ILA1048

2110MHz~2170MHz 60W LTE / 5G NR Power Amplifier

INSPOWER
RF Amplifiers

Description

The Model ILA1048 is 60W linear power amplifier that is specifically designed for LTE / 5G NR systems, operating between 2110 to 2170MHz. This amplifier uses class AB LDMOS Power devices and Doherty Design to provide high efficiency and linearity characteristics. Though it is designed to work with external digital pre-distortion linearization circuits, it can also be used with RF pre-distortion linearization circuits, or even standalone. Inspower's advanced design technology ensures that the amplifier's linearity characteristics remain stable over a wide range of temperatures.

Product Features

- 60W Average Output per channel, two channels in a single unit
- High Efficiency Doherty Design
- Feed-Back port for external linearization circuit
- Overpower Alarm, High Temperature Alarm & Shutdown
- LTE Band 1 / 5G NR Band n1 Downlink

Electrical Specifications @ +28.0VDC, 25°C, 50 Ω System, PAR 8.5dB@CCDF0.01%

Symbol	Parameter		Unit	Min.	Typ.	Max.
BW	Operating Frequency		MHz	2110		2170
P_{3dB}	3dB Compression Output Power		Watt	550	600	
P_{AVG}	Output Power LTE / 5G NR		Watt	60		
G	Gain @ Pin=0dBm		dB	47	48	49
G_{Δ}	Gain Variation @ Operating Temperature Range		dB			±1.5
ACLR	LTE 20MHz 1Carrier@ 47.8dBm PAR 8.5dB @ 0.01%	±20MHz	dBc	30		
		±40MHz	dBc	40		
ΔG_P	Small Signal Gain Flatness		dB			±0.75
F/B	Feed-Back Port output power @ P_{out}=60W		dBm	-11	-10	-9
S_{11}/S_{22}	Input/Output Return Loss		dB			-14
H	Harmonics @ P_{out}=60W		dBc			-45
Spur	Spurious Signal		dBc		-70	-60
V_{DC}	Operation Voltage		Volt	26	28	32
I_{DD}	Current Consumption @ P_{out}=60W, LTE 20MHz 1 Carrier		Amp		8	10 @ 1Path
I_{DQ}	Quiescent Current @ Both Path		Amp		4.5	5
I_{SD}	Current Consumption @ Shutdown, Both Path		mA			200

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Mechanical Specification

Parameters	Value	Limit	Unit
Dimension (W × D × H)	230 x 220 x 28	-	mm
RF Connector Input/output	SMA Female / N-Type Female	-	-
Interface Connector	9Pin D-Sub Male	-	-
DC Connector	D-Sub 3W3 Male		
Weight	2.8	Max	Kg
Cooling	External Heat-sink	-	-

Environmental Characteristics

Parameters	Specifications	Remark
Operating Case Temperature Range	-30°C to +80°C	
Storage Temperature	-40°C to +85°C	
Relative Humidity non-condensing	95%	

Protection

Item	Specifications for Activation	Remark
Input Overdrive	+7dBm Max	
Thermal Shutdown	90°C ± 5°C Shutdown	70°C ± 5°C Auto Recovery

DC Connector (D-Sub 3W3 Male)

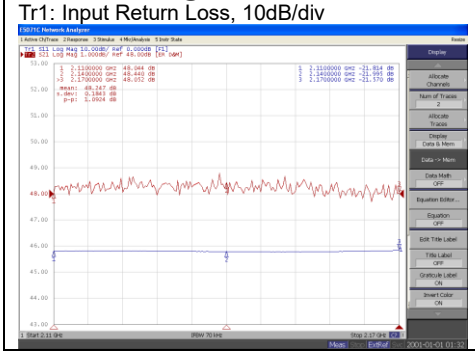
Pin No	Description	Specifications
A1	VDD	+28V_{DC}
A2	GND	Ground
A3	N/C	N/C

I/O Interface (D-Sub 9Pin Male)

