Preliminary

GaN Power Amp Pallet RTP08050-20B

RFHIC

RoHS Comply

Product Features

- Broadband amplifier design
- Small and light weight
- 50 Ohm Input / Output impedance matched
- Highly reliable and rugged design
- High efficiency, High Gain

Application

- LTE Application



Description

The RTP08050-20B is designed for RF system application frequencies from 837.5MHz to 957MHz, with high gain.
This Pallet Amplifier uses GaN on Sic HEMT technology which performs high breakdown voltage, high linearity, and high efficiency. The RTP08050-20B is a LTE DPD application amplifier.

Electrical Specifications @ VDD= 45V, 50Ω System

PARAMETER	Symbol	Specification		
Frequency Range	BW	837.5~957MHz		
Operating Bandwidth within BW	OBW	119.5MHz		
Average Output Power	Pout	47.2dBm(52.5W) Avg. @ LTE 1FA 10MHz		
Peak Output Power	Psat	54 dBm (Min. Duty Cycle 10% Pulse)		
ACLR (LTE 1FA 10MHZ) @ Po=47.2dBm	ACLR	Pre-DPD	-27dBc(Min) @±10MHz	@-30 ~ +60°C @45V @CFR 6.5dB
		Post-DPD	-50dBc(Min) @±10MHz	
RF Gain @ 25℃	G	55dB (Min.)		
Gain Flatness	ΔG	3.0 dB(Peak to peak) @ Operating Frequency		
Input Return Loss	S11	-12dB (Max.)		
Output Return Loss	S22	-17dB (Max.)		
Normal Operating Voltage	VDC	V1= +5.6V, V2= +45V		
Current Consumption @ Po=47.2dBm	IDD	0.3A @ 5.6V (Max.) 3.1A / 45V (Typ.)		
Efficiency	Eff	38% @ 45V (Typ.)		
Feedback Output level @ 47.2dBm	FB	+8dBm ± 2dB		
Temp Detector	T	0.9V @ 40℃		

Environmental Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Operating Ambient Temperature	Ta	-30		+65	°C
Storage Temperature	Tstg	-40		+130	°C
Relative humidity w/o condensation	RH			80	%

Maximum Rating

Input Overdrive	P_{OD}	-2dBm	Max.
Load VSWR	Ψ	∞ : 1 (All Phase & Amplitude)	Nom.
Operating Case Temperature	Tc	+100	°C

Interface Connector

8-Pin-Control (MOLEX_5267_08)

Pin #	Description	Specifications
1	Vcc	+5.6V
2, 3, 4	Vcc	+45V
5, 6, 7, 8	GND	GROUND

4Pin-Control (SMW200-04P, Yeonho)

