 0.5 dB, typical

**RF Solid State Amplifier Specifications**  
 Frequency Range 9 kHz to 400 MHz  
 Power Rating 100 watts min.  
 At 1 dB compression the power is 75 watts min.  
 Harmonic Distortion -20 dBc at 75 watts  
 Mismatch Tolerance 100% of rated power without fold back. Will operate without damage or oscillation with any magnitude of source and load impedance.  
 Gain 50 dB min.

**Connections**  
 RF Out Type N Male (front)  
 Monitor Port In Type N Male (front)  
 Communication GPIB (rear)

**General**  
 Power 115/230 VAC, 50/60 Hz, single phase 16 A  
 Breaker 2 pole, 20 A  
 Cooling Active air cooling, air ventilation  
 Environmental Conditions 10°C to 40°C (50°F–104°F)

**PC Requirements**  
 Computer Minimum Intel Pentium 4/AMD Athlon 64 or better processor  
 Operating System Windows, 7, 8, or 10  
 RAM 2 GB Minimum  
 Free Hard Drive Space 2 GB  
 Screen Resolution 1024 x 768  
 Ports 2 available USB ports  
 Software Requirements Microsoft Word/Excel 2007 or newer

\* Specifications can be met using AR-specified external accessories (injection probes, monitor probes, calibration fixtures, CDNs, attenuators, etc.). All conducted immunity systems can be configured to cover 4 kHz to 3 GHz.

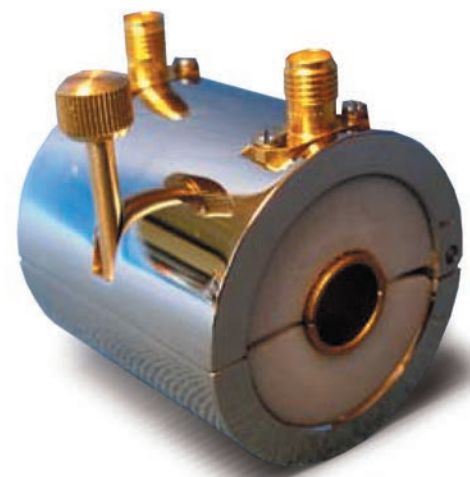


# Conducted Immunity Testing Accessories

## Conducted Immunity and Emissions Tubular Wave Couplers

Our series of compact, versatile, and affordable tubular wave couplers is suitable for immunity testing and emissions measurement of power leads or other connection lines. The BI30000 Series features a bandwidth from 400 MHz to 3 GHz for immunity testing and 150 kHz to 3 GHz for emissions testing.

Immunity testing using the BI30000 Series is similar to using a BC1 probe as in ISO 11451-2, ISO 11452-4, or IEC 61000-4-6, and emission measurements can be taken as a current probe according to EN 55025 (CISPR 25). With the proposed standards coming up in the automotive industry, the BI30000 Series will provide a low-cost alternative to perform conductive testing up to 3 GHz.



	BI30410	BI30413	BI30416	BI30520	BI30526
ISL Value <10 dB	0.50–2.80 GHz	0.60–2.80 GHz	0.80–2.50 GHz	0.60–1.40 GHz	
ISL Value <20 dB	0.15–3.00 GHz	0.15–3.00 GHz	0.20–3.00 GHz	0.15–2.50 GHz	0.20–2.50 GHz
Size (LxW)	40 x 40 mm (1.575 x 1.575 in.)	40 x 40 mm (1.575 x 1.575 in.)	40 x 40 mm (1.575 x 1.575 in.)	50 x 50 mm (1.97 x 1.97 in.)	50 x 50 mm (1.97 x 1.97 in.)
Internal Diameter	10 mm (0.394 in.)	13 mm (0.512 in.)	16 mm (0.630 in.)	20 mm (0.787 in.)	26 mm (1.02 in.)

M1 versions of the above models are available with 17025-compliant calibration.

## Tubular Wave Coupler Calibration Kit

AR offers the CF30000 calibration fixture. This is designed to work with the BI30000 Series Tubular Wave



Couplers for the purpose of level setting prior to conducted immunity testing.

	Model CF30000
Frequency Range	150 MHz–3 GHz
Calibration Power (max. watts)	4 CW
Input Impedance	50Ω
Connectors	SMA(F)
Max. Diameter of TWC	50 mm (1.97 in.)
Length of coupling line	120 mm (4.72 in.)
Weight	1.1 kg 2.42 lb.
Size (approx.) L x W x H	230 x 95 x 90 mm (9.05 x 3.74 x 3.54 in.)

For more information about selecting accessories for our Conducted Immunity Systems, please see Application Note—Selection Guide for CI System Accessories.



Model CI00402

## Conducted Immunity Testing Kits

For use in CI requirements to 1 GHz. Contain all of the attenuators, injection probes, monitor probes, calibration fixtures, calibration resistors, and termination resistors necessary to perform Bulk Current Injection testing to various specifications.

	Model TK1000	Model TK1001	Model TK1002
Application	IEC For use with the CI00250A, CI00400A, CI00401A Testing up to 32 mm cable diameter	Testing up to 66 mm cable diameter	Testing up to 23 mm cable diameter
Accessories Included	AF06250, 6 dB 250 watt fixed attenuator AF20050, 20 dB 50 watt fixed attenuator AF10050, 10 dB 50 watt fixed attenuator TL50050, 50 ohm 50 watt termination BIO0250, 10 kHz–250 MHz injection probe CF00250, 10 kHz–250 MHz calibration fixture CR00100BC, 150-50 ohm adapter BP00250, 10 kHz–250 MHz Monitor Probe CC21111015 50 Ω Shielded Coaxial Cable, 1.5 m, N male connectors (Qty 2) CC21111003 50 Ω Shielded Coaxial Cable, 0.3 m, N male connectors	AF06250, 6 dB 250 watt fixed attenuator AF20050, 20 dB 50 watt fixed attenuator AF10050, 10 dB 50 watt fixed attenuator TL50050, 50 ohm 50 watt termination BIO0251, 10 kHz–250 MHz injection probe CF00251, 10 kHz–250 MHz calibration fixture CR00100BC, 150-50 ohm adapter BP00251, 10 kHz–250 MHz Monitor Probe CC21111015 50 Ω Shielded Coaxial Cable, 1.5 m, N male connectors (Qty 2) CC21111003 50 Ω Shielded Coaxial Cable, 0.3 m, N male connectors	AF06250, 6 dB 250 watt fixed attenuator AF10050, 10 dB 50 watt fixed attenuator AF20050, 20 dB 50 watt fixed attenuator TL50050, 50 ohm 50 watt termination EM10123, electromagnetic clamp EM10123CF, electromagnetic clamp calibration kit BP00250, 10 kHz–250 MHz Monitor Probe CC21111015 50 Ω Shielded Coaxial Cable, 1.5 m, N male connectors (Qty 2) CC21111003 50 Ω Shielded Coaxial Cable, 0.3 m, N male connectors

	Model TK2000	Model TK3000	Model TK4000
Application	MIL/DO For use with the CI00400A Testing up to 32 mm cable diameter	Automotive For use with the CI00400A, CI00401A Testing up to 32 mm cable diameter	CI requirements to 1 GHz Testing up to 32 mm cable diameter
Accessories Included	AF06250, 6 dB 250 watt fixed attenuator AF20050, 20 dB 50 watt fixed attenuator AF10050, 10 dB 50 watt fixed attenuator TL50050, 50 ohm 50 watt termination BIO0400, 10 kHz–400 MHz injection probe CF00400, 10 kHz–400 MHz calibration fixture BP00100, 100 Hz–100 MHz monitor probe BP00400, 10 kHz–400 MHz monitor probe CC21111015 50 Ω Shielded Coaxial Cable, 1.5 m, N male connectors (Qty 2) CC21111003 50 Ω Shielded Coaxial Cable, 0.3 m, N male connectors	AF20050, 20 dB 50 watt fixed attenuator AF10050, 10 dB 50 watt fixed attenuator TL50050, 50 ohm 50 watt termination BIO0401, 1–400 MHz injection probe CF00400, 10 kHz–400 MHz calibration fixture BP00400, 10 kHz–400 MHz monitor probe CC21111015 50 Ω Shielded Coaxial Cable, 1.5 m, N male connectors (Qty 2)	BIO10100, 100 kHz–1,000 MHz injection probe CF01000, Calibration Fixture for BIO1000 BP01000, 100 kHz–1,000 MHz monitor probe AF06250, 6 dB, 250 watt fixed attenuator AF20050, 20 dB, 50 watt fixed attenuator AF10050, 10 dB, 50 watt fixed attenuator CR00100BC, 150-50 Ohm adapter CC21111015, 50 Ohm Shielded Coaxial Cable, 1.5 m, N male connectors (Qty 2) CC21111003, 50 Ohm Shielded Coaxial Cable, 0.3 m, N male connectors TL50050, 50 Ohm, 50 watt termination

## RF Conducted Probe and Cables

The following accessories are for use with our RF Conducted Immunity CI System Model CI00402.

### Current Monitor Probe

AR offers a clamp-on monitoring probe used to measure RF currents flowing through the conductor onto which the probe is placed. The following model is available:

- BP00250: 1 kHz–250 MHz

### Coaxial Cables

Available in 50 Ω



# AR—Your Chamber Solution Provider

AR is a single-source provider with the ability to design, build, and service EMC test and RF chambers. AR’s experienced chamber team is with you all the way, starting with your requirements definition phase and all throughout the life of an AR-supplied chamber. AR customers can expect the highest level of service and technical support with chambers that you are familiar with for AR’s instrumentation and systems.

AR is now the exclusive distributor for the US of Comtest Engineering products, including chambers, shielded rooms, absorbers, and antenna-measurement chambers.

### Available Products:

- Semi- and fully anechoic chambers
- Reverberation chambers
- RF shielded rooms
- Antenna test ranges
- Chamber upgrades
- RF shielded doors
- Microwave absorbers

### Applications:

- MIL-STD-461G
- MIL-STD-464C
- DO-160
- ISO
- IEC
- CISPR
- ETSI

### Typical Chambers

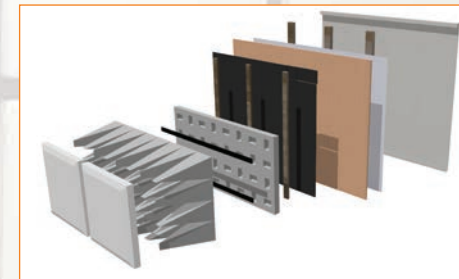
At AR, we understand that the best option for our customers is being able to go to a single point of contact and obtain a complete EMC solution. Moreover, a quick response for budgeting purposes is also a must. With that in mind, AR has established a number of standard chamber designs that can easily be used when requesting a ROM (Rough Order of Magnitude) price. The chambers below represent the offerings that are readily available for our customer’s reference and early planning.

Model	Description	Model	Description
ARCP-0021	Shield Room	ARCP-0028	Vehicle Component Test Chamber
ARCP-0022	Radiated Immunity Chamber	ARCP-0029	Military Component Test Chamber (hybrid)
ARCP-0023	Semi Anechoic 3 m Chamber	ARCP-0030	Military Component Test Chamber (non-hybrid)
ARCP-0024	Semi Anechoic 5 m Chamber	ARCP-0031	Reverb Chamber LUF200
ARCP-0025	Semi Anechoic 10 m Chamber w/ 3 m Qz	ARCP-0032	Reverb Chamber LUF400
ARCP-0026	Semi Anechoic 10 m Chamber w/ 4 m Qz	ARCP-0033	Reverb Chamber LU1000
ARCP-0027	Semi Anechoic 10 m Chamber w/ 5 m Qz	ARCP-0034	Fully Anechoic 3 m Chamber

Although AR offers standard chamber designs, chambers are fully customizable, and offer a complete selection of accessories. Turntables, masts, and a wide array of antennas are part of the basic offering while other components such as fiber-optic converters, shielded RF penetrations, specialty bulkhead connectors, CCTV, and projection systems are also available.

### Why Choose a Comtest Chamber Through AR?

- Over 1,000 chamber installations worldwide
- 30 years of experience in chamber design, manufacturing, and installation
- Chambers backed by AR’s global customer service
- Industry leading polystyrene absorber, and designs—oscillating wall, pan-type RF shielding, and chamber doors
- Typical designs are rated in excess of 40 GHz



Comtest absorber products are divided into two main categories: hybrid and microwave. Hybrid chamber solutions make use of ferrite tiles in combination with the hybrid absorbers, and the microwave absorber line is typically used for research related to antenna pattern measurement.





# Advancements In Antennas

## Antennas for All Your EMC Applications

AR's EMC applications engineers and antenna designers are continually working together to develop antennas that not only meet today's test requirements but also greatly improve test efficiency as well. This is achieved through wider beamwidths and frequency bands, thus reducing the need for using multiple antennas to cover required bands, and reducing the overall number of antenna positions.

Our Radiant Arrow bent element antennas—for fields from 26 MHz to 6 GHz—are about 60% smaller, lighter, and more compact than standard log-periodic antennas. Yet they cover broad frequency ranges, offer up to 6 dBi gain, and produce high fields even in the toughest applications. The smaller size not only makes them more portable, but it also minimizes field loss from room loading.

The ATR26M1G Radiant Arrow antenna pushes the boundaries even further. ATR26M1G (26–1,000 MHz / 20,000 watts input power) goes beyond existing susceptibility requirements, so it's ready for future developments. And the robust design accommodates the high power levels needed to generate significant E-fields.

AR is also THE source for microwave and RF horn antennas, broadband log periodics, and antennas for HIRF testing. Antennas are available up to 50 GHz and 20,000 watts of input power. All AR antennas develop high fields, suitable for RF and EMC testing, and many models can be calibrated for emissions testing.

All our antennas are frequency- and power-matched to AR amplifiers, so it's easy to select the right combination.



**ATH800M6G  
High-Gain Horn Antenna**

800 MHz to 6 GHz, up to 2.3 kW, fields up to 2,000 V/m @ 1 m. It is ideal for HIRF testing of aircraft, automotive and military applications. It has high gain and high power handling.



**ATT700M12G  
Trapezoidal Log-Periodic Antenna**

700 MHz to 12 GHz, broad, uniform beam up to 600 watts, fields up to 200 V/m @ 1 m. This is an all-purpose antenna that can be used in many applications. It's ideal for IEC 61000-4-3 and telecom testing. Furthermore, its wide beamwidth and small physical size makes this antenna desirable for small chambers.



**ATR80M6G  
Radiant Arrow  
Log-Periodic Antenna**


80 MHz to 6 GHz, up to 5 kW, fields up to 500 V/m @ 1 m. It's ideal for covering the full testing range of IEC 61000-4-3 while providing excellent gain and beamwidth throughout the band.



**ATP10K100MM4  
E-Field Generator**

10 kHz to 100 MHz, fields up to 500 V/m. Primary application is MIL-STD-461 testing. It can also be used for automotive component testing.



**JB6  
Broadband Hybrid  
Antenna from **

The 30 MHz–6 GHz Broadband Hybrid Antenna is a compact, high performance instrument designed for both EMC emissions and immunity testing.



**Custom Striplines**

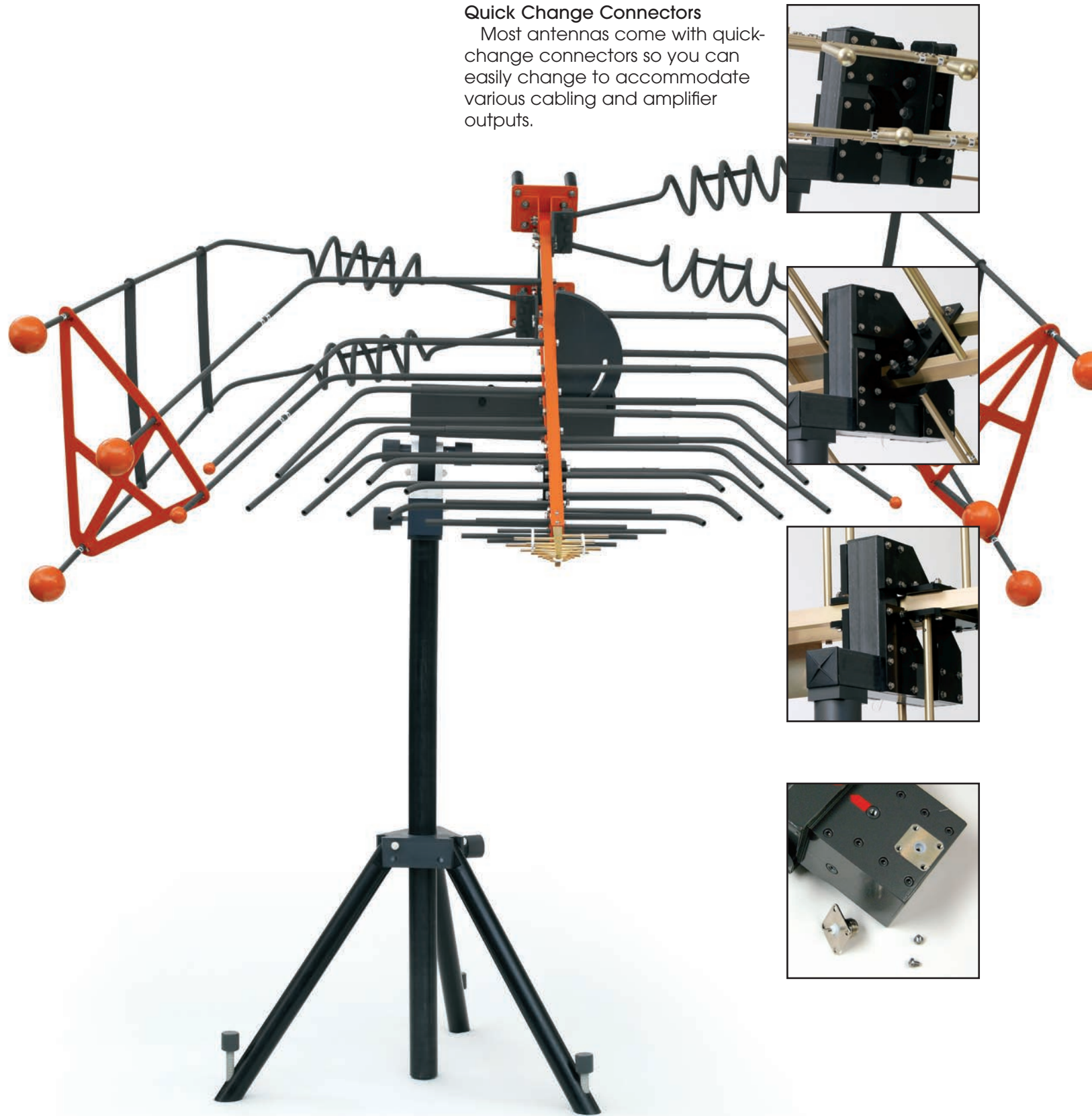
10 kHz to 30 MHz typical up to 20 kW Direct Feed or Step-up Transformer. Its primary application is full-vehicle automotive testing. It's also applicable to MIL-STD-464 testing of large military systems and can be designed to meet your specific needs.



# Radiant Arrow Antennas That Take Technology to New Heights

### Quick Change Connectors

Most antennas come with quick-change connectors so you can easily change to accommodate various cabling and amplifier outputs.



Remove a pin and easily rotate the antenna to the desired position.

With the unique, patented design of our Radiant Arrow bent-element antennas, AR has advanced the science of log-periodic antennas for fields from 26 MHz to 6 GHz.

This exceptional family of antennas includes the ATR80M6G (80 MHz–6 GHz, 5,000 watts input power), the ATR26M6G and ATR26M6G-1 (26 MHz–6 GHz, 5,000 watts input power), and the ATR26M250 (26 MHz–250 MHz, 15,000 watts input power).

The Radiant Arrows utilize a bent-element approach that provides a size reduction up to 75%, without sacrificing key electrical performance such as gain or bandwidth. The size reduction minimizes field loss resulting from room loading, which is especially troublesome when conventional log-periodic antennas are used in small enclosures. All four models feature a vertical to horizontal pivot, to allow bore sight rotation without removing an element from the antenna or removing the antenna from the AR positioner.

Model ATR26M6G-1 shown on model TP1000B tripod.





# Radiant Arrow Antenna

## ATR26M1G 26 MHz to 1,000 MHz

The Model ATR26M1G is a wideband, high-gain, log-periodic antenna that is uniquely suited for use in both traditional applications as well as in new compact chambers. The proprietary design, which utilizes a bent-element approach combined with additional innovations, provides a size reduction of approximately 75% without sacrificing key electrical performance such as gain and beamwidth. The reduced profile and extremely low VSWR make it an excellent choice for high field-strength immunity testing, and the robust design can accommodate the high power levels necessary to generate significant E-fields. The ATR26M1G can also be calibrated for RF emission testing.

Can be custom calibrated to the user's requirement for use in RF emission testing. The calibrated model is designated by adding a CC suffix to the desired model version. Calibration details must be provided using Form 701. Contact factory for details.



## ATR26M6G-1 26 MHz to 6 GHz

The Model ATR26M6G-1 is uniquely suited for use in both traditional applications and in compact test chambers. Its exceptionally broad frequency range addresses existing RF susceptibility requirements as well as anticipated developments. The ATR26M6G-1 features a 75% size reduction over standard log-periodic antennas covering this frequency range. It is matched to work directly with AR's "W," "S," and "A" series RF power amplifiers. The robust design can accommodate the high power levels necessary to generate significant E-fields. The ATR26M6G-1 can also be calibrated for RF emissions testing. The antenna can be supported with the AP5010B antenna positioner or the TP1000BM3 with a ballast tray.

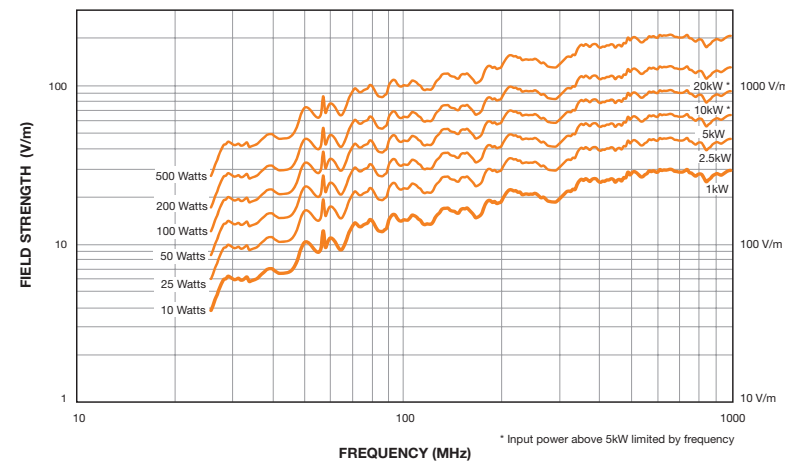
Can be custom calibrated to the user's requirement for use in RF emission testing. The calibrated model is designated by adding a CC suffix to the desired model version. Calibration details must be provided using Form 701. Contact factory for details.



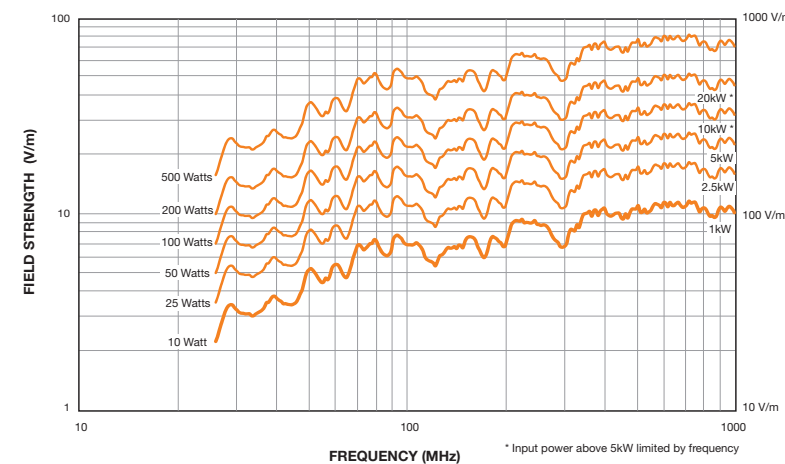
Specifications	
	<b>ATR26M1G</b>
Frequency range	26 MHz–1 GHz
Power input, CW	20 kW @ 26 MHz, derate to 5 kW @ 1,000 MHz
Gain (over isotropic)	-8 to 0 dB (26–80 MHz) 0–6 dB (80–1,000 MHz)
Gain flatness	±3 dB (80–1,000 MHz)
Impedance	50 ohms nominal
VSWR (max.)	6:1 (26–80 MHz) 3:1 (80–1,000 MHz)
Beamwidth (average)	Typical curves available on request
Connector	1 5/8 EIA male with removable center bullet
Size (W X H X D)	231 x 66 x 183 cm (91 x 26 x 72 in.)
Weight (max.)	29.5 kg (65 lb.)
Mounting	May be mounted in two perpendicular planes using an optional antenna positioner (AP5010B). One non-metallic mast (4 foot) is included for vertical mounting.

### ATR26M1G

FIELD STRENGTH MEASURED AT ONE METER



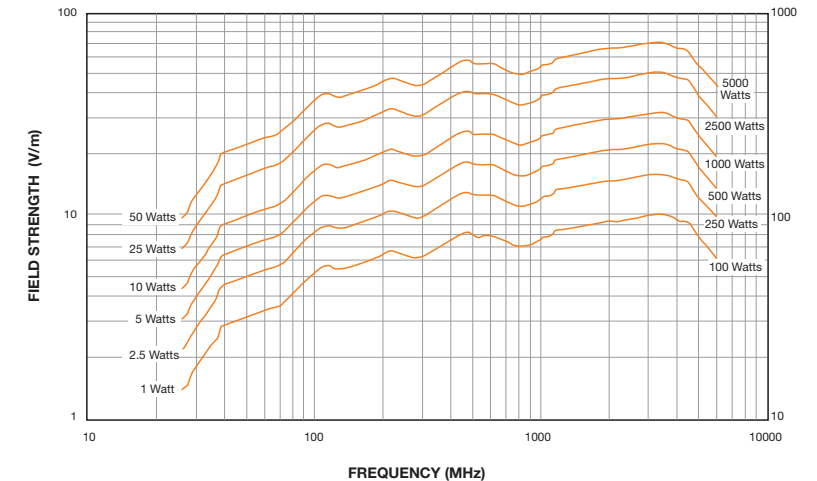
FIELD STRENGTH MEASURED AT THREE METERS



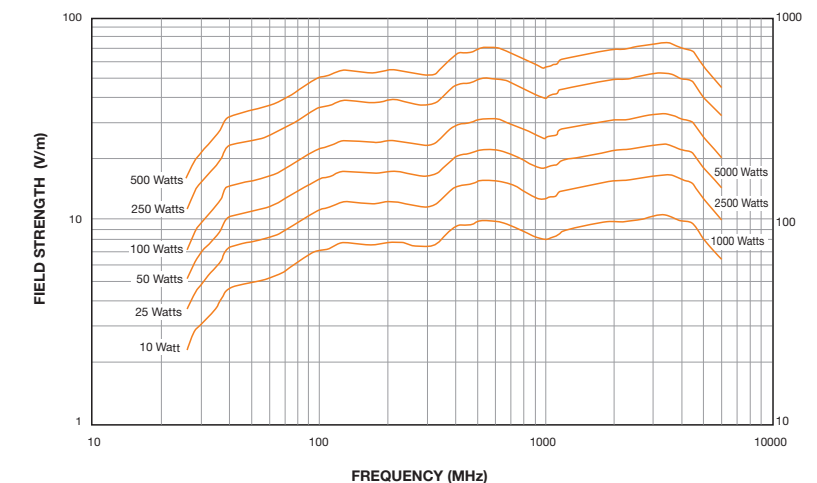
Specifications	
	<b>ATR26M6G-1</b>
Frequency range	26 MHz–6 GHz
Power input (max.)	5,000 watts
Gain (over isotropic)	-4 to 6 dB (26–80 MHz) 6 dB (80 MHz–6 GHz)
Gain flatness	±1.5 dB (80 MHz–6 GHz)
Impedance	50 ohms nominal
VSWR (max.)	6:1 (26–80 MHz) 3:1 (80 MHz–6 GHz)
Beamwidth (average)	Typical curves available on request
Connector	Type N (F) quick change connector; Type C (F) supplied for higher power applications
Size (w x h x d)	218.4 x 73.7 x 161.3 cm (86 x 29 x 63.5 in.)
Weight (max.)	13.6 kg (30 lb.)
Mounting	May also be mounted using the optional AP5010B antenna positioner or the TP1000BM3 tripod with ballast tray. Also includes 2 non-metallic masts (4 and 6 feet) vertical mounting.

### ATR26M6G-1

FIELD STRENGTH MEASURED AT ONE METER



FIELD STRENGTH MEASURED AT THREE METERS



Field strengths have been measured in free-space conditions. Individual shielded rooms, amplifiers, and test-system conditions will influence performance. Field strength also varies with frequency and position of antenna and EUT in non-anechoic testing environments.



# The Most Advanced Antennas for Radiated EMC Testing

**a:** ATR26M250–26 MHz to 250 MHz

**b:** ATR26M6G–26 MHz to 6 GHz

**c:** ATR80M6G–80 MHz to 6 GHz

**d:** ATR200M6G–200 MHz to 6 GHz

Our Radiant Arrow Antennas offer up to 6 dBi gain and produce high fields even in the toughest applications. They can also be calibrated for emissions testing. These efficient, compact, portable antennas represent the innovative thinking and exceptional products that have earned AR the number-one position in the industry.

### Antenna Mounting Adapters

These adapters are available for older versions of the AT1000, AT1080, and AT5080 antennas. They allow for vertical and horizontal polarization changes without removing the antenna from the tripod.

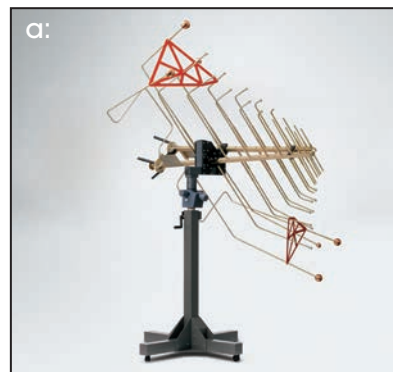
Can be custom calibrated to the user's requirement for use in RF emission testing. The calibrated model is designated by adding a CC suffix to the desired model version. Calibration details must be provided using Form 701. Contact factory for details.

### Specifications

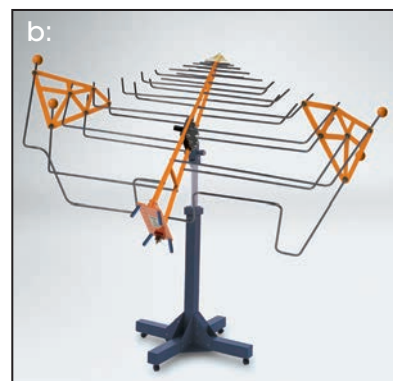
	ATR26M250	ATR26M6G	ATR80M6G	ATR200M6G
Frequency range	26 MHz–250 MHz	26 MHz–6 GHz	80 MHz–6 GHz	200 MHz–6 GHz
Power input (max.)*	15,000 watts	5,000 watts	5,000 watts	5,000 watts
Gain (over isotropic)	-3 to +6 dBi (26–80 MHz) 6 dBi (80–250 MHz)	-3 to +6 dBi (26–80 MHz) 6 dBi (80 MHz–6 GHz)	6 dBi	6 dBi
Gain flatness	±1.5 dBi (80–250 MHz)	±1.5 dBi (80–6 GHz)	±2 dBi	±1.5 dBi
Impedance	50 ohms nominal	50 ohms nominal	50 ohms nominal	50 ohms nominal
VSWR (max.)	3:1 (80–250 MHz) 10:1 (26–80 MHz)	3:1 (80–6 GHz) 10:1 (26–80 MHz)	3:1 2:1 (typical)	3:1 2:1 (typical)
Beamwidth (max.)	Typical curves available on request	Typical curves available on request	Typical curves available on request	Typical curves available on request
Connector	1 5/8 EIA quick change connector	Type N (F) quick change connector	Type N (F) quick change connector	Type N (F) quick change connector
Size (w x h x d)	279.4 x 53.6 x 202.4 cm (110 x 21.1 x 79.7 in.)	279.4 x 53.6 x 202.4 cm (110 x 21.1 x 79.7 in.)	132.1 x 20.32 x 97.8 cm (52 x 8 x 38.5 in.)	82.6 x 17.8 x 57.2 cm (32.5 x 7 x 22.5 in.)
Weight (max.)	31.8 kg (70 lb.)	22.7 kg (50 lb.)	7.94 kg (17.5 lb.)	5 kg (12 lb.)
Mounting	May be mounted in two perpendicular planes using an optional antenna positioner (AP5010B). One non-metallic mast (4 foot) is included for vertical mounting.	May be mounted in two perpendicular planes using an optional antenna positioner (AP5010B). Two non-metallic masts (4 and 6 foot) are included for vertical mounting.	May be tripod mounted in two perpendicular planes using optional tripod. Also includes one non-metallic mast for vertical mounting.	May be tripod mounted in two perpendicular planes using optional tripod. Also includes one non-metallic mast for vertical mounting.

\*Connector and frequency dependent. Contact factory for details.

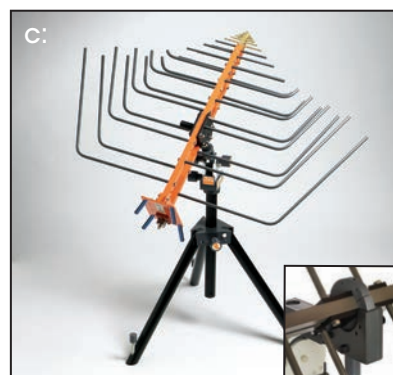
Typical gain charts and antenna patterns are available for most antennas. Contact factory for more information.



