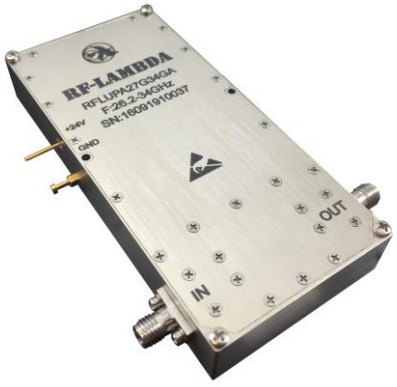
# 30W Solid State High Power Amplifier 2-6 GHz




RoHS Compliant

## *Features*

- Wideband Solid State Power Amplifier
- Psat: +45dBm
- Gain: 50dB
- Supply Voltage: +36V

## *Typical Applications*

- Wireless Infrastructure
- Short Haul / High Capacity Links
- RF Microwave and Vsat
- Military & Aerospace Applications
- Test Instrumentation

***Electrical Specifications, $T_A$ = +25°C, Vcc = +36V***

| Parameter | Min. | Typ. | Max. | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|---|
| Frequency Range | 2 – 4 | | | 4 – 6 | | | GHz |
| Gain | | 52 | | | 48 | | dB |
| Gain Flatness | | ±10 | | | ±10 | | dB |
| Gain Variation Over Temperature (-45°C ~ +85°C) | | ±3 | | | ±3 | | dB |
| Input Return Loss | | 15 | | | 15 | | dB |
| Output Return Loss | | 5 | | | 5 | | dB |
| Saturated Output Power (Psat) | | 45 | | | 45 | | dBm |
| Supply Current (+36 VDC) | | 600 | 3500 | | 600 | 3500 | mA |
| Isolation S12 | | 70 | | | 70 | | dB |
| Input Max Power (No Damage) | Psat – Gain | | | Psat – Gain | | | dBm |
| Weight NP Model / WP Model | 375/1300 | | | | | | g |
| Impedance | 50 | | | | | | Ohms |
| Input / Output Connectors | SMA - Female | | | | | | |
| Finish NP Model/WP Model | Gold Plated / Nickel Plated | | | | | | |
| Material | Aluminum / Copper | | | | | | |
| Package Sealing | Epoxy Sealed (Standard) | | | | | | |
| | Hermetically Sealed (Optional) | | | | | | |

* P1dB, P3dB and Psat power test signal: 200µs pulse width with 10% duty cycle.
* For average CW power testing or increased duty cycle, a 5dB back off from Psat is required unless water/oil cooling system is applied.

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| Absolute Maximum Ratings | |
|---|---|
| Supply Voltage | +36 VDC |
| RF Input Power | Psat – Gain |

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 Ground Pin |
| Step 3 | Connect VDC |
| Power OFF Procedure | |
| Step 1 | Turn Off VDC |
| Step 2 | Remove RF Connection |
| Step 3 | Remove Ground |

## *Environmental Specifications and Test Standards*

| Parameter | Standard | Description |
|---|---|---|
| Operational Temperature | MIL-STD-39016 | -45°C~+55°C (Case Temperature less than 85C) |
| Storage Temperature | | -50°C~+125°C |
| Thermal Shock | | 1 Hour@ -45°C → 1 Hour @ +85°C (5 Cycles) |
| Random Vibration | | Acceleration Spectral Density 6 (m/s)<br>Total 92.6 RMS |
| Electrical & Temperature Burn In | | Temperature +85°C for 72 Hours |
| Shock | | 1. Weight >20g, 50g half sine wave for 11ms, Speed variation 3.44m/s<br>2. Weight <=20g, 100g Half sine wave for 6ms, Speed variation 3.75m/s<br>3. Total 18 times (6 directions, 3 repetitions per direction). |
| Altitude | | Standard: 30,000 Ft (Epoxy Sealed Controlled Environment)<br>Optional: Hermetically Sealed (60,000 ft. 1.0 PSI min) |
| Hermetically Sealed (Optional) | MIL-STD-883 | MIL-STD-883 (For Hermetically Sealed Units) |

Note: The operating temperature for the unit is specified at the package base. It is the user's responsibility to ensure the part is in an environment capable of maintaining the temperature within the specified limits

| Ordering Information | |
|---|---|
| Part No. | Description |
| RFLUPA02G06G | 2GHz~6GHz 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.

