Preliminary

GaN Power Amp Pallet RTP09080-20

Product Features

- Doherty amplifier design
- Small and light weight
- 50 Ohm Input/Output impedance matched
- Highly reliable and rugged design
- High efficiency, High Gain
- 80W typical P_{AVG}

Application

- LTE RRH



Description

This HPA Module is a high gain and Amplifier module for LTE Repeater use.

Electrical Specification @ VDD= 45V, 50Ω System

Parameter	Symbol	Specification @ 25℃		
Frequency Range	BW	925 ~ 960MHz		
Operating Bandwidth within BW	OBW	5 ~ 35MHz		
Average Output Power	Pout	49dBm(80W) Avg. @ LTE 1FA 10MHz		
Peak Output Power	Psat	56dBm (Min.) @ Duty 10% Pulse		
ACLR (LTE 1FA 10MHZ) @ Po=+49dBm (max.)	ACLR	Non-DPD	-27dBc(Min) @±10MHz	@-30 ~ +65°C @45V @CFR 6.5dB
		With-DPD	-53dBc(Min) @±10MHz	
RF Gain @ 25℃	G	57dB (Min.)		
Gain Flatness	ΔG	2.0 dB(Peak to peak) @ Operating Frequency		
Gain Variation with Temperature	G	±3dB		
Input Return Loss	S11	-12dB (Max.)		
Output Return Loss	S22	-17dB (Max.)		
Operating Voltage	VDC	+5.6V, +45V		
Current Consumption	IDD	0.3A @ 5.6V (Max.) 4.1A / 45V (Typ.)		
Efficiency	Eff	43% @ 45V (Typ.)		
Feedback Output level @ 49dBm	FB	8dBm ± 1.5dBm		
Temp Detector	T	0.9V @ 40℃		

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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 Ratings

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	Vcc	+45V
3	Vcc	+45V
4	Vcc	+45V
5	GND	GROUND
6	GND	GROUND
7	GND	GROUND
8	GND	GROUND

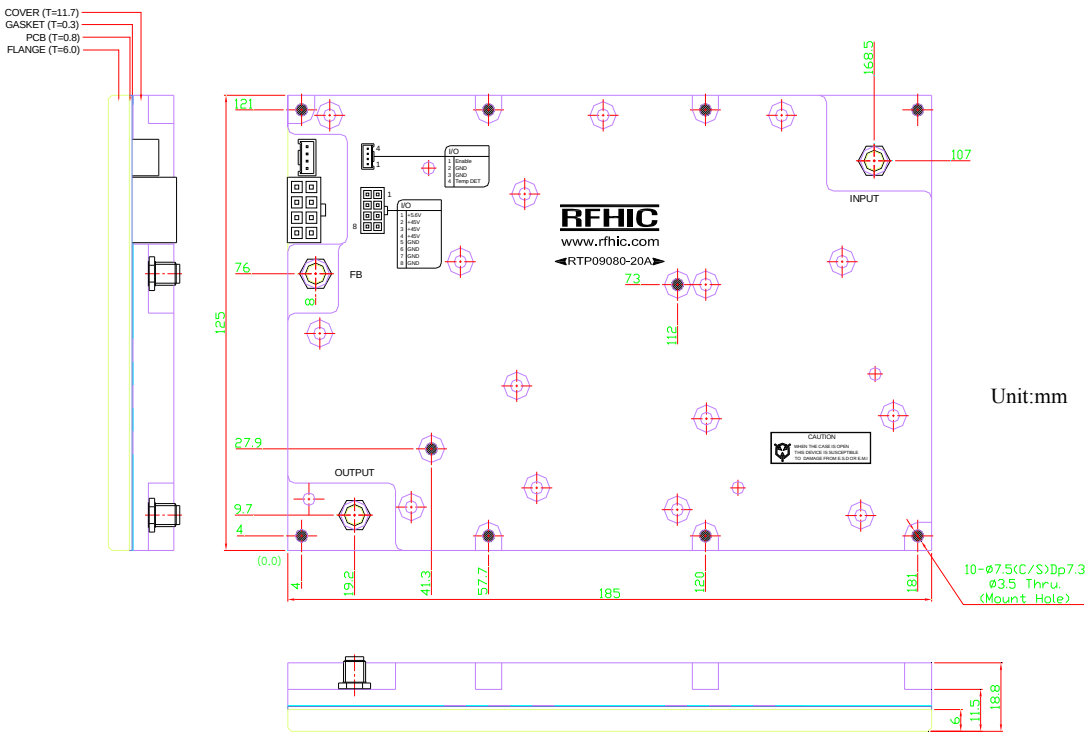
4Pin-Control (SMW200-04P)

