

15W Wide Band Bench Top Power Amplifier 18GHz-26.5GHz



Features

- Wide Band Bench Top Power Amplifier
- Small Signal Gain 45dB Typical
- Output Saturation Power 42dBm Typical
- Supply Voltage 110/220 VAC
- 50 Ohm Matched Input/Output
- Overcurrent Protection

Product Description

RAMP18G26GA is an ultra wide band benchtop power amplifier with a frequency range of 18 to 26GHz.

The power output of this amplifier is 42 dBm typical. The typical small signal gain is 45 dB with a great flatness of ± 5 dB.

The AC power amplifier uses a standard convenient 110V/220 VAC power supply. The fan and heatsink are all completely integrated inside the unit.

The power amplifier's connectors are 2.92mm-Female.

The operating temperature of this product is within -30°C to +70°C.

Typical Applications

- Wireless Infrastructure
- Military and Aerospace Applications
- Test Instrumentation
- Radar Systems
- 5G Wireless Communications
- Microwave Radio Systems
- TR Modules
- Research and Development
- Cellular Base Stations

Electrical Specifications ($T_A = +25^\circ\text{C}$)

Parameter	Min	Typ	Max	Units
Frequency Range	18		26.5	GHz
Gain	40	45		dB
Gain Flatness		± 5.0		dB
Gain Variation Over Temperature (-30°C ~ +70°C)		± 6.0		dB
Input Return Loss		18		dB
Saturated Output Power (Psat)	40	42		dBm
Supply Current (AC = 220V)		0.45		A
Isolation S12		-60		dB
Weight		25.8 Max.		lbs.
Impedance		50		Ohms
Input / Output Connectors	2.92mm- Female(Input) - 2.92mm- Female(Output)			
Package	Epoxy Sealed (Standard)			
	Hermetically Sealed (Optional)			

Absolute Maximum Ratings

Parameter	Rating
Supply Voltage Range	110V to 240VAC
*RF Input Power (RFIN)	Psat – Large Signal Gain

Bias Up Procedure

1. Connect input and output with 50 Ohm source/load.
(In band VSWR < 1.9:1 or >10dB return loss.)

2. Connect Power Cable

3. Turn On Back Panel AC Power Supply Switch

4. Press Front Panel Power Switch to Power Display

Bias Down Procedure

1. Press Front Panel Power Switch to Power Off Display

2. Turn Off Back Panel AC Power Supply Switch

3. Remove Power Cable (If Moving Equipment)

4. Disconnect input and output with 50 Ohm source/load. (In band VSWR < 1.9:1 or >10dB return loss.)

Environmental Specifications and Test Standards

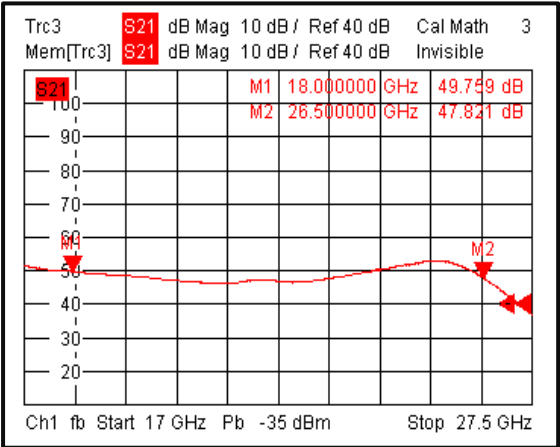
Parameter	Description
Operational Temperature	-30°C to +70°C (Case Temperature)
Storage Temperature	-50°C to +105°C
Thermal Shock	-40°C → +85°C (5 Cycles / 10 hours)
**Random Vibration	MIL-STD-202G Table 214-I, Test Condition Letter C 1.5 Hours Per Axis
High Temperature Burn In	Temperature +70°C for 72 Hours
Shock	1. Weight >20g, 50g half sine wave for 11ms, Speed variation 3.44m/s 2. Weight <=20g, 100g Half sine wave for 6ms, Speed variation 3.75m/s 3. Total 18 times (6 directions, 3 repetitions per direction).
Altitude	Standard: 30,000 Ft (Epoxy Sealed Controlled Environment) Optional: Hermetically Sealed (60,000 ft. 1.0 PSI min)
Hermetically Sealed (Optional)	MIL-STD-883 (For Hermetically Sealed Units)

*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.

