

Preliminary

GaN-SiC Pallet Amplifier

RTP21070-20



Product Features

- Doherty amplifier design
- GaN on SiC HEMT
- Small and light weight
- 50 Ohm Input/Output impedance matched
- Highly reliable and rugged design
- High efficiency, High Gain
- 70W typical P_{AVG}

Application

- LTE, WCDMA DPD amplifier
- General purpose RF amplifier



Description

The RTP21070-20 is designed for RF system application frequencies from 2110MHz to 2170MHz, with high gain. This Pallet Amplifier uses GaN on SiC HEMT technology which performs high breakdown voltage, high linearity, high efficiency. The RTP21070-20 is DPD application amplifier.

Electrical Specifications @ VDD=+48VDC, T=25°C, 50Ω

PARAMETER	Symbol	Min	Typ	Max	Unit
Frequency Range	BW	2110	-	2170	MHz
Output Power	P _{AVG}	-	48.5		dBm
Instantaneous Bandwidth	SBW		20	30	MHz
Output Power @ Psat G.C.P	P _{sat}	-	56.0	-	dBm
Small Signal Gain	SSG	50	55	-	dB
Small Signal Gain Flatness	ΔG	-	± 0.5	± 1.0	dB
Gain Variation	ΔGt		± 3.0		dB
ACLR @ WCDMA 5MHz 4FA*1	ACLR		-25		dBc
ACLR with DPD	ACLR		-57		dBc
Forward Coupling Level	FC	9	10	11	dBm
Operating Voltage 1	VDC1		48		Volt
Operating Voltage 2	VDC2		5.6		Volt
Chain Efficiency*2 @ Pout 77.6W	EC	-	48	-	%
Pallet Efficiency @ Pout 70.8W	EP	-	44	-	%
Input Port Return Loss	IRL	-13	-18		dB
Output Port Return Loss	ORL	-15	-18		dB

*1 Test Signal Condition: WCDMA 5MHz 4FA(PAR 7.5dB), Test DPD solution: Optichron DPD(OP6180)

*2 Chain Efficiency is an entire operating transistor efficiency excluded isolator and coupler.

Environmental Characteristics

PARAMETER	Symbol	Min	Typ	Max	Unit
Operating Temperature	T _c	-40	-	+60	°C
Storage Temperature	T _s	-45	-	+90	°C

Mechanical Specifications

PARAMETER	Value	Units	Limits
Dimensions (L x W x H)	170 x 100 x 20	mm	Max
Weight	502	g	Typical
RF Connectors In/Out/Coupling	SMA Female		
DC Connectors / Controls	5566-08(8pin)		
Cooling	External Heat sink + airflow		

RF Interface Connectors

Pin #	DESCRIPTION	Specifications
1	RF IN	RF Input signal
2	RF OUT	RF Output signal
3	FB OUT	RF Forward Detection signal For Feed-back

