

FCC/IC MEASUREMENT AND TEST REPORT

For

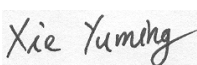
ZTE Corporation

ZTE Plaza, Hi-tech Park, Nanshan District, Shenzhen,
Guangdong, China 518057

FCC ID: Q78-R8862AS2600

IC ID: 5200A-R8862AS2600

November 25, 2015

This Report Concerns: ☒ Original Report		Equipment Type: LTE Remote Radio Unit
Test Engineer:	Jennie HE 	
Report No.:	RF2015922RP	
Test Date:	November 1 –November 25, 2015	
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Note: The test report is specially limited to the above company and this particular sample only. It may not be duplicated without prior written consent of ZTE Corporation. This report must not be used by the client to claim product certification 、 approval 、 or endorsement by any agency of the US Government.

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2 GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The ZTE Corporation's product, model number: ZXSDR R8862A S2600 or the "EUT" as referred to in this report is a LTE Remote Radio Unit.

Technical specification:

Size: 422 mm x 218 mm x 133 mm (HxWxD)

Input voltage(DC): -37V~-60V

Input voltage(AC): 90V~~280VAC

Frequency range: 2620MHz~2690 MHz

(Bottom frequency is about 2622.5MHz, Middle frequency is about 2655MHz, Top frequency is about 2687.5MHz).

Max RF output power: 46dBm

Gain of the antenna: 15dBi

Appearance of EUT:

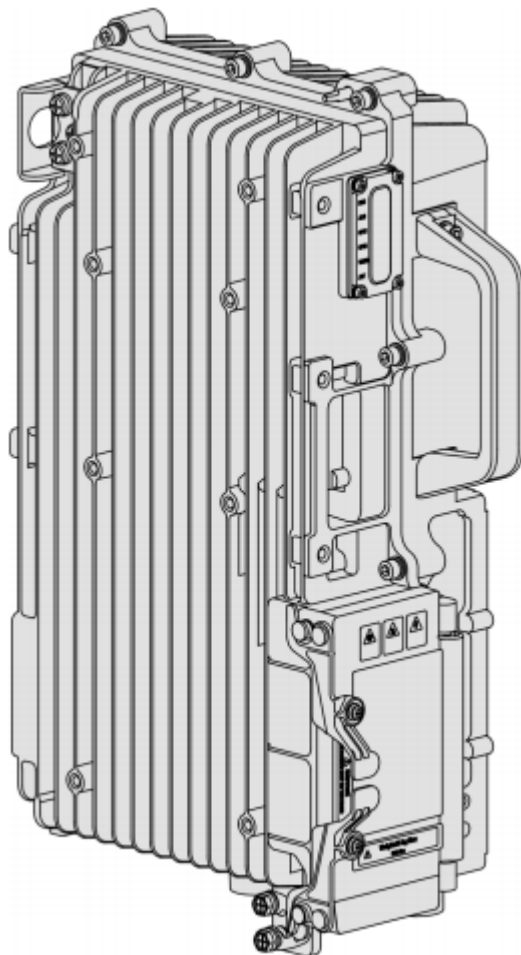


FIGURE 1 APPEARANCE OF ZXSDR R8862A S2600

Objective

This type approval report is prepared on behalf of ZTE Corporation in accordance with Part 2, Part 15, Part 27 of the Federal Communication Commissions rules.

Related Submittal(s)/Grant(s)

No related submittal(s).

Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of federal Regulations Title 47 Part 2 as well as the following parts:

Part 27 MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

Applicable Standards: TIA EIA 137-A, TIA EIA 97-D, TIA/EIA 603-C, Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

All radiated and conducted measurement was performed at ZTE Corporation Reliability Testing Center. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Shenzhen ZTE Technology Service Co., Ltd to collect test data is located in the ZTE Plaza, Hi-tech Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China, Tel: +86-755-26770000, Fax: +86-755-26771999. Test site at ZTETS Corporation has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on November 04, 2004. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 0007895832. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

3 SYSTEM TEST CONFIGURATION

Description of Test Configuration

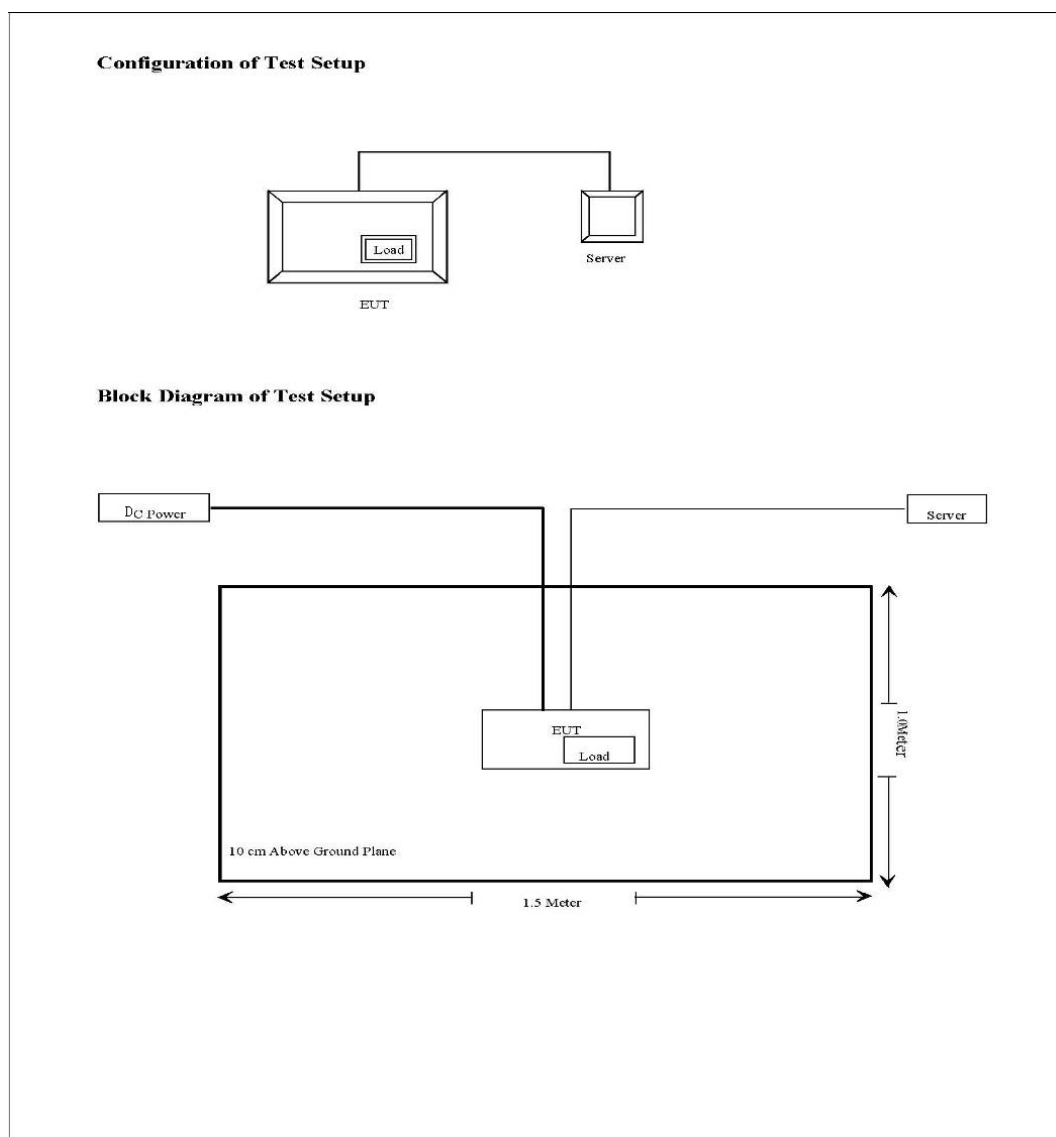
Justification

The EUT was configured for testing according to TIA/EIA-603C.

The final qualification test was performed with EUT operating at normal mode.

Equipment Modifications

ZTE Corporation has not done any modification on the EUT.



4 Applied Standard

FCC Part27, October 1, 2014
IC RSS-GEN, Issue 4, November 2014
IC RSS-199, Issue 2, October 2014

5 SUMMARY OF TEST RESULTS

FCC RULES	IC Rules	DESCRIPTION OF TEST	RESULT
§ 2.1046 , §27.50	RSS-GEN 6.12 RSS-199 4.4	Transmitter output Power	Compliant
§ 2.1091 , §1.1037	RSS-102	RF Exposure	Compliant
§ 2.1047	RSS-199 4.2	Modulation Characteristic	Compliant
§ 2.1053, §27.53	RSS-GEN 6.13 RSS-199 4.6	Spurious Radiated Emissions	Compliant
§ 2.1051, §27.53	RSS-GEN 6.13 RSS-199 4.6	Spurious Emissions AT Antenna Terminals	Compliant
§ 2.1049, §27.53	RSS-GEN 6.6	Occupied Bandwidth	Compliant
§ 2.1051, §27.53	RSS-GEN 6.13 RSS-199 4.6	Band Edge	Compliant
§ 2.1055	RSS-GEN 6.11 RSS-199 4.3	Frequency stability	Compliant
/	RSS-GEN 5 RSS-GEN 7	Receiver Spurious Emissions	Compliant

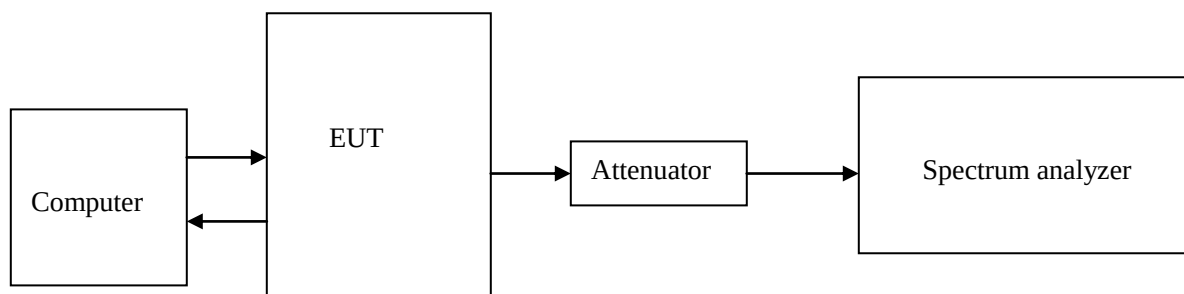
6 TRANSMITTER OUTPUT POWER

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9030A	MY49431143	2015.06.18	2016.06.18
DTS	DTS 40dB Attenuator	DTS100-40-3-1	09112005	2015.07.19	2016.07.19
Silverline	Silverline RF Cable	SLA18-NMN1T	100311-04-0001	N/A	N/A

***statement of traceability:** ZTE Corporation Reliability Testing Center attests that all calibration has been performed per the NVLAP requirements, traceable to NIST.

Test Procedure



The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation. External attenuation Loss is 40dB, Cable Loss is about 1.5dB

Environmental Conditions

Temperature:	20 °C
Relative Humidity:	53 %
ATM Pressure:	1009 mbar



FCC ID: Q78-R8862AS2600
IC ID: 5200A-R8862AS2600

Test Result: Pass

Test Mode: Transmitting LTE

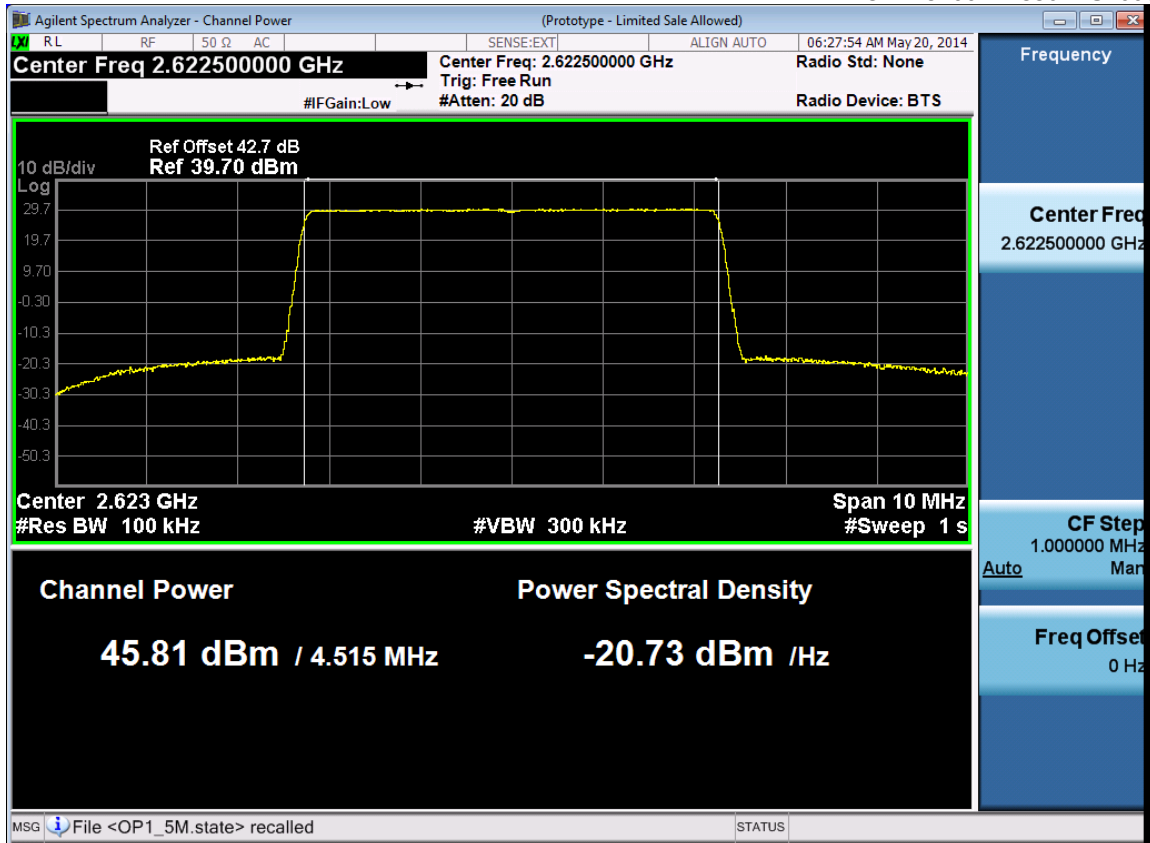
Test Data:

Single Carrier:

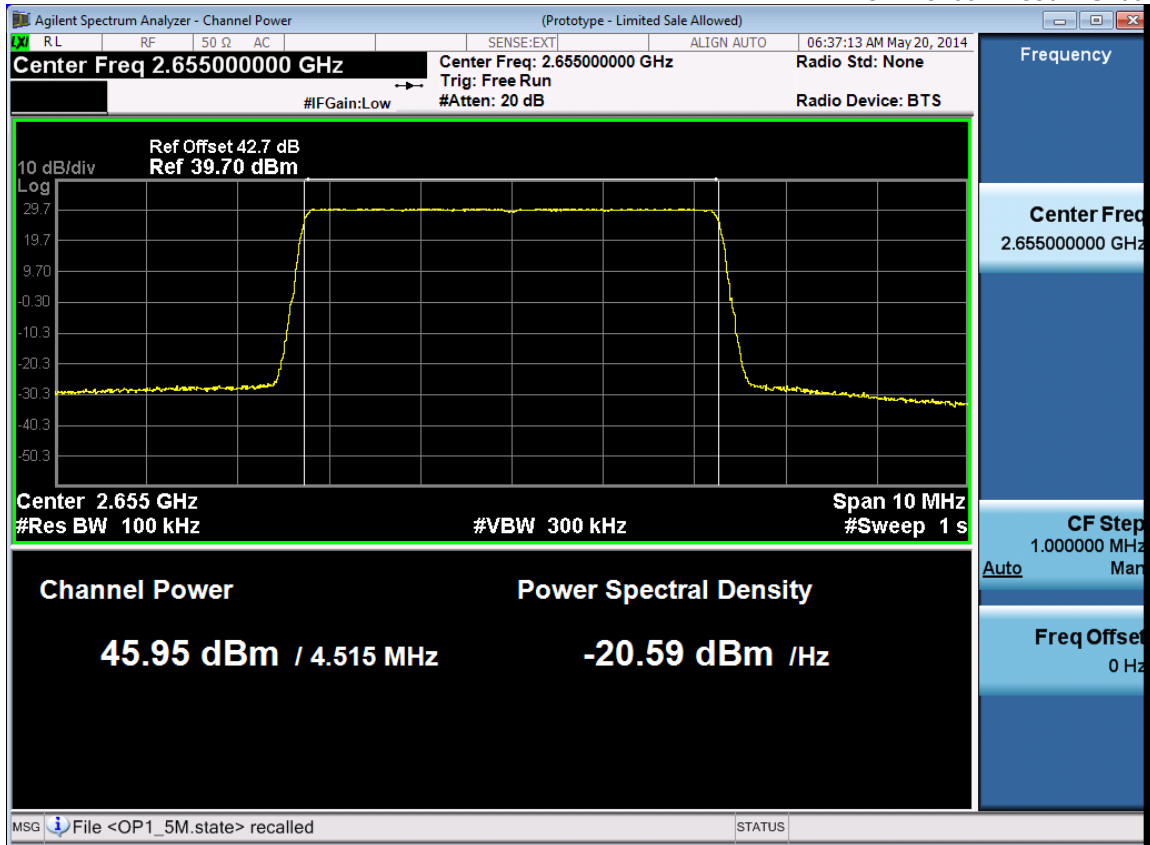
Channel Bandwidth :5M

Port	Center Freq. (MHz)	Max output Power in dBm
1	2622.5	45.81
	2655	45.95
	2687.5	45.82
2	2622.5	46.12
	2655	45.94
	2687.5	45.86