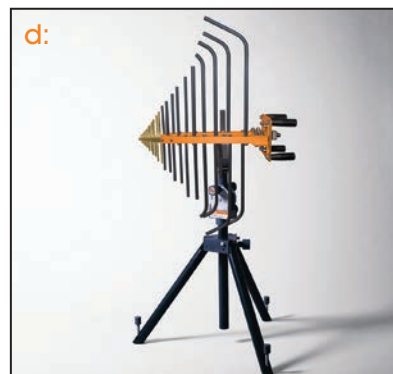
Shown on model AP5010B



Shown on model AP5010B

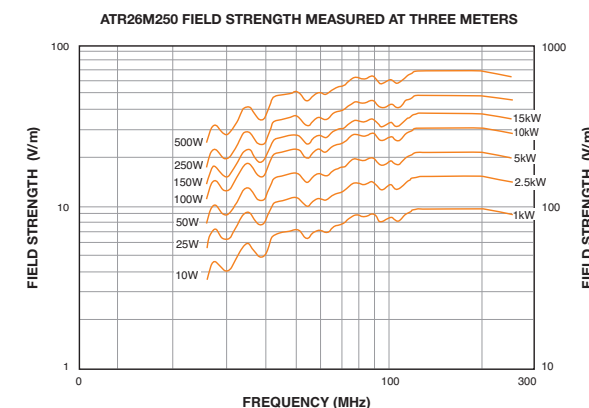
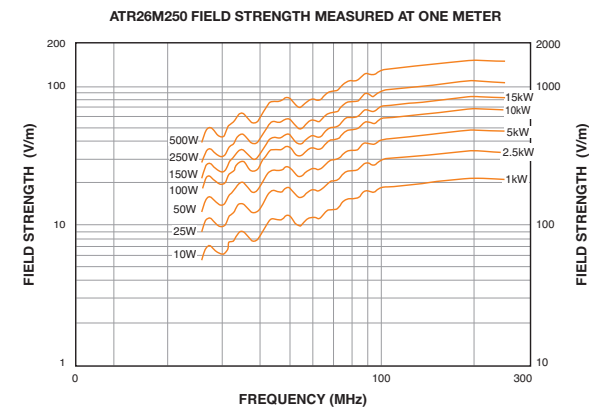


Shown on model TP1000B

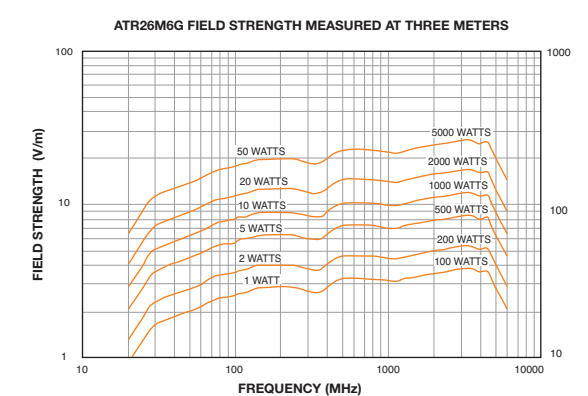
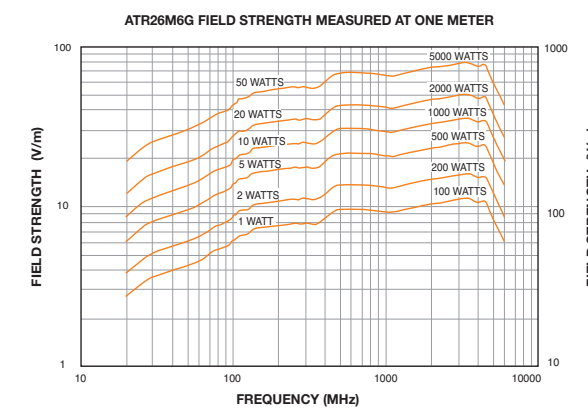


Shown on model TP1000B

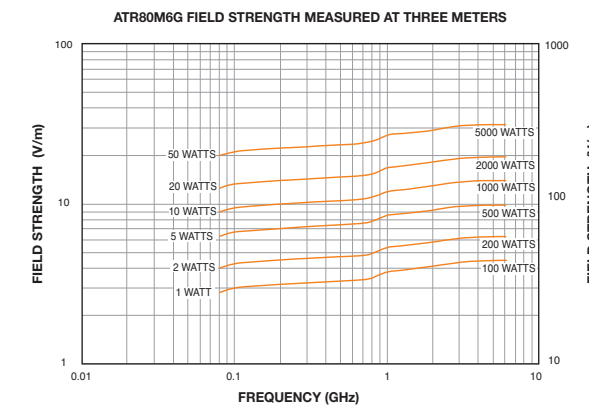
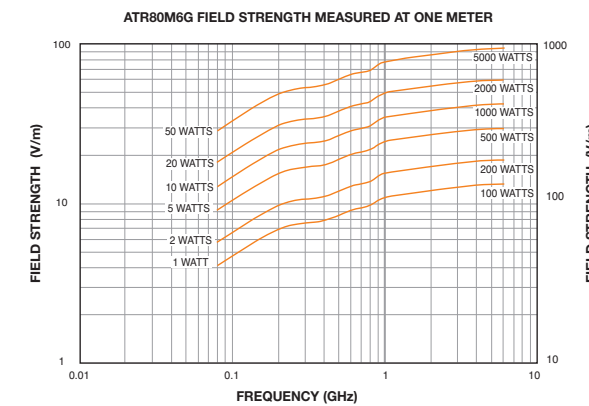
### ATR26M250



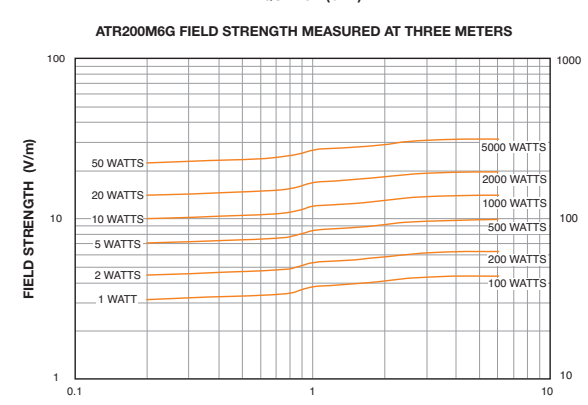
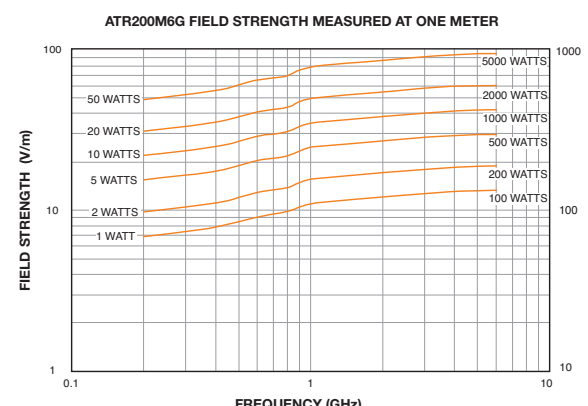
### ATR26M6G



### ATR80M6G



### ATR200M6G



Field strengths have been measured in free-space conditions. Individual shielded rooms, amplifiers and test systems conditions will influence performance. Field strength also varies with frequency and position of the antenna and EUT in non-anechoic testing environments.



Broadband Log Periodic. High Gain. Wide Band. Excellent Performance.

- a: ATL80M1G
- b: ATL150M1G

80 MHz to 1 GHz • Fields up to 800 V/m

You can count on AR's high-gain log periodics to deliver the constant high-intensity fields you need for RFI and EMI testing, in and out of a shielded room. You'll also get frequency response and field intensity that goes beyond the norm.

Their lightweight, compact design makes relocation easy, and they can easily be mounted on a flat surface or tripod. And these antennas are built tough to stand up to the outdoors.

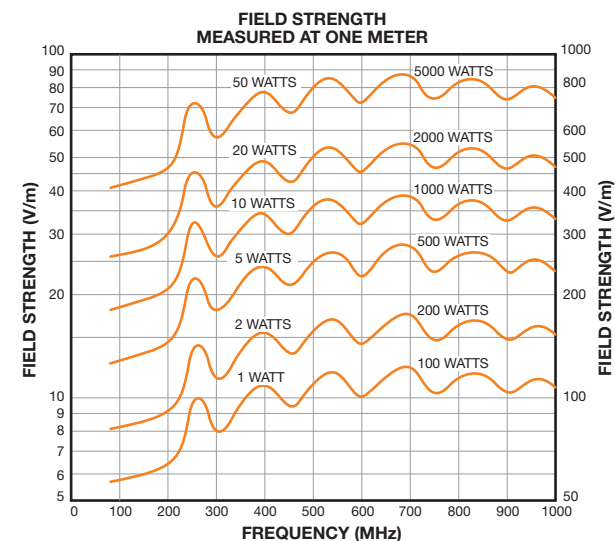
These antennas have been designed to allow polarization change without removing the antenna from a tripod and can be calibrated for emissions testing.

Can be custom calibrated to the user's requirement for use in RF emission testing. The calibrated model is designated by adding a CC suffix to the desired model version. Calibration details must be provided using Form 701. Contact factory for details.

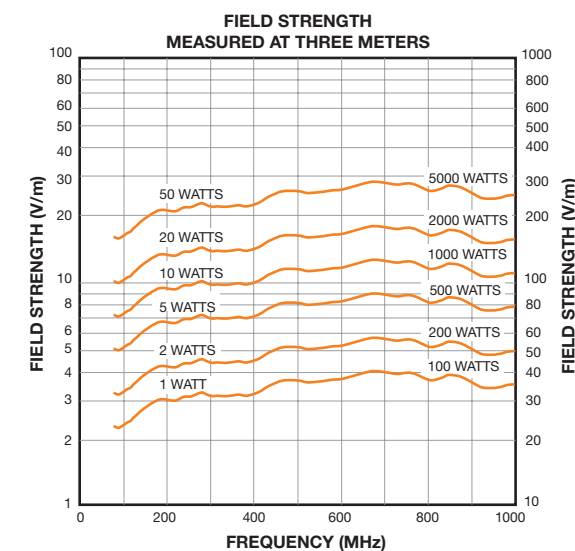


Specifications		
	ATL80M1G	ATL150M1G
Frequency range	80 MHz-1 GHz	150 MHz-1 GHz
Power input (max.)	2,000 watts	2,000 watts
Gain (over isotropic)	6.5 dBi min., 7.5 dBi avg.	6.5 dBi min., 7.5 dBi avg.
Gain flatness	±1.0 dBi	±1.0 dBi
Impedance	50 ohms nominal	50 ohms nominal
VSWR	1.8:1 (max.) 1.5:1 (average)	1.8:1 (max.) 1.5:1 (average)
Beamwidth (min.)	E plane 60° H plane 105°	E plane 60° H plane 105°
Front to back ratio (min.)	15 dB	15 dB
Connector	Type N (F) quick change connector; Type C (F) supplied for higher power applications	Type N (F) quick change connector; Type C (F) supplied for higher power applications
Size (w x h x d)	193 x 13 x 160 cm (76 x 5.1 x 63 in.)	102 x 13 x 91 cm (40 x 5.1 x 36 in.)
Weight (max.)	7 kg (15 lb.)	7 kg (15 lb.)
Mounting	May be mounted using the optional TP1000B tripod.	May be mounted using the optional TP1000B tripod.

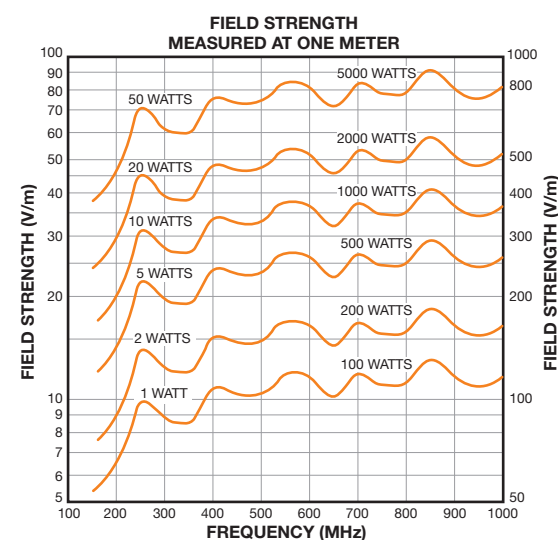
ATL80M1G



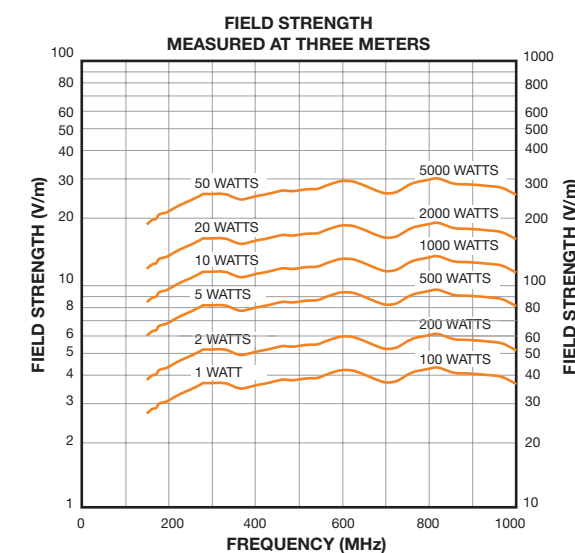
Note: Curves above 1000 and 2000 watts do not apply past power-frequency limits of the antenna.



ATL150M1G



Note: Curves above 1000 and 2000 watts do not apply past power-frequency limits of the antenna.



Field strengths have been measured in free-space conditions. Individual shielded rooms, amplifiers, and test-system conditions will influence performance. Field strength also varies with frequency and position of antenna and EUT in non-anechoic testing environments.



# Wideband, High-Gain, Trapezoidal Log-Periodic Antennas

## ATT700M8G

700 MHz to 7.5 GHz

The model ATT700M8G is a wideband trapezoidal log-periodic antenna and handles twice the power of the ATT700M12G. It provides high power handling, nearly constant gain, and wide-beam widths, which are nearly equal in the E and H planes. The lightweight, compact model is designed to complement AR's "S" Series amplifiers and easily mounts to a tripod using the included adapter.



## ATT700M12G

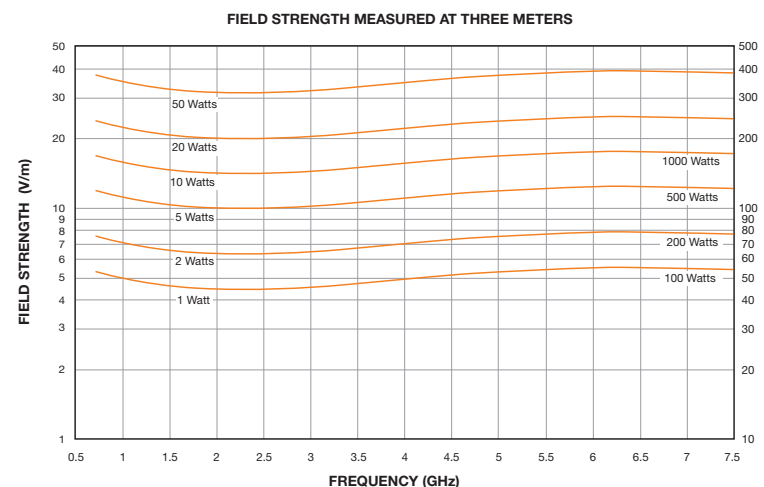
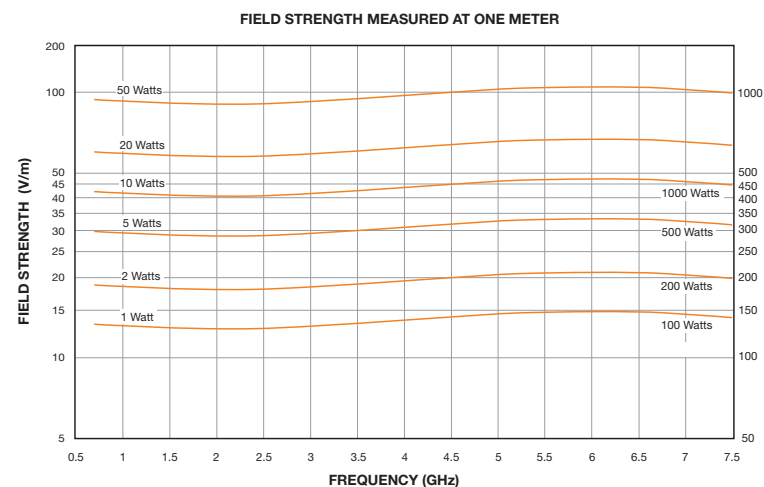
700 MHz to 12 GHz

The ATT700M12G is a wideband trapezoidal log-periodic antenna. It provides high power handling, nearly constant gain, and wide beam widths, which are nearly equal in the E and H planes. The lightweight, compact model is designed to complement AR's "S" Series amplifiers and easily mounts to a tripod using the included adapter.



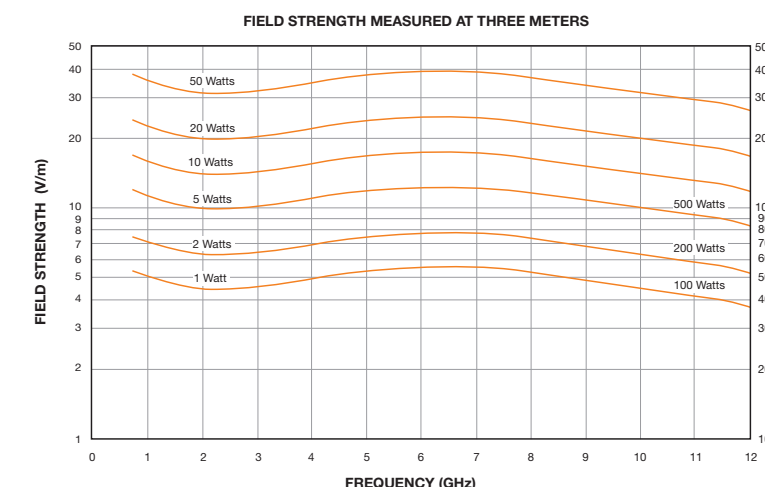
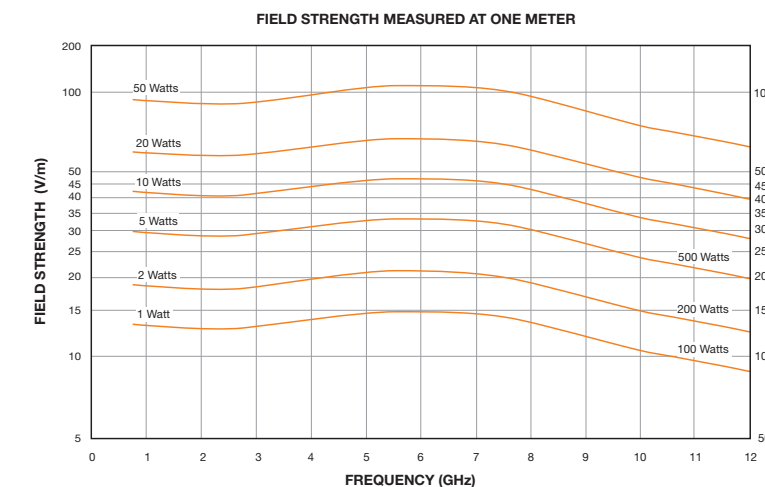
Specifications	
	<b>ATT700M8G</b>
Frequency range	700 MHz-7.5 GHz
Power input (max.)	1,200 watts max.
Gain (over isotropic)	8 dBi typ.
Gain flatness	±1.5 dBi
Impedance	50 ohms nominal
VSWR	3:1 (max.) 1.7:1 (average)
Beamwidth (max.)	E plane 57° H plane 60°
Connector	7-16 DIN (F)
Size (w x h x d)	28 x 28 x 56 cm (11 x 11 x 22 in.)
Weight (max.)	1.8 kg (4 lb.)
Mounting	May be tripod mounted with included mount.

### ATT700M8G



Specifications	
	<b>ATT700M12G</b>
Frequency range	700 MHz-12 GHz
Power input (max.)	600 watts max.
Far Field Gain	8 dBi typ.
Gain flatness	±1.5 dBi
Impedance	50 ohms nominal
VSWR	3:1 (max.) 1.7:1 (average)
3 dB Beamwidth (average)	E plane 57° H plane 60°
Connector	Type N (F)
Size (W X H X D)	28 x 28 x 55 cm (11 x 11 x 21.5 in.)
Weight (max.)	1.7 kg (3 lb., 12 oz)
Mounting	May be tripod mounted with included mount.

### ATT700M12G



Field strengths have been measured in free-space conditions. Individual shielded rooms, amplifiers, and test-system conditions will influence performance. Field strength also varies with frequency and position of antenna and EUT in non-anechoic testing environments.



# RF Horns: High Gain over a Broad Spectrum

- a: ATH200M1G
- b: ATH200M1G-1
- c: ATH400M1G

200 MHz To 1,000 MHz • Fields up to 800 V/m

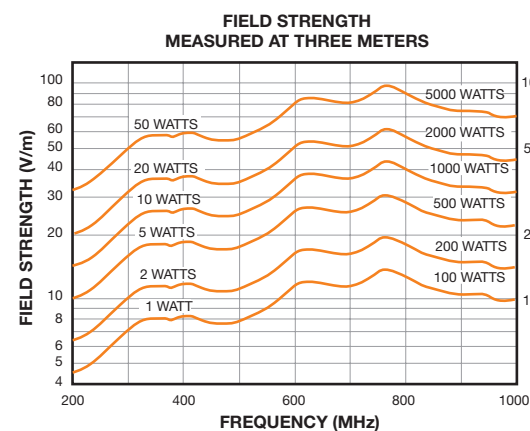
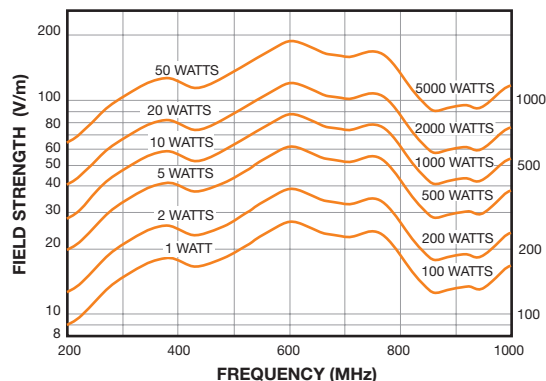
Our RF horn antennas exhibit increasing gain with frequency up to 18 dBi at 1,000 MHz, helping to compensate for losses that occur elsewhere in an RF test system. The ATH200M1G handles up to 5,000 watts input power, and can be used with AR's high-power amplifiers. You can use these antennas in shielded rooms for free space testing.

Can be custom calibrated to the user's requirement for use in RF emission testing. The calibrated model is designated by adding a CC suffix to the desired model version. Calibration details must be provided using Form 701. Contact factory for details.



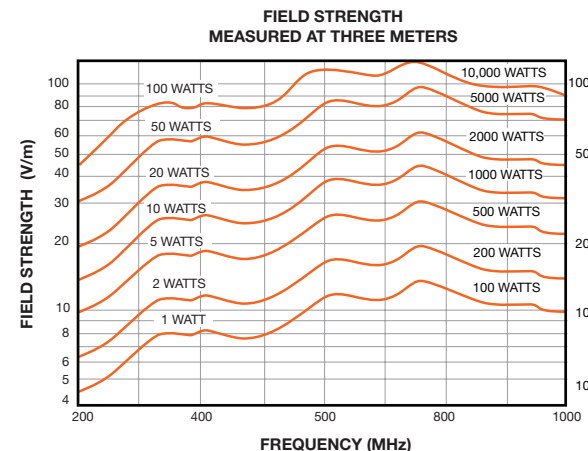
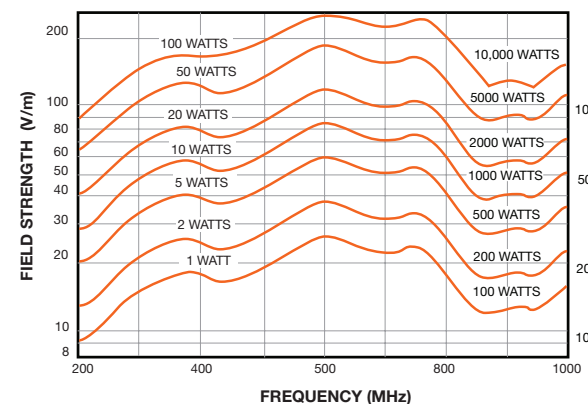
ATH200M1G

FIELD STRENGTH MEASURED AT ONE METER



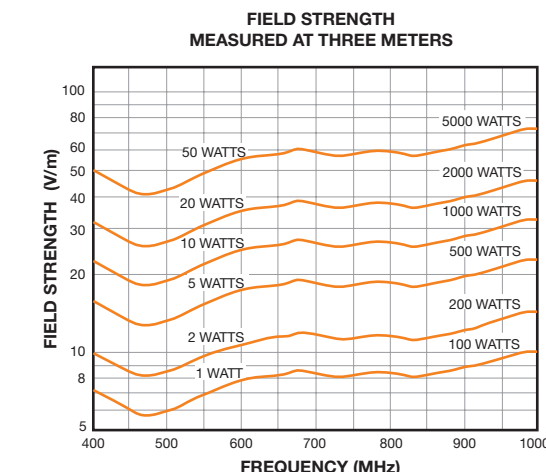
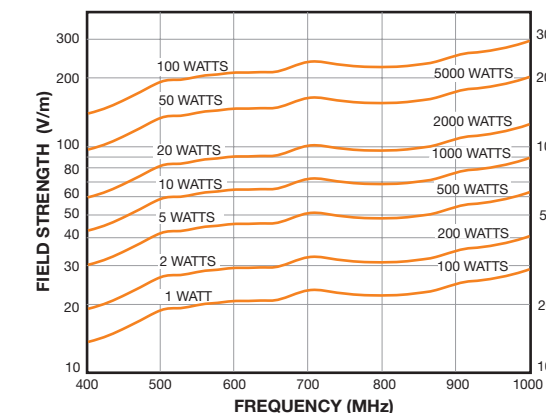
ATH200M1G-1

FIELD STRENGTH MEASURED AT ONE METER



ATH400M1G

FIELD STRENGTH MEASURED AT ONE METER



## Specifications

	ATH200M1G	ATH200M1G-1	ATH400M1G
Frequency range	200 MHz-1 GHz	200 MHz-1 GHz	400 MHz-1 GHz
Power input (max.)	5,000 watts	10,000 watts	See graphs.
Gain (over isotropic)	10 dBi min., typically increasing to 18 dBi at 1,000 MHz	10 dBi min., typically increasing to 18 dBi at 1,000 MHz	10 dBi min., typically increasing to 15 dBi at 1,000 MHz
Impedance	50 ohms nominal	50 ohms nominal	50 ohms nominal
VSWR	2.5:1 max., 1.5:1 avg.	2.5:1 max., 1.5:1 avg.	2.5:1 max., 1.5:1 avg.
Beamwidth (front to back)	Typical curves available on request	Typical curves available on request	See curve
Connector	Type 1-5/8 EIA Flange, Quick Change Connector	Type 1-5/8 EIA Flange	Quick Change block. See Model Configurations.
Mounting	Heavy-duty tripod included. Pads with 3/8-16 thread for stand mounting vertically or horizontally.	Pads with 3/8-16 thread for stand mounting vertically or horizontally.	Rear flange for wall mount. Pads with 1/4-20 thread for tripod mount.
Weight	46 kg (100 lb.)	46 kg (100 lb.)	9.1 kg (20 lb.)
Size (W X H X D)	109.2 x 145.8 x 175.3 cm (43 x 57 x 69 in.)	109.2 x 145.8 x 175.3 cm (43 x 57 x 69 in.)	56.4 x 79.3 x 73.7 cm (22.2 x 31.2 x 29 in.)

Field strengths have been measured in free-space conditions. Individual shielded rooms, amplifiers, and test-system conditions will influence performance. Field strength also varies with frequency and position of antenna and EUT in non-anechoic testing environments.



# Suite of Antennas for DO 160 HIRF Testing



U.S. Air Force photo/Kenji Thulowitz

- a: ATH2G4-2 GHz to 4 GHz
- b: ATH4G6-4 GHz to 6 GHz
- c: ATH6G8-6 GHz to 8 GHz

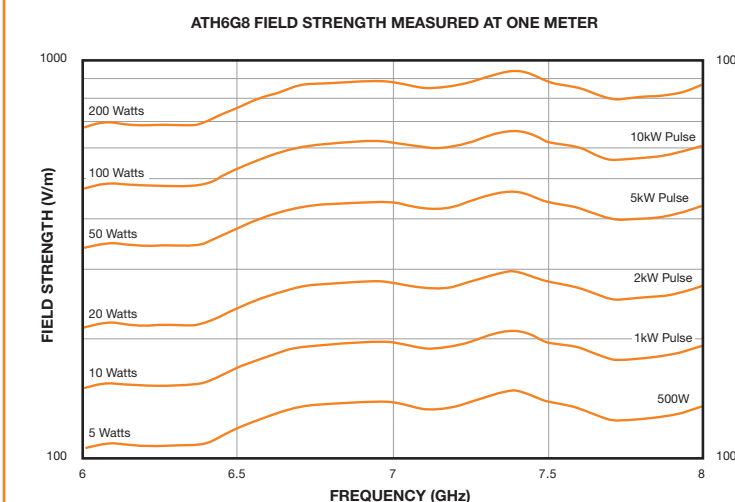
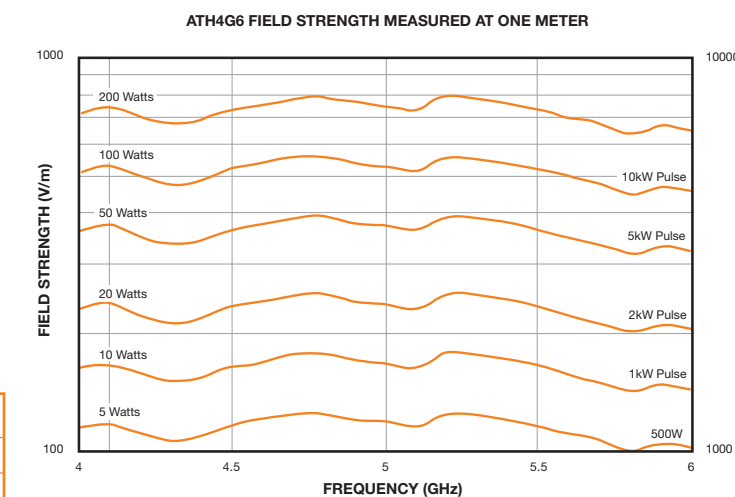
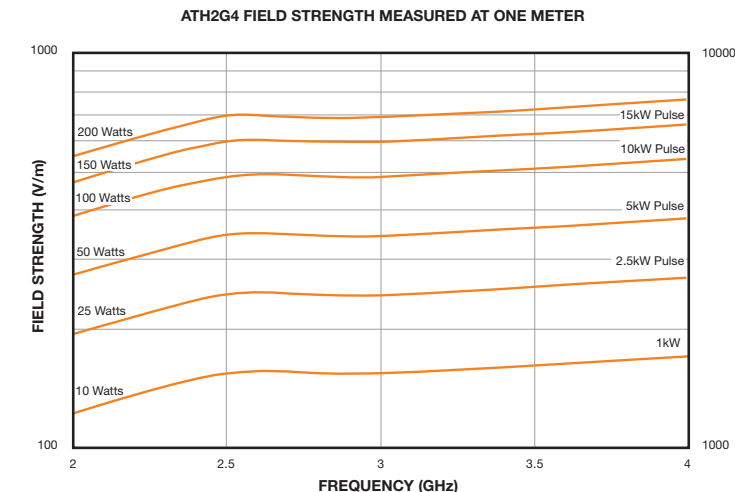
## A Special Family of Antennas for High Intensity Radiated Field (HIRF) Testing

High intensity fields—whether from radar or other electronic devices or generated by enemy/terrorist forces—can cause electronic equipment to malfunction, stop working, or worse. Our amplifiers and antennas are critical components in generating high intensity fields for testing electronic equipment. To keep up with the demands of HIRF testing, AR has developed a family of antennas with the power and bandwidth needed for high intensity field testing.

These are all high-gain, high-power microwave horn antennas that provide typical 20 dBi over isotropic. They supply high intensity fields for aviation and military HIRF testing. They are extremely compact and lightweight for easy mobility. Yet they're built tough to withstand the demands of outdoor use. All three antennas are designed to mount easily on a tripod or to a mounting plate and can be used with AR's pulsed-power traveling wave tube amplifiers.

Can be custom calibrated to the user's requirement for use in RF emission testing. The calibrated model is designated by adding a CC suffix to the desired model version. Calibration details must be provided using Form 701. Contact factory for details.

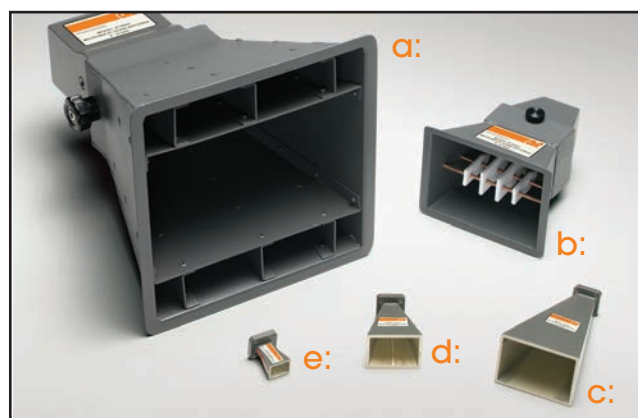
Specifications			
	ATH2G4	ATH4G6	ATH6G8
Frequency range	2 GHz-4 GHz	4 GHz-6 GHz	6 GHz-8 GHz
Power input (max.)	1,000 watts CW	800 watts CW	700 watts CW (6-7.5 GHz) 600 watts CW (7.5-8 GHz)
Peak pulse less than 20%	17 kW peak pulse (1% duty cycle 6µs pulse width)	15 kW peak pulse (1% duty cycle 6µs pulse width)	10 kW peak pulse (1% duty cycle 6µs pulse width)
Gain (over isotropic)	17 dBi min.	18 dBi typ.	18 dBi typ.
VSWR			
Max.	1.5:1	1.5:1	1.5:1
Average	1.3:1	1.3:1	1.3:1
Beamwidth (avg.)			
E Plane	18°	19°	19°
H Plane	16°	19°	19°
Connector	7-16 DIN connector	7-16 DIN connector	7-16 DIN connector
Weight	11.36 kg (25 lb.)	1.59 kg (3.5 lb.)	91 kg (2 lb.)
Size (WxDxH)	46.55 x 29.4 x 98.50 cm (19 x 12 x 40.2 in.)	23.11 x 17.01 x 46.99 cm (9.1 x 6.7 x 18.5 in.)	16.25 x 12.06 x 39.37 cm (6.4 x 4.75 x 15.5 in.)
Mounting	Mounting pad on the E-plane and H-plane for tripod	Mounting pad on the E-plane and H-plane for tripod	Mounting pad on the E-plane and H-plane for tripod



Field strengths have been measured in free-space conditions. Individual shielded rooms, amplifiers, and test-system conditions will influence performance. Field strength also varies with frequency and position of antenna and EUT in non-anechoic testing environments.



# Compact, Lightweight Microwave Horns to 50 GHz



Field strengths have been measured in free-space conditions. Individual shielded rooms, amplifiers, and test-system conditions will influence performance. Field strength also varies with frequency and position of antenna and EUT in non-anechoic testing environments.

- a:** ATH4G8
- b:** ATH7G18
- c:** ATH18G27
- d:** ATH18G27A-1
- e:** ATH26G40

Our microwave horns also provide exceptional performance. Along with our broadband RF antennas, they are specially designed to compensate for the losses that typically occur in test systems as frequency increases.

These innovative microwave horn antennas are compact and lightweight for easy mobility, yet they're tough enough for the extra demands of outdoor use, and they easily mount on a tripod. Several of our microwave horns have removable gain enhancers that improve the field strength to perform 3-meter testing.



