RF-LAMBDA
THE LEADER OF RF BROADBAND SOLUTIONS

350W Wideband EMC Benchtop Power Amplifier 2GHz - 20GHz

REMC0220GG

Sales: sales@rflambda.com
Technical: support@rflambda.com

Rev 3. 05-27-2026 | Subject to change without notice

PRODUCT SUMMARY

PRODUCT OVERVIEW

GENERAL DESCRIPTION

REMC0220GG is a wideband EMC power amplifier with a frequency range of 2 to 20GHz.

The power output of this amplifier is 55dBm typical. The typical small signal gain is 72dB with a flatness of ±10dB. This performance is achieved through the use of GaN devices. The power amplifier's input connector is N-Female and Output connector is N-Female. This product has a calibration feature which enables customer to obtain great performance through time and temperature changes. The operating temperature of this product is within 0°C to +50°C.

FEATURES

- Wide band EMC Solid State Power Amplifier
- Small Signal Gain 72dB Typical
- Output Saturation Power 55dBm Typical
- Supply Voltage 110/220 VAC 3-phase
- 50 Ohm Matched Input / Output
- Fast RF Blanking
- Real Time VSWR measurement
- Internal Signal Generator – Optional
- Over temperature Protection
- Over current Protection
- Over voltage Protection
- Auto Calibration

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

QUALITY STANDARDS

ESD Policy

https://rflambda.com/pdf/rflambda_esd_control.pdf

Random Vibration Test Standard

https://www.rflambda.com/pdf/rflambda_random_vibration_MIL-STD-202G.pdf

Connector Torque Specifications

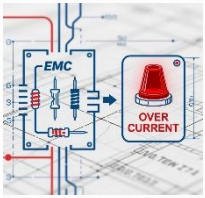
https://www.rflambda.com/pdf/Torque_Specifications.pdf

Parameter	Description
Operational Temperature	0°C to +50°C (Ambient Temperature)
Thermal Shock	0°C → +50°C (5 Cycles / 10 hours, Only internal modules tested prior to final assembly)
*Random Vibration	MIL-STD-202G, Table 214-I, Test Condition Letter C, 1.5 Hours Per Axis
High Temperature Burn In	Temperature +50°C for 72 Hours
Storage Temperature	-40°C to +85°C

*For vibration testing details please see additional information section.

RF-Lambda is ISO: 9000 certified with 25,000 ft² combined R&D and production space, including an ISO7 10K Clean Room to meet ISO-14644-1.

