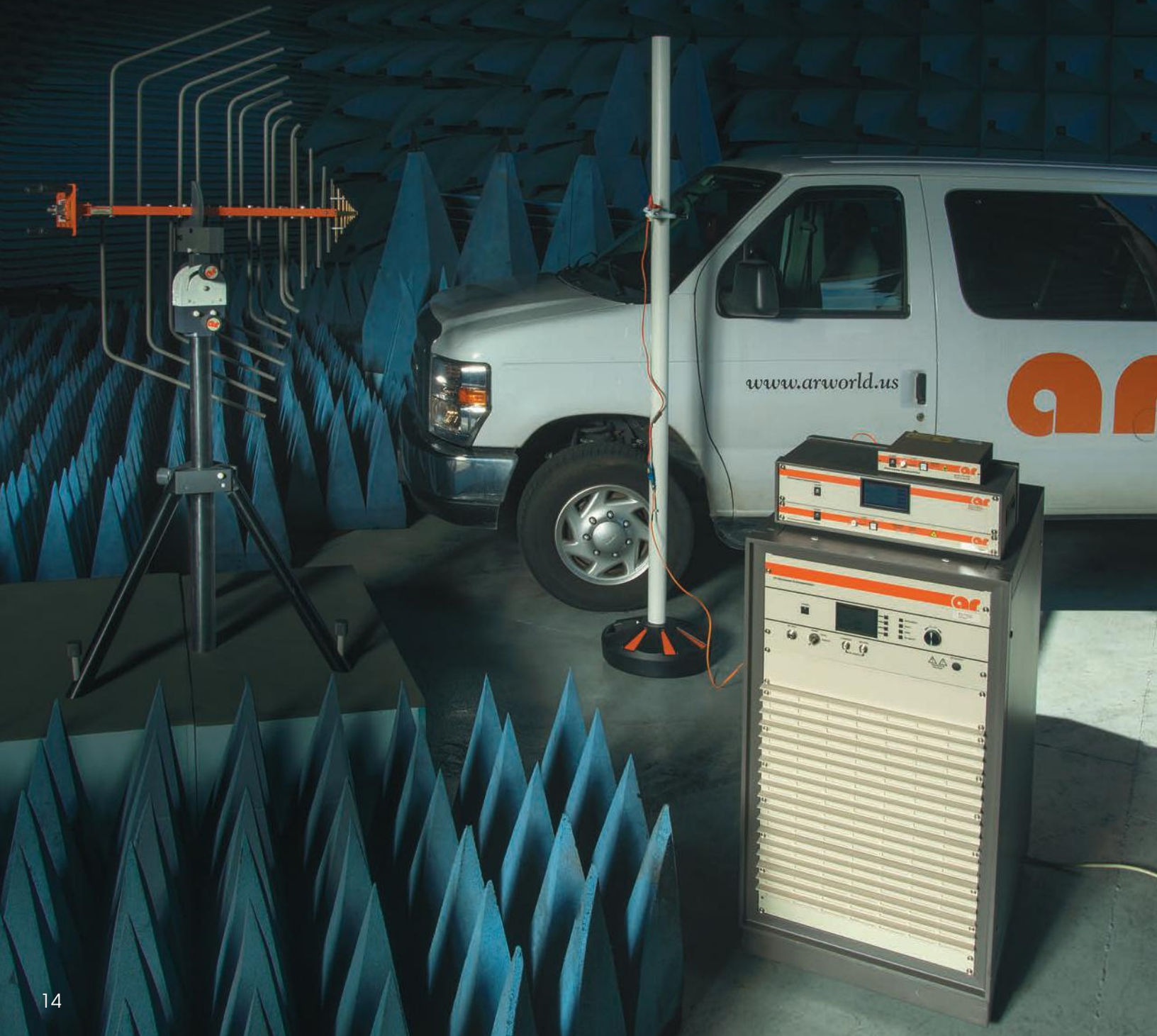


Always Building the Reliable, High Power and Frequency Range Amplifiers You Need



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.