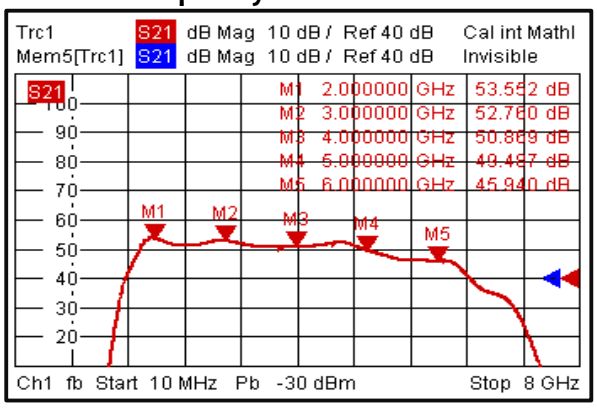
Amplifiers do not contain Thermal protection, Reverse DC polarity or Over voltage protection with the exception of a few models. Please inquire.

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

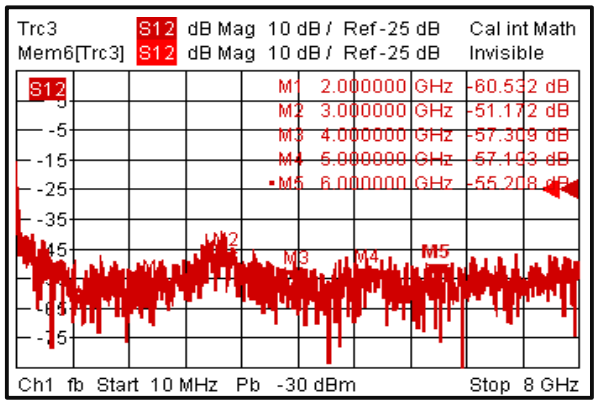
What is not covered with warranty?

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.