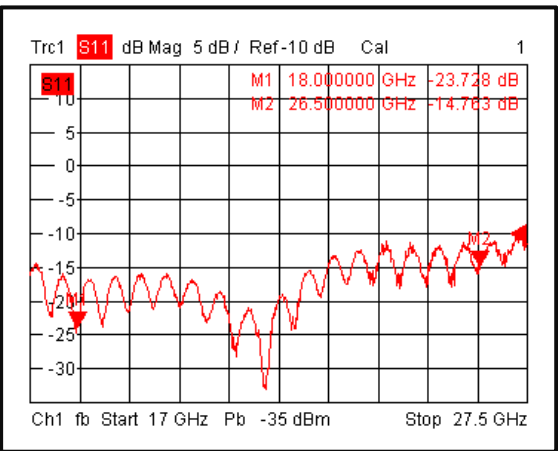
**For vibration testing details please see additional information section.

Typical Performance Plots

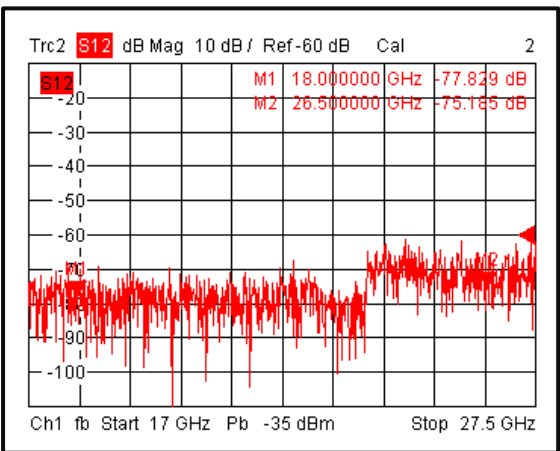
Gain@+25°C



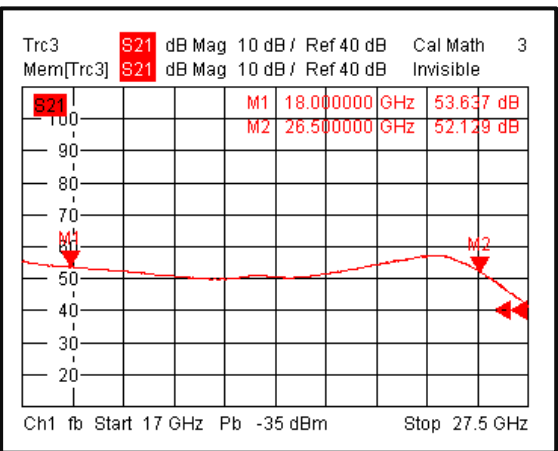
Input Return Loss@+25°C



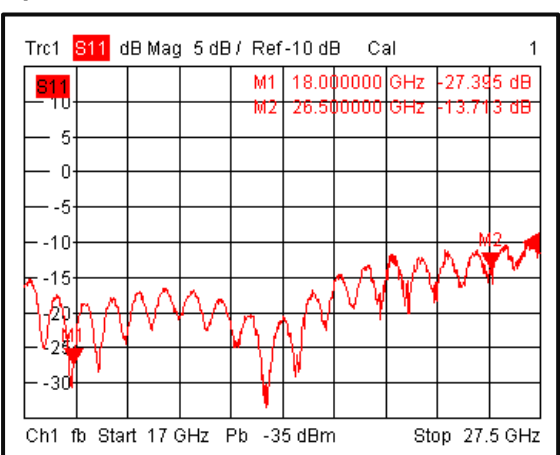