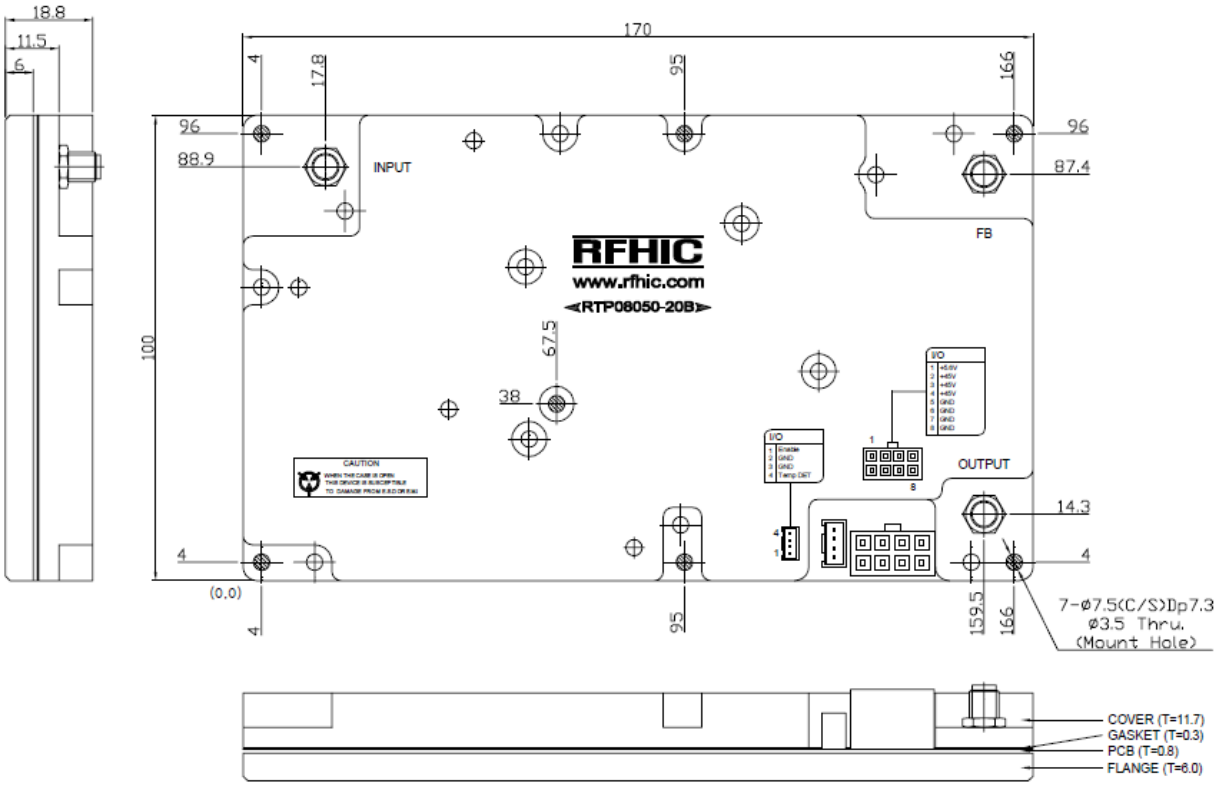
Pin #	Description	Specifications
1	Enable / Disable	Amp Enable(+5.6V) / Amp Disable(+0V)
2, 3	GND	GROUND
4	Temp DET	Temp Sensor (0.9V @ 40℃)

Mechanical Specifications

Parameter	Value	Units	Limits
Dimensions	170 x 100 x 18.8	mm	
Weight	0.60(max)	Kg	
RF Input Connector	SMA(Female)		
RF Output Coupling Connector	SMA(Female)		
RF Output Connector	SMA(Female)		
I/O Connector	SMW200 4pin(Male)		
	Molex 8pin(Male)		
Cooling	External Heat-sink		