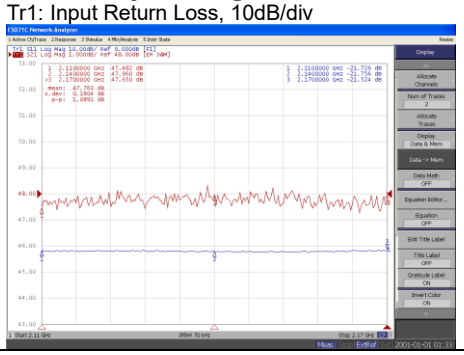
Pin No	Pin Description	Specifications	Remark
1	FWD PWR Monitor	4.0V @ 48dBm, 100mV/dB	
2	REV PWR Monitor	4.0V @ 48dBm, 100mV/dB	
3	Overpower Alarm	Normal: Low(0V) Alarm: High(+5V)	> 52dBm ± 1dB
4	High Temperature Alarm	Normal: Low(0V) Alarm: High(+5V)	90°C ± 5°C Shutdown 70°C ± 5°C Auto Recovery
5	Temperature Monitor	0.75V @ 25°C, 10mV/°C	
6	PA On/Off	On: Low(0V) or Open Off: High (+5V or +3.3V)	
7	NC	Not Connected	
8	GND	Ground	
9	GND	Ground	

Typical Characteristics

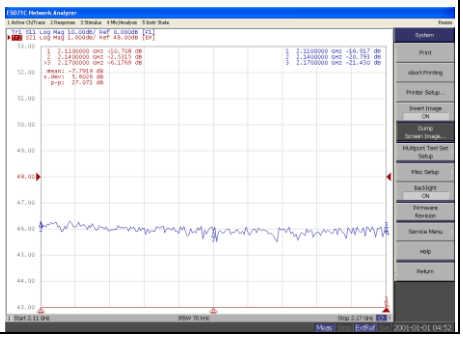
Plot 1
Tr2: Power Gain @ Pin= 0dBm
Tr1: Input Return Loss, 10dB/div



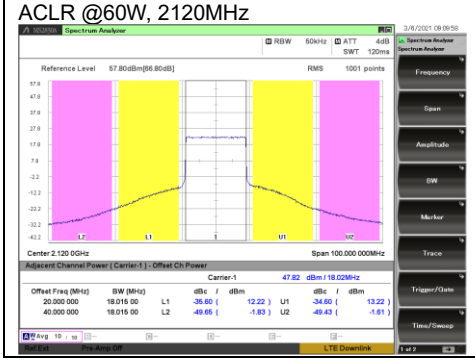
Plot 2
Tr2: Small Signal Gain @ Pin= -20dBm
Tr1: Input Return Loss, 10dB/div



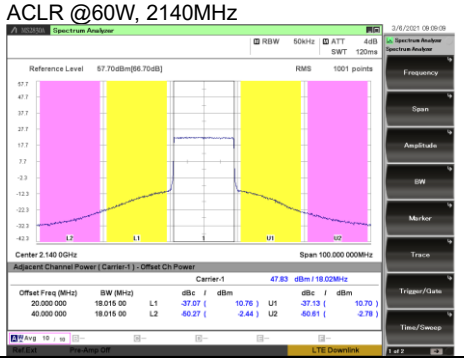
Plot 3
Tr1: Output Return Loss, 10dB/div