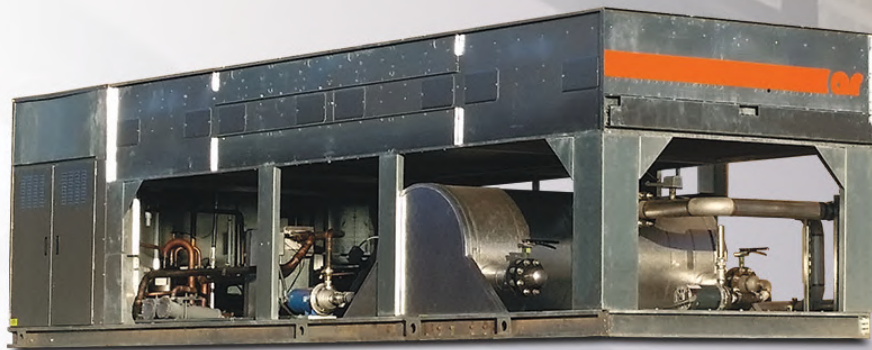
Second, it reduces the size of the amplifier. Air-cooled amplifiers use large metal heat sinks over which air is forced to carry away heat. In a liquid-cooled amplifier, the transistors are mounted on cooling plates through which water flows. The plates are much smaller than heat sinks, and because you 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

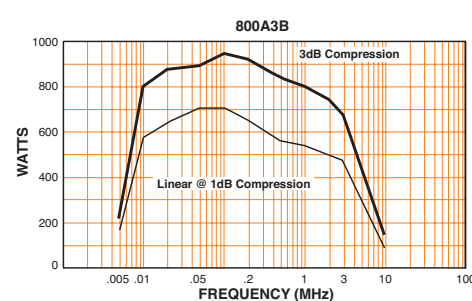
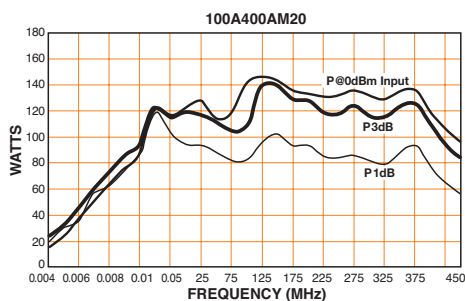
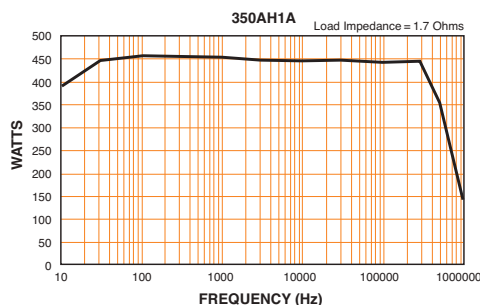
Rated Output Power Into 50Ω:	4 kHz–100 kHz: 10 watts min. rising to 100 watts min. at 100 kHz 100 kHz–400 MHz: 125 watts typ.; 100 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB Compression Into 50Ω:	4 kHz–100 kHz: 10 watts min. rising to 100 watts min. at 100 kHz 100 kHz–400 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 min., 100 kHz–400 MHz; <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. 55 dBm typ.
Third Order Intercept Point	8 dB 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	Min. 800 watts, 10 kHz–2 MHz Min. 700 watts, 2–3 MHz
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.
For external impedance transformer options, see specification sheet for IT2000 Series impedance transformers.	
Export classification	EAR99



