100W Solid State Power Amplifier 2-6GHz

RoHS Compliant

- Communications
- Electronic Warfare
- Test Instrumentation
- Psat: + 50 dBm
- Gain: 47 dB
- Supply Voltage: +36V
- 50 Ohm Matched Input/Output

Electrical Specifications , TA = +25° C Vd = +36V

Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range	2GHz – 4GHz			4GHz – 6GHz			GHz
Gain	42	47		40	45		dB
Gain Flatness		±5			±4		dB
Gain Variation Over Temperature(-45 ~ +85)		±3			±3		dB
Input Return Loss		>7			>7		dB
Output Return Loss		10			10		dB
Saturated Output Power (Psat)	48	50		48	50		dBm
IM3		-30			-30		dBc
Supply Current (Idd) (Vcc=+36V)	Quiescent = 1.8 Max = 10						A
Isolation S12		-65			-65		dB
Input Max Power(no damage)	Psat – Gain						dBm
Weight	3000						g
Impedance	50						Ohms
Power Connector	D-SUB COMBO 3POS						
Input /Output Connector	Input SMA-Female---Output N-Type Female						
Finishing	Standard: Nickel 220 micron thickness						
Material	Aluminum/copper						
Package Sealing	Epoxy and Screw tight Sealing (Standard)						

* P1dB, P3dB and Psat power testing 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	+40Vdc
RF Input Power (RFIN) Pin_max = Psat - Gainsat	Psat – Gain
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 Ground Pin
Step 2	Connect input and output with 50 Ohm source/load. (in band VSWR<1.9:1 or >10dB return loss)
Step 3	Connect +36V biasing
Power OFF Procedure	
Step 1	Turn off +36V biasing
Step 2	Remove RF connection
Step 3	Remove Ground.

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

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	ECCN	Description
RFLUPA02G06GC	3A001.b.4.b.4	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 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.

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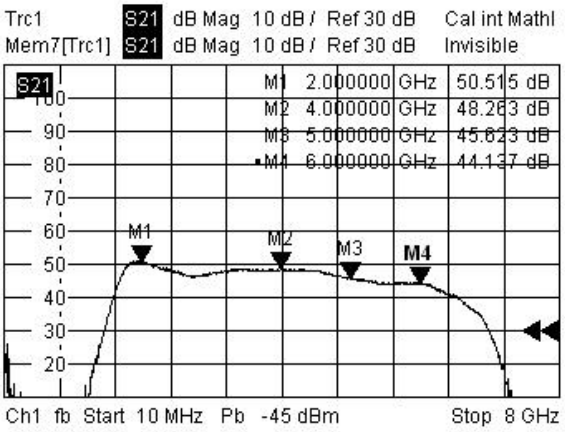
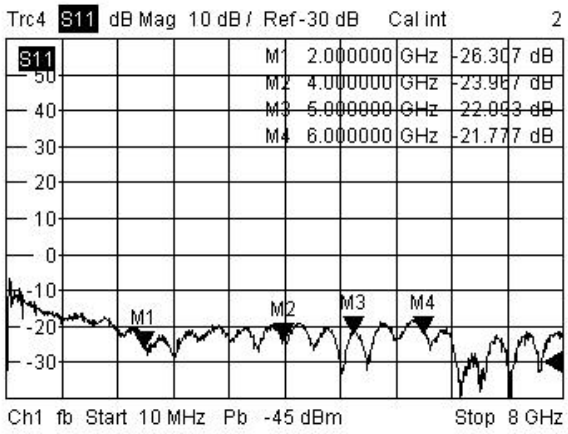
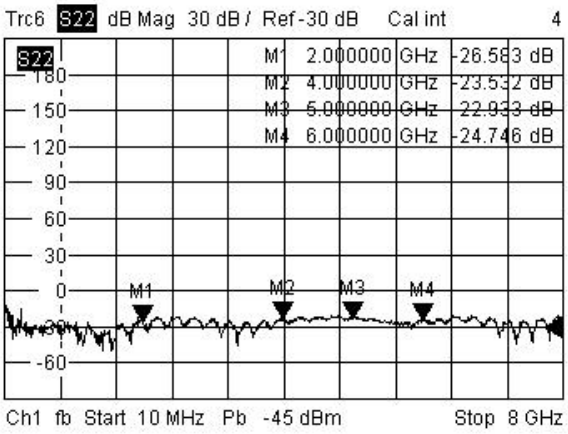
Gain