PRODUCT FUNCTIONS



1 EMC Functions

- Output Power Lock
- Automatic Calibration

2 Mode Selections

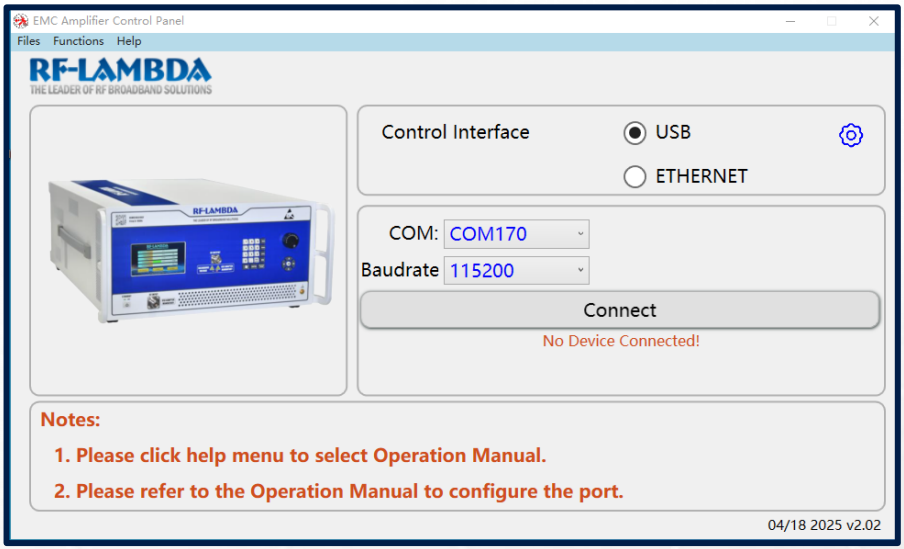
- Local
- Remote Control

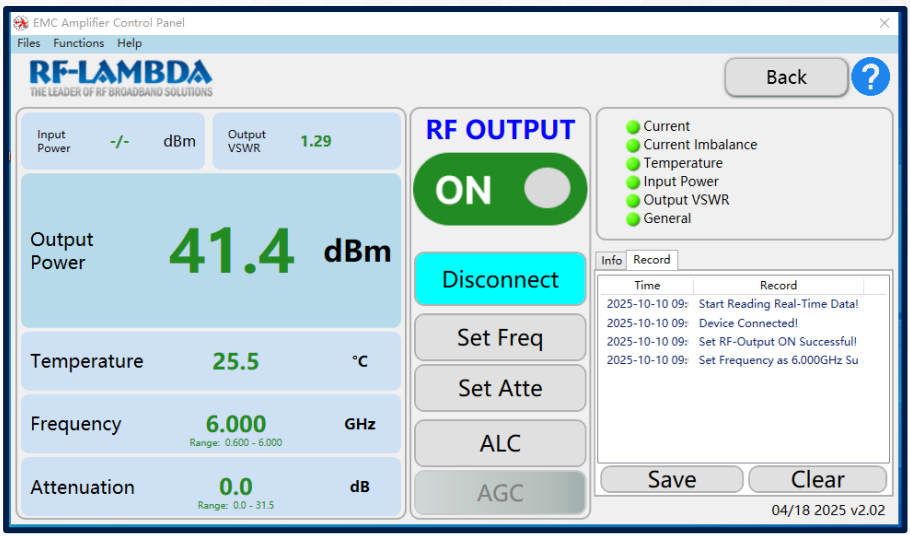
3 Product Safety Interlock

- Input Power Overload Protection
- Output Mismatch Protection
- Over Temperature Protection
- Over Current Protection
- Cooling System Anomaly Protection

Category	Function	Included	Optional (Licensing)	Optional (Hardware)	NOT Applicable
Product Safety Interlock	Input Overload Protection	☑	☐	☐	☐
	Output VSWR Protection	☑	☐	☐	☐
	Current Overload Protection	☑	☐	☐	☐
	Temperature Protection	☑	☐	☐	☐
	Current Imbalance Protection	☑	☐	☐	☐
	Overvoltage and Undervoltage Protection	☑	☐	☐	☐
	AC Power Abnormality Protection	☑	☐	☐	☐
	Fan Abnormality Protection	☑	☐	☐	☐
User Operation Functions	USB, LAN Communication	☑	☐	☐	☐
	DB Interface	☑	☐	☐	☐
	Self-Calibration Function	☑	☐	☐	☐
	Gain Compensation Over Temperature	☑	☐	☐	☐
	Current Compensation Over Temperature	☑	☐	☐	☐
	TDD Control - RF Switch Enable	☑	☐	☐	☐
	TDD Control - Positive Voltage Enable	☑	☐	☐	☐
	TDD Control - Negative Voltage Enable	☑	☐	☐	☐
	GUI Interface	☑	☐	☐	☐
	Parameter Setting	☑	☐	☐	☐
	Gain Calibration Each Stage	☑	☐	☐	☐
	Software ON/OFF Function	☑	☐	☐	☐
	Modularized System Integration	☑	☐	☐	☐
	Remote Software Control ON/OFF	☑	☐	☐	☐
EMC Functions	Rotary Gain Adjustment	☑	☐	☐	☐
	Screen Protection Function	☑	☐	☐	☐
	Touch Screen Display	☑	☐	☐	☐
	Developer Interface	☑	☐	☐	☐
User Customization Functions	System Log Recording	☑	☑	☐	☐
	Output VSWR Measurement	☑	☑	☐	☐
	Input Power Measurement	☑	☑	☐	☐
	ALC - Automatic Loop Control Gain	☑	☑	☐	☐
	AGC - Automatic Gain Control Function	☐	☑	☐	☐
	Input Circulator Protection (Internal Load)	☐	☐	☑	☐
	Output Circulator Protection (Internal Load)	☐	☐	☑	☐
	Waveguide Adapter (E-H)	☐	☐	☑	☐
	Fast RF Blanking	☑	☐	☐	☐
Internal Signal Generator	Single Frequency Output	☐	☑	☐	☐
	Frequency Auto Sweeping	☐	☑	☐	☐
	Frequency Hopping	☐	☑	☐	☐
	External Signal	☐	☑	☐	☐