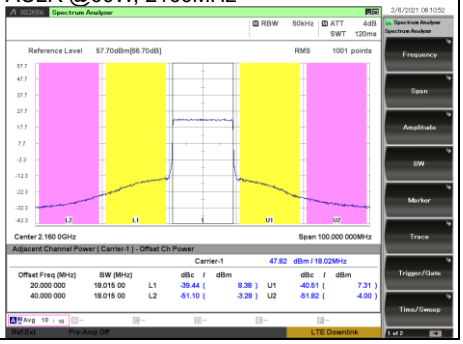
Plot 4
LTE 20MHz
ACLR @60W, 2120MHz

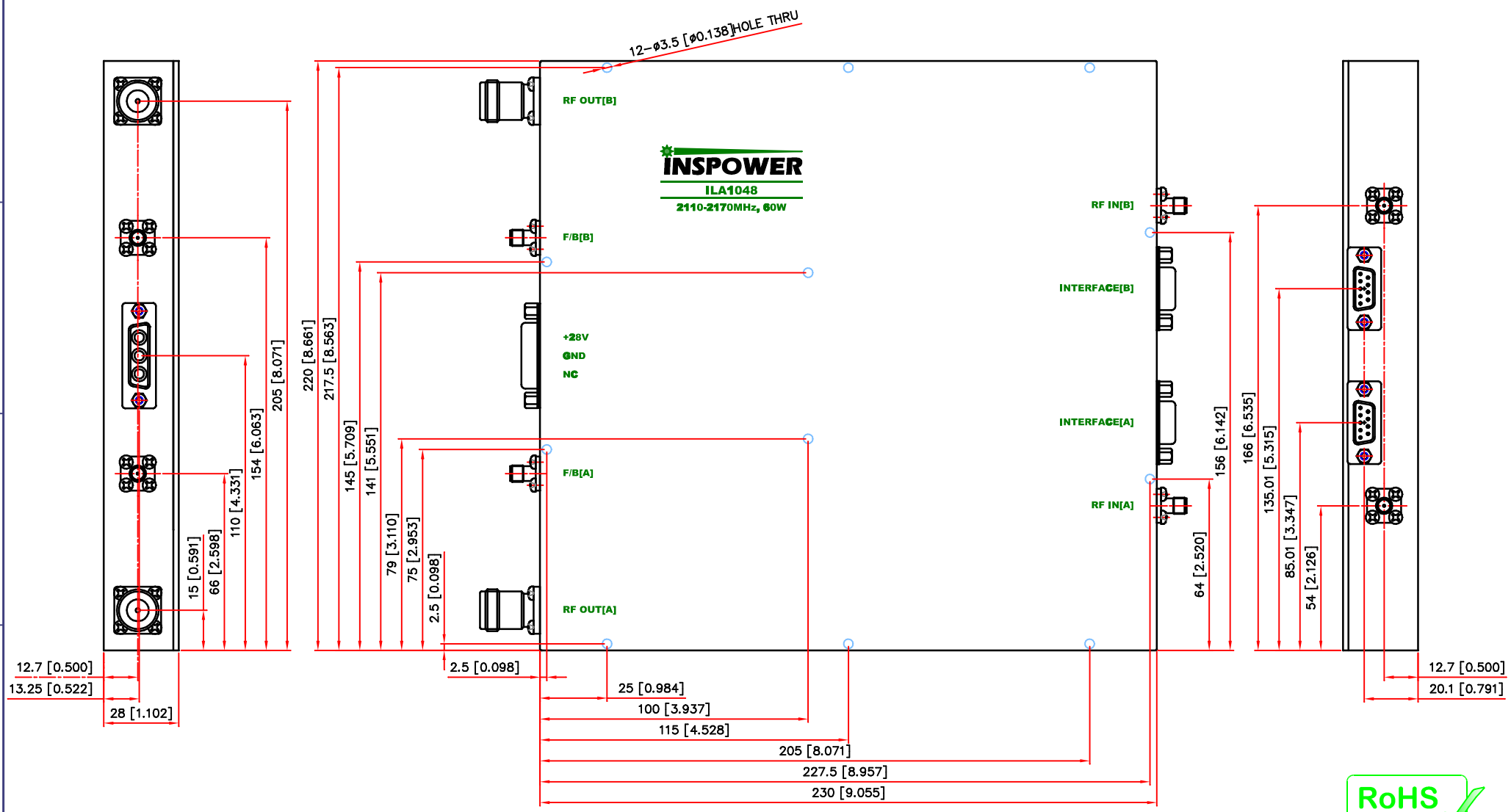


Plot 5
LTE 20MHz
ACLR @60W, 2140MHz



Plot 6
LTe 20MHz
ACLR @60W, 2160MHz





RoHS Compliant

APPROVED	MATERIAL	PART NAME	OUTSIDE DRAWING C1
	FINISH	DWG NO.	SHEET 1 OF 1
CHECKED	THIRD ANGLE PROJECTION	SIZE A3	UNIT: mm[INCH] / SCALE: CAD=1/1 PLOT=N/S / Q'TY:
DESIGNED S.K.KIM 2024.04.11	MODEL/TITLE ILA1048 2110~2170MHz, 60W		INSPOWER RF Amplifiers