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

Mechanical Specifications

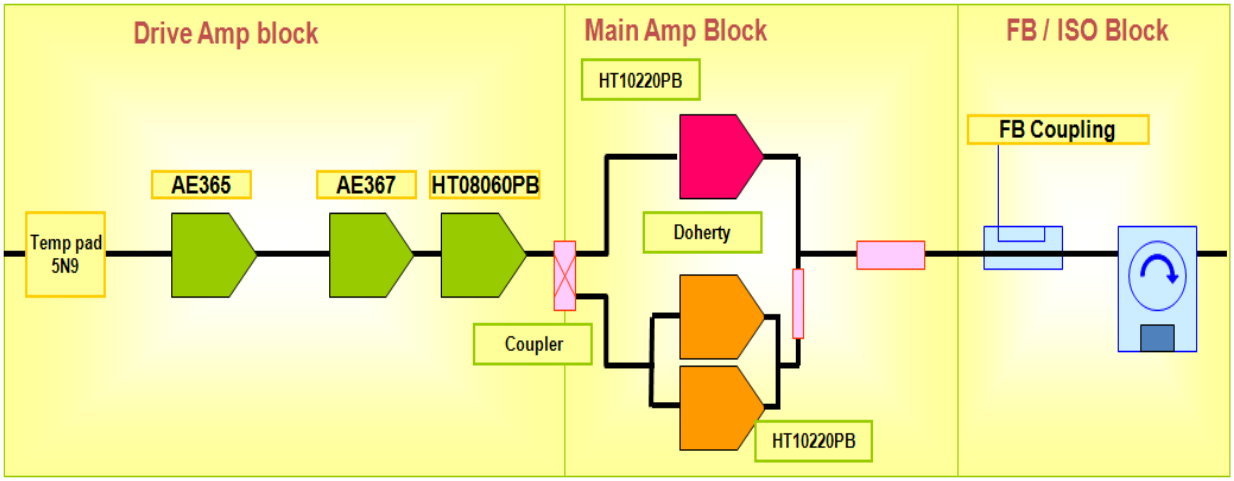
Parameter	Value	Units	Limits
Dimensions	185(W) x 125(L) x 18.8(H)	mm	
Weight	0.75(max)	Kg	
RF Input Connector	SMA(Female)		
RF Output Coupling Connector	SMA(Female)		
RF Output Connector	SMA(Female)		
I/O Connector	SMW200 4pin(Male)		
	Molex 8pin(Male)		
Cooling	External Heat-sink		

Outline Drawing



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

Block Diagram



Test Data (Test Results: DPD Operation)

Test Equipments

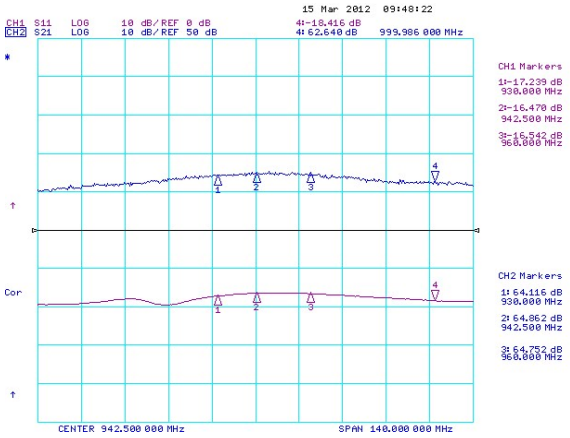
- DPD Engine : Optichron OP6180 Board
- Signal Generator : E4438C (Agilent)
- Spectrum Analyzer : E4440A (Agilent)
- Network Analyzer : 8753ES (Agilent)
- Power Supply : 6674A (Agilent)