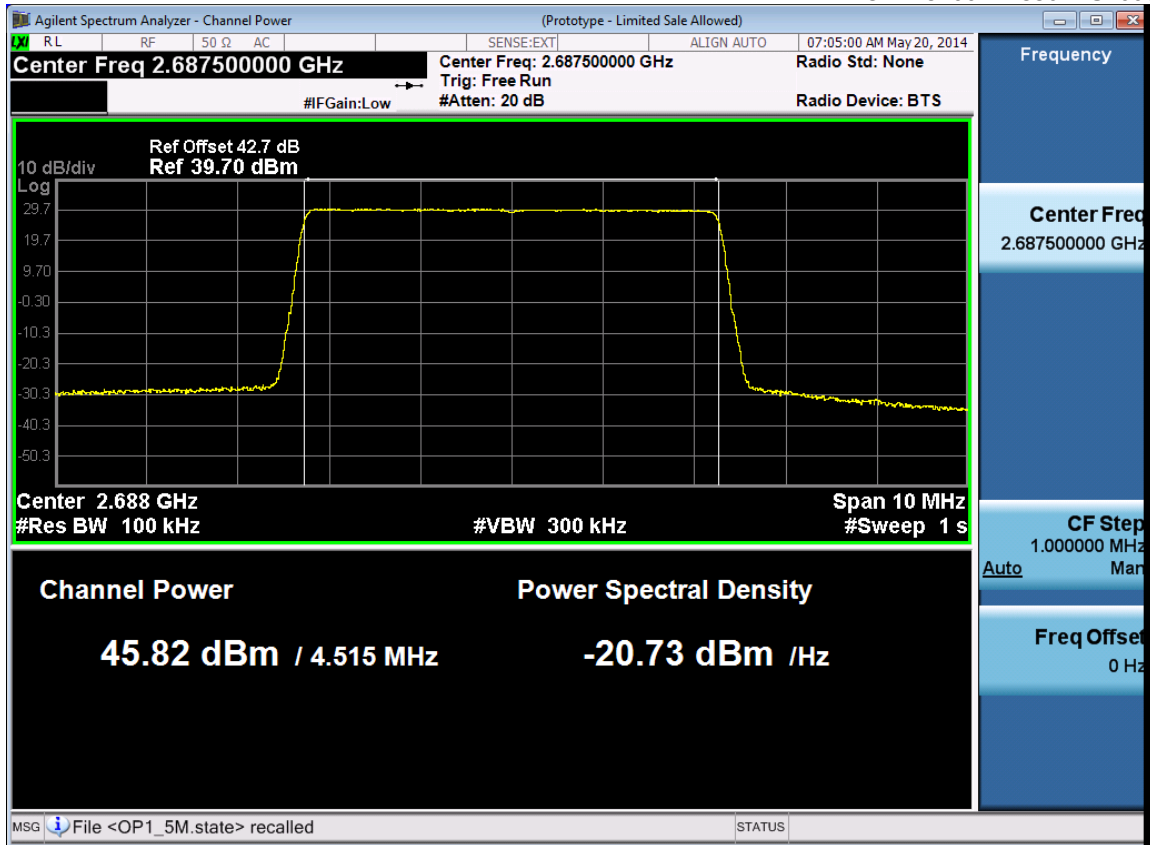
5M -Port 1 -2622.5MHz



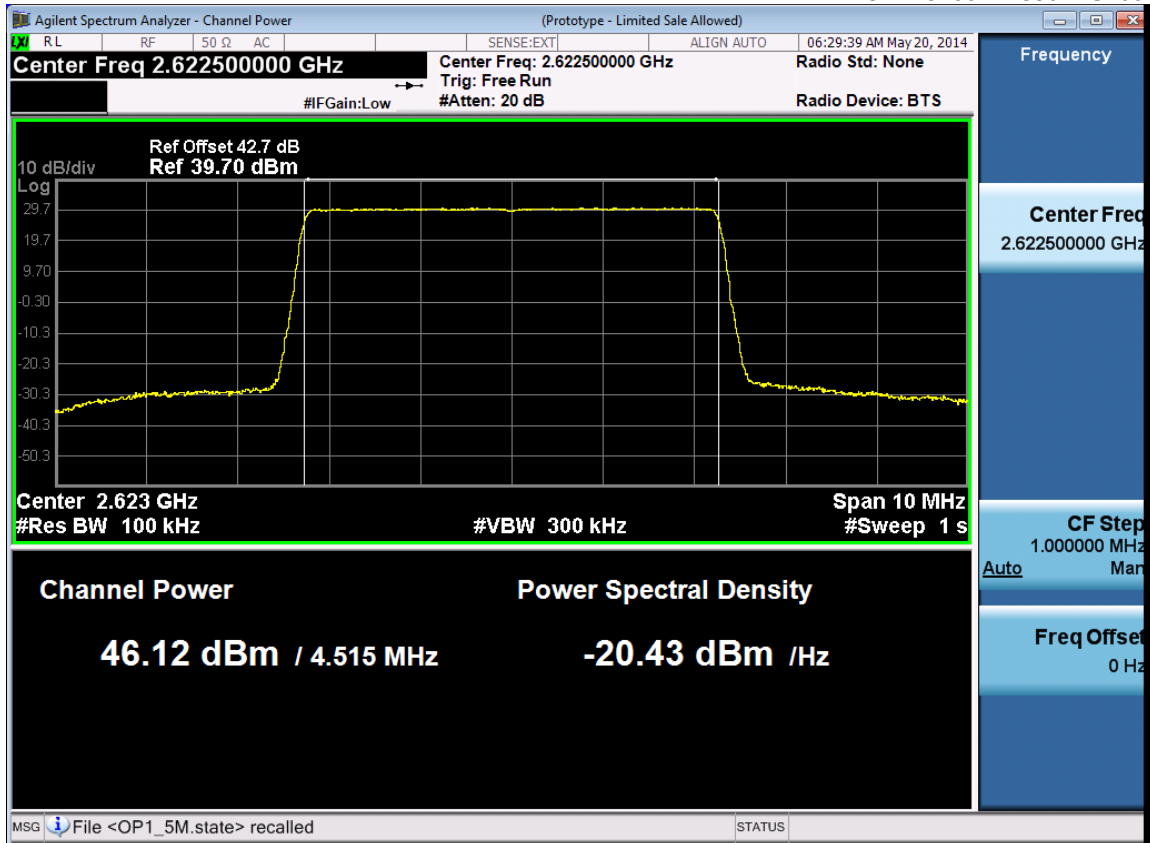
5M -Port 1 -2655MHz



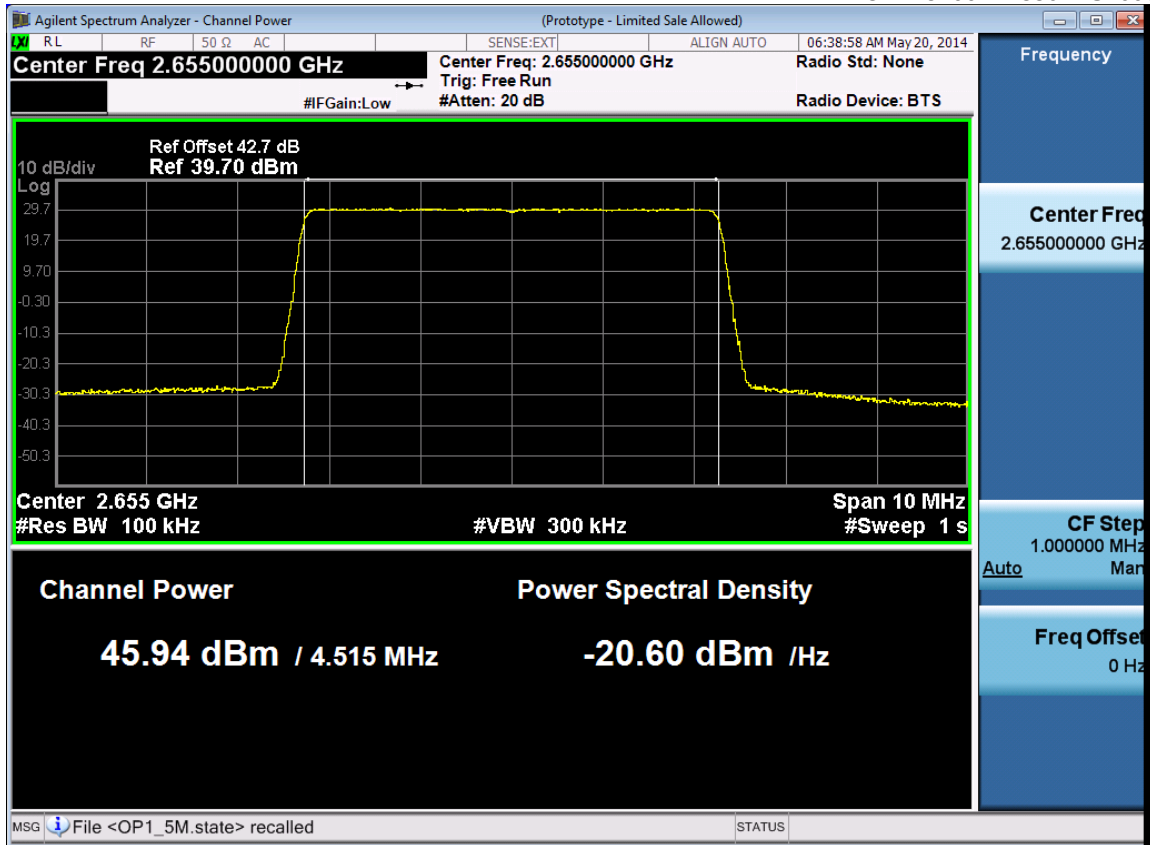
5M -Port 1 -2687.5MHz



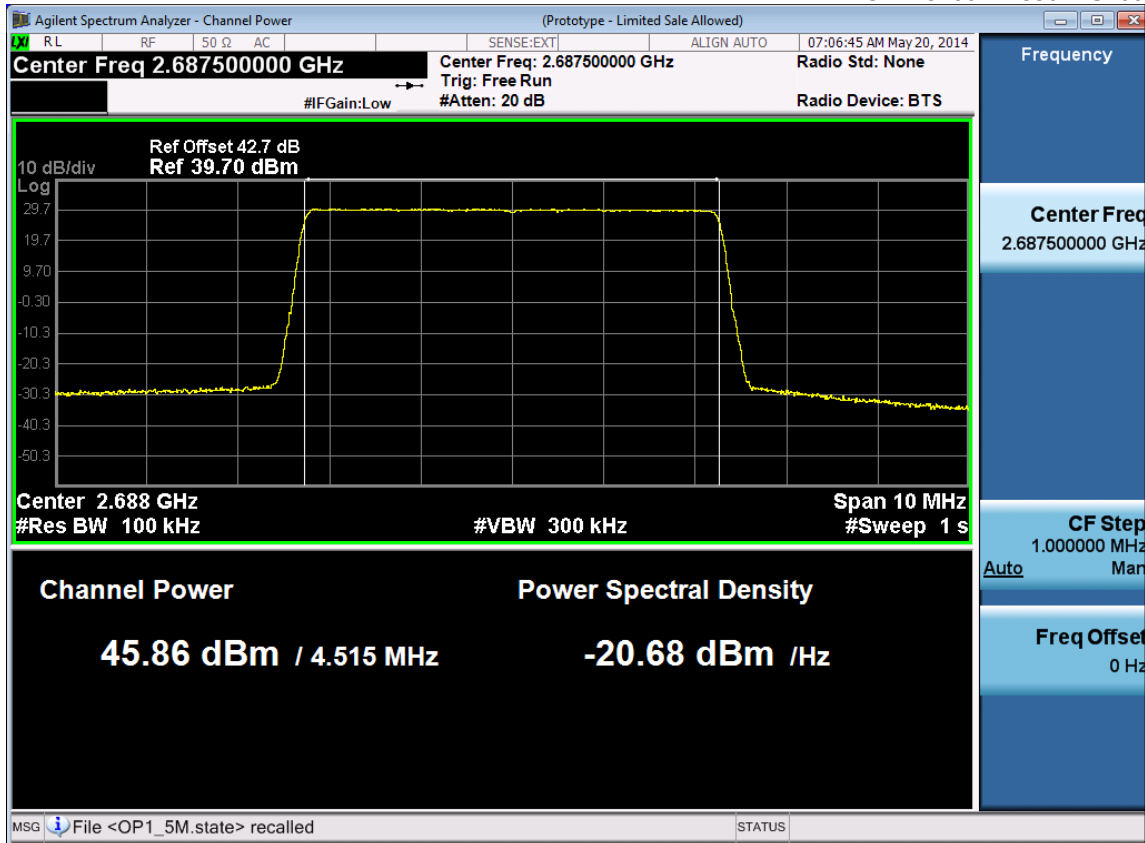
5M -Port 2 -2622.5MHz



5M -Port 2 -2655MHz



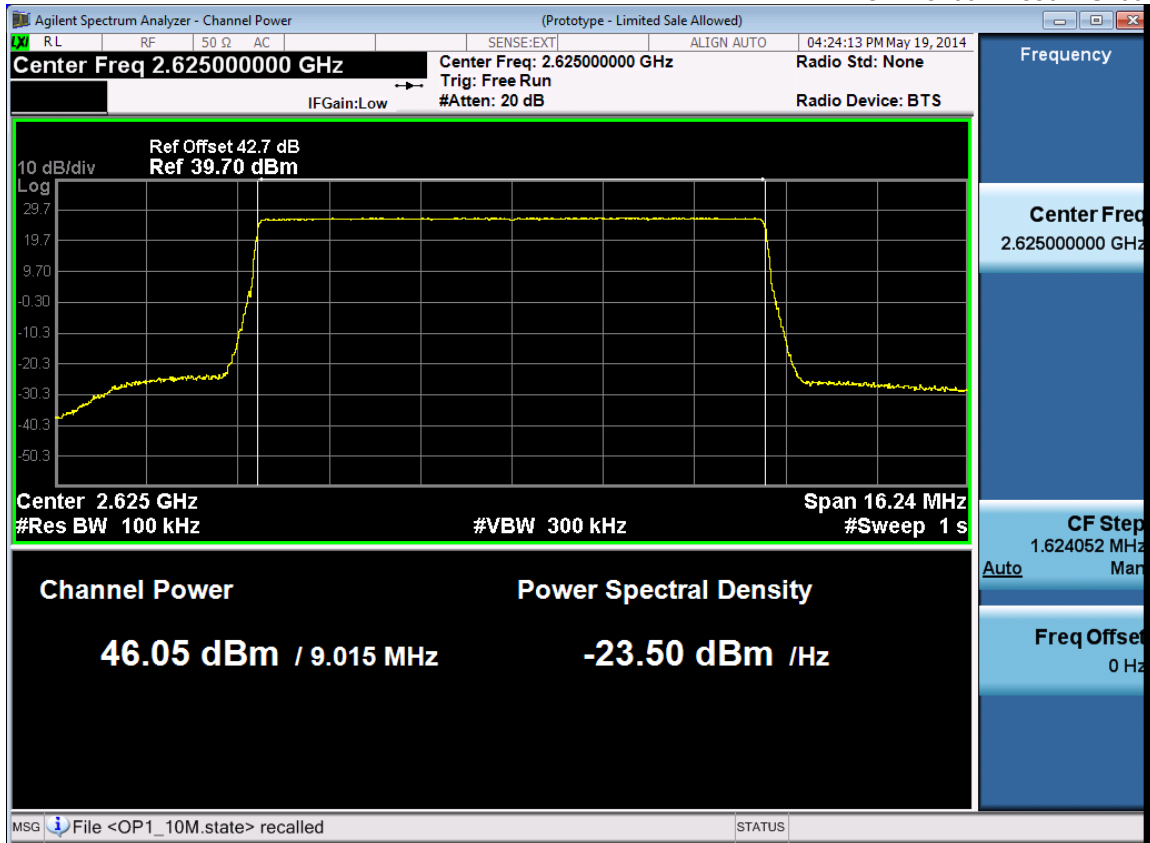
5M -Port 2 -2687.5MHz



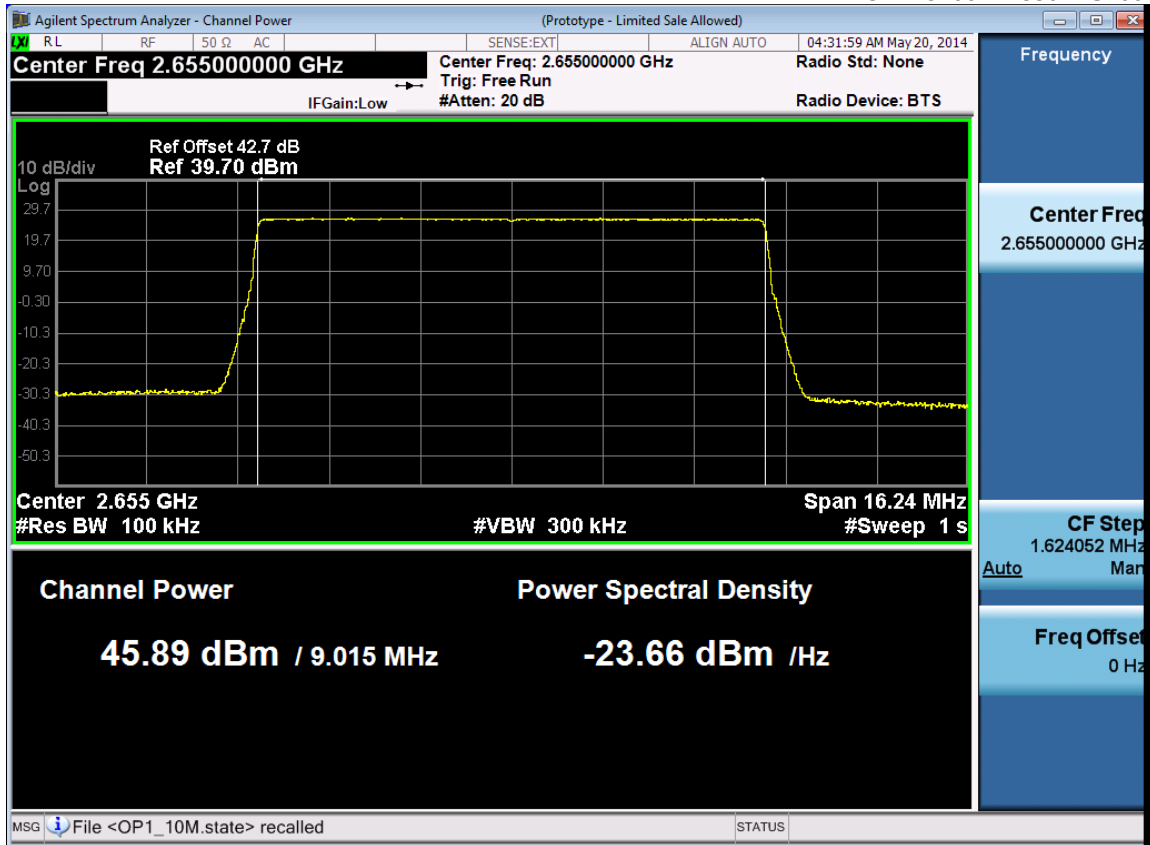
Channel Bandwidth :10M

Port	Center Freq. (MHz)	Max output Power in dBm
1	2625	46.05
	2655	45.89
	2685	45.81
2	2625	46.18
	2655	45.92
	2685	45.81

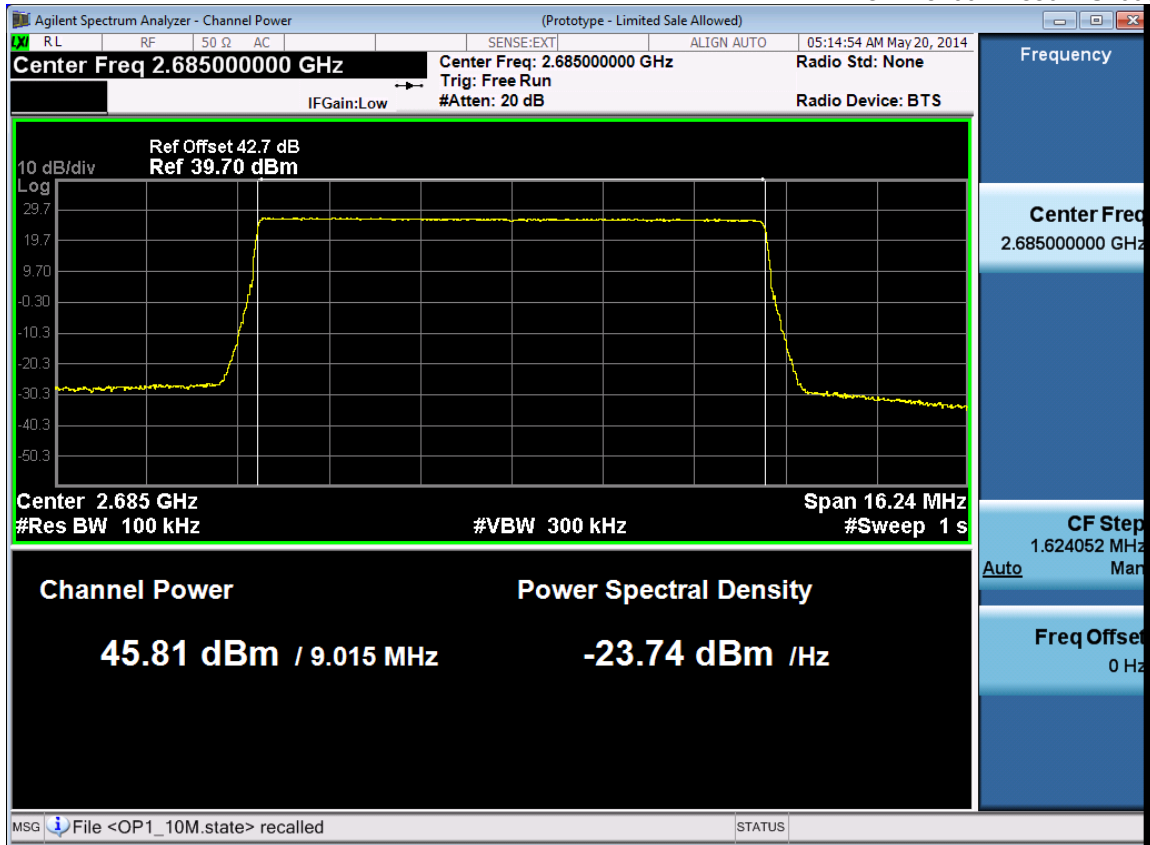
10M -Port 1 -2625MHz



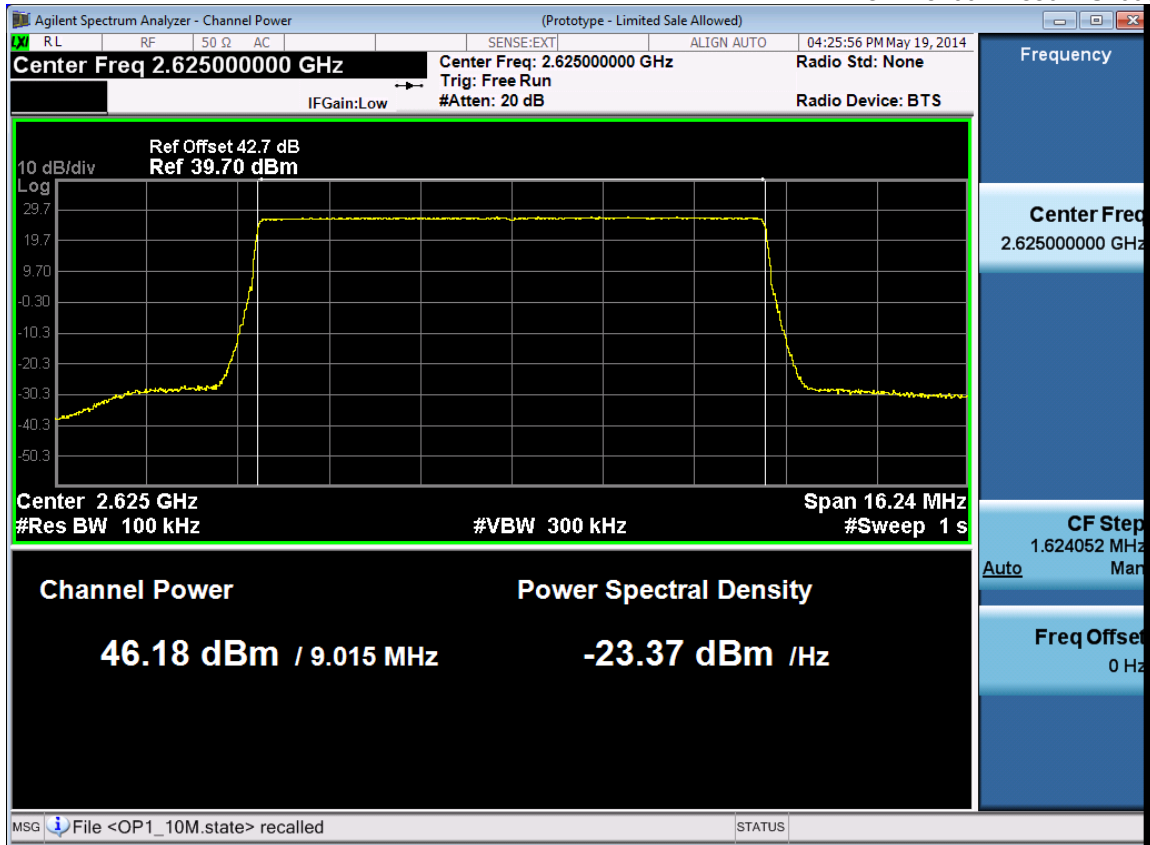
10M -Port 1 -2655MHz



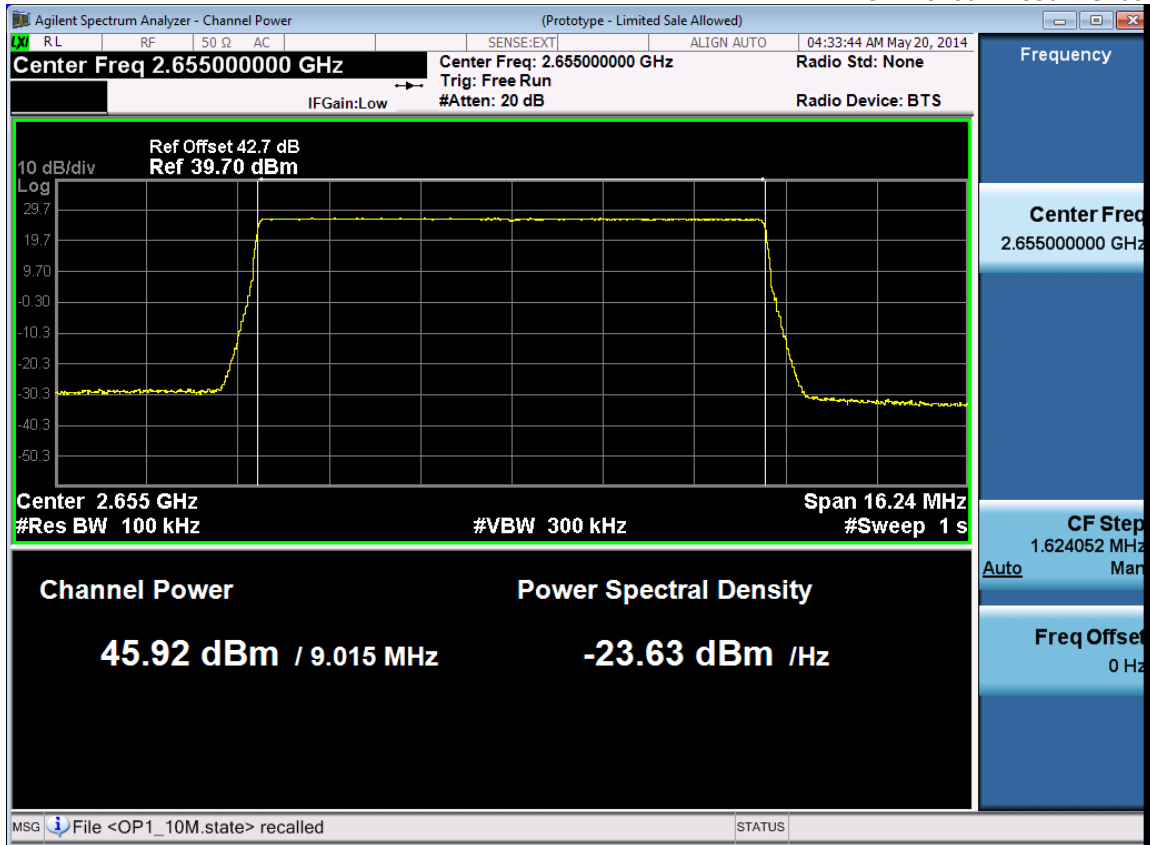
10M -Port 1 -2685MHz



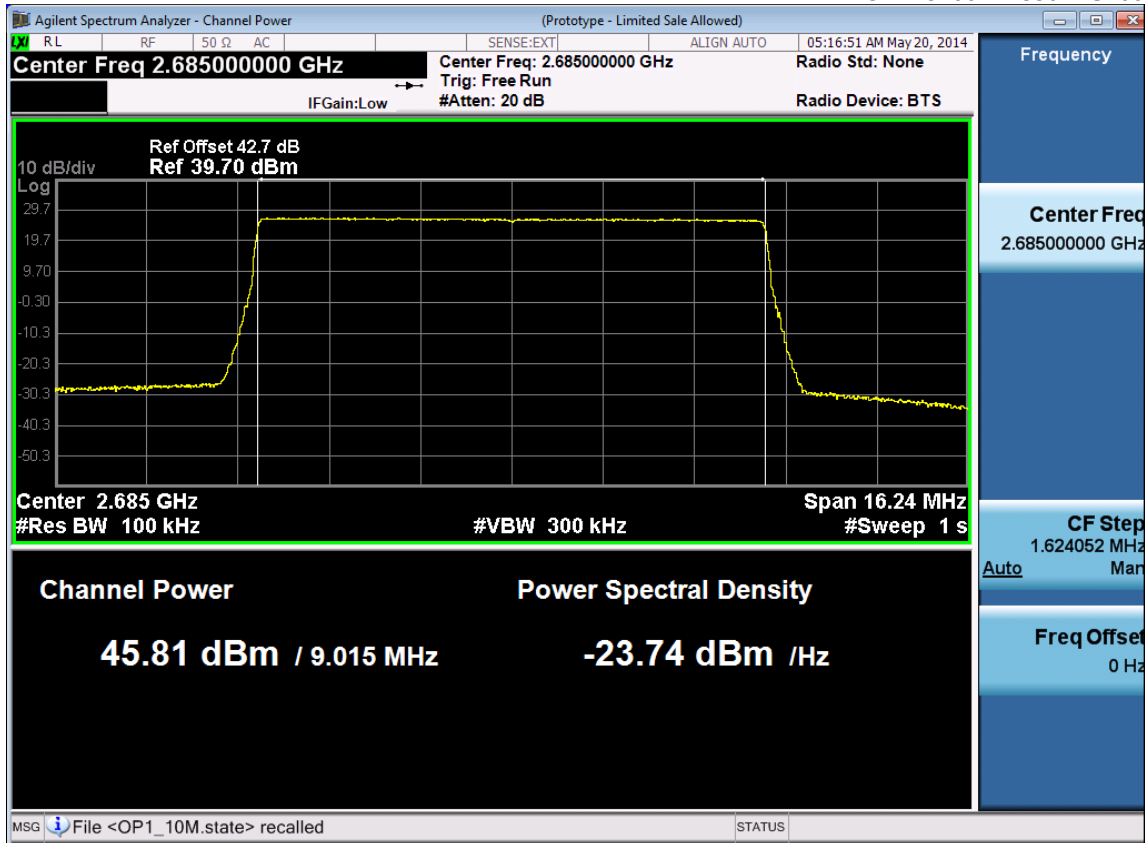
10M -Port 2 -2625MHz



10M -Port 2 -2655MHz



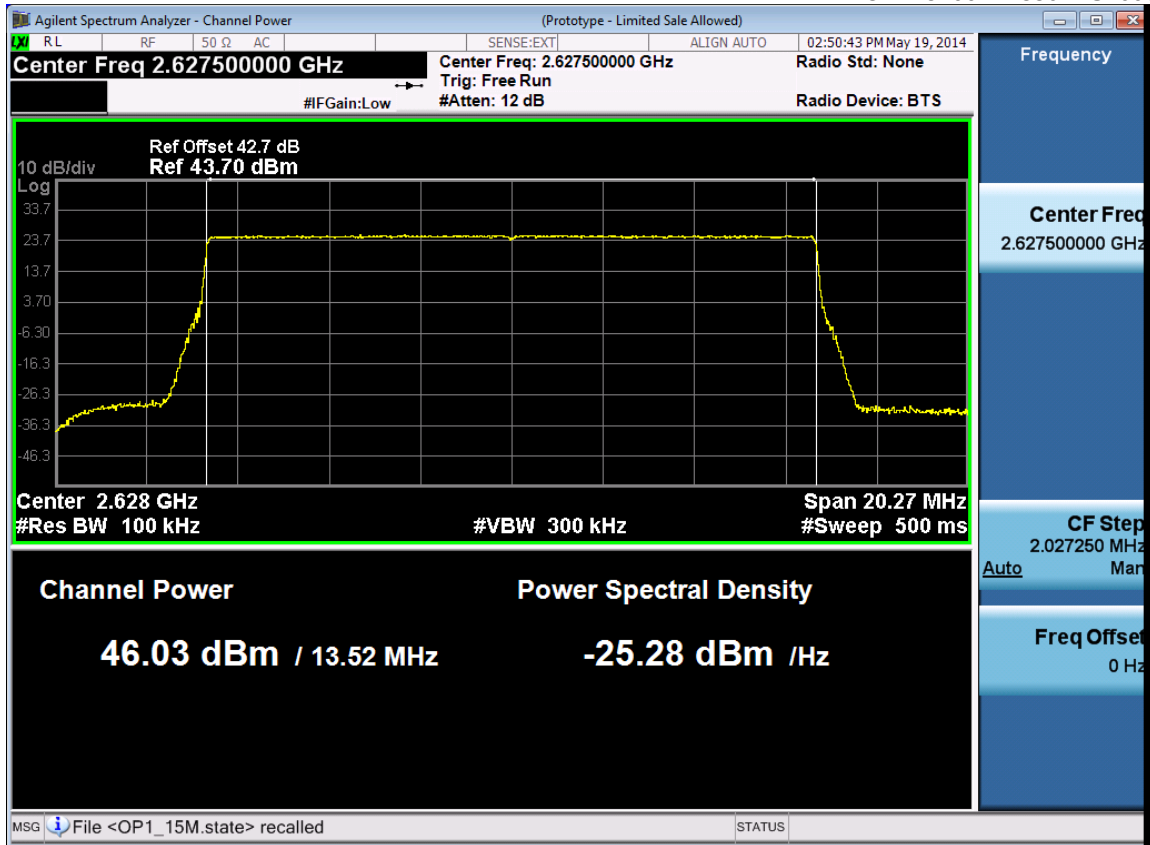
10M -Port 2 -2685MHz



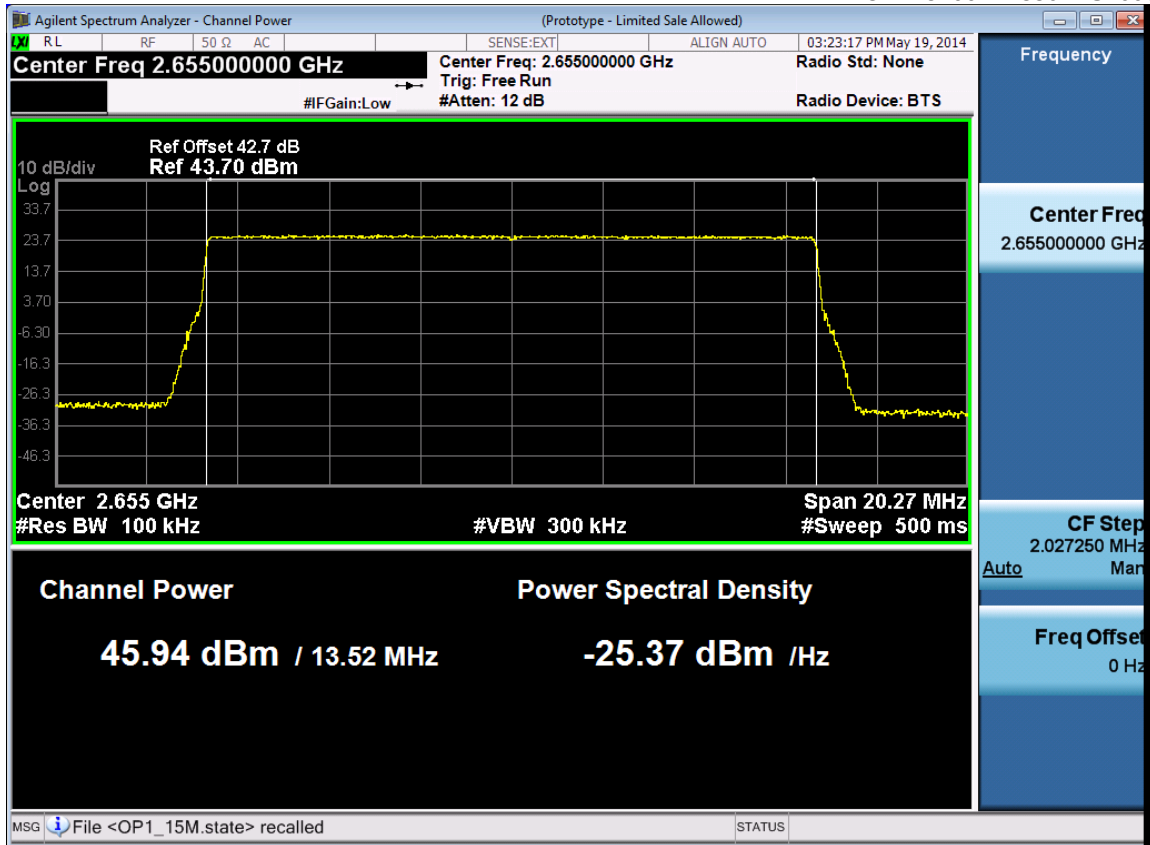
Channel Bandwidth :15M

Port	Center Freq. (MHz)	Max output Power in dBm
1	2627.5	46.03
	2655	45.94
	2682.5	45.87
2	2627.5	45.97
	2655	45.78
	2682.5	45.86