REMOTE CONTROL





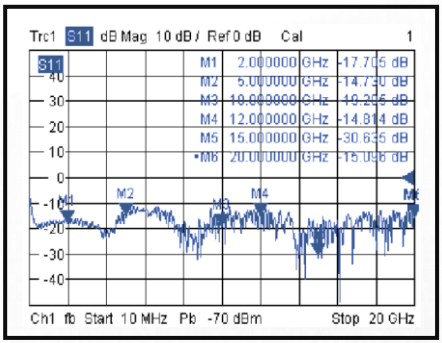
TECHNICAL DATA SPECIFICATIONS

Parameter		Min	Typ	Max	Units
Frequency Range		2		20	GHz
Small Signal Gain			72		dB
Gain Flatness			±10		dB
Gain Variation Over Temperature (0ºC to 50ºC)			±3		dB
Input Return Loss			-10		dB
Output 1dB Compression Point (P1dB)			45		dBm
Saturated Output Power (Psat)(CW)			55		dBm
Supply Current(3-phase 208VAC)			12	20	A
Power Added Efficiency (PAE)			20		%
IM3			-28		dBc
Turn On/Off Speed (Switch Disable)	ON		/		ns
	OFF		/		ns
Turn On/Off Speed (Drain Disable)	ON		/		us
	OFF		/		us
Turn On/Off Speed (Gate Disable)	ON		/		us
	OFF		/		us
RF Fast Blanking Speed (Optional) (Mute RF Output signal and noise)	ON		/		us
	OFF		/		us
Optional RF Fast Blanking Frequency (Optional)			/		kHz
Weight			84		lbs.
Impedance			50		Ohms
***RF Input Power (RFIN)**			Psat – Large Signal Gain		
Package			5U Rack-mount/Tabletop Chassis		
Cooling System			**Forced air (Self-contained fan)**		
Supply Voltage			208VAC 3-phase		VAC
Supply Frequency			47 to 63		Hz
Supply Power			/		W

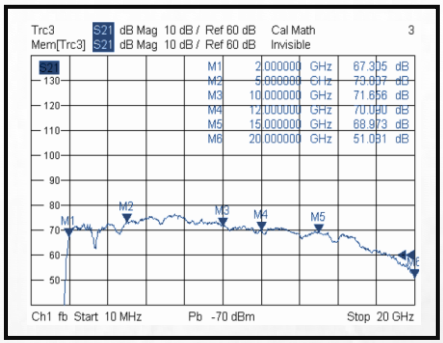
*Maximum RF input power is set to assure safety of amplifier. Input power may be increased at own risk to achieve full power of amplifier. Please reference gain and power curves.

TYPICAL PERFORMANCE PLOTS

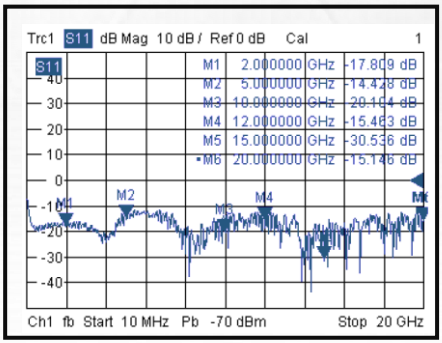
Input Return Loss @+25ºC



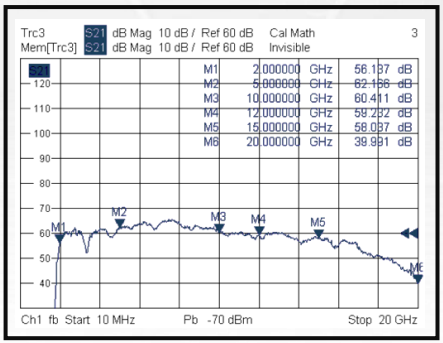
Gain vs. Frequency @+25ºC With default 10dB Attenuation



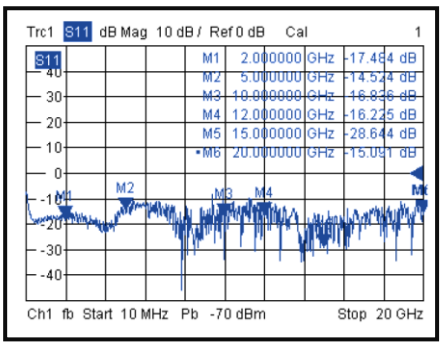
Input Return Loss @+25ºC



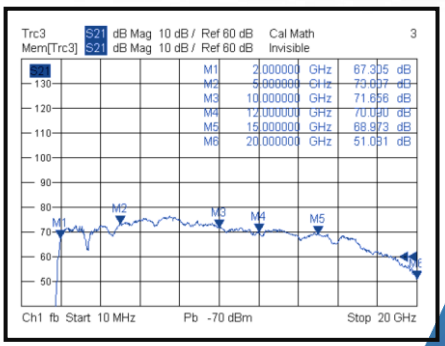
Gain vs. Frequency @+25ºC With max 20dB Attenuation



Input Return Loss @+25ºC



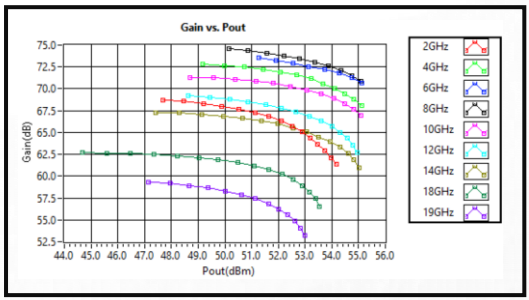
Gain vs. Frequency @+25ºC With 0dB Attenuation



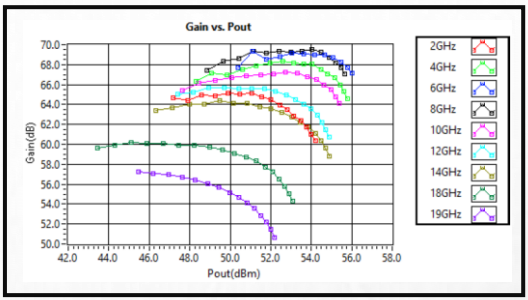
Note: Small signal VNA measurements include attenuators to protect equipment.

TYPICAL PERFORMANCE PLOTS

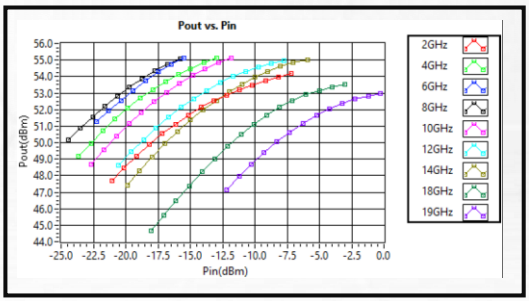
Gain vs Output Power CW
With default 10dB Attenuation



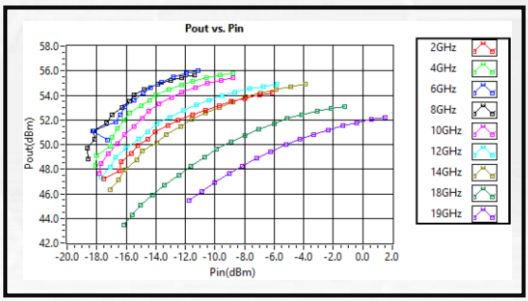
Gain vs Output Power *Pulse
With default 10dB Attenuation



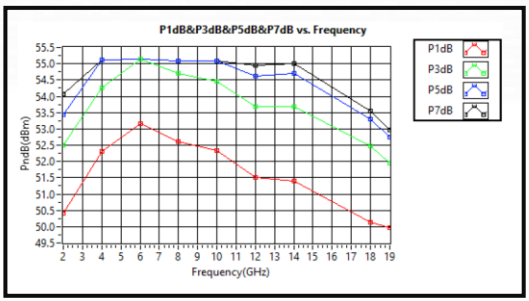
Output vs Input Power CW
With default 10dB Attenuation



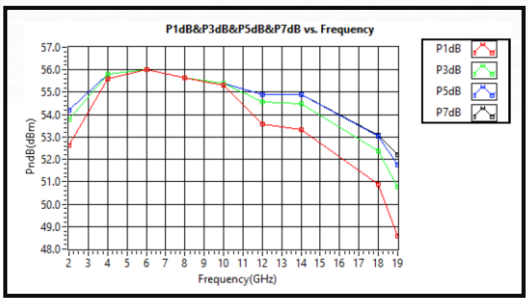
Output vs Input Power *Pulse
With default 10dB Attenuation



PxdB vs Frequency CW
With default 10dB Attenuation



PxdB vs Frequency *Pulse
With default 10dB Attenuation

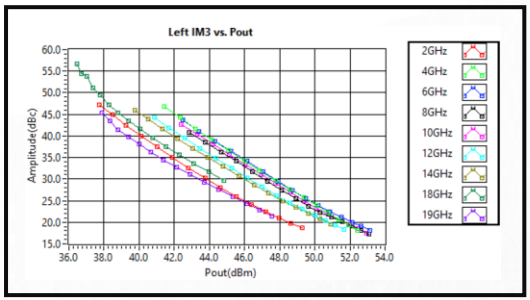


*Pulse Psatpower test signal: 20μs pulse width with 10% duty cycle.

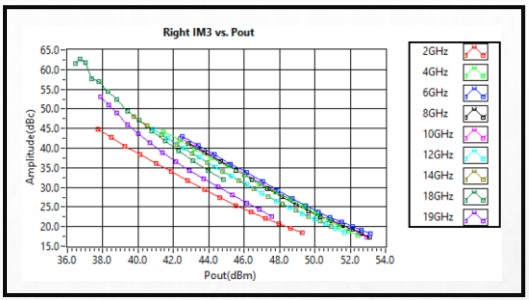
*20GHz power not tested dew to test setup limitations

TYPICAL PERFORMANCE PLOTS

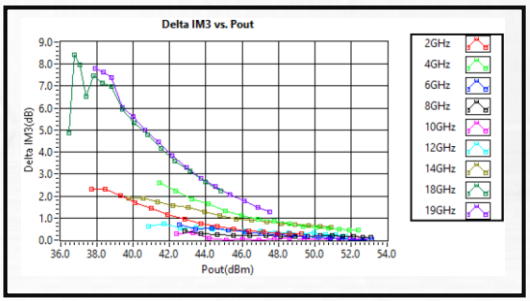
Left IM3 vs. Pout



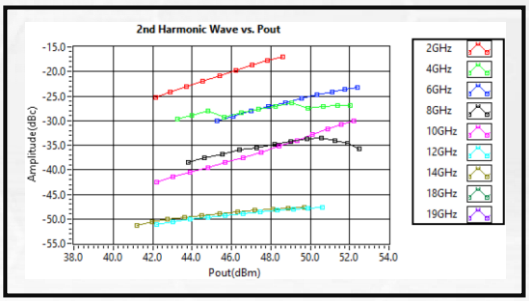
Right IM3 vs. Pout



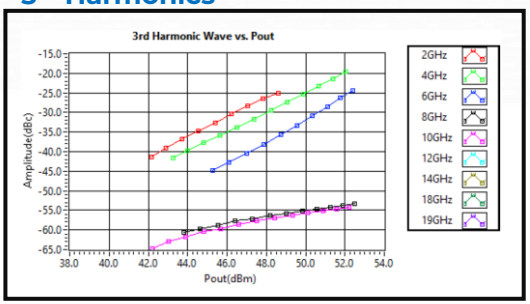
Delta IM3 vs. Pout



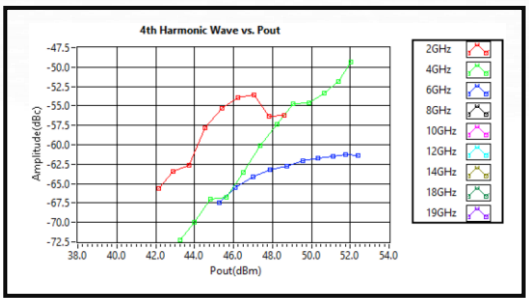
2nd Harmonics



3rd Harmonics

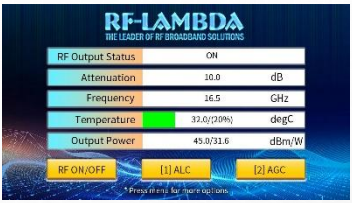


4th Harmonics



Note: IM3 test performed with 1 MHz tone spacing

INSTRUCTIONS FOR USE



Please follow the instructions on the front panel LCD screen after switching on the power. Press "1" on keypad to continue.