Isolation@+25°C



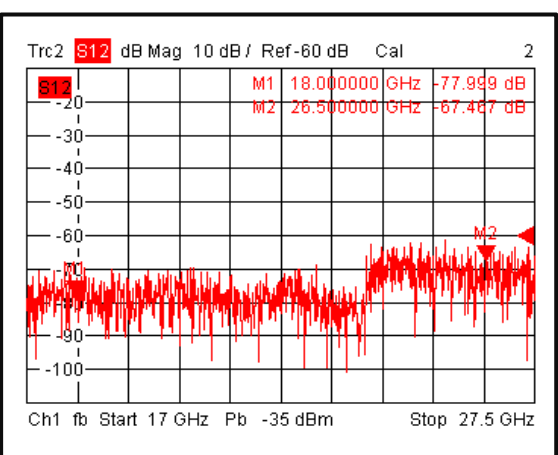
Gain@-30°C



Input Return Loss@-30°C



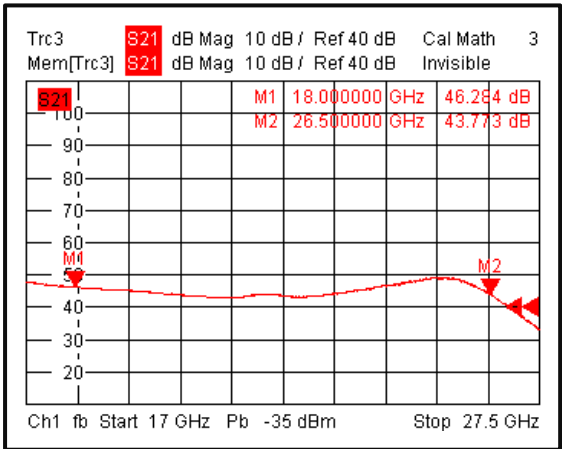
Isolation@-30°C



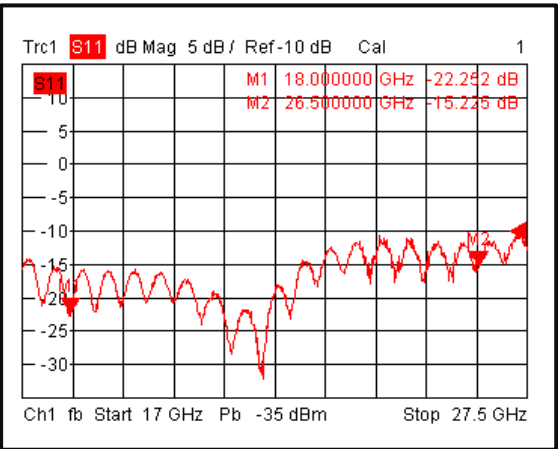
Note: Small signal VNA measurements include attenuators to protect equipment