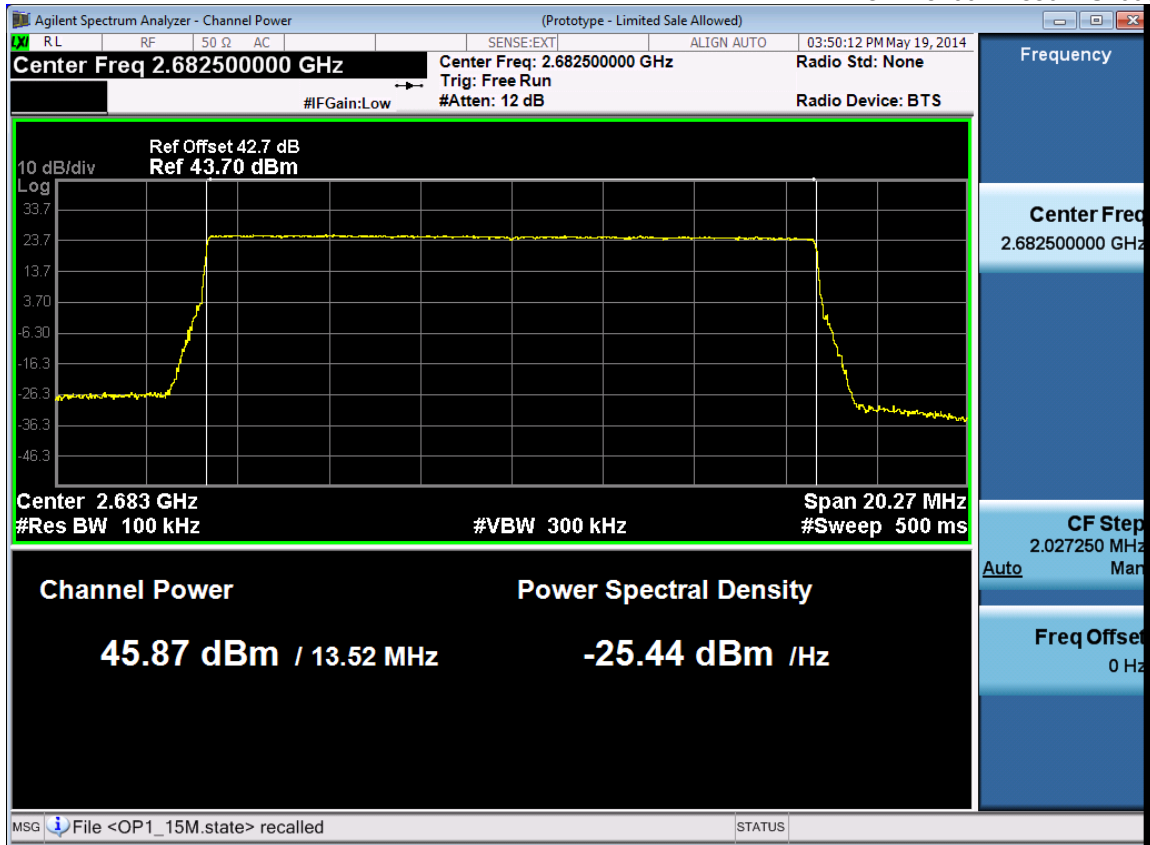
15M -Port 1 -2627.5MHz



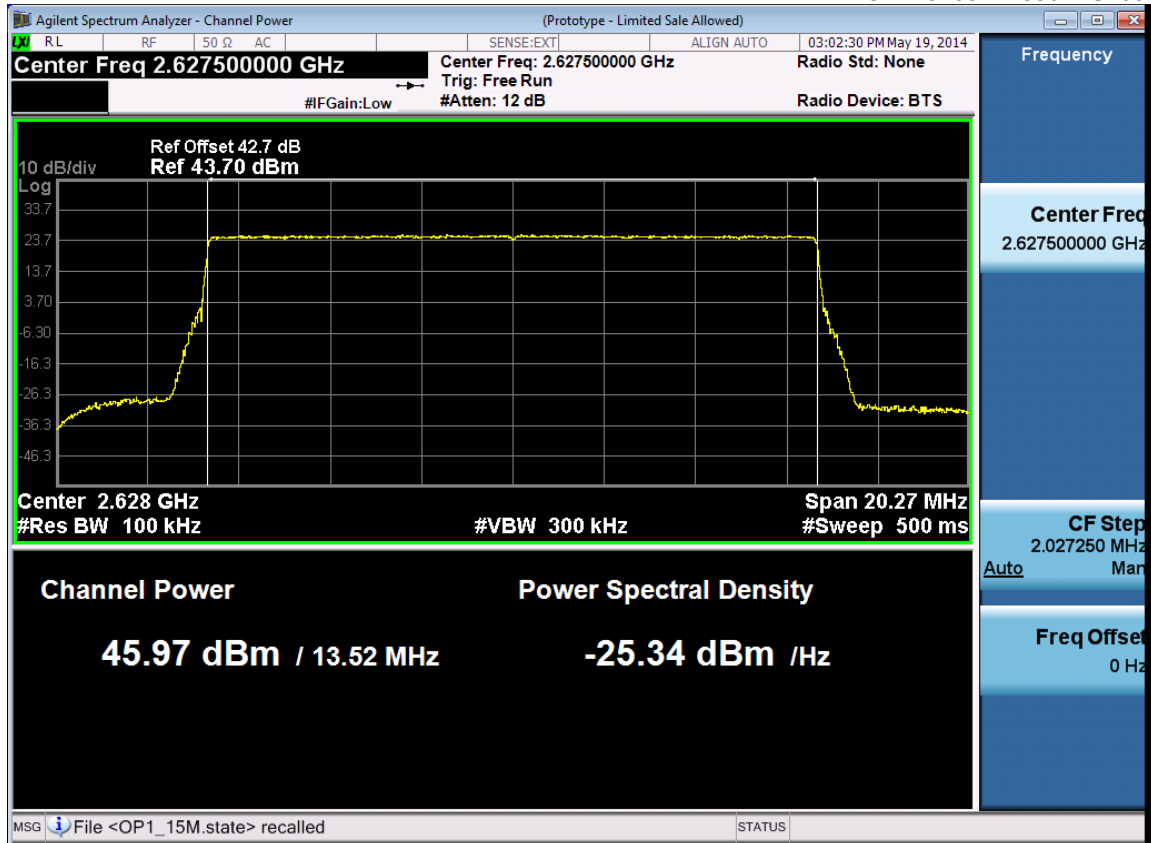
15M -Port 1 -2655MHz



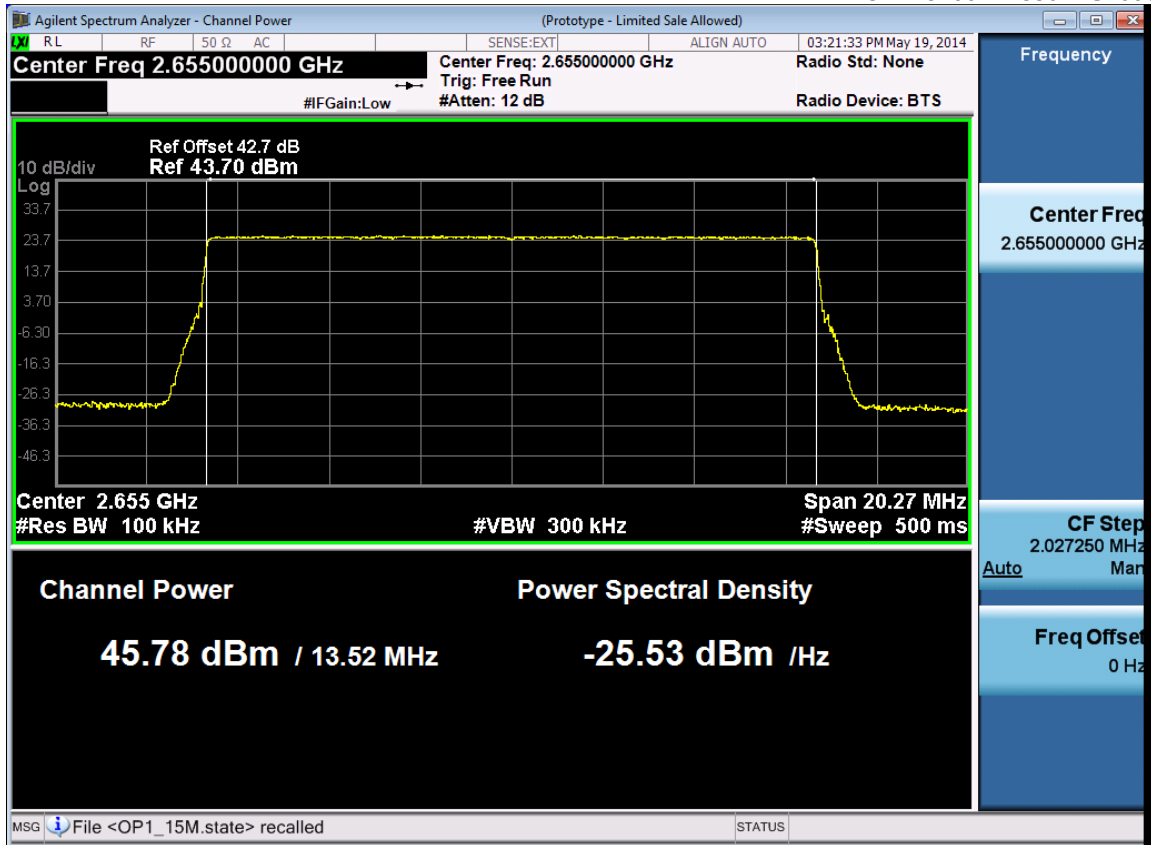
15M -Port 1 -2682.5MHz



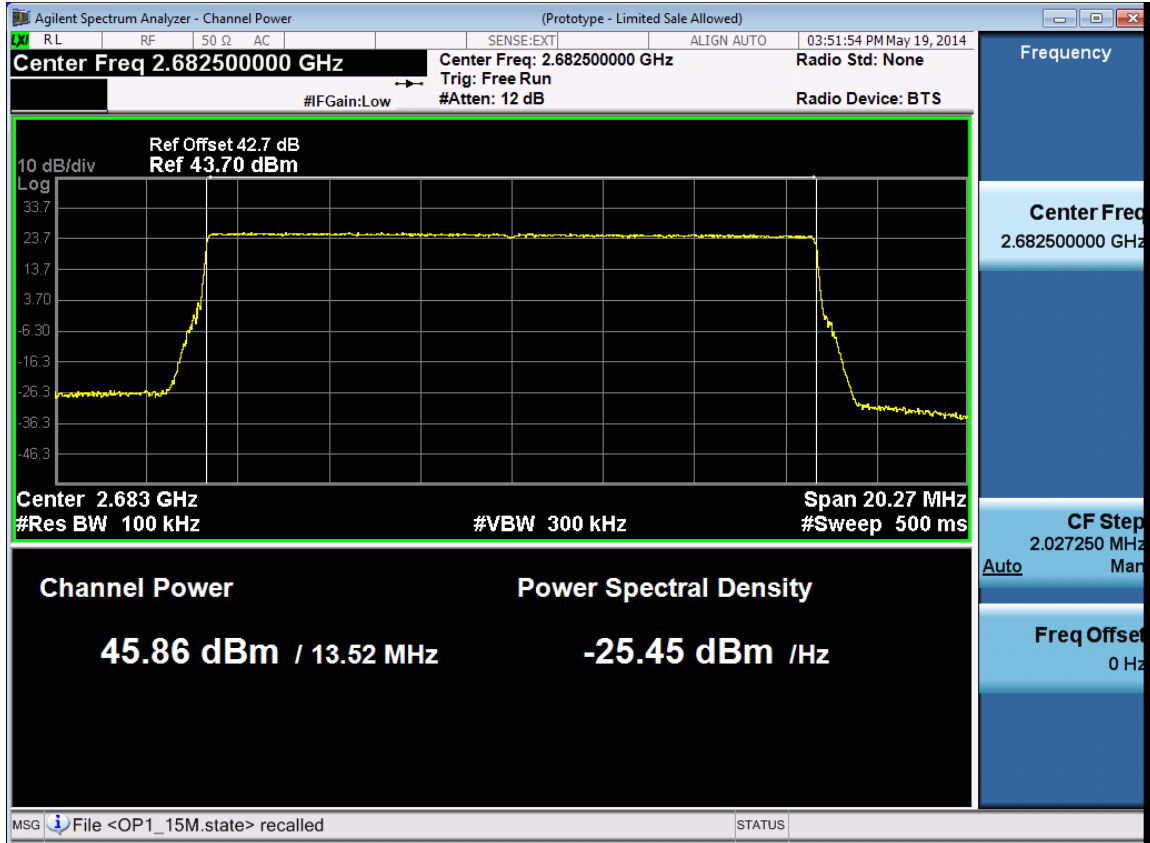
15M -Port 2 -2627.5MHz



15M -Port 2 -2655MHz



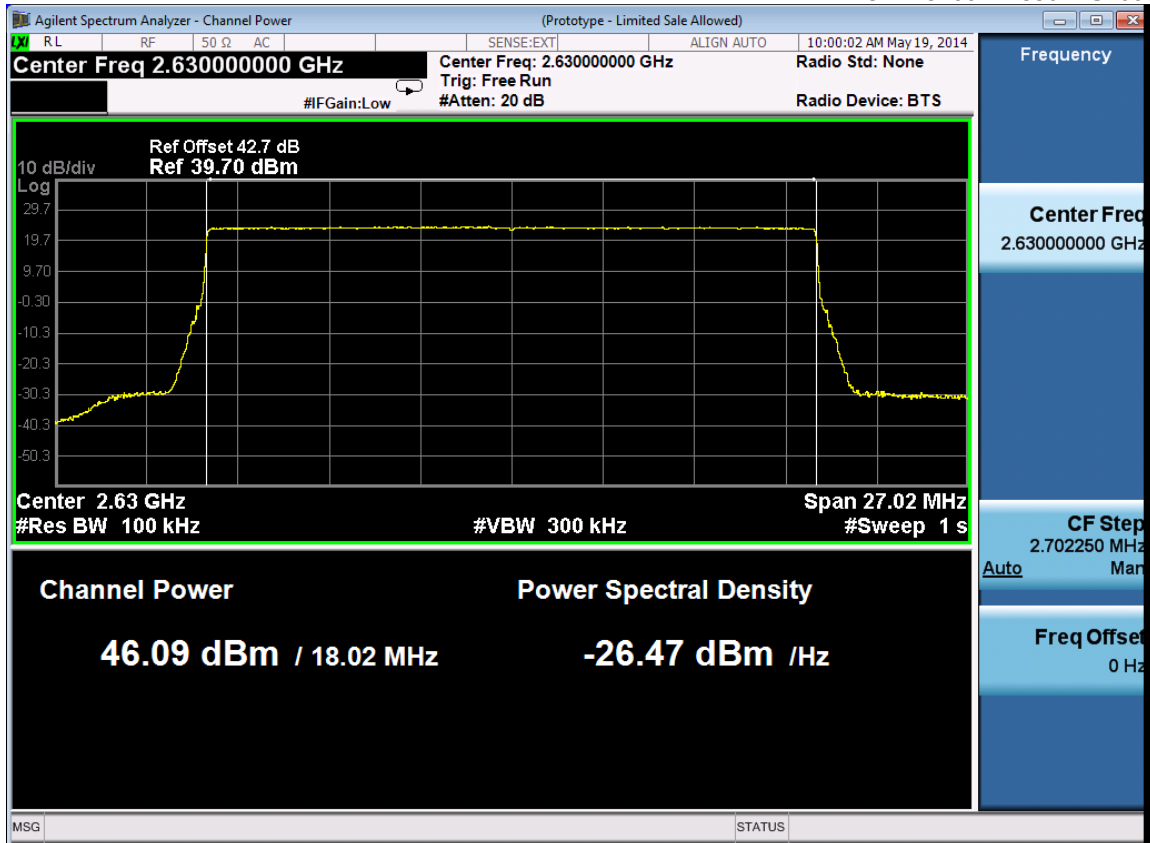
15M -Port 2 -2682.5MHz



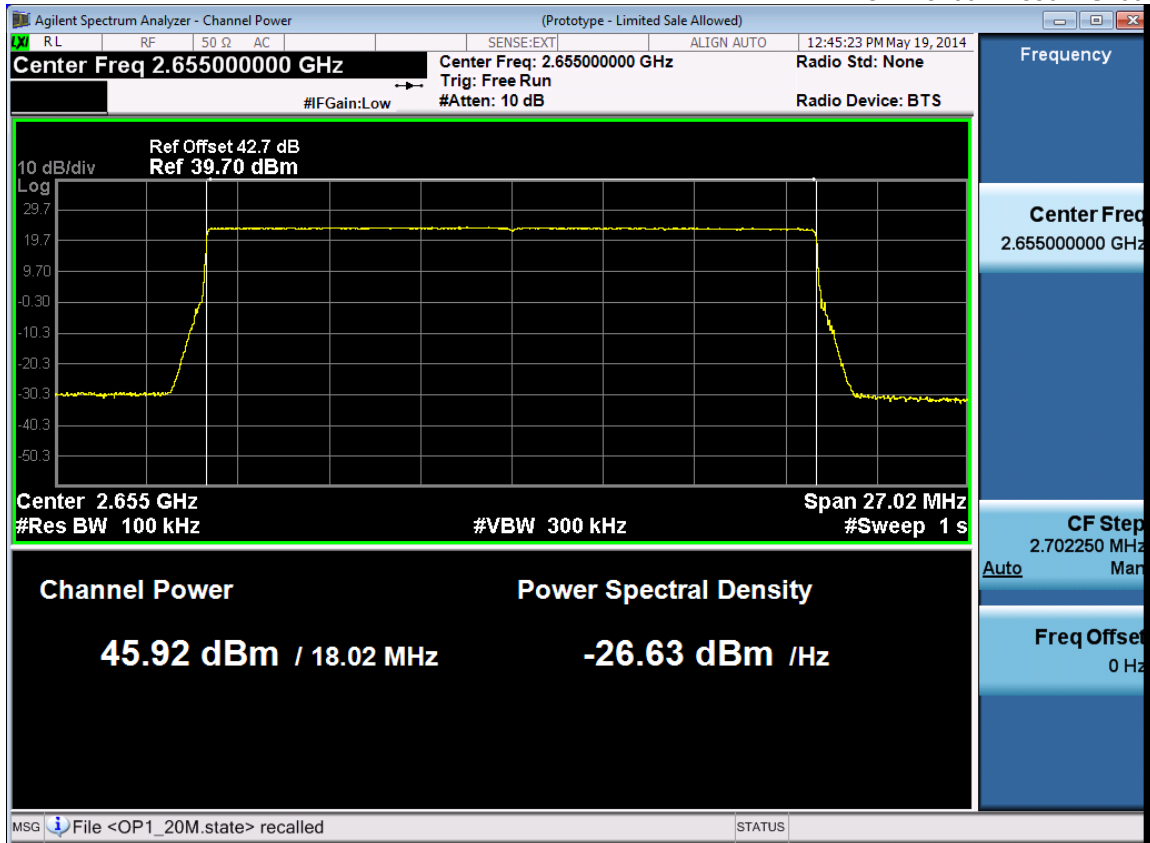
Channel Bandwidth :20M

Port	Center Freq. (MHz)	Max output Power in dBm
1	2630	46.09
	2655	45.92
	2680	46.01
2	2630	45.99
	2655	45.94
	2680	46.02

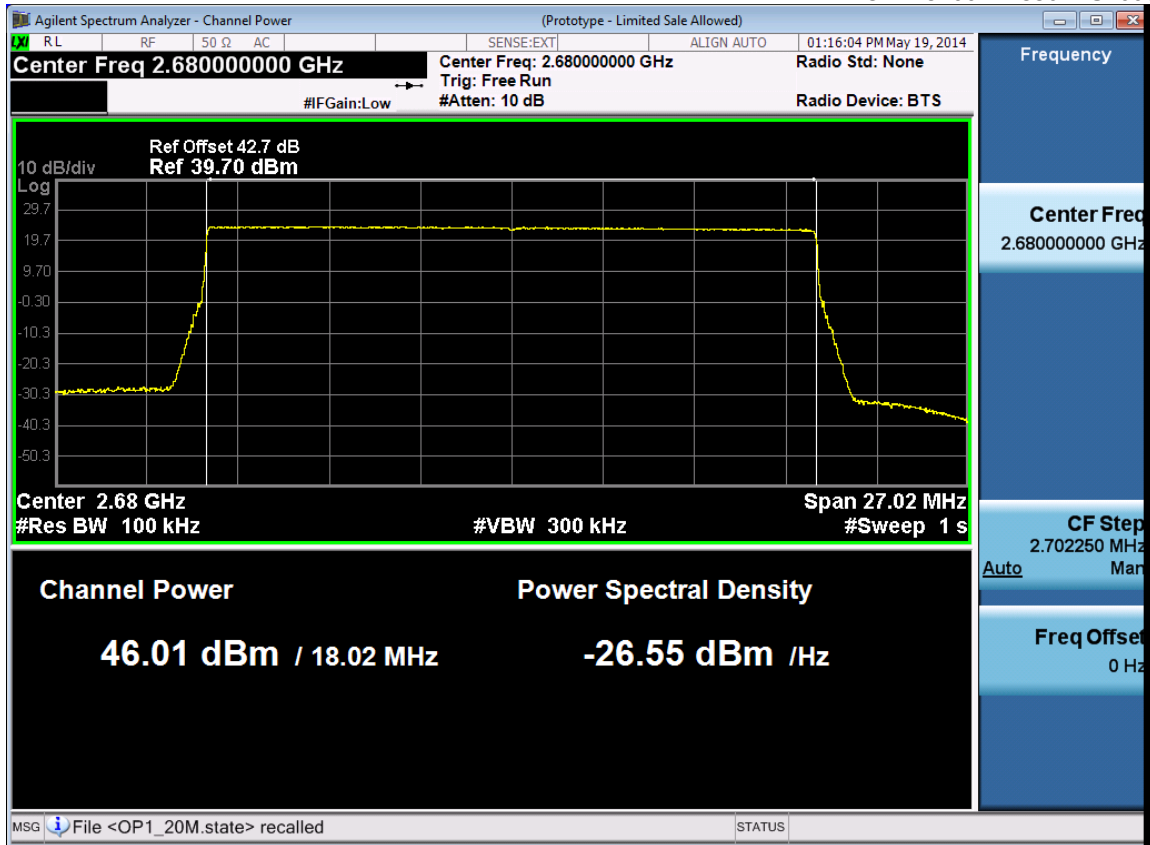
20M -Port 1 -2630MHz



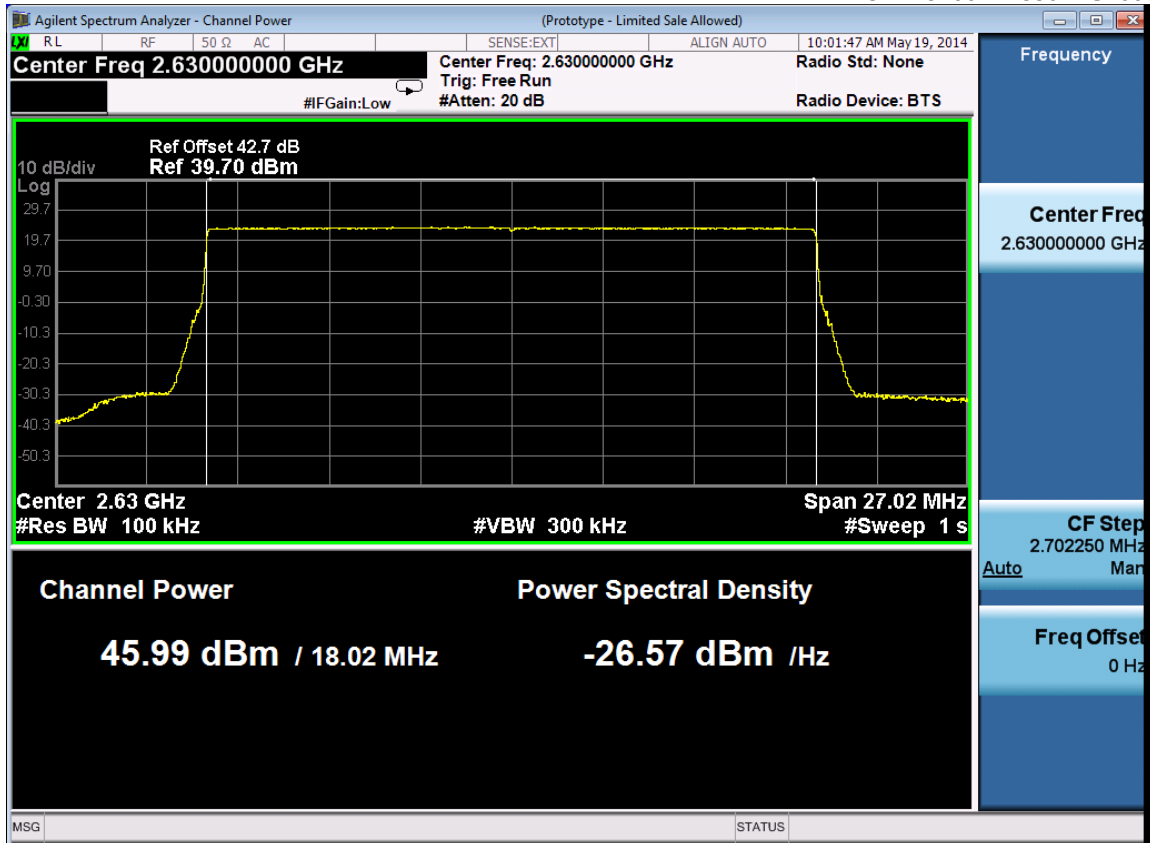
20M -Port 1 -2655MHz



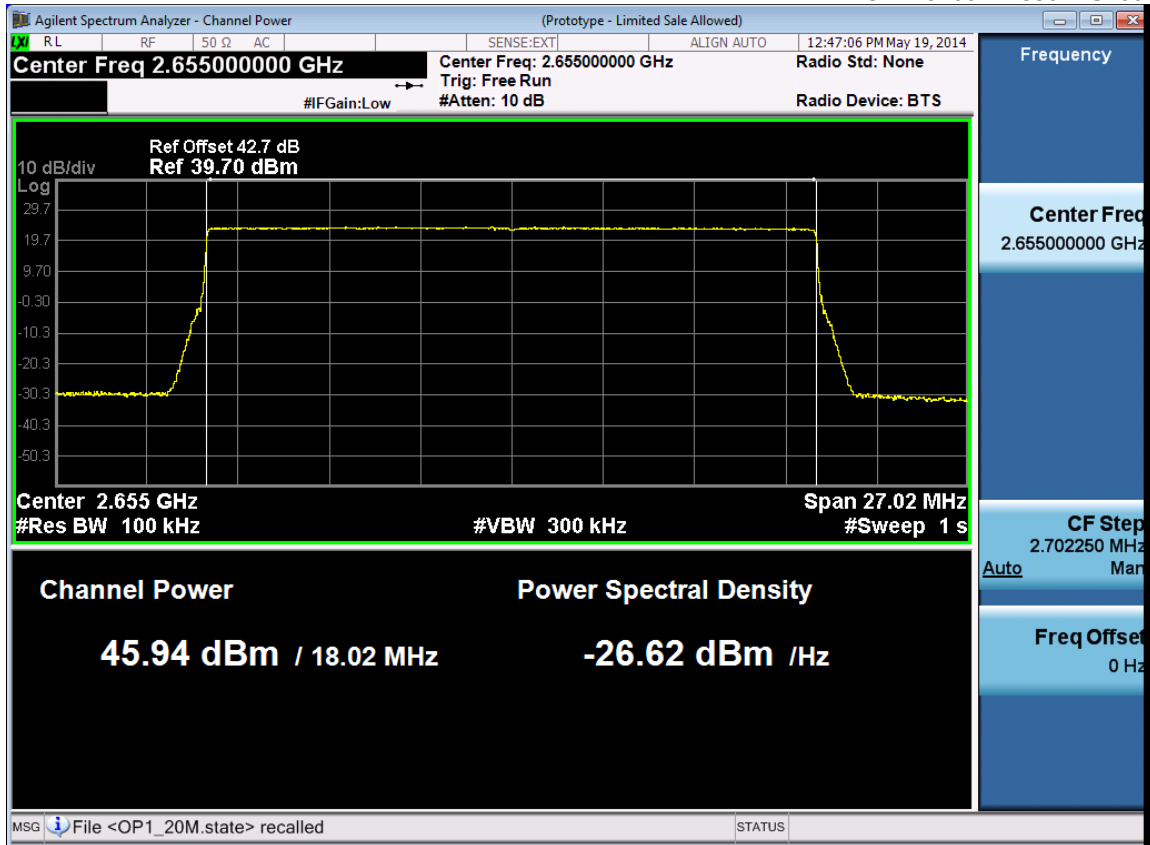
20M -Port 1 -2680MHz



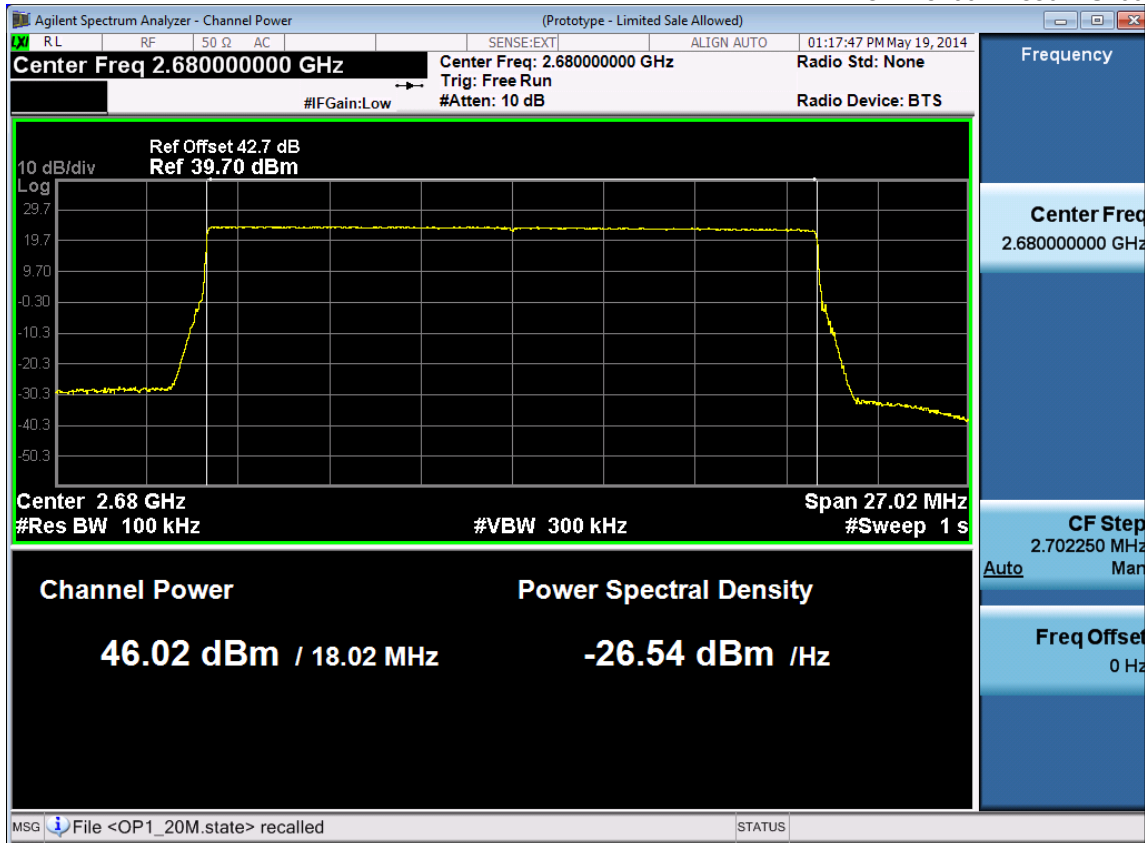
20M -Port 2 -2630MHz



20M -Port 2 -2655MHz



20M -Port 2 -2680MHz

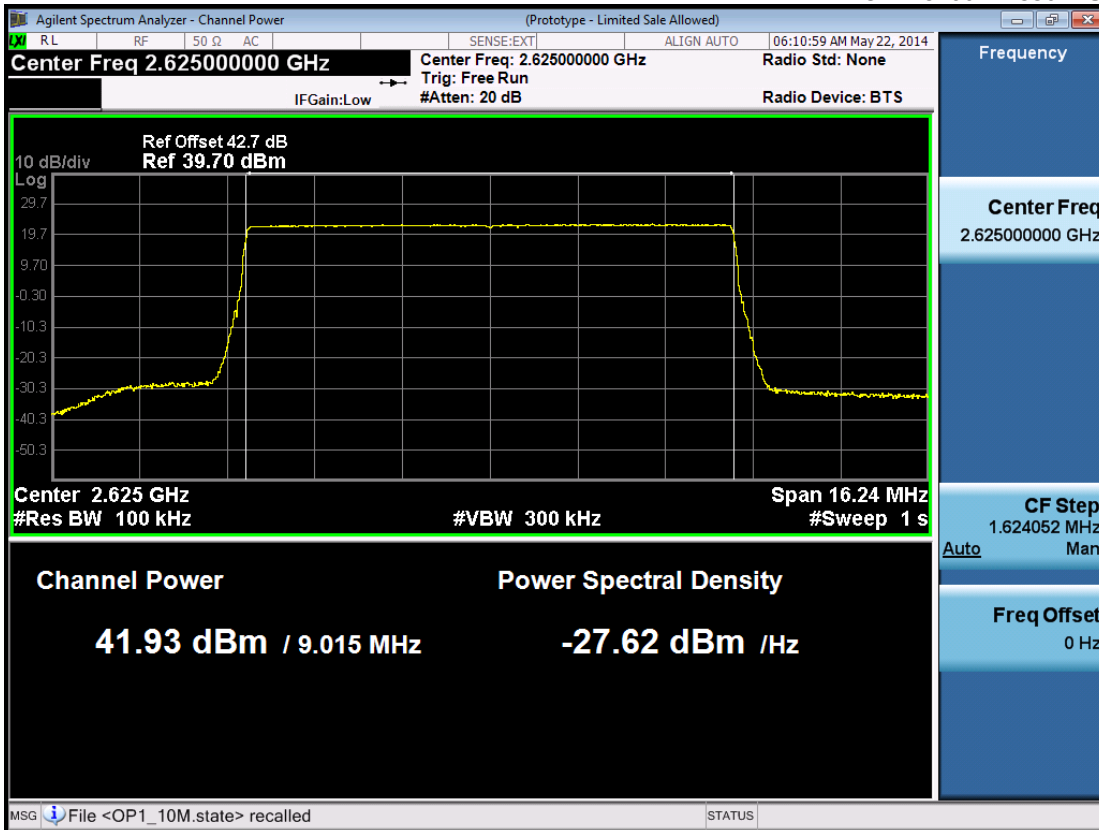


Double Carrier:

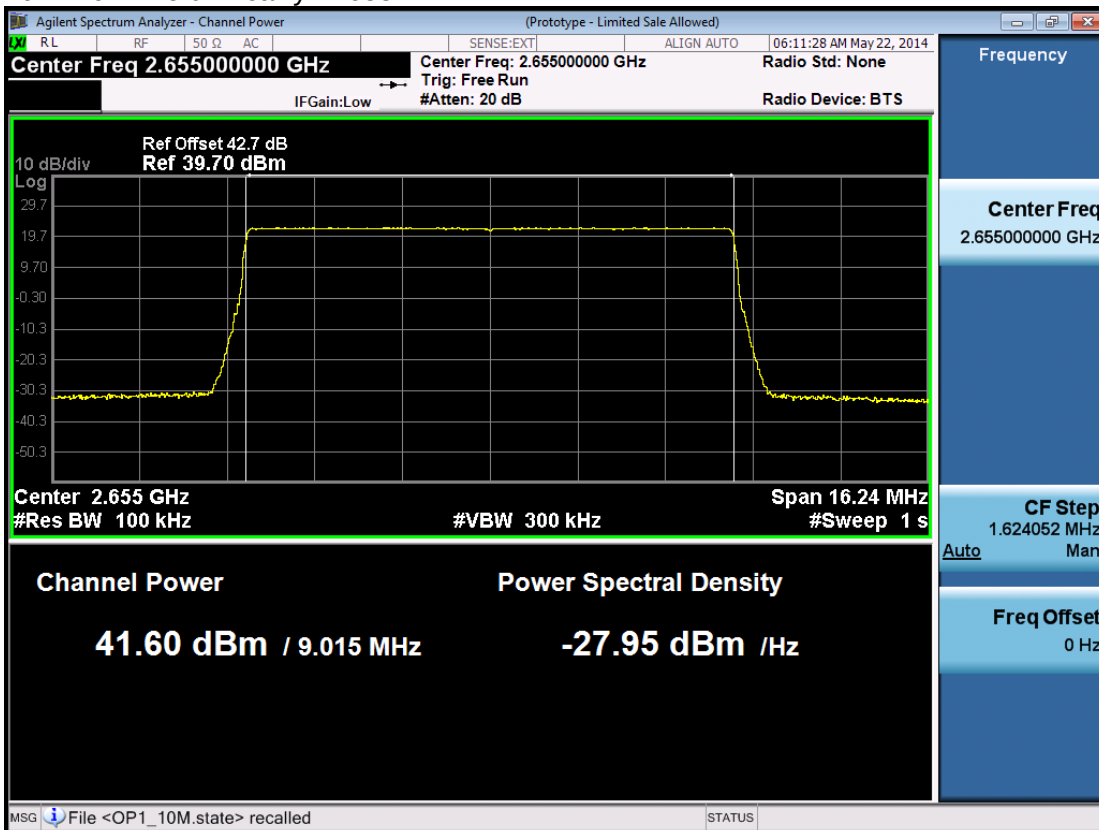
Channel Bandwidth :10M+10M

Port	Carry1 Center Freq. (MHz)	Carry1 Max output Power in dBm	Carry2 Center Freq. (MHz)	Carry2 Max output Power in dBm	Max output Power in dBm
1	2625	41.93	2655	41.60	44.79
	2640	41.95	2670	41.40	44.71
	2655	42.16	2685	41.68	44.70
2	2625	41.92	2655	41.59	44.77
	2640	41.93	2670	41.38	44.69
	2655	42.13	2685	41.66	44.70