Model  
ATH800M6G



Model  
ATH1G18A

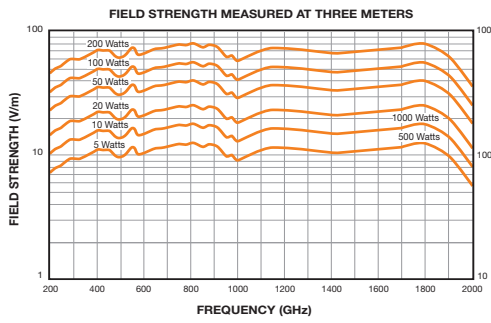
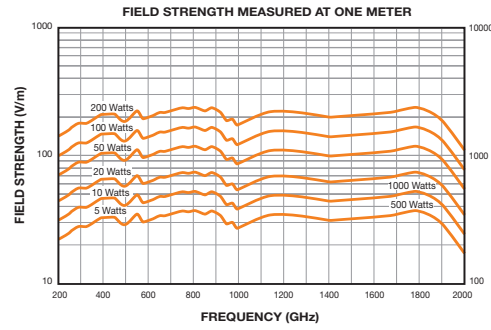
Specifications		
	ATH200M2G	ATH1G18A
Frequency range	200 MHz–2 GHz	1 GHz–18 GHz
Power input (max.)	1,000 watts	300 watts up to 7 GHz; above 7 GHz, derate linearly to 175 watts at 18 GHz
Gain (over isotropic)	6 dBi typ.	See curve
VSWR (typ.)	2:1	2:1
Beamwidth (avg.) E Plane H Plane	(beamwidth graph available on request)	(beamwidth graph available on request)
Front To Back Ratio (min.)	20 dBi	20 dBi
Connector	N (f) Precision	N (f) Precision
Weight	10.21 kg (22.5 lb.)	1.8 kg (4 lb.)
Size (WxDxH)	72.9 x 97.8 x 93.2 cm (28.7 x 38.5 x 36.7 in.)	24.1 x 15.2 x 22.9 cm (9.5 x 6 x 9 in.)

AR offers two wideband, double-ridged microwave horn antennas for RFI/EMI testing. Due to the wide beamwidth, these two antennas are compliant to many military and commercial emissions standards. Both horns are compact and lightweight for easy mobility yet are tough to withstand the extra demands of outdoor use.

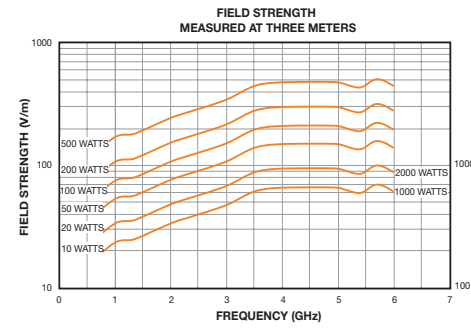
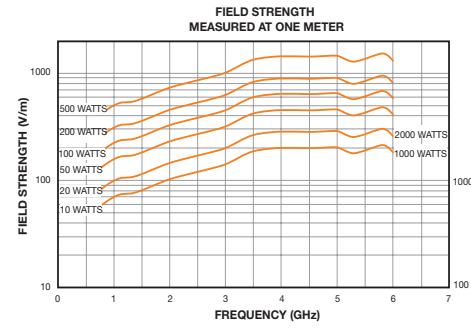
Specifications														
	ATH800M6G	ATH2G18	ATH2G10	ATH2G8A	ATH2G8A-1	ATH4G8	ATH6G18	ATH7G18	ATH18G27	ATH18G27A-1	ATH18G40	ATH26G40	ATH26G40A-1	ATH33G50
Frequency range	800 MHz–6 GHz	2 GHz–18 GHz	2 GHz–10 GHz	2.5 GHz–7.5 GHz	2.5 GHz–7.5 GHz	4 GHz–8 GHz	6 GHz–18 GHz	7.5 GHz–18 GHz	18 GHz–26.5 GHz	18 GHz–26.5 GHz	18 GHz–40 GHz	26.5 GHz–40 GHz	26.5 GHz–40 GHz	33 GHz–50 GHz
Power input (max.)	2,300 watts (connector dependent)	50 watts	700 watts	12 kW	12 kW	500 watts	3,000 max.	2,800 watts	350 watts	350 watts	450 watts	400 watts	240 watts	240 watts
Gain	11 dBi min., increasing to 22 dBi at 6 GHz	6 dBi min., increasing to 12 dBi at 18 GHz	12.5 dBi min., increasing to 23 dBi at 10 GHz	9.5 dBi min., increasing to 18 dBi at 7.5 GHz.	12.5 dBi min., increasing to 22 dBi at 7.5 GHz.	11.5 dBi min., increasing to 15.9 dBi at 8 GHz	19 dBi min., increasing to 23 dBi at 18 GHz	11.3 dBi min., increasing to 14 dBi at 8 GHz	18.7 dBi min., increasing to 21.6 dBi at 26.5 GHz.	8.8 dBi min., increasing to 11.3 dBi at 26.5 GHz.	15.5 dBi min., increasing to 21.2 dBi at 40 GHz.	18.9 dBi min., increasing to 21.8 dBi at 40 GHz.	9 dBi min., increasing to 12 dBi at 40 GHz.	20 ± 2 dBi
VSWR														
Max.	2.5:1	3.0:1	2:1	1.8:1	1.8:1	1.6:1	1.9 max., 6.5–18 GHz	1.2:1	1.5:1	1.4:1	1.5:1	1.5:1	1.3:1	
Average	1.6:1	2.0:1	1.5:1	1.3:1	1.3:1	1.3:1	2.5 max., 6.0–6.5 GHz	1.1:1	1.3:1	1.2:1	1.3:1	1.3:1	1.2:1	1.2:1
Beamwidth (avg.) at 3 dBi down from peak														
E Plane	27.5°	50°	25°	30°	22°	18° with gain enhancer	14°	17° with gain enhancer	15°	57°	21°	15°	57.5°	9.85°
H Plane	25°	50°	27°	30°	25°	18° with gain enhancer	15°	17° with gain enhancer	15°	55°	19°	15°	56.5°	11.9°
Connector	7-16 DIN (F)	SMA (F)	N (F)	WRD-250-D30	WRD-250-D30	N (F) Quick change connector	WRD-650 D28 waveguide, cover flange, alternating thru/tapped hole pattern	WRD-750 waveguide	WR-42 waveguide	WR-42 waveguide	WRD-180 C24 waveguide	WR-28 waveguide	WR-28 waveguide	WR-22 waveguide
Weight	7.26 kg (16 lb.)	283.5 g (10 oz.)	1.59 kg (3.5 lb.)	1.18 kg (2.5 lb.)	1.8 kg (4 lb.)	2.27 kg (5 lb.)	1.07 kg (2.36 lb.)	0.6 kg (1.25 lb.)	56.7 g (2 oz)	241 g (8.5 oz)	56.7 g (2 oz)	60 g (2.1 oz)	122 g (4.3 oz)	0.15 kg (0.33 lb.)
Size (WxDxH)	46.3 x 46.3 x 69.2 cm (18.25 x 18.25 x 27.25 in.)	12.64 x 8.23 x 9.85 cm (4.98 x 3.24 x 3.88 in.)	22.9 x 17.8 x 31.75 cm (9 x 7 x 12.5 in.)	12.2 x 9.9 x 20.3 cm (4.8 x 3.9 x 8 in.)	18 x 14.5 x 33.5 cm (7.1 x 5.7 x 13.2 in.)	without gain enhancer 7.62 x 10.3 x 15.14 cm (3.00 x 4.06 x 5.96 in.) with gain enhancer: 21.6 x 21.6 x 30.5 cm (8.5 x 8.5 x 12 in.)	17.7 x 12.7 x 30.8 cm (7 x 5 x 12.1 in.)	without gain enhancer 4.6 x 6.1 x 6.4 cm (1.8 x 2.4 x 2.5 in.) with gain enhancer: 8.9 x 11.4 x 13.3 cm (3.5 x 4.5 x 5.25 in.)	5.74 x 4.09 x 11.4 cm (2.26 x 1.61 x 4.49 in.)	2.2 x 2.2 x 3.2 cm (0.88 x 0.88 x 1.25 in.)	3.73 x 2.69 x 6.27 cm (1.47 x 1.06 x 2.47 in.)	3.7 x 2.75 x 8 cm (1.45 x 1.08 x 3.14 in.)	1.9 x 1.9 x 2.54 cm (0.75 x 0.75 x 1.00 in.)	4 x 3 x 9 cm (1.57 x 1.18 x 3.54 in.)



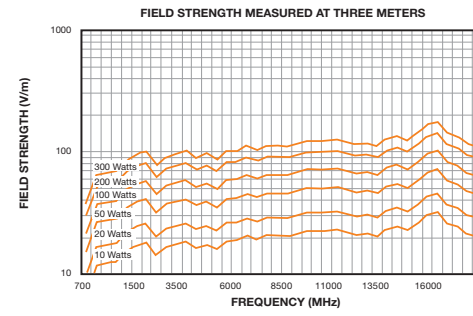
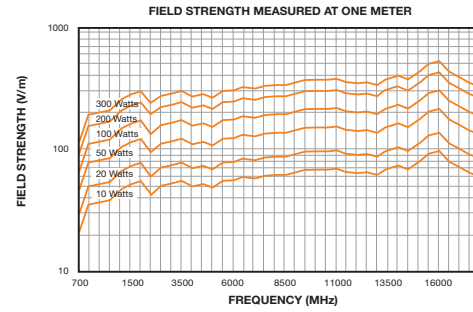
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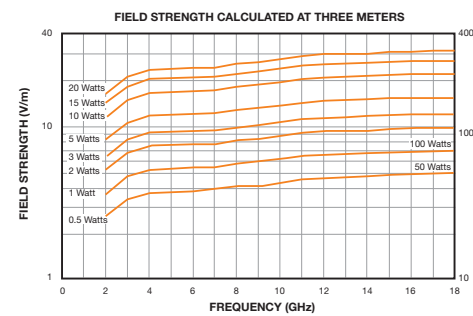
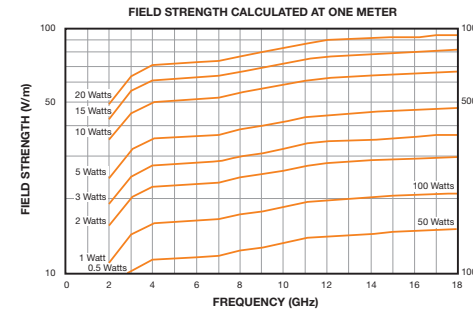
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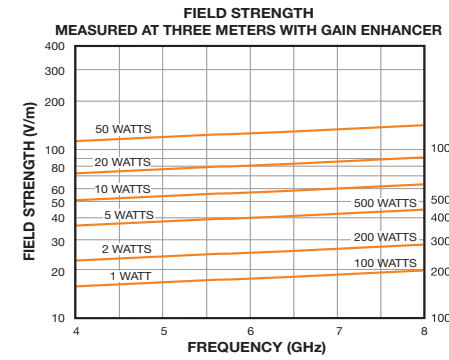
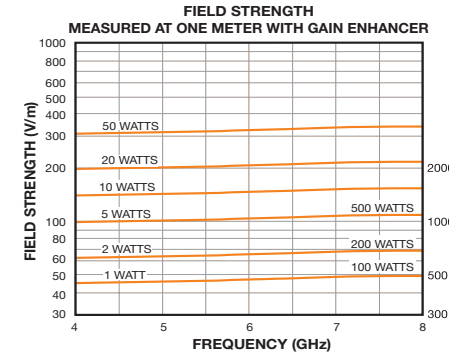
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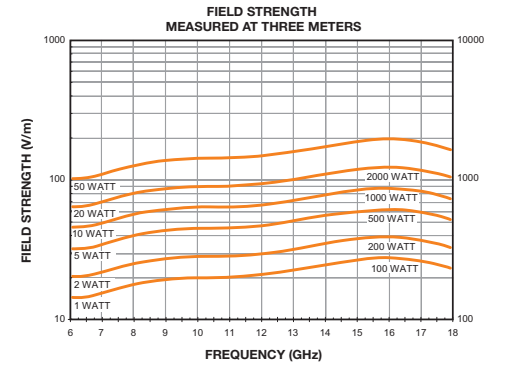
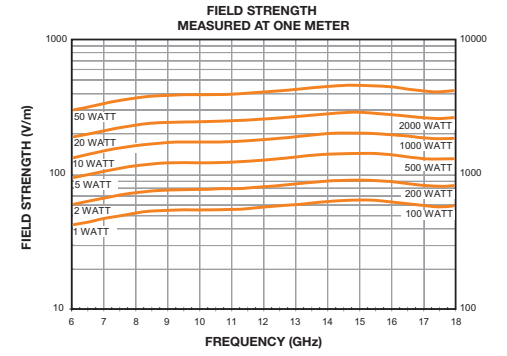
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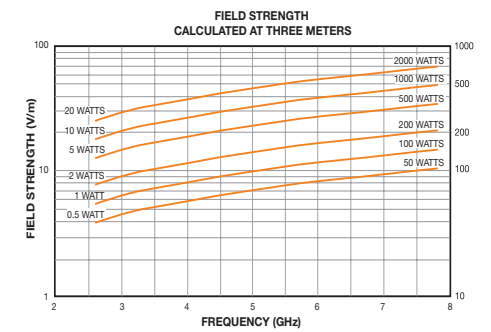
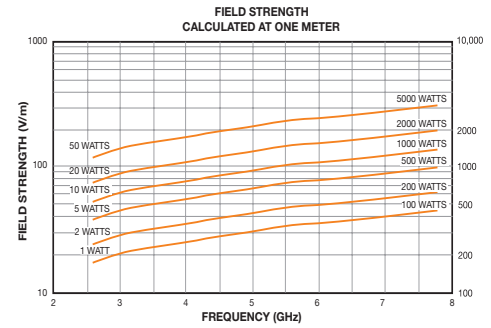
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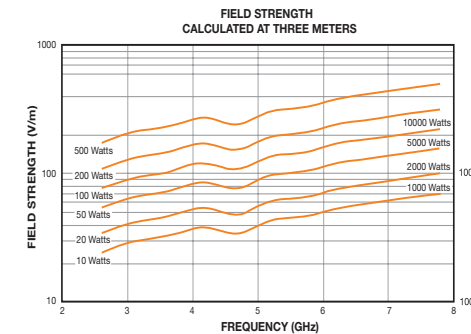
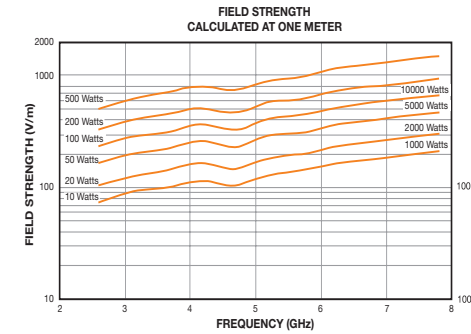
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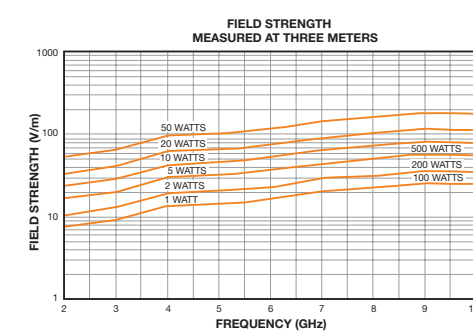
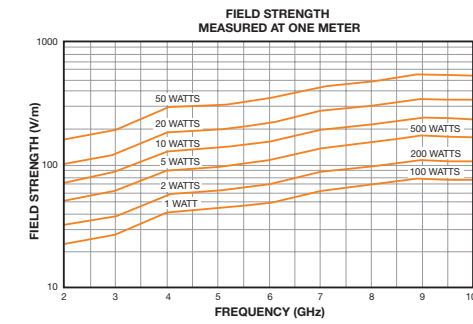
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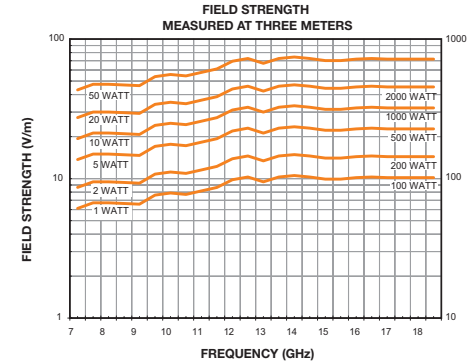
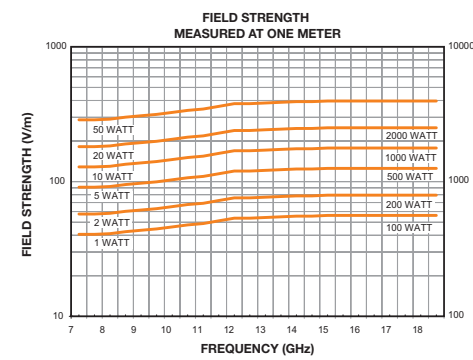
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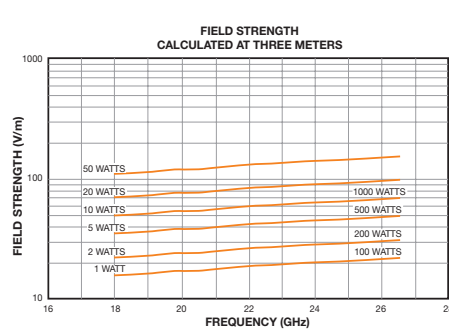
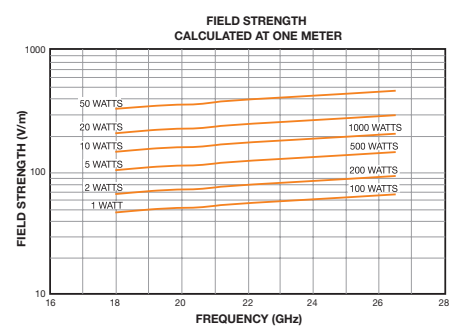
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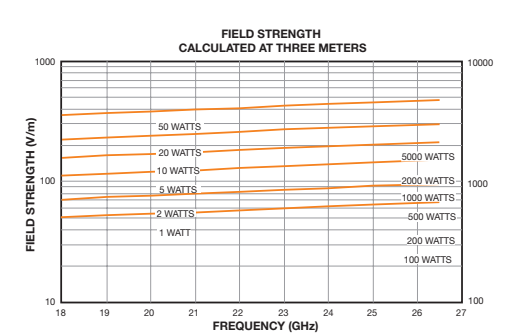
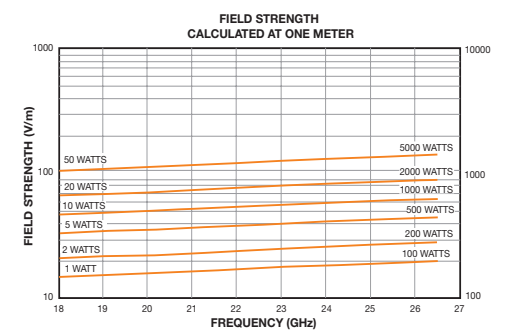
**ATH7G18**



**ATH18G27**



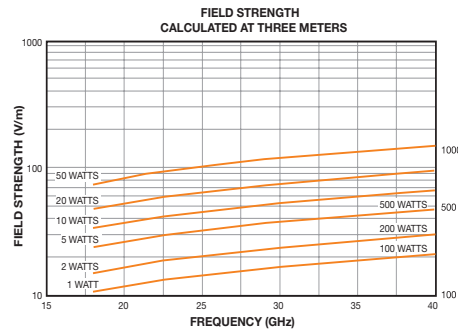
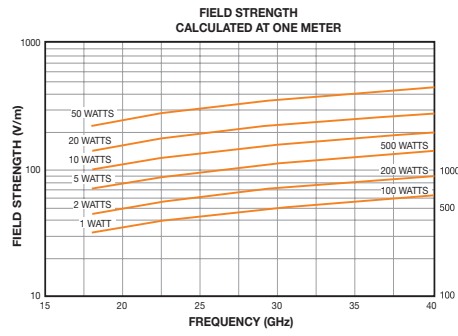
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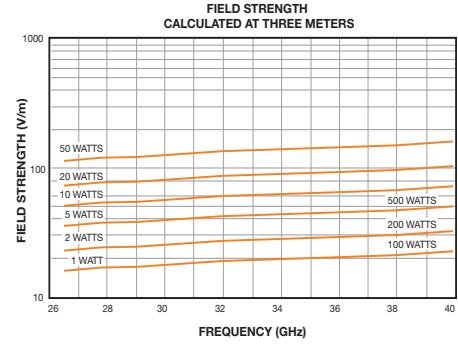
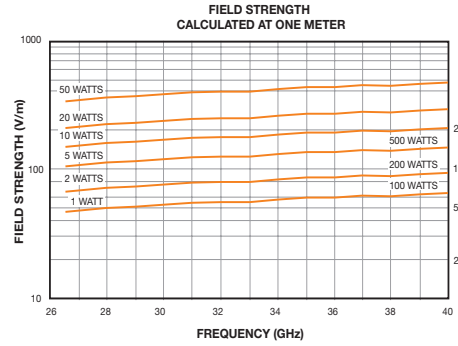


# Microwave Horns: Now to 50 GHz

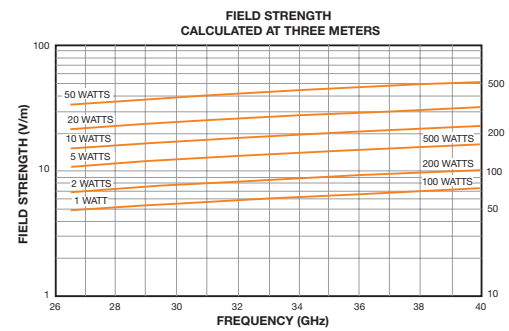
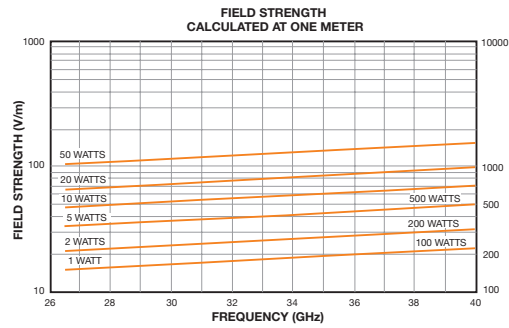
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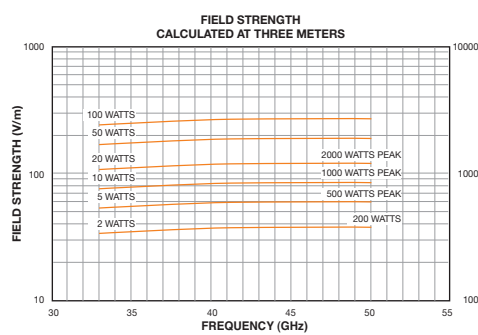
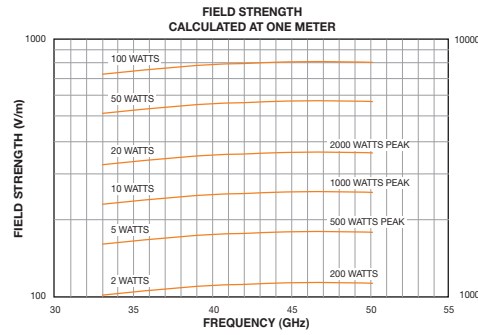
ATH26G40



ATH26G40A-1



ATH33G50

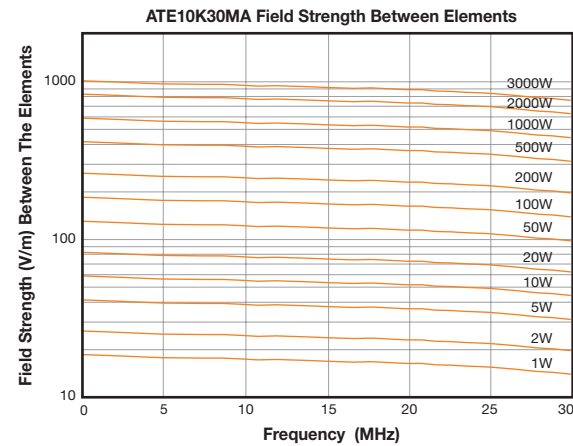




# E-Field Generators: For Uniformity Between the Elements

## ATE10K30MA Our Original Wideband 10 kHz to 30 MHz • Fields up to 1,000 V/m Between the Elements

The ATE10K30MA E-field generator uses low-inductance, high-power internal load resistors to terminate RF power. An internal broadband balun transformer steps up the output voltage and also decouples the feed line. With optional forced-air cooling, the ATE10K30MA can handle power levels up to 3,000 watts. It is small enough to be handled easily in shielded rooms but capable of susceptibility testing at intense field levels.



Field strengths shown are typical for free space. Proximity to conductive surfaces and the presence of the device under test will influence actual levels.

### Specifications

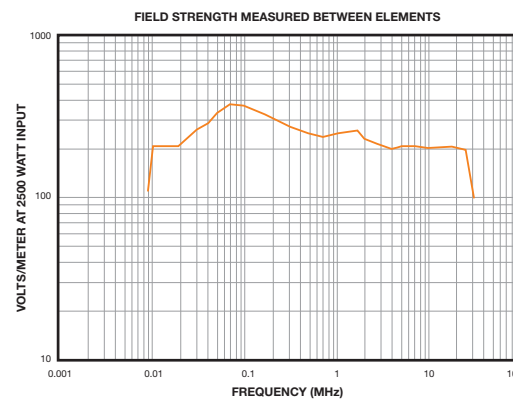
Frequency range	10 kHz–30 MHz
Power Input (max)	1,000 watts continuous 3,000 watts, 50% duty cycle
VSWR	10 kHz–15 MHz 2.0:1 Max 15 MHz–22 MHz 3.0:1 Max 22 MHz–30 MHz 5.0:1 Max
Electric Field Intensity	See graph.
Mounting Provisions	UNC 1/4-20 tripod thread on 2 sides (optional tripod available)
Size	188 x 72 x 7.0 cm (74 x 28.3 x 2.5 in.) (field-generating elements are removable for storage and transportation)
Weight	without cooling option 17 kg (38 lb.) with forced-air cooling 21 kg (46 lb.)
Connector	Type C(F) Quick Change

\*See data sheet for higher power operation and alternate duty cycles.

## ATE10K25M-1 for The BIG Jobs 10 kHz to 25 MHz Fields up to 200 V/m Between the Elements

Practically no job is too large for the ATE10K25M-1 broadband high-power E-field generator. It wraps around cars, small trucks, and other large EUTs. Unbolt the bottom elements from the field generator base to use the ATE10K25M-1 above a ground plane or turn table.

Its high input power and low VSWR capability mean the ATE10K25M-1 generates high E-field strengths for the large span between the elements.



Field strength is shown using AR broadband power amplifiers. Field strengths are typical and do not include cable losses. Individual shielded rooms, reflections, amplifiers, and test-system characteristics will influence performance.

### Specifications

Power Input (max)	3,000 watts CW
Frequency Range	10 kHz–25 MHz
Impedance	50 ohms
VSWR	2.0:1 max., 10 kHz–20 MHz 3.5:1 max., 20 MHz–25 MHz
Electric Field Intensity	200 volts/meter
Connector*	Type C (F)
Size (W x H x D)	303.53 x 222.25 x 101.8 cm (119.5 x 87.5 x 40 in.)
Weight (max.)	113 kg (250 lb.)
Mounting Provisions	Optional tripod available

\*Adapter C (M)/ N(F) included.

## ATE10K100M Evolved Design 10 kHz to 100 MHz Fields up to 300 V/m Between the Elements

Our engineers improved upon the parallel element design with this patented extended bandwidth E-field generator. It offers excellent spatial and spectral field uniformity within the defined test zone.

Two sets of elements accommodate a range of EUT sizes. They can be changed quickly and easily thanks to the specially designed quick-disconnect clamps.

Type A elements provide the highest field intensities and can test objects up to 36 x 46 x 36 cm. The larger elements, Type B, are suitable for testing objects up to 48 x 46 x 36 cm.

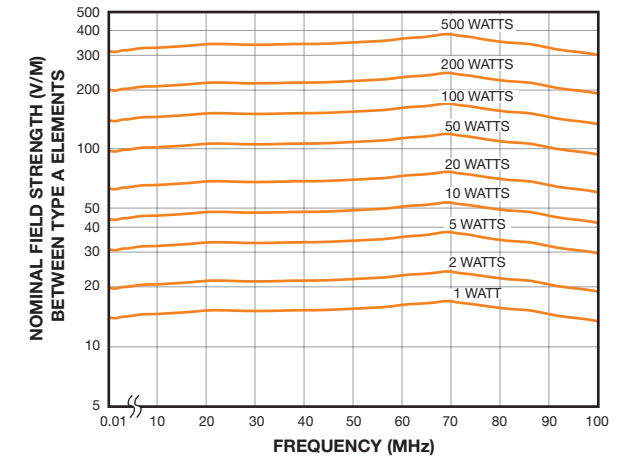


### Specifications

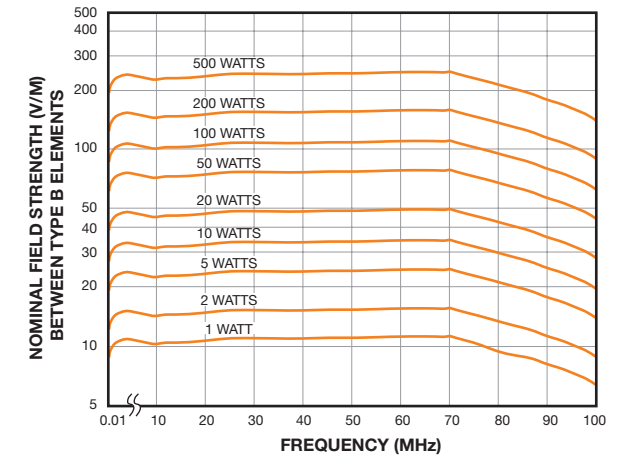
Frequency range	10 kHz–100 MHz
Input Impedance	50 ohms nominal
VSWR	2.5:1 max., 1.4:1 typical
Power input	500 watts max.
Electric field intensity	See graphs.
Field Intensity	between Type A elements nominally 350 V/m with 500 watts input between Type B elements nominally 200 V/m with 500 watts input
Max. Test Object Volume	between Type A elements 36 x 46 x 36 cm (14 x 18 x 14 in.) between Type B elements 48 x 46 x 36 cm (19 x 18 x 14 in.)
Connector*	Type N (F)
Size	with Type A elements 74 x 41 x 102 cm (29 x 16 x 40 in.) with Type B elements 104 x 41 x 102 cm (41 x 16 x 40 in.)
Weight (max.)	13 kg (28 lb.)
Mounting	Accepts tripod threaded 1/4 x 20 stud on three faces (optional tripod available)

\*Adapter C (M)/ N(F) included.

FIELD STRENGTH MEASURED BETWEEN TYPE A ELEMENTS



FIELD STRENGTH MEASURED BETWEEN TYPE B ELEMENTS



Field strength is shown using AR broadband power amplifiers. Field strengths are typical and do not include cable losses. Individual shielded rooms, reflections, amplifiers, and test-system characteristics will influence performance.



### ATP10K100MM4

10 kHz to 100 MHz • Fields up to 500 V/m

#### 360° Rotation Accommodates Any Test Object.

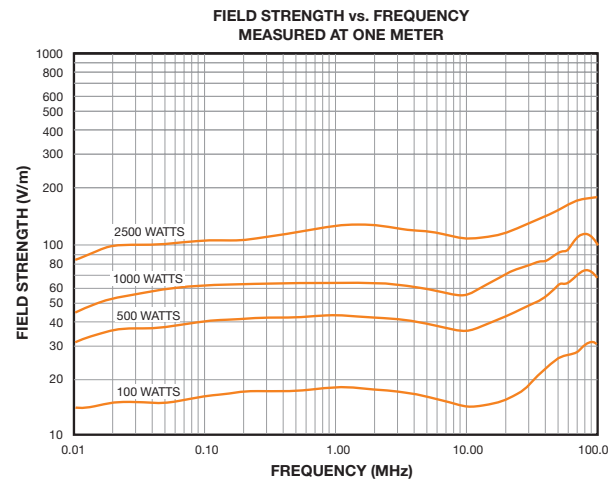
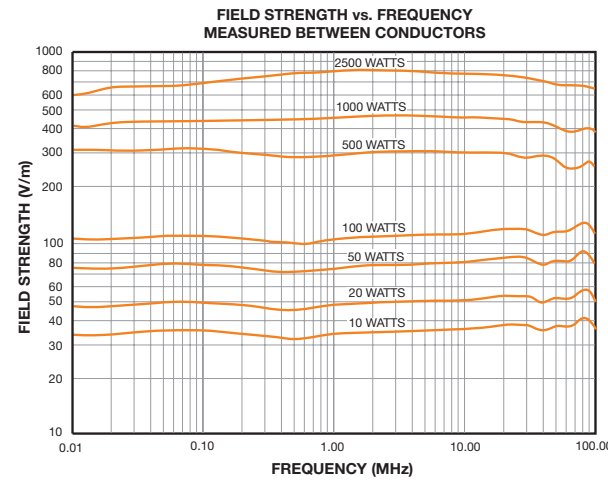
The ATP10K100MM4 adds possibilities to shielded room and anechoic chamber testing with its ability to match free space impedance, resulting in efficient production of E and H fields.

The parallel transmission line of the ATP10K100MM4 offers a 377-ohm wave impedance of free space. Matching transformer and load resistors are built in, and provide excellent VSWR characteristics over a frequency range of 10 kHz to 100 MHz.

The open area between conductors accommodates entire assemblies within the max. field volume. Test items too large for insertion between the elements can be brought near the parallel conductors and radiated. The ATP10K100MM4 easily rotates to any horizontal, vertical, or diagonal position and is equipped with height adjustment. Rotation accommodates large EUTs that can't fit between conductors.



ATP10K100M includes a stand with casters for easy mobility



Field strength is shown using AR broadband power amplifiers. Field strengths are typical and do not include cable losses. Individual shielded rooms, reflections, amplifiers, and test-system characteristics will influence performance.

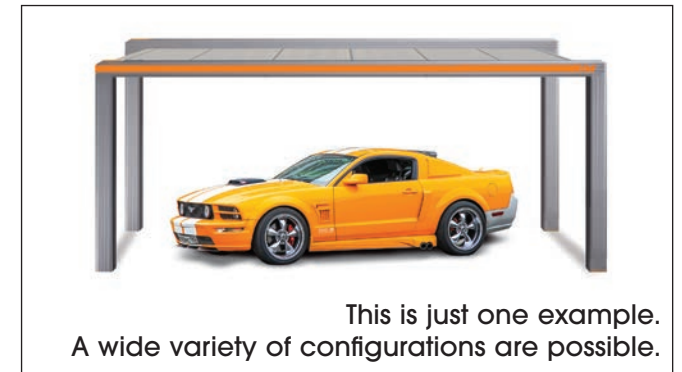
Specifications	
Power input (max)	3,000 watts CW
Frequency range	10 kHz–100 MHz
Input impedance	50 ohms
VSWR	2.0:1 max. 10 kHz–100 MHz 6:1 max. 10–20 kHz above 1 kW input power
Electric field intensity	See charts above
Connector	Type 7-16 DIN Female Cooling
Natural convection to 40°C ambient temperature	
Weight	159 kg (350 lb.)
Size (W x H x D)	261.1 x 215.4 x 141.7 cm (102.8 x 84.8 x 55.8 in.)

