



**ZTE Corporation**

Application  
For  
Certification

**FCC ID: Q78-R8964S2600**

**LTE Remote Radio Unit**

**Model: ZXSDR R8964 S2600**

Report No.: 131025009SZN-001

Prepared and Checked by:

Approved by:

Sign on file

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Supervisor

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Deputy General Manager  
Date: October 25, 2013

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# 1 GENERAL INFORMATION

## Product Description for Equipment Under Test (EUT)

The ZTE Corporation's product, model number: ZXSDR R8964 S2600 or the "EUT" as referred to in this report is a LTE Remote Radio Unit.

### Technical specification:

Size: 440 mm x 290 mm x 134 mm (HxWxD)

Input voltage: -37V~-57V

Frequency range: 2623.5MHz~2663.5 MHz

(Bottom frequency is 2633.5MHz, Middle frequency is 2643.5MHz, Top frequency is 2653.5MHz).

Max RF output power: 43dBm one port

Modulation type of emission: LTE

Appearance of EUT:

