



### RF Microwave System 8W High Power Wide Band Power Amplifier 1-22GHz



- Short Haul / High Capacity Links
- High Power Amplifier
- Military & Space
- Noise Figure: 5 dB
- Psat: + 39dBm
- Gain: 42 dB
- Supply Voltage: 110/220 VAC
- 50 Ohm Matched Input/Output

Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range	1		10	11		22	GHz
Gain	37	44	48	37	41	45	dB
Gain Flatness		±5			±5		dB
Gain Variation Over Temperature(-45 ~ +85)		±3			±3		dB
Noise Figure		5			5		dB
Input Return Loss		15			15		dB
Output Return Loss		10			12		dB
Output Power for 1 dB Compression (P1dB) *	33	34	36	32	33	36	dBm
Output Power for 3 dB Compression (P3dB) *	36	37	38	34	36	38	dBm
Saturated Output Power (Psat) *		39			38		dBm
Output Third Order Intercept (IP3)		42			42		dBm
Supply Current (Idd) (Vcc=+24V) Require 20% current head room for power supply.		2500	2800		2500	2800	mA
Power Supply Voltage	24	24V recommended				28	V
Isolation S12 (Isolation data is wrong, should minus attenuator value)	105	106	107	99	100	102	dB
Input Max Power (no damage)			+2			+2	dBm
Weight (no heatsink)	280						g
Impedance	50						Ohms
Input /Output Connector	SMA-Female						
Finishing	Standard: Gold 40 micron; Nickel 220 micron thickness						
	Option: Gold 80 micron; Nickel 180 micron thickness						
Material	Aluminum/copper						
Package Sealing	Epoxy Sealing (Standard)						
	Hermetically Seal (Option with extra charge)						

\* P1, P3dB and Psat power testing signal: 200us pulse width with 10% duty cycle.

\* If use average CW power for power testing, 5dB back off from Saturated power is required unless with water/oil cooling system.

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# RF-LAMBDA

The power beyond expectations

RAMP01G22GA

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Absolute Maximum Ratings	
Supply Voltage	110/220 VAC
RF Input Power (RFIN)	+2dBm
Storage Temperature(C°)	-50 to +125

Note: Maximum RF input power is set to assure safety of amplifier. Input power may be increased at own risk to achieve full power of amplifier. Please reference gain and power curves

Biasing Up Procedure	
Step 1	Connect input and output with 50 Ohm source/load. ( in band VSWR<1.9:1 or >10dB return loss)
Step 2	Connect AC Plug
Step 4	Flip switch to "ON" position
Power OFF Procedure	
Step 2	Flip switch to "OFF" position
Step 3	Remove AC Plug
Step 4	Remove RF Connection

Environment specifications	
Operational Temperature (C°)	-45 ~ +85(Case Temperature must be less than 85C all time)
Altitude	30,000 ft. (Epoxy Seal Controlled environment)
	60,000 ft 1.0psi min (Hermetically Seal Un-controlled environment) ( Optional )
Vibration	25g rms (15 degree 2KHz) endurance, 1 hour per axis
Humidity	100% RH at 35c, 95%RH at 40°c
Shock	20G for 11msc half sin wave,3 axis both directions

Ordering Information	
Part No	Description
RAMP01G22GA	1GHz~22GHz Power Amplifier

### Amplifier Use

Ensure that the amplifier input and output ports are safely terminated into a proper 50 ohm load before turning on the power. Never operate the amplifier without a load. A proper 50 ohm load is defined as a load with impedance less than 1.9:1 or return loss larger than 10dB relative to 50 Ohm within the specified operating band width.

#### Power Supply Requirements

Power supply must be able to provide adequate current for the amplifier. Power supply should be able to provide 1.5 times the typical current or 1.2 times the maximum current (whichever is greater).

In most cases, RF-Lambda amplifiers will withstand severe mismatches without damage. However, operation with poor loads is discouraged. If prolonged operation with poor or unknown loads is expected, an external device such as an isolator or circulator should be used to protect the amplifier.