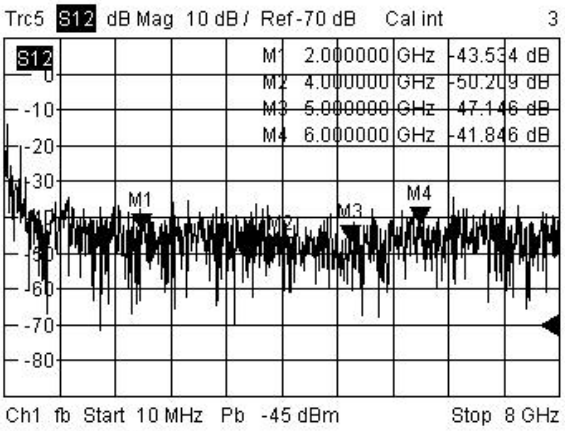
Input Return Loss



Output Return Loss

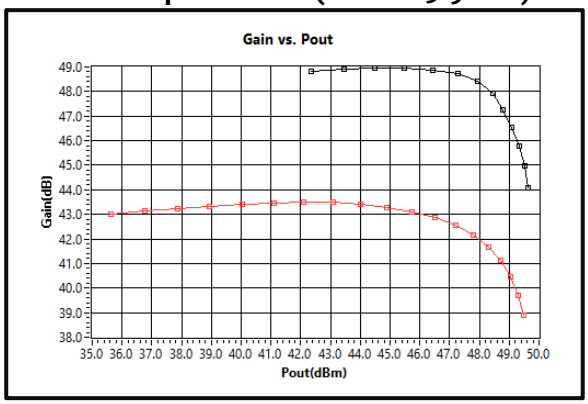


Isolation

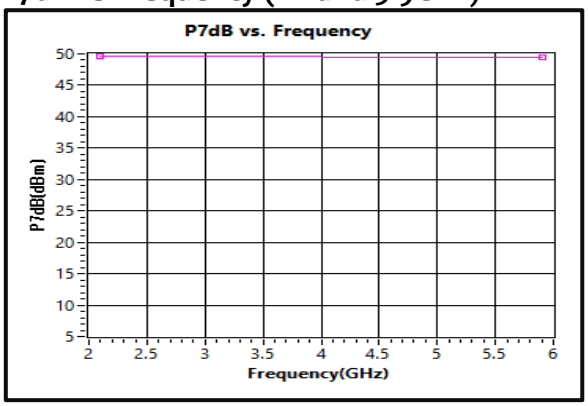


Note: Input/output return loss measurements include attenuators to protect equipment

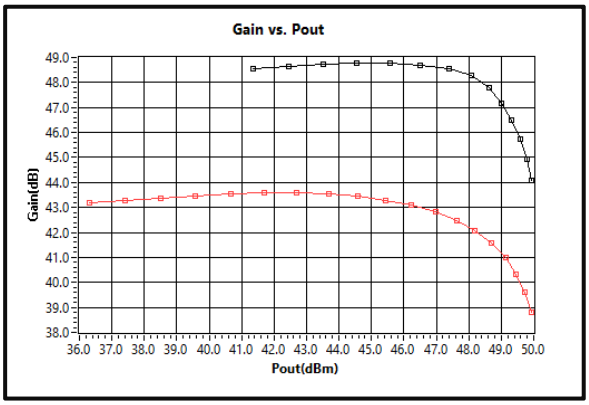
Gain vs Output Power (2.1 and 5.9GHz)



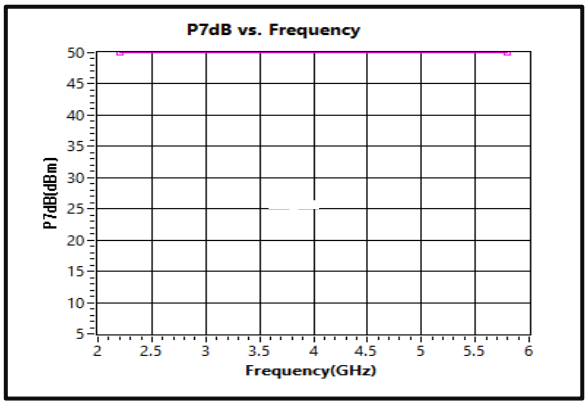
P7dB vs Frequency (2.1 and 5.9GHz)



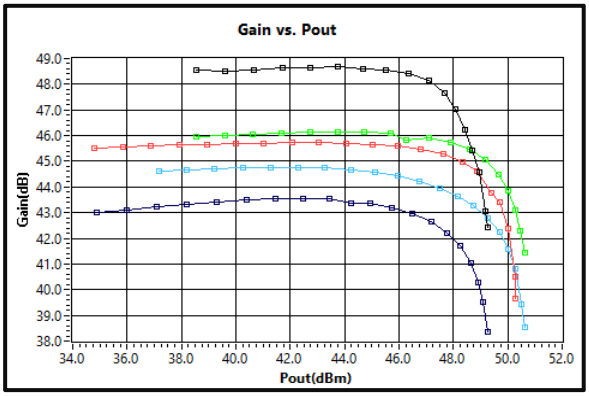
Gain vs Output Power (2.2 and 5.8GHz)



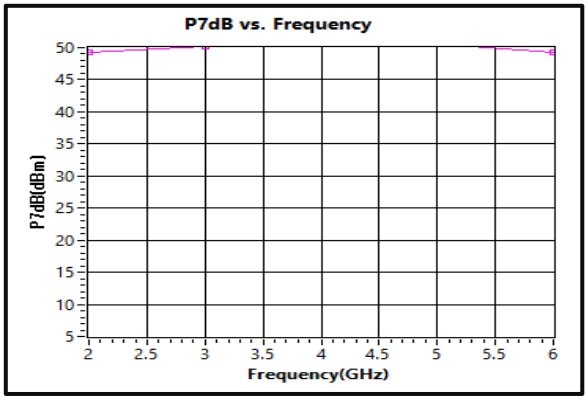
P7dB vs Frequency (2.2 and 5.8 GHz)



Gain vs Output Power (2GHz to 6GHz)



P7dB vs Frequency (2GHz to 6GHz)



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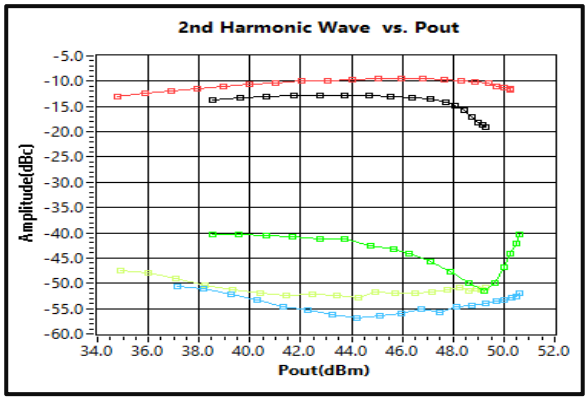
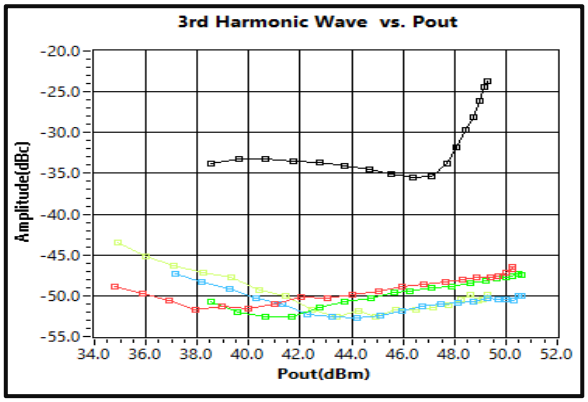
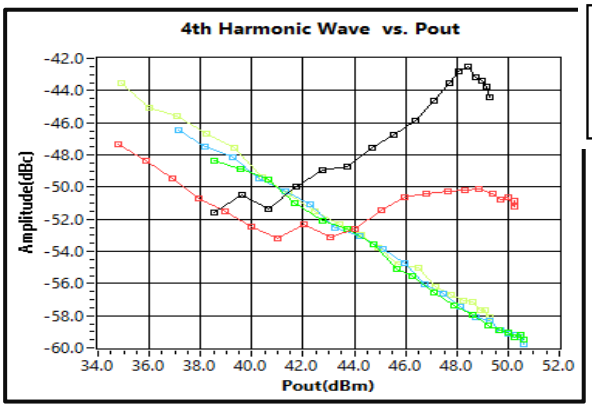
2nd Harmonic Wave vs Pout