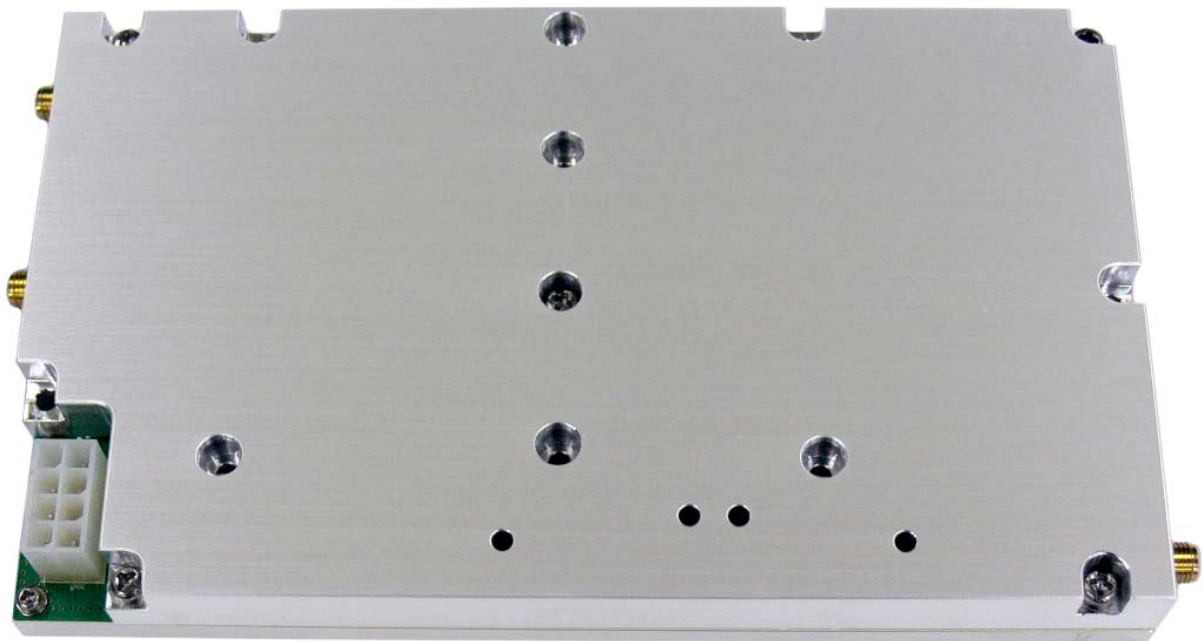
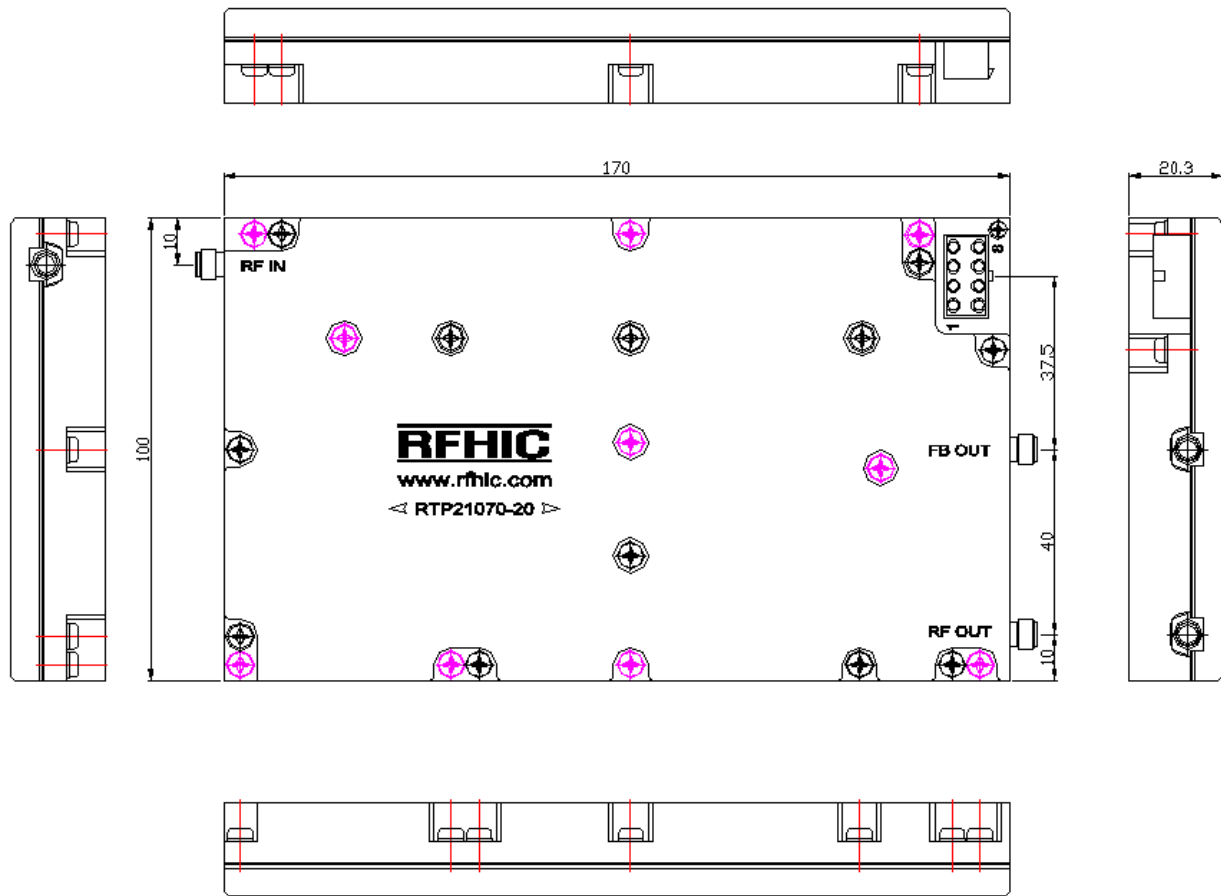
DC Connector