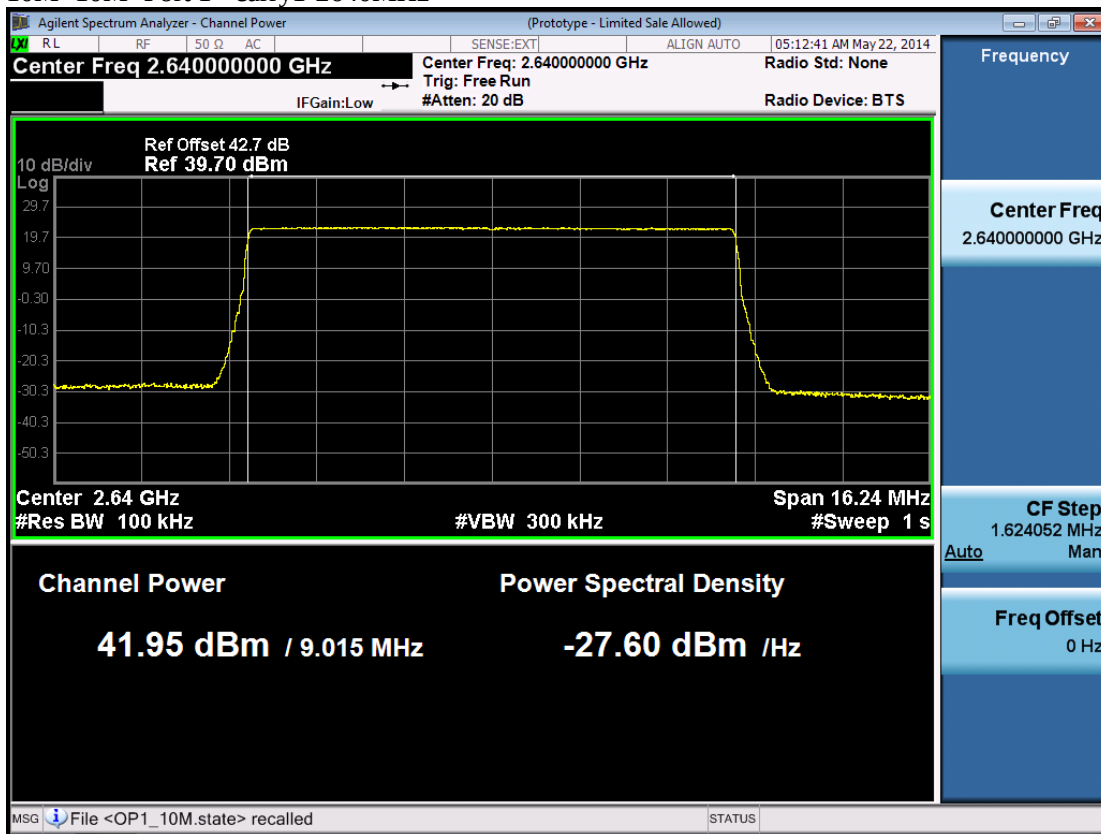
10M+10M -Port 1 –carry1-2625MHz



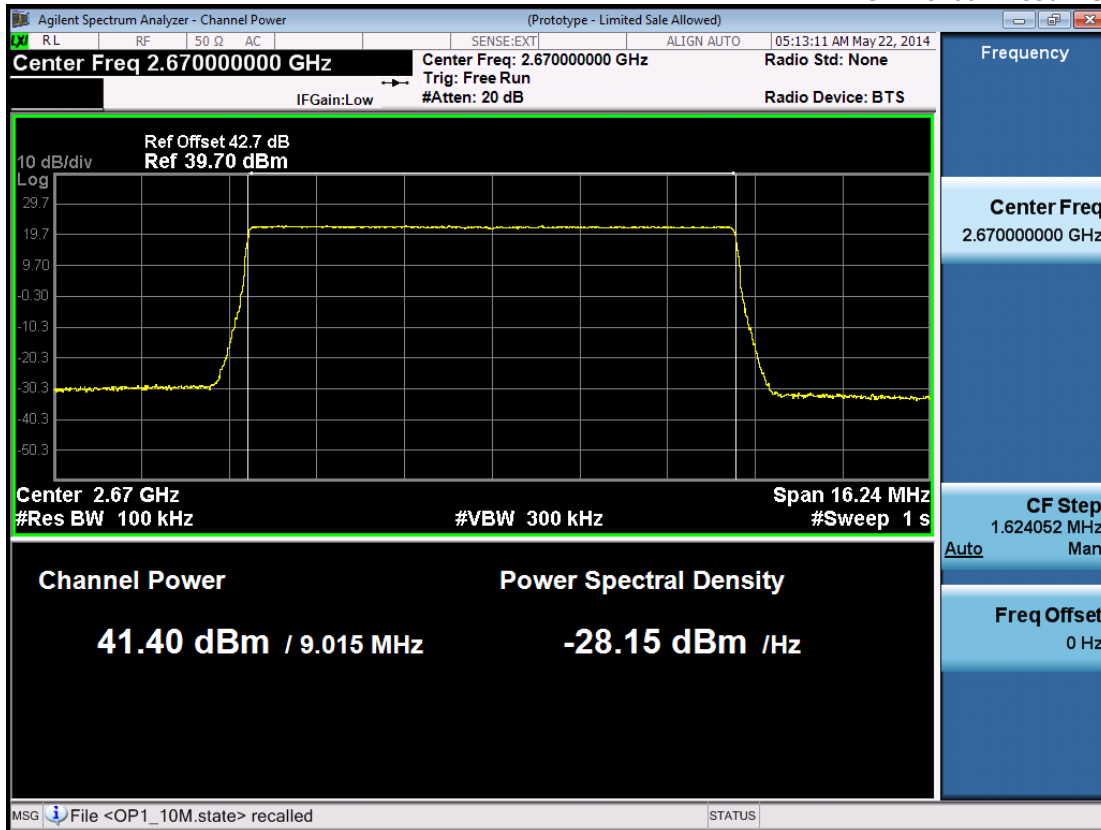
10M+10M -Port 1 –carry2-2655MHz



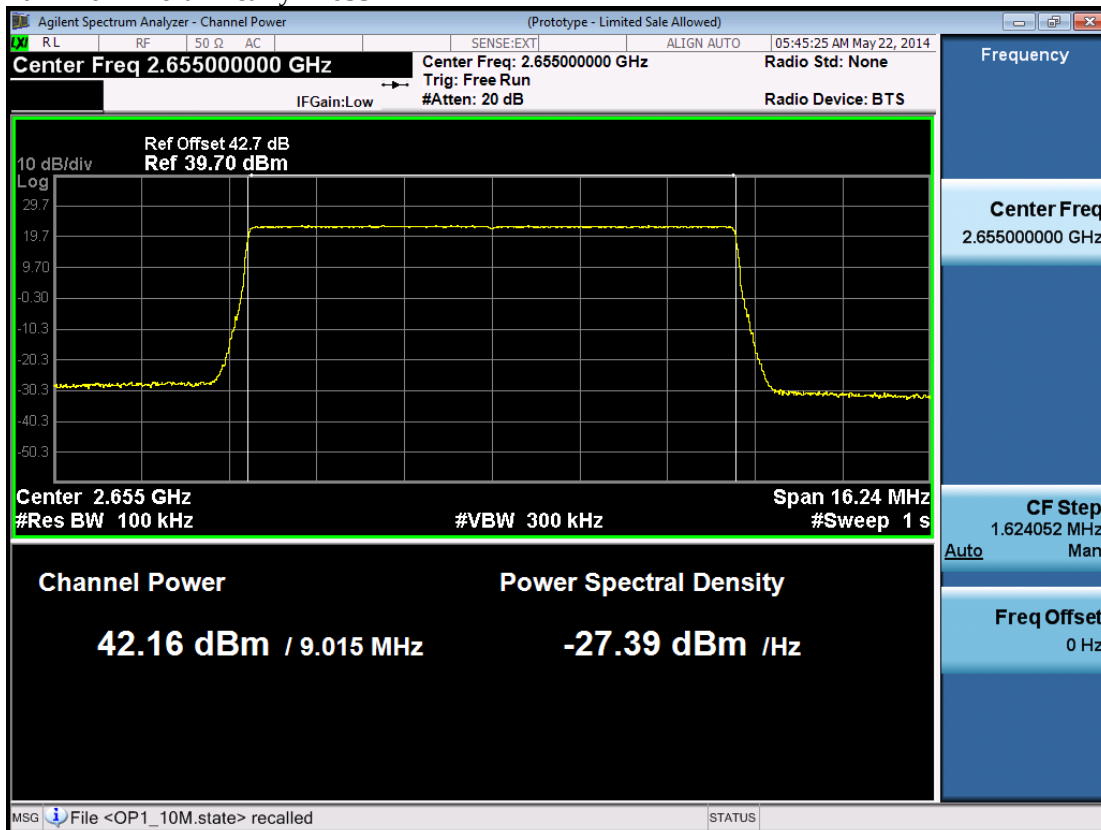
10M+10M -Port 1 - carry1-2640MHz



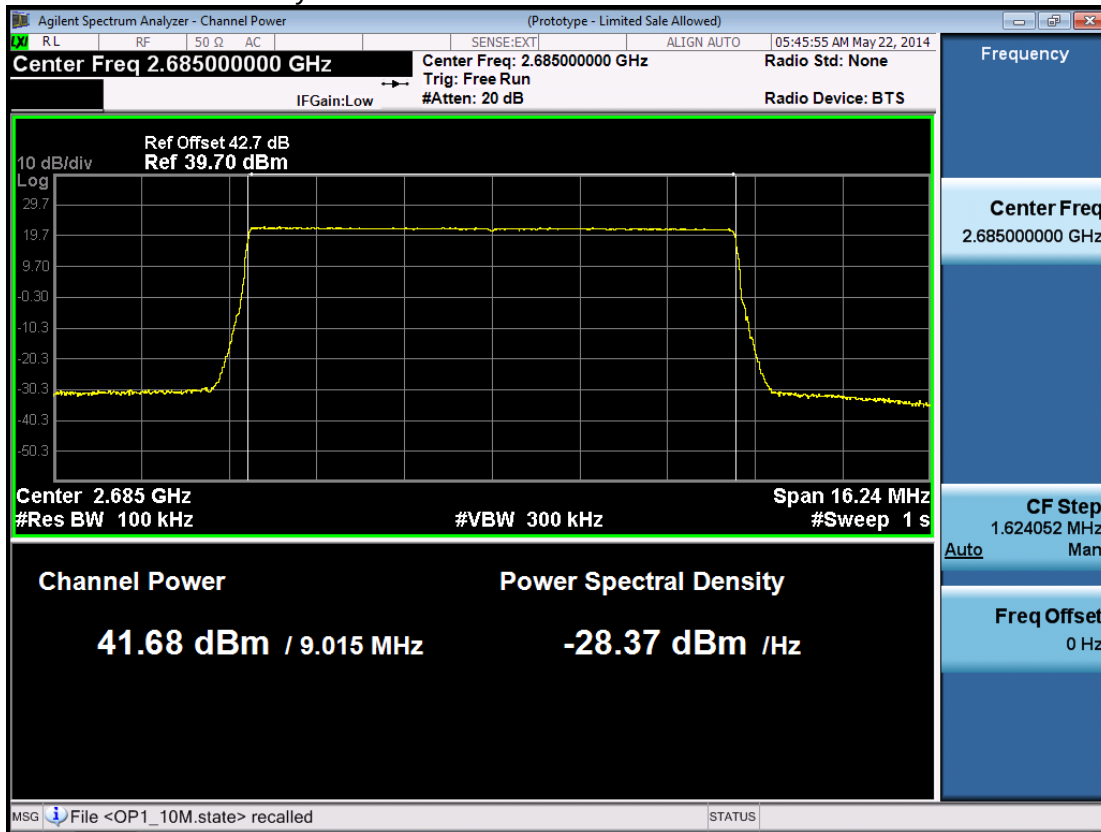
10M+10M -Port 1 -carry2-2670MHz



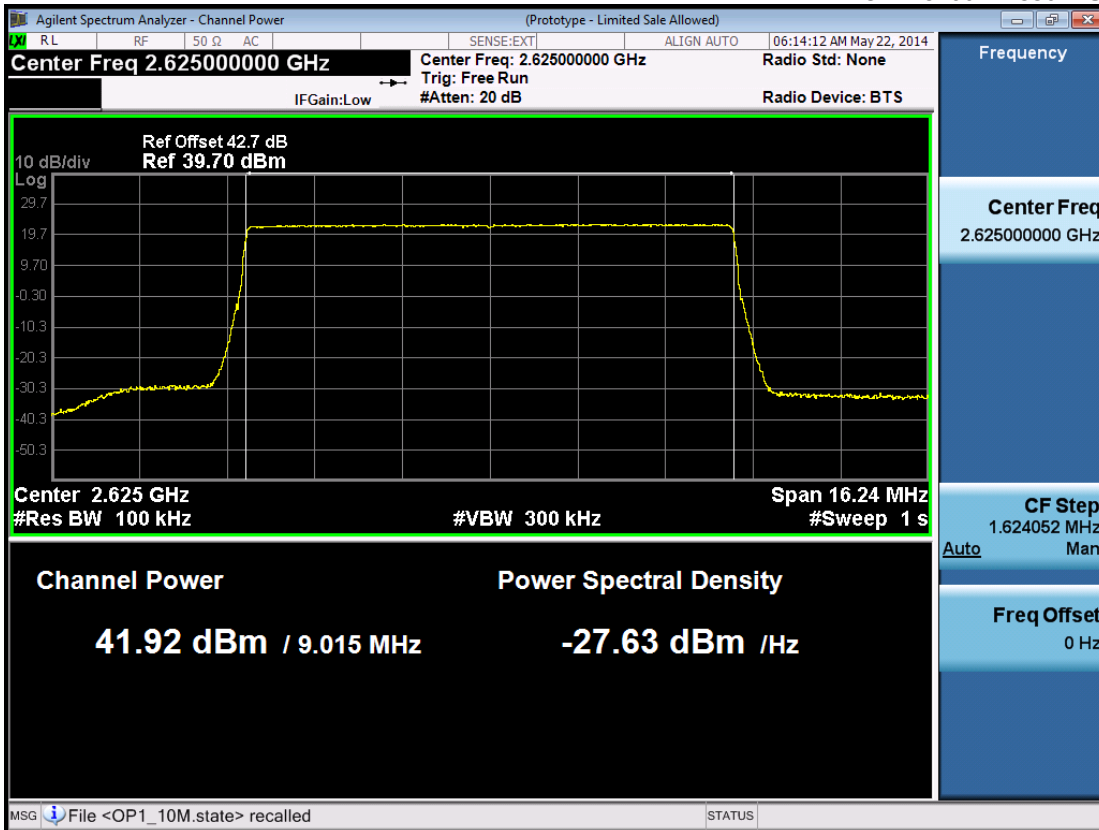
10M+10M -Port 1 - carry1-2655MHz



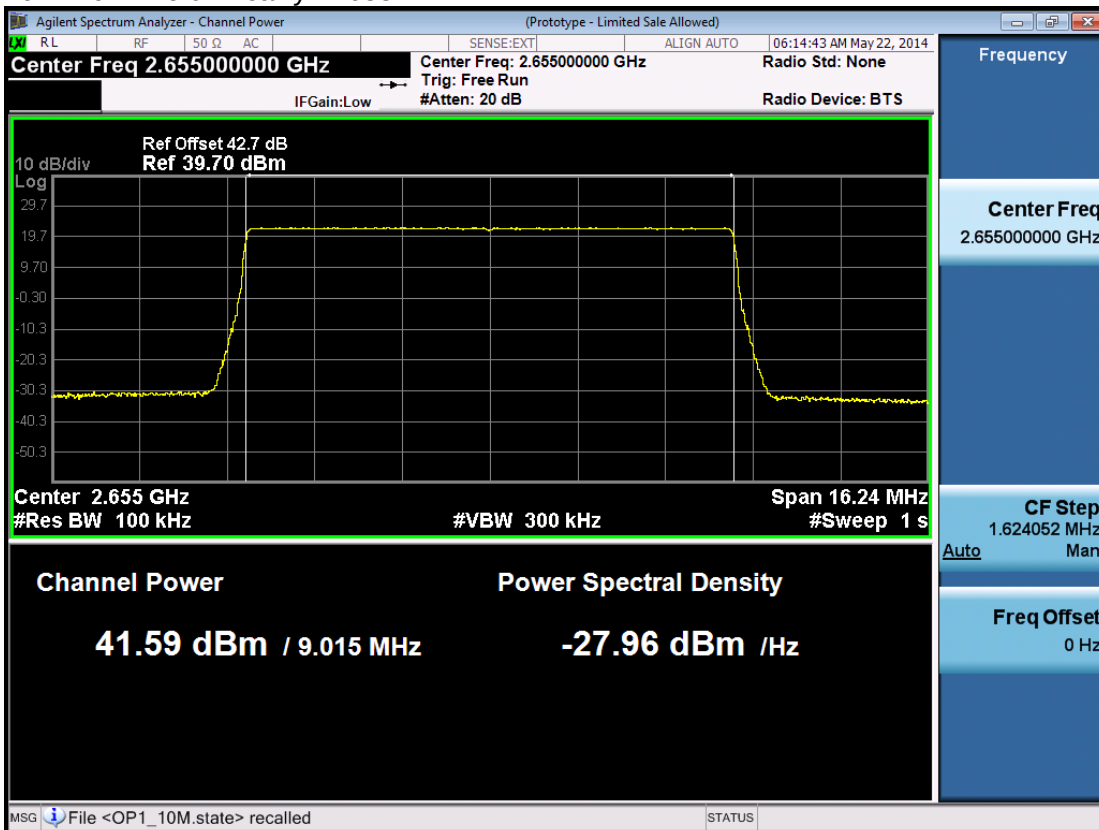
10M+10M -Port 1 –carry2-2685MHz



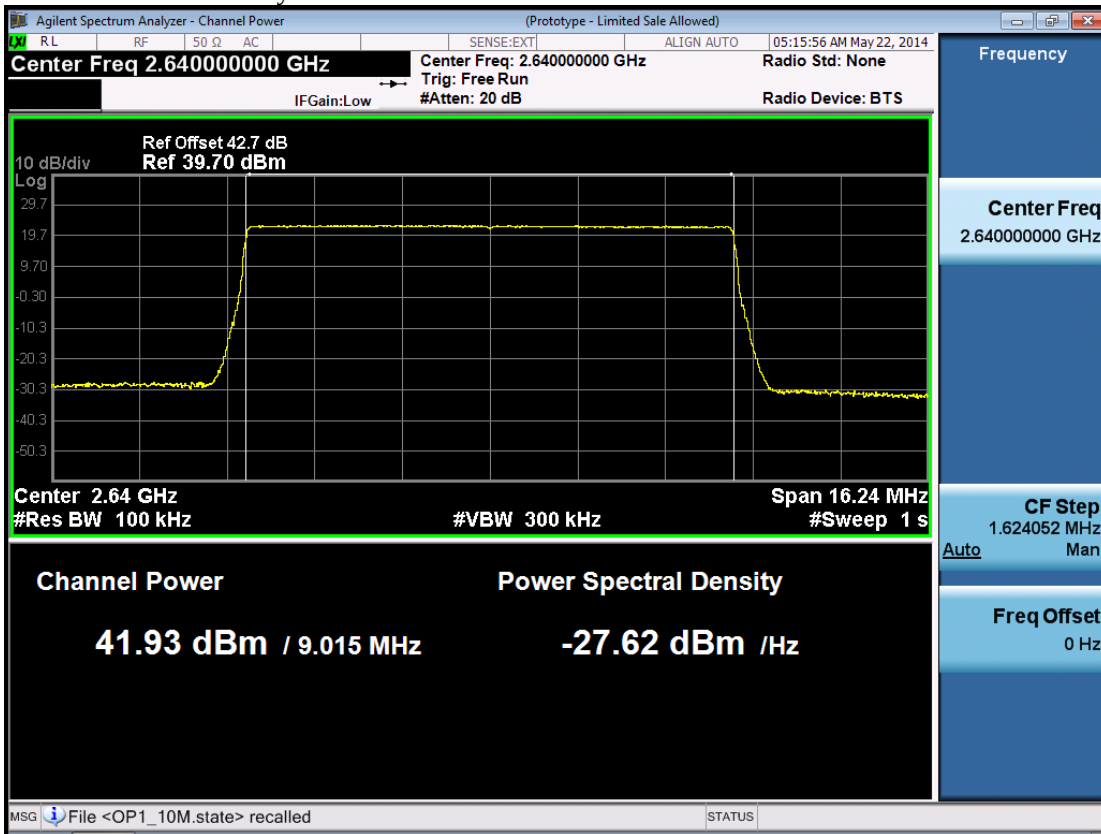
10M+10M -Port 2 –carry1-2625MHz



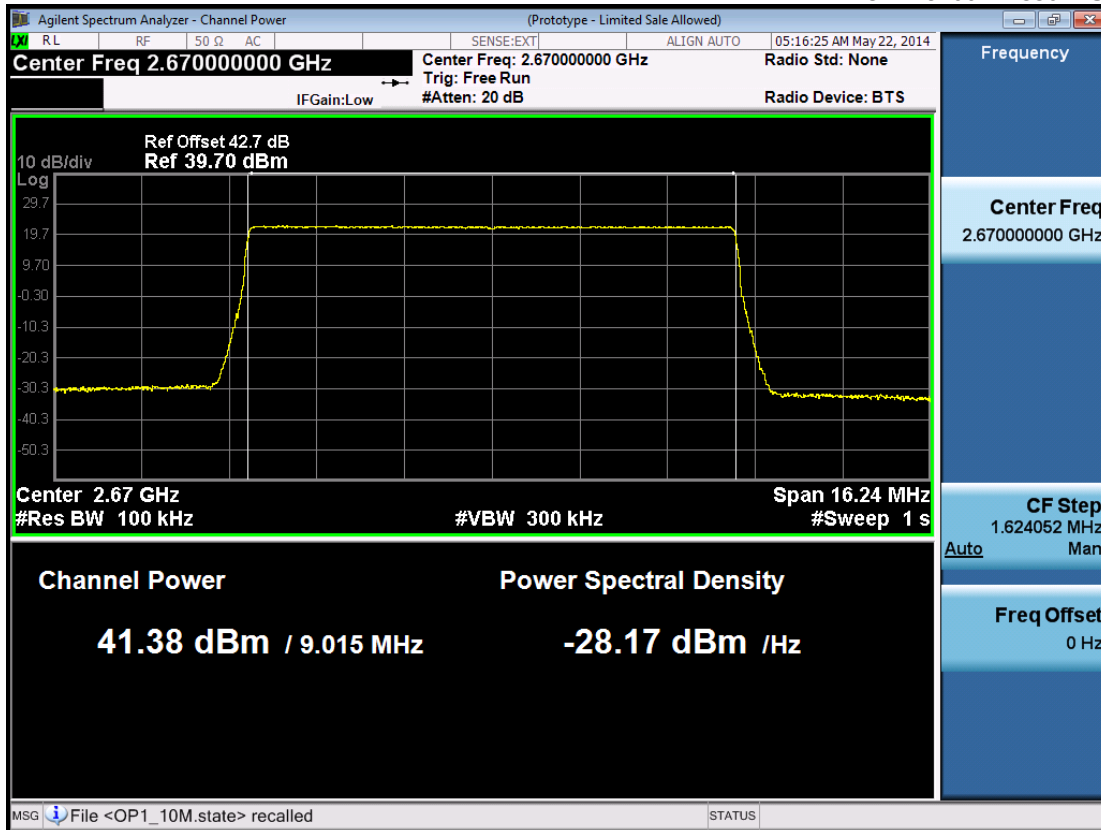
10M+10M -Port 2 -carry2-2655MHz



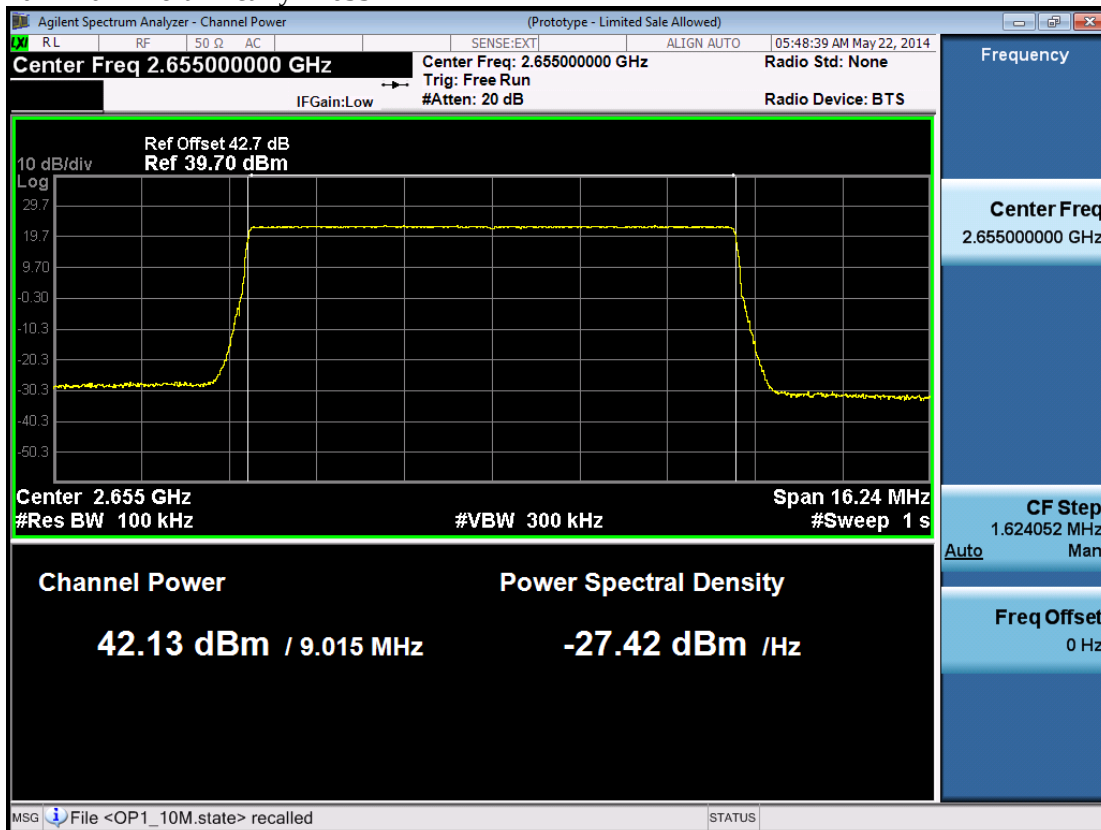
10M+10M -Port 2 - carry1-2640MHz



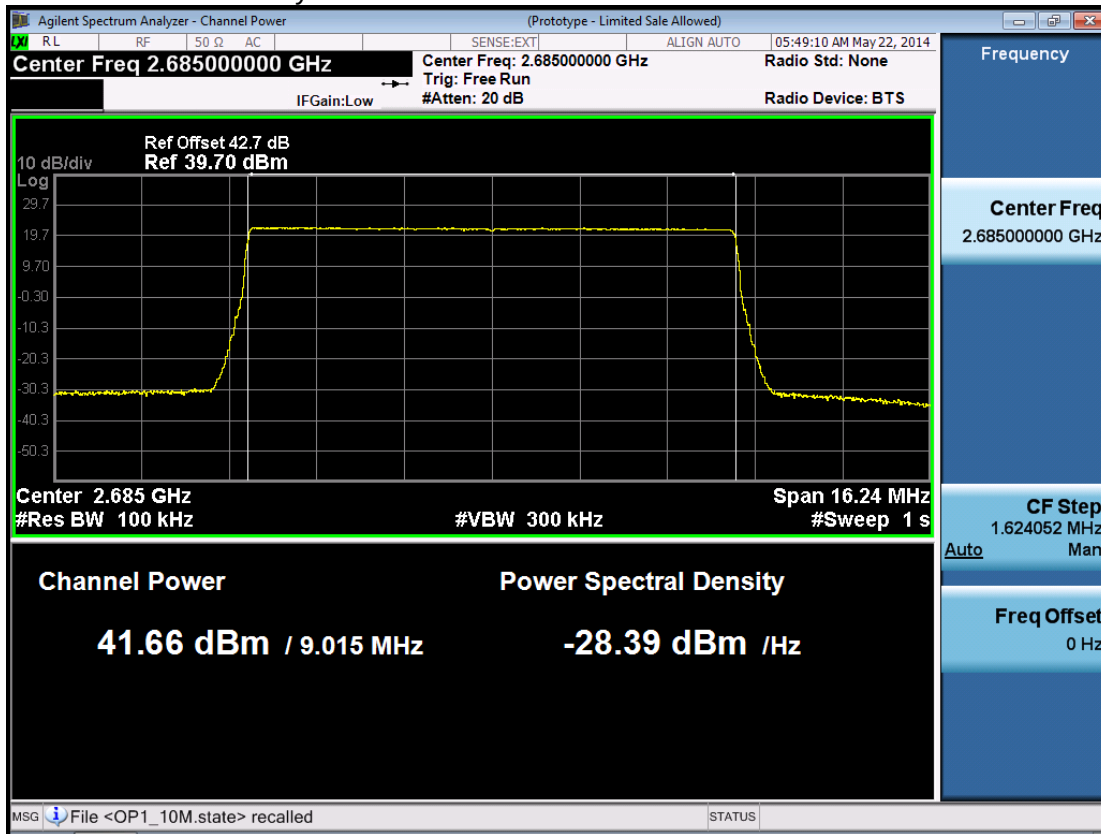
10M+10M -Port 2 -carry2-2670MHz



10M+10M -Port 2 - carry1-2655MHz



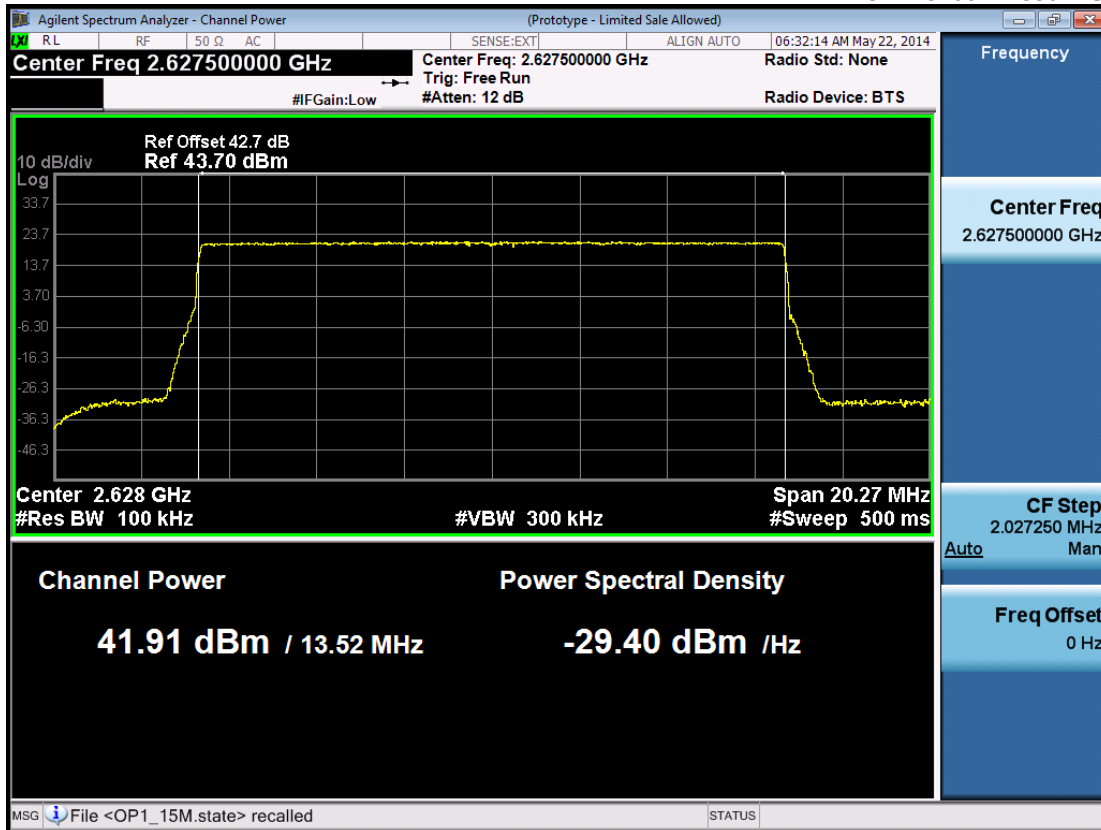
10M+10M -Port 2 –carry2-2685MHz



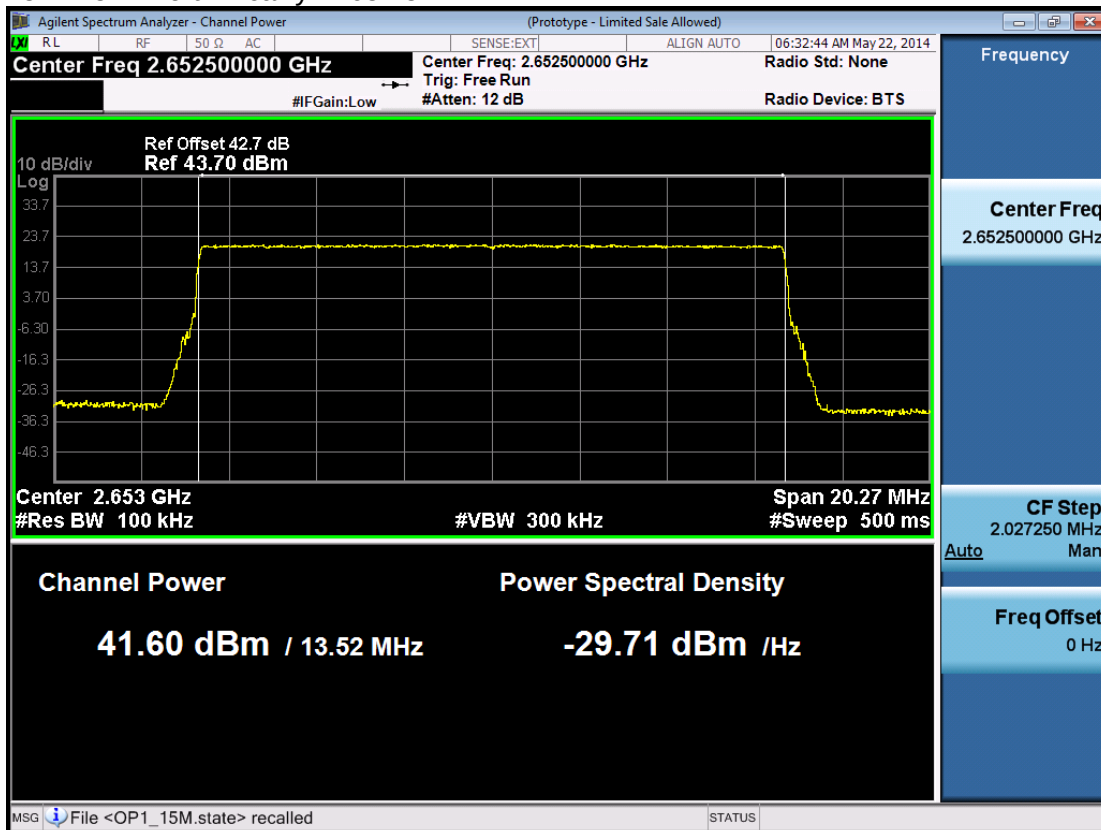
Channel Bandwidth :15M+15M

Port	Carry1 Center Freq. (MHz)	Carry1 Max output Power in dBm	Carry2 Center Freq. (MHz)	Carry2 Max output Power in dBm	Max output Power in dBm
1	2627.5	41.91	2652.5	41.60	44.77
	2642.5	41.94	2667.5	41.51	44.76
	2657.5	42.02	2682.5	41.47	44.68
2	2627.5	41.88	2652.5	41.58	44.75
	2642.5	41.91	2667.5	41.49	44.73
	2657.5	42.01	2682.5	41.51	44.65