### Custom Stripline Field Generators

10 kHz to 30 MHz Typical • Up to 20,000 watts

Let AR design a custom stripline system to meet your test needs. Optimum performance is best achieved when all pieces of the system are matched from amplifier through field generation. The results will be guaranteed performance, simplified execution, and best value.

Our engineers will develop the electrical and mechanical design to meet your specific requirements. They are highly experienced with 3D electromagnetic simulations and with high-power RF impedance transformers and low-inductance loads. AR will also configure the structural interface to your facility in partnership with your team.



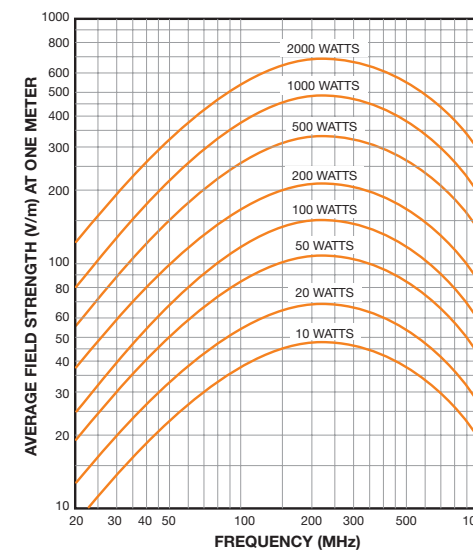
This is just one example. A wide variety of configurations are possible.

### The CAVITENNA: ATC25M1G

25 MHz to 1 GHz • Fields up to 700 V/m

This is the first RF antenna to make the shielded room an integral part of the radiator. A top-loaded monopole, the Cavitenna model ATC25M1G uses the shielded enclosure as a reverberating antenna and the wall as the antenna's ground plane. As a result, the Cavitenna accommodates extremely high power and corresponding field intensities comparable to those of log-periodic antennas four times its size. In a mode-tuned or mode-stirred reverberation chamber, the Cavitenna's compact design and high efficiency is very effective for lower frequency uses. Its small footprint does not protrude into the test volume as other antenna technologies, such as log-periodic and Biconical antennas.

The Cavitenna extends the lower end of its operational frequency range in some applications. In addition to antenna performance, the Cavitenna's ease of use makes it a perfect match for fully automated test configurations. A magnetic mounting clamp is provided to simplify installation in the shielded room.



Specifications	
Frequency range	25 MHz–1,000 MHz
Input power (max.)	
25 MHz–250 MHz	3,500 watts
250 MHz–500 MHz	2,000 watts
500 MHz–1 GHz	1,250 watts
Impedance	50 ohms nominal
Connector	Type C (F)
Electric field intensity	See curves left
Size (W x H x D)	117 x 61 x 51 cm (46 x 24 x 20 in.)
Weight (max.)	14 kg (30 lb.)
Mounting provisions	Magnetic clamps included

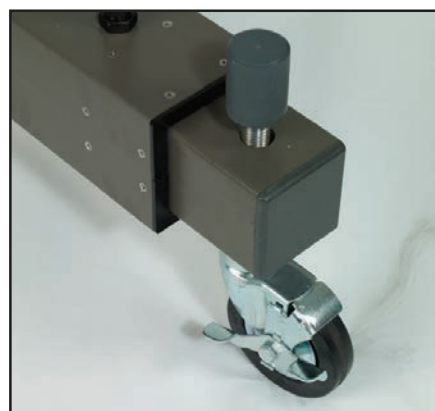
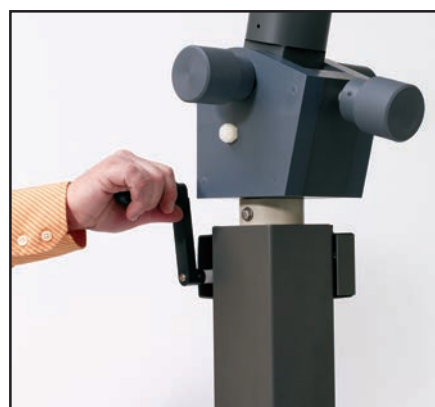
Average field strengths using AR broadband power amplifiers are shown. Field strengths will vary with individual shielded room geometry and placement of the Cavitenna and test item within the room. Consult AR applications engineering or request our Cavitenna Test Report for more information.



# Antenna Positioner and Tripods

## The AP5010B Antenna Positioner

The Model AP5010B is a heavy-duty non-conductive support and positioner for models ATR26M6G, ATR26M6G-1, ATR26M1G or ATR26M250. Built-in casters allow for easy movement in a shielded room or open site testing. The design also allows the test engineer to position the antenna for either vertical or horizontal polarization and permits the antenna to be tilted 30 degrees. Height adjustment is from 2.07 m (81.69 in.) to 3.31 m (130.25 in.), measured from the floor to the center line of antenna. The AP5010B is equipped with base-leg adjustment from 1.53 m (60.19 in.) overall to 2.04 m (80.19 in.).



## TP3000 Standard Tripod

The Model TP3000 is a high-quality wooden-legged tripod for use in RF generation and measuring applications. The majority of the tripod is non-metallic, which minimizes the effect the tripod has on an RF field and allows for more accurate measurements. This tripod is ideal for use in applications where a non-conductive tripod is preferable. Adjustable legs allow for leveling of the tripod.

### Specifications

Load Capacity:	10 kg (22 lb.)
Maximum Height (Approx.):	175 cm (69 in.)
Minimum Height (Approx.):	53 cm (21 in.)
Column Travel:	45 cm (18 in.)
Pan Rotation:	360°
Instrument Mounting Screw:	1/4 in. x 20
Material:	Wood
Weight:	2.6 kg (5.7 lb.)
Export Classification:	EAR99



## The TP1000B Tripod

Our lightweight, nonconductive tripod supports many antennas. Angle, level and height are easily adjustable. The adjustable mount makes it simple to change antenna polarization. The TP1000BMI comes with locking casters and an additional swivel adapter head. AR offers other tripods including models TP2000, TP2010 and TP4000. For more information on these models, visit our website.



## The TM 1000 Series Antenna Adapters

AR also provides antenna adapters that allow bore sight rotation of microwave horn antennas. The TM series is compatible with AR Model TP1000B tripod.

- TM1000: For WRD-750 D24 waveguide and ATH7G18.
- TM1001: For WR-42 waveguide and ATH18G27 and ATH18G27A-1
- TM1002: For WR-28 waveguide and ATH26G40 and ATH6G40A-1



## The AP4000 Antenna Positioner

The AP4000 antenna positioner is a heavy-duty positioner for AR's ATH200M1G, the 200 to 1,000 MHz high-gain horn antenna. The height is easily adjustable, and the positioner rotates to change polarization. The AP4000 is built on wheels for easy movement in a shielded room or at free space testing. Also available is a 3-meter height positioner for the ATH200M1G antenna.



# RF and Microwave Test Accessories More Options than Ever Before

## Power and Frequency Matched to AR Amplifiers

If you use AR amplifiers, you obviously recognize the importance of quality and reliability. But when you add accessories, that's no time for a weak link.

All it takes is one component in your test setup that doesn't perform as well as it should, and all your test results become questionable. Why take chances?

AR offers a complete selection of accessories that give you the most reliable results. Many even make testing quicker, more efficient, and more accurate.

We've got probes, software, system controllers, couplers, and more. They're all matched to our amplifiers to make your setup as easy as possible...and to help you avoid any weak links.

## Three-Channel Power Meter Features High-Speed Measurement Capability

Advanced digital signal processing combined with a full line of fast-response diode heads allow the PM2003 to deliver 200 readings per second with one channel or 100 per second when two channels are used. Two channels at a time can be simultaneously displayed and recorded, and the third channel can easily be switched in to be displayed or recorded. The PM2003 measures signals from -70 dBm to +44 dBm (with appropriate powerhead), and can store calibration data for up to four heads in its internal, non-volatile memory. Its dynamic range extends to 90 dB when diode heads are used.

We offer a family of diode or thermo-couple 50 ohm powerheads with excellent specifications. All are supplied with NIST-traceable calibration factors. Each new powerhead is supplied with a Powerhead Data Adapter that has complete calibration data stored in a built-in EEPROM, and a 5 ft. powerhead cable. Please visit our web site for a full listing of available powerheads.

### PM2003 Three-Channel Power Meter

Frequency Range	10 kHz to 40 GHz, powerhead dependent
Power Range	-70 dBm to +44 dBm, powerhead dependent
Measurement Speed:	1 channel: 200 Readings/Sec. 2 channels: 100 Readings/Sec.
Dynamic Range	Up to 90 dB with diode heads, 50 dB with thermocouple heads.
Inputs	Rear panel HEAD connectors and rear panel IEEE-488 connector standard.
Outputs	Rear panel PWR/REF connector, 0 dBm, 50 MHz. Rear panel RECORDER BNC connector, 0 to 10 V into 1 MΩ. Output impedance is 9.09 kΩ. May be operated into 1 kΩ or 1 V fs.

Standard Power Heads (Sensors)	Frequency	Dynamic range (model PM2003)
PH2000A Dual diode	10 kHz to 8 GHz	-60 to +20 dBm
PH2005 Dual diode	500 kHz to 18 GHz	-70 to +20 dBm
PH2010 Dual diode	30 MHz to 40 GHz	-70 to +20 dBm

Rack mount kit (RM2000) also available for the PM2003.





# Power-Measuring Equipment

## PSP Series Pulse Power Sensors

The PSP Series Wideband USB pulse power sensors turn your PC or laptop with a standard USB 2.0 port into a pulse power analyzer without the need for any other instrument. Power measurements from the PSP Series can be displayed on the PC or can be integrated into a test system with a set of remote commands. A status LED on the sensor provides indication of its operational state for diagnostic purposes.

The PSP sensors PSP001 through PSP005 include 6, 18, and 40 GHz models for measurement of wideband modulated and unmodulated signals over a frequency range of 50 MHz up to 40 GHz.

The PSP Series Wideband USB pulse power sensors are supported by both AR's emcware<sup>®</sup> software and PulsewARE. PulsewARE is a Windows-based software package that provides control and readout of the sensors.

The unique PSP102 power sensor measures down to 4 kHz and has an upper frequency of 6 GHz.

The PSP Series is ideal for radiated and conducted immunity, telecommunications, and intentional radiator EMC testing as well as applications in manufacturing, design, and research. The design of these products allows for fast, accurate, and reliable RF power measurements of a wide range of pulsed, modulated, and CW signals.



### PSP001-PSP005 Pulse Power Sensors.

Sampling Techniques:	Real-time/Equivalent Time/Statistical Sampling
Continuous Sample Rate:	100 MHz
Effective Sample Rate:	10 GHz
Time Resolution:	100 ps
Statistical Analysis:	Continuous or gated CCDF
Statistical Speed:	100 M points/sec
Trigger Sources:	Internal or External TTL
External Trigger in/out:	TTL in (slave) or out (master), SMB connector
Minimum Trigger Width:	10 ns
Maximum Trigger Frequency:	50 MHz
Trigger Jitter:	0.1 ns rms
Trace Acquisition Speed:	100 K sweeps/second
Measurement Speed:	100 K meas/sec (buffered mode) over USB 800 meas/sec (continuous)
Trigger Modes:	Auto, Normal, Single, Free run
Trigger Arming:	Continuous, Trigger Holdoff, Frame (gap) Holdoff
Remote Connectivity:	USB 2.0, type B connector
Command Protocol:	IVI-C and IVI-Com
Maximum Input Power:	200 mW avg, 1W for 1 us peak
Size (LxWxH):	145 x 43 x 43 mm (5.7 x 1.7 x 1.7 in.)
Weight:	363 grams/0.8 lb.
Power Consumption:	2.5W max (USB high power device)

### PSP102 Pulse Power Sensor.

Continuous sample rate:	25 MSPS
Effective sample rate:	1 GSPS
Time resolution:	1 ns
Trigger source:	internal or external TTL
External Trigger in/out:	TTL in (slave) or out (master)
Minimum Trigger Width:	4 us
Maximum Trigger Frequency:	120 kHz
Trigger Jitter:	1 ns rms, 20 ns rms (external)
Trace Acquisition Speed:	> 30 k sweeps/second
Measurement Speed:	100 k meas/sec (buffered mode) over USB 1000 meas/sec (continuous)
Trigger Modes:	Auto, Normal, Single, Free run
Trigger Arming:	Continuous, Trigger Holdoff, Frame (gap) Holdoff
Remote Connectivity:	USB 2.0, type B connector
Command Protocol:	M-C and IVI-Com
Maximum Input Power:	200 mW avg, 1W for 1 us peak
Size (LxWxH):	145 x 43 x 43 mm (5.7 x 1.7 x 1.7 in.)
Weight:	363 grams/0.8 lb.
Power Consumption:	2.0W, (USB high power device)

Sensor Model	Frequency Range	Dynamic range
PSP001	50 MHz to 6 GHz	-60 to +20 dBm
PSP002	50 MHz to 18 GHz	-34 to +20 dBm
PSP003	50 MHz to 40 GHz	-34 to +20 dBm
PSP004	50 MHz to 18 GHz	-50 to +20 dBm
PSP005	50 MHz to 40 GHz	-50 to +20 dBm
PSP102	4 kHz to 6 GHz	-60 to +20 dBm





# Laser Powered E-field Probes

Accredited Calibration of Field Probes is Available Through Our In-house Calibration Lab

## AR's Complete and Rugged Line of EMC Field Monitoring Equipment

### Starprobe® Laser Powered Probes Cover the Broadest Frequency Range—5 kHz to 60 GHz!

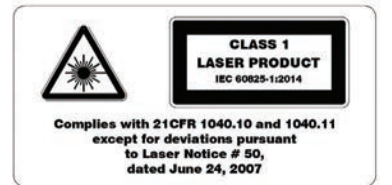
AR has designed and manufactured a highly-advanced line of field-monitoring equipment. These E-field laser probes contain an internal microprocessor which provides the field probes with important features. Some features allow for optimal linearization, temperature compensation, control, and communication functions. And because they're laser powered, you never have to replace or recharge batteries. Ruggedized antenna cones and fiber optic cables provide exceptional reliability.

### FI7000 Probe Interface

Provides both power and a serial communication with the FL7000 and PL7000 series probes. An additional, low-level loop back fiber-optic connection is used to sense unexpected disconnect of laser-driven fibers to ensure user-safe laser operation. The FI7000 can be used with the FM7004A field monitor or a PC by direct communication using the USB, GPIB, or RS-232 interfaces. All "FL7000" and "PL7000" series probes require the FI7000 probe interface.



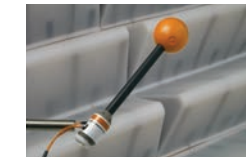
Model FI7000



### All AR Laser Probes kits include—:

- 10 meter fiber-optic cable set
- Accredited calibration report

### The Most Advanced Laser Powered E-Field Probes on the Planet



Field Probes	Starprobe® 1 (Model FL7030)	Starprobe® 2 (Model FL7006)	Starprobe® 3 (Model FL7040)	Starprobe® 4 (Model PL7004)*	Starprobe® 5 (Model FL7060)	Starprobe® 6 (Model FL7218)
Sensor Type	Electric (E) field	Electric (E) field	Electric (E) field	Electric (E) field Relative Flatness (field aligned with sensor axes): ±2.5 dB, 800 MHz–3 GHz ±3.0 dB, 3–3.6 GHz	Electric (E) field	Electric (E) field
Frequency	5 kHz–30 MHz	100 kHz–6 GHz	2 MHz–40 GHz	800 MHz–3.6 GHz	2 MHz–60 GHz	2 MHz–18 GHz
Probe Use	CW	CW	CW	Pulse	CW	CW
Amplitude Accuracy (field aligned with sensor axes)	±1.0 dB, 10 MHz with calibration factors applied: (typical expanded measurement uncertainty — 95% confidence interval) 0.8 dB, 5 kHz–30 MHz	±1.0 dB, 10 MHz with calibration factors applied: (typical expanded measurement uncertainty — 95% confidence interval) 0.8 dB, 100 kHz–1 GHz 1.4 dB, 1 GHz–6 GHz	±1.0 dB, 10 MHz with calibration factors applied: (typical expanded measurement uncertainty — 95% confidence interval) 0.8 dB, 2 MHz–1 GHz 1.4 dB, 1 GHz–40 GHz	±1.5 dB, 1 GHz with calibration factors applied: (typical expanded measurement uncertainty — 95% confidence interval) 0.8 dB, 800 MHz–1 GHz 1.4 dB, 1–3.6 GHz	±1.0 dB, 10 MHz with calibration factors applied: (typical expanded measurement uncertainty — 95% confidence interval) 0.95 dB, 2 MHz–1 GHz 1.5 dB, 1 GHz–60 GHz	±1.0 dB, 10 MHz with calibration factors applied: (typical expanded measurement uncertainty — 95% confidence interval) 0.8 dB, 2 MHz–1 GHz 1.4 dB, 1 GHz–18 GHz
Response Time/Sampling Rate (through FI7000)	20 msec/up to 50 samples per second, USB and GPIB only	20 msec/up to 50 samples per second, USB and GPIB only	20 msec/up to 50 samples per second, USB and GPIB only	20 msec/up to 50 samples per second, USB and GPIB only	20 msec/up to 50 samples per second, USB and GPIB only	20 msec/up to 50 samples per second, USB and GPIB only
Isotropic Deviation (measured at the ortho angle)	±0.5 dB, 10 MHz ±0.5 dB, 5 kHz–30 MHz typ.	±0.5 dB, 10 MHz ±0.5 dB, 0.5 MHz–2 GHz typ.	±0.5 dB, 10 MHz ±1.5 dB, 2 MHz–40 GHz typ.	±1 dB at 1 GHz (for improved accuracy this probe should be used with a single axis aligned with the e-field being measured)	±0.5 dB, 10 MHz ±1.5 dB, 2 MHz–60 GHz typ.	±0.5 dB, 10 MHz ±1.5 dB, 2 MHz–18 GHz typ.
Sensitivity	1.5–300 V/m	0.5–800 V/m, 100 kHz–1 GHz 0.5–600 V/m, 1–4 GHz 0.7–800 V/m, 4–6 GHz	2–1,000 V/m	80–800 V/m Pulse width: 1 to 100 microseconds Pulse period: up to 5 milliseconds between pulses (greater than 200 Hz pulse rate) Pulse duty: 0.02% to 2% Pulse measurement variation (over range of pulse width, period, and duty relative to a 10 microsecond pulse width and 1 millisecond pulse period, 1 kHz pulse rate, 1% duty): +0.5 dB/-1.0 dB (typ.)	2–1,000 V/m	2–1,000 V/m
Linearity	(1.5–300 V/m) ±0.5 dB and +0.9 V/m	(0.5–800 V/m) ±0.5 dB and ±0.3 V/m	(2–1,000 V/m) ±0.5 dB	(80–800 V/m) ±0.5 dB	(2–1,000 V/m) ±0.5 dB	(2–1,000 V/m) ±0.5 dB
Temperature Stability	±0.5 dB over operating temperature range	±0.5 dB over operating temperature range	±0.5 dB over operating temperature range	±0.5 dB over operating temperature range	±0.5 dB over operating temperature range	±0.5 dB over operating temperature range
Damage Level	1,000 V/m continuous field	1,000 V/m continuous field	1,200 V/m CW	1,200 V/m CW	1,200 V/m continuous field	1,200 V/m CW
Ranges	Single	Single	Single	Single	Single	Single
Data Returned from Probe	X, Y, Z axes, and composite	X, Y, Z axes, and composite	X, Y, Z axes, and composite	X, Y, Z axes, and composite	X, Y, Z axes, and composite	X, Y, Z axes, and composite
Power Requirement	Laser powered from FI7000 interface	Laser powered from FI7000 interface	Laser powered from FI7000 interface	Laser powered from FI7000 interface	Laser powered from FI7000 interface	Laser powered from FI7000 interface
Dimensions	5.7 x 5.7 x 5.7 cm (2.25 x 2.25 x 2.25 in.) 2.92 cm (1.15 in.) DIA spherical housing 3.18 cm (1.25 in.) sensor Radome per axes	5.7 x 5.7 x 5.7 cm (2.25 x 2.25 x 2.25 in.) 2.92 cm (1.15 in.) DIA spherical housing 3.18 cm (1.25 in.) sensor Radome per axes	27.8 x 6.5 x 6.5 cm (10.9 x 2.6 x 2.6 in.) 65 mm Probe head diameter	5.7 x 5.7 x 5.7 cm (2.25 x 2.25 x 2.25 in.) 2.92 cm (1.15 in.) DIA spherical housing 3.18 cm (1.25 in.) sensor Radome per axes	27.8 x 6.5 x 6.5 cm (10.9 x 2.6 x 2.6 in.) 65 mm Probe head diameter	27.8 x 6.5 x 6.5 cm (10.9 x 2.6 x 2.6 in.) 65 mm Probe head diameter
Weight	62.5 g (2.2 oz)	62.5 g (2.2 oz)	150 g (5.3 oz)	62.5 g (2.2 oz)	150 g (5.3 oz)	150 g (5.3 oz)
Operating Temperature Range	10–40°C (50–104°F) @ 5–95% RH non-condensing	10–40°C (50–104°F) @ 5–95% RH non-condensing	10–40°C (50–104°F) @ 5–95% RH non-condensing	10–40°C (50–104°F) @ 5–95% RH non-condensing	10–40°C (50–104°F) @ 5–95% RH non-condensing	10–40°C (50–104°F) @ 5–95% RH non-condensing

\* The model PL7004 is the only commercial pulsed E-Field probe approved by name in the new Ford-EMC-CS2009 specification.





### Starmonitor® Field Monitor

Model FM7004A is an E- and H-field control center that offers monitoring and display capabilities for immunity-test environments for up to four field probes or field analyzers. It is exceptionally precise, with auto-recognition to adapt to laser or battery-powered probes. The unit allows field-strength measurement for up to four probe locations simultaneously, with results displayed on a backlit color touch LCD.

The FM7004A has the ability to internally apply correction factors to field probe readings. Up to six tables of correction factors containing up to 30 different frequency points can be stored. From the menu-controlled front panel, call up composite field readings, or choose readings from each axis of a three-axis probe.

The FM7004A field monitor provides four digital interfaces (USB, GPIB, RS-232, and Ethernet) and a highly readable, user-configurable LCD touch display. Menu options are at your disposal. Communication from the chamber to the FM7004A is through fiber-optic cables.

### Virtual Field Monitor

AR's VM7000 Virtual Field Monitor Software converts your computer into a field monitor. It can simultaneously control and operate any combination of the 7000 Series field probes or field analyzers. The VM7000 provides a graphical user interface that allows effortless control of all probe functions while clearly displaying probe data and status.

With this system, your computer becomes a direct connection for up to 16 simultaneous field probes and also acts as a complete control center. From the computer, you can enable and disable the individual axes of all probes at once or the axis of just one specific probe. Over-range, battery voltage, and temperature status can be displayed for continued and proper field monitoring. Field strength data can be displayed in a number of ways, and readings from all modes can be data logged.

The VM7000 runs under the Windows 7, 8, and 10 operating systems.

Main Menu		
CH2	FP7018	V/m
108.54		
99.31 X		
42.37 Y		
11.05 Z		
Freq Cor: 10.000MHz		
Channel	Display	System
Freq Cor	Search	

Main Menu			
Min	V/m	Max	V/m
17.43		120.57	
Average		V/m	
100.57		CH1 X Y Z	CH2 X Y Z
		CH3 X Y Z	CH4 X Y Z
Freq Cor: 10.000MHz			
Channel	Display	System	Freq Cor
Search			

Main Menu					
CH1	FL7030	V/m	CH2	FP7018	V/m
31.93		350.39			
14.92 X		350.04 X			
15.27 Y		3.75 Y			
23.74 Z		15.20 Z			
CH3	FL7006	V/m	CH4	FL7040	V/m
2.70		190.85			
0.78 X		10.08 X			
1.07 Y		19.80 Y			
2.35 Z		189.55 Z			
Freq Cor: 10.000MHz					
Channel	Display	System	Freq Cor	Search	

AR Field Monitors can display single-channel, multichannel, minimum and maximum, and average field-strength data.

### Cables, Clamps, and Everything You Need to Do the Job Right

#### FC Series Fiber-Optic Cables

For use with our field-measurement systems

Model	Length (meters)	Compatible AR Equipment
FC7010	10	F17000, FL7XXX, PL7XXX
FC7020	20	
FC7050	50	
FC7100	100	

#### MA7000 Fiber-Optic Mating Adapter Set

Used to join two FC7000 Series cables together



PS2000B Probe Stand  
Adjustable to 7.5 ft., also includes one CL2000B clamp

CL2000B Probe Clamp  
Extra clamp for PS2000B probe stand

Model PS2000B



# MultiStar Field Analyzers

## Measure CW and Pulse Modulated RF fields with the FA7000 Series Field Analyzers

The FA7000 Series Field Analyzers detect and accurately measure modulated and CW electric fields. This innovative device uses an isotropic field sensor to sample the composite field and transmits its amplitude digitally over optical fiber to a processor unit. The sample rate of the FA7000 Field Analyzer is 1.5 million samples per second—significantly faster than conventional RF field probes—enabling it to accurately measure pulsed electric fields in the microsecond range.

Each of the FA7000 Series analyzer kits provides a web-based, oscilloscope-type display of the instantaneous electric field strength or power density over time and calculates the minimum, maximum, and average field strength of the waveform as displayed. Each kit consists of an isotropic field sensor, glass fiber-optic cabling, and a processor unit. The processor unit stores all of the necessary amplitude corrections for its associated field sensor.

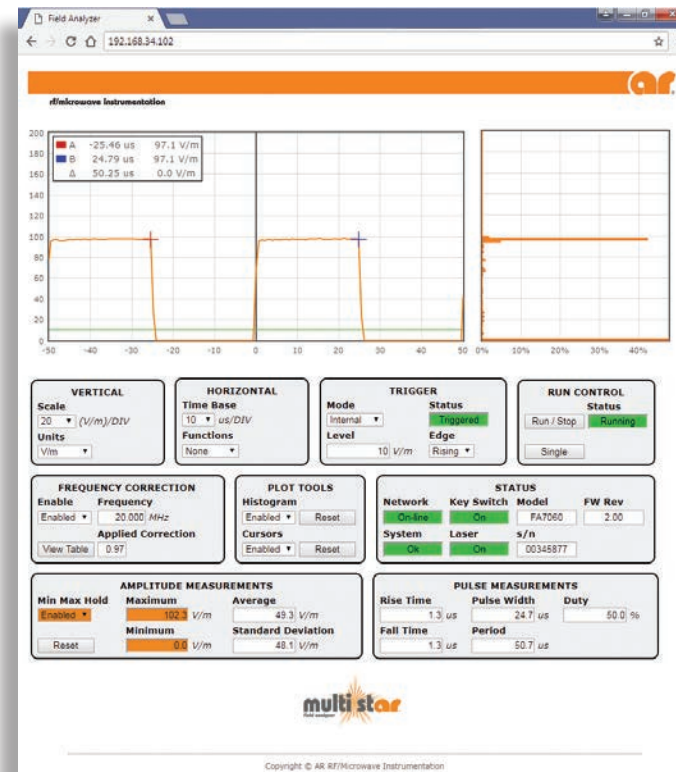
Frequency correction factors are provided with each kit. Loading these factors into the processor unit automatically corrects the field readings. Linear interpolation is used between calibration frequencies.

Embedded webpage for viewing the modulation envelope of the measured electric field



FA7006, FA7218, FA7040, and FA7060 Processor Unit

Rack mount kit (RK7000) available for use with any FA7000 Series Field Analyzer.



### FA7000 Series Processor Unit

Dimensions (W x H x D)	21.91 x 4.45 x 27.69 cm
Weight	1.36 kg
Operating Temperature Range	10°C to 40°C @ 5% to 95% RH non-condensing
Fiber Optic Connector	E2000 compact duplex (Yellow, keying #3)
Fiber Optic Cable length	20 m (supplied with kit)
Max Fiber Optic length	100 m (sold separately)
Remote Interfaces	LAN (Ethernet) USB 2.0 (Test and Measurement class) IEEE-488 (GPIB) Fiber Optic Serial (FSMA connectors; Reserved for use with FM7004A Field Monitor)
Max Remote Transfer Rate	20 queries per second
External Trigger Port	
Impedance	>10 MΩ
Threshold Voltage	3 V
Maximum Input Voltage	5 V
Minimum Pulse Width	40 ns
Readout Display	Embedded Web Application through PC (PC not included)
Remote Interface	LAN (Ethernet)
Compatible Web Browsers	Chrome, Internet Explorer, Safari, Firefox, Opera
Timebase Range	1 μs/Div to 400 μs/Div
Scale Range	0.1 (V/m)/Div to 5,000 (V/m)/Div
Trigger Modes	Free Run, Internal (conventional threshold), External
Edges (Threshold trigger)	Rising and Falling
Vertical Divisions	10
Horizontal Divisions	10
Laser	
Wavelength	830 nm
Output Power	≤500 mW
Shutdown Time	<1 ms after fiber disconnect
Power Requirements	
Input Voltage	90–260 VAC, 50–60 Hz
Input Current	0.2–0.6A
Input type	IEC inlet with filter
Sample Rate	1.5 MS/s
Max Record Length	6 k Points
Modulation Frequency Range	250 Hz to 750 kHz
Measurement Format	Composite only
Calibration Data	Accredited Calibration Report supplied with kit

### FAC Series Fiber-Optic Cables

For use with our field analyzer systems

Model	Length (meters)	Compatible AR Equipment
FAC7010	10	FA7XXX
FAC7020	20	
FAC7050	50	
FAC7100	100	

### FAM7000 Fiber-Optic Mating Adapter

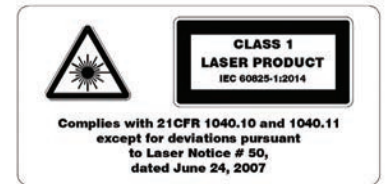
Used to join two FAC7000 Series cables together



FA7006 Field Sensor



FA7218, FA7040, and FA7060 Field Sensor



### FA7000 Series Field Sensors

	FA7006	FA7218	FA7040	FA7060
Amplitude Accuracy <sup>1</sup>	±1.0 dB @ 10 MHz <sup>2</sup> 0.8 dB, 100 kHz–1 GHz <sup>3,4</sup> 1.4 dB, 1 GHz–6 GHz <sup>3,4</sup>	±1.0 dB @ 10 MHz <sup>2</sup> 0.8 dB, 2 MHz–1 GHz <sup>3,4</sup> 1.4 dB, 1 GHz–18 GHz <sup>3,4</sup>	±1.0 dB @ 10 MHz <sup>2</sup> 0.8 dB, 2 MHz–1 GHz <sup>3,4</sup> 1.4 dB, 1 GHz–40 GHz <sup>3,4</sup>	±1.0 dB @ 10 MHz <sup>2</sup> 0.95 dB, 2 MHz–1 GHz <sup>3,4</sup> 1.5 dB, 1 GHz–60 GHz <sup>3,4</sup>
Isotropic Deviation <sup>4,5</sup>	±1.2 dB @ 10 MHz ≤ 200 V/m ±2.0 dB @ 10 MHz > 200 V/m	±1.0 dB @ 10 MHz ≤ 200 V/m ±2.0 dB @ 10 MHz > 200 V/m	±1.0 dB @ 10 MHz ≤ 200 V/m ±2.0 dB @ 10 MHz > 200 V/m	±1.0 dB @ 10 MHz ≤ 200 V/m ±2.0 dB @ 10 MHz > 200 V/m
Operating Range <sup>9</sup>	9–900 V/m	14–1,400 V/m	14–1,400 V/m	14–1,400 V/m
Linearity	±0.5 dB	±0.5 dB	±0.5 dB	±0.5 dB
Typical Analog Rise Time <sup>6,7</sup>	300 nS	300 nS	300 nS	300 nS
Minimum Pulse Width	1 ms	1 ms	1 ms	1 ms
Damage Level (CW)	1,000 V/m	1,200 V/m	1,200 V/m	1,200 V/m
Temperature Stability	±1.0 dB, 10°C–40°C <sup>8</sup>	±1.0 dB, 10°C–40°C <sup>8</sup>	±1.0 dB, 10°C–40°C <sup>8</sup>	±1.0 dB, 10°C–40°C <sup>8</sup>
Approximate Dimensions (w x h x d)	5.7 x 5.7 x 5.7 cm	27.8 x 6.5 x 6.5 cm	27.8 x 6.5 x 6.5 cm	27.8 x 6.5 x 6.5 cm
Weight	62.5 g	150 g	150 g	150 g

<sup>1</sup> Single axis aligned with field

<sup>2</sup> Without correction factors applied

<sup>3</sup> With correction factors applied

<sup>4</sup> Typical expanded measurement uncertainty (95% confidence interval)

<sup>5</sup> Measured at the ortho angle

<sup>6</sup> 10%–90%

<sup>7</sup> Pre-digitization

<sup>8</sup> 5%–95% Relative humidity, non-condensing

<sup>9</sup> Less than 50% duty



## emcware® 5.0 for Automated EMC Testing

The emcware® 5.0 Suite by AR RF/Microwave Instrumentation provides automated Electromagnetic Compatibility (EMC) testing and report generation for users ranging from OEM, independent, and R&D test laboratories. It is a standalone software application designed to operate on a PC running a Microsoft Windows™ operating system.

The emcware® suite stands apart from other EMC software packages by implementing a unique workflow, producing an extremely user-friendly and flexible tool for laboratories. It is broken up into modules based on different types of EMC testing. Within each module, there are pre-defined standards. The ability to create custom test standards is also available through emcware®.

### Equipment Management

Contained within the emcware® is a built-in Equipment List Manager. This tool allows for equipment to be entered one time and then accessed from within any of the modules. The Equipment List Manager also keeps track of calibration dates and can warn the user when the calibration date of a specific piece of equipment is approaching.

### EUT Monitoring

Use custom equipment or a National Instruments DAQ card to monitor and report the status of the equipment under test (EUT). Custom equipment, in conjunction with dynamic link library (DLL) files, allows for complete EUT monitoring and control.

### Instrument Drivers

An extensive equipment driver library is installed with the software. Drivers can also be created and imported by the user in the form of dynamic link library (dll's) files. The software can communicate with equipment through GPIB, RS-232, and USB remote interfaces.

### Signal Routing

The emcware® is designed to allow the user to select between manual and automatic signal routing. Automatic signal routing is implemented using one or more AR RF/Microwave Instrumentation Model SC2000 System Controllers.

### User Security Levels

Define equipment and test setups as a system administrator, then change the security level to Restricted User to ensure secure testing.