Test Condition

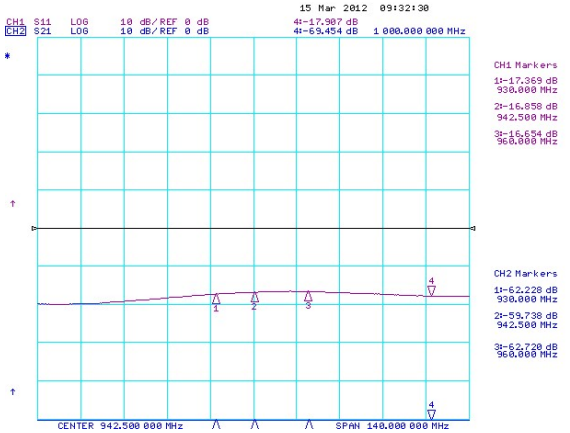
- Signal : LTE 1FA 10MHz(PAPR 6.5dB) & GSM 4FA(PAPR 6.5dB)
- CFR apply
- AMP Temperature: 40°C

Network Analyzer Data

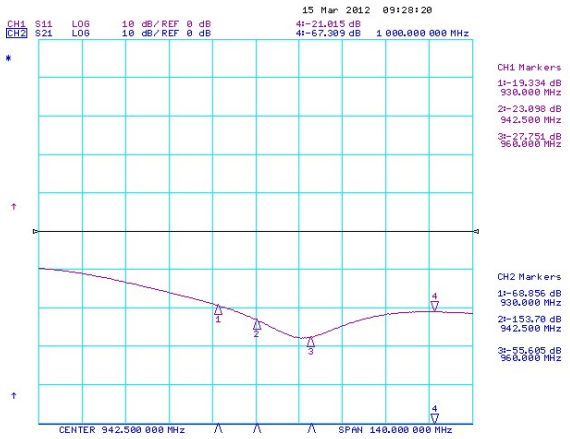
• **Gain (S21)**



• **Input VSWR (S11)**

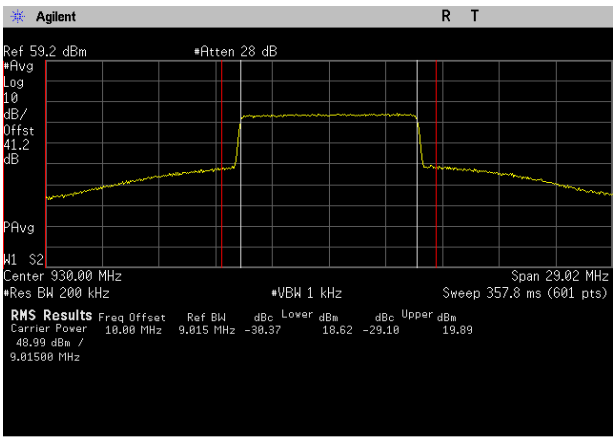


• **Output VSWR (S22)**