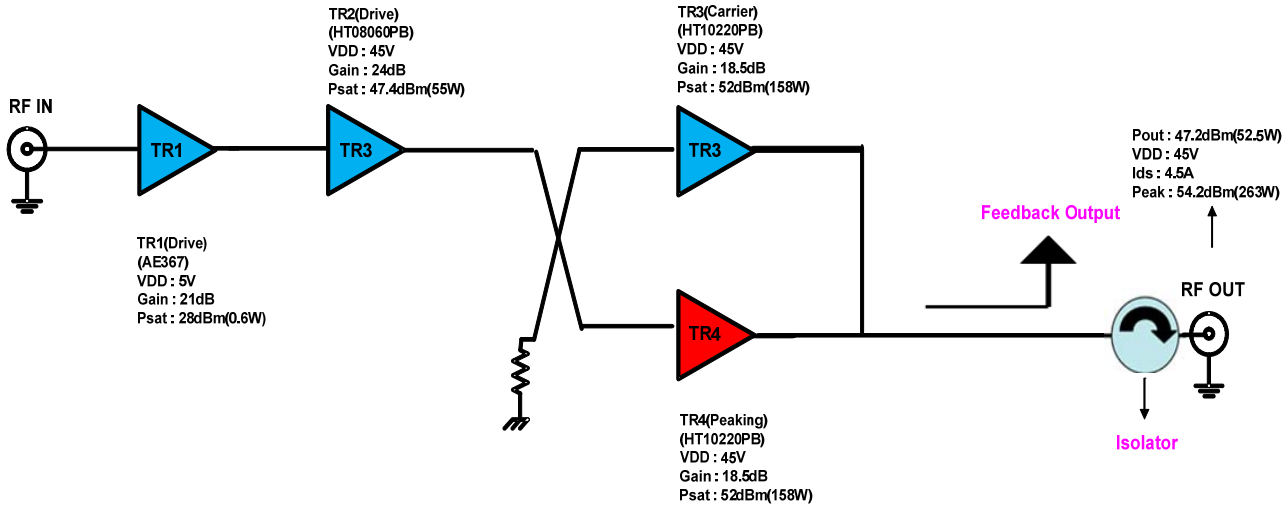
Outline Drawing

*Note:
Connector positions and module mount holes may be subjected change.



Unit : mm

RTP08050-20B Budget



Test Data (Test Results: DPD Operation)

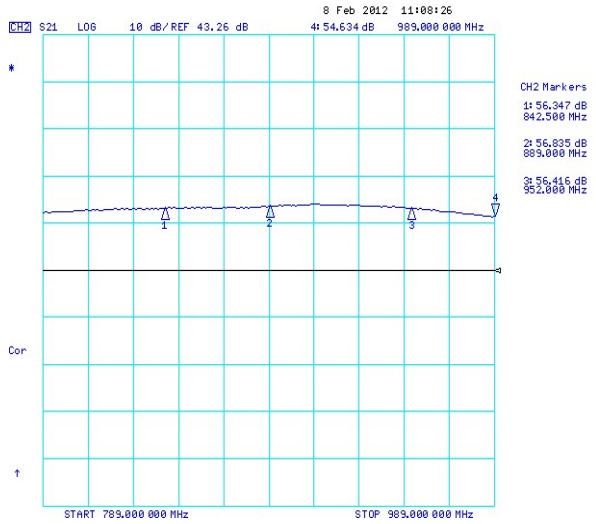
Test Equipments

- DPD Engine(Optichron board(OP6180)
- Signal Generator : E4438C (Agilent)
- Spectrum Analyzer : E4440A (Agilent)
- Network Analyzer : 8753ES (Agilent)
- Power Supply : 6674A (Agilent)
- RTP08050-20B