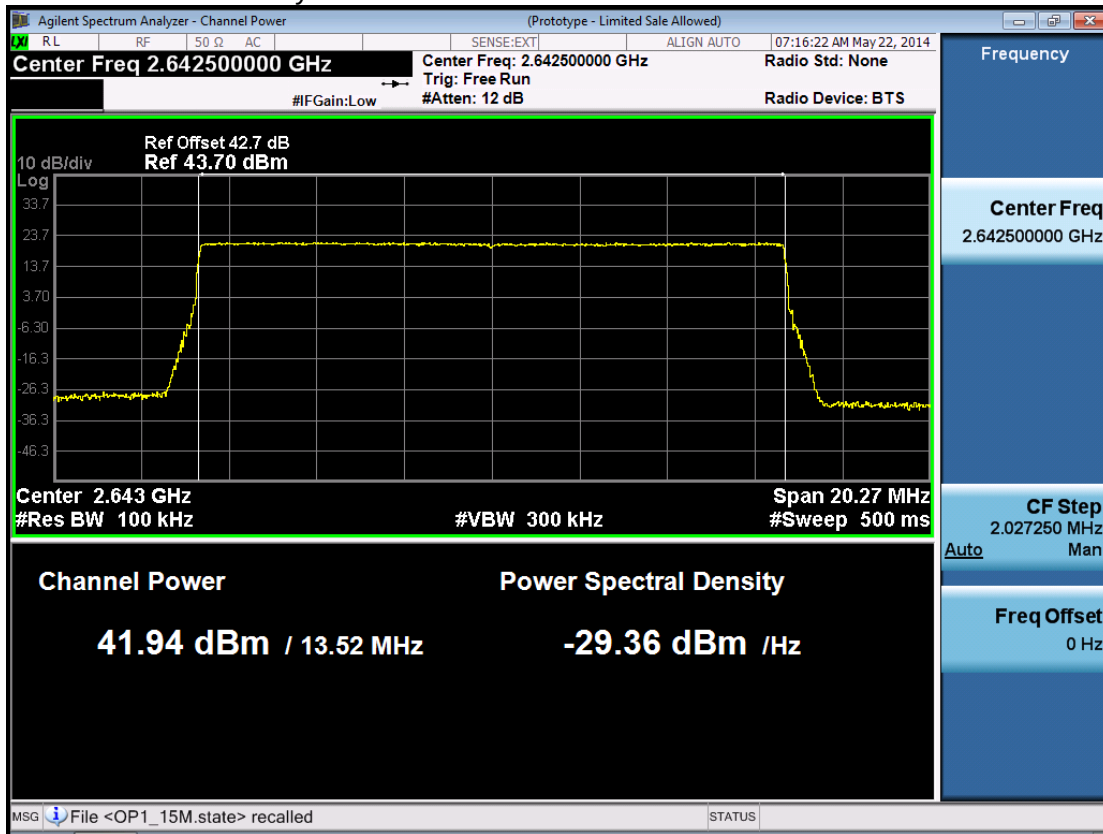
15M+15M -Port 1 –carry1-2627.5MHz



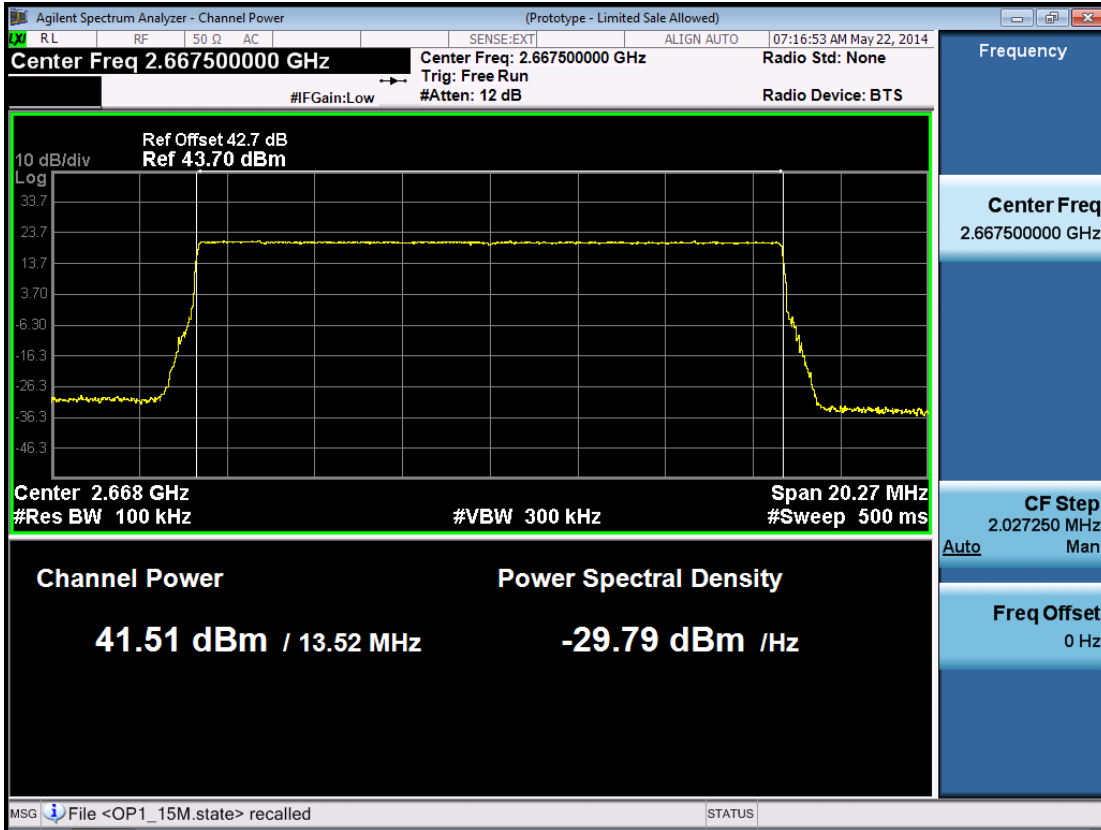
15M+15M -Port 1 -carry2-2652.5MHz



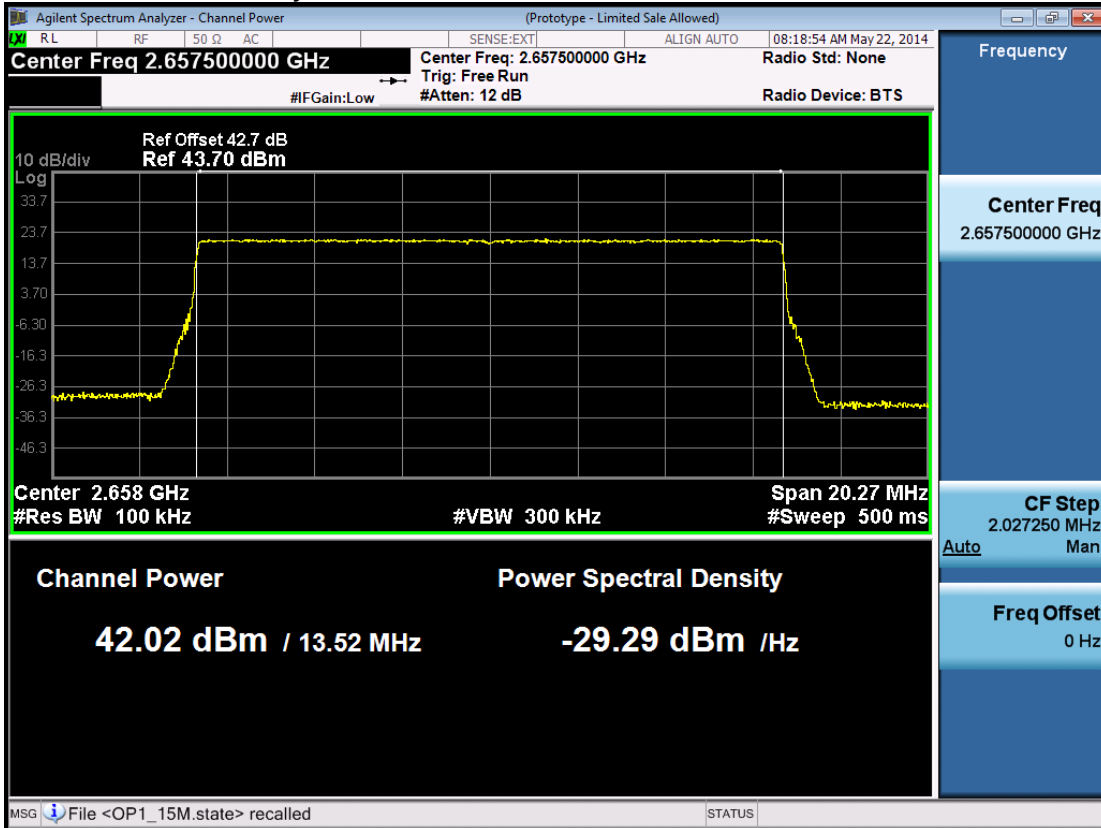
15M+15M -Port 1 –carry1-2642.5MHz



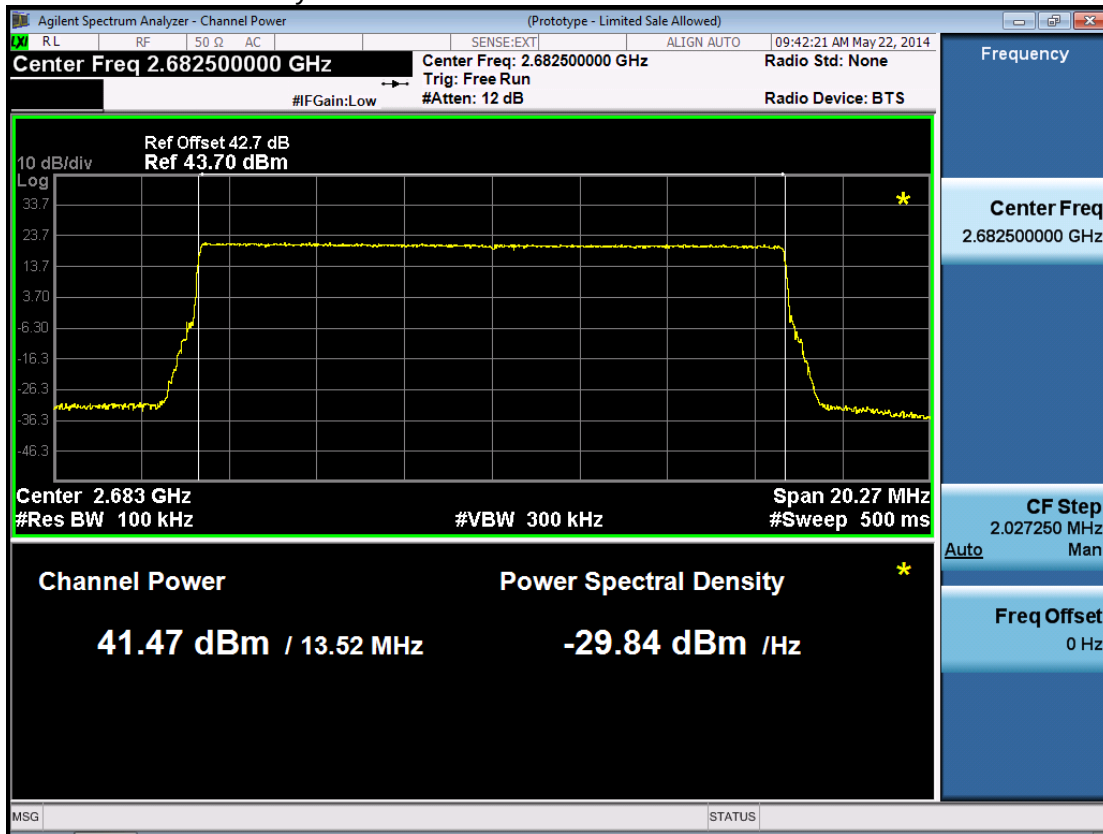
15M+15M -Port 1 –carry2-2667.5MHz



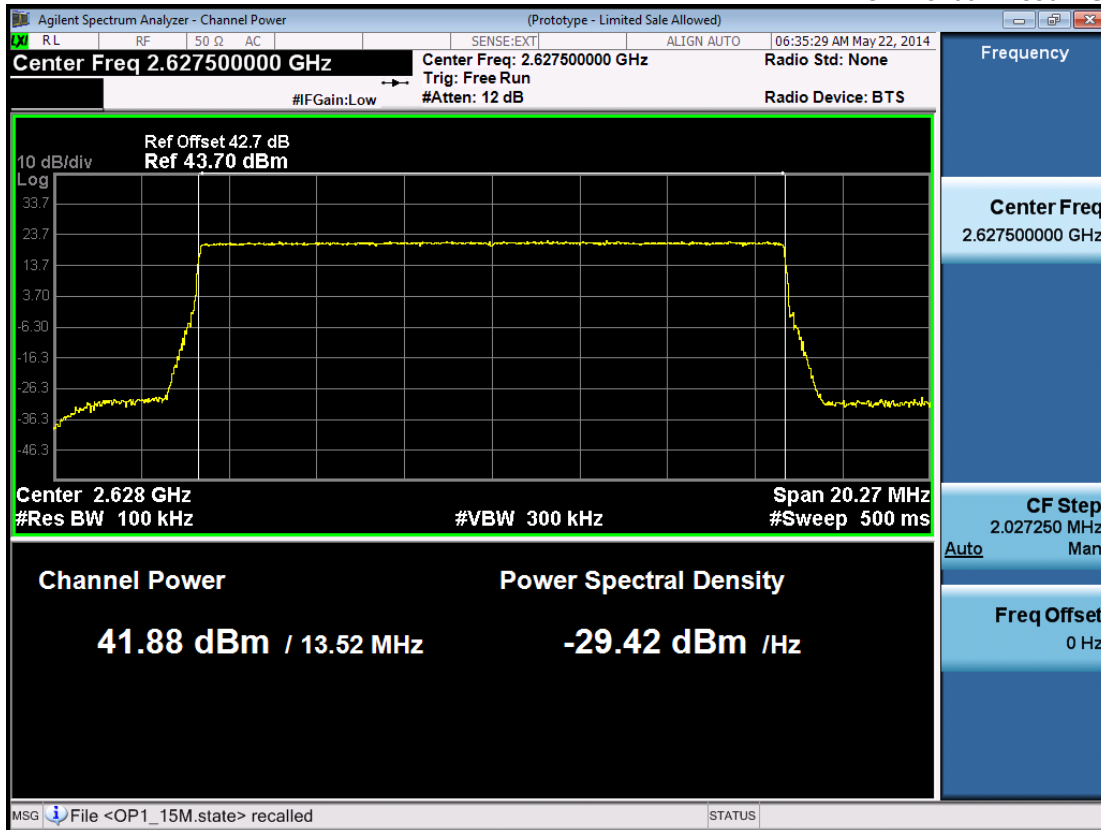
15M+15M -Port 1 –carry1-2657.5MHz



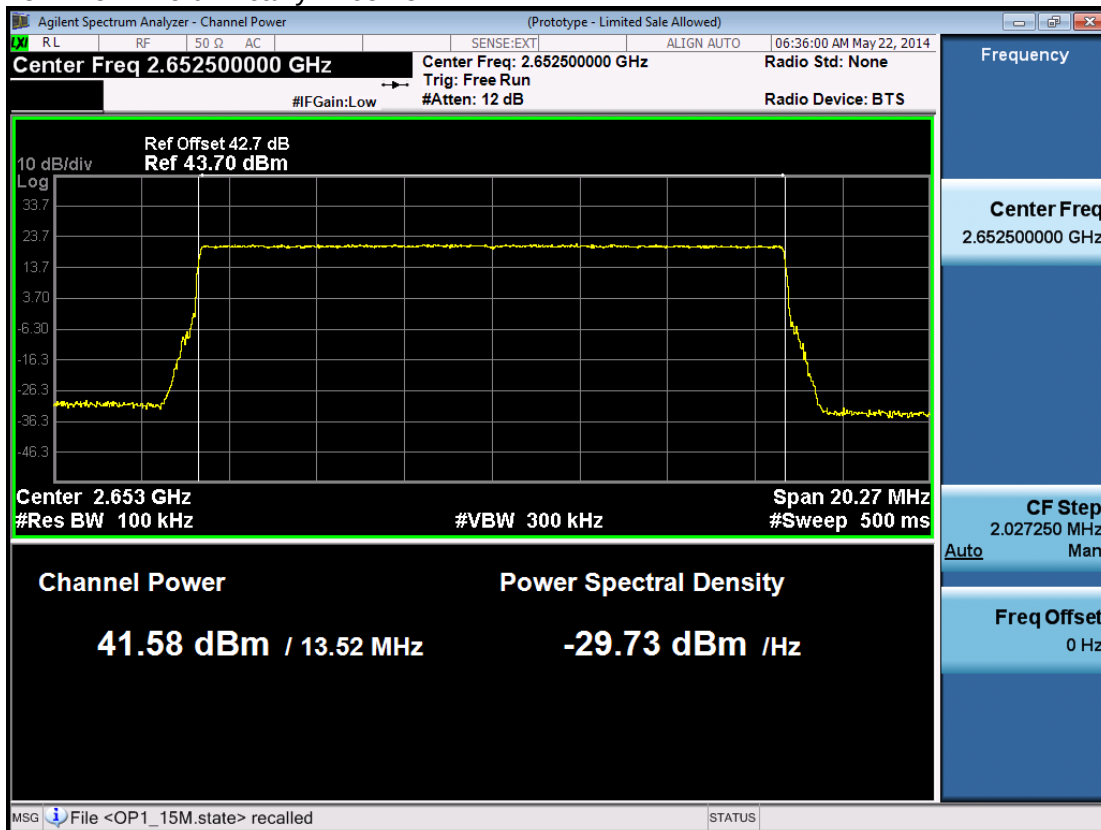
15M+15M -Port 1 –carry2-2682.5MHz



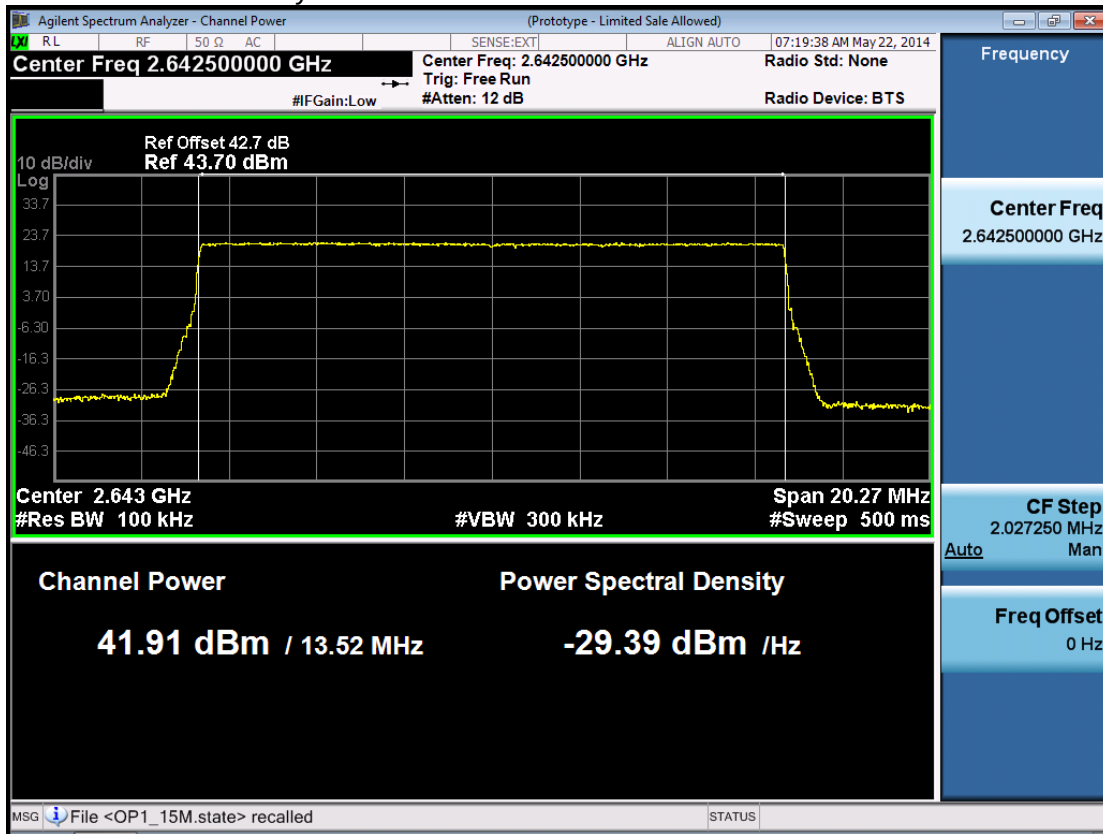
15M+15M -Port 2 –carry1-2627.5MHz



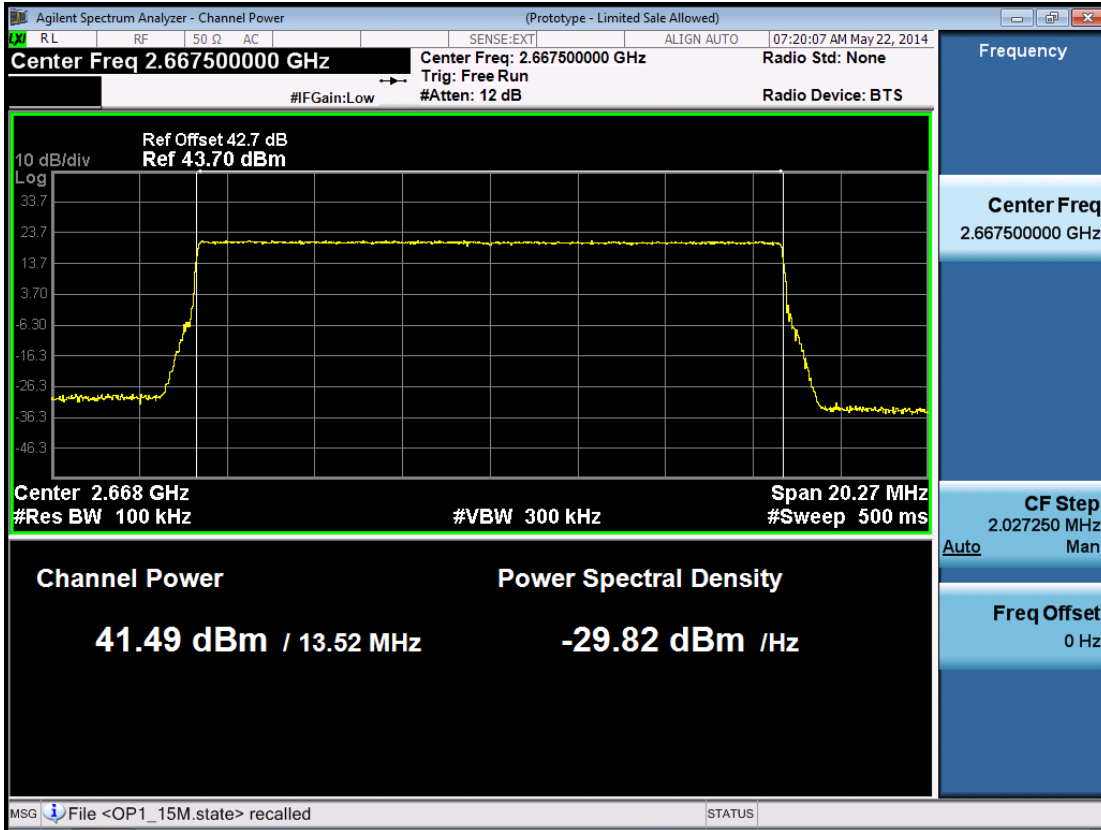
15M+15M -Port 2 -carry2-2652.5MHz



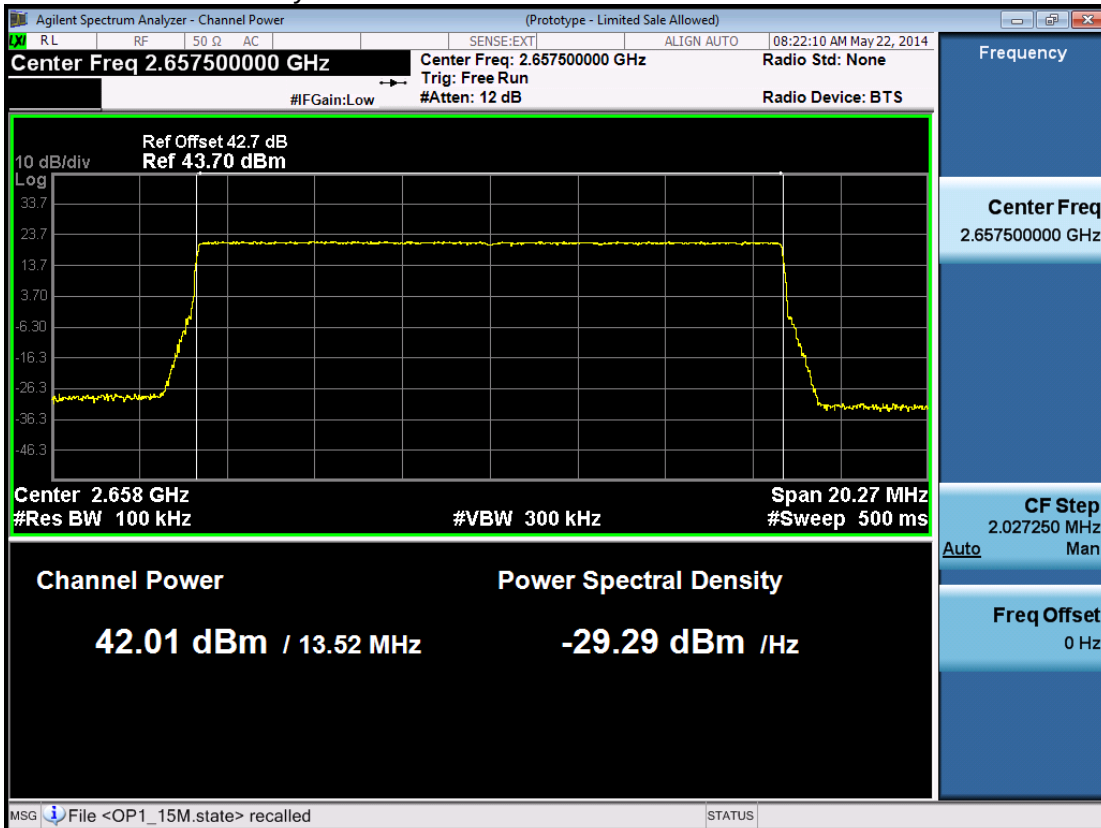
15M+15M -Port 2 –carry1-2642.5MHz



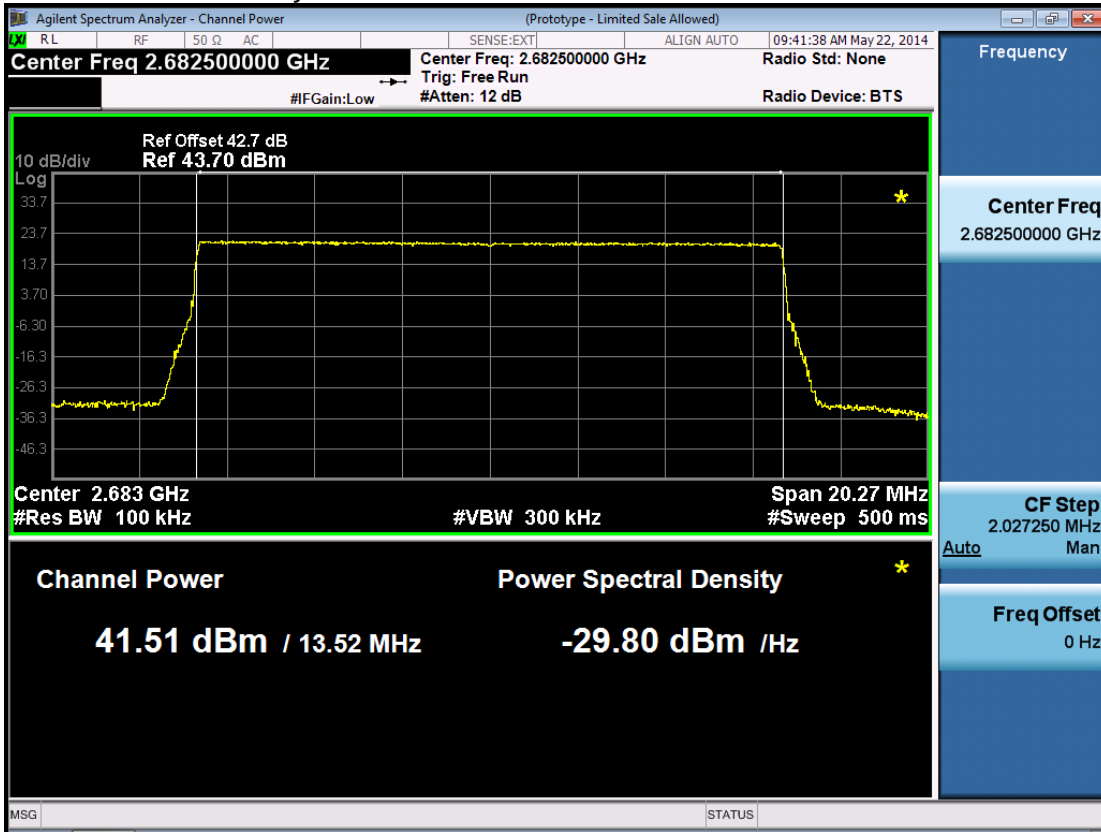
15M+15M -Port 2 –carry2-2667.5MHz



15M+15M -Port 2 -carry1-2657.5MHz



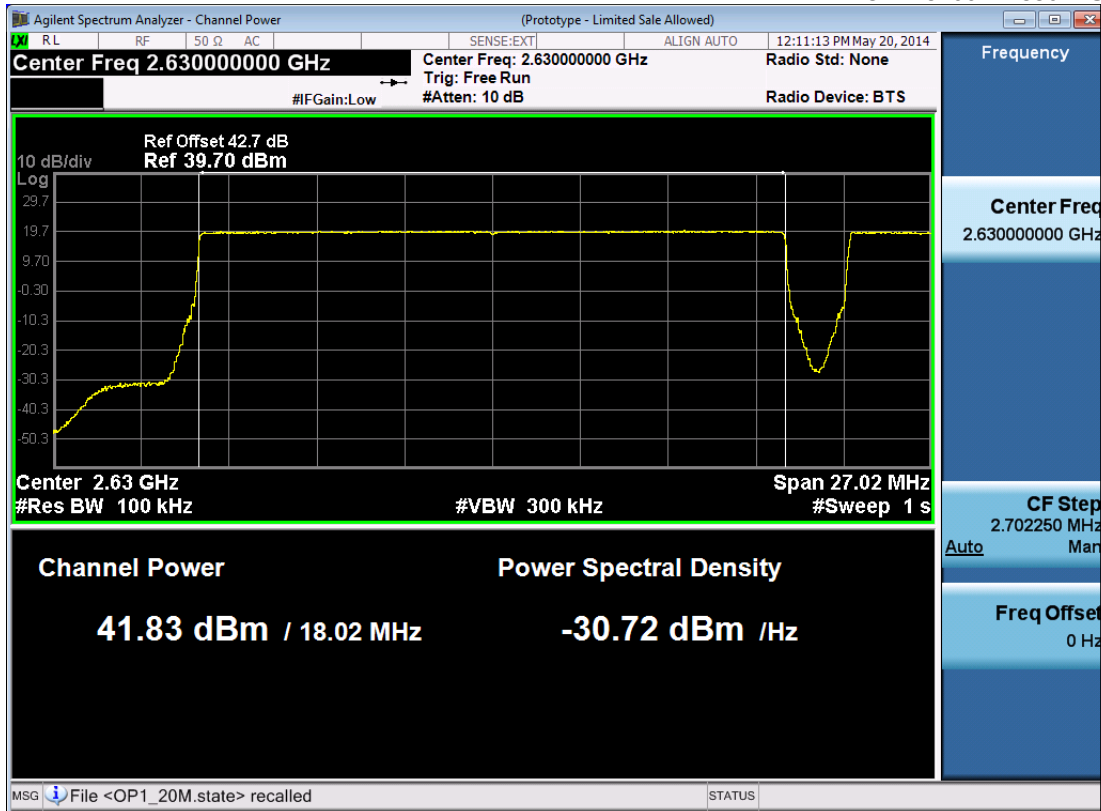
15M+15M -Port 2 –carry2-2682.5MHz



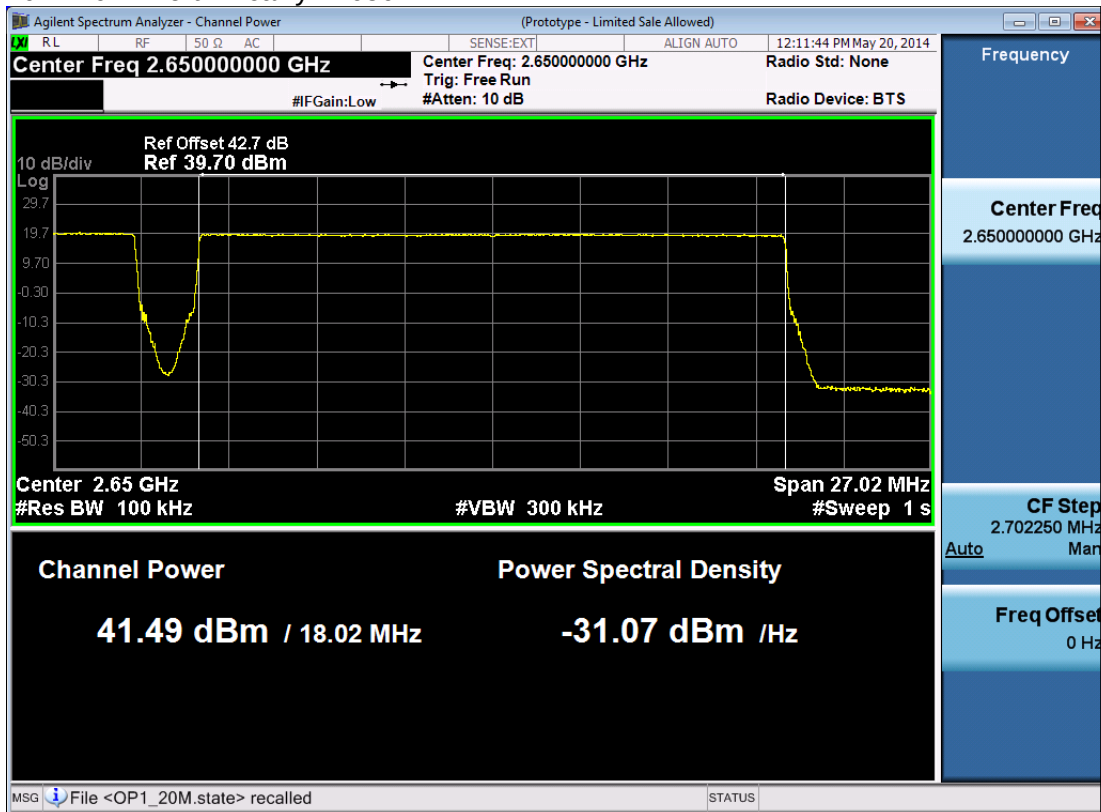
Channel Bandwidth :20M+20M

Port	Carry1 Center Freq. (MHz)	Carry1 Max output Power in dBm	Carry2 Center Freq. (MHz)	Carry2 Max output Power in dBm	Max output Power in dBm
1	2630	41.83	2650	41.49	44.71
	2645	41.77	2665	41.42	44.62
	2660	41.99	2680	41.41	44.73
2	2630	41.86	2650	41.51	44.70
	2645	41.76	2665	41.42	44.61
	2660	41.97	2680	41.40	44.71