Please follow the instructions.

Name	Description
RF Output Status	Indicates instrument RF output status. It will display: ON or OFF
Attenuation	RF output attenuation (change with adjustment knob)
Frequency	RF input signal frequency (For illustrative purposes only)
Temperature	Instrument temperature (For illustrative purposes only)
Output Power	Instrument RF output power (For illustrative purposes only)
RF ON/OFF	Switches On or Off for instrument RF output port
ALC	**ALC mode,** Automatic Loop Control
AGC	**AGC mode,** Automatic Gain Control, **this function is invalid**

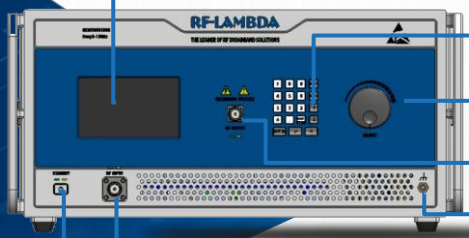
Power On/Off Procedure

Power On Procedure	Power Off Procedure
1. Connect the back panel grounding post to the common ground wire.	1. Turn off the RF output and the input source signal.
2. Connect RF input and RF output with 50 Ohm source/load. (In band VSWR < 1.9:1 or >10dB VSWR).	2. Turn off the unit, turn off the display, and enter standby mode.
3. Connect the AC power cord, turn on the AC switch, and enter standby mode.	3. Turn off the AC switch and remove the AC power cord.
4. Press the front panel switch button to enter operating mode.	4. Remove RF Connection.
5. Ensure the input signal is a low-power signal and turn on the RF output.	5. Remove ground.

*When using two identical devices simultaneously for testing or power combining applications, it is necessary to add reverse isolation protection measures at the output port of each device to prevent mutual interference from large signals between the devices under different operating conditions, which could cause equipment damage. For example: add an isolator at the output of each device.

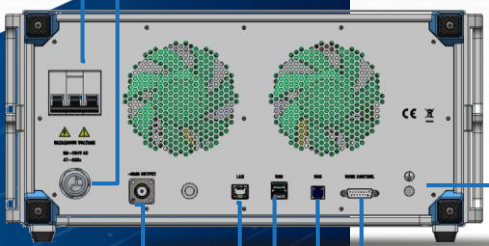
INTERFACE DESCRIPTION

FRONT PANEL



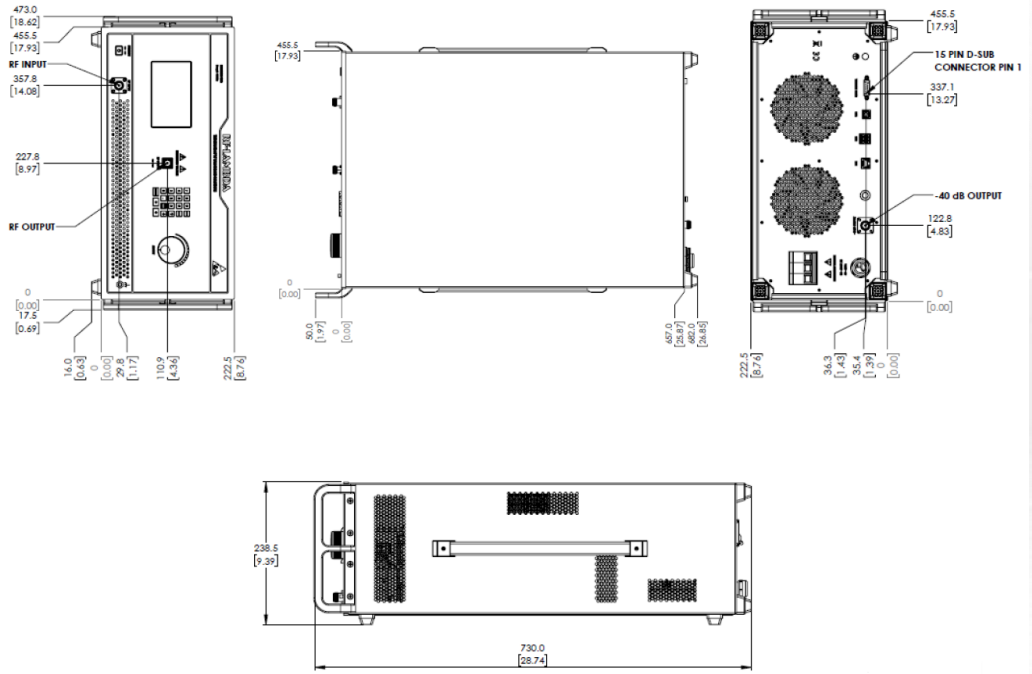
- LCD Display
- Keypad
- Gain Adjustment Knob
- RF Output
- GND Connector
- RF Input
- Front Panel ON/OFF switch