- 5566-08 (4.2mm PITCH, 8Pin)

Pin #	DESCRIPTION	Specifications
1,2	Drive, Main Amp +Vdd	+48Vdc
3	Gain Block Amp +Vgg	+5.6V
4	Enable	TTL High Enable (+5Vdc)
5,6,7	GND	Ground
8	Temp. Monitor	Reporting Temperature data [0.75V/25°C(10mV/°C)]

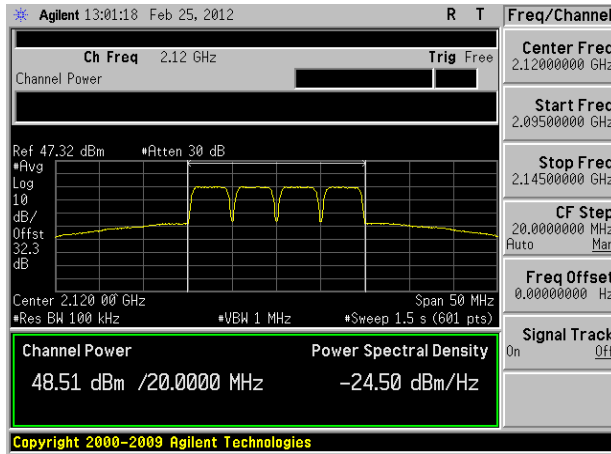
※ RF connector and DC connector custom design available.

Outline Drawing

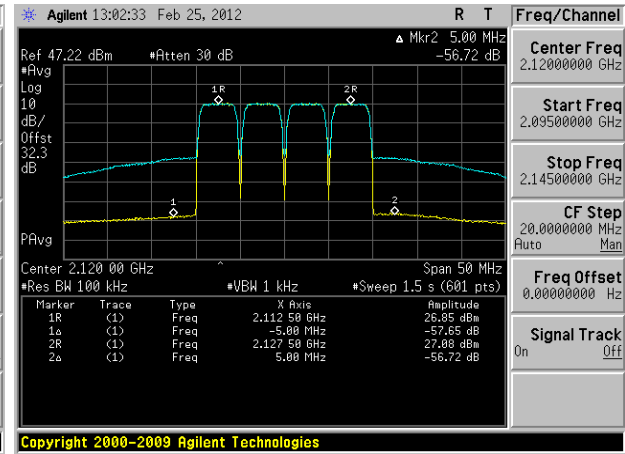


Typical Output Spectrum @ WCDMA 5MHz 4FA (PAR 7.5dB): Pout =70.8W(48.5dBm)