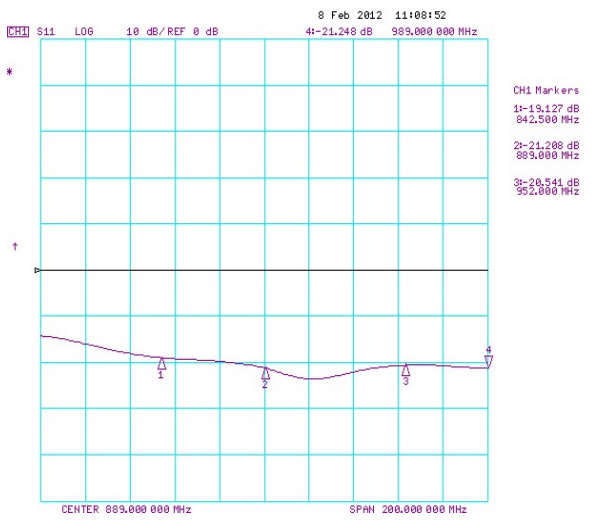
Test Condition

- Signal : LTE 1FA 10MHz(PAPR 6.5dB)
- CFR apply
- AMP Temperature: 40°C

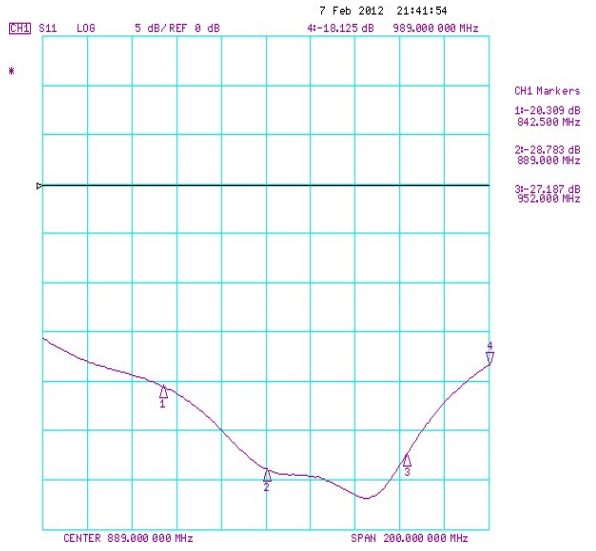
• **Gain & GAIN FLATNESS**



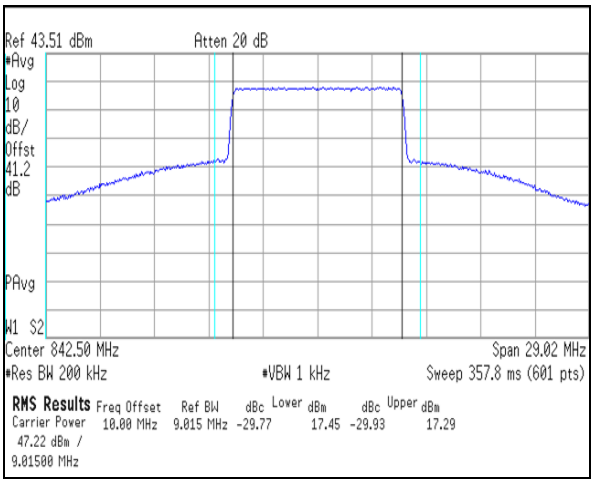
• **S11**



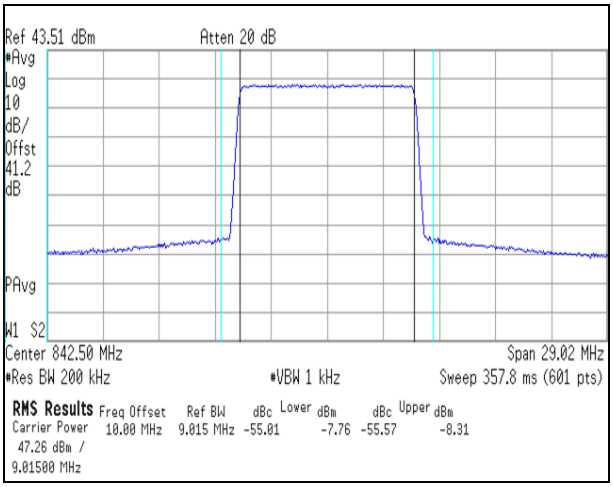
• **S22**



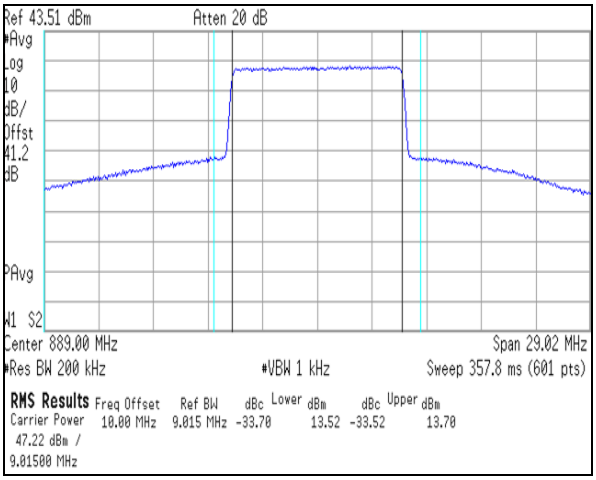
• **Pre – DPD @ 842.5MHz, LTE 1FA 10MHz**