Ensure that the power is off when connecting or disconnecting the input or output of the amp.

Prevent overdriving the amplifier. Do not exceed the recommended input power level.

Adequate heat-sinking required for RF amplifier modules. Please inquire.

Amplifiers do not contain Thermal protection, Reverse DC polarity or Over voltage protection with the exception of a few models. Please inquire.

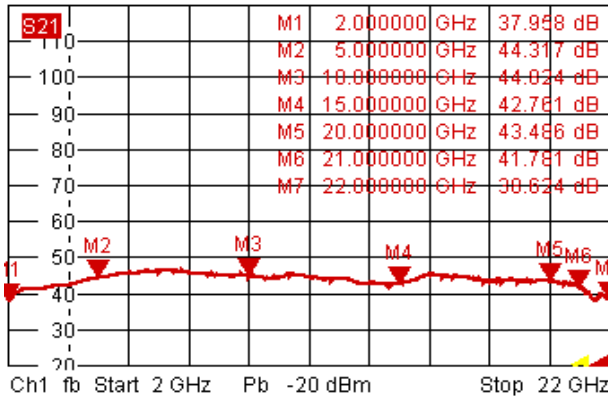
Proper electrostatic discharge (ESD) precautions are recommended to avoid performance degradation or loss of functionality.

#### What is not covered with warranty?

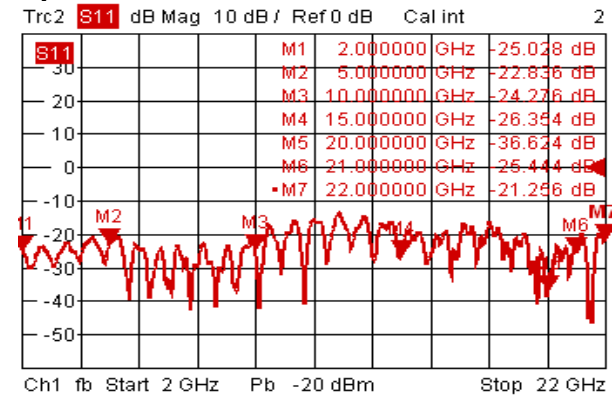
Each of RF-Lambda amplifiers will go through power and temperature stress testing. Due to fragile of the die, IC or MMIC, those are not covered by warranty. Any damage to those will NOT be free to repair.