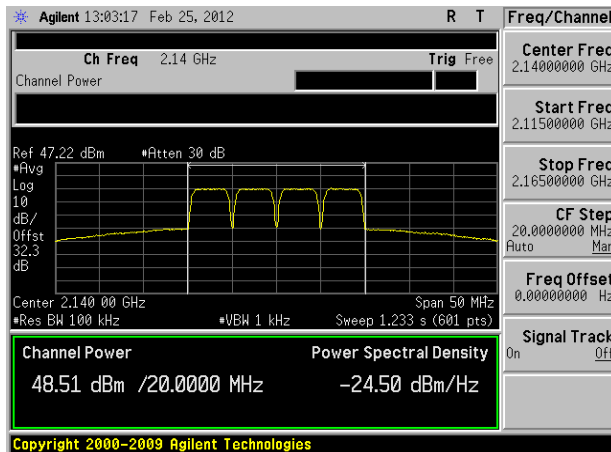
- Without DPD 2120MHz-



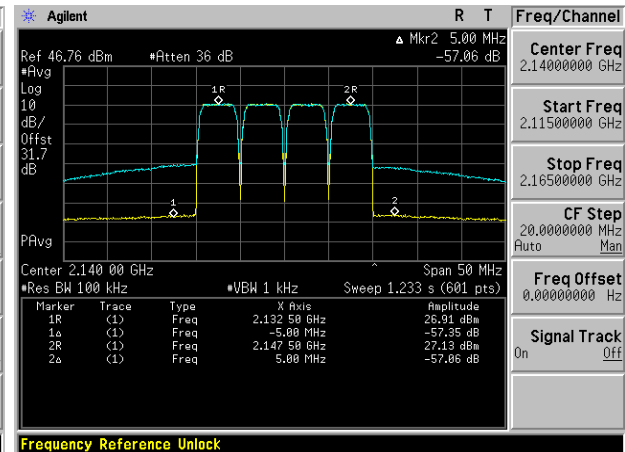
- With DPD 2120MHz-



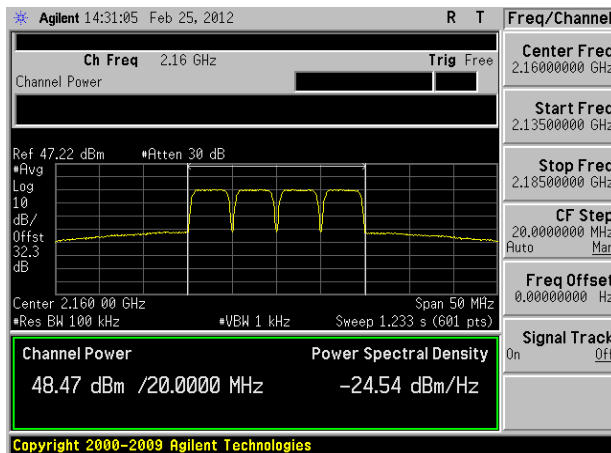
- Without DPD 2140MHz-



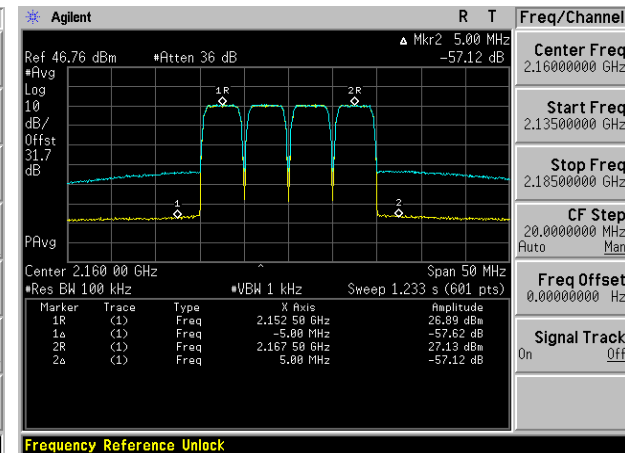
- With DPD 2140MHz-



- Without DPD 2160MHz-



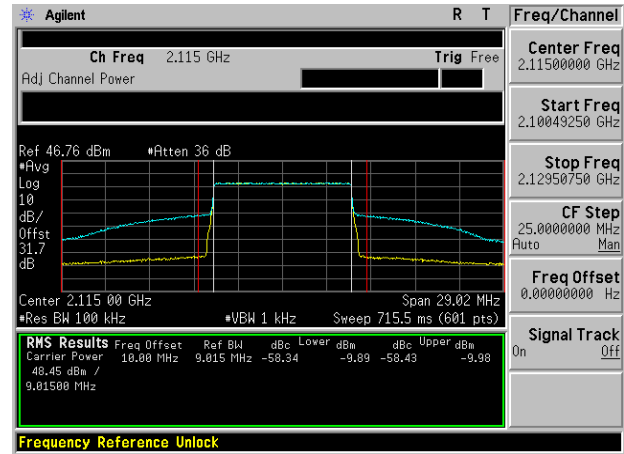
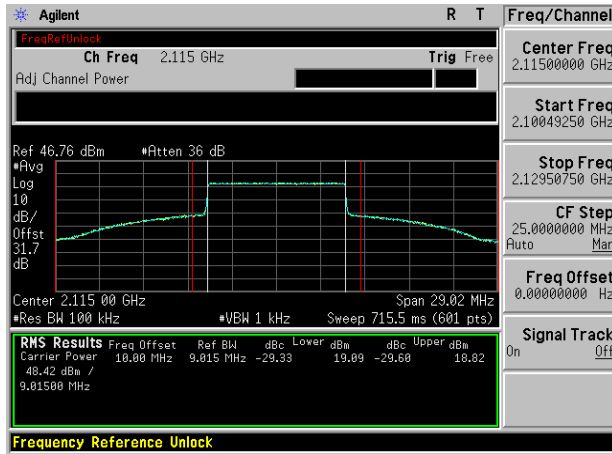
- With DPD 2160MHz-