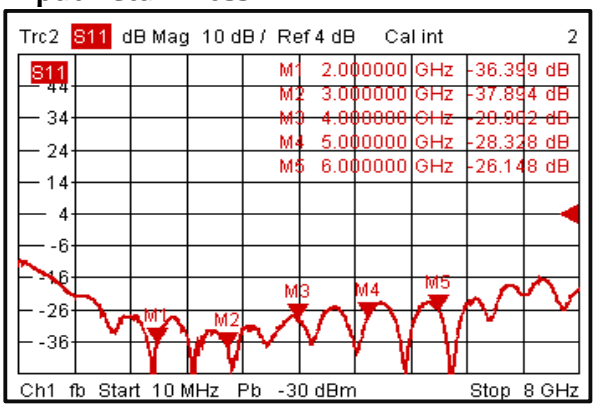
## Gain vs. Frequency



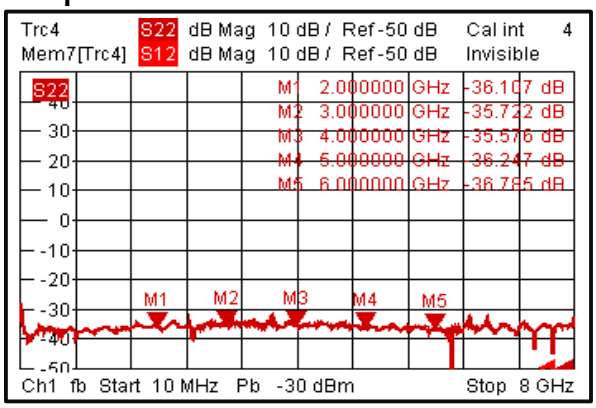

## Isolation




## Input Return Loss



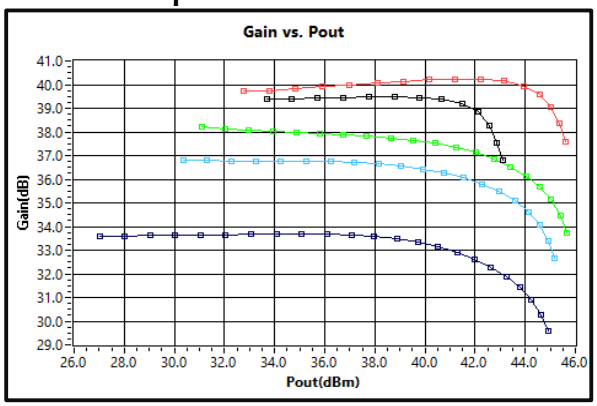

## Output Return Loss



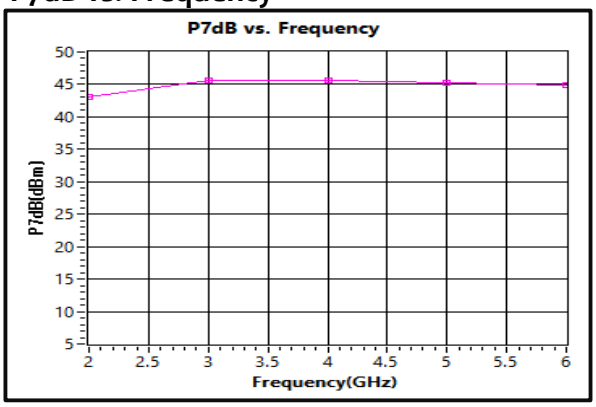

**Note: Input / Output return loss measurements include attenuators to protect equipment**

30W Solid State High Power Amplifier 2-6 GHz

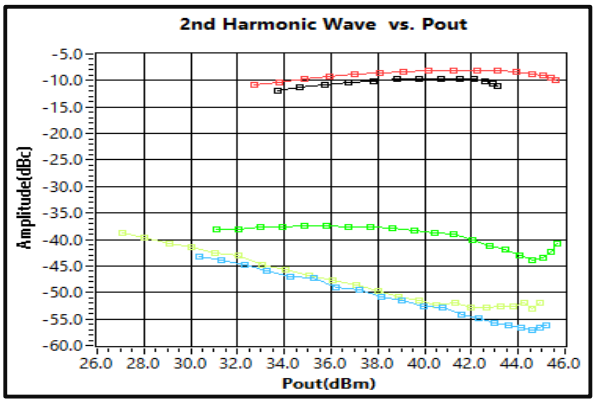
## Gain vs. Output Power



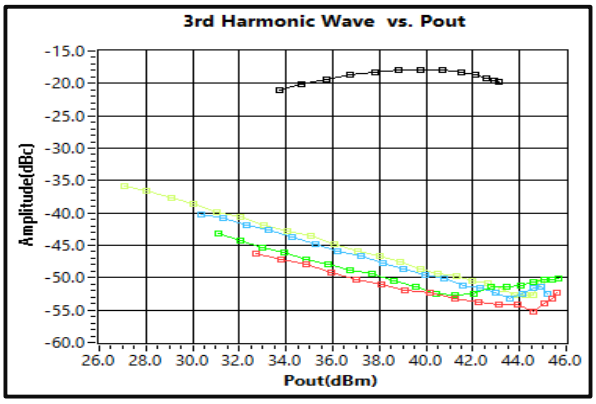

## P7dB vs. Frequency



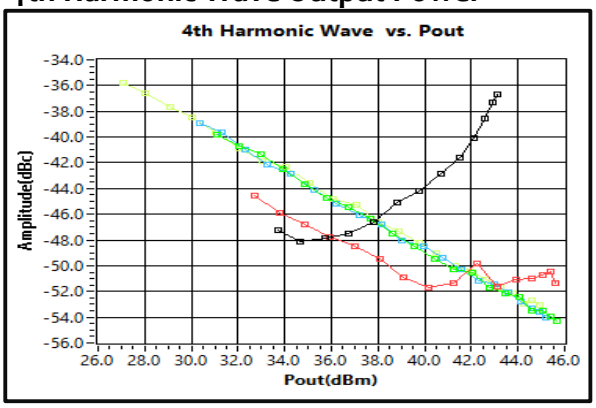

## 2nd Harmonic Wave Output Power




## 3rd Harmonic Wave Output Power



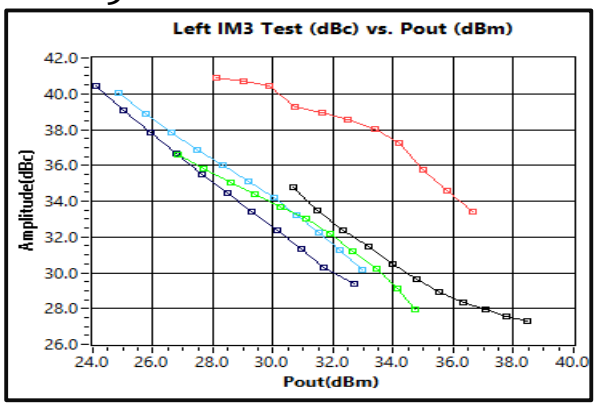

## 4th Harmonic Wave Output Power



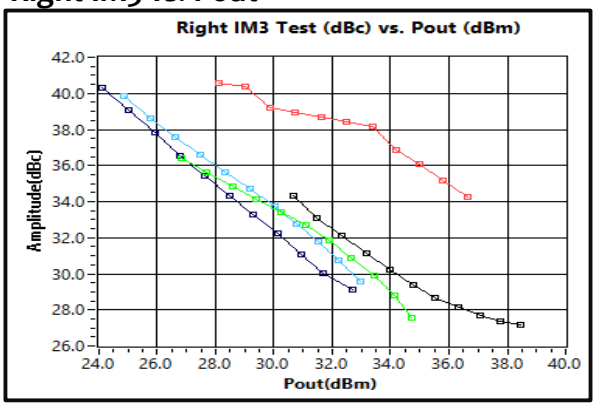


30W Solid State High Power Amplifier 2-6 GHz

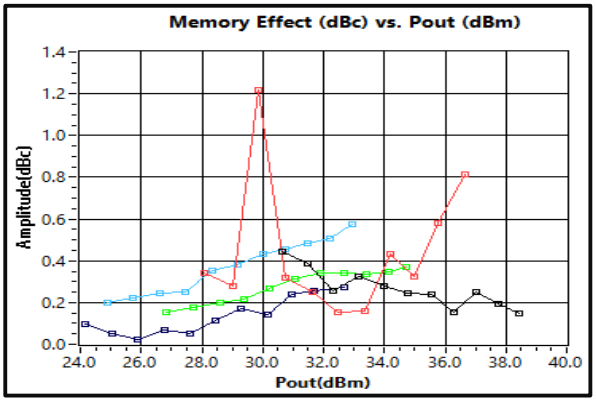
## Left IM3 vs. Pout

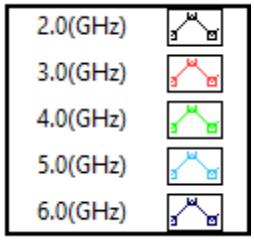



## Right IM3 vs. Pout




## Memory Effect vs. Pout

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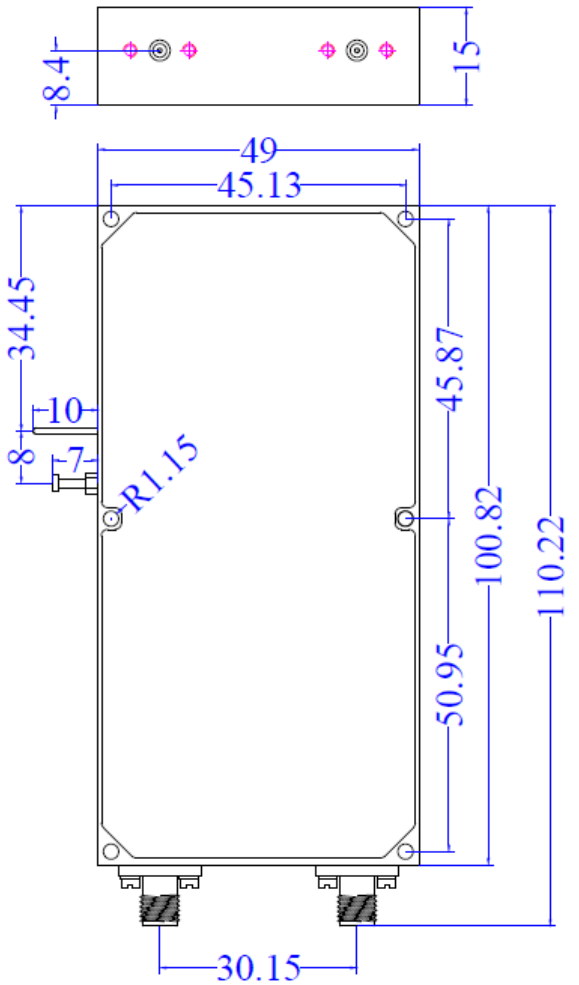
## Outline Drawing (NP Version):