10 kHz to 100 MHz 10 kHz to 225 MHz

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

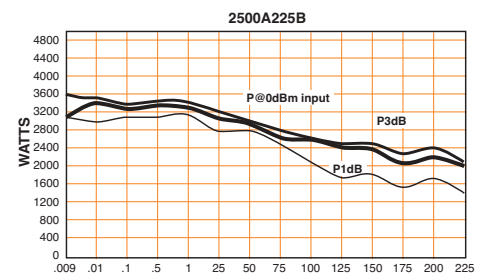
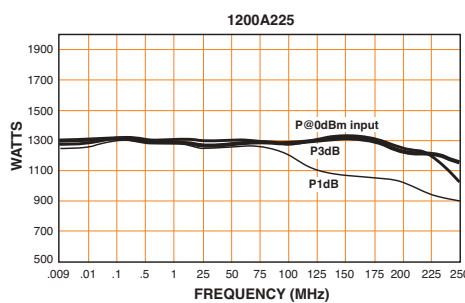
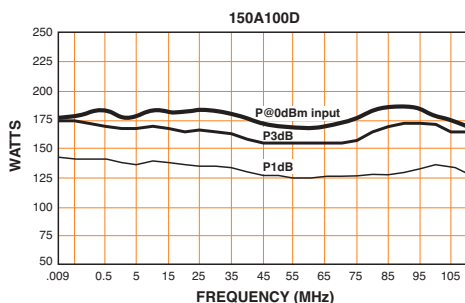
Rated Output Power	Typ.: 1,300 watts, min. 1,200 watts, 01–100 MHz Typ.: 1,200 watts, min. 1,100 watts, 100–225 MHz
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	Typ.: 1,300 watts, min. 1,200 watts, 01–100 MHz Typ.: 1,200 watts, min. 1,100 watts, 100–225 MHz
Power Output @ 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, 100–200 MHz Typ.: 2,000 watts, min. 1,800 watts, 200–225 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, 100–200 MHz Typ.: 1,500 watts, min. 1,300 watts, 200–225 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
Sample Ports	N 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



RF Solid State Amplifiers

10 kHz to 225 MHz

5000A225A



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: 24-pin female
 IEEE-488: 9-pin subminiature D (female)
 RS-232: ST Conn Tx and Rx RS-232
 Fiber optic: Type B
 USB 2.0: RJ-45
 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

10000A225A-A



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 ±3.0 dB max.
 ±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: 24-pin female on rear panel
 IEEE-488: 9-pin female Type D on rear panel
 RS-232: Type ST, rear panel
 RS-232 (fiber optic): Type B female, rear panel
 USB 2.0: Type B female, rear panel
 Ethernet: RJ-45

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

Weight 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

12500A225A-L



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 3,000 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.

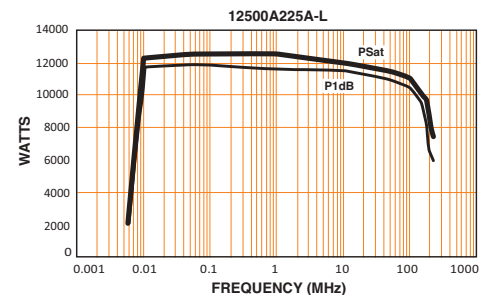
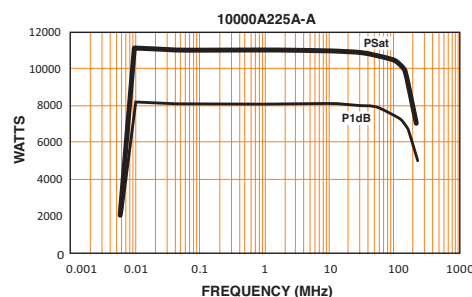
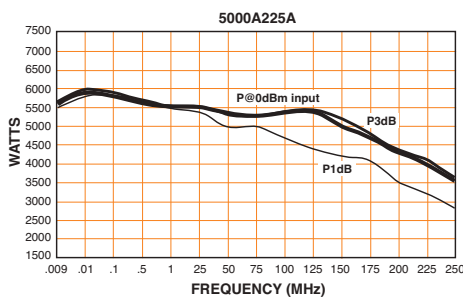
Connectors
 RF Input: Type N female on rear panel
 RF Output: Type EIA 1-5/8 male on rear panel
 Forward Sample: Type N female on front panel (coupling factor 80 dB typical)
 Reverse Sample: Type N female on front panel (coupling factor 80 dB typical)
 Pulse Modulation Input: Type BNC female, rear panel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