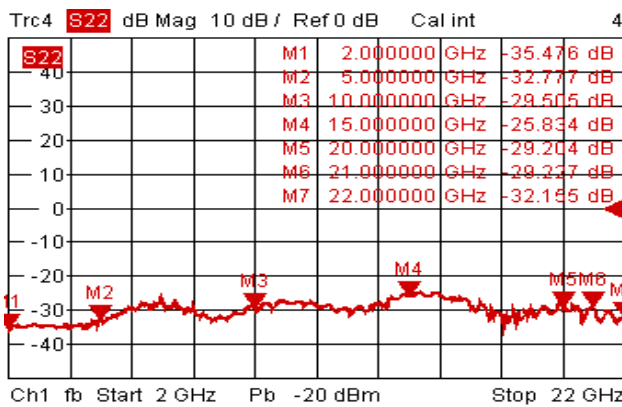
### Gain



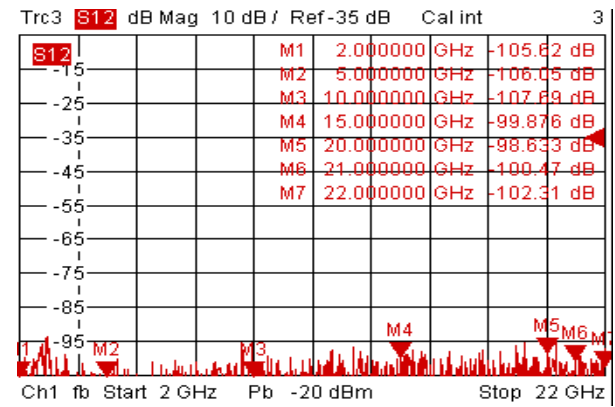
### Input Return Loss



### Output Return Loss

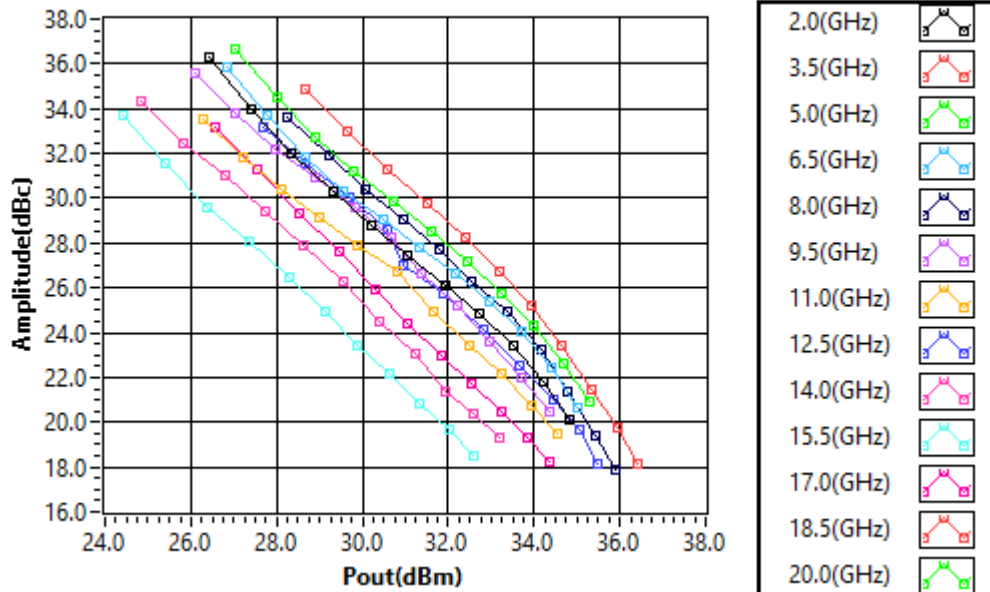


### Isolation



Note: Input/output return loss measurements include attenuators to protect equipment

IM3 Test (dBc) vs. Pout (dBm)



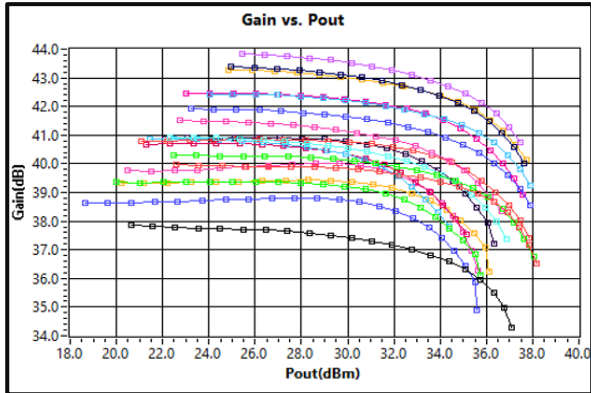


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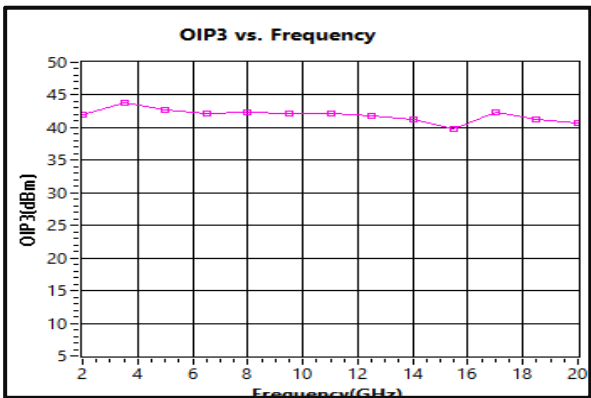
The power beyond expectations