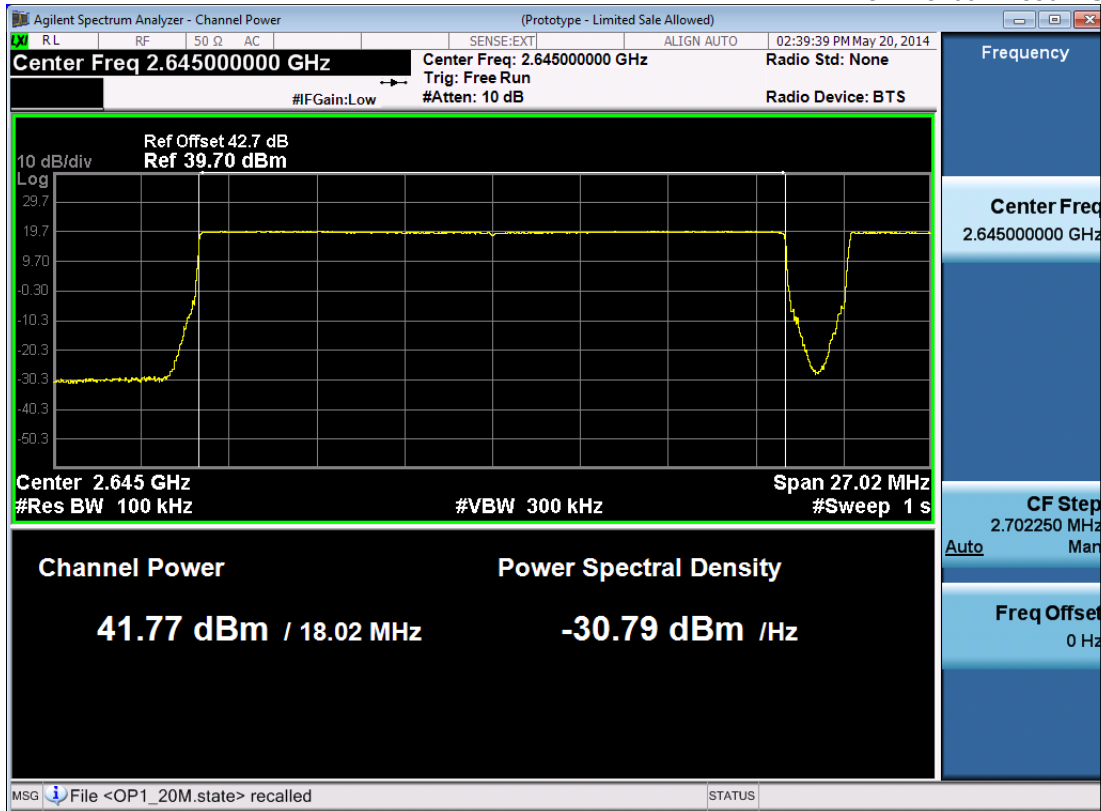
20M+20M -Port 1 –carry1-2630MHz



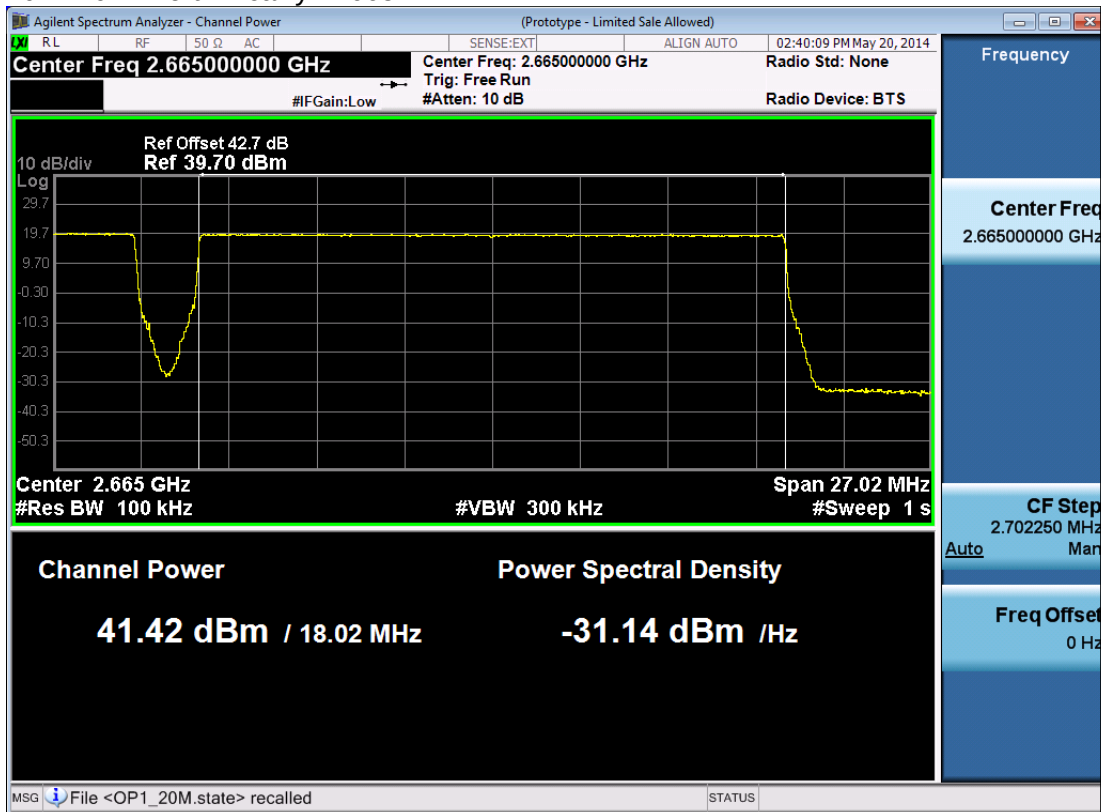
20M+20M -Port 1 -carry2-2650MHz



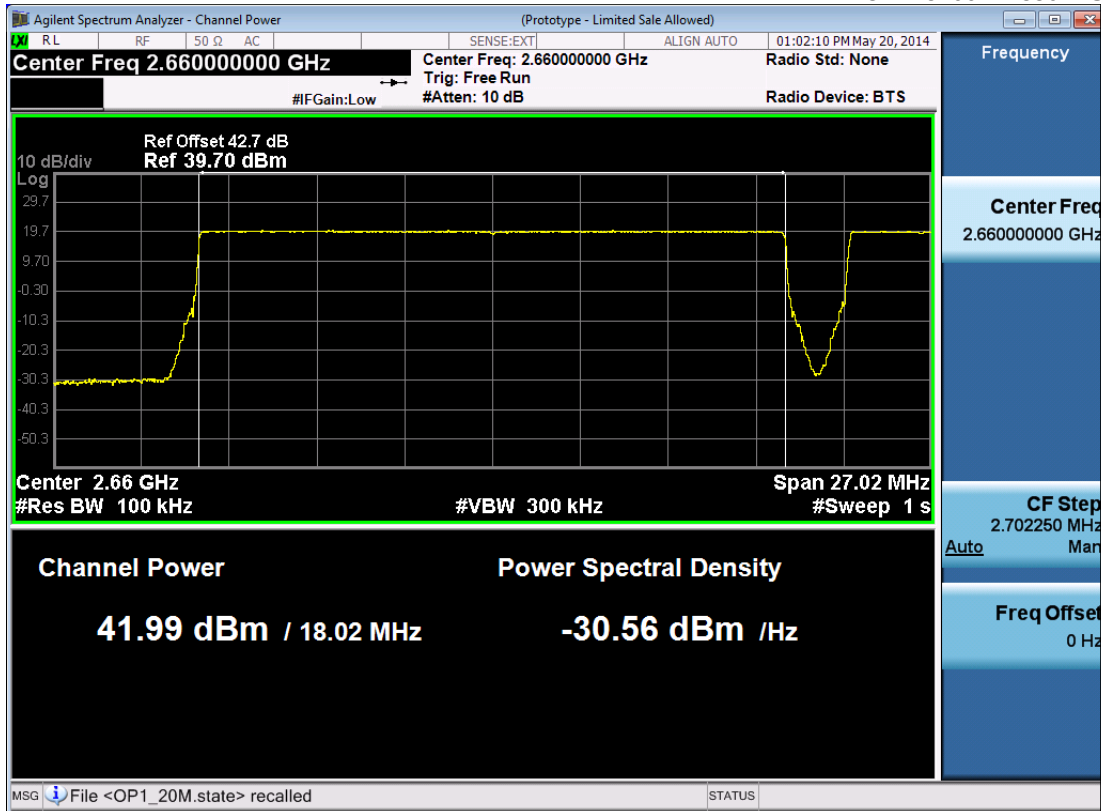
20M+20M -Port 1 -carry1-2645MHz



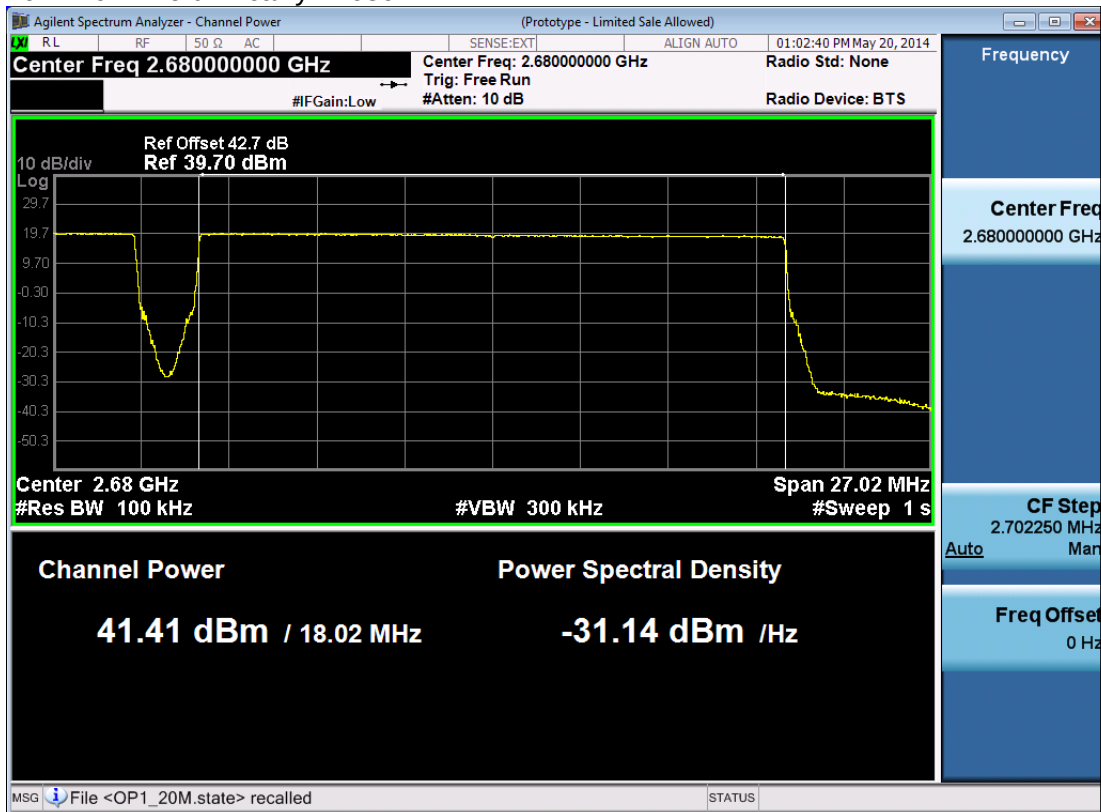
20M+20M -Port 1 -carry2-2665MHz



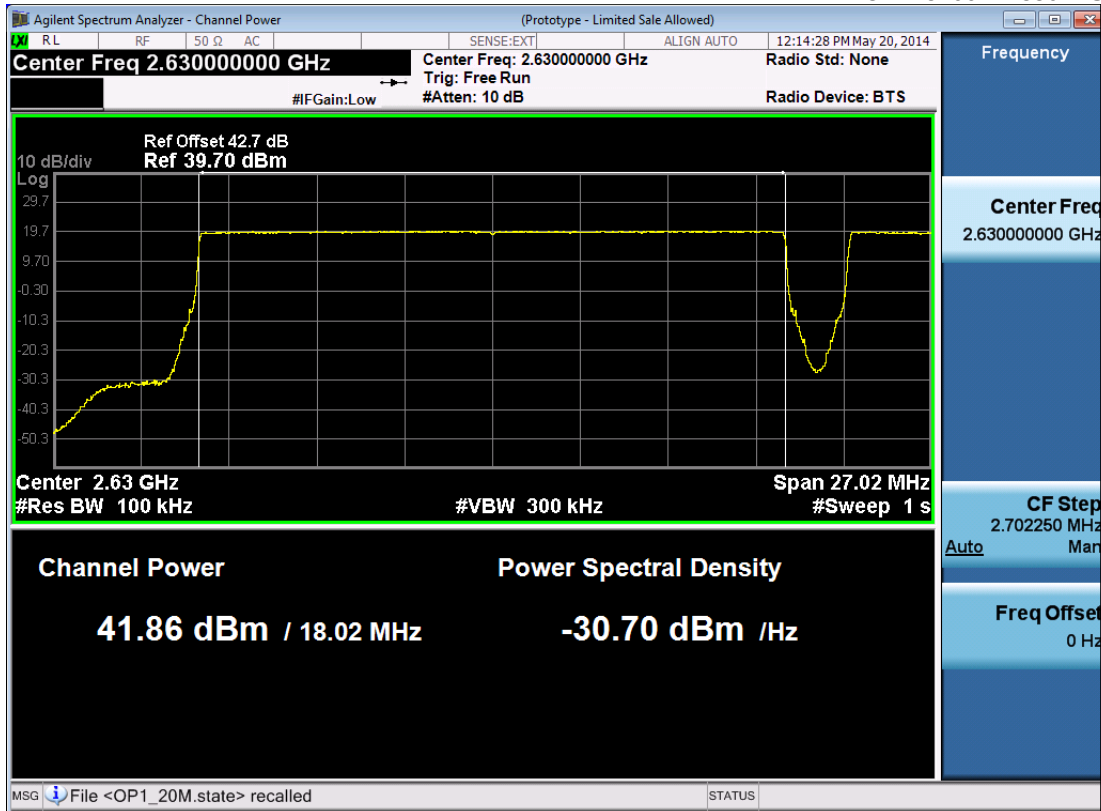
20M+20M -Port 1 -carry1-2660MHz



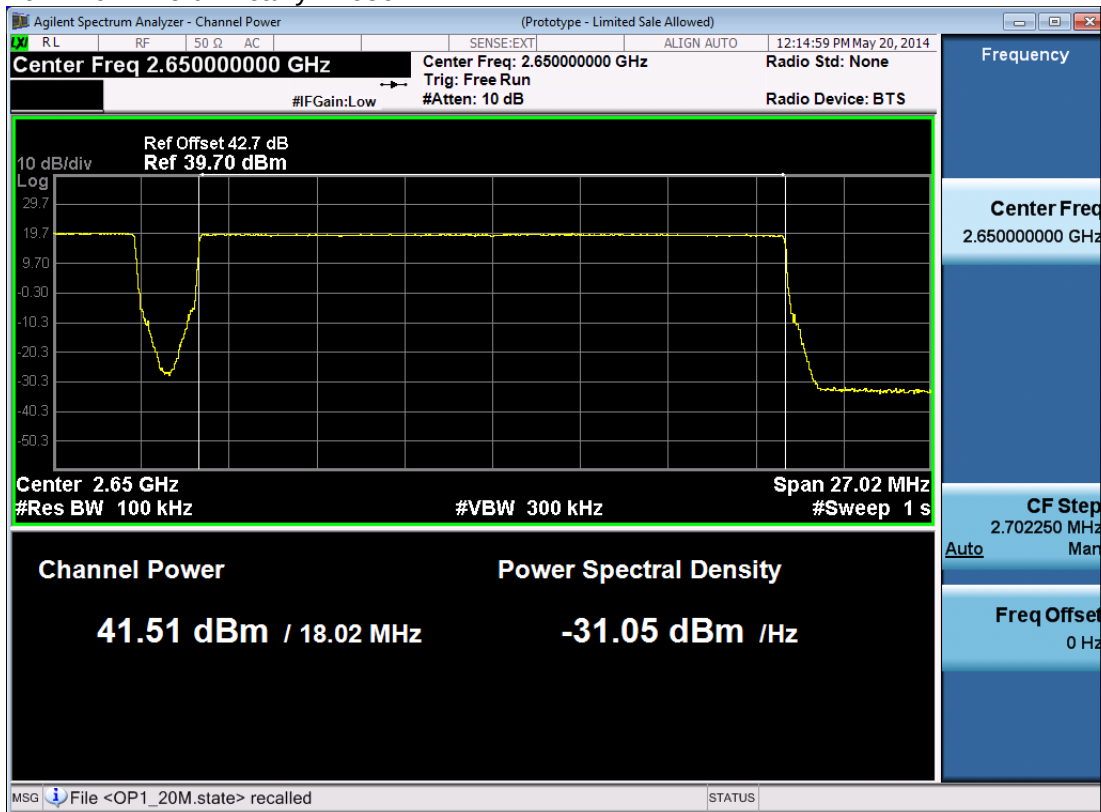
20M+20M -Port 1 -carry2-2680MHz



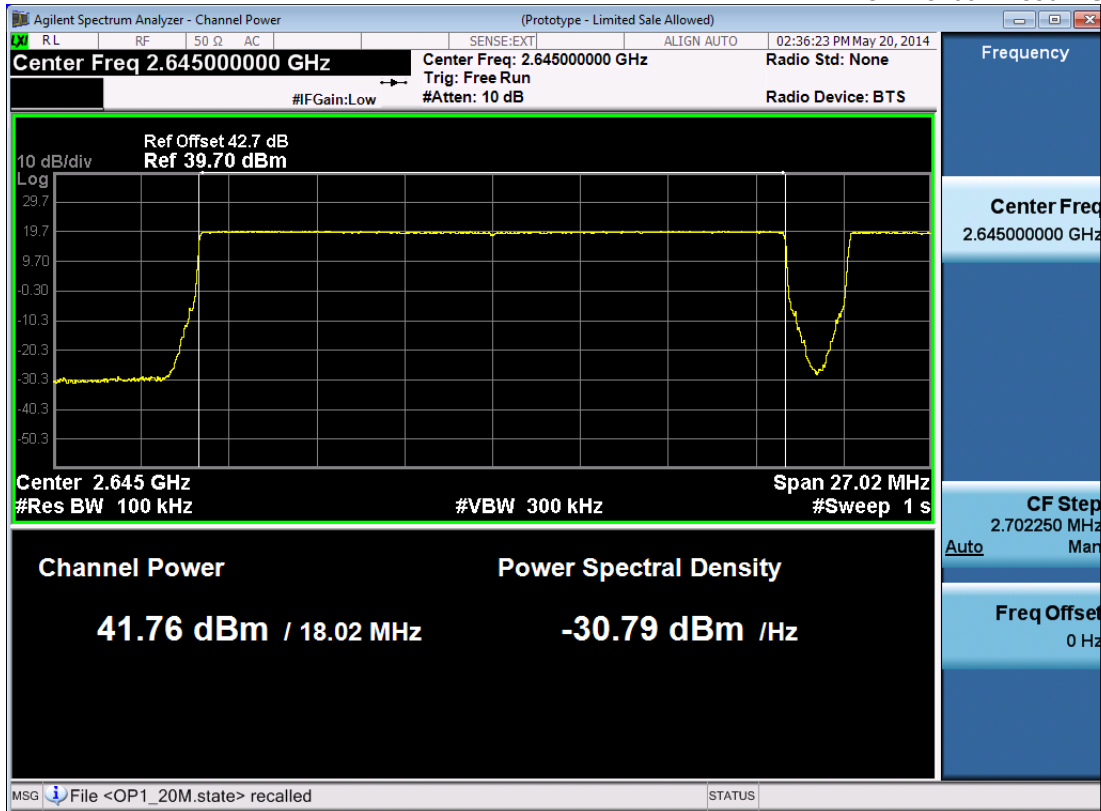
20M+20M -Port 2 -carry1-2630MHz



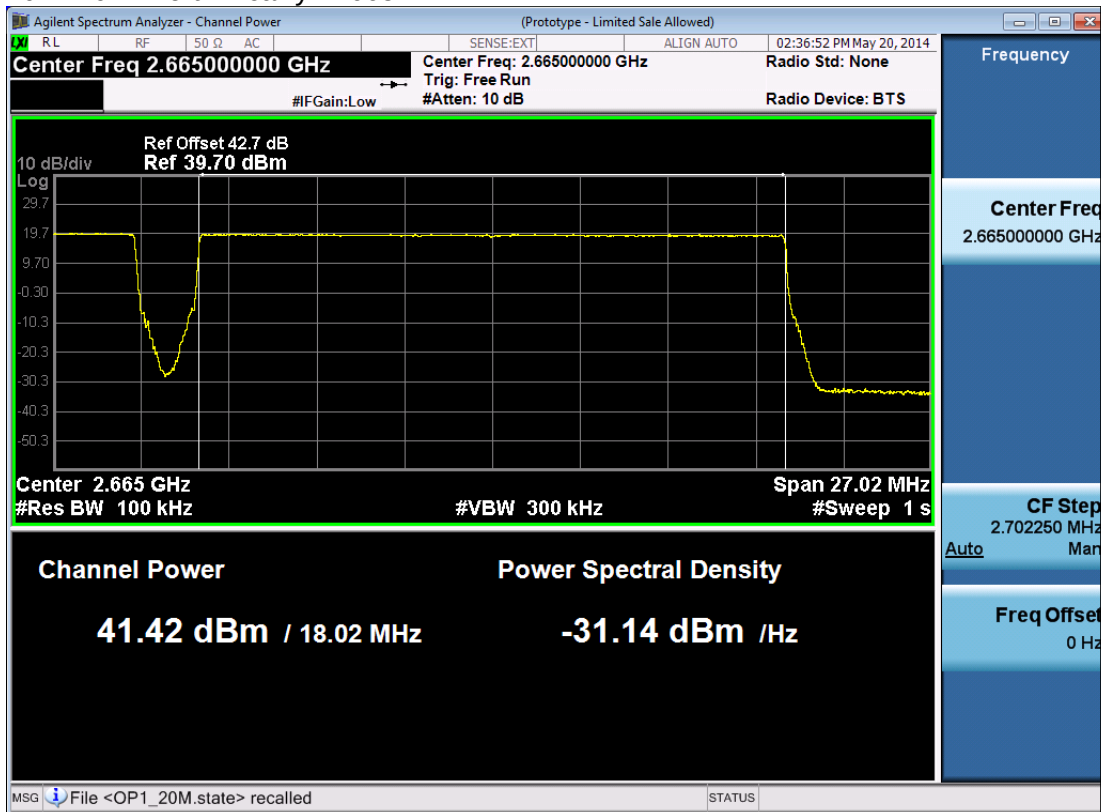
20M+20M -Port 2 -carry2-2650MHz



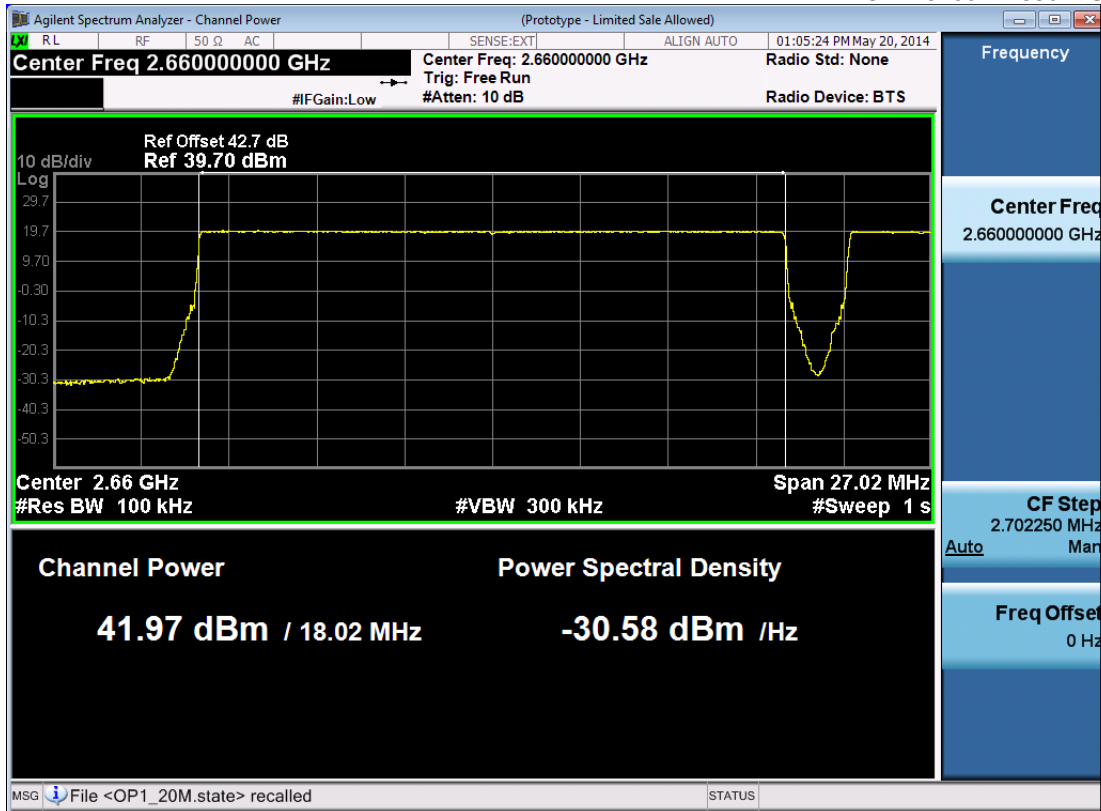
20M+20M -Port 2 -carry1-2645MHz



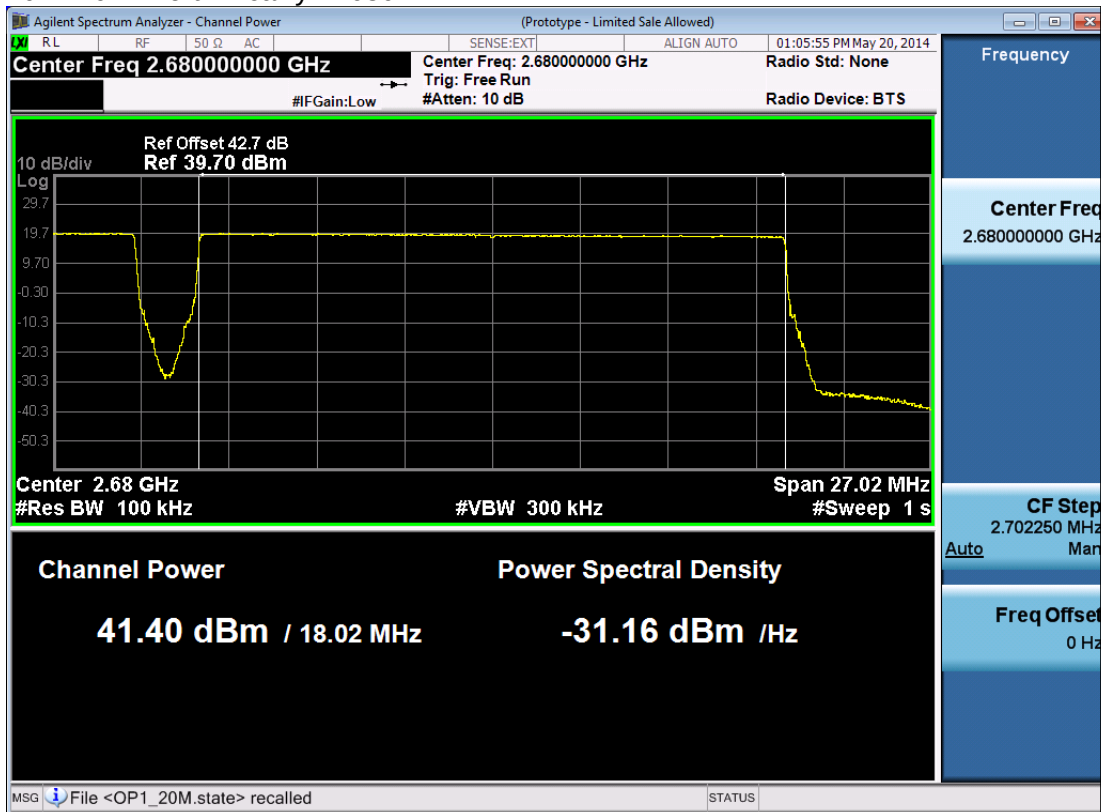
20M+20M -Port 2 -carry2-2665MHz



20M+20M -Port 2 -carry1-2660MHz



20M+20M -Port 2 -carry2-2680MHz



7 RF EXPOSURE

Limit

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated. Limits for Maximum Permissible Exposure (MPE)

(B) Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

Test Data

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = \text{EIRP} / 4\pi R^2$$

Where: S = power density

EIRP= equivalent isotropically radiated power=ERP+2.15dB

R = distance to the center of radiation of the antenna= $[(\text{ERP}+2.15\text{dB})/4\pi S]^{1/2}$

According to §27.50 , the effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 1000 Watts.

Frequency 2690MHz is between 1500MHz and 100,000MHz, and the Maximum $S=1\text{mW/cm}^2$

$$\Rightarrow R=4.22\text{m.}$$

This equipment should be installed and operated with minimum distance 4.22m between the radiator& your body.

Test Result: pass

8 MODULATION CHARACTERISTIC

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9030A	MY49431143	2015.06.18	2016.06.18
DTS	DTS 40dB Attenuator	DTS100-40-3-1	09112005	2015.07.19	2016.07.19
Silverline	Silverline RF Cable	SLA18-NMN1T	100311-04-0001	N/A	N/A

***statement of traceability:** ZTE Corporation Reliability Testing Center attest that all calibration have been performed per the NVLAP requirements , traceable to NIST.

Test Procedure

LTE digital mode is used by EUT.

Test Data Environmental Conditions

Temperature:	20 °C
Relative Humidity:	53 %
ATM Pressure:	1009 mbar

Test Result: Pass

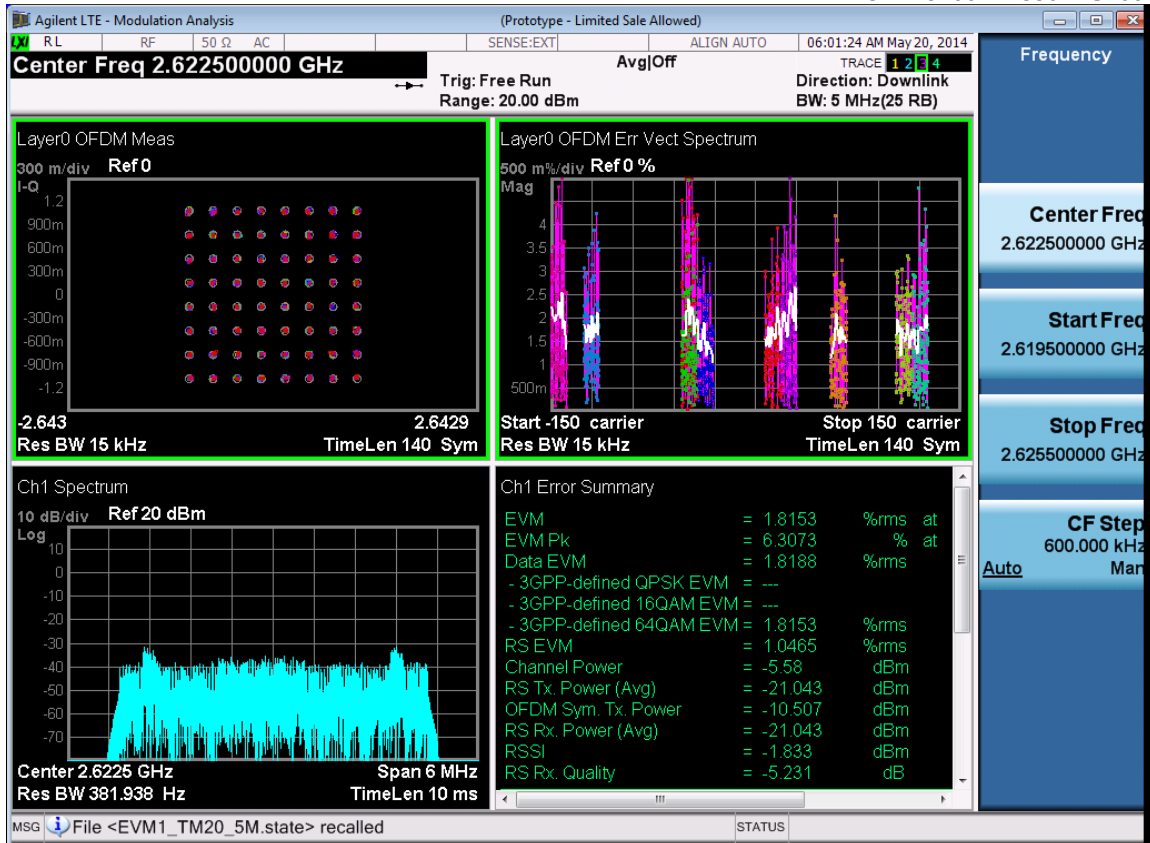
Test Mode: Transmitting LTE

Test Data:

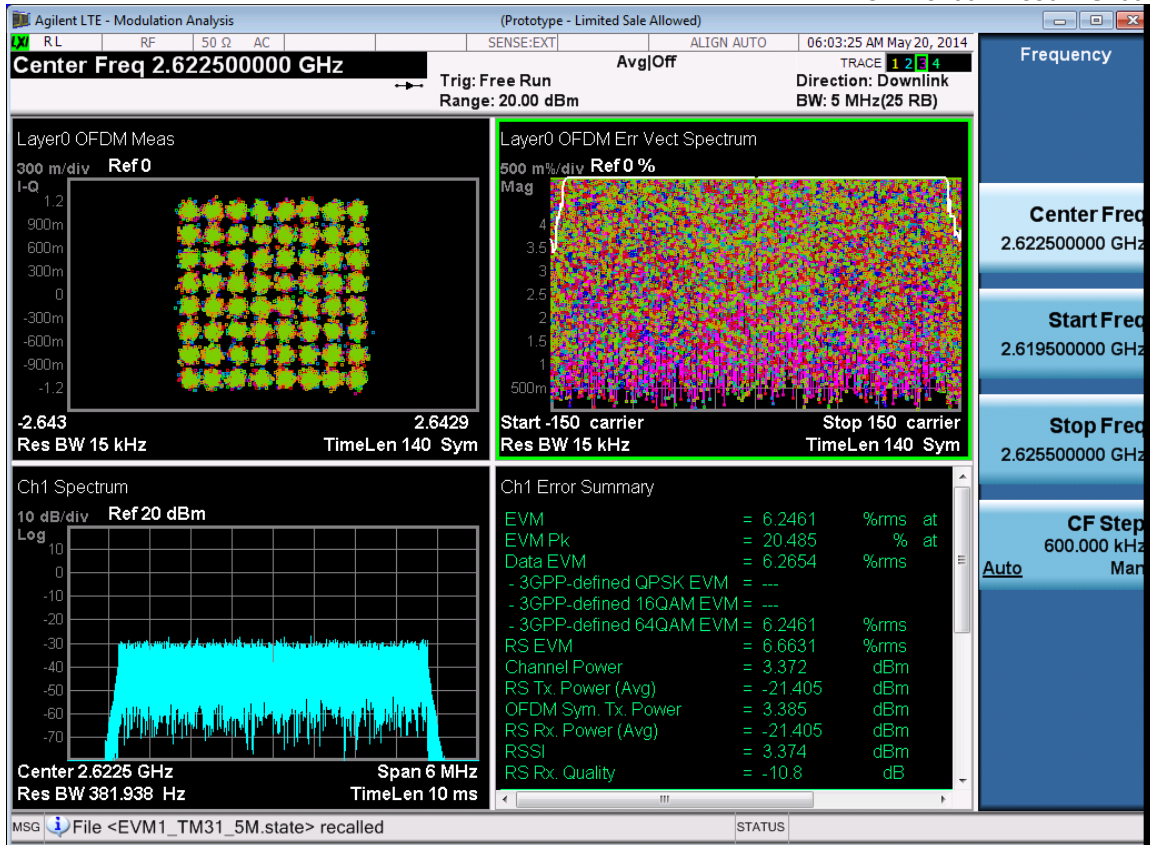
Single Carrier:

Channel Bandwidth :5M			
Port	Frequency (MHz)	Test mode	EVM
1	2622.5	TM2.0	1.815
		TM3.1	6.246
		TM3.2	7.656
		TM3.3	14.328
	2655	TM2.0	1.888
		TM3.1	6.302
		TM3.2	7.661
		TM3.3	14.294
	2687.5	TM2.0	2.366
		TM3.1	6.233
		TM3.2	7.666
		TM3.3	14.345
2	2622.5	TM2.0	1.907
		TM3.1	6.226
		TM3.2	7.653
		TM3.3	14.050
	2655	TM2.0	1.711
		TM3.1	6.245
		TM3.2	7.654
		TM3.3	14.298
	2687.5	TM2.0	2.496
		TM3.1	6.243
		TM3.2	7.671
		TM3.3	14.289