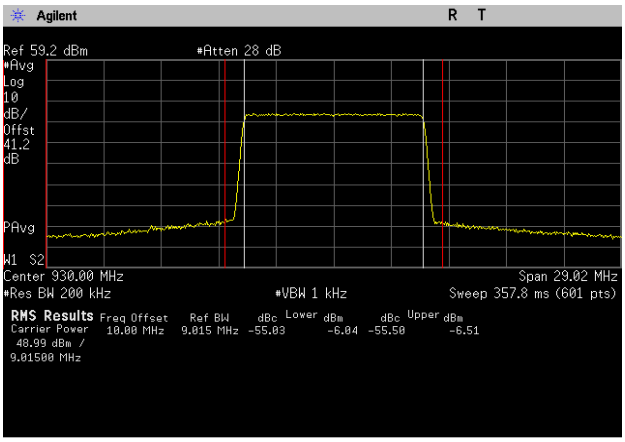


Spectrum Analyzer Data

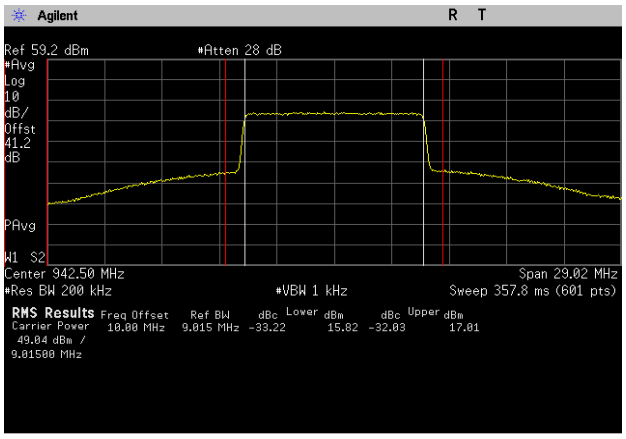
- **Pre – DPD @ 930MHz**



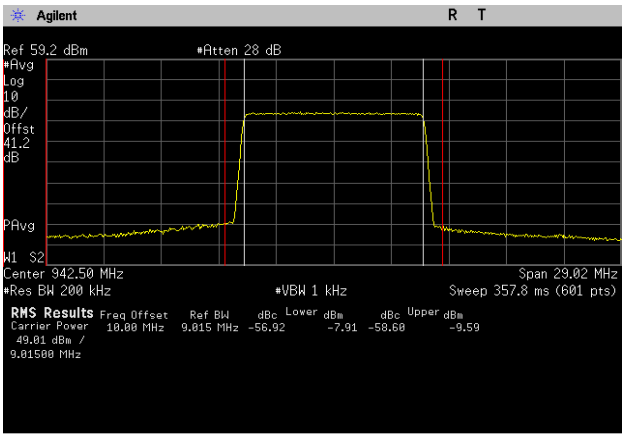
- **Post- DPD @ 930MHz**



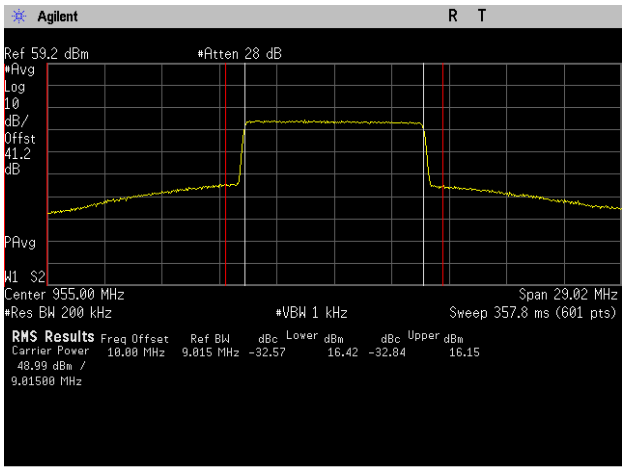
- **Pre – DPD @ 942.5MHz**



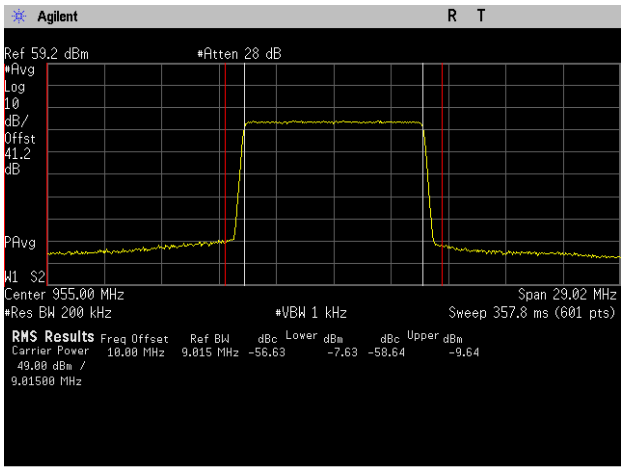