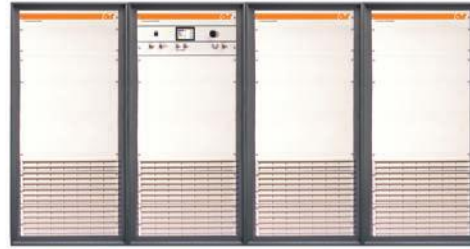
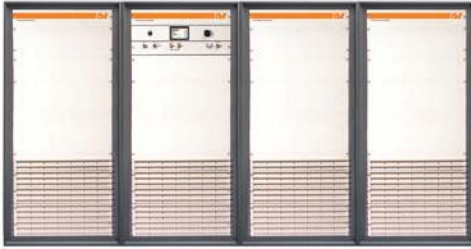
Export classification EAR99



16000A225A-A

20000A225A-L

25A250B



16,000 watts CW, 10 kHz–225 MHz

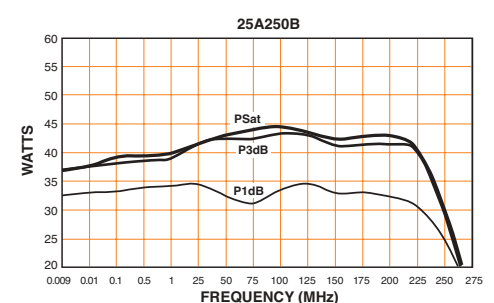
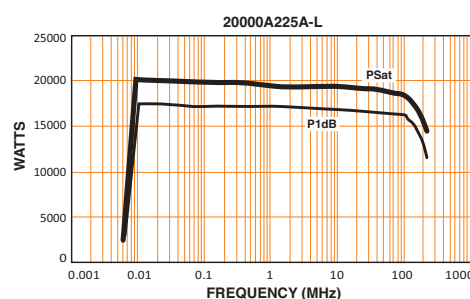
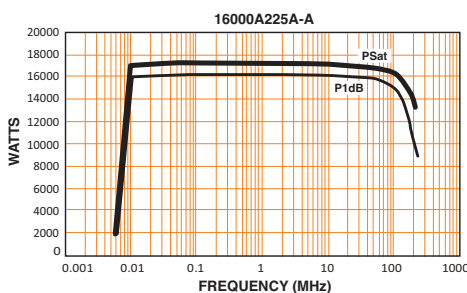
Rated Output Power		17,000 watts
Nominal		16,000 watts, .01–100 MHz
Minimum		12,000 watts, 100–225 MHz
Input for Rated Output		1.0 milliwatt max.
Power Output for 1 dB compression		15,000 watts
Nominal		14,000 watts, .01–100 MHz
Minimum		8,000 watts, 100–225 MHz
Flatness		±3.0 dB max.
		±1.0 dB with 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		20,000 watts
Nominal		18,000 watts, .01–100 MHz
Minimum		13,000 watts, 100–225 MHz
Input for Rated Output		1.0 milliwatt max.
Power Output for 1 dB compression		17,000 watts
Nominal		16,000 watts, .01–100 MHz
Minimum		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 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 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.
Input for Rated Output		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



RF Solid State Amplifiers

10 kHz to 250 MHz

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

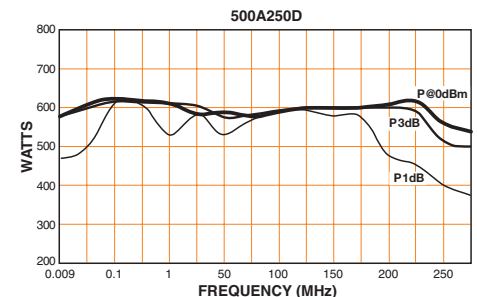
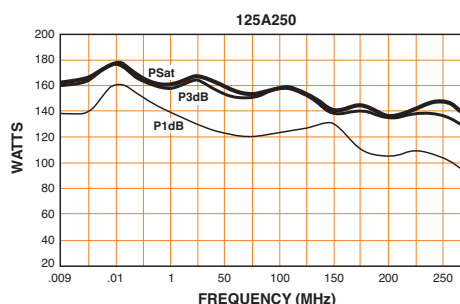
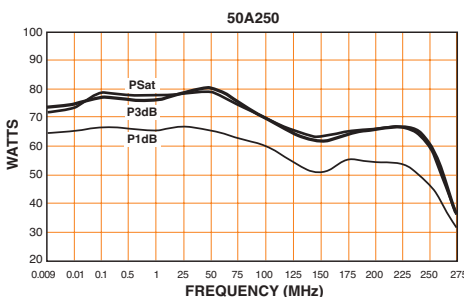
Rated Output Power	150 watts typ., 125 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	
Typical: 145 watts / min. 125 watts	
Power Output @ 1 dB compression	
Typical: 110 watts / min. 90 watts	
Flatness	±1.0 dB typ., ±1.5 dB max.
Frequency Response	10 kHz–250 MHz 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	
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