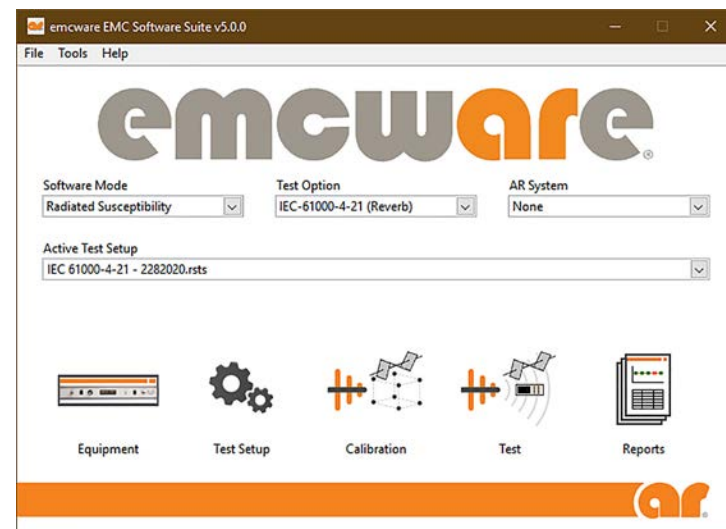
### Reports

Extensive report generation capability is built in using Microsoft Word and Microsoft Excel.

### Help File

Included with the software is a detailed help utility with tutorials and a searchable index.

A yearly support contract for emcware® is available.



## emcware® 5.0 Included Test Standards

### Radiated Susceptibility Module

- IEC 61000-4-3
  - 50130-4
  - 61000-6-1
  - 60601-1-2
  - 61326
- GR-1089
- ISO 11452
  - 11452-2
  - 11452-3
  - 11452-5
- MIL STD 461 RS103 (Rev D, E, F, G)
- RTCA/DO-160 Section 20 (Rev D, E, F, G)

### Conducted Immunity Module

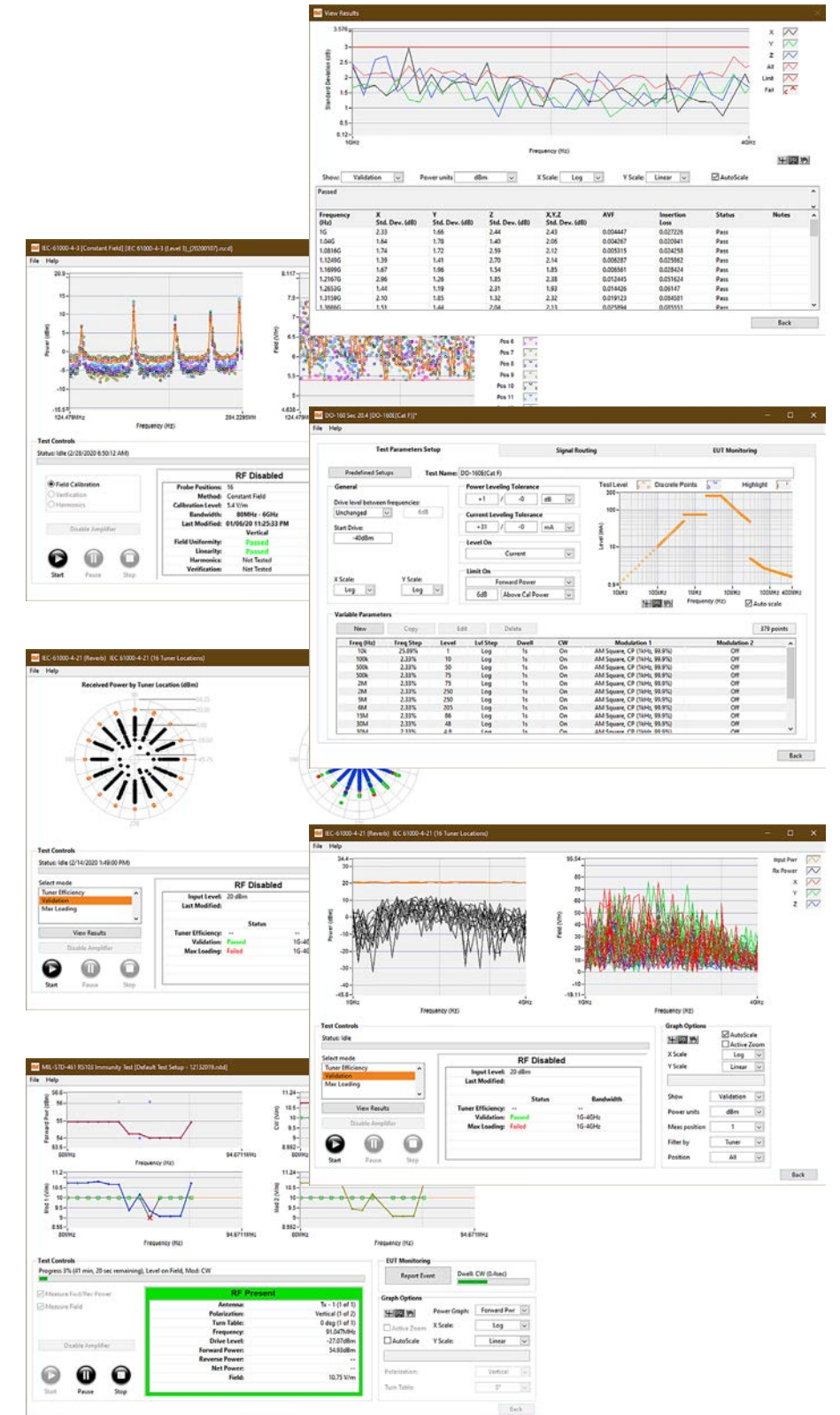
- IEC 61000-4-6
  - 50130-4
  - 61326
  - 60601-1-2
  - 61000-6-2
  - 61000-6-1
- ISO 11452-4
  - ES-XW7T-1A278-AC (FORD)
  - GMW3097 (GM)
  - 36-00-808 (Renault)
  - GS 95002 (BMW)
  - B21 7110 (Peugeot)
  - DC11224 (Chrysler)
- MIL STD 461 CS114 (Rev D, E, F, G)
- RTCA/DO-160 Section 20 (Rev D, E, F, G)

### Emissions Module

- MIL STD 461 (RE101/RE102/CE101/CE102)
- RTCA/DO-160 Section 21
- CISPR 11, 25 and 32

### Reverb Test

- RTCA DO-160F/G
- MIL STD-461G
- IEC61000-4-21





### The AR SI1000 System Interlock



The SI1000 System Interlock provides a means of interlocking up to 12 independent pieces of equipment and/or other SI1000 units through the use of relay contacts and a fiber-optic output, which change state based on a single master interlock signal. The master interlock signal can be either a monitored switch state change or a fiber-optic signal state change. The master interlock input signal and relay output signals can be wired either NO or NC. A front-panel key switch enables the system and can be removed in the disabled position to lockout the system from accidental access. Interlock status is displayed on the front panel through the use of a bicolor (red and green) LED.

By using two SI1000 units, one configured for wired master interlock and one configured for fiber-optic master interlock and a connecting fiber-optic cable, a single switch outside an anechoic chamber (door closure switch) can be used to disable the RF generation of a system inside the chamber. Multiple units can be linked together either by wires or fiber optically to expand the interlock system.

The SI1000 front panel also includes a main power (on/off) switch and an emergency power off (EPO) switch. The outputs of these switches are routed to the rear panel of the interlock system and are provided for systems with power distribution systems with remote capability.

### SI1000 System Interlock

Specifications	
Wired Interlock, Remote Out, and Relay Connections	Molex receptacle, 3-pin, 0.093 in. DIA terminals
Mating 3-pin plug connector and terminals supplied	
Fiber Optic Connectors	(2) FSMA for fiber connection
Compatible with FC2000 Series Cables	
Power Requirements	
Input Voltage	90-260 VAC, 50-60 Hz
Input Current	0.2-0.6 A
Input type	IEC inlet with filter
Enclosure	Rack mount case, 1U high
Dimensions (WxHxD)	48.3 x 4.5 x 17.8 cm (19.0 x 1.75 x 7.0 in.)
Weight	2.5 kg (6.25 lb.)
Operating Temperature Range	10 C to 40 C (50 F to 104 F) @ 5% to 95% RH non-condensing

### AR's SC2000 System Controller Makes System Integration Possible

The SC2000 switch controller family is a versatile and expandable platform which provides switching functions for RF systems. Unlike our previous design, the SC2000 has five user-configurable module slots on the rear panel that offer great flexibility for numerous applications. Eighteen different SCM series switch modules are available to populate the available slots; these switch modules include different switching configurations and connector types—SMA(f), K(f), or N(f). The SC2000 system can be further expanded by fiber optically linking up to seven SCX2000 expansion units that include an additional five module slots.

#### Features:

- Five user configurable slots per chassis
- Fiber-optically expandable up to 8 chassis
- Preconfigured versions available (Drop-in replacements for legacy model, SC1000)
- Color touch screen
- Remote or local control
- Multiple interlocks
- User defined switch states
- More than 18 switch modules available



SC2000 Configuration Guide

SC2000 Versions	Max # of signal generators	Max # of amplifiers	Max # of Loads	Ability to Switch in a receiver/spectrum analyzer	# of forward power ports can be switched to 1 power head	# of reverse power ports can be switched to 1 power head	Can work up to 40 GHz	Total # of switches installed
SCP2000	3	4	4	No	4	NA	No	5
SCP2000M1	3	4	4	Yes	4	4	No	7
SCP2000M2	3	4	NA	No	4	NA	No	3
SCP2000M3	3	4	NA	No	4	4	No	4
SCP2000M4	3	4	NA	No	4	4	Yes	4
SCP2000M5	3	4	NA	No	4	4	No	5
SCX2000	3	4	4	No	4	NA	No	5

The SC2000 switch control platform accommodates systems using combinations of multiple signal sources, amplifiers, antennas, and forward/reverse power-measurement equipment for radiated immunity testing in a wide variety of configurations. Alternative applications include the use of the system controller to switch in various RF filters for reducing harmonic distortion.

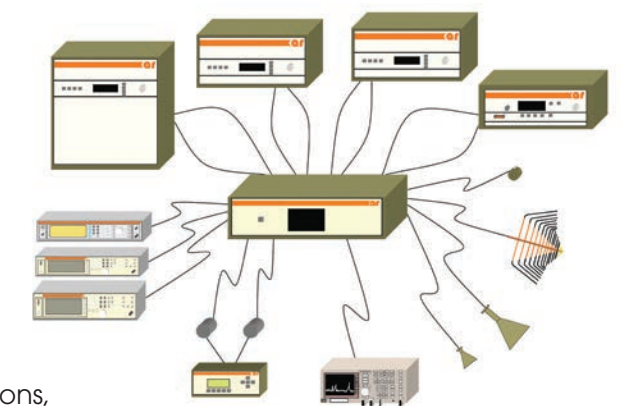
The SCP2000 model variants are preconfigured versions of the SC2000 family specifically configured to replace, on a one-for-one basis, the legacy model SC1000 System Controller model variants with the same switching and control functionality.

System-interlock capability is provided by sensing a switch closure. Interlock, "safe," and common switch states are user programmable. A fused 24 VDC output, four open drain outputs, and four TTL I/O lines are supplied to allow the control and monitoring of external switches or other peripherals.

Operational control is available manually, using the provided color LCD touch screen display, or remotely, using any of the four provided remote ports (USB, GPIB, RS-232, and Ethernet).

For more information, see the specification sheets on [www.arworld.us](http://www.arworld.us) for details on the SC2000, SCX2000 and SCP2000 products and their RF switch modules, configurations, and performance (power handling and derating factors), along with specifications for base unit dimensions, weight, power requirements, power consumption, etc.

System Configuration Example





# The Competitive Edge in Couplers

## A Wide Range of Couplers Monitor Forward And Reflected Power to 50 GHz

Cover the RF spectrum from 4 kHz to 50 GHz with power handling capability from 50 to 15,000 watts continuous, 60,000 watts peak pulse power. This broad range gives you flexibility in coupling low- and high-power amplifiers to power meters, spectrum analyzers, receivers, oscilloscopes, and other sensitive measuring instruments.

Dual directional design—two couplers in the same package—lets you monitor forward and reflected power. The directivity, flatness, and coupling factors are excellent, allowing for accurate measurement of power.

Dual directional couplers are required for measurements per IEC 61000-4-3 and -6. Popular applications include power sampling, amplifier leveling, VSWR monitoring, field control, and amplifier load protection.

All AR couplers are power- and frequency-matched to our amplifiers and antennas.

Different connector configurations are available for all models.



## RF Couplers 4 kHz to 1 GHz.

	DC2035A	DC2500AM1	DC2600A	DC3001A	DC3010A	DC3100	DC3100A	DC3300A
Frequency Range	10 kHz–250 MHz	10 kHz–250 MHz	10 kHz–250 MHz	100 kHz–1,000 MHz	10 kHz–1,000 MHz	10 kHz–1,000 MHz	10 kHz–1,000 MHz	4 kHz–400 MHz
Power (max. watts)	3,500 CW	1,000 CW 2,000 peak	600 CW, 1,200 peak (10 kHz–100 MHz)	100 CW 1,000 peak	100 CW 200 peak	500 CW	500 CW	250 CW
Flatness (max.)	± 0.9 dB	± 0.9 dB	± 0.5 dB	± 0.6 dB	± 0.6 dB	± 0.5 dB	± 0.5 dB	50 ± 1.5 dB (4 kHz–10 kHz) 50 ± .75 dB (.01 MHz–400 MHz)
Coupling Factor (includes flatness)	50 ± 1 dB	50 ± 1 dB	50 ± 1 dB	40 ± 0.8 dB	40 ± 0.8 dB	40 ± 1.5 dB	40 ± 1.5 dB	50 ± 1.5 dB (4 kHz–10 kHz) 50 ± 1 dB (.01 MHz–400 MHz)
Directivity								
typical	25 dB	25 dB	25 dB	25 dB	25 dB	25 dB	25 dB	20 dB
minimum	20 dB	20 dB (20 kHz–250 MHz) 18 dB (10 kHz–20 kHz)	18 dB	20 dB	20 dB	20 dB	20 dB	15 dB
Insertion Loss (max.)	0.30 dB	0.22 dB	0.25 dB	0.6 dB	0.6 dB	0.45 dB	0.45 dB	0.2 dB
VSWR (main line)	1.2:1 max.	1.2:1 max.	1.3:1 max.	1.3:1 max.	1.3:1 max.	1.30:1 max.	1.30:1 max.	1.2:1 max.
Connectors								
main line (J1/J2)	7-16(M)/7-16(F)	N(M)/N(F)	N(M)/N(F)	N(M)/N(F)	N(M)/N(F)	N(F)/N(F)	N(M)/N(F)	N(M)/N(F)
coupled (J3/J4)	N(F)/N(F)	N(F)/N(F)	N(F)/N(F)	N(F)/N(F)	N(F)/N(F)	N(F)/N(F)	N(F)/N(F)	N(F)/N(F)
Weight (max.)	1.8 kg 4 lb.	1.13 kg 2.5 lb.	0.64 kg 1.4 lb.	0.39 kg 0.86 lb.	0.9 kg 2 lb.	1.1 kg 2.5 lb.	1.1 kg 2.5 lb.	.36 kg 0.8 lbb
Size (approx.) W x H x D	25.4 x 8.9 x 11.7 cm (10 x 3.5 x 4.6 in.)	26.6 x 8.1 x 7.6 cm (10.1 x 3.2 x 3.0 in.)	10.2 x 7.6 x 6.6 cm (4 x 3 x 2.6 in.)	12.7 x 5.1 x 3.8 cm (5 x 2 x 1.5 in.)	12.7 x 5.1 x 3.8 cm (5 x 2 x 1.5 in.)	17 x 5.8 x 4.3 cm (6.7 x 2.27 x 1.69 in.)	17 x 5.8 x 4.3 cm (6.7 x 2.27 x 1.69 in.)	19.3 x 5.1 x 5.6 cm (7.6 x 2.0 x 2.2 in.)

	DC3400A	DC3401A	DC3510A	DC4255*	DC4256*	DC4260*	DC6080A	DC6180A
Frequency Range	10 kHz–400 MHz	10 kHz–400 MHz	9 kHz–1,000 MHz	10 kHz–250 MHz	10 kHz–250 MHz	10 kHz–250 MHz	80–1,000 MHz	80–1,000 MHz
Power (max. watts)	250 CW 400 peak	500W CW	200 CW 400 peak	10,000 CW 35,000 peak	13,000 CW 50,000 peak	20,000 CW 60,000 peak	500 CW 1,000 peak	600 CW 1,000 peak
Flatness (max.)	± 0.5 dB	± 0.6 dB	± 0.6 dB	± 0.9 dB	± 1 dB	± 2 dB	± 0.5 dB	± 0.5 dB
Coupling Factor (includes flatness)	40 ± 1.0 dB	50 dB ± 0.8 dB	40 ± 0.8 dB	60 dB ± 1 dB	60 dB ± 1 dB	60 dB ± 2 dB	40 dB ± 1 dB	60 ± 1 dB
Directivity								
typical	25 dB	25 dB	25 dB	25 dB	25 dB	25 dB	25 dB	25 dB
minimum	20 dB	20 dB	20 dB (.01–1,000 MHz) 15 dB (.009–.01 MHz)	20 dB	20 dB	20 dB	20 dB	20 dB
Insertion Loss (max.)	0.5 dB	0.5 dB	0.5 dB	0.1 dB	0.1 dB	0.1 dB	0.25 dB	0.15 dB
VSWR (main line)	1.3:1 max.	1.30:1 max.	1.3:1 max.	1.20:1 max.	1.20:1 max.	1.25:1 max.	1.2:1 max.	1.15:1 max.
Connectors								
main line (J1/J2)	N(M)/N(F)	N(M)/N(F)	N(M)/N(F)	EIA fixed flanges 1 5/8 in. EIA (m)	EIA fixed flanges 1 5/8 in. EIA (m)	EIA fixed flanges 3 1/8 in. EIA (m)	N(M)/N(F)	N(M)/N(F)
coupled (J3/J4)	N(F)/N(F)	N(F)/N(F)	N(F)/N(F)	N(F)/N(F)	N(F)/N(F)	N(F)/N(F)	N(F)/N(F)	N(F)/N(F)
Weight (max.)	0.8 kg 1.8 lb.	0.8 kg 1.8 lb.	1.36 kg 3 lb.	7 kg 15.5 lb.	7 kg 15.5 lb.	7.9 kg 17.5 lb.	0.45 kg 1 lb.	0.6 kg 1.2 lb.
Size (approx.) W x H x D	13.2 x 6.8 x 4.1 cm (5.2 x 2.7 x 1.6 in.)	13.2 x 6.8 x 4.32 cm (5.2 x 2.7 x 1.7 in.)	15.7 x 5.8 x 4.3 cm (6.2 x 2.28 x 1.69 in.)	15.2 x 11.4 x 30.48 cm (6.0 x 4.5 x 12 in.)	15.24 x 11.43 x 32.38 cm (6.0 x 4.5 x 12.75 in.)	25.4 x 25.4 x 23 cm (10 x 10 x 9 in.)	7.62 x 7.62 x 2.77 cm (3.0 x 3.0 x 1.09 in.)	10.9 x 6.3 x 3.2 cm (4.3 x 2.5 x 1.3 in.)

\*Power required for fan cooling.



### RF Couplers 4 kHz to 1 GHz (cont.)

	DC6280AM1	DC6380	DC6380M1	DC6380M2	DC6430	DC6440	DC6580AM1
Frequency Range	80–1,000 MHz	80–1,000 MHz	80–1,000 MHz	80–1,000 MHz	80–1,000 MHz	80–1,000 MHz	80–1,000 MHz
Power (max. watts)	1,500 CW 3,000 peak	3,000 CW 6,000 peak	4,500 CW 9,000 peak	7,000 CW 10,000 peak	15,000 CW	15,000 CW	1,500 CW 3,000 peak
Flatness (max.)	± 0.5 dB	± 1.0 dB	± 1.0 dB	± 1.0 dB	± 1.0 dB	± 1.0 dB	± 0.5 dB
Coupling Factor (includes flatness)	63 ± 1 dB	65 ± 1.5 dB	68 ± 1.5 dB	70 ± 1.5 dB	68 dB	70 dB	50 ± 1 dB
Directivity							
typical	25 dB	25 dB	25 dB	25 dB	20 dB	20 dB	25 dB
minimum	20 dB	20 dB	20 dB	20 dB	18 dB	18 dB	20 dB
Insertion Loss (max.)	0.15 dB	0.15 dB	0.15 dB	0.15 dB	0.1 dB	0.1 dB	0.15 dB
VSWR (main line)	1.2:1 max.	1.5:1 max.	1.5:1 max.	1.5:1 max.	1.15:1 max.	1.10:1 max.	1.2:1 max.
Connectors							
main line (J1/J2)	7-16(M)/7-16(F)	EIA flange 1 5/8 in. EIA (m)	EIA flange 1 5/8 in. EIA (m)	EIA flange 1 5/8 in. EIA (m)	EIA fixed/swivel flanges, 3 1/8 in.	EIA fixed/swivel flanges, 4 1/16 in.	7-16(M)/7-16(F)
coupled (J3/J4)	N(F)/N(F)	N(F)	N(F)	N(F)	N(F)	N(F)	N(F)/N(F)
Weight (max.)	0.6 kg 1.2 lb.	1.8 kg 4 lb.	1.8 kg 4 lb.	1.8 kg 4 lb.	3.0 kg 6.6 lb.	3.5 kg 7.7 lb.	0.6 kg 1.2 lb.
Size (approx.) W x H x D	10.9 x 6.3 x 3.2 cm (4.3 x 2.5 x 1.3 in.)	20.3 x 8.9 x 10.2 cm (8 x 3.5 x 4 in.)	20.3 x 8.9 x 10.2 cm (8 x 3.5 x 4 in.)	20.3 x 8.9 x 10.2 cm (8 x 3.5 x 4 in.)	15.2 x 13.2 cm (6.0 x 5.2 in.)	15.2 x 15.8 cm (6.0 x 6.2 in.)	7.62 x 7.62 x 2.79 cm (3 x 3 x 1.1 in.)

### Microwave Couplers 0.7 to 50 GHz (cont.)

	DC7210A	DC7215A	DC7230	DC7230A	DC7276M1	DC7281A	DC7351	DC7352A
Frequency Range	0.7–6 GHz	0.7–6 GHz	0.7–6 GHz	0.7–6 GHz	2.5–7.5 GHz	2–8 GHz	4–8 GHz	4–8 GHz
Power (max. watts)	500 CW	750 CW	500 CW 20 K peak	500 CW	2,800 CW	600 CW 10 K peak	6,000 CW 92 K peak	600 CW 10 K peak
Flatness (max.)	± 1.0 dB	± 0.5 dB	± 0.5 dB	± 0.5 dB	± 2.5 dB	± 1 dB	± 1.5 dB	± 1 dB
Coupling Factor (includes flatness)	50 dB ± 1.2 dB	50 dB ± 1.5 dB	48 dB ± 1.5 dB	48 dB ± 1.5 dB	50 ± 3 dB	50 ± 2 dB	40 ± 2 dB	50 ± 2 dB
Directivity								
typical	18 dB	18 dB	20 dB	20 dB	28 dB	15 dB	35 dB	15 dB
minimum	15 dB	15 dB	15 dB	15 dB	25 dB	16 dB	30 dB	18 dB
Insertion Loss (max.)	0.2 dB	0.2 dB	0.2 dB	0.2 dB	0.3 dB	0.2 dB max.	0.15 dB max.	0.2 dB
VSWR (main line)	1.35:1 max.	1.35:1 typ. 1.45:1 max.	1.35:1 max.	1.35:1 max.	1.1:1 max.	1.30:1 max.	1.1:1 max.	1.30:1 max.
Connectors								
main line (J1/J2)	7-16(M)/7-16(F)	7-16(M)/7-16(F)	N(F)/N(F)	N(M)/N(F)	WRD-250	N(M)/N(F)	WRD-350	N(M)/N(F)
coupled (J3/J4)	N(F)/N(F)	N(F)/N(F)	N(F)/N(F)	N(F)/N(F)	N(F)	N(F)/N(F)	N(F)	N(F)/N(F)
Weight (max.)	0.27 kg 0.6 lb.	0.27 kg 0.6 lb.	0.27 kg 0.6 lb.	0.27 kg 0.6 lb.	1.7 kg 3.8 lb.	0.22 kg 0.48 lb.	1.24 kg 2.75 lb.	0.22 kg 0.48 lb.
Size (approx.) W x H x D	54.6 x 50.8 x 34.5 cm (2.15 x 2.0 x 1.36 in.)	5.5 x 5.1 x 3.5 cm (2.15 x 2.0 x 1.36 in.)	5.1 x 5.1 x 2.7 cm (2.0 x 2.0 x 1.06 in.)	5.1 x 5.1 x 2.7 cm (2.0 x 2.0 x 1.06 in.)	45.7 x 8.1 x 8.1 cm (18 x 3.2 x 3.2 in.)	10.49 x 3.07 x 2.54 cm (4.13 x 1.21 x 1 in.)	4.1 x 6.9 x 45.8 cm (1.61 x 2.72 x 18 in.)	10.49 x 3.07 x 2.54 cm (4.13 x 1.21 x 1 in.)

### Microwave Couplers 0.7 to 50 GHz.

	DC7128A	DC7144A	DC7154A	DC7154AM1	DC7164	DC7164M1	DC7200A	DC7205A
Frequency Range	0.8–2.8 GHz	0.7–4.2 GHz	0.7–4.2 GHz	0.7–4.2 GHz	0.8–4.2 GHz	0.8–4.2 GHz	1–6 GHz	0.7–6 GHz
Power (max. watts)	1,500 CW 10 K peak	400 CW 4 K peak	400 CW	700 CW	700 CW	1,400 CW	250 CW	250 CW
Flatness (max.)	± 0.8 dB	± 0.8 dB	± 0.8 dB	± 0.8 dB	± 0.8 dB	± 0.8 dB	± 0.8 dB	± 0.8 dB
Coupling Factor (includes flatness)	50 ± 1.0 dB	40 ± 1.3 dB	50 ± 1.3 dB	50 ± 1.3 dB	60 dB ± 1 dB	65 dB ± 1 dB	40 ± 1.2 dB	41 ± 1.2 dB
Directivity								
typical	25 dB	19 dB	19 dB	19 dB	19 dB	19 dB	18 dB	18 dB
minimum	20 dB	15 dB	15 dB	15 dB	15 dB	15 dB	15 dB	15 dB
Insertion Loss (max.)	0.2 dB	0.4 dB	0.4 dB	0.4 dB	0.4 dB	0.4 dB	0.2 dB	0.2 dB
VSWR (main line)	1.3:1 max.	1.25:1 max.	1.25:1 max.	1.25:1 max.	1.25:1 max.	1.25:1 max.	1.2:1 max.	1.2:1 max.
Connectors								
main line (J1/J2)	7-16(M)/7-16(F)	N(M)/N(F)	N(M)/N(F)	7-16(M)/7-16(F)	7/8 EIA	7/8 EIA	N(M)/N(F)	N(M)/N(F)
coupled (J3/J4)	N(F)/N(F)	N(F)/N(F)	N(F)/N(F)	N(F)/N(F)	N(F)	N(F)	N(F)/N(F)	N(F)/N(F)
Weight (max.)	0.7 kg 1.5 lb.	0.24 kg 0.525 lb.	0.29 kg 0.64 lb.	0.29 kg 0.64 lb.	0.91 kg 2 lb.	0.91 kg 2 lb.	0.27 kg 0.6 lb.	0.27 kg 0.6 lb.
Size (approx.) W x H x D	7.6 x 7.6 x 2.9 cm (3 x 3 x 1.125 in.)	2.35 x 5.84 x 19 cm (0.925 x 2.3 x 7.48 in.)	3.2 x 6.3 x 10.9 cm (1.3 x 2.5 x 4.3 in.)	3.2 x 6.3 x 10.9 cm (1.3 x 2.5 x 4.3 in.)	5.71 x 8.25 x 15.25 cm (2.25 x 3.25 x 6.0 in.)	5.71 x 8.25 x 15.25 cm (2.25 x 3.25 x 6.0 in.)	6.8 x 5.1 x 3.05 cm (2.7 x 2.0 x 1.2 in.)	6.8 x 5.1 x 3.05 cm (2.7 x 2.0 x 1.2 in.)

	DC7435A	DC7445	DC7450M1	DC7462	DC7490	DC7530	DC7620	DC7820
Frequency Range	4–18 GHz	6–18 GHz	7.5–18 GHz	12–18 GHz	8–12 GHz	18–26.5 GHz	26.5–40 GHz	33–50 GHz
Power (max. watts)	200 CW 3 K peak	3,000 CW 16 K peak	3,000 CW 21 K peak	1,400 CW 6.5 K peak	3,000 CW 208 K peak	300 CW 80 K peak	200 CW 30 K peak	200 CW 30 K peak
Flatness (max.)	± 1.0 dB	± 3.0 dB	± 1.5 dB	± 1.5 dB	± 1.5 dB	± 1 dB	± 1 dB	± 1.0 dB
Coupling Factor (includes flatness)	35 ± 2.5 dB	48 ± 4 dB	50 ± 2 dB	40 dB ± 2.0 dB	40 dB ± 2.0 dB	40 ± 2 dB	40 ± 2 dB	40 dB ± 2.0 dB
Directivity								
typical	16 dB	30 dB	28 dB	30 dB	40 dB	40 dB	28 dB	32 dB
minimum	12 dB	20 dB	25 dB	25 dB	35 dB	30 dB	23 dB	30 dB
Insertion Loss (max.)	0.6 dB	0.3 dB max.	0.15 dB	0.15 dB	0.14 dB	0.20 dB	0.26 dB max.	0.15 dB max.
VSWR (main line)	1.5:1 max.	1.3:1 max.	1.1:1 max.	1.1:1 max.	1.1:1 max.	1.10:1 max.	1.15:1 max.	1.1:1 max.
Connectors								
main line (J1/J2)	N(M)/N(F)	WRD-650	WRD-750 D24	WR62	WR90	WR42	WR28	WR22
coupled (J3/J4)	SMA(F)	N(F)	N(F)	N(F)	N(F)	K(F)	K(F)	2.4 mm (F)
Weight (max.)	0.1 kg 3 oz	0.64 kg 1.4 lb.	0.64 kg 1.42 lb.	0.17 kg 0.38 lb.	0.45 kg 1.0 lb.	204 g 7.2 oz	113 g 4 oz	0.45 kg 1 lb.
Size (approx.) W x H x D	4.3 x 1.6 x 1.9 cm (1.7 x 0.625 x 0.75 in.)	2.9 x 3.5 x 30.5 cm (1.13 x 1.4 x 12 in.)	3.5 x 4.4 x 30.5 cm (1.4 x 1.7 x 12 in.)	1.8 x 7.6 x 28 cm (0.7 x 3.0 x 11 in.)	2.54 x 8.43 x 33 cm (1.0 x 3.32 x 13 in.)	2.2 x 3.5 x 22.9 cm (0.88 x 1.4 x 9 in.)	3.5 x 1.9 x 14 cm (1.4 x 0.75 x 5.5 in.)	3.3 x 3.3 x 15.24 cm (1.3 x 1.3 x 6 in.)

Please check individual coupler data sheets available on the AR web site price list for other connector combinations.

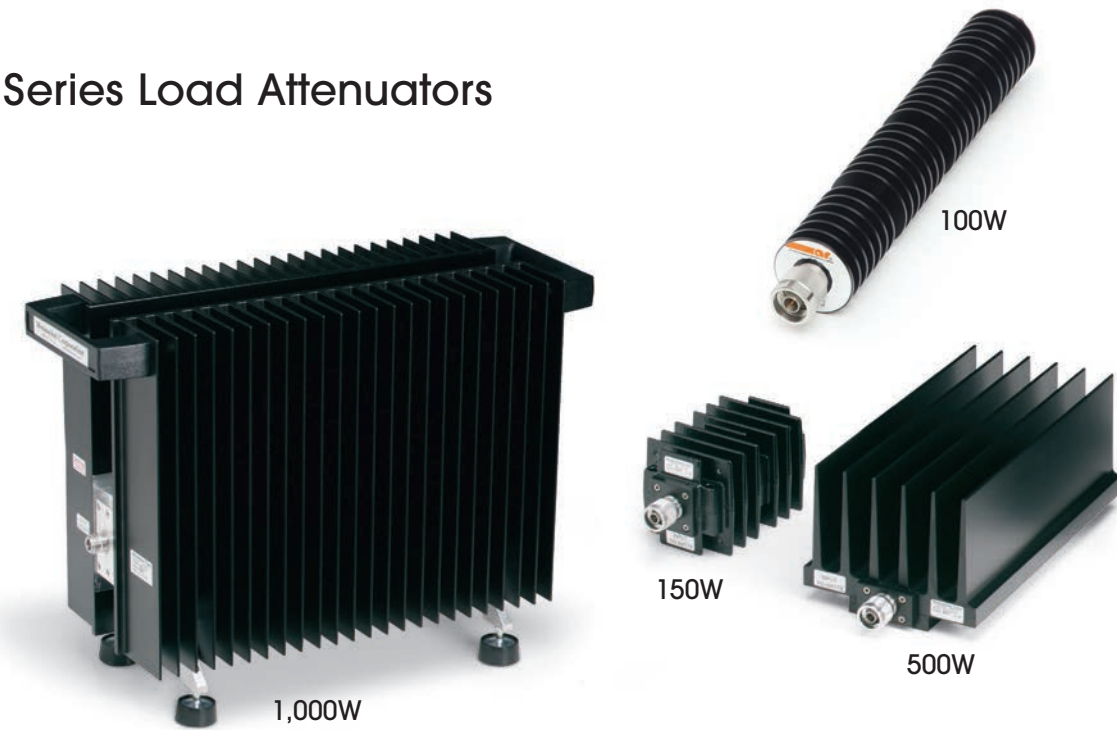


### Dual Directional Couplers and Termination Loads for RF Amplifiers

Power Amplifier	Dual Directional Coupler	Load Resistor or Attenuator	Power Amplifier	Dual Directional Coupler	Load Resistor or Attenuator	Power Amplifier	Dual Directional Coupler	Load Resistor or Attenuator	Power Amplifier	Dual Directional Coupler	Load Resistor or Attenuator
<b>"U" Series Amplifiers</b>			<b>"S" Series Amplifiers</b>			<b>Solid State Pulsed Amplifiers</b>			<b>TWT Amplifiers—Pulse</b>		
1U1000	DC3010A		15S1G6	DC7205A		1300SP1G2	DC7154A		1000TP8G18	DC7450M1	LR1000
2.5U1000	DC3010A		30S1G6	DC7200A		2000SP1G2	DC7128A		2000TP2G8B	DC7281A	LR2000M1
5U1000	DC3010A		50S1G6AB	DC7200A		4000SP1G2	DC7128A		2000TP8G18	DC7450M1	LR1000
10U1000	DC3010A		60S1G6	DC7205A		8000SP1G2	DC7128A		4000TP2G4	DC7281A	LA500
25U1000	DC3010A		100S1G6AB	DC7200A		1500SP1z2G1z4	DC7154A		12000TP2G4	DC7281A	
50U1000	DC3010A		125S1G6	DC7205A		4000SP1z2G1z4	DC7128A		4000TP4G8	DC7351	
100U1000	DC3100A		250S1G6	DC7230A		8000SP1z2G1z4	DC7128A		12000TP4G8	DC7351	
250U1000	DC3100A		350S1G6A	DC7210A		15000SP1z2G1z4	Call Factory		4000TP8G12	DC7490	
500U1000	Call Factory		500S1G6A	DC7215A		1000SP2G4	DC7154A		20000TP8G12	DC7490	
<b>"A" Series Amplifiers</b>			<b>Dual-Band, Solid State Amplifiers</b>			<b>TWT Amplifiers—CW</b>					
350AH1	Call Factory		125S1G2z5	DC7144A		2000SP2G4	DC7154A		3000TP12G18	DC7462	
800A3B	DC2500AM1		250S1G2z5B	DC7144A		10000SP2G4	DC7154AM1		5700TP12G18	DC7462	
150A100D	DC2600A	LA500	500S1G2z5A	DC7154AM1		1000SP2z7G3z1	DC7154AM1		6500TP1z5G2	DC7128A	
1200A225	DC2500AM2		1000S1G2z5B	DC7164M1		3000SP2z7G3z1	Call Factory		6900TP2G4	DC7154AM1	
2500A225B	DC2035A		2000S1G2z5	DC7128AM6		6000SP2z7G3z1	Call Factory		7400TP4G8	DC7351	
5000A225A	DC4255		3000S1G2z5	DC7128AM6		12000SP2z7G3z1	Call Factory		8000TP1G1z5	DC7128A	
10000A225A-A	DC4256		40S6G18A-L	DC7435AM1					8000TP2z7G3z1	DC7154AM1	
12500A225A-L	DC4256		40S6G18A-L	DC7435AM1					8300TP8G12	DC7490	
16000A225A	DC4260								10000TP8G10	DC7490M1	
20000A225A-L	Call Factory										
25A250B	DC3010A		150/150AW1000	DC3510A							
50A250	DC2600A		xx/xxSTG18								
125A250	DC2600A	LA150	dual-output	DC7205A and DC7435AM1							
500A250D	DC2500AM1										
100A400A	DC3400A	LA150									
100A400AM20	DC3300A										
175A400	DC3401A										
250A400	DC3401A										
350A400	DC3401A										
600A400	DC3410A										
1000A400	DC3410A										
<b>"W" Series Amplifiers</b>											
50W1000D	DC3001A										
150W1000B	DC6080A	LA250									
250W1000C	DC6180A	LA500									
500W1000C	DC6180A	LA1000									
750W1000B	DC6280AM1										
1000W1000G	DC6280AM1	LA4000									
1500W1000A	DC6380										
2000W1000D	DC6380	LR5000									
3000W1000B	DC6380M1	LR5000									
4000W1000B	DC6380M2	LR5000									
6000W1000	DC6430										
10000W1000A	DC6440										



### LA Series Load Attenuators



#### Monitor Signals at Acceptable Levels

This series of high-power fixed coaxial attenuators is recommended for use with RF power amplifiers that operate in the same frequency and power range as the attenuators. The attenuated output provides a means of monitoring the signal at an acceptable level by sensitive measuring instruments like a spectrum analyzer, power meter, or oscilloscope and permits use of a detector for RF leveling.