Typical Output Spectrum @ LTE 10MHz 1FA (PAR 7.5dB) : Pout =70.8W(48.5dBm)

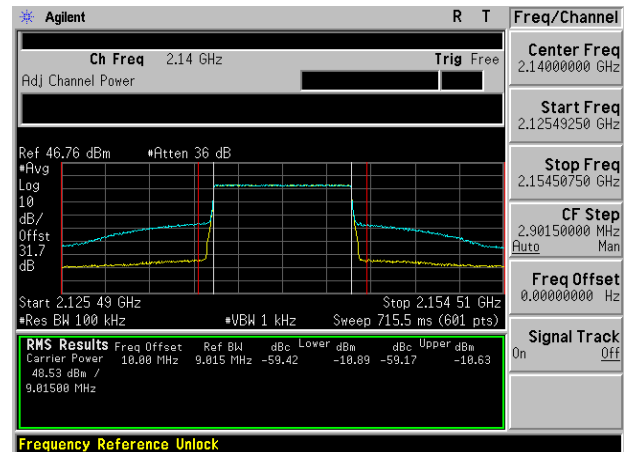
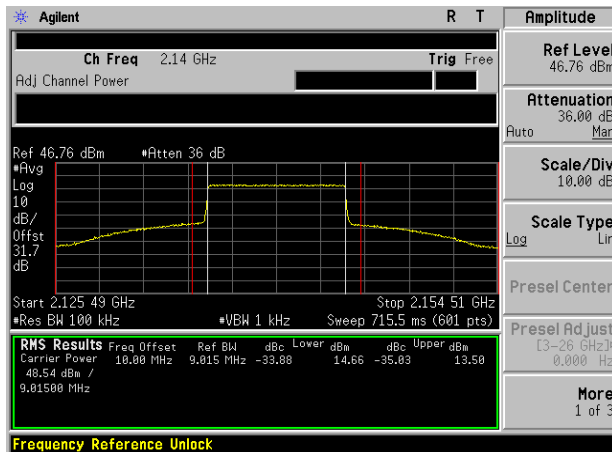
- Without DPD 2120MHz-

- With DPD 2120MHz-



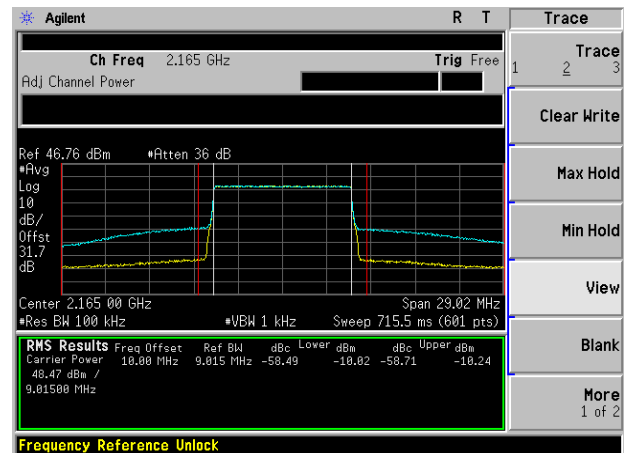
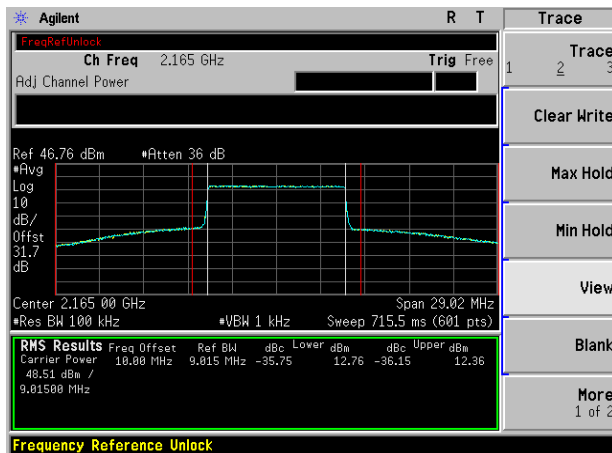
- Without DPD 2140MHz-