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	
Third Order Intercept Point	68 dBm typ.
Spurious	Minus 73 dBc 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



10 kHz to 400 MHz

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

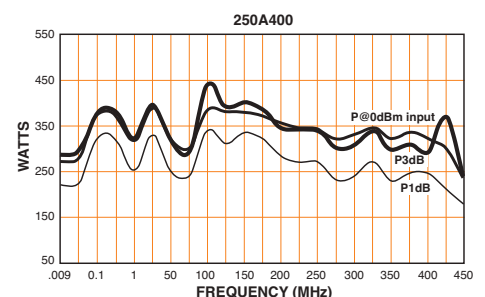
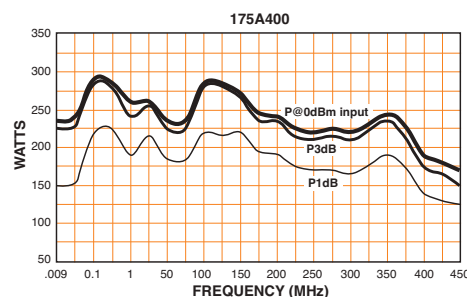
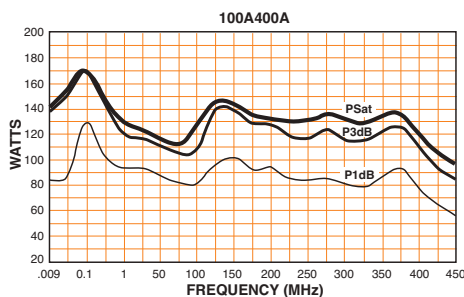
Rated Output Power	225 watts typ., 175 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	
Typ. 210 watts / min. 165 watts	
Power Output @ 1 dB compression	
Typ. 165 watts / min. 125 watts	
Flatness	±0.9 dB typ. / ±1.5 dB max.
Frequency Response	10 kHz–400 MHz instantaneously
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



RF Solid State Amplifiers

10 kHz to 400 MHz

350A400



600A400



1000A400



350 watts CW, 10 kHz–400 MHz

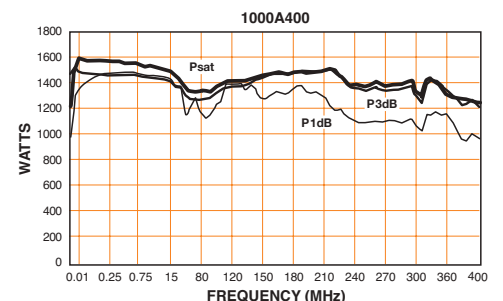
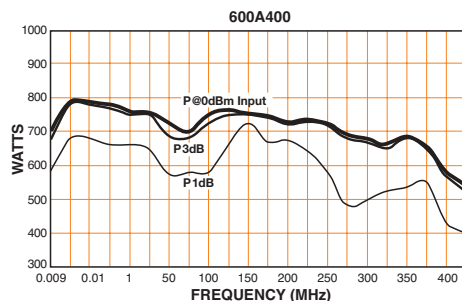
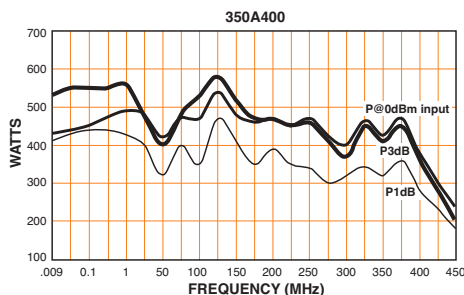
Rated Output Power	425 watts typ., 350 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	Typ. 400 watts / min. 325 watts
Power Output @ 1 dB compression	Typ. 325 watts / min. 225 watts
Flatness	±1.5 dB typ. / ±2.0 dB max.
Frequency Response	10 kHz–400 MHz instantaneously
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