## RAMP01G22GA

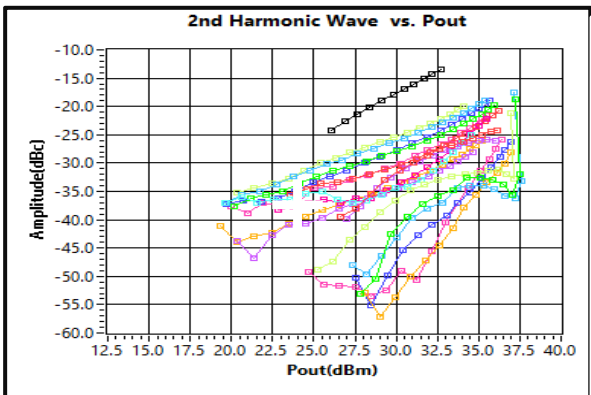
### Gain vs. output power



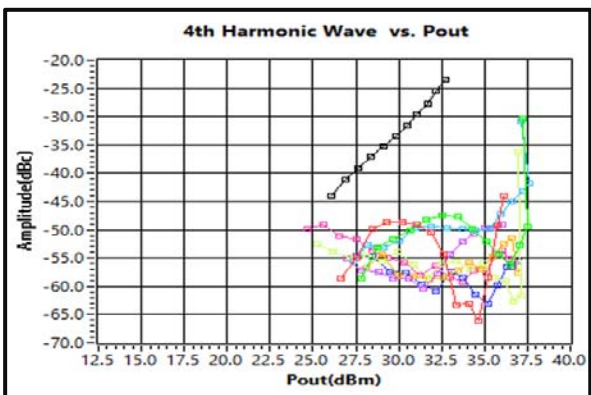
### Output Third Order Intercept (IP3)



