EMPOWER
RF SYSTEMS, INC.

Solid State Broadband High Power Amplifier

1141 - BBM2E4ALP

20 – 1000 MHz / 125 Watts

PRELIMINARY INFORMATION

The BBM2E4ALP (SKU # 1141) is suitable for ultra broadband high power linear applications. This amplifier module utilizes Silicon LDMOS power devices that provide high gain, wide dynamic range, low distortions and good linearity. Exceptional performance, long term reliability and high efficiency are achieved by employing advanced broadband RF matching networks and combining techniques, EMI/RFI filters, machined housings and qualified components. Empower RF's ISO9001 Quality Assurance Program assures consistent performance and the highest reliability.

- Solid-state Class AB linear design
- Instantaneous ultra broadband
- Small form factor and lightweight
- Suitable for all modulation types
- 50 Ohm Input/Output impedance
- High reliability and ruggedness
- Built In Protection circuits and Control interface

ELECTRICAL SPECIFICATIONS @ +28VDC, 25°C, 50Ω System

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	20		1000	MHz
Power Output CW	P_{SAT}	100	125		Watt
Power Output @ 1dB Gain Compression Point	P_{1dB}	80			Watt
Power Gain @ 1dB Gain Compression Point	G_{1dB}	51			dB
Input Power for Rated Output	P_{IN}		0		dBm
Small Signal Gain Flatness	ΔG			±1.5	dB
Input Return Loss	S11			-10	dB
Noise Figure	NF			10	dB
Third Order Inter modulation	IMD		-38		dBc
2-Tone @ 42dBm/tone, Δ = 100KHz	IP3		+56		dBm
Harmonics @ 100W output	2^{nd}		-20		dBc
	3^{rd}		-20		
Spurious Signals	Spur		<-70	-60	dBc
Operating Voltage	VDD	26	28	30	Volt
Quiescent Current	I_{DQ}		4		Amp
Current consumption @ 100W	I_{DD}		13	16	Amp

MECHANICAL SPECIFICATIONS

Parameter	Value	Units	Limits
Dimensions	6.4 x 6.7 x 1.3	Inch	Max
Weight without heatsink	4.0	lb.	Max
RF Connectors In/Out	SMA female		
DC/Control Connector	7W2 Hybrid D-sub		
Cooling	Requires External Heatsink		

ENVIRONMENTAL CHARACTERISTICS

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	Tc	-40		+85	°C
Storage Temperature	Tstg	-40		+95	°C
Relative humidity w/o condensation	RH	95			%
Altitude	ALT	10,000	30,000		Feet
Shock & Vibration	SH / VI		MIL-STD-810F		

EMPOWER RF SYSTEMS, INC.