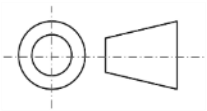
REAR PANEL



- AC power supply ON/OFF air breaker
- AC power cord
- GND connector
- USER Interface, D-SUB Connector
  See page below for more information.
- USB Port
- LAN Port (upon request)
- -50dB Output

OUTLINE DRAWING





Notes:

1. Package Material: Aluminum
2. Finish: White Baking Paint
3. All dimensions are in millimeters [inches].
4. Standard torque wrench must be used to secure RF connectors.

VAC POWER SUPPLY PLUG

America Configuration: L21-30P PLUG

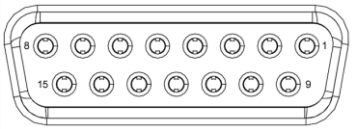
or

EU CEE32 Configuration:

*Power supply plug type should be requested with PO

PROTECTION CONNECTOR TABLE

Female D-Sub is on the housing
The mating female part number: 172-E15-203R001



Pin #	Name	Function	Initial State	Description	Applied
1	Reset	Control		Resets PA when logic LOW is applied and released	Yes
2	Gate Disable	Control	LOW	Applying logic HIGH disables gate of amplifiers	Yes
3	Drain Disable	Control	LOW	Applying logic HIGH disables drain of amplifiers	Yes
4	RF IN Over	Indicator	HIGH	Pin will be latched to logic HIGH when input signal is over limit	Yes
5	Temp Over	Indicator	LOW	Pin will be latched to logic HIGH when amplifier is driven over temperature	Yes
6	Current Over	Indicator	LOW	Pin will be latched to logic HIGH when drain current limit is reached	Yes
7	ID Imbalance	Indicator	LOW	Pin will be latched to logic HIGH when an imbalance in the drain current of the combining branches occurs	Yes
8	PA Off Alarm	Indicator	LOW	Pin will be latched to logic HIGH when any of the protection limit is reached	No
9	Fan Alarm	Indicator	LOW	Pin will be latched to logic HIGH when Fan limit is reached	Yes
10	RF Switch OFF	Control	LOW	Applying logic HIGH turns RF switch to load path	Yes
11	VSWR	Indicator	HIGH	Pin will be latched to logic HIGH when output reflection is over limit	Yes
12	5dB Attenuation	Control	LOW	Applying logic HIGH enables 5dB attenuation	No
13	10dB Attenuation	Control	LOW	Applying logic HIGH enables 10dB attenuation	No
14	+5V	Power Supply	+5V	+5V DC is available for reference 400mA current ability	Yes
15	GND	Ground	GND	Ground	Yes

Notes:
- HIGH/LOW voltages are standard TTL signals 0.0V-0.8V = LOW. 2V-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 700mA.
- Indicator output signals can source 24mA.

PACKING LIST

Each amplifier is shipped in a well protected package.

ORDERING INFORMATION

Part Number	Modification	Description
REMC0220GG	Input connector N-Female and Output connector N-Female	2GHz - 20GHz Wideband EMC Benchtop 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

The information contained herein is believed to be reliable. RF-Lambda makes no warranties regarding the information contained herein. RF-Lambda assumes no responsibility or liability whatsoever for any of the information contained herein. RF-Lambda assumes no responsibility or liability whatsoever for the use of the information contained herein. The information contained herein is provided "AS IS, WHERE IS" and with all faults, and the entire risk associated with such information is entirely with the user. All information contained herein is subject to change without notice. Customers should obtain and verify the latest relevant information before placing orders for RF-Lambda products. The information contained herein or any use of such information does not grant, explicitly or implicitly, to any party any patent rights, licenses, or any other intellectual property rights, whether with regard to such information itself or anything described by such information.
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