#### LA Load Attenuators

	LA100	LA150	LA500	LA1000
Frequency Range	DC–18 GHz	DC–6 GHz	DC–5 GHz	DC–3 GHz
Power (max. watts)	100 W continuous to 25°C*	150 W continuous to 25°C*	500 W continuous to 25°C*	1,000 W continuous to 25°C*
Attenuation	40 dB**	40 dB**	40 dB**	40 dB**
Input VSWR (max.)	1.25:1 (DC–8 GHz)	1.1:1 (DC–2 GHz) 1.2:1 (2–6 GHz)	1.15:1 (DC–2.5 GHz) 1.35:1 (2.5–5 GHz)	1.15:1 (DC–1.5 GHz) 1.25:1 (1.5–3 GHz)
Output VSWR (max.)	1.35:1 (8–12.4 GHz) 1.45:1 (12.4–18 GHz)	1.20:1 (2–5 GHz)	1.15:1 (DC–2.5 GHz) 1.25:1 (2.5–5 GHz)	1.15:1 (DC–1.5 GHz) 1.25:1 (1.5–3 GHz)
Connectors Input	N (M)	N (M)	N (M)	N (F)
Output	N (F)	N (F)	N (F)	N (F)
Ambient Temperature Range	–55°C to 125°C	–55°C to 125°C	–55°C to 125°C	–55°C to 125°C
Operating Position	Horizontal Only	Horizontal Only	Horizontal Only	Horizontal Only
Weight (max.)	320 g 11 oz	1.13 kg 2.5 lb.	3.63 kg 8 lb.	13.15 kg 29 lb.
Size (approximate) W x H x D	21.8 x 4.2 x 4.2 cm (8.6 x 1.62 x 1.62 in.)	80 x 80 x 137.1 mm (3.15 x 3.15 x 5.4 in.)	138.7 x 109.5 x 259.6 mm (5.46 x 4.31 x 10.22 in.)	178 x 332 x 451 mm (7.00 x 13.1 x 17.76 in.)

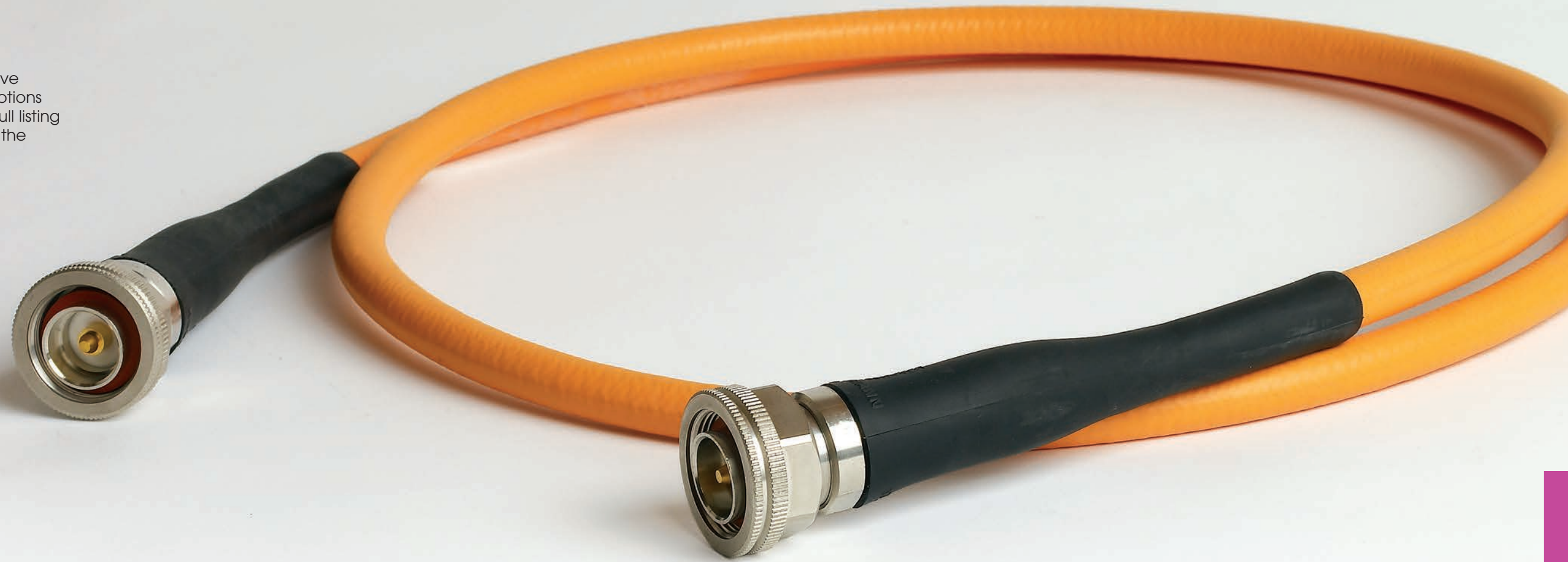
\* See specification sheet for derating curves.  
\*\* See specification sheet for tolerances.



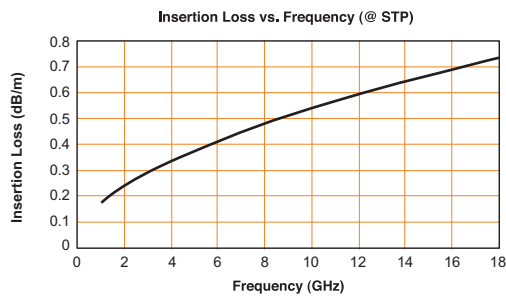
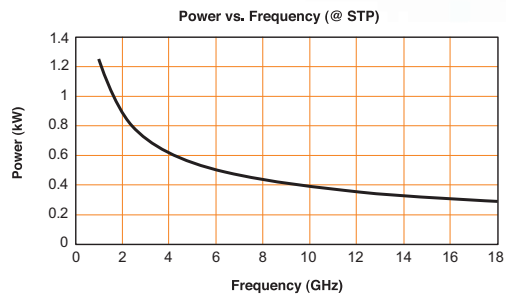
# Coaxial Cables

## Coaxial Cables

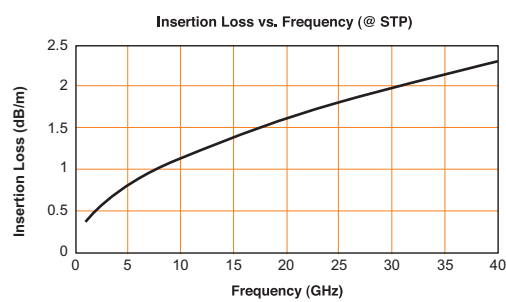
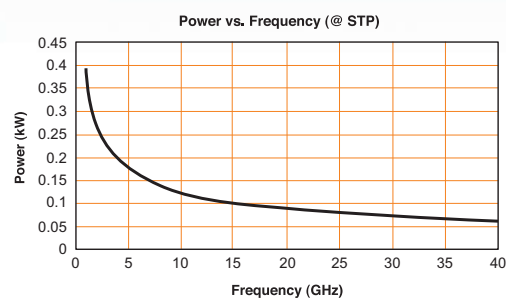
AR offers a line of low-loss microwave coaxial cables. Several connector options and lengths are available. To see a full listing of our available cables, please view the specification sheets on our website.



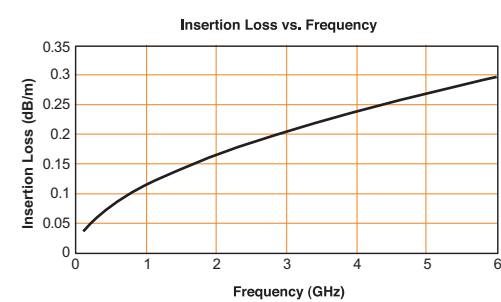
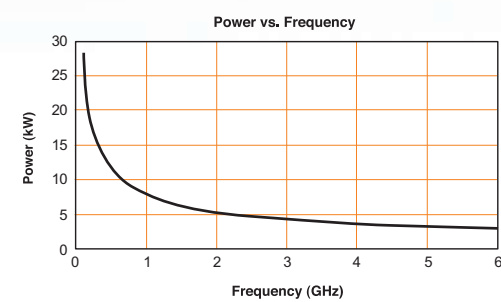
**CC1 Series:** Armored low-loss microwave cables for applications with frequencies less than 18 GHz, VSWR typically less than 1.35:1



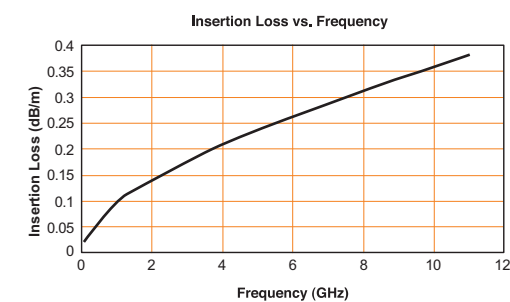
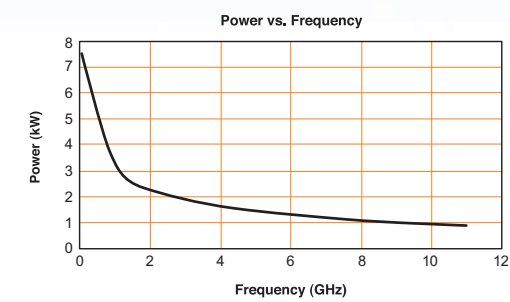
**CC2 Series:** Armored low-loss microwave cables for applications with frequencies less than 40 GHz. VSWR is typically less than 1.45:1



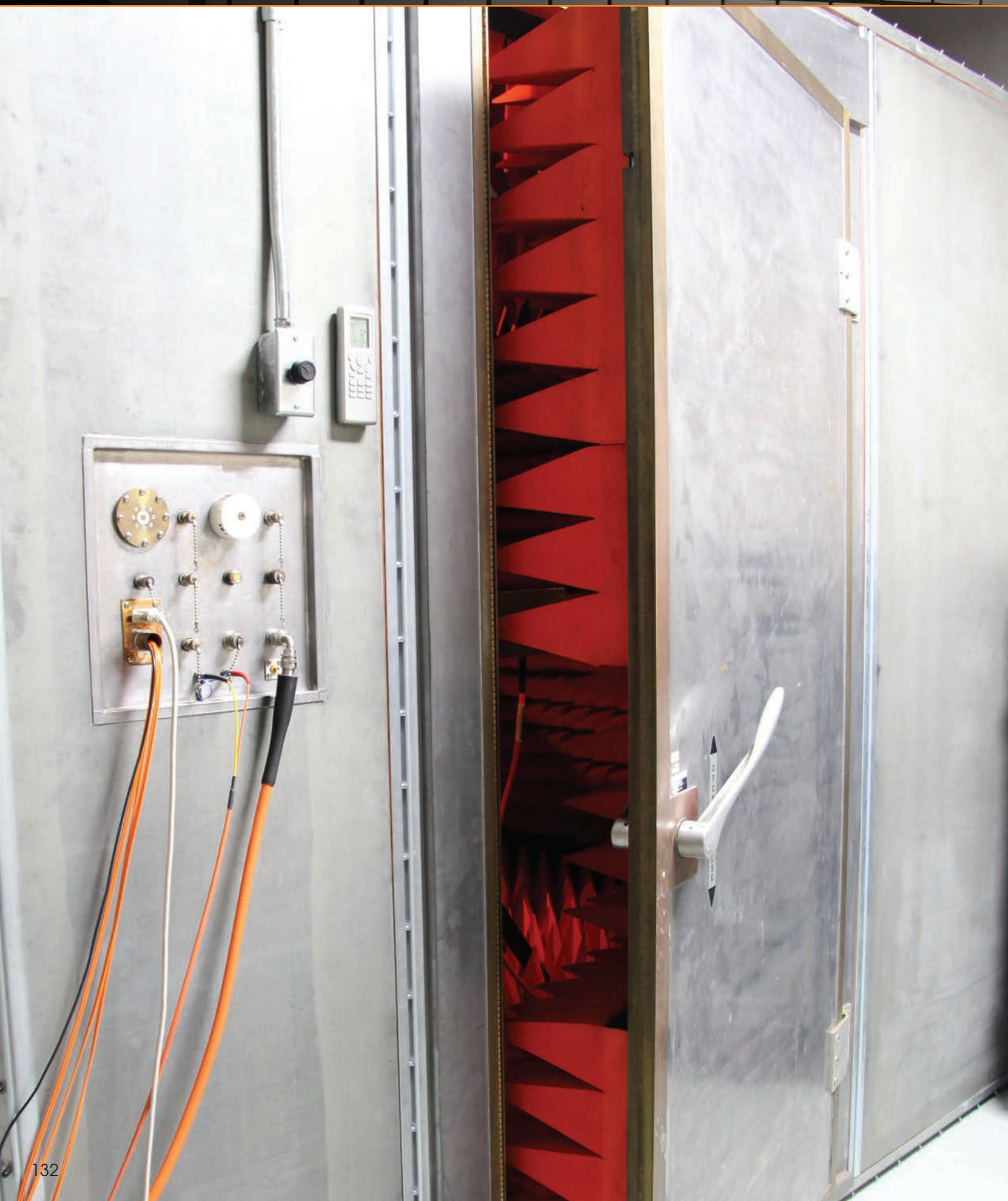
**CC4** cables are recommended for AR's high power "A," "W," and "S" series amplifiers or other applications in the appropriate frequency and power range. VSWR is typically less than 1.25:1.



**CC5 Series:** Low-loss microwave cables designed for higher power applications with frequencies up to 11 GHz. VSWR typically less than 1.25:1.







## Identify Shielding Discontinuities with the AR CL-105A/CL-106A Shielded Enclosure Leak Detection System (SELDS)

The CL-105A/CL-106A provides a convenient and easy-to-use means of testing electromagnetic shielding effectiveness. The CL-105A/CL-106A can be used on shielded apparatuses such as shielded cables, cable plenums, and shielded enclosures. This leakage detector is specifically designed to identify points of degradation in seams, doors, patch panels, and cable to enclosure interfaces, to name a few. The system consists of a transmitter, receiver, headphones, and durable carrying case. The incredible sensitivity of the model CL-105A Receiver allows it to meet the most rigid MIL standards (i.e., MIL-STD-188/125) for shielded room acceptance. The rugged construction and sleek appearance allow it to be used under the most adverse conditions.

The transmitter generates an output signal that is coupled directly to the shield under test. The receiver is then moved along the surface of any suspect areas of the item under test to detect and alert the user both visually and audibly in the event a discontinuity in the shield is detected. This method can detect much smaller discontinuities than typical shielding effectiveness measurements. To further aid the user with detection of leakages, the receiver features a meter, audio output for headphone operation, battery operation for portable use, and dynamic range of 120 dB. The meter is calibrated in logarithmic units that provide an indication of how severe the shielding discontinuity is.

For information about Shielding Effectiveness and Shielded Enclosure Leakage Detector System (SELDS), download Application Note—Shielding Effectiveness and Shielded Enclosure Leakage Detector System (SELDS), <http://bit.ly/AppNote80>.





## Our Outstanding Service and Support Is Always There.

The highest quality precision equipment is only as good as the service that supports it. AR has one of the best service organizations in the world.

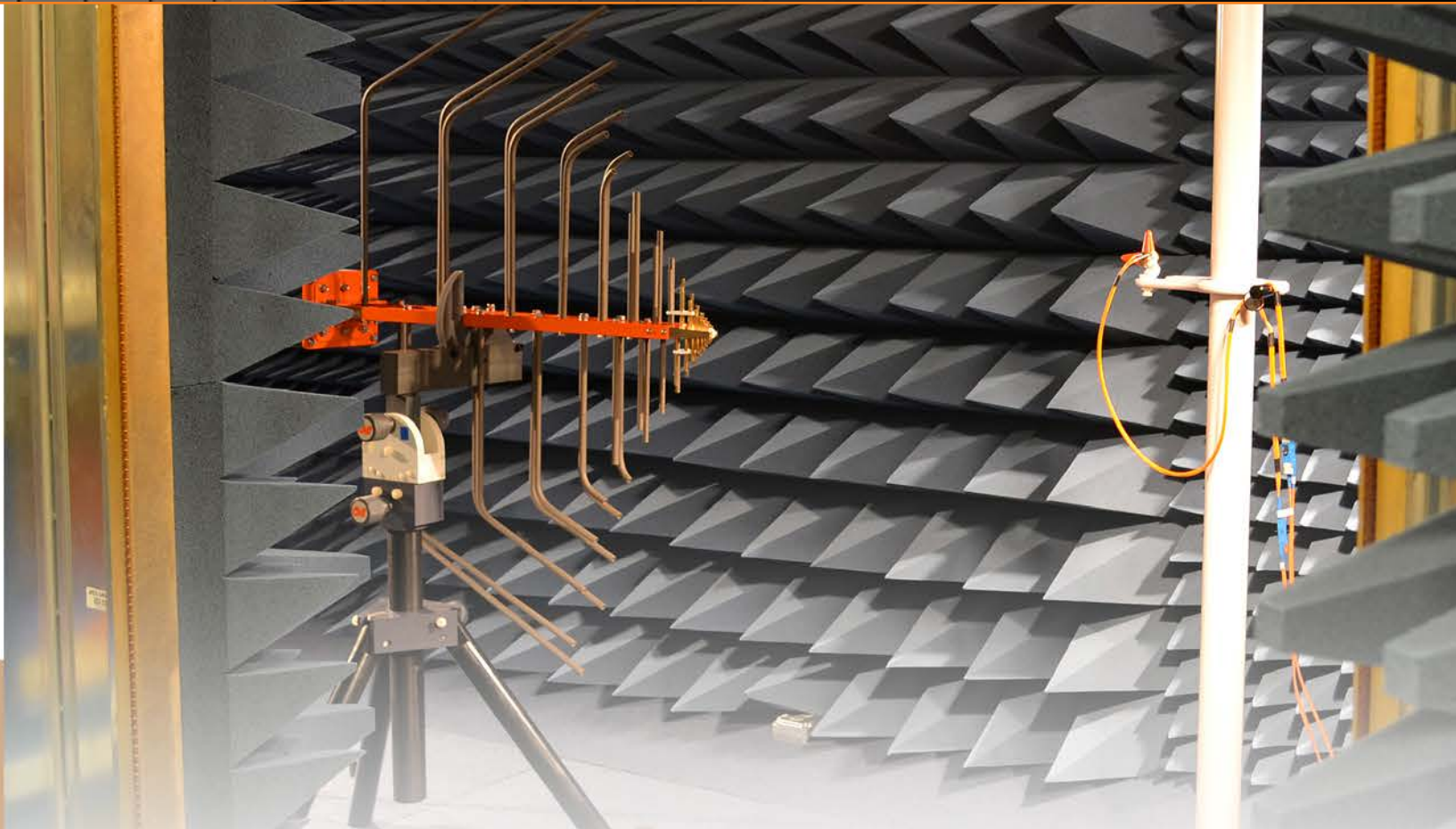
Our highly trained technicians maintain equipment so that even older or rebuilt AR products perform better than some other brand's new equipment. There are rebuilt AR amplifiers over 20 years old that are still going strong and delivering precision results.

From calibration and regular maintenance, to trouble-shooting and repairs, you can depend on AR's service.

### Three-Year, No Questions Asked Warranty

We set a new standard when we introduced our three-year warranty (one-year warranty for TWTs and powerheads). It's easy to stand behind your products when their quality is unsurpassed.

Making sure that AR products exceed your expectations is our goal. We do whatever it takes to achieve that.



	Basic Warranty	Assured	Enhanced	Performance
<b>Technical Support (HW and SW)</b>				
Email / Phone Case Response Time	24 hrs.	8 hrs	4 hrs	2 hrs
24 x 5 Technical Support				✓
On-Site Post-Sales Support				✓
<b>Hardware Support</b>				
Repair Service Coverage Turnaround Time	15 business days	14 business days	10 business days	7 business days
Calibration Service Turnaround Time	15 business days	10 business days	5 business days	3 business days
Firmware Release and Updates	✓	✓	✓	✓
Spare Parts/Consignment Inventory			optional	✓
Product Maintenance	optional	optional	optional	optional
<b>Software Support</b>				
Updates and Maintenance Releases	✓	✓	✓	✓
Proactive Release Notification	✓	✓	✓	✓
<b>Success Services</b>				
Customer Success Manager—Advocate, Escalation Point			✓	✓
Onboarding and Support Performance Metrics Report		✓ Annual	✓ Bi-Annual	✓ Quarterly

1. Response time based on AR standard business hours and hardware support turnaround time excludes component lead time.  
 2. AR Software Agreement required for software support.  
 3. All the offered services are subject to availability of capabilities in country and legal terms and conditions.  
 4. Contact your local AR sales representative for more information.



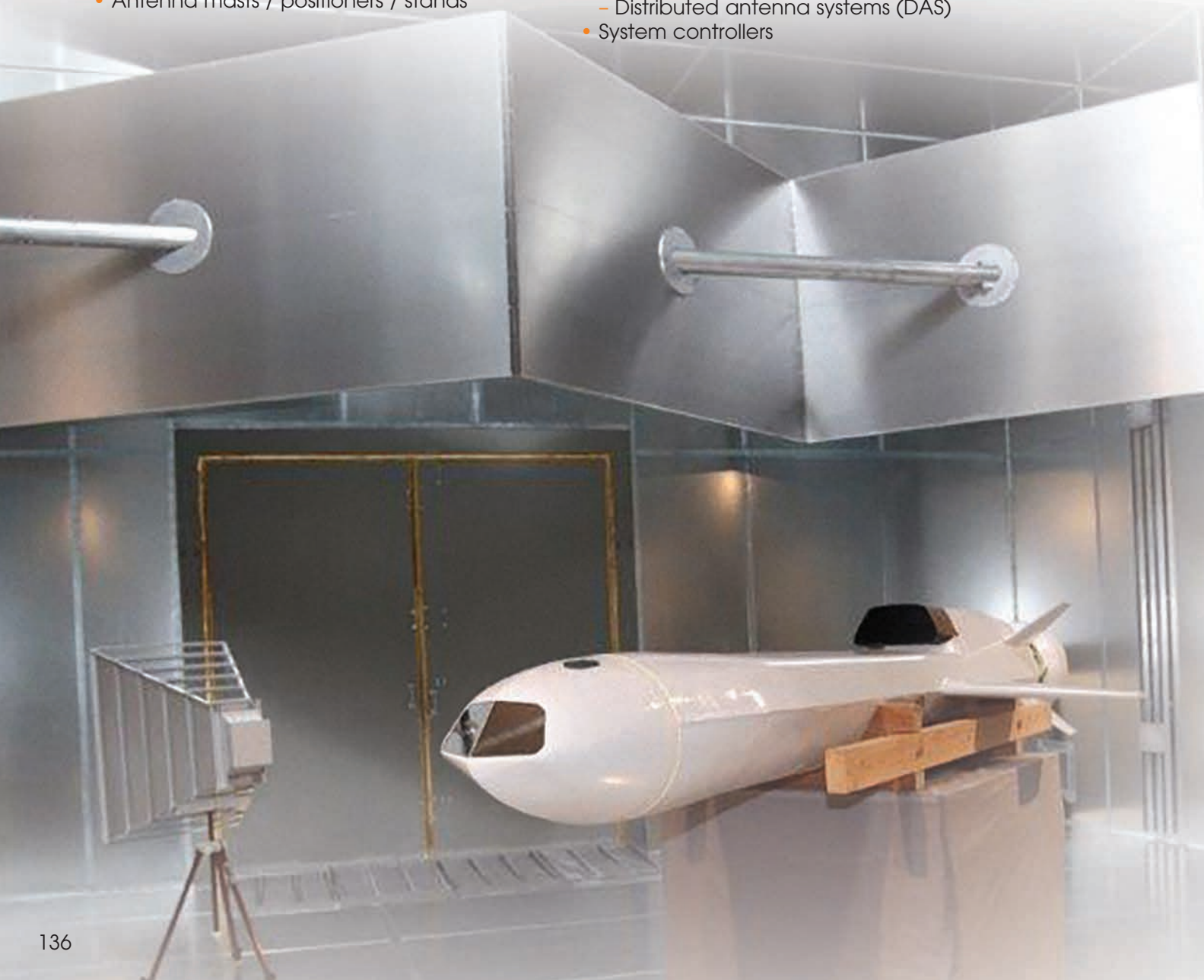
# SunAR RF Motion

## Manufacturers of Positioning Equipment and Antennas for EMC and Wireless Testing

The SunAR RF Motion product line includes precision positioners for EMC testing, antenna measurements, and OTA testing; antennas for EMC and wireless testing, distributed antenna systems (DAS); turntables; and reverberation system design and stirrers for EMC, shielding effectiveness and OTA testing. Formerly known as Sunol Sciences, the Dublin, CA-based company has built a reputation for providing reliable, high performance and high-quality products; characteristics that make it a perfect fit for AR.

### Product Overview

- Full line of standard products
- Scalable designs for specific applications
- Turntables
- Antenna masts / positioners / stands
- Reverberation chamber stirrers
- Antennas
  - EMC and wireless testing
  - Distributed antenna systems (DAS)
- System controllers



### Reverberation Chamber Stirrers and Tuners

#### Features

- Proven designs
- Scalable designs for existing chambers
- High performance
- High precision
- No detectable shakedown
- Servo-motor driven
- Variable speed
- Linear or s-curve acceleration
- Fully programmable
- Manual or automated operation
- Homing function
- Stirring-only models available

### System Controllers

#### SC110V

- .01 cm or degree resolution
- TTL Triggering

#### Features

The Model SC100V system controller provides fully independent control of up to three positioning devices and three auxiliary devices.

#### Configuration Options

Purchase one, two, or three module units; each module has one channel of full device control plus one auxiliary channel.





## Turntables

### Flush Mount Turntables For EMC Testing

#### Features

- Advanced, low-maintenance grounding scheme
- Pit ring with self-cleaning ground plane interface (optional square interface)
- Exceeds site attenuation requirements
- Positioning switch located at turntable
- Variable speed standard
- Custom sizes and load ratings available
- All metal construction
- Variety of deck-mounted component options
- Precision—<.5° (greater precision optional)
- Manual and remote operation
- Gear driven
- Scan or continuous rotation
- Extremely low maintenance
- Adjustable height
- Fiber-optic interface

### Flush Mount Turntables—Standard Models

Model Number (VS-variable speed)	Diameter, m (ft.)	Distributed Load, kg (lb.)	Caster Load,* kg (lb.)	Min. Pit Depth, mm (in.)**
FM410VS	1.2 (4.0)	500 (1,100)	125 (275)	300 (11.8)
FM1505VS	1.5 (4.9)	500 (1,100)	125 (275)	300 (11.8)
FM1511VS	1.5 (4.9)	1,000 (2,200)	250 (550)	300 (11.8)
FM2005VS	2.0 (6.6)	500 (1,100)	125 (275)	300 (11.8)
FM2011VS	2.0 (6.6)	1,000 (2,200)	250 (550)	300 (11.8)
FM2022VS	2.0 (6.6)	2,000 (4,400)	500 (1,100)	300 (11.8)
FM2044VS	2.0 (6.6)	4,000 (8,800)	1,000 (2,200)	410 (16)
FM2066VS	2.0 (6.6)	6,000 (13,200)	1,500 (3,300)	410 (16)
FM2522VS	2.5 (8.2)	2,000 (4,400)	500 (1,100)	300 (11.8)
FM2544VS	2.5 (8.2)	4,000 (8,800)	1,000 (2,200)	410 (16)
FM3022VS	3.0 (9.8)	2,000 (4,400)	500 (1,100)	300 (11.8)
FM3044VS	3.0 (9.8)	4,000 (8,800)	1,000 (2,200)	410 (16)
FM3066VS	3.0 (9.8)	6,000 (13,200)	1,500 (3,300)	410 (16)
FM4044VS	4.0 (13.1)	4,000 (8,800)	1,000 (2,200)	460 (18)
FM4066VS	4.0 (13.1)	6,000 (13,200)	1,500 (3,300)	460 (18)
FM5044VS	5.0 (16.4)	4,000 (8,800)	1,000 (2,200)	460 (18)
FM5066VS	5.0 (16.4)	7,000 (15,400)	1,750 (3,850)	460 (18)
FM7066VS	7.0 (23.0)	6,000 (13,200)	1,500 (3,300)	460 (18)

\* Caster Load is defined as the load evenly distributed on four casters, each separated by at least 46 cm (18 in.)

\*\* Low-profile models, custom sizes and weight capacities available—consult factory

### Surface Mount Turntables

#### Features

- No pit required
- Indoor/outdoor
- Non-slip drive belt
- Cable access between turntable top and bottom
- Fiber-optic interface
- Self-cleaning, fixed rollers
- Non-conductive
- No drive shaft increases position accuracy
- Variable speed standard
- Motor box to table separation optional and customer specified
- <0.5° position accuracy
- Electrically-shielded motor box

### Surface Mount Turntables—Standard Models

Model Number	Diameter	Running Load	Table Top Height
SM46C	1.2 m (4 ft.)	800 lb.	2 in. (5 cm)
SM411C	1.2 m (4 ft.)	1,100 lb.	3 in. (7.6 cm)
SM2015C	2 m	1,500 lb.	3 in. (7.6 cm)

### FS121

#### Free-Space Turntable

#### Features

- 12 in. diameter deck
- Non-conductive deck and riser
- 36 in. height (customer specified)
- EUT load rating: 10 lb.
- Variable speed: 0–6 rpm
- Soft start/stop
- <1° resolution and repeatability
- Low RF cross section
- Portable
- RS-232 control from PC
- Hollow riser tube for cable access
- Simple ASCII command set
- Precision stepper motor drive
- Electromechanical home switch
- 120 or 230 VAC, 50–60 Hz

#### Options

- Fiber-optic interface

### FS-241

#### Free-Space Turntable

#### Features

- Diameter: 24 in. (custom diameters available)
- Height at deck: to be specified by customer (15 in.–96 in.)
- Distributed load capacity: ~45 kg (100 lb.)
- Rotation speed: Variable at 0.5, 1.0, 2.0, ~2.2 rpm (custom speeds available)
- Speed may be selected either by pushing a single button on the front panel of the System Controller or by sending a command to the System Controller via the GPIB port (customized control available)
- Position resolution: <0.25°
- All material beyond the motor box is nonconductive
- Cables may be routed between the rotating deck and its base
- Power requirement: 115 VAC / 230 VAC, 50/60 Hz, single phase, 4A



Model FS121-A  
Free-Space Turntable



## Antennas

SunAR RF Motion antennas feature an innovative design philosophy that makes them the practical choice for EMC testing. New manufacturing techniques simplify assembly and minimize the use of hardware, creating an electrically-stable measuring instrument that stays in calibration and holds up to the environment.

### JB Series Broadband EMC Test Antennas

30 MHz–6 GHz

#### Applications

- Radiated Emissions
- Radiated Immunity
- Pre-Scan/Full Compliance

#### Features

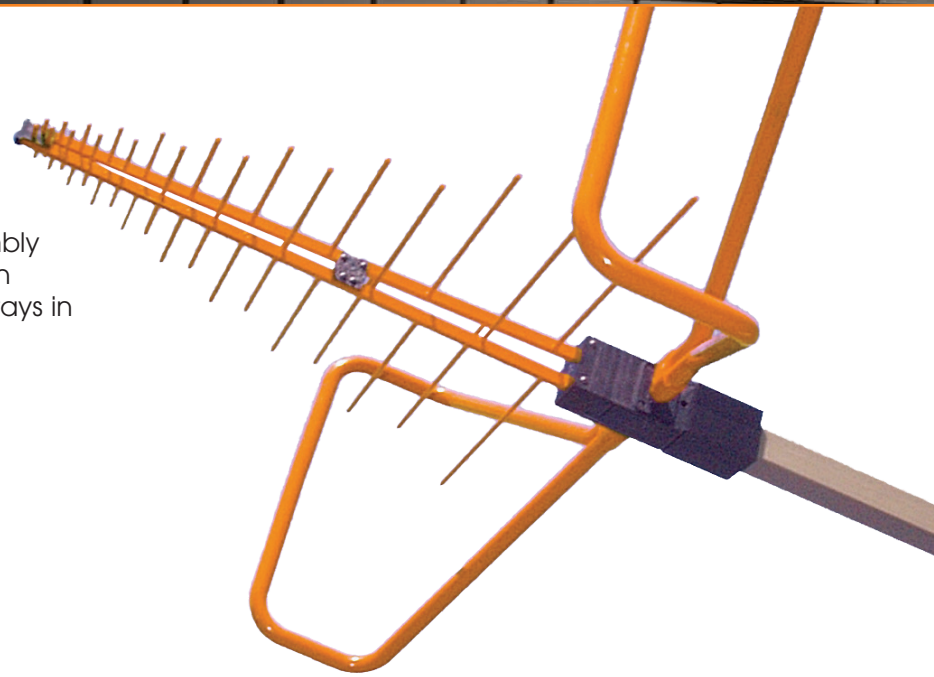
SunAR RF Motion JB Series antennas are compact, high-performance instruments designed for EMC emissions and immunity testing. The broadband characteristics of these antennas enable them to operate over a wide frequency range—a must for automated test environments. Innovative design and manufacturing techniques result in long-lasting strength and mechanical integrity. The result is an electrically-stable measuring instrument that maintains calibration over extended use.