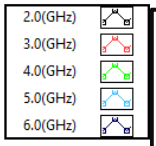


3rd Harmonic Wave vs Pout

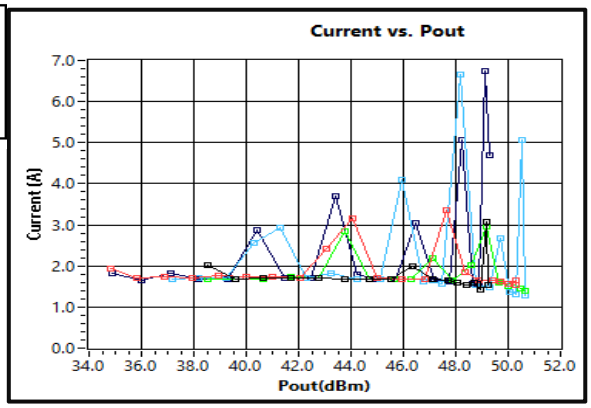


4th Harmonic Wave vs Pout





Current vs Pout



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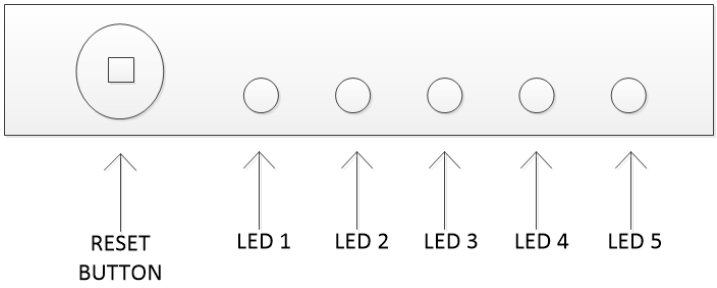
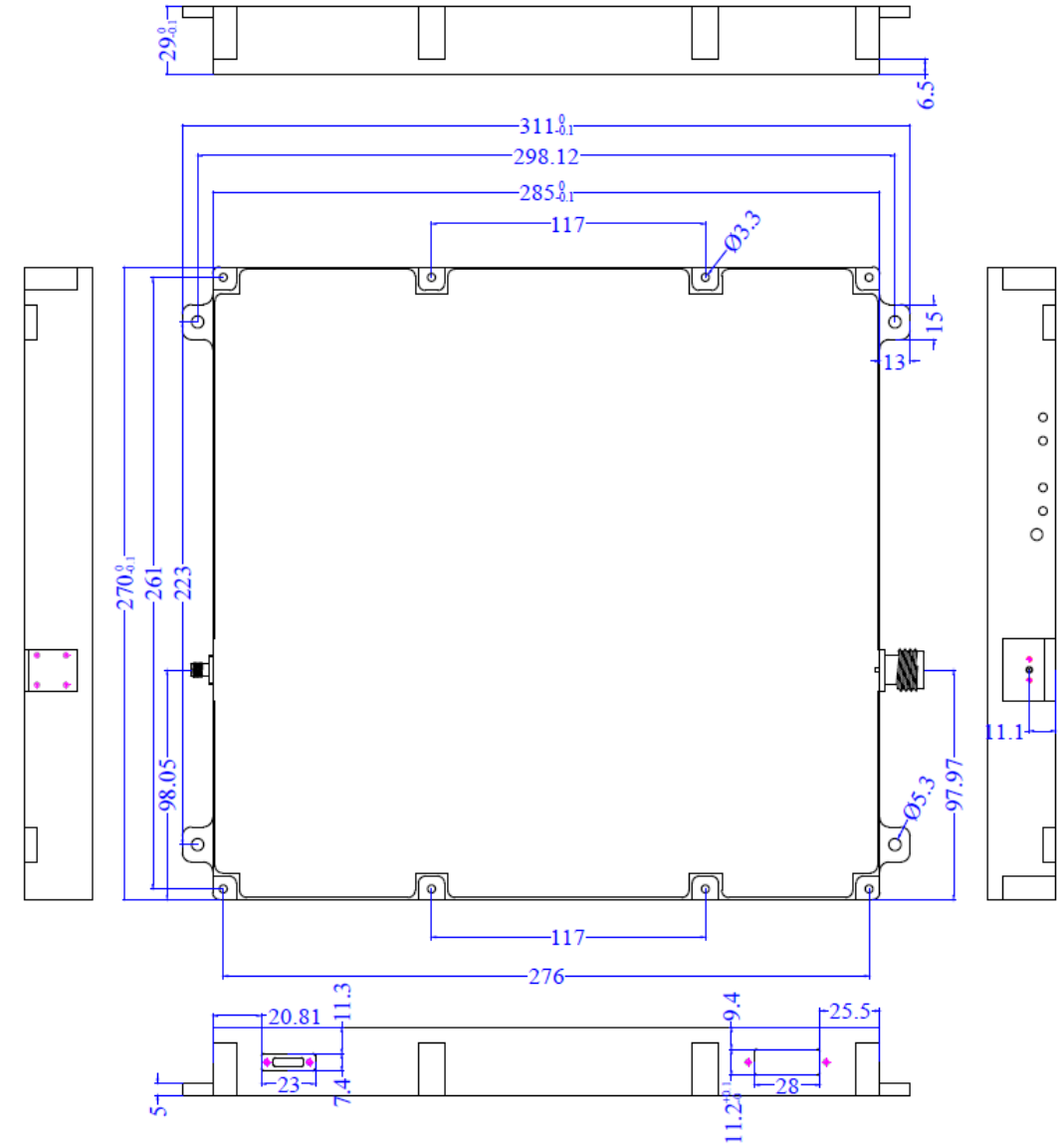
Alarm Status Panel:

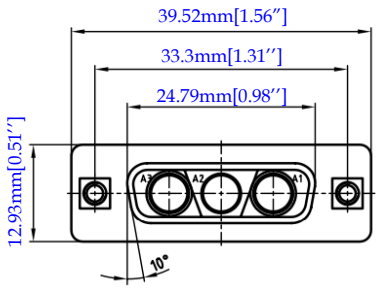


	Name	Function	Initial State	Description	Applied
	RESET	Control		Manual reset button to reset PA	Yes
LED 1	POWER	Indicator	RED Color	LED will light to RED color when supply power is applied	Yes
LED 2	RF IN	Indicator	GREEN Color	PA will shut down and latch this LED to a RED color when input signal is over limit *	Yes
LED 3	VSWR	Indicator	GREEN Color	PA will shut down and latch this LED to a RED color when output reflection is over limit *	No
LED 4	ID	Indicator	GREEN Color	PA will shut down and latch this LED to a RED color when an imbalance in the drain current of the combining branches occurs or if a drain current limit is reached *	Yes
LED 5	TEMP	Indicator	GREEN Color	PA will shut down and latch this LED to a RED color when driven over temperature *	Yes