600 watts CW, 10 kHz–400 MHz

Rated Output Power	700 watts typ., 600 watts min.; .01–250 MHz 600 watts typ., 500 watts min.; 250 MHz–400 MHz
Power Output @ 3 dB compression	650 watts typ., 600 watts min.; .01–250 MHz 600 watts typ., 500 watts min.; 250 MHz–400 MHz
Power Output @ 1 dB compression	575 watts typ., 500 watts min.; .01–250 MHz 500 watts typ., 400 watts min.; 250 MHz–400 MHz
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

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



50 to 1,000 MHz

80 to 1,000 MHz

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

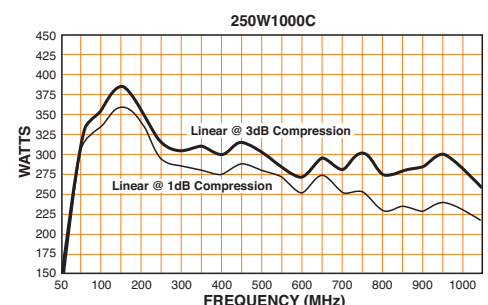
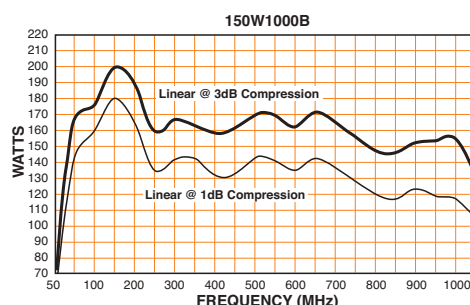
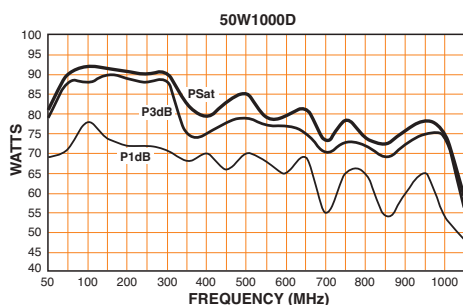
Rated Output Power	160 watts typical, 130 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	
Nominal 150 watts / min. 125 watts	
Power Output @ 1 dB compression	
Nominal 125 watts / min. 100 watts	
Flatness	±1.5 dB typ. / ±2.0 dB max.
Frequency Response	80–1,000 MHz 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

Rated Output Power	600 watts typ., 500 watts Minimum
Input for Rated Output	1.0 mW max.
Power Output @ 3 dB compression	Typical: 575 watts, Minimum: 525 watts up to 700 MHz; 475 watts 700–1,000 MHz
Power Output @ 1 dB compression	Typical: 500 watts, Minimum: 450 watts up to 700 MHz; 425 watts 700–1,000 MHz
Flatness	±1.0 dB max. / 1.5 dB typ.
Frequency Response	80–1,000 MHz instantaneously
Gain (at max. setting)	57 dB min.
Gain Adjustment (continuous range)	25 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 425 watts; minus 30 dBc typical at 425 watts
Third Order Intercept Point	63 dBm typ.
Spurious	Minus 73 dBc typ.
Primary Power	100–240 VAC 50/60 Hz, 1,800 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: 69.4 kg (153 lb.) Without cabinet: 50.8 kg (112 lb.)
Size (WxHxD)	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.
Export Classification	EAR99