### Broadband EMC Test Antennas

JB Series Antennas	Frequency Range
JB1	30–2,000 MHz
JB3	30–3,000 MHz
JB6	30–6,000 MHz



JB6 Tripod



### LP Series Log-Periodic EMC Antennas

30 MHz–5 GHz

#### Applications

- Radiated Emissions
- Radiated Immunity
- Pre-Scan/Full Compliance

#### Features

SunAR RF Motion log-periodic antenna booms are made from a custom aluminum extrusion that reduces the number of parts at the front of the antenna, resulting in a stronger, more stable feedpoint. The unique shape allows for a larger feed cable to be used, which significantly increases the maximum power rating. Dipole elements are permanently attached to the boom by a construction technique that maintains excellent electrical characteristics for the life of the antenna. A tough powder-coat finish with UV inhibitors seals the aluminum structure and protects it from sunlight and moisture. Includes individual A2LA accredited calibration.

### Log-Periodic Antennas: 200 MHz–2, 3, 5 GHz

LP Series Antennas	Frequency Range
LP1	2 GHz
LP3	3 GHz
LP6	6 GHz

### LP80, LP100 Directional Antennas

80 MHz–3 GHz  
100 MHz–3 GHz

#### Applications

- EMC Radiated Emissions
- EMC Radiated Immunity
- Signal Monitoring and Detection

#### Features

Model LP80 & LP100 are directional antennas designed for transmitting and receiving RF signals from 80 or 100 MHz to 3 GHz. The broadband characteristics of the log-periodic structure enable it to operate with a nearly constant gain and radiation pattern over the entire frequency range.

Innovative design and manufacturing techniques result in long-lasting strength and performance. The antenna boom is made from a custom aluminum extrusion that reduces the number of mechanical RF junctions. Dipole elements are attached to the boom by a technique that maintains excellent electrical characteristics for the life of the antenna. A tough powder-coat finish with UV inhibitors seals the aluminum structure and protects it from sunlight and moisture.

The LP80 & LP100 have a rear tube that allows polarization adjustments without changing antenna height. This also minimizes the effect of the RF cable by keeping it well behind the antenna elements. The SNAP! mount provides a secure interface to antenna positioning towers. It locks the antenna in place and prevents unwanted rotation during polarization changes.



LP Series  
Directional Antennas  
80 MHz–6 GHz

### LP60 Directional Antennas

400 MHz–6 GHz

#### Applications

- EMC and wireless testing
- Site survey
- In situ testing

#### Features

Our low-profile directional antennas are designed for EMC and wireless testing applications from 400 MHz to 6 GHz and beyond. These antennas are etched on a low-loss microwave substrate. The broadband, log-periodic structure enables operation over a very wide frequency range with constant gain. Innovative design and manufacturing techniques result in long-lasting performance.

A stainless steel rear mounting tube aids in mounting and handling. An optional Polarization Mount (pictured) is available for use with a tripod or permanent fixture. Kits available.

### Directional Antennas

Model	Frequency Range	Typical Gain
LP430	400 MHz–3 GHz	5 dBi
LP460	400 MHz–6 GHz	5 dBi
LP6530	650 MHz–3 GHz	7 dBi
LP760	700 MHz–6 GHz	6 dBi
LP60	1.3–6 GHz	6 dBi



## Antennas (Continued)

### PD Series Precision Dipole Antennas

450 MHz–3 GHz

#### Applications

- Signal Injection
- EMC and Wireless Testing
- Signal Monitoring and Detection

#### Features

Our PD Series Precision Dipoles are narrowband, resonant antennas that are designed for transmitting and receiving RF signals at specific frequencies. They are manufactured in accordance with ANSI/AAMI PC69:2000. Each dipole is one-half wavelength long at its frequency of operation and contains a series-parallel coaxial stub balun that meets rigid specifications. Dipoles cut to custom frequencies are available upon request.

An optional polarization mount is available for use with a tripod or permanent fixture.

#### Precision Dipole Antennas

Model	Center Freq.
PD450	450 MHz
PD600	600 MHz
PD800	800 MHz
PD825	825 MHz
PD850	850 MHz
PD875	875 MHz
PD900	900 MHz
PD930	930 MHz
PD1500	1,500 MHz
PD1610	1,610 MHz
PD1850	1,850 MHz
PD1910	1,910 MHz
PD2450	2,450 MHz
PD3000	3,000 MHz



### DRH Series Broadband Horn Antennas

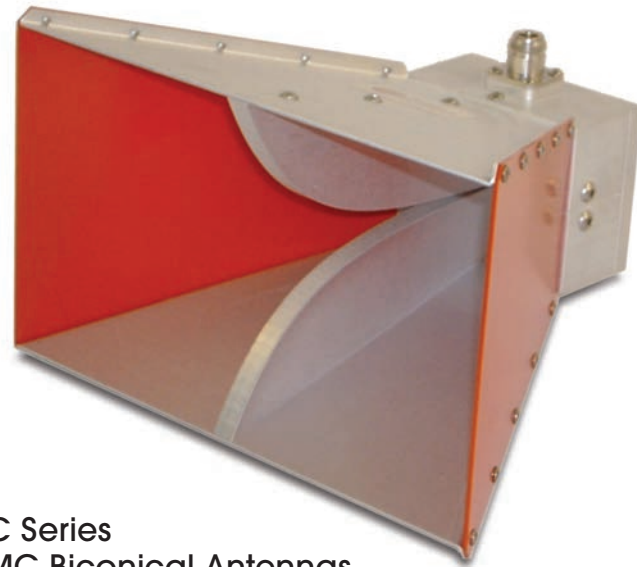
1 GHz–40 GHz

#### Applications

- Radiated Emissions
- Radiated Immunity
- Pre-Scan/Full Compliance

#### Features

SunAR RF Motion double-ridged horn antennas are ideal for high power radar stations, phased array and broadband jamming systems as well as for RFI/EMI testing. Due to the wide beam width, the DRH Series are compliant with many military and commercial emissions standards. They are compact and lightweight for easy mobility yet tough enough to withstand the extra demands of outdoor use.



### BC Series EMC Biconical Antennas

30 MHz–300 MHz

#### Applications

- Radiated Emissions
- Radiated Immunity
- Pre-Scan/Full Compliance

#### Features

SunAR RF Motion antennas feature an innovative design philosophy that makes them the practical choice for EMC testing. New manufacturing techniques simplify assembly and minimize the use of hardware, creating an electrically-stable measuring instrument that stays in calibration and holds up to the environment.

## DAS: Distributed Antenna Systems

SunAR RF Motion broadband directional antennas are designed for transmitting and receiving wireless communications signals. The broadband characteristics of the log-periodic structure enable it to operate over a very wide frequency range with constant gain. Our innovative design and manufacturing techniques result in long-lasting strength and performance.

Our standard directional antenna features a log-periodic structure and includes dipole elements and a universal mounting bracket for easy installation. Its metal alloy construction reduces the number of mechanical RF junctions and keeps PIM (Passive Intermodulation) to a minimum. Permanently attached dipole elements allow a stronger, more stable feedpoint with a low VSWR. The radome cover (UL94V0 flame rated) and optional UV-inhibiting powder-coat finish offer exceptional protection.

Our low-profile directional antennas are etched onto low-loss microwave substrate material with options for outdoor rated and half inch thick water-resistant housing. Dielectric and reactive loading of the antenna elements reduce the overall size of certain models. For these, the antenna is mounted in a protective housing that is only 1 cm thick. Every low-profile directional antenna is designed with four mounting holes for simple installation on to any flat nonconductive surface, such as an office wall or ceiling. Contact our factory for guidance on mounting antennas to concrete or other surfaces.

#### Applications

- Distributed Antenna Systems (DAS)
- Cellular
- Wi-Fi
- Public Safety Bands

#### Broadband Directional Antennas

Model	Frequency Range	Typical Gain
LP425	400 MHz–3 GHz	7 dBi
LP425PCB	400 MHz–3 GHz	5.5 dBi
LP425PCB-O-DIN	400 MHz–3 GHz	5.5 dBi
LP460PCB	400 MHz–6 GHz	5-6 dBi
LP6530PCB	650 MHz–3 GHz	7 dBi
LP6560PCB	650 MHz–6 GHz	6 dBi



**Model LP6530PCB**  
Broadband 650 MHz–3 GHz  
Directional DAS Antenna



**Model LP425**  
Broadband 400 MHz–3 GHz  
Directional DAS Antenna



## Antenna Masts and Positioners

### TWR99, TWR95 Motorized Antenna Positioning Towers Standard/Compact Antenna Towers

#### Features

- 1-2.5 m (TWR99) and 1-4 m (TWR95) antenna height standard, 1-6 m optional
- Electric height adjustment
- 1 cm height resolution, 0.1 m/sec speed
- Low-stretch polyester rope suspension (750 lb. breaking strength)
- Pneumatic polarization, 0-90°, standard (70-150 PSI CDA required), ¼ in. NPT male hose needed
- Safety brake
- Zero maintenance
- Total height (2.5 m scan): 116 in. (~295 cm)
- Total height (4 m scan): ~180 in. (~457 cm)
- Absolutely no conductive material above motor box
- Strong, stable construction
- Fiber-optic interface standard (62.5/125 duplex ST)
- Height and polarization switches located at tower
- Molded one-piece foot and trolley for greater strength, durability
- Easy assembly/disassembly
- Maximum antenna load (may require counterweight):
  - TWR95: 35 lb. (~16 kg)
  - TWR99: 30 lb. (~14 kg)
- 120 V/230 VAC, 50/60 Hz, 6A/2x4A
- TWR95 base size: 48 in. x 48 in. (1.2 m x 1.2 m)
- TWR99 base size: 30 in. x 36 in. (.76 m x .76 m)
- Custom sizes and configurations available

### TLT2 Bore-Sight Antenna Positioning Tower

SunAR RF Motion Antenna Positioning Towers feature innovative design and manufacturing concepts that result in great ruggedness, durability and performance at a competitive price. The new Model TLT2 provides a very stable platform for the largest and smallest EMC test antennas of all types. Variable speed with soft start & stop.

#### Features

- New trolley guide concept enhances azimuthal stability
- Dual load carriers give rigid, stable elevation under heaviest loads
- Stable boom extension allows proper focal point placement for any size antenna without moving tower
- Monolithic construction of major components results in unbreakable lifetime utility
- Absence of conductive material above the motor box minimizes the electro-magnetic cross section and minimizes coupling to antennas
- Materials are selected for resistance to UV radiation and resistance to water absorption
- Standard model is operated by a single, standard controller channel
- Developed for indoor and outdoor use

### TLT3 Bore-Sight Antenna Positioning Tower

SunAR RF Motion Antenna Positioning Towers feature innovative design and manufacturing concepts that result in great ruggedness, durability and performance at a competitive price.

#### Features

- EUT distance: 1 m (worst case)
- Calibration point height: 4 m
- Tower height: 15-ft. 3 in.
- Taller towers for larger antennas available (contact us)

#### Arbitrary setup parameters

- EUT distance
- Bore-sight initiation height

### APS-1, APS-1EMP Antenna Positioner Stands

#### Features

- Adjustable leveling casters
- Hard stops at 1, 1.5 and 2 m
- Fine height adjust
- Adjustable calibration point
- Remote controlled polarization
- Lightweight
- Disassembles easily
- Exceptionally stable

### EL75, ELAZ75 Elevation over Azimuth Positioners

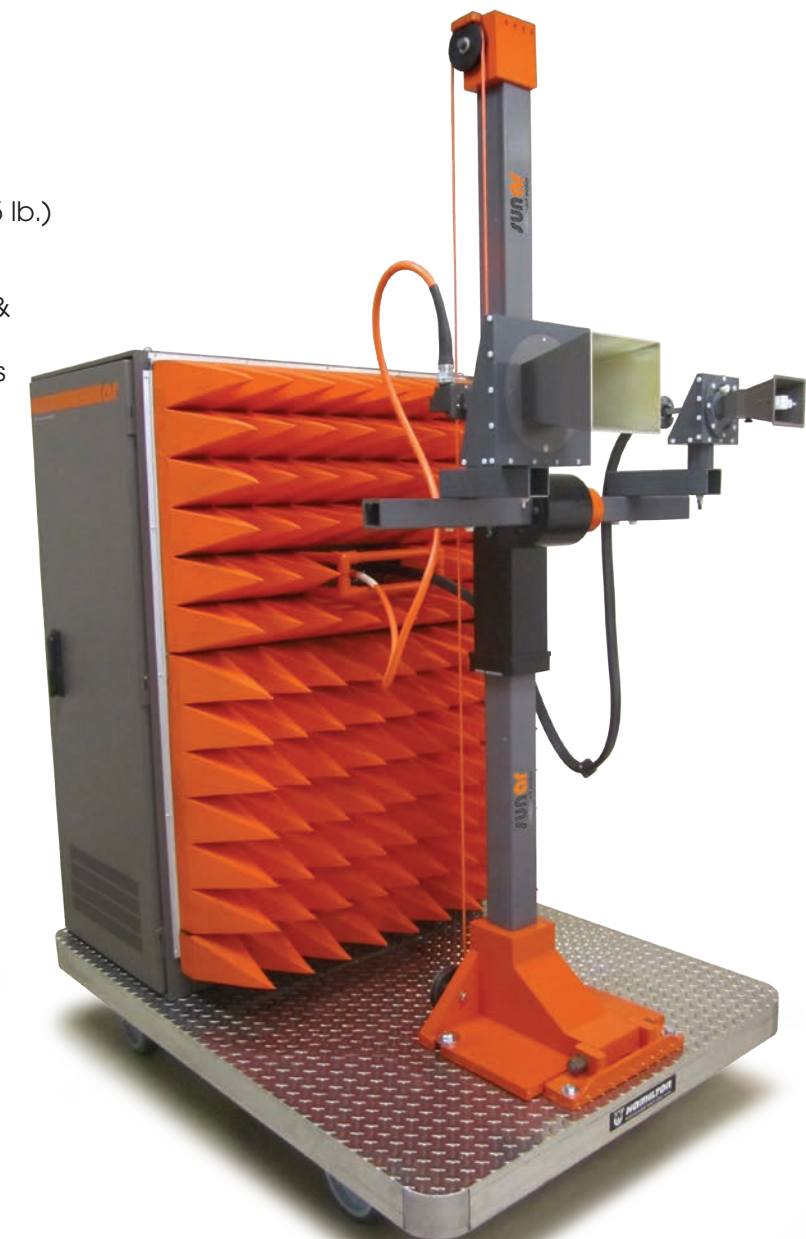
#### Features

- Allows for heavy EUT loads in both elevation (75 lb.) & azimuth (600 lb.)
- Variable speed in both elevation & azimuth
- Continuous rotation allowed in both elevation & azimuth (with optional components)
- Low RF cross-section materials above drive units
- Portable (no permanent installation necessary)
- Remote azimuth drive option
- Height customer-defined
- Fiber-optic connections to controller (requires SC104V or SC110V System Controller)
- GPIB full control
- Custom EUT mounts

### Request Service

For an applications engineer, call 800-933-8181 or email [applications@arworld.us](mailto:applications@arworld.us)

Direct-to-Service, call 925-833-9936 or email [sunarinfo@arworld.us](mailto:sunarinfo@arworld.us)





## AR Modular RF for Tactical Booster Amplifiers, RF Systems And Modules

Located in Bothell, WA, AR Modular RF manufactures and distributes RF amplifier modules and broadband solid-state RF amplifier systems that play a critical role in wireless and radio communications, military communications, electronic warfare, electronic countermeasures, and homeland security. They have a variety of medical, scientific, and industrial applications.

- RF amplifier modules: 80 kHz–3,000 MHz, 5 to 500 watts
  - Broadband, narrowband, and custom designs available
- Rack-mount amplifier systems: 80 kHz–3,000 MHz, 5 to 1,000 watts
- Booster amplifiers for tactical military radios from 30 MHz to 3 GHz, 20–125 watts
- Power amplifiers for legacy communication designs as well as virtually every new and emerging communications system



## Read the Waves

Experienced specialists in amplifiers and boosting signals, we read the next wave of technology and market trends to deliver mission-critical, software-savvy solutions.

From market pioneers to industry technology trailblazers, we have always recognized the critical elements that drive the market: technological performance, dependability, and time to market. We pride ourselves in developing plug and play products and turnkey solutions.

We are focused on amplifiers and boosting signals and providing turnkey solutions to one of the most demanding customers in the world—the military. We work as a trusted partner to provide the most innovative solutions in the business. We look at the entire picture. We balance size, weight, and power requirements to provide an optimal solution.

On the battlefield, in the air, and on the ground, we keep on passing the toughest tests. In the most extreme and tortuous environments, our products are constantly pushed to their limits. Our amplifiers consistently perform beyond expectations.





## AR Modular RF Airborne Applications Airborne Certified, Gunship Approved

The booster amplifiers specified for these aircraft are the most reliable, easiest-to-use, long-range, and innovative booster amplifiers available today.

- Reliable
- Sophisticated
- In use
- Proven
- Lighter
- Tested

Our products have been tested and certified for military airborne applications.



AR-20H



EC-130J  
AR-75



C-130 Gunship  
AR-35



AR-50



CV-22 Osprey  
AR-50



MH-60M Blackhawk  
AR-20H



AR-35



MH/AH-6M Little Bird  
AR-20H



MH-47G Chinook  
AR-20H



AR-75



MC-12 Liberty  
AR-50



Unmanned Aerial Vehicle  
AR-20H



# AR Modular RF Military Products

## Performs in Extreme Conditions, Highest Quality. Best Warranty.

AR delivers innovative technology, advanced design, and superior workmanship with lower cost per watt, plus a worldwide support network that is here for you today, tomorrow, and always. Everything we sell is backed by the best and most comprehensive warranty in the industry.

### Waveforms Supported:

- ANW2, IW, SRW, WNW, ASCM, SINCGARS, HAVEQUICK I and II, and others!

### Frequency Bands Supported:

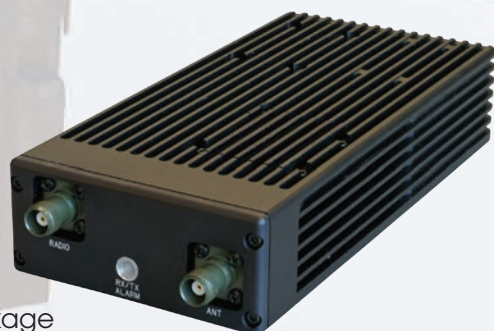
- HF/VHF/UHF/L-Band

### Supports Multiple Radio Platforms:

- AN/PRC-154 Rifleman™ Radio, AN/PRC-117F, AN/PRC-117G, AN/PRC-152, AN/PRC-148 (MBITR/JEM), AN/PSC-5D, AN/ARC-210, and others!

### Airborne Flight Certified AR-20H

- 20 watts
- 30-512 MHz
- Lighter package
- Lower profile
- Supports legacy and modern networking waveforms
- MIL-STD 810G (Including Gun Ship)
- MIL-STD 461F, MIL-STD 464C, MIL-STD 704F



### AR-50SE

- 50 watts
- 30-88 MHz
- SINCGARS compatible
- Compatible with Thales PRC-148, Harris PRC-152, Harris PRC-117F, Harris PRC-117G, and others



### SM-AR-50

- Shock mount kit
- Vehicle and aircraft



### AR-20

- 20 watts
- 30-512 MHz
- Lighter package
- Lower profile
- Internal LNA
- Co-site filtering
- Supports legacy and modern networking waveforms



### AR-50S

- 50 watts
- 30-88 MHz
- SINCGARS compatible
- Compatible with Thales PRC-148, Harris PRC-152, Harris PRC-117F, Harris PRC-117G, and others



## AR-50 Tactical Booster Amplifier Selected in the V-22 Osprey Upgrade

### AR-50

- 50 watts
- 30-512 MHz
- Internal LNA
- Supports legacy and modern networking waveforms
- DAMA and IW Certified
- 810G (including SB-X10001B)
- Compatible with Thales PRC-148, Harris PRC-152, Harris PRC-117F, Harris PRC-117G, and others



### AR-75

- 75 watts
- 30-512 MHz
- Compatible with Harris PRC-117F, Harris PRC-117G, and others
- Includes MIL-STD 461/1275 Filter
- Supports legacy and modern networking waveforms
- Airborne Safety Flight Certified



### AR-125R

- 125 watts
- 30-512 MHz
- Internal and external LNA
- 2U Rack Mount
- CW duty cycle
- Compatible with Harris PRC-117F, Harris PRC-117G, and others
- Supports legacy and modern networking waveforms





## Tactical Booster Amplifiers

MODEL NAME	DESCRIPTION
AR-20	20 watts PEP, 30–512 MHz, Tx/Rx Booster Amplifier with LNA
AR-20KT	20 watts PEP, 30–512 MHz, Tx/Rx Booster Amplifier Kit with LNA. Kit includes amplifier, cables, pouches and LOS antenna.
AR-20KT-DUAL	20 watts PEP, 30–512 MHz, Tx/Rx Booster Amplifier Kit with LNA. Kit includes amplifier, cables, pouches, switch, LOS and SATCOM antennas.
AR-20B	20 watts PEP, 30–512 MHz, Tx/Rx Booster Amplifier
AR-20BKT	20 watts PEP, 30–512 MHz, Tx/Rx Booster Amplifier Kit. Kit includes amplifier, cables, pouches and LOS antenna.
AR-20BKT-DUAL	20 watts PEP, 30–512 MHz, Tx/Rx Booster Amplifier Kit. Kit includes amplifier, cables, pouches, switch, LOS and SATCOM antennas.
AR-20H	20 watts PEP, 30–512 MHz, Tx/Rx Booster Amplifier with Remote Keyline
AR-20EP	20 watts CW/PEP, 225–450 MHz, Tx/Rx Booster Amplifier
AR-20HC2	20 watts PEP, 300–512 MHz, Tx/Rx Booster Amplifier
AR-35	35 watts PEP, 30–512 MHz, Tx/Rx Booster Amplifier
AR-50	50 watts PEP, 30–512 MHz, Tx/Rx Booster Amplifier
AR-50RC	25 watts PEP, 30–512 MHz / 50 watts PEP 290–320 MHz, RF Tx/Rx Booster Amplifier
AR-50RCS	50 watts PEP, 30–88 MHz, Tx/Rx Booster Amplifier
AR-50S	50 watts PEP, 30–88 MHz, Tx/Rx Booster Amplifier
AR-50-SAT75	50 watts PEP, 30–512 MHz / 75 watts PEP 220–324 MHz, Tx/Rx Booster Amplifier
AR-50SE	50 watts PEP, 30–88 MHz, Tx/Rx Booster Amplifier
AR-55L	45 watts PEP, 1.2–1.8 GHz, Tx/Rx Booster Amplifier
AR-75	75 watts PEP, 30–512 MHz, Tx/Rx Booster Amplifier
AR-75-M50	50 watts PEP, 30–512 MHz, Tx/Rx Booster Amplifier
AR-125R	125 watts PEP, 30–512 MHz, Tx/Rx 19-in. Rack Mount Booster Amplifier





# Find It Fast. AR Modular RF Military Products.



FEATURES	AR-20	AR-20KT	AR-20B	AR-20BKT	AR-20H	AR-20EP	AR-20HC2	AR-35	AR-50
Power Output	20 watts CW 20 watts PEP	20 watts CW 20 watts PEP	20 watts CW 20 watts PEP	20 watts CW 20 watts PEP	20 watts CW 20 watts PEP	20 watts CW 20 watts PEP	20 watts CW 20 watts PEP	35 watts CW nominal; 35W PEP with 70% AM modulation	50 watts CW nominal; 50W PEP with 70% AM modulation; <10% distortion typical
Frequency Range	30 MHz–512 MHz	30 MHz–512 MHz	30 MHz–512 MHz	30 MHz–512 MHz	30 MHz–512 MHz	225 MHz–450 MHz	300 MHz–500 MHz	30 MHz–512 MHz	30 MHz–512 MHz
Input Power	2W CW or PEP for full 20W output	2W CW or PEP for full 20W output	2W CW or PEP for full 20W output	2W CW or PEP for full 20W output	Nominal 2W–5W CW or PEP for full 20W output	2W CW or PEP for full 20W output	Nominal 0.75W–3W CW or PEP for full 20W output	3W PEP typical for 35W PEP Output	<5W CW typical for 50W Output
SATCOM Rx LNA	Built-in	Built-in	n/a	n/a	Built-in	Built-in	Built-in	n/a	Built-in
SATCOM Rx LNA Gain/Noise Figure	12 dB/<2.5 dB typical	12 dB/<2.5 dB typical	n/a	n/a	6 dB/4 dB typical	12 dB/4 dB typical	10 dB/2.5 dB typical	n/a	12 dB/2.5 dB typical
SATCOM Rx Co-site Filter	Co-Site filter provides >35 dB protection to the SATCOM receive channels	Co-Site filter provides >35 dB protection to the SATCOM receive channels	n/a	n/a	n/a	n/a	Yes	n/a	Band pass frequency 239–273 MHz, Out of band rejection >45 dB typical
Modulation	All Legacy and Modern complex tactical communications waveforms like ANW2, IW, and SRW	All Legacy and Modern complex tactical communications waveforms like ANW2, IW, and SRW	All Legacy and Modern complex tactical communications waveforms like ANW2, IW, and SRW	All Legacy and Modern complex tactical communications waveforms like ANW2, IW, and SRW	All Legacy and Modern complex tactical communications waveforms like ANW2C and SRW	All Legacy and Modern complex tactical communications waveforms	All Legacy and Modern complex tactical communications waveforms like F SK, ANW2C and SRW	AM, FM, or PM, and Tactical communications waveforms	All Legacy and Modern complex tactical communications waveforms like ANW2, WNW, and SRW
Power Requirements	12–35.5 VDC single XX90 battery or 12 and 28 VDC vehicle supply	12–35.5 VDC single XX90 battery or 12 and 28 VDC vehicle supply	12–35.5 VDC single XX90 battery or 12 and 28 VDC vehicle supply	12–35.5 VDC single XX90 battery or 12 and 28 VDC vehicle supply	18 to 35.5 VDC compliant to MIL-STD-704F,, MIL-STD 461F, MIL-STD 464C	12 to 35.5 VDC	9.5 to 36 VDC	13.8 VDC–33 VDC, from two BAXX90 Batteries or 12 and 24 VDC vehicle systems, filtered and transient protected	12–36 VDC, from Battery or 12 and 24 VDC vehicle systems. Filtered and transient protected
Current@24 VDC nominal	<3.2A Amps @ 28 V typical	<3.2A Amps @ 28 V typical	<3.2A Amps @ 28 V typical	<3.2A Amps @ 28 V typical	<3.2A Amps @ 24 V typical	<3.2A Amps @ 24 V typical	<3.5A Amps @ 24 V typical	5.5 Amps nominal	7.5 Amps nominal
Operating Temperature	-30 to +60° C Ambient	-30 to +60° C Ambient	-30 to +60° C Ambient	-30 to +60° C Ambient	-40 to +71° C Ambient	-30 to +60° C Ambient	-40 to +70° C Ambient	-30 to +60° C	-30 to +60° C
Water	IP67	IP67	IP67	IP67	IP67	IP67	IP67	66 ft for 20 min	IP67
Vibration/Shock/ Humidity	Designed to meet applicable sections of MIL STD 810/ designed for ground/base vehicle use	Designed to meet applicable sections of MIL STD 810/ designed for ground/base vehicle use	Designed to meet applicable sections of MIL STD 810/ designed for ground/base vehicle use	Designed to meet applicable sections of MIL STD 810/ designed for ground/base vehicle use	MIL-STD-810G	MIL-STD-810	MIL-STD-810	MIL STD 810F/Hand portable	Per MIL STD 810G (Including SB-X10001B)
Size (HxWxD) Inches	1.58 x 3.75 x 5.05 in.	1.58 x 3.75 x 5.05 in.	1.58 x 3.75 x 5.05 in.	1.58 x 3.75 x 5.05 in.	1.86 x 3.75 x 8.78 in.	1.58 x 3.75 x 5.05 in.	1.86 x 3.75 x 8.78 in.	2.30 x 3.00 x 7.70 in.	2.50 x 6.00 x 7.50 in.
Weight	1 lb. 10 oz	2 lb. 15 oz (Full Kit)	1 lb. 10 oz	2 lb. 15 oz (Full Kit)	2.6 lb.	1 lb. 10 oz	2.6 lb.	2 lb.	4.4 lb.
JITC Certified	Yes	Yes	No	No	No	No	No	No	PSC-5D, PRC-117G, PRC-148 JEM
GSA Schedule	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes



# Find It Fast. AR Modular RF Military Products.



FEATURES	AR-50RC	AR-50RCS	AR-50S	AR-50SE	AR-55L	AR-75	AR-75-M50	AR-125R/C2
Power Output	LOS: 25 watts CW nominal; 25W PEP with 70% AM modulation; <10% distortion typical SATCOM (290 MHz to 320 MHz); 50 watts	50 watts CW nominal; 50W PEP with 70% AM modulation; <10% distortion typical	50 watts CW nominal; 50W PEP with 80% AM modulation; <10% distortion typical	50 watts CW nominal; 50W PEP with 80% AM modulation; <10% distortion typical	45W PEP (+2 dB / -1 dB), typical across the band, with 5W PEP input	75 watts CW nominal; 75 W PEP with 70% AM modulation; <10% distortion typical	Nominal 50 watts CW; 50W PEP 70% DOM; < 10% distortion <5% typical	125 watts CW typical
Frequency Range	30 MHz–512 MHz	30 MHz–90 MHz	30 MHz–88 MHz	30 MHz–88 MHz	1,250–1,800 MHz	30 MHz–512 MHz	30 MHz–512 MHz	30 MHz–512 MHz
Input Power	<5 watts CW typical for 25W LOS and 50W SATCOM Output	<5 watts CW typical for 50 watts Output	<5 watts CW typical for 50 watts Output	<5 watts CW typical for 50 watts Output	2–5 W PEP	5–8 watts CW typical for nominal 75 watts Output	~5–7 watts CW typical for 50 watts Output	10 watts typical, up to 20W without damage
SATCOM Rx LNA	Built-in	n/a	n/a	n/a	Built-in	Built-in	Built-in	External/KMW2030P
SATCOM Rx LNA Gain/Noise Figure	12 dB/2 dB typical	n/a	n/a	n/a	12 dB/<3.5 dB typical	12 dB/2 dB typical	12 dB/2 dB typical	12 dB/2 dB typical
SATCOM Rx Co-site Filter	Band pass frequency 239 MHz–273 MHz, Out of band rejection 35 dB typical	n/a	n/a	n/a	High pass Filter, Out of band rejection 40 dB typical	Band pass frequency 239–273 MHz, Out of band rejection 45 dB typical	Band pass frequency 239 MHz–273 MHz, Out of band rejection 45 dB typical	n/a
Modulation	AM, FM, or PM, and tactical communications waveforms	AM, FM, or PM, and tactical communications waveforms	AM, FM, or PM, and tactical communications waveforms	AM, FM, or PM, and tactical communications waveforms	Constant Envelope Waveforms	AM, FM, or PM, and Tactical communications waveforms	AM, FM, or PM, and modern Tactical networking communication waveforms	AM/FM/PM, SINGARS, HPW, HAVEQUICK, DAMA, IW, SRW and ANW2, plus others
Power Requirements	12–35.5 VDC filtered and transient protected for 12 or 24 volt vehicle systems or dual XX90 batteries	12–35.5 VDC filtered and transient protected for 12 or 24 volt vehicle systems or dual XX90 batteries	12–36 VDC filtered and transient protected for 12 or 24 Volt vehicle systems or dual XX90 batteries	12–33 VDC MIL-STD-461E and 1275	28 VDC filtered and transient protected	18–35.5 VDC filtered and transient protected for 24 volt vehicle systems batteries MIL-STD 1275 and 461 compliant DC-DC internal power supply	18–35.5 VDC filtered and transient protected for 24 volt vehicle systems batteries; MIL-STD 1275 and 461 compliant DC-DC internal power supply filter	AC power (AR-125R): 100 to 240 VAC, 50 Hz–60 Hz DC power (AR-125RC2): 18 to 36 VDC (approximately 650 watts @ 24 VDC)
Current@24 VDC nominal	<7.5 Amps @ 24 V typical	<7.5 Amps @ 24 V typical	<7.5 Amps @ 24 V typical	<7.5 Amps @ 24 V typical	7 Amps @ 28 V typical	<9.5 Amps @ 24 V typical	< 9.5 Amps @ 24 V typical	27 Amps typical
Operating Temperature	-30 to +60°C	-30 to +60°C	-30 to +60°C	-40 to +55°C	-30 to +60 °C Ambient	-30 to +60 °C Ambient	-30 to +60° C	-30 to +60° C (ambient)
Water	IP67	IP67	IP67	IP67	IP67	IP67	IP67	No
Vibration/Shock/Humidity	Per MIL STD 810F	Per MIL STD 810F	Per MIL STD 810F	Per MIL STD 810F	Designed to meet applicable sections of MIL STD 810F/ designed for ground/base vehicle use	Per MIL STD 810F	Per MIL STD 810F	Per MIL-STD-461
Size (HxWxD) Inches	2.50 x 6.00 x 7.50 in.	2.50 x 6.00 x 7.50 in.	2.50 x 6.00 x 7.50 in.	2.50 x 6.50 x 9.93 in.	2.5 x 6.0 x 7.5 in.	3.00 x 6.00 x 11.17 in.	3.00 x 6.00 x 11.17 in.	3.5 x 19 x 24 in.
Weight	4.4 lb.	4.4 lb.	4.4 lb.	8.0 lb.	6.0 lb.	10.5 lb.	10.5 lb.	~ 25 lb.
JITC Certified	Based off AR-50 design	Based off AR-50 design	Based off AR-50 design	Based off AR-50 design	No	No	No	No
GSA Schedule	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes



## If You Can Imagine It, We Can Build It

The company is also known for superior quality rack-mounting and table-top amplifier systems and modules from 80 kHz to 3,000 MHz. With output powers from 5–1,000 watts, these systems and modules are used for communications and a variety of medical, scientific, and industrial applications.

Perhaps most important, AR Modular RF helps clients find the best solutions to their most demanding requirements by offering customer-specific designs and semi-custom modifications to our existing line of products.

All AR Modular RF products are backed by the three-year, no-nonsense warranty.