*LED needs to be manually reset to initial state by pressing RESET button



Power Supply Connector Drawing:



Heat Sink and cooling fan required during operation

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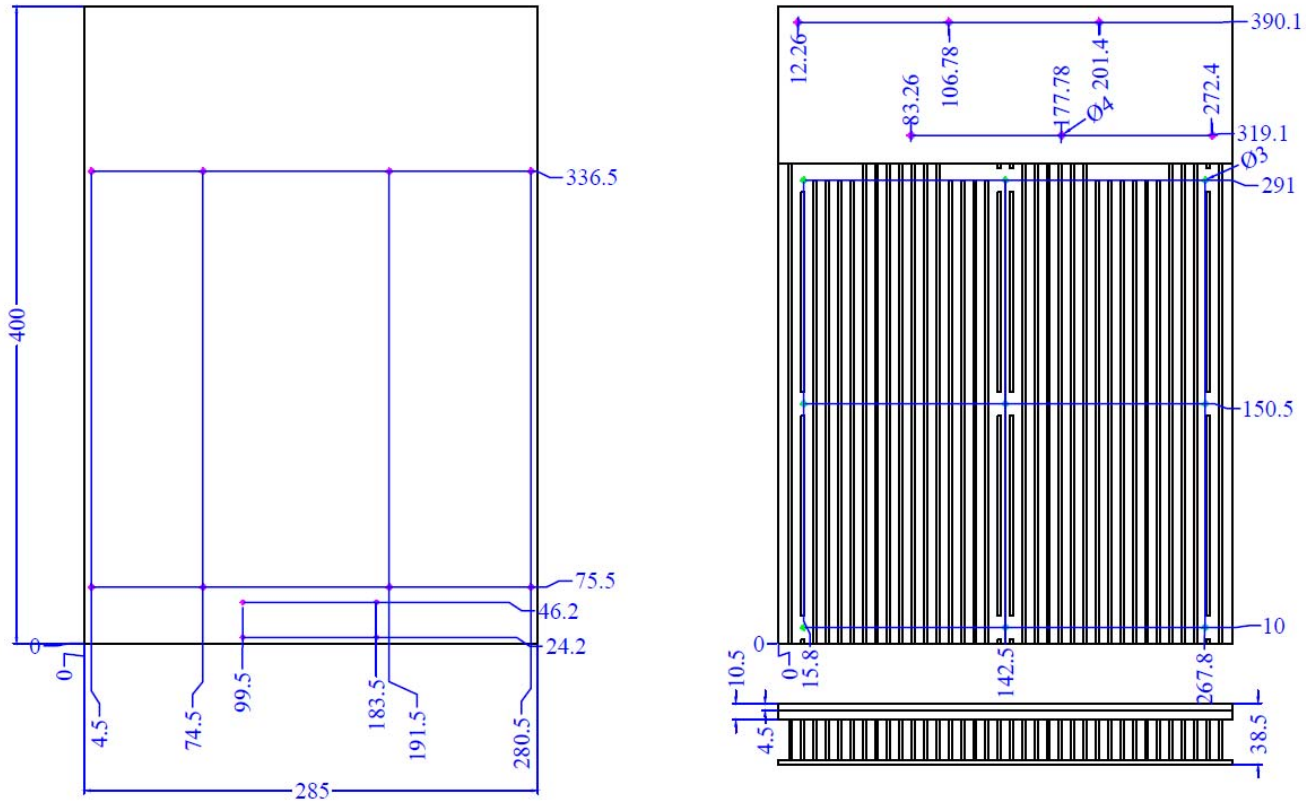

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