

Solid State Broadband High Power Amplifier

2226
900 – 1600 MHz / 2000 Watts

The 2226 is suitable for high power CW, modulated, and pulse applications. This amplifier utilizes high power GaN on SiC devices that provide wide frequency response, high gain, high peak power capability, and low distortions. Exceptional performance, long-term reliability and high efficiency are achieved by employing advanced broadband RF matching networks and combining techniques, EMI/RFI filters, and all qualified components. The drawers are constructed in 5RU and 3RU including the forced-air cooling with optional enclosure.

The amplifier includes a built-in control and monitoring system, with protection functions which preserve high availability. Remote management and diagnostics are via an embedded web server allowing network managed site status and control simply by connecting the unit's Ethernet port to a LAN. Using a web browser and the unit's IP address (IPv4) allows ease of access with the benefit of multi-level security. The control system core runs an embedded OS (Linux), has a built-in non-volatile memory for event recording, and factory setup recovery features. The extended memory option allows storage of control parameters and event logs.



Empower RF's ISO9001:2015 Quality Assurance Program assures consistent performance and the highest reliability.

- Solid-state class AB compact and modular design
- Suitable for CW, AM, FM, Pulse and some linear applications (Consult factory for other modulation types)
- Embedded directional coupler – Eliminates the need for external component
- 50 ohm input/output impedance
- Built-in Control, Monitoring and Protection functions
- High reliability and ruggedness

ELECTRICAL SPECIFICATIONS over temperature conditions (-10 to +40°C)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	900		1600	MHz
Power Output CW	P _{OUT}	2000			Watt
Power Output @ 1dB Gain Compression <i>Note 2</i>	P _{1dB}	1500			Watt
Power Gain @ 1dB Gain Compression	G _{1dB}		63		dB
Input Power for Rated P _{OUT} – MGC Mode	P _{IN}		-10	-3	dBm
Input Power Range, Mode ALC	P _{IN}	-3.0		+3.0	dBm
Small Signal Gain (MGC)/Leveled ALC – Flatness	ΔG			±1.5 / ±0.5	dB
Gain Adjustment Range @ P _{IN} = -30dBm	FGA	15	20		dB
Input Return Loss	S ₁₁			-10	dB
Noise Figure @ maximum gain	NF		20	25	dB
Third Order Intermodulation Distortion 2-Tone @ 57dBm/Tone, 1MHz Spacing	IM3		-25		dBc
Harmonics @ P _{OUT} = 2000W	2 ND			-14	dBc
	3 RD			-15	
Spurious Signals	Spur			-70	dBc
Operating Voltage – (3-ph, line-to-line) <i>Note3</i>	V _{AC}	180	208	260	Volt
Power Consumption @ 2000W CW	P _D			6,000	VA
Efficiency @ rated output	Eff	33			%

Notes:
1. CW measurement performed in MGC Mode (Manual Gain Control)
2. P_{1dB} measurement is performed with AM 80% depth of modulation at 1kHz modulation signal
3. AC Voltage input is factory configurable for 208V 3-phase or 220V single phase and an optional 400 hertz cycle.

MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Dimensions W x H x D (excludes handles, connectors and brackets)	17.5 x 14.0 x 22 (3RU + 5RU)	Inch
Weight	230	Pound
RF Connectors Input/Output	Input: N-type, Female Output: 1-5/8 EIA	RF IN RF OUT
RF Sample Connectors	SMA Female	FORWARD/REVERSE
Blanking/Gating Input Connector	BNC Female	Blanking
Cooling	Built-in forced air-cooling system – front to rear)	Airflow direction

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ENVIRONMENTAL CHARACTERISTICS (Qualification Data available for review):

Parameter	Symbol	Min	Typ	Max	Unit
Operating Ambient Temperature *	T _A	-10 *		+40	°C
Non-operating Temperature *	T _{STG}	-20 *		+85	°C
Relative Humidity (non-condensing)	RH			95	%
Shock / Vibration - MIL-STD-810F Shock Method 516.5, Vibration Method 514.5	SH / VI				

Note: [*] Consult Empower RF for application conditions below -10°C / -20°C temperatures (Operational / Non-operational).

PROTECTIONS:

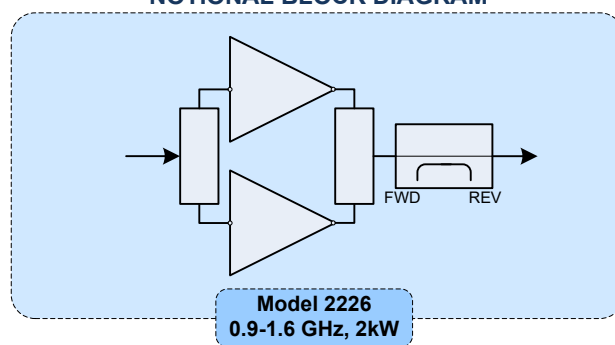
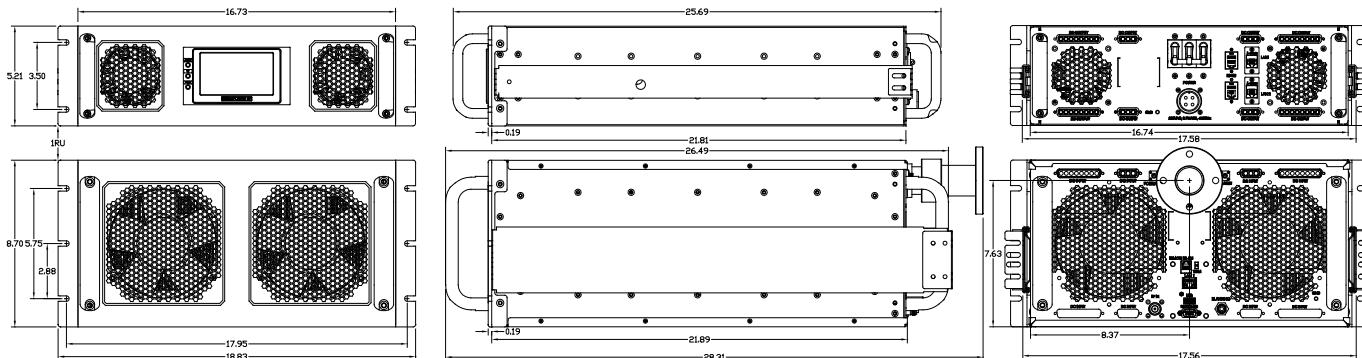
Parameter	Specification	Unit
Input Overdrive	+10 dBm	Max
VSWR Protection	At 3:1 – PA backs-off output power to a safe operating level – no system shutdown, “On Air” time is maximized	-
Thermal – Graceful Degradation	Ambient 40°C	Min
Default Data Recovery	Factory Default Calibration Recovery	