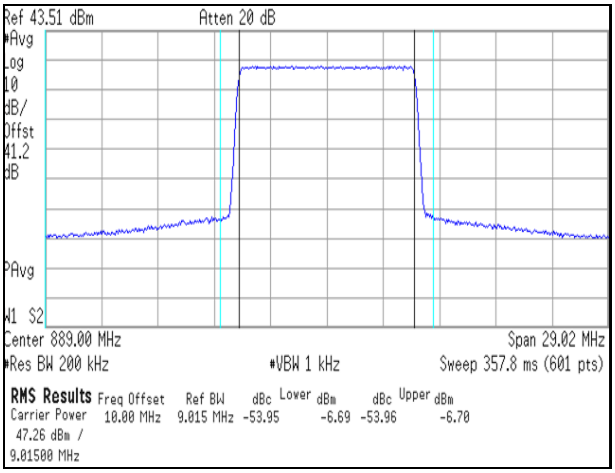
• **Post- DPD @ 842.5MHz, LTE 1FA 10MHz**



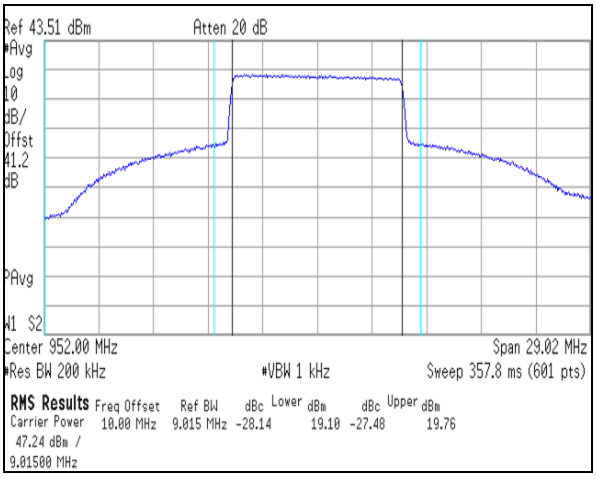
• **Pre – DPD @ 889MHz, LTE 1FA 10MHz**



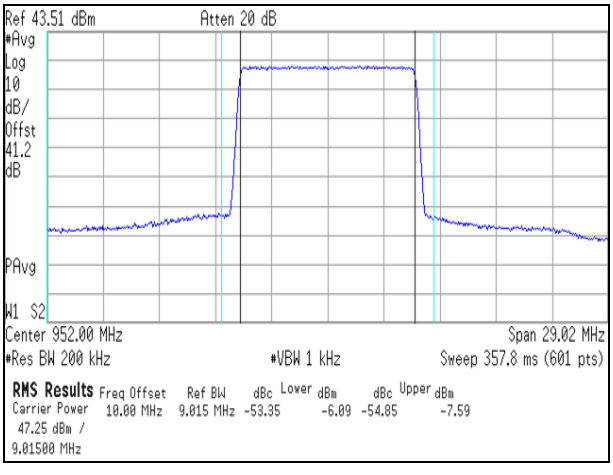
• **Post- DPD @889MHz, LTE 1FA 10MHz**



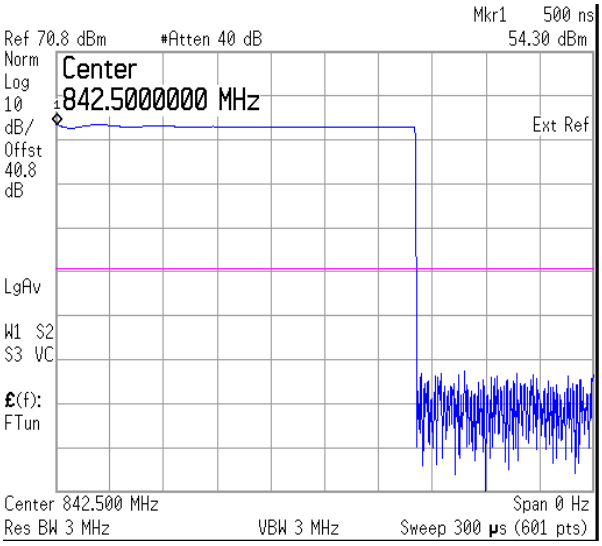
• **Pre – DPD @952MHz, LTE 1FA 10MHz**



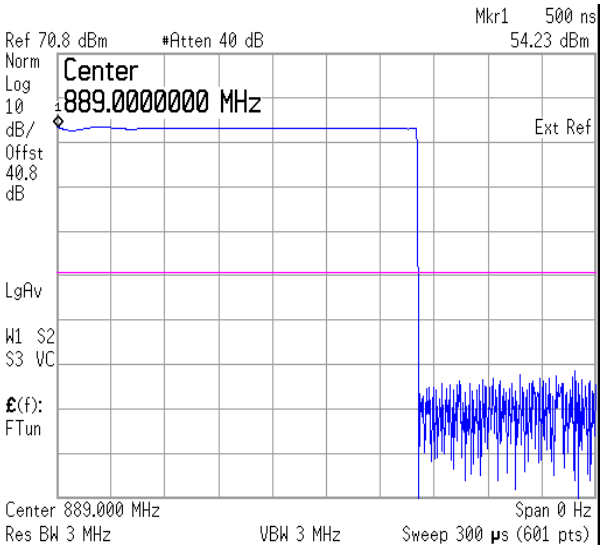
• **Post- DPD @952MHz, LTE 1FA 10MHz**



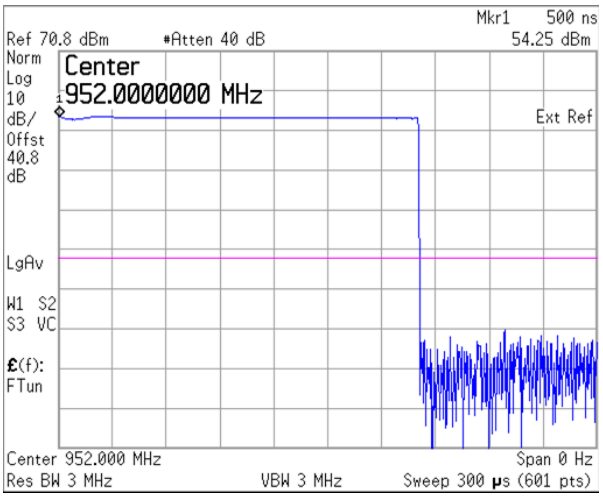
• **Psat=54.3dBm@842.5MHz**



• **Psat=54.23dBm@889MHz**



• **Psat=54.25dBm@952MHz**



Test Sheet(S/N:RTP08-12020001)

Parameter	SPEC	0001		
Frequency	837.5 ~957MHz	842.5MHz	889MHz	952MHz
Input Power		-8.3	-9.5	-8.5
Output Power(Avg.)	47.2dBm(52.5W)@10MHz	47.2		
Output Power(Peak.)	54dBm(min.) Duty 10% by pulse	54.3	54.23	54.25
ACLR(Lower/Upper)	-27dBc @ 10MHz offset	-29.7	-33.7	-28.1
		-29.9	-33.5	-27.5
ACLR(Lower/Upper)_DPD	-50dBc @ 10MHz offset	-55.0	-53.9	-53.3
		-55.5	-53.9	-54.8
Coupling Port Output	8dBm±2.0dB	7.2		
Temp Detector(mV)	0.9V @ 40℃	0.95		
Current Consumption	Vcc(+45V) : 3.1A(Max.)	3.01		
		2.8	3.02	2.8
PAE(%)	>38%	41.6	38.6	41.6
Frequency(N/A)	837.5MHz ~957MHz	842.5MHz	889MHz	952MHz
Gain Flatness	3.0dB(Peak to Peak)	55.5	56.7	55.7
		0.5		
Input Return Loss	-12dB(Max.)	-19.1	-21.2	-20.5
Output Return Loss	-17dB(Max.)	-20.3	-28.7	-27.1

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