All Dimensions in mm



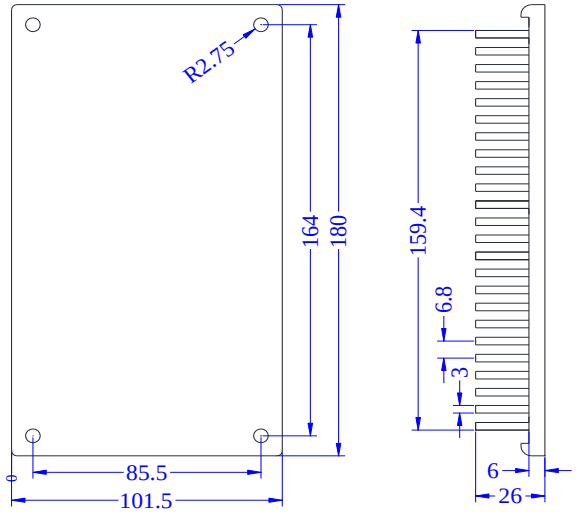


***Heat Sink and cooling fan required during operation***

30W Solid State High Power Amplifier 2-6 GHz

## Outline Drawing Heatsink (NP Version):

All Dimensions in mm

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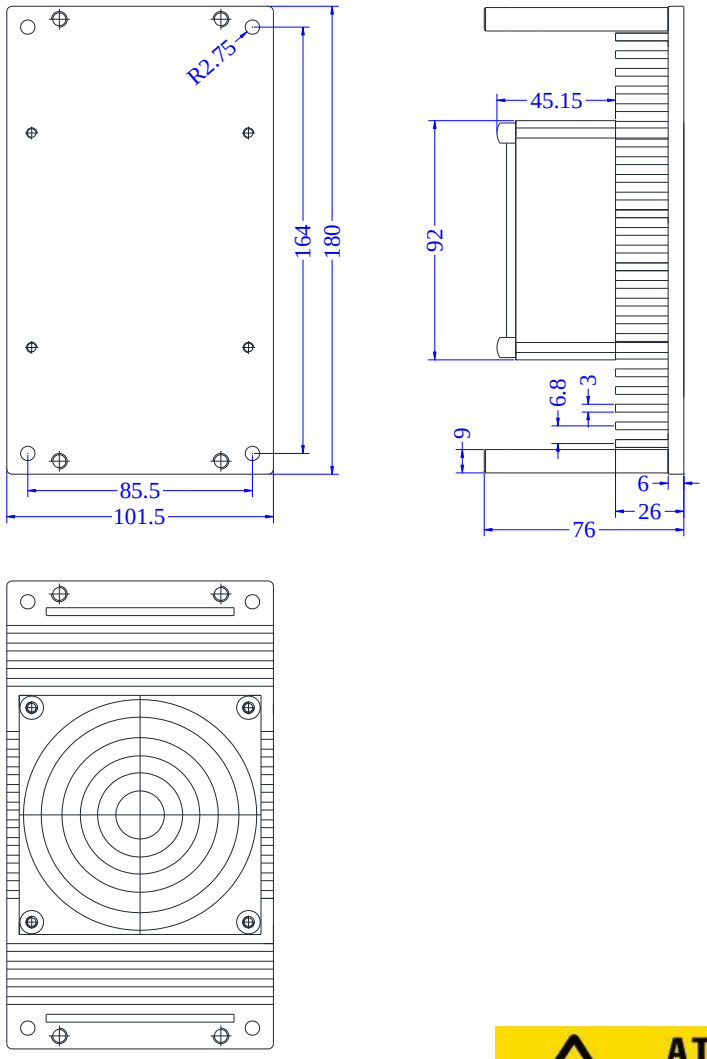
## Outline Drawing Heatsink Including Air Cooling (NP Version):