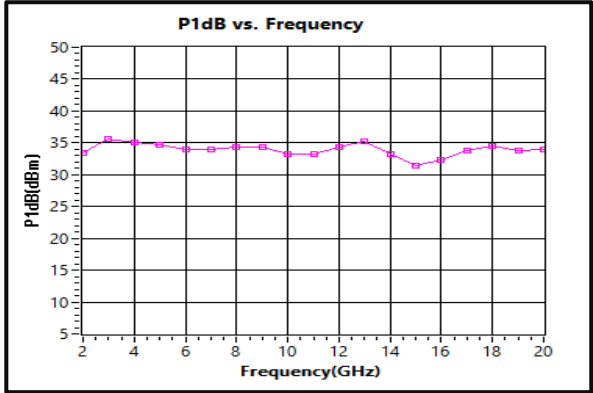
### 2nd Harmonic Wave output Power



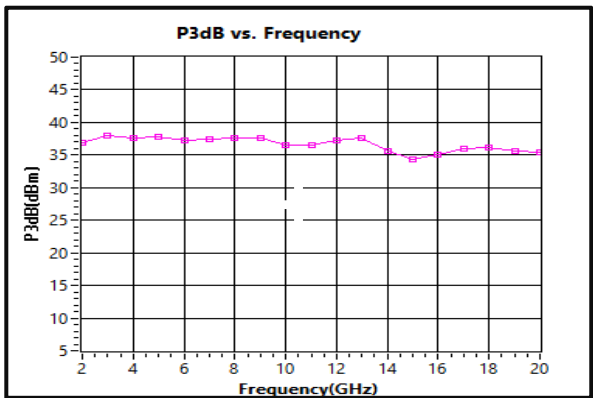
### 4th Harmonic Wave output Power



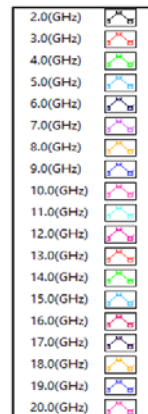
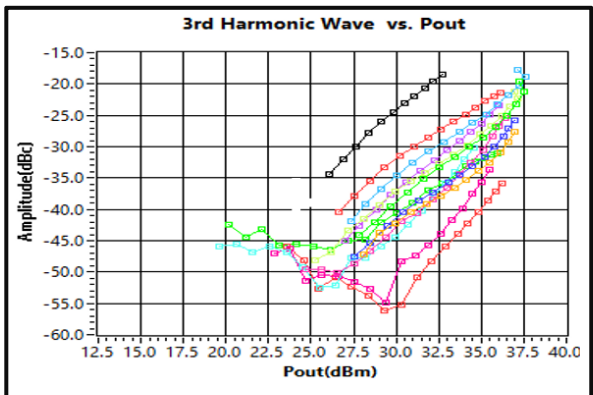
### P1dB vs. Frequency



### P3dB vs. Frequency



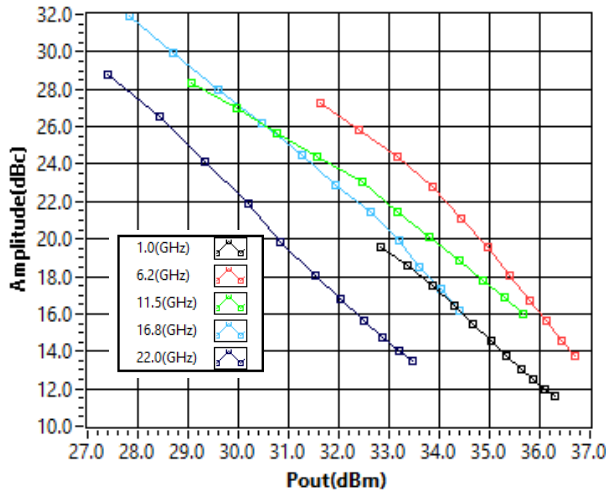
### 3rd Harmonic Wave output Power



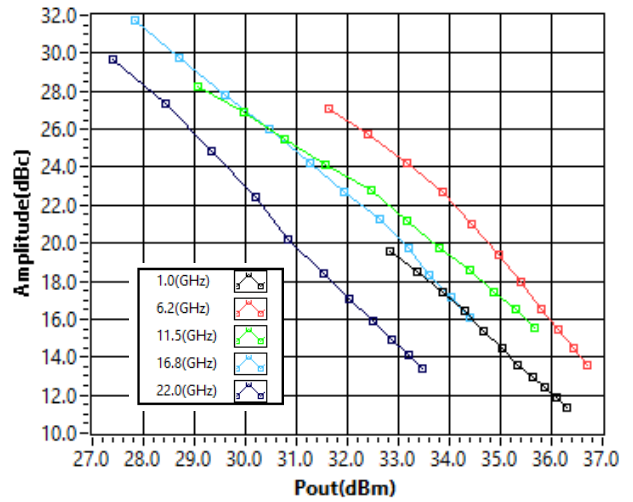
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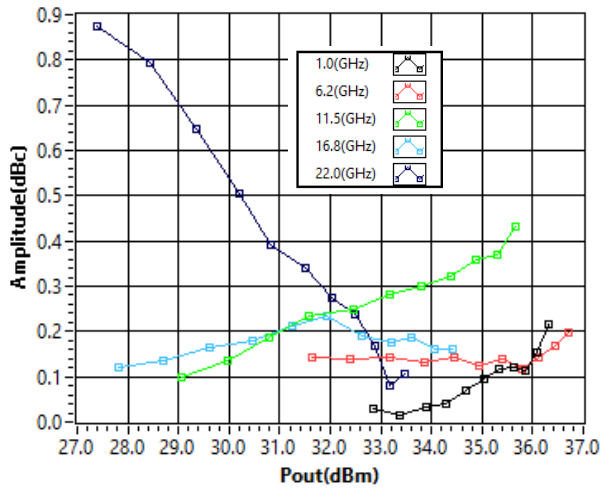
Left IM3 Test (dBc) vs. Pout (dBm)