Typical Performance Plots

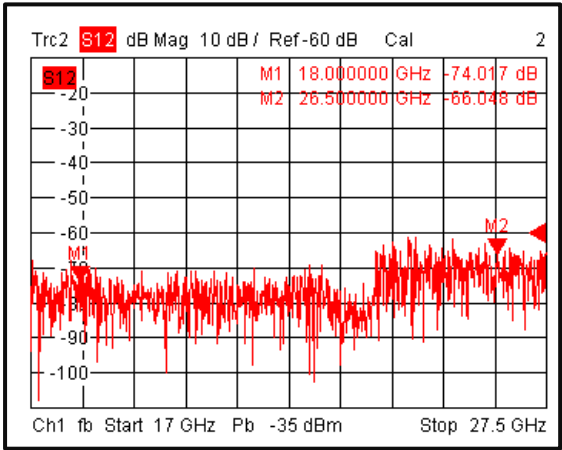
Gain@+70°C



Input Return Loss@+70°C



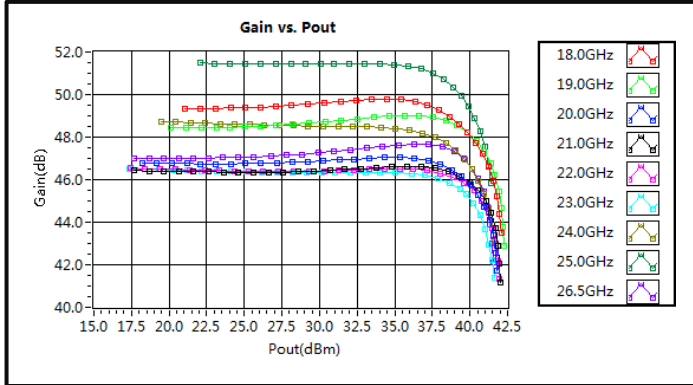
Isolation@+70°C



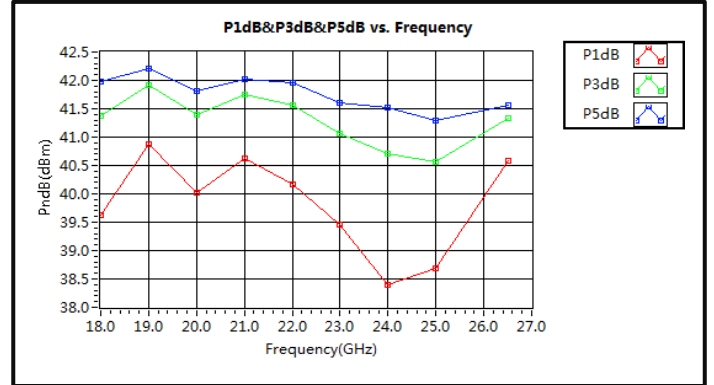
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Typical Performance Plots