All Dimensions in mm

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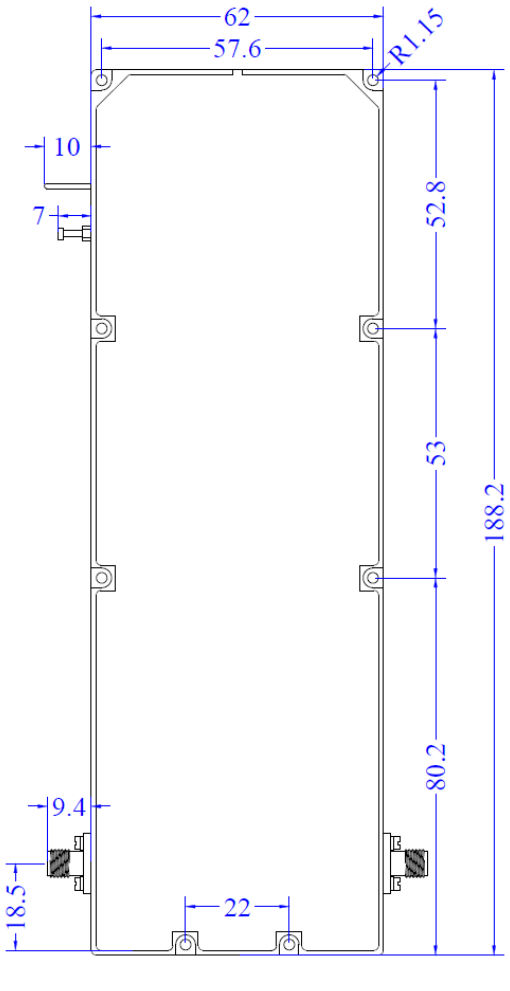
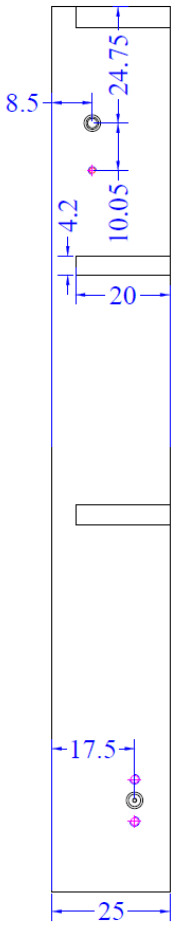
## Outline Drawing (WP Version):

All Dimensions in mm

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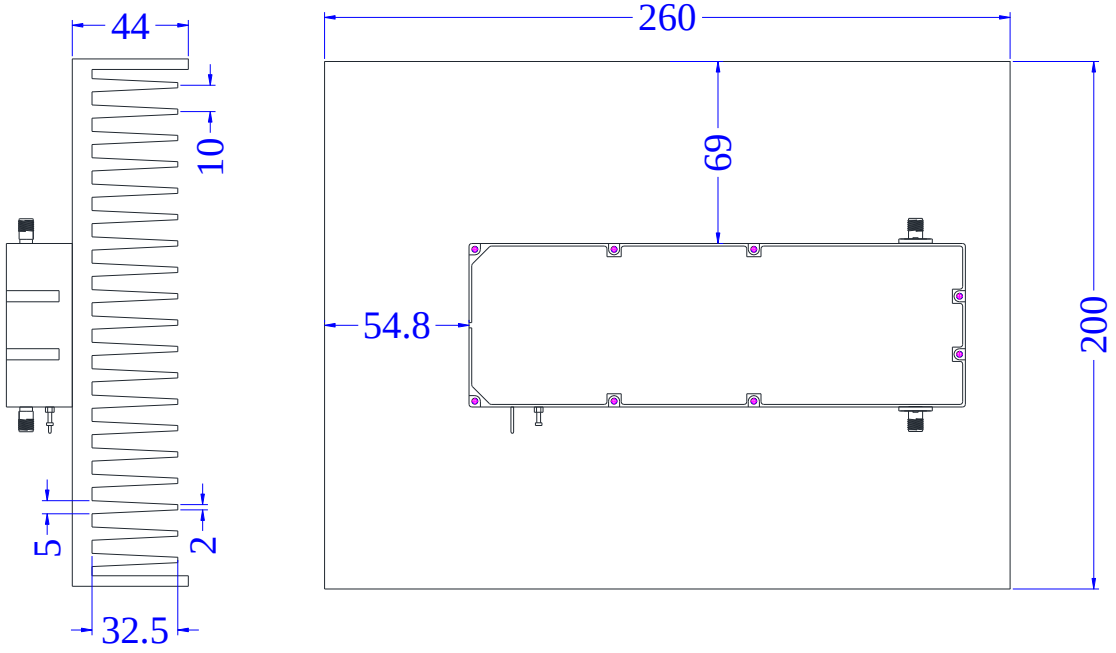
## Outline Drawing Heatsink (WP Version):