- With DPD 2140MHz-



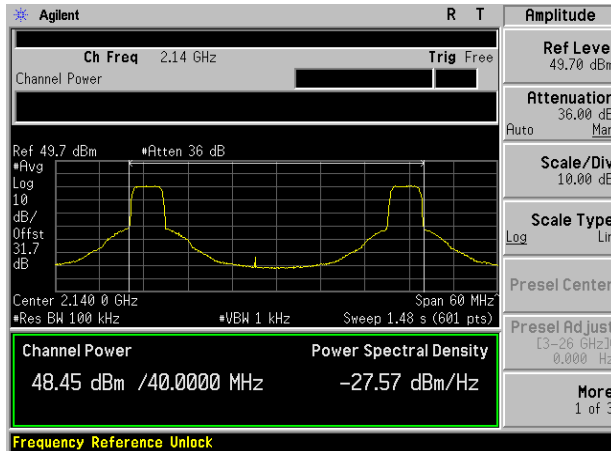
- Without DPD 2160MHz-

- With DPD 2160MHz-

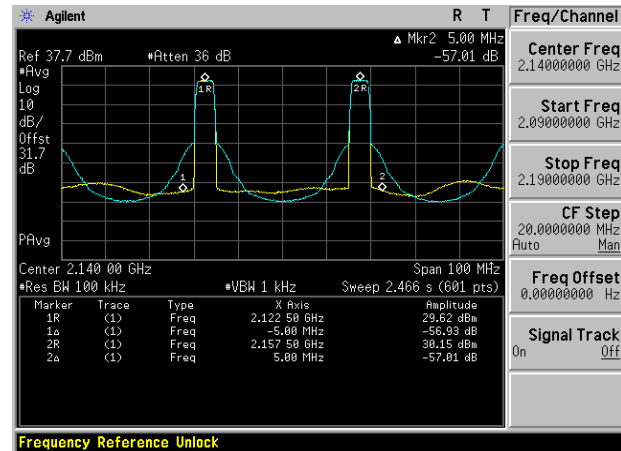


Typical Output Spectrum @ WCDMA 5MHz 2FA 40MHz Spacing: Pout =70.8W(48.5dBm)

- Without DPD 2140MHz-

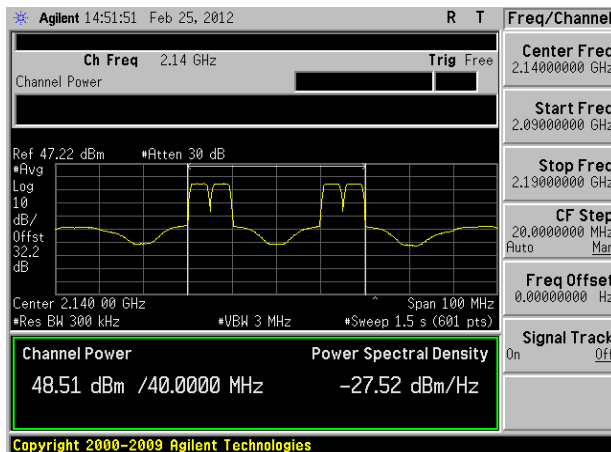


- With DPD 2140MHz-

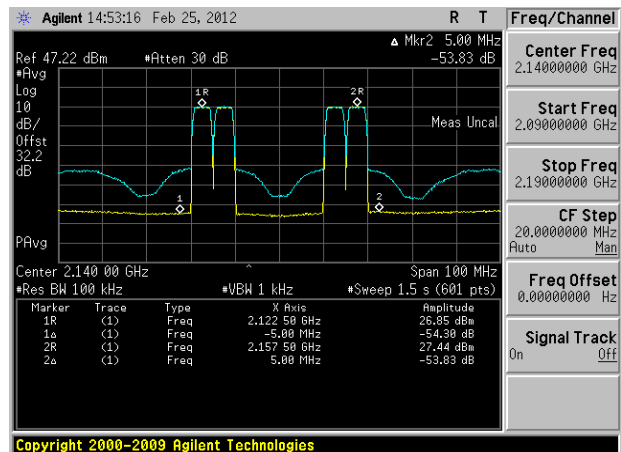


Typical Output Spectrum @ WCDMA 5MHz 4FA 40MHz Spacing: Pout =70.8W(48.5dBm)

- Without DPD 2140MHz-



- With DPD 2140MHz-



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