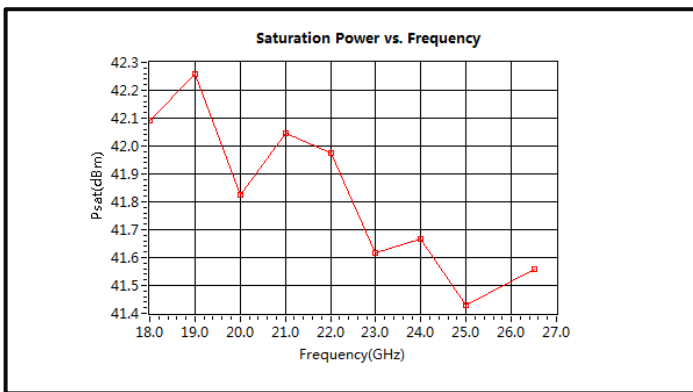
Gain vs. Output Power



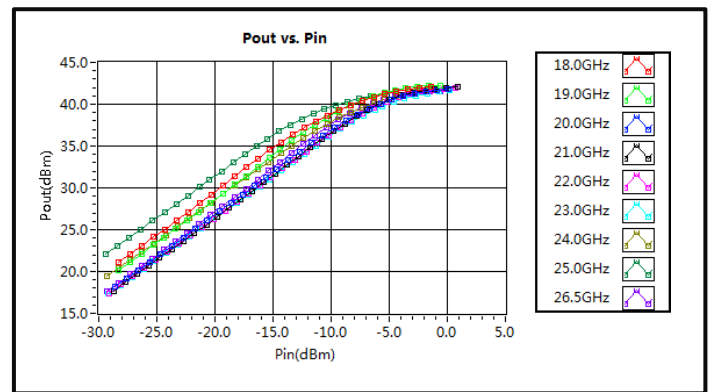
PndB vs. Frequency



Saturated Power vs. Frequency

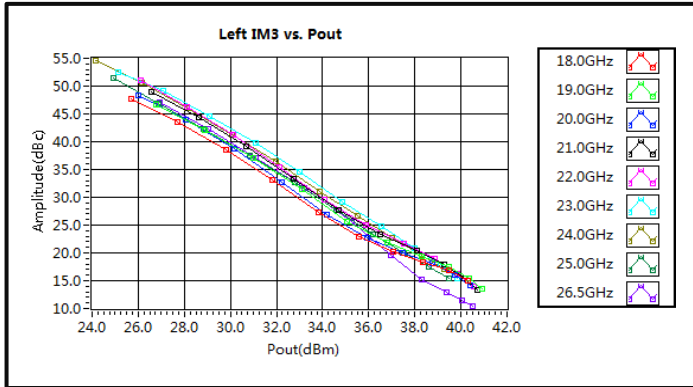


Pout vs. Pin

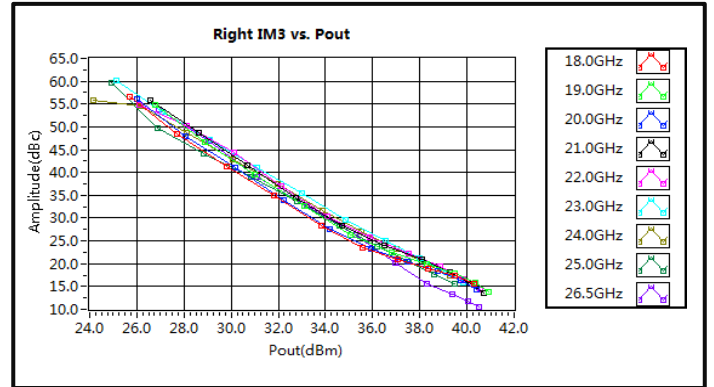


Typical Performance Plots

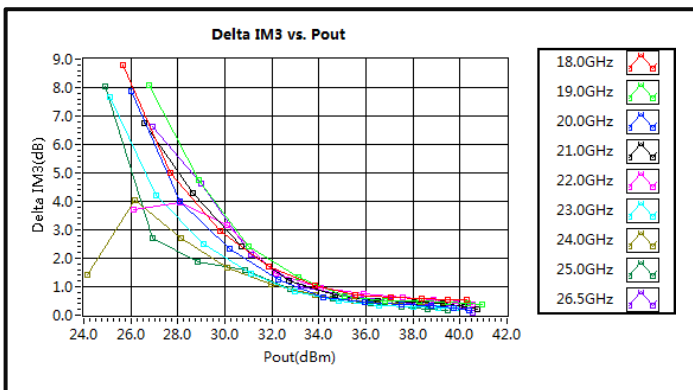
Left IM3 vs Output Power



Right IM3 vs Output Power



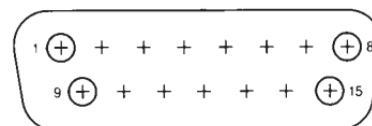
Delta IM3 vs Output Power



Note: IM3 test performed with 1MHz tone spacing

Protection Connector Table

Male D-Sub is on the housing
The mating female part number: 172-E15-113R001

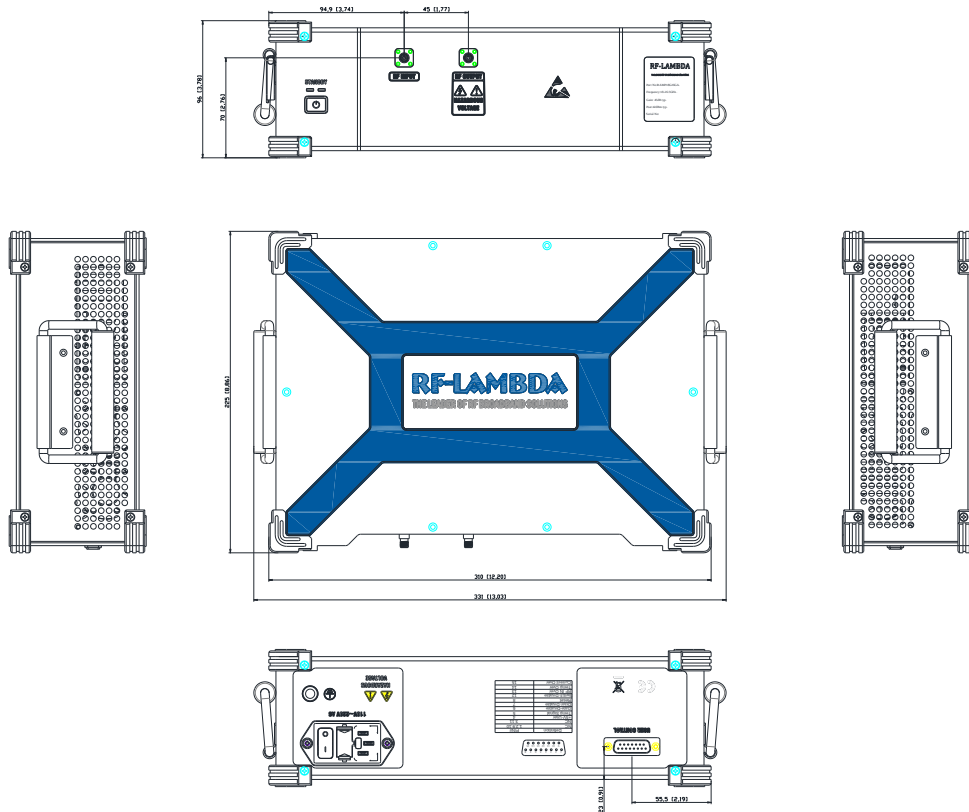


Pin #	Name	Function	Initial State	Description	Applied
1,2,3,9, 10,11	NC	NO	--	No Internal Connection	No
4	+5V-User	Power	+5V	+5V DC is supplied for reference(200mA)	Yes
5	Temp Signal	Indicator		PA carrier case temperature is represented by voltage	Yes
6	Gate Disable	Control	LOW	Applying logic HIGH disables gates of amplifiers	Yes
7	Drain Disable	Control	LOW	Applying logic HIGH disables Positive Supply Voltage of amplifiers	Yes
8	Reset	Control	HIGH	Resets PA when logic <u>LOW</u> is applied and released	Yes
12	Switch Disable	Control	HIGH	Applying logic <u>LOW</u> disconnects RF signal of amplifiers	Yes
13	RF IN Over	Indicator	LOW	Pin will be latched to logic <u>HIGH</u> when input signal is over limit	Yes
14	Temp Over	Indicator	LOW	Pin will be latched to logic <u>HIGH</u> when amplifier is driven over temperature	Yes
15	Current Over	Indicator	LOW	Pin will be latched to logic <u>HIGH</u> when drain current limit is reached	Yes