Solid State Broadband High Power Amplifier

1141 - BBM2E4ALP	20 – 1000 MHz / 125 Watts

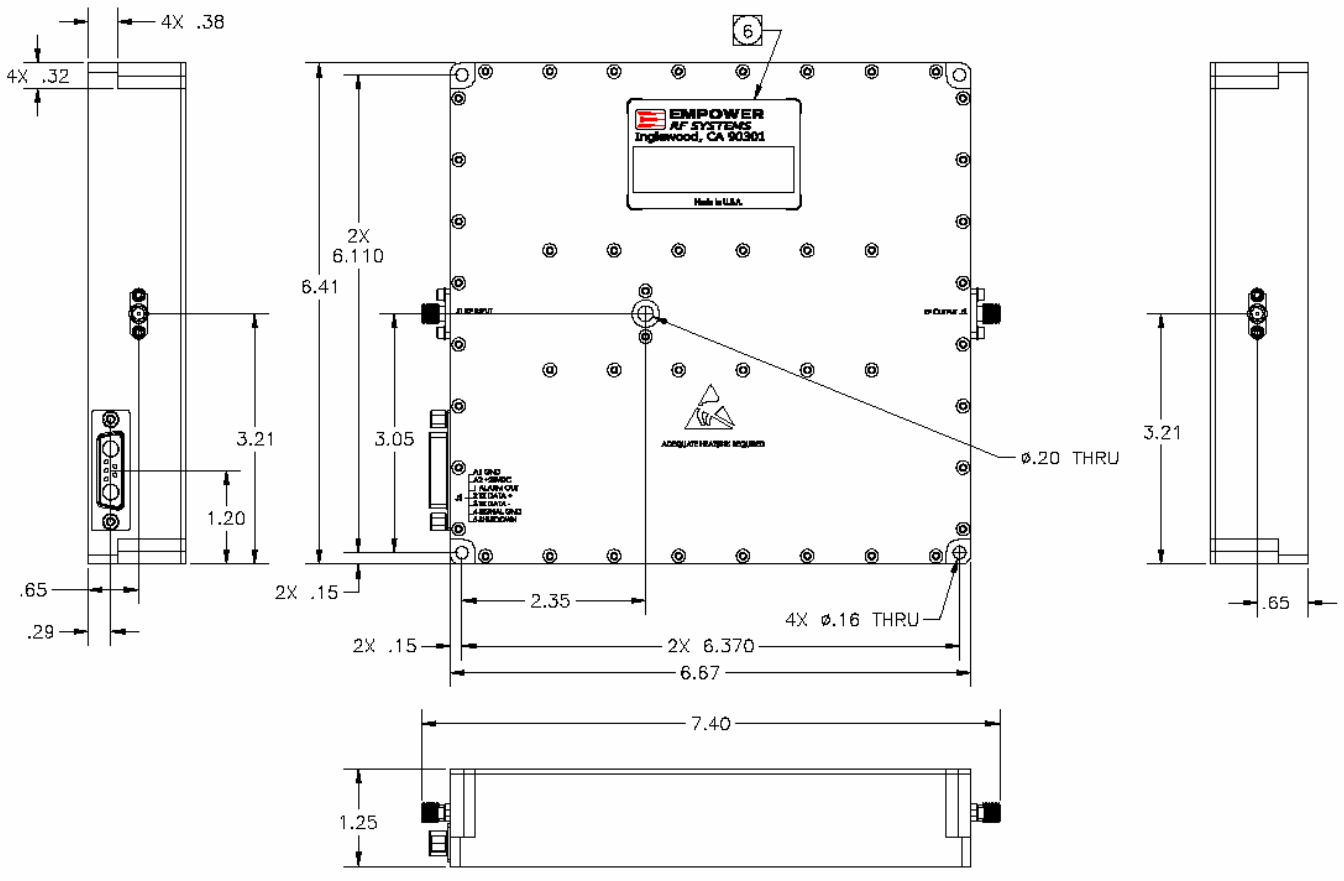
PROTECTIONS

Input Power Overdrive	P_{od}	+10dBm	Max
Load VSWR @ rated P1dB Gain Compression Point	Ψ	∞ @ all load phase & amplitude	Nom
Thermal Overload	T_{OD}	Graceful Degradation	

INTERFACE CONNECTOR – 7W2 Hybrid D-Sub

Pin #	Description	Specifications
1	Summary Alarm Out	TTL Low = Fault
2	RS422 TX_DATA+	Differential RS422 transmit output
3	RS422 TX_DATA-	Differential RS422 transmit output
4	Signal Gnd	Ground
5	Shutdown	PA ON - TTL “Low” (1.0 µSec typical) PA OFF - TTL “High”
A1	GND	Ground
A2	V_{DD}	+28 ± 2V_{DC}

OUTLINE DRAWING



EMPOWER RF SYSTEMS, INC.

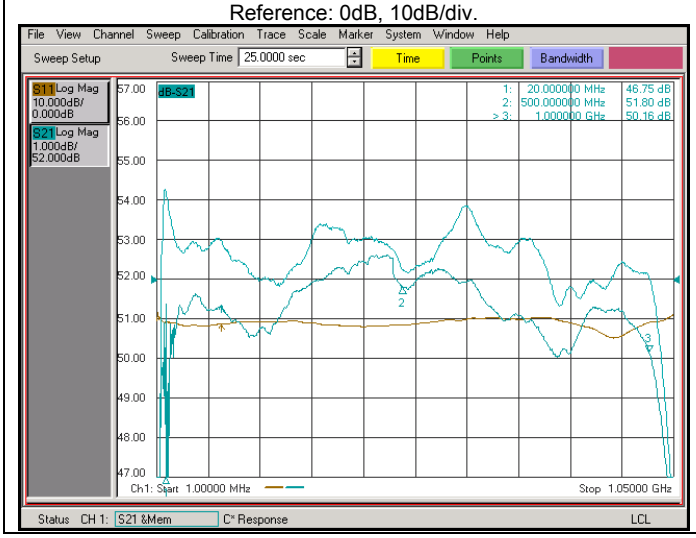
Solid State Broadband High Power Amplifier

1141 - BBM2E4ALP

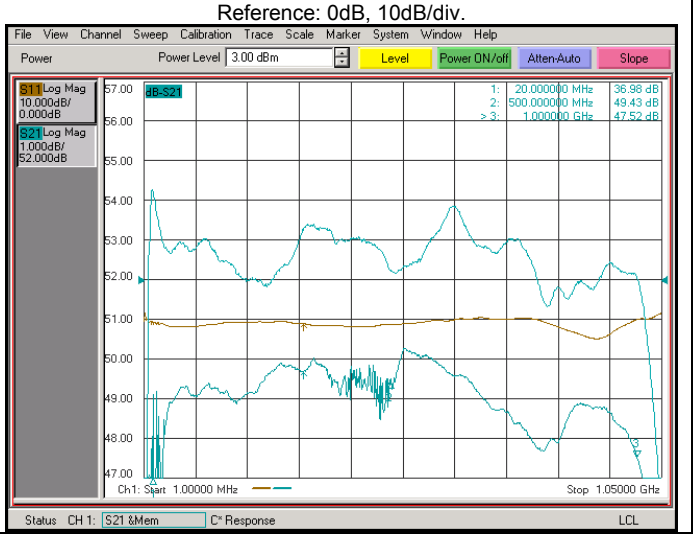
20 – 1000 MHz / 125 Watts

TYPICAL PERFORMANCE PLOTS

Plots 1 - Small Signal and P_{2dB} Gain
Top Curve: Small Signal Gain @ P_{IN} = -20dBm
Middle Curve: Power Gain @ P_{2dB}, P_{IN} = 0dBm **(Note 2)**
Reference: 52dB, 1dB/div.
Bottom Curve: Input Return Loss
Reference: 0dB, 10dB/div.



Plot 2 - Small Signal and P_{SAT}
Top Curve: Small Signal Gain @ P_{IN} = -20dBm
Bottom Curve: P_{SAT} @ P_{IN} = 3dBm **(Note 2)**
Reference: 52dB, 1dB/div.
Middle Curve: Input Return Loss
Reference: 0dB, 10dB/div.



Notes: Cable Loss/Source Correction included in P_{IN} Measurement: 0.0dB @ 1000MHz.