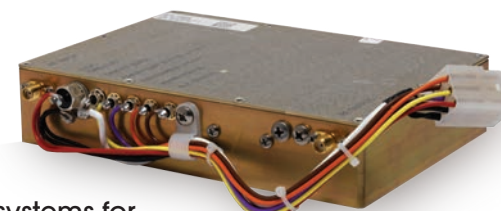
### Modules for OEMs and Integration

- 10 kHz to 6 GHz
- High- and low-gain power amplifier modules
- Mini-system PA modules with ALC and interfaces



### Subsystems for Integration

- Custom packaging
- Engineered to customer specifications
- Sub-octave and multi-octave designs



### Physics Applications

- Custom frequency band
- Highly repeatable performance unit to unit
- Multiple calibrated monitoring ports
- Highly reliable for long-term 24/7 use



### Communication Systems

- VHF/UHF band operation
- Up to 1,000 watt output
- 24/7 operation capable
- Repeatable performance unit to unit for field interchangeability
- Single-phase and three-phase AC power capable from same unit



#### AR-5010 Basic Communications

- Lightweight, 19-in., 2U rack mount
- Ethernet remote control
- 500 watts CW/PEP
- 30 MHz to 88 MHz



#### AR-5030/AR-5030C2 Shipboard Communications

- Lightweight, 19-in., 2U Rack Mount
- Ethernet remote control
- 80 watts CW/PEP
- 700 MHz to 960 MHz



#### AR-5000 Series Base Platform for Quick Customizations

- Class A or Class AB
- Lightweight 19-in., 2U rack mount
- Ethernet remote control
- 100–500 watts CW, 1,000 watts peak
- 80 kHz to 1 GHz

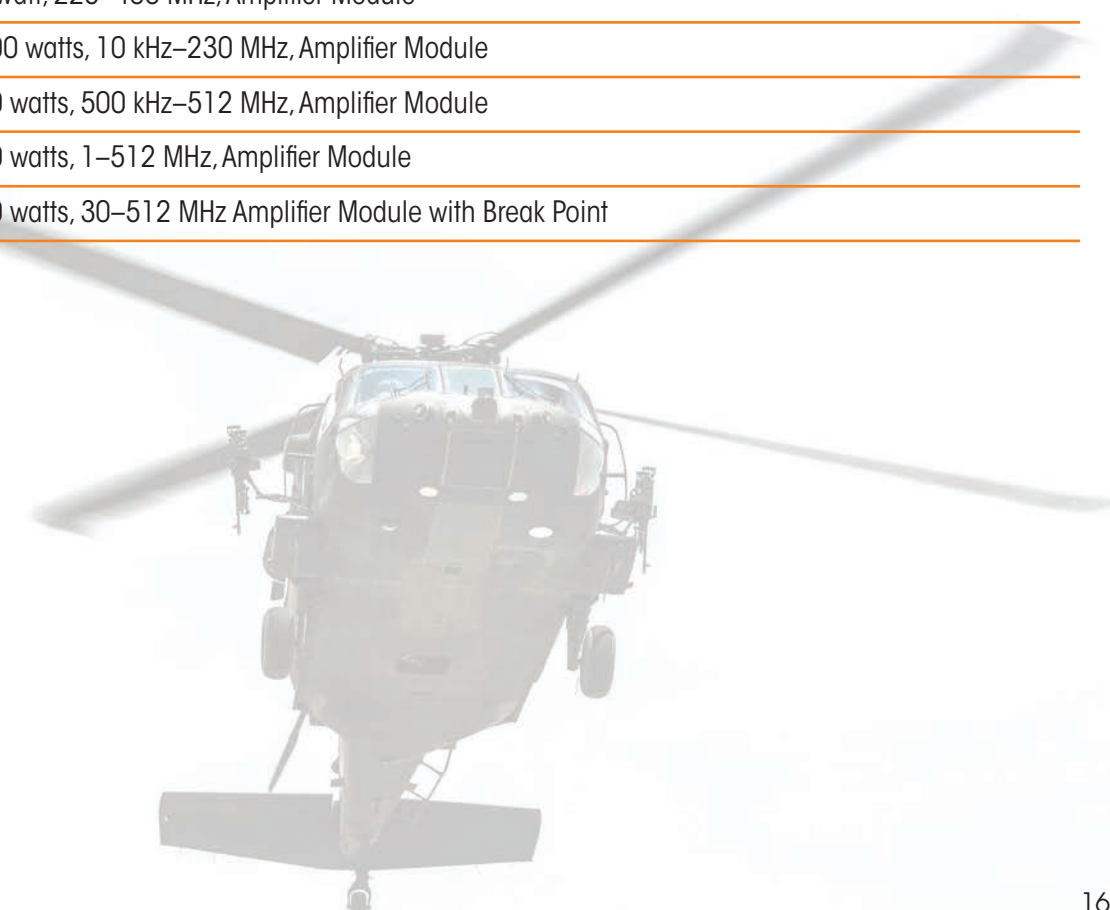


## Rack Mount Amplifiers

MODEL NAME	DESCRIPTION
AR-5010	500 watts, 30 MHz–88 MHz, 19-in. Rack Mount
AR-5030	80 watts, 700 MHz–960 MHz, 19-in. Rack Mount
AR-5030C2	80 watts, 700 MHz–960 MHz, Shipboard 19-in. Rack Mount
AR-5000	19-in. Rack Mount Product Series. 100–500 watts, 80 MHz–1,000 MHz (Call factory for details)
KAA1020	25 watts, 10 kHz–230 MHz RF Amplifier
KAA4020	500 watts, 1 MHz–50 MHz, RF Amplifier, 19-in. Rack Mount
KAW1080	25 watts, 10 kHz–1,000 MHz, Dual Band RF Amplifier, 19-in. Rack Mount
KAW2020-M16	100 watts, 220 MHz–245 MHz, RF Amplifier, 19-in. Rack Mount
KAW2100-M2	200 watts, 200–500 MHz, RF Amplifier, 19-in. Rack Mount
KAW5050	1,000 watts PEP, 500 watts CW, 225 MHz–400 MHz, RF Amplifier, 19-in. Rack Mount
KAA2020	100 watts, 500 kHz–100 MHz, RF Amplifier, 19-in. Rack Mount
KAA2026	125 watts, 700 kHz–3 MHz, RF Amplifier, 19-in. Rack Mount
KAA2030	200 watts, 500 kHz–40 MHz, RF Amplifier
KAA2030-M11	300 watts, 500 kHz, RF Amplifier
KAA2070-M11	100 watts, 70 MHz–76 MHz, RF Amplifier, 19-in. Rack Mount
KAA3020	250 watts, 2 MHz–32 MHz, RF Amplifier, 19-in. Rack Mount
KAA4021P	300 watts, Pulse, 1 MHz–50 MHz, RF Amplifier, 19-in. Rack Mount
KAA5170P	1,000 watts, Pulse, 500 kHz–5.5 MHz, RF Amplifier, 19-in. Rack Mount
KAW1020	5 watts, 500 kHz–1,000 MHz RF Amplifier
KAW1040	20 watts, 1 MHz–512 MHz, RF Amplifier
KAW1050	25 watts, 1 MHz–400 MHz, RF Amplifier
KAW2020	100 watts, 200 MHz–500 MHz, RF Amplifier, 19-in. Rack Mount
KAW2040	100 watts, 100 MHz–500 MHz, RF Amplifier, 19-in. Rack Mount
KAW2300	100 watts PEP, 100 MHz–1,000 MHz, RF Amplifier, 19-in. Rack Mount
KAW4040-M12	500 watts, 390 MHz–410 MHz, RF Amplifier, 19-in. Rack Mount
KAW5030	200 watts, 800 watts Peak, 100 MHz–400 MHz, RF Amplifier, 19-in. Rack Mount

## Amplifier Modules

MODEL NAME	DESCRIPTION
KMA1040	50 watts, 200 kHz–50 MHz, Amplifier Module
KMA2040	200 watts, 500 kHz–40 MHz, Amplifier Module
KMA2040-M12	200 watts, 500 kHz–40 MHz, Amplifier Module
KMA2040-M22	200 watts CW, 250 watts Peak, 2–30 MHz, Amplifier Module
KMA2040-M25	100–500 watts, 100 kHz–50 MHz, Amplifier Module
KMA2040P	200 watts, (CW/Pulse) 500 kHz–40 MHz, Amplifier Module
KMA4040	400 watts, 30–40 MHz, Amplifier Module
KMW2025	100–200 watts CW, 500 watts Pulse, 30–512 MHz, Amplifier Module
KMW2026-M15	40 watts, 225–450 MHz, Amplifier Module
KMW2026-M20	100–200 watts, 30–512 MHz Amplifier Module with Break Point
KMW2026-M26	60 watts, 291 MHz, Amplifier Module
KMW2040-LTE	100 watts CW/125 watts Peak, 225–400 MHz, Amplifier Module
KMW2040-M17	100 watts, 225–400 MHz, Amplifier Module
KMA1001	1 watt, 225–400 MHz, Amplifier Module
KMA2020	100 watts, 10 kHz–230 MHz, Amplifier Module
KMW1020	10 watts, 500 kHz–512 MHz, Amplifier Module
KMW1060	20 watts, 1–512 MHz, Amplifier Module
KMW2026-M5	30 watts, 30–512 MHz Amplifier Module with Break Point





## Your Partner for All Your Equipment Needs

AR Europe is not just a distribution network; we are a system and solution provider! In collaboration with our third-party sales partners, we supply a broad range of test equipment/systems for RF/Microwave, EMC, electrical safety, power electronics, test and measurement, and RF shielding applications.

AR Europe is comprised of five AR offices (Ireland, UK, France, Benelux, and Germany) and an extensive network of independent sales representatives' companies. Our network of experienced sales associates and service technicians allows us to provide the best technical solution for our customers' requirements as well as local training, installation, repair, and maintenance support.

With our extensive range of products, services, skills, and experience, AR Europe is the perfect partner for all your test-equipment needs. We have the solutions, from instrumentation to turnkey systems and one-off projects.

## A Formidable Force

No one has more experience in all facets of EMC testing equipment than AR Europe and our partners around the world. Working as a team together with our customers, we have the ability to find solutions, solve problems, and provide exceptional service in the most efficient, cost-effective, and timely manner.

With locations throughout Europe, we're nearby and ready to help make EMC testing quicker, easier, and more accurate than ever.

We have developed a very strong customer base in a wide range of electronic/electrical business sectors covering communications, military, commercial, medical, automotive, aerospace, product compliance testing, research, and educational markets.



## AR Europe Systems

Not only are we able to provide individual components or instruments, but we also have the know-how and capability to design and develop custom test systems and turnkey solutions. Our team of applications engineers and project managers work closely with our customers to understand their requirements in order to tailor and deliver the best solution available.

With the strong and diverse engineering capabilities of the AR Europe engineers and our sales partners, we have worked on a number of projects where our customers' unique needs have been realized!





## Our Support Is As Strong As Our Products

We believe local after sales support and service is essential, and we strive to provide the best service possible. That's why we continually invest in our facilities, equipment, and staff.

Throughout Europe, we have well-equipped service centers staffed by our experienced factory-trained engineers, enabling us to provide high quality local warranty support, repair, and calibration if needed.

We are able to offer full after sales product support, service, and calibration on a broad range of products, including—

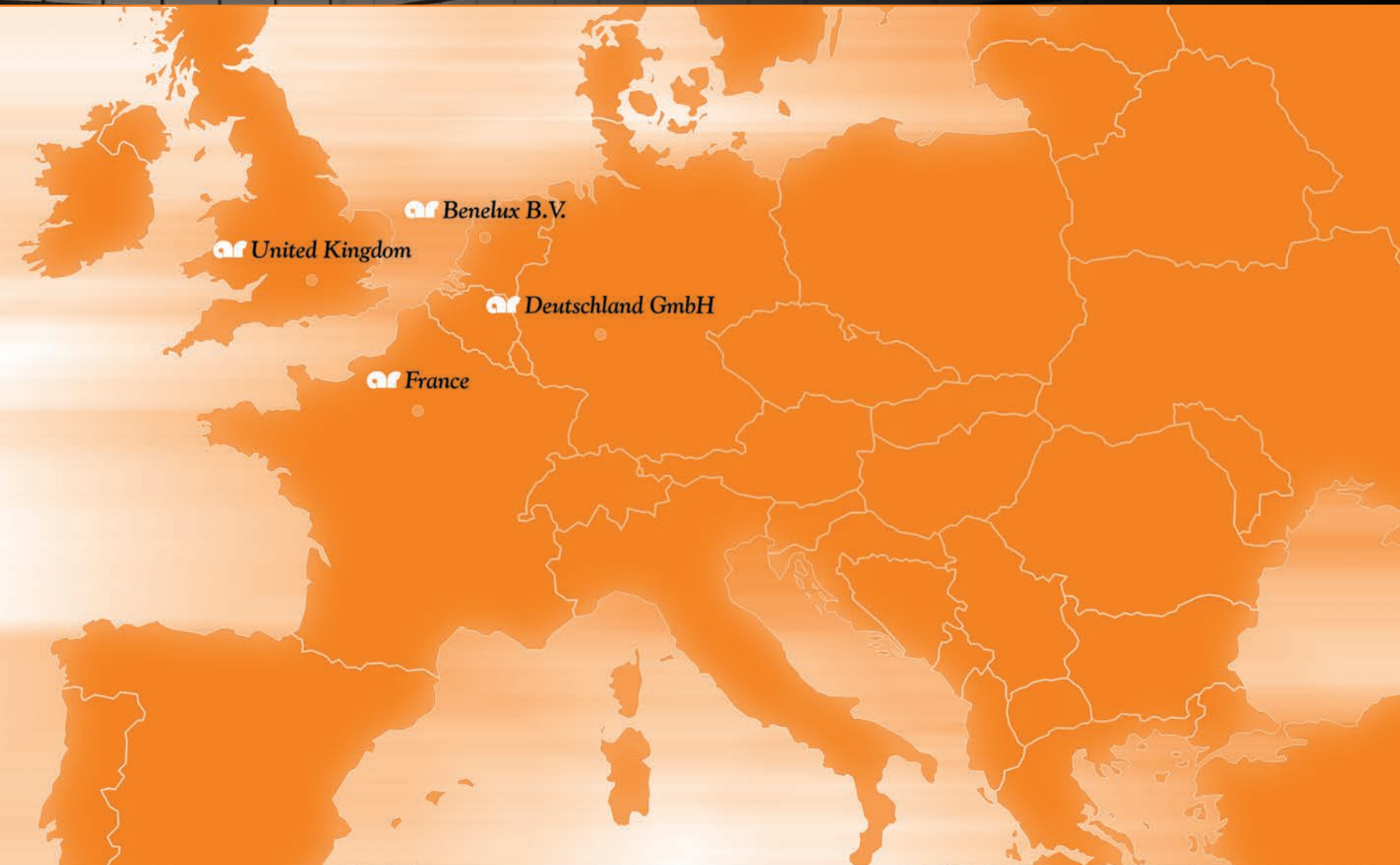
- RF and microwave amplifiers and accessories from DC–40 GHz, up to very high power
- ESD and transient equipment
- Antennas and E-field generators
- Current injection and monitoring probes, coupling/decoupling networks and LISNS
- E- and H-field monitoring probes/system
- AC/DC power sources and loads
- Electrical safety test equipment
- Optical links and cables
- Miscellaneous test and measurement instrumentation

With an extensive range of spare parts available in stock in Europe we can respond quickly, providing a fast turnaround on service helping to minimise your downtime.

Additional services include—

- On-site repair and calibration
- Bespoke service contracts
- Routine maintenance programs
- Management of all your calibration needs (including accredited calibration)
- Shielding effectiveness measurements

Contact your local service centre for more information.

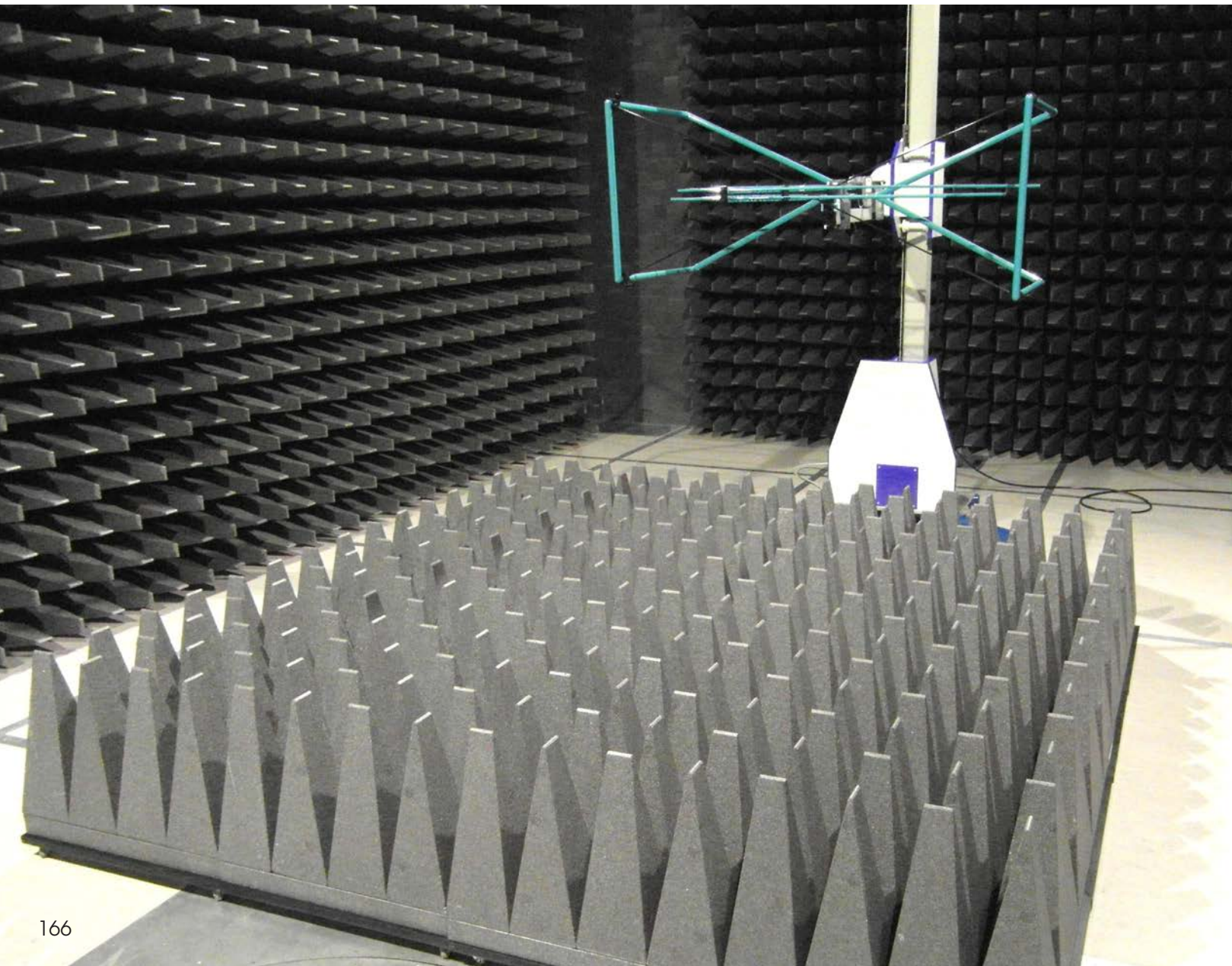




Our Present Partners Include The Following Renowned Companies:



Not all chambers offer the same performance or quality. All reverberation and fully and semi-anechoic chambers provided by AR RF/Microwave Instrumentation through Comtest Engineering BV offer customers the highest level of performance, quality, and support. There are several outstanding advantages of Comtest chambers. One unique advantage is the Pan Shield design. The approach used by Comtest allows for premium performance and seamless construction over older designs techniques, such as wood core shielded chambers. The baseline performance of the pan-type shield is far more reliable and exceeds 100 dB level of attenuation up to 40 GHz without any modifications or addons. This provides a great testing environment for your testing needs.



## GERAC

For more than 25 years, GERAC (a Thales subsidiary) has developed and manufactured a number of high power RF and microwave product lines specializing in HIRF pulsed amplifiers and direct lightning generators.

Products and engineering solutions include—

### Solid State Amplifiers

- High Intensity Radiated Fields (HIRF) 1 to 4 GHz, narrow and wide band, 1 kW to 80 kW, 1 to 100µs pulse
- High power scientific amplifiers 30 MHz to 4 GHz, 5 kW to 2 MW CW/pulsed

### Tube Amplifiers

- High Power Microwaves (HPM) 1 to 18 GHz, 0.1 to 10 MW, 1 to 100µs pulse
- Nuclear Electromagnetic Pulse (NEMP) 1 to 200 MHz, up to 300 kW

### Generators

- Nuclear Electromagnetic Pulse (NEMP) 10 to 300 kV
- Indirect and Direct Lightning Electromagnetic (LEMP) 10 to 200 kA, WF1-WF4-WF5A-WF5B, up to level 5, DO160, ABD100, EUROCAE-ED-84, MIL-STD-464





Our Present Partners Include The Following Renowned Companies:



Noisecom is a leader of RF and microwave noise sources for signal jamming and impairment, reference level comparison and calibration, receiver robustness testing, and jitter injection. Electronic noise generation devices from Noisecom come in a variety of product types, including, noise diodes, built-in-test modules (BITE), calibrated noise sources, jitter sources, cryogenic noise standards, and programmable instruments. Calibrated noise sources are available from audio to millimeter wavelengths in coaxial or waveguide modules. Programmable instruments are highly configurable and able to generate precise Carrier-to-Noise, Signal-to-Noise, and broadband white noise. Noisecom products are customizable to meet the unique needs of challenging applications and can be designed for high power, high crest factor, and specific filter responses with a wide selection of input and output options.



- CNG-EBNO Signal to Noise Generator
- UFX7000A Series Remote Control
- J7000 Jitter Noise Generator
- DNG7500 Digital Noise Generator
- NC6000A/8000A Series Noise Generators
- GPS7500 Noise and Interference Generator
- PNG7000 Analog AWGN Noise Generator
- JV9000 Series: Adjustable Vcc Noise Generator
- NC1000 Series Amplified Noise Modules
- NC346 Broadband Coaxial
- NC3000 Coaxial
- NC3200K Coaxial Noise Sources
- NC3400 High ENR Coaxial
- NC3600 Series

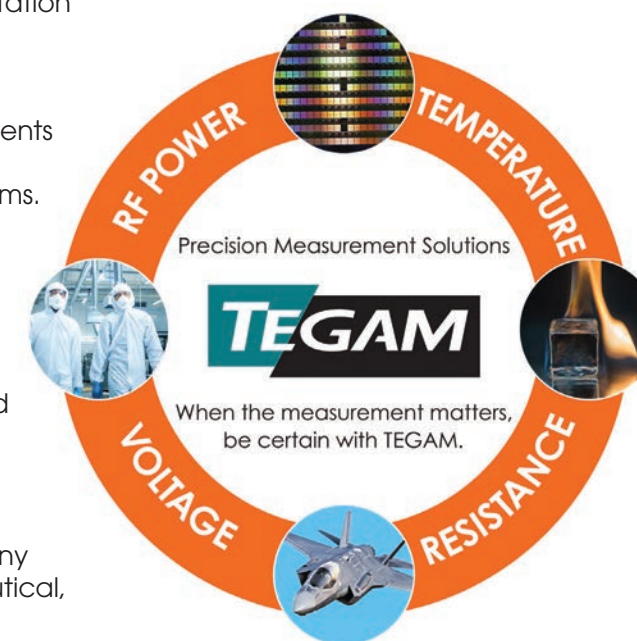


Boonton Electronics is a leader in high performance RF and microwave test equipment for radar, avionics, electronic warfare, satellite and wireless communications, and EMI/EMC applications. Used across the semiconductor, military, aerospace, medical, and communications industries, Boonton products enable a wide range of RF power measurements and signal analysis for RF product design, production, maintenance and system integration. The Boonton product portfolio includes peak and average RF power meters, Real-Time USB Power sensors, RF voltmeters, modulation analyzers, and audio analyzers.



TEGAM designs, manufactures, and calibrates instrumentation that impacts life in surprising ways. Our goal is to make your measurement task easier, faster, and more accurate. We continuously invest in R&D of products and calibration techniques that allow you to make your critical measurements with unparalleled uncertainty. Our electrical measuring capabilities include temperature, RF power, and micro-Ohms.

- High and Low RF Power Calibration Instruments
- Data-Logging Industrial Thermometers
- Bond Meters
- Micro-Ohmmeters
- Ratio Transformers
- Waveform and Instrumentation Amplifiers
- Synchro Resolvers
- LCR Meters
- Safety Voltmeters
- Humidity Measurement
- Motor Rotation and Phase Sequence Indicators



TEGAM instruments perform critical measurements in many industries including aerospace, defense, food, pharmaceutical, oil and gas, and environmental monitoring. When the measurement matters, be certain with TEGAM.

Our offices in the UK, France, Benelux and Germany offer a broad range of complementary products and services for a wide range of applications including RF, Microwave, EMC, Electrical Safety, Power Electronics and General Test and Measurement. Please contact your local office for more information. AR Benelux +31 172 423000. AR France +33147917530. AR Deutschland +49 6101 80270-0. AR United Kingdom +44 1908 282766

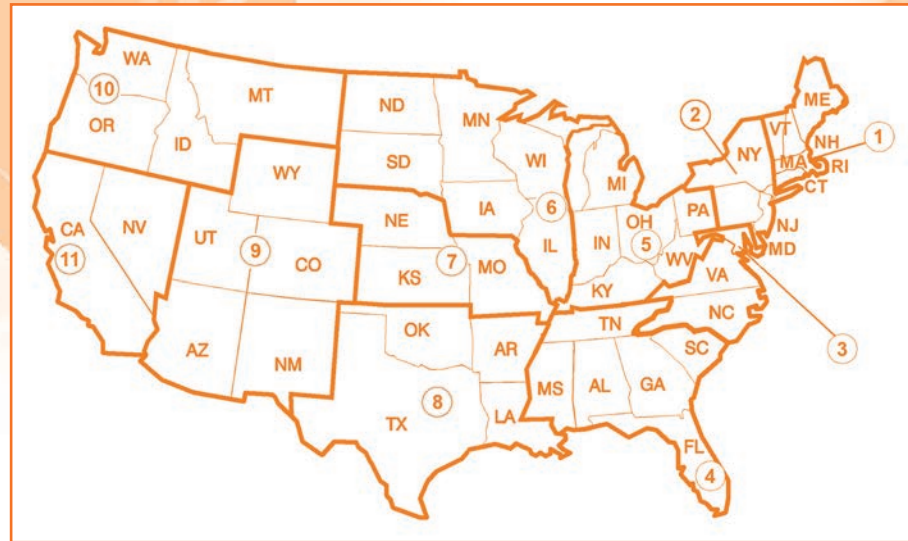


## Our Worldwide Sales and Support Network.

Visit our website at [www.arworld.us](http://www.arworld.us) to find the sales associate in your territory.

### AR US Sales Associates

- |   |  |  |
|---|--|--|
| 1. Test-Rep Associates, Inc.<br>Westford, MA<br>978-692-8000      | 8. Testech Sales Engineers<br>Richardson, TX<br>972-644-5010                               | 10. † AR Modular RF<br>Bothell, WA<br>425-485-9000             |
| 2. Advanced Technical Marketing<br>Parsippany, NJ<br>800-310-8805 | 9. Technical Marketing Specialists<br>Salt Lake City, UT<br>800-342-8408                   | W5 Engineering<br>Portland, OR<br>971-244-8200                 |
| 3. Delmarva Engineering<br>Crownsville, MD<br>410-990-9000        | Technical Marketing Specialists<br>Colorado, Utah<br>Greenwood Village, CO<br>800-342-8408 | † Cain Sweet<br>Bellevue, WA<br>425-562-6028                   |
| Delmarva Engineering<br>Charlottesville, VA<br>410-990-9000       | Technical Marketing Specialists<br>El Paso, TX, New Mexico<br>800-342-8408                 | 11. Ward/Davis Associates<br>Redondo Beach, CA<br>310-643-6977 |
| 4. Brennan Associates<br>Clearwater, FL<br>727-446-5006           | Technical Marketing Specialists<br>Tempe, AZ<br>800-342-8408                               | Ward/Davis Associates<br>San Jose, CA<br>408-213-1090          |
| Brennan Associates<br>Atlanta, GA<br>727-446-5006                 |  |  |
| 5. EQS Systems, LLC<br>Chesterland, OH<br>800-729-8084            |  |  |
| 6. TecRep Corporation<br>Lombard, IL<br>630-627-9110              |  |  |
| 7. TecRep Corporation<br>Lombard, IL<br>630-627-9110              |  |  |



† AR Modular RF Only

All sales associates represent AR RF/Microwave Instrumentation unless otherwise noted.

### AR International Sales Associates

- |   |  |  |  |
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| Argentina<br>Instrumental Tech<br>+54 11 45460479 and<br>+54 911 33954300 | Estonia<br>Testhouse Finland<br>+358 40 544 8283                             | Luxembourg<br>AR Benelux B.V.<br>+31 1724 23000                                | Saudi Arabia<br>Motabaqah<br>Trading Company<br>+966 11 4160110              |
| Australia<br>Scientific Devices<br>+61 3 9569 1366                        | Finland<br>Testhouse Finland<br>+358 40 544 8283                             | Malaysia<br>Precision Technologies<br>PTE, Ltd. Singapore<br>+ 65 6 2734573    | Serbia<br>Test Solutions<br>+359 2 970 19 90                                 |
| Austria<br>AR Deutschland GmbH<br>+49 6101 802700                         | France<br>AR France SAS<br>+33 1479 175 30                                   | Macedonia<br>Test Solutions<br>+359 2 970 19 90                                | Singapore<br>Precision Technologies<br>PTE, Ltd. Singapore<br>+ 65 6 2734573 |
| Bahrain<br>Motabaqah<br>Trading Company<br>+966 11 4160110                | Germany<br>AR Deutschland GmbH<br>+49 6101 802700                            | Montenegro<br>Test Solutions<br>+359 2 970 19 90                               | Slovakia<br>AR Europe<br>+353 61 50 4300                                     |
| Belarus<br>Radiant-Elcom<br>+7495 725 0404                                | Greece<br>Vector Technologies Ltd<br>+30 210 6858008                         | Mexico<br>SI-EMC<br>+52 (55) 2163 2148   | Slovenia<br>AR Europe<br>+353 61 50 4300                                     |
| Belgium<br>AR Benelux B.V.<br>+31 1724 23000                              | Greenland<br>Alfoo Measurement Science<br>ApS<br>+45 30 38 23 82             | Malta<br>DELO Instruments<br>+39 029 072 2441                                  | South Africa<br>Protea Electronics Pty Ltd<br>+27 117195791                  |
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| Bulgaria<br>Test Solutions<br>+359 2 970 19 90                            | Iceland<br>Alfoo Measurement Science ApS<br>+45 30 38 23 82                  | Montenegro<br>Test Solutions<br>+359 2 970 19 90                               | Spain<br>INCOM<br>+34 976 013300   |
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### At AR, we are committed to a sustainable future.

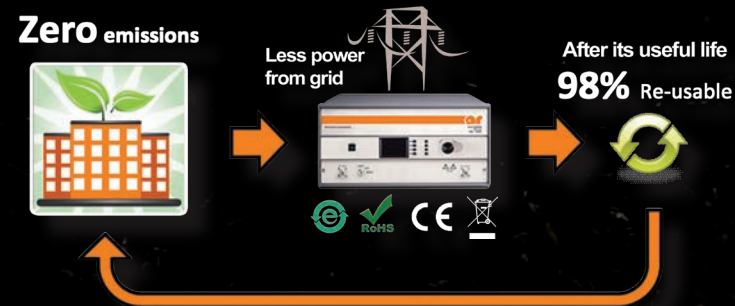
Over the last decade, we have worked hard to continuously improve our product efficiency and reliability. Our products are more energy efficient than ever. This increased efficiency not only improves the product's operational life but also lowers the user's energy consumption. Our goal is to achieve zero environmental footprint without compromising strength or quality. We are focused on innovative solutions that meet tomorrow's needs. AR is working hard to make a positive impact on the world.

#### Repair it.

If your equipment is in need of some extra care to fix a problem, we are here to help.<sup>1</sup> All our products come with a limited warranty and are designed with easy maintenance in mind. Our global network of AR certified repair locations aims at minimizing downtime and restoring product life. Contact us by email or phone for help.

#### Trade it in.

Trade in your eligible equipment when you purchase a new product. AR Trade In is a way to exchange your old equipment for credit, so that you can offset the purchase price of your new one.<sup>2</sup> If your equipment isn't eligible for credit, we'll recycle it free of charge. It's a win for you and the planet.



1. In the US, contact AR's Customer Service Department at 215.723.0275 or service@arworld.us. Outside of the US, contact the AR distributor nearest you.

2. Trade-in values vary based on condition, year, and model eligibility. When we receive your equipment at our factory site in Souderton, PA, it will be thoroughly inspected to determine if it can be reused or recycled. The trade in value is determined by AR at its sole discretion.



# AR's Competitive Edge

At AR, there's no substitute for customer responsiveness. It's the foundation of our business and the AR value that's recognized around the globe. It's one of the key reasons AR has become the worldwide leader in EMC, wireless and beyond.

AR products do more, last longer, work harder, and make your job easier. And that gives you a fierce competitive edge. Only AR delivers innovative technology, advanced design, quality build and workmanship, mismatch capability, durability and longevity, less cost per watt, and a worldwide support network that's here for you today and tomorrow.

With the combined resources of all the AR companies, we simply have more of the best people making the products to overcome your toughest challenges.

## AR RF/Microwave Instrumentation

- RF Solid State Amplifiers 1–50,000 watts, dc to 1 GHz
- Microwave Amplifiers 1–10,000 watts, 0.8 to 50 GHz
- Antennas to 15,000 watts input power, 10 kHz to 50 GHz
- RF Conducted Immunity Test Systems
- EMC Test Software
- EMC and RF Test Accessories
- Power-Measuring Equipment
- Positioning Equipment
- Chambers
- Accessories

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## AR Modular RF

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- RF Amplifiers and Modules for Industrial, Medical, Scientific and Communication Applications
- RF Rack Mount Amplifiers for Industrial, Medical, Scientific and Communication Applications

## SunAR RF Motion

- Positioning equipment, turntables and towers
- Distributed antenna systems
- Reverberation chamber stirrers
- EMC Test Antennas

## AR Europe

- Offering a complete line of RF Products and testing solutions for the European market

Want to know more about AR? Need help with any RF solutions or testing procedures?

Here's how to reach AR and get all the help you need:

[www.arworld.us](http://www.arworld.us)

## AR RF/Microwave Instrumentation

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AR France +33 147 917530  
AR Deutschland GmbH +49 6101 80270 0  
AR United Kingdom +44 1908 282766

AR RF/Microwave Instrumentation is ISO Certified.



## AR Global Promise

*The AR warranty is more than just a warranty, it's a promise, backed by a knowledgeable support team that's always there for you to help solve any problems and answer any questions, today and tomorrow. AR warrants its amplifiers, antennas, test systems, power meters, field monitoring equipment, conducted immunity generators, couplers and tripods to be free of defects in materials and workmanship for a period of three years from date of shipment. Vacuum, traveling wave tubes and powerheads carry a one year warranty.*