Notes:

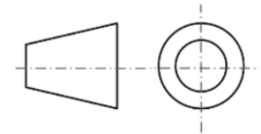
- HIGH/LOW voltages are standard TTL signals 0V to 0.8V = LOW. 2.8V to 5V = HIGH. Input current is 10uA.
- Matching connector and cable will be shipped with the product.
- Applied=Yes means the feature is included. Applied=No means the feature is not included with this model.
- 5V reference supply can source 200mA.
- Indicator output signals can source 24mA.

Outline Drawing



Notes:

1. Package Material: Aluminum
2. Finish: White Paint
3. All dimensions are in millimeters [inches].
4. Tolerances ± 2.5 [0.098] unless otherwise specified.
5. Heat Sink and cooling fan required during operation. Matching heatsink is listed on our website. If customer would like to use their own cooling method, please make sure the amplifier will operate under the specs that listed in page 2 of this datasheet.
6. DB15 cable is configured for power connection port by default (RFCBLADB15)
7. Standard torque wrench must be used to secure RF connectors.



Packing List

ID	Description	QTY
1	Fig b. DB15 cable (RFCBLADB15)	1



Fig a.

Ordering Information

Part Number	Modification	Description
RAMP18G26GA	Input connector 2.92mm-Female and Output connector 2.92mm-Female	18GHz-26.5GHz Bench Top 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 RF - Lambda amplifier will go through power and temperature stress testing.

Since the die, ICs or MMICs are fragile, these are not covered by warranty. Any damage to these will NOT be free to repair.

Important Notice

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