- **Post- DPD @ 942.5MHz**



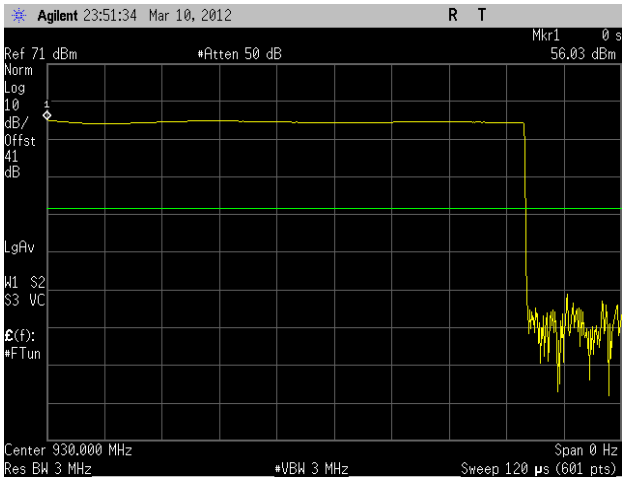
- **Pre – DPD @ 955MHz**



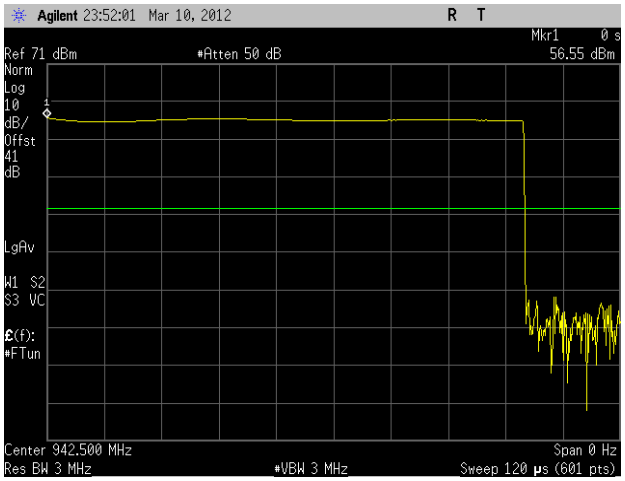
- **Post- DPD @ 955MHz**



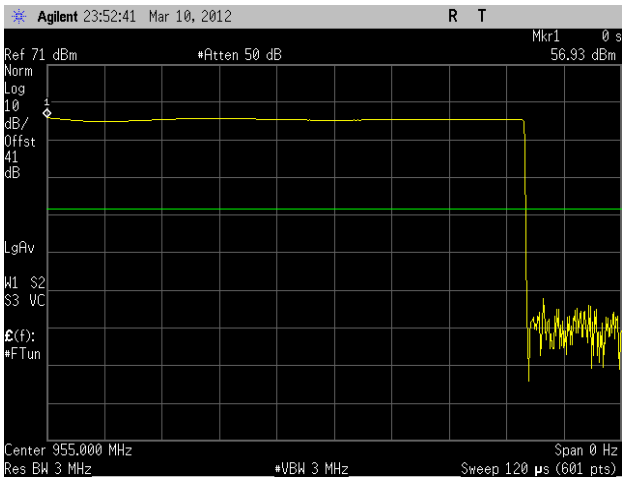
Pulse Duty 10% @ 930MHz



Pulse Duty 10% @ 942.5MHz



Pulse Duty 10% @ 955MHz



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