750W1000B



750 watts CW, 80–1,000 MHz

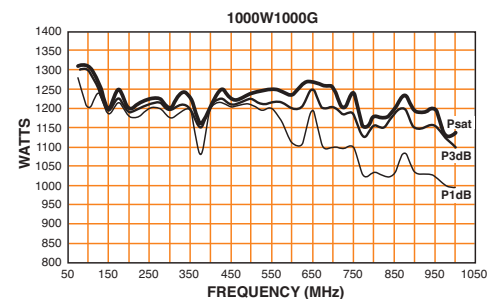
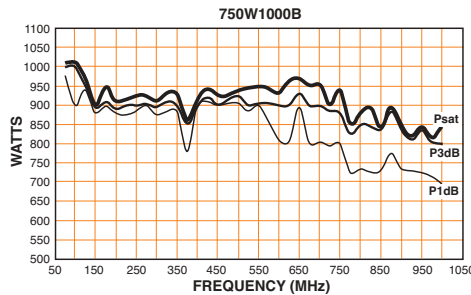
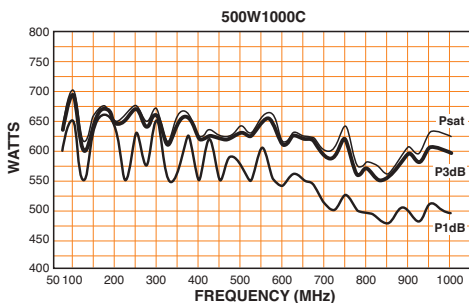
Rated Output Power	850 watts typ., 750 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	Typical: 900 watts, Minimum: 775 watts up to 700 MHz; 725 watts 700–1,000 MHz
Power Output @ 1 dB compression	Typical: 750 watts, Minimum: 700 watts up to 700 MHz; 650 watts 700–1,000 MHz
Flatness	±1.5 dB max. / 1.0 dB typ.
Frequency Response	80–1,000 MHz instantaneously
Gain (at max. setting)	58.8 dB min.
Gain Adjustment (continuous range)	25 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 700 watts; minus 20 dBc typical at 750 watts
Third Order Intercept Point	64 dBm typ.
Spurious	Minus 73 dBc typ.
Primary Power	200–240 VAC 50/60 Hz, 2,800 watts
Connectors	RF Input: Type N female on front 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 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	113.4 kg (250 lb.)
Size (WxHxD)	56.1 x 97.8 x 82.5 cm / 22.1 x 38.5 x 32.5 in.
Export Classification	EAR99

1000W1000G



1,000 watts CW, 80–1,000 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	Typical: 1,200 watts / 1,100 watts min. up to 700 MHz; 950 watts from 700 to 1,000 MHz
Power Output @ 1 dB compression	Typical: 1,000 watts / 975 watts min. up to 700 MHz, 900 watts from 700 to 1,000 MHz
Flatness	±1.5 dB max; ±1.0 dB typ.
Frequency Response	80–1,000 MHz instantaneously
Gain (at max. setting)	60 dB min.
Gain Adjustment (continuous range)	25 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.
Harmonic Distortion	Minus 20 dBc max. at 900 watts Minus 20 dBc typ. @ 1,000 watts
Third Order Intercept Point	66 dBm typ.
Spurious	Minus 73 dBc typ.
Noise Figure	8 dB max., 6 dB typ.
Primary Power	200–240 VAC 50 / 60 Hz, 3,400 watts
Connectors	RF Input: Type N female 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 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.
Export Classification	EAR99



1500W1000A



1,500 watts CW, 80–1,000 MHz

Rated Output Power	1,600 watts typ., 1,500 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	
Nominal	1,600 watts / 1,500 watts min. up to 700 MHz;
	1,400 watts from 700 to 1,000 MHz
Power Output @ 1 dB compression	
Nominal	1,450 watts / 1,400 watts min. up to 700 MHz;
	1,250 watts min. 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)	61.8 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.	
Harmonic Distortion	Minus 20 dBc max. at 1,250 watts, -20 dBc typ. at 1,500 watts
Third Order Intercept Point	68 dBm typ.
Spurious	Minus 73 dBc typ.
Noise Figure	8 dB max., 6 dB typ.
Primary Power (user must specify)	
200–240 VAC, Delta-connected (4-wire)	
380–415 VAC, Wye-connected (5-wire)	
50 / 60 Hz, 3 phase, 7,000 watts	
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 (-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
Cooling	
Forced air (self-contained fans), enters front and bottom	
Weight (approximate)	182 kg (400 lb.)
Size (WxHxD)	56.1 x 175.3 x 97.6 cm / 22.1 x 69 x 38.4 in.
Export Classification	EAR99