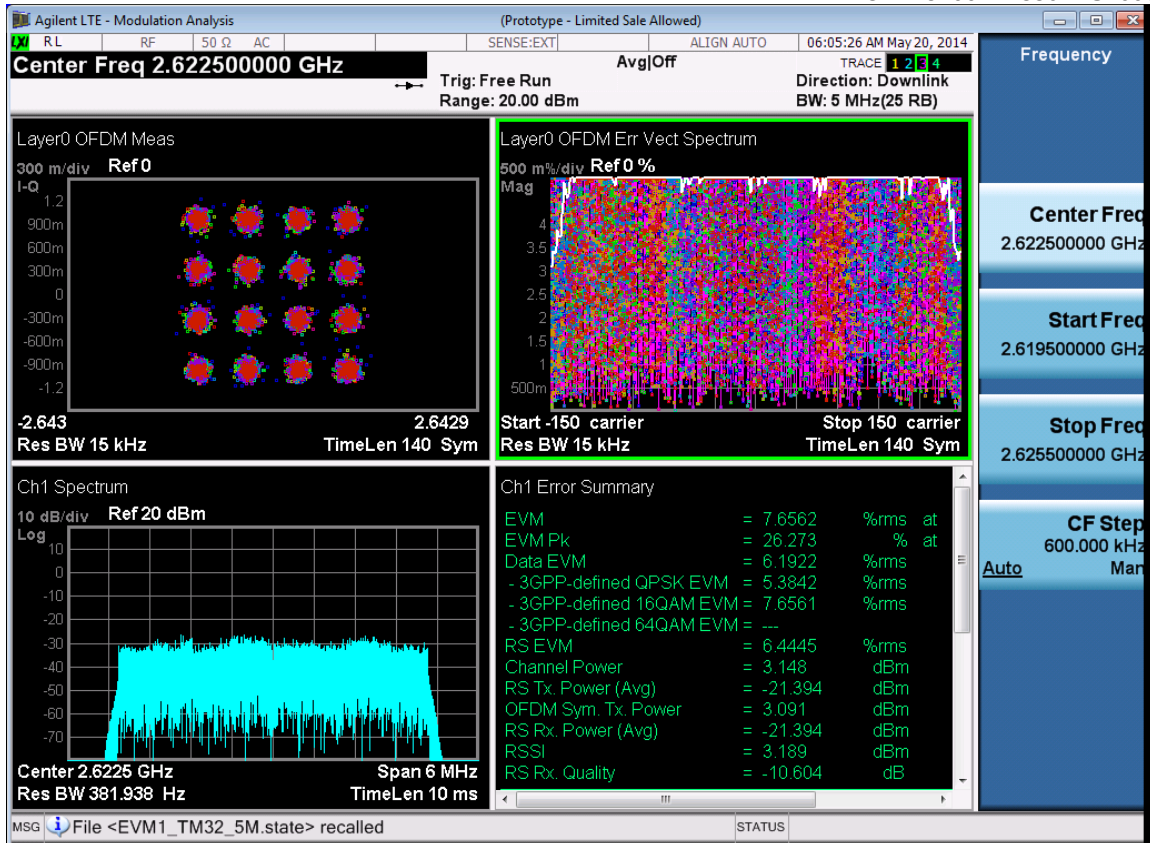
5M -Port 1 -2622.5MHz-TM2.0



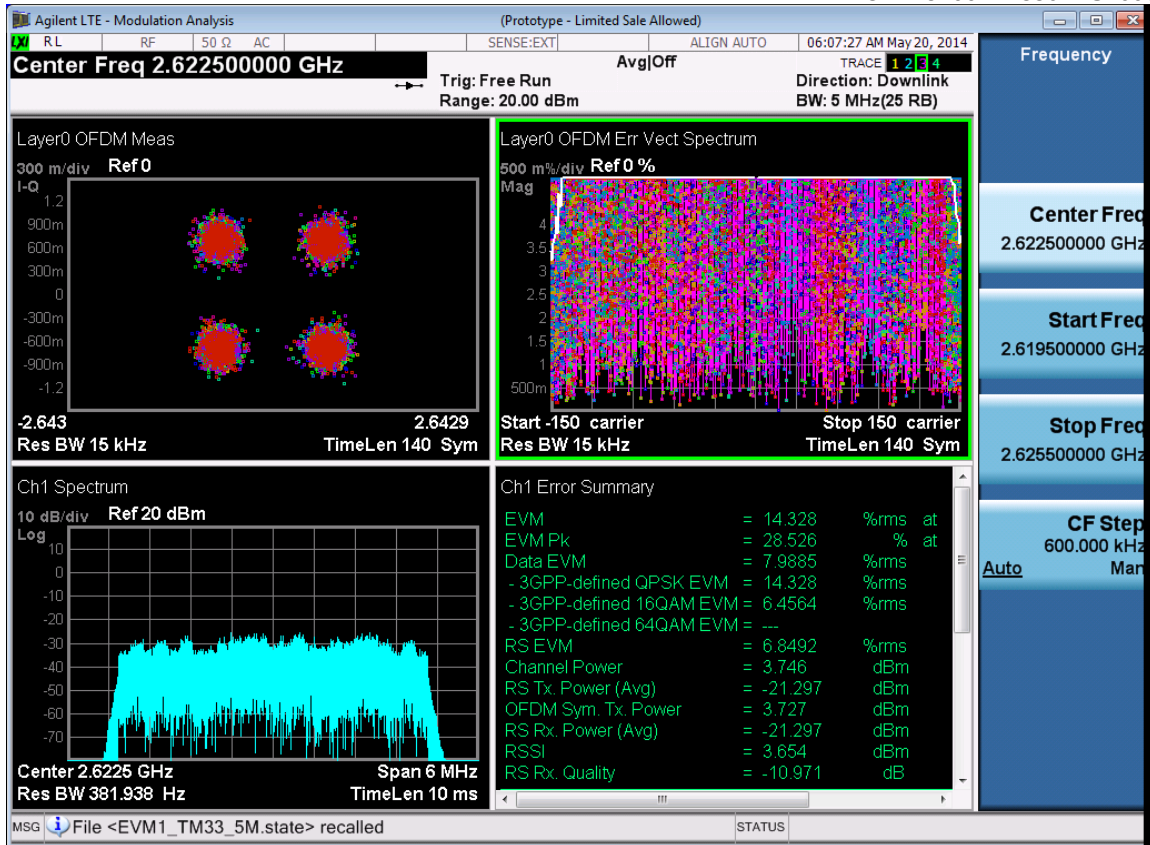
5M -Port 1 -2622.5MHz -TM3.1



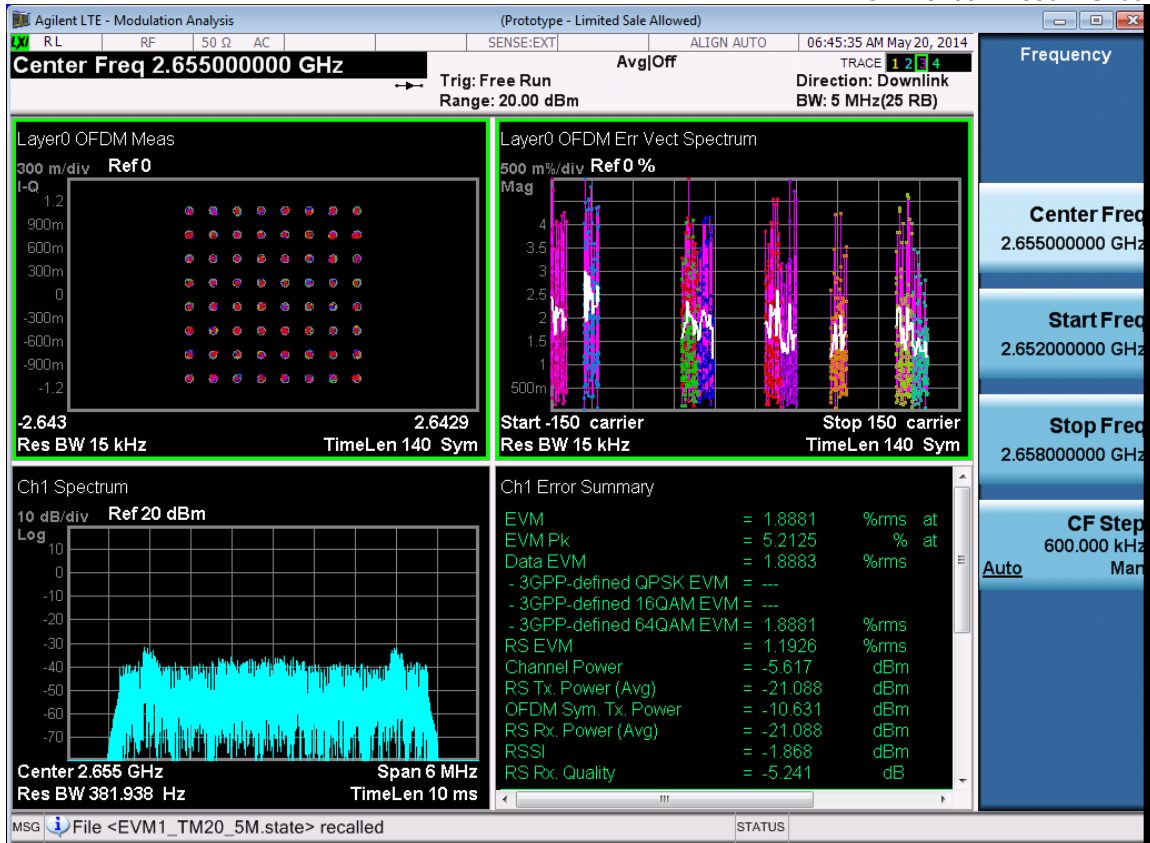
5M -Port 1 -2622.5MHz -TM3.2



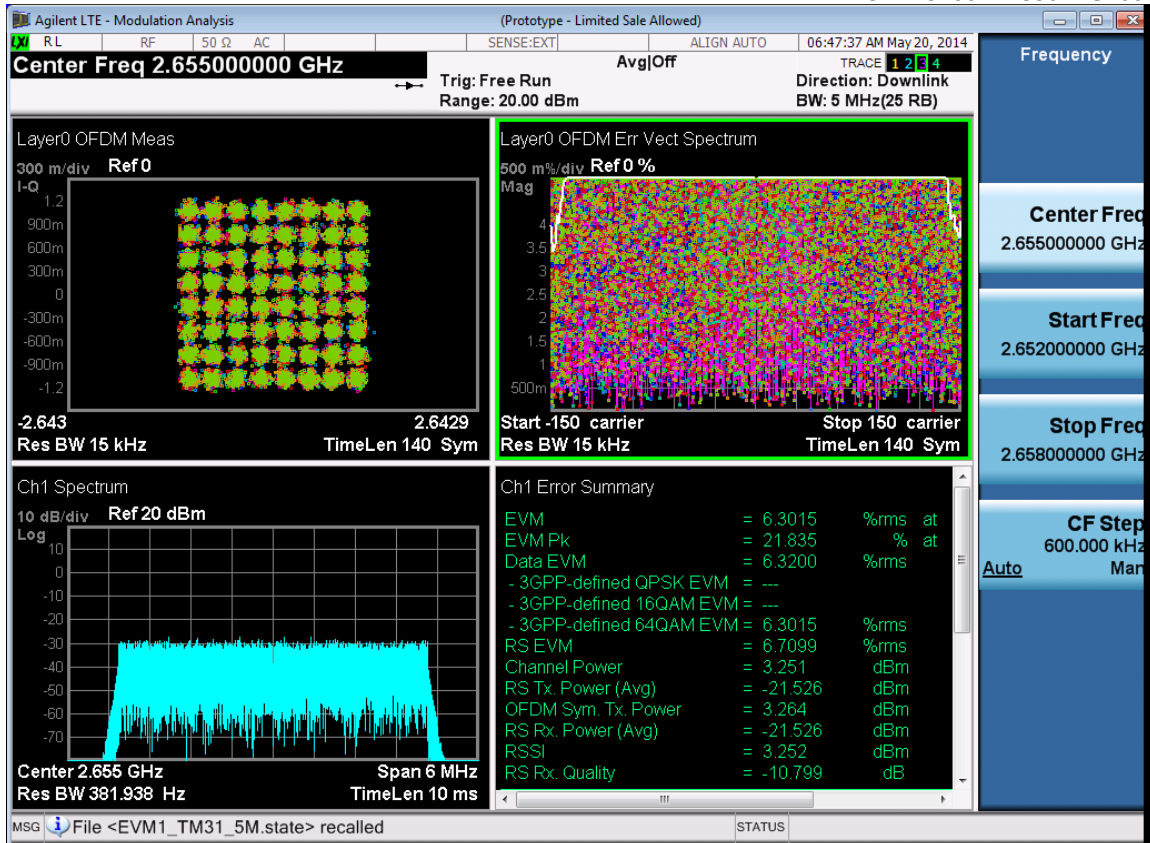
5M -Port 1 -2622.5MHz -TM3.3



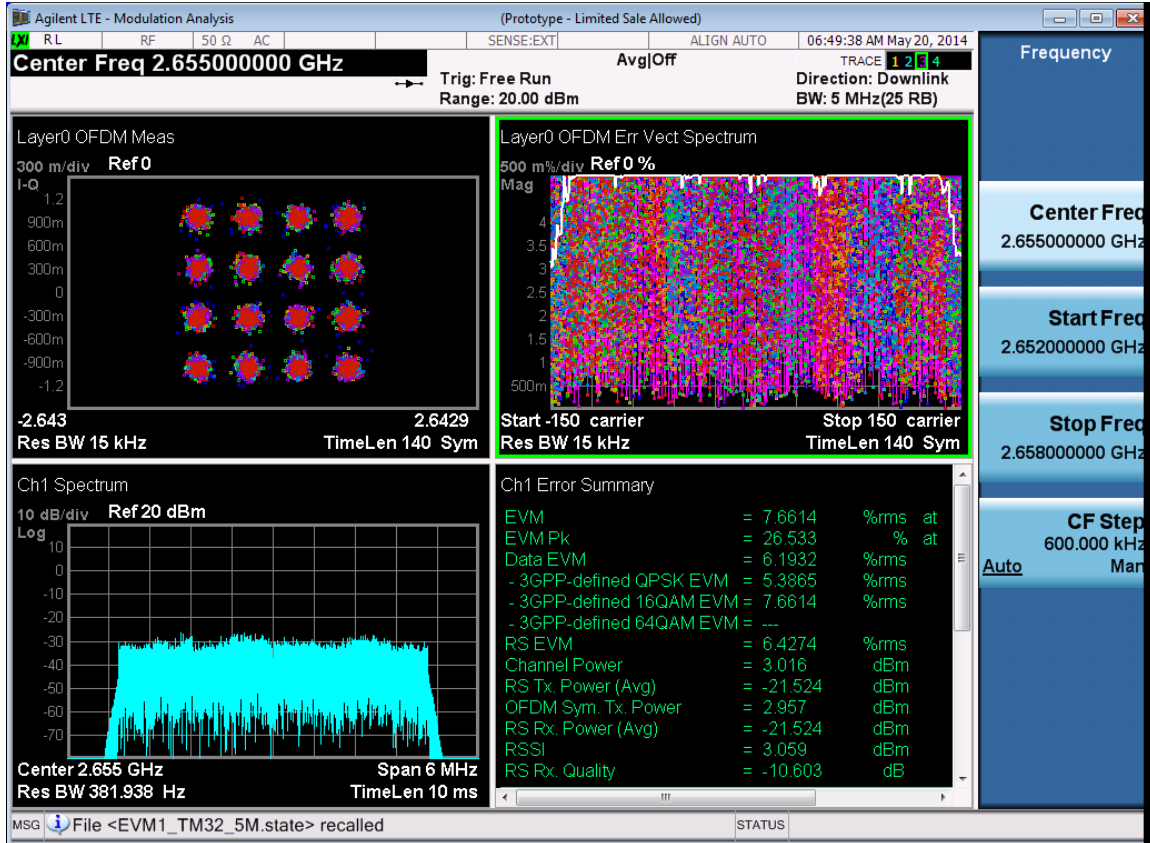
5M -Port 1 -2655MHz-TM2.0



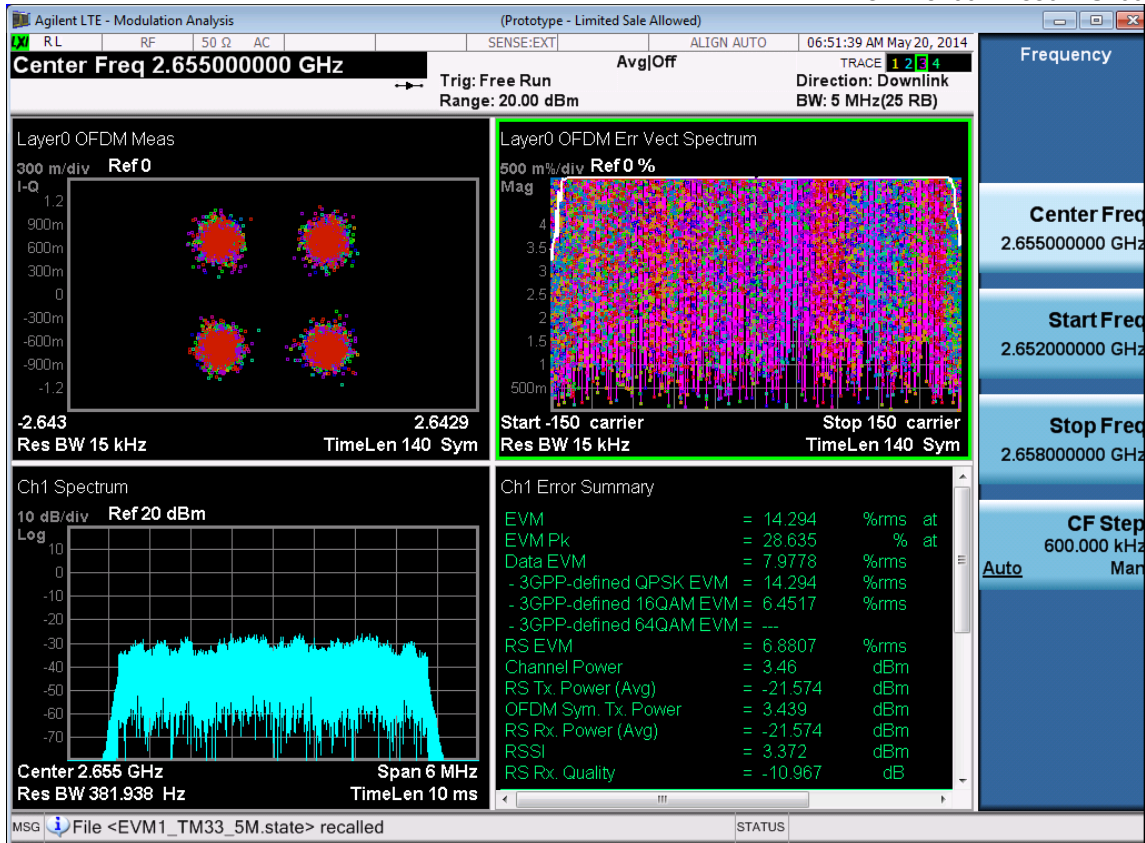
5M -Port 1 -2655MHz -TM3.1



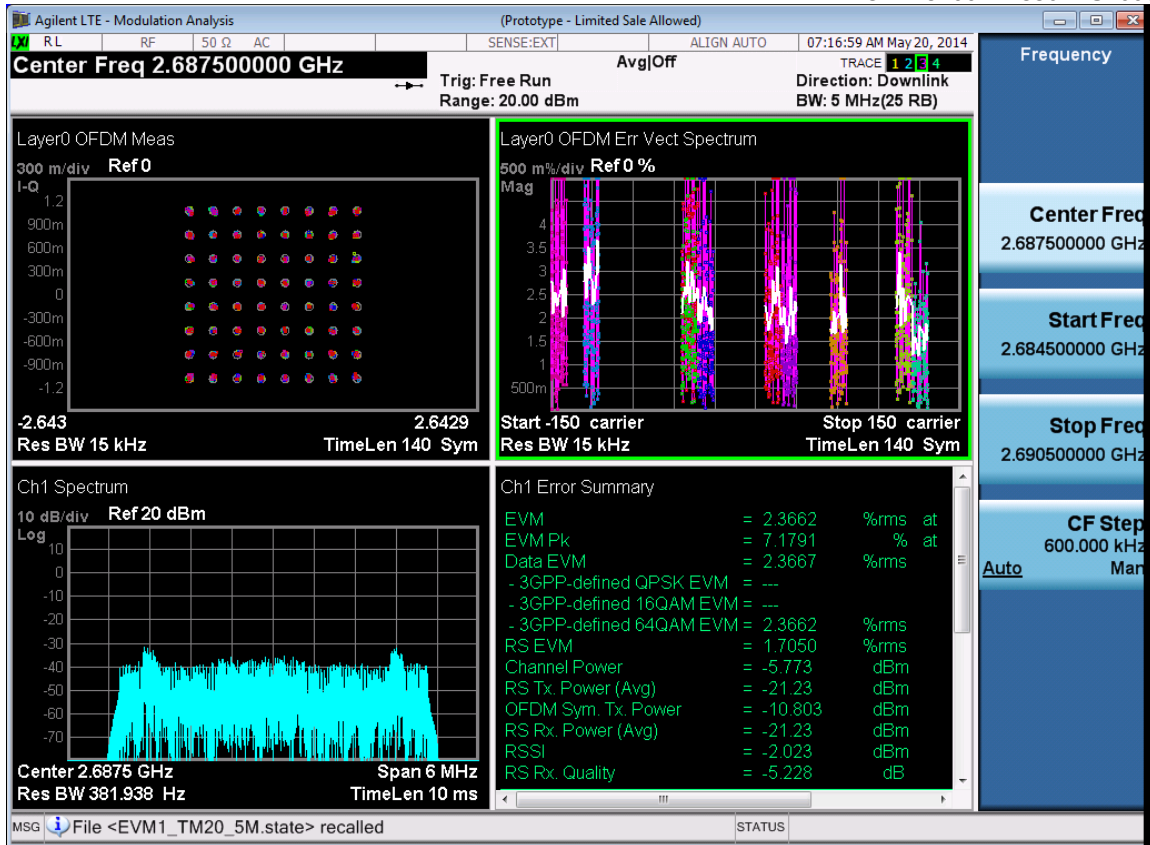
5M -Port 1 -2655MHz -TM3.2



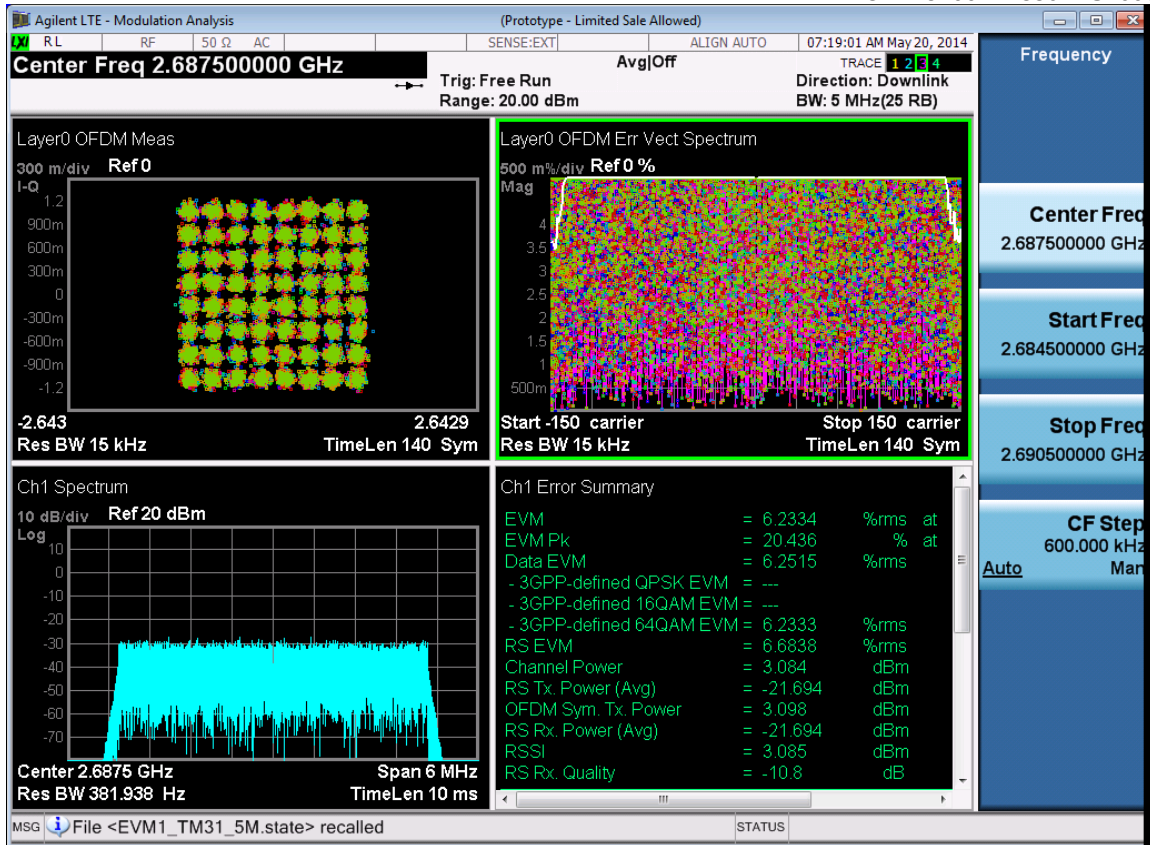
5M -Port 1 -2655MHz -TM3.3



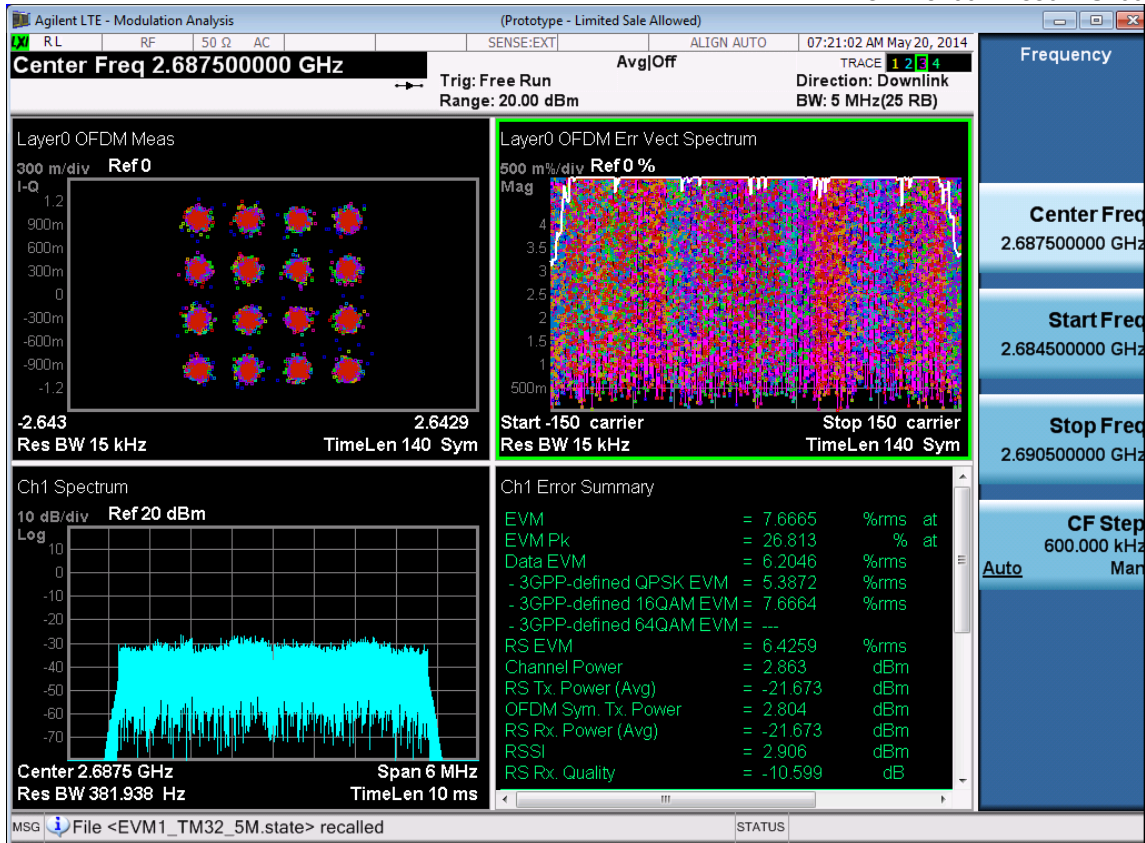
5M -Port 1 -2687.5MHz-TM2.0



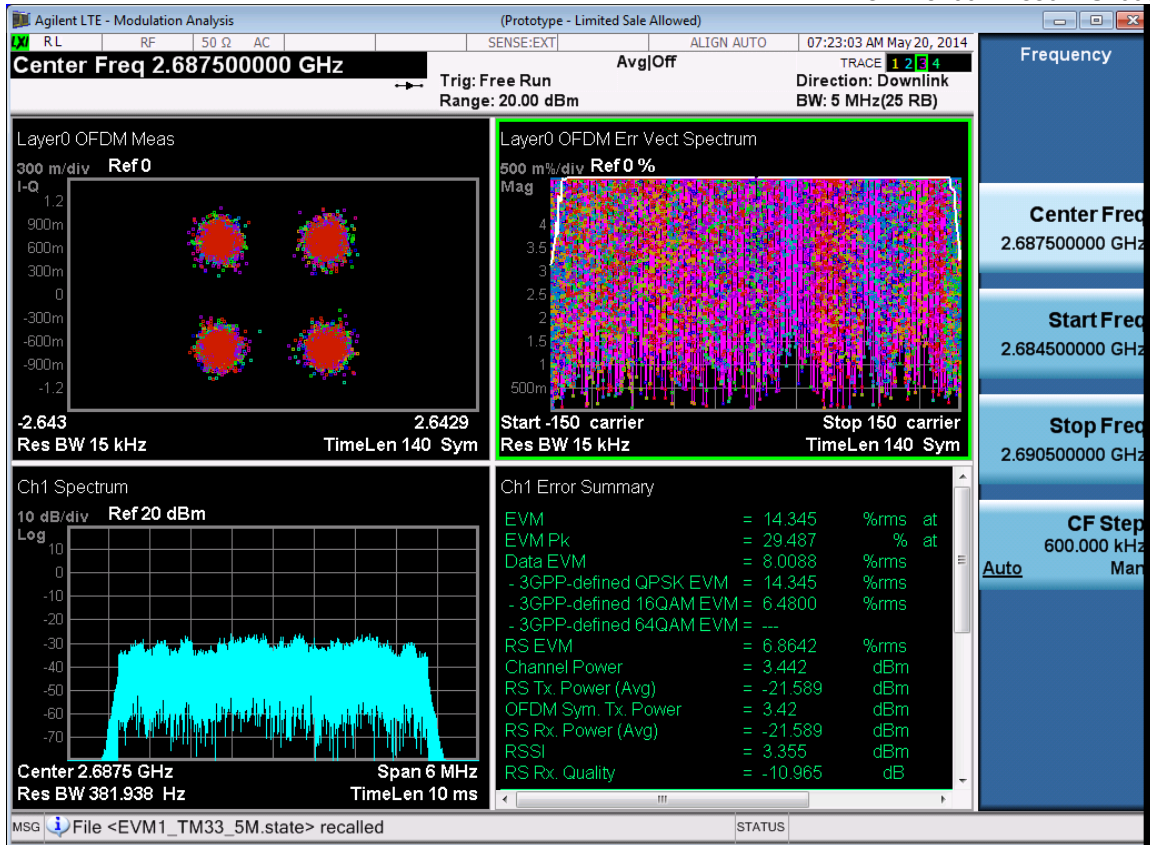
5M -Port 1 -2687.5MHz -TM3.1



5M -Port 1 -2687.5MHz -TM3.2



5M -Port 1 -2687.5MHz -TM3.3



5M -Port 2-2622.5MHz -TM2.0