COMMUNICATION INTERFACES:

Function	Utility	Connector
Ethernet	Network management of device / web interface	RJ45
USB	Mass storage / Expansion Bus	USB 1.x/2.0 compatible
RS232, default [RS422, factory configurable]	Serial management of device / local operator access	D-Sub 9-position Male

Available Options

2226-00X
-002 208 VAC, 3-phase-Delta, 47-63 Hz, Rear RF Connectors
Contact us for other available options
Standard Feature:
-LCD Control, Ethernet & Serial Comm.
-Sample Ports: Forward & Reverse [SMA Female]
-Blanking/Gating Port: BNC Female
-Rack Slides, Handles and Rackmount Bracket

NOTIONAL BLOCK DIAGRAM

SYSTEM MECHANICAL OUTLINE


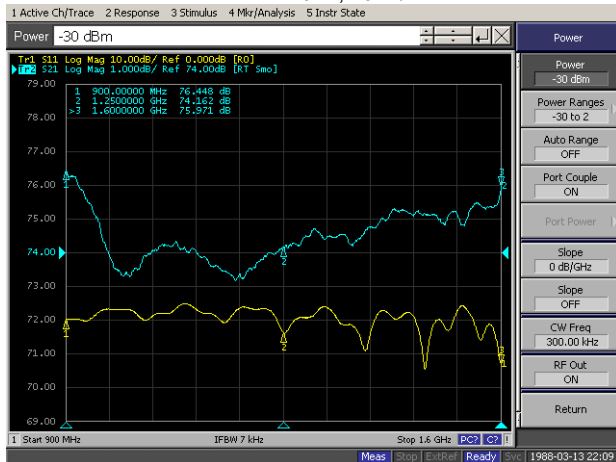
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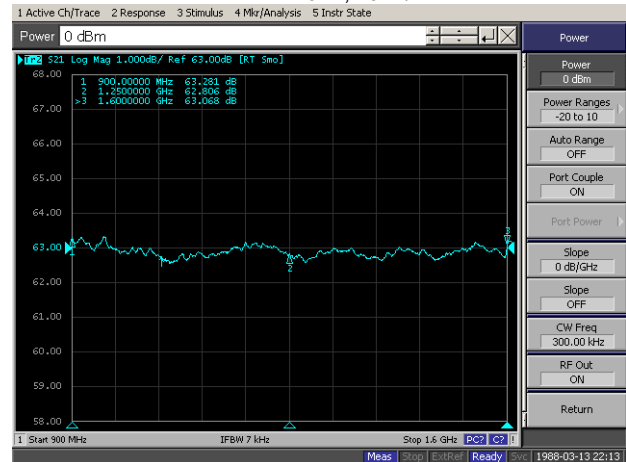
TYPICAL PERFORMANCE

Plot 1 – Small Signal Gain

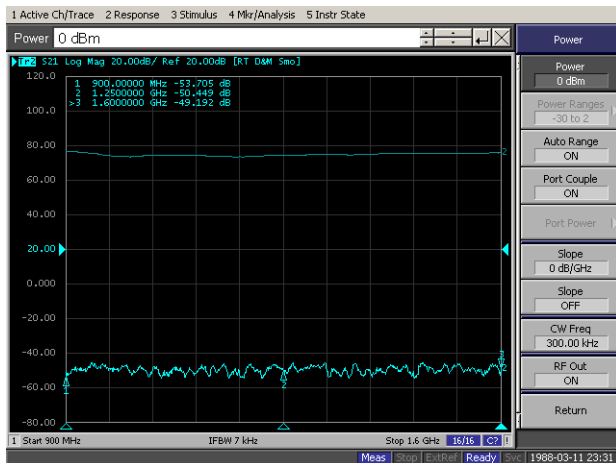
Top Curve: Small Signal Gain @ $P_{IN} = -30\text{dBm}$
Reference: 71dB, 1dB/div.
Bottom Curve: Input Return Loss
Reference: 0dB, 10dB/div.


Plot 2 – Output Power Flatness @ ALC Mode

Top Curve: Output Power @ 2000W, $P_{IN} = 0\text{dBm}$
Reference: 60dBm, 1dB/div.
Bottom Curve: Input Return Loss
Reference: 0dB, 10dB/div.


Plot 3 – Gain @ Shutdown

Top Curve: Small Signal Gain @ $P_{IN} = -30\text{dBm}$
Bottom Curve: Gain @ STANDBY MODE
Reference: 20dB, 20dB/div.


Plot 4 – Power Gain Adjustment Range @ $P_{IN} = -30\text{dBm}$

Top Curve: Maximum Gain
Bottom Curve: Minimum Gain
Reference: 60dB, 10dB/div.