All Dimensions in mm

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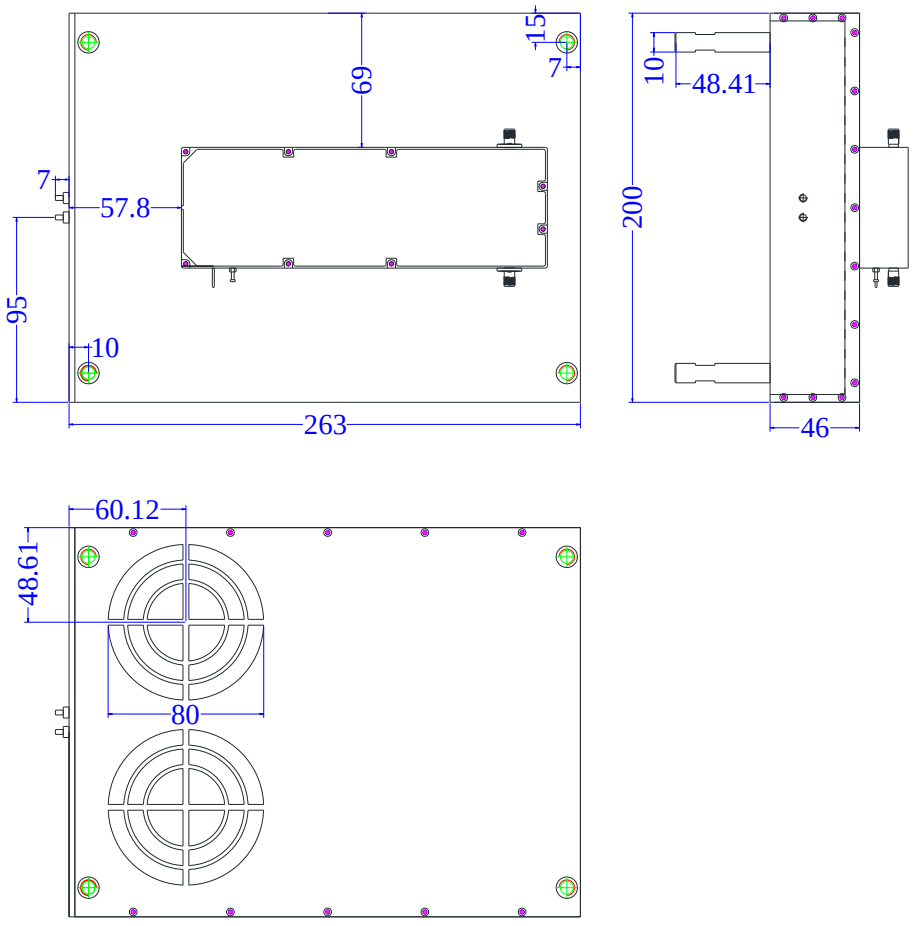
## Outline Drawing Heatsink Including Air Cooling (WP Version):

All Dimensions in mm

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## Important Notice