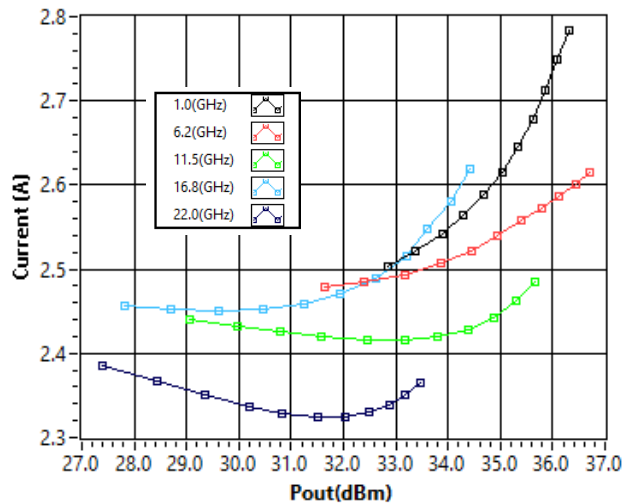
Right IM3 Test (dBc) vs. Pout (dBm)



Memory Effect (dBc) vs. Pout (dBm)



Current vs. Pout

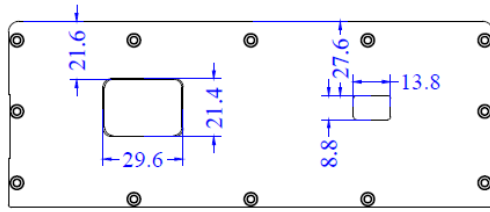




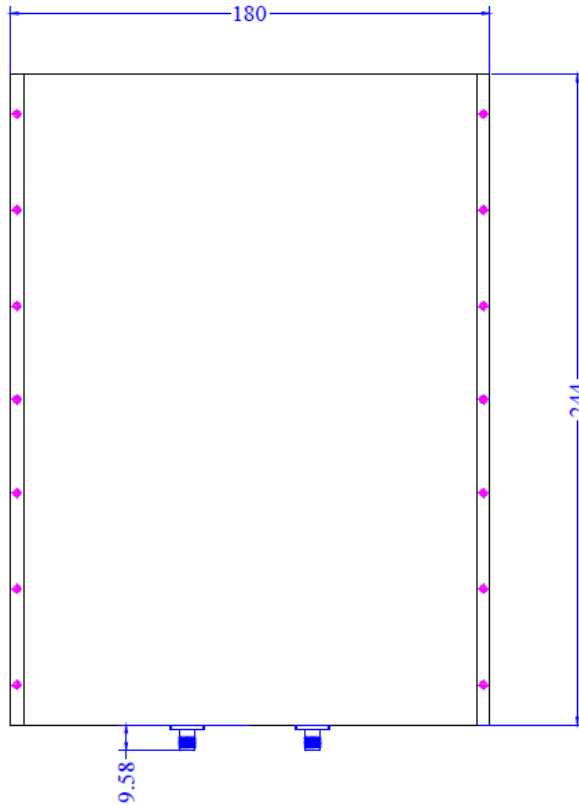
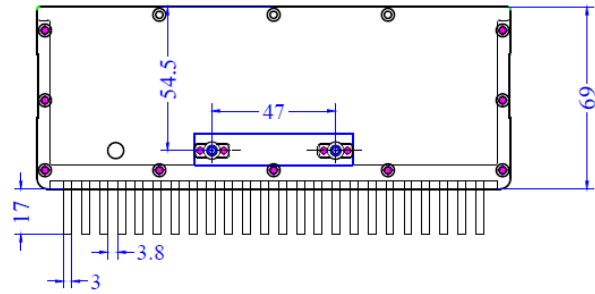
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Units in mm



Heat Sink required during operation

## Important Notice

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