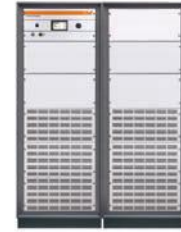
2000W1000D



2,000 watts CW, 80–1,000 MHz

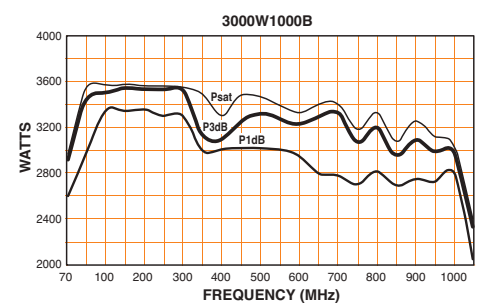
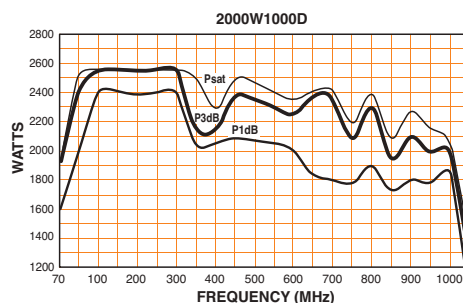
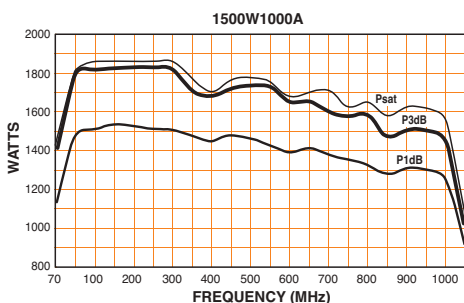
Rated Output Power	2,200 watts typ., 2,000 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	
Nominal	2,200 watts / 2,000 watts min. up to 700 MHz;
	1,800 watts from 700 to 1,000 MHz
Power Output @ 1 dB compression	
Nominal	1,850 watts / 1,750 watts min. up to 700 MHz;
	1,600 watts min. 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)	63 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.	
Harmonic Distortion	Minus 20 dBc max. at 1,800 watts, -20 dBc typ. at 2,000 watts
Third Order Intercept Point	70 dBm typ.
Spurious	Minus 73 dBc typ.
Noise Figure	8 dB max., 6 dB typ.
Primary Power (user must specify)	
200–240 VAC, Delta-connected (4-wire)	
380–415 VAC, Wye-connected (5-wire)	
50 / 60 Hz, 3 phase, 9,000 watts	
Connectors	
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
Cooling	
Forced air (self-contained fans)	
Weight (approximate)	218 kg (480 lb.)
Size (WxHxD) (3 cabinets)	56.1 x 175.3 x 97.6 cm / 22.1 x 69 x 38.4 in.
Export Classification	EAR99

3000W1000B

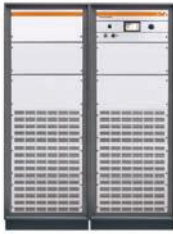


3,000 watts CW, 80–1,000 MHz

Rated Output Power	2,800 watts min.
Input for Rated Output	1.0 milliwatt max.
Power Output @ 3 dB compression	
Nominal	3,000 watts / 2,600 watts min. up to 500 MHz;
	2,400 watts from 500 to 1,000 MHz
Power Output @ 1 dB compression	
Nominal	2,500 watts / 2,250 watts min. up to 500 MHz;
	1,850 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)	64.8 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 1,500 watts reflected power.	
Harmonic Distortion	Minus 20 dBc max. at 2,400 watts, -20 dBc typ. at 3,000 watts
Third Order Intercept Point	72 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, 14 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)	364 kg (800 lb.)
Size (WxHxD) (2 joined cabinets)	111.8 x 177.8 x 97.6 cm / 44 x 70 x 38.4 in.
Export classification	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.	
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):	1,407 kg (3,100 lb.)
Weight (approximate)	
Size (WxHxD)	340.0 x 183.0 x 99.0 cm / 134 x 72 x 39 in.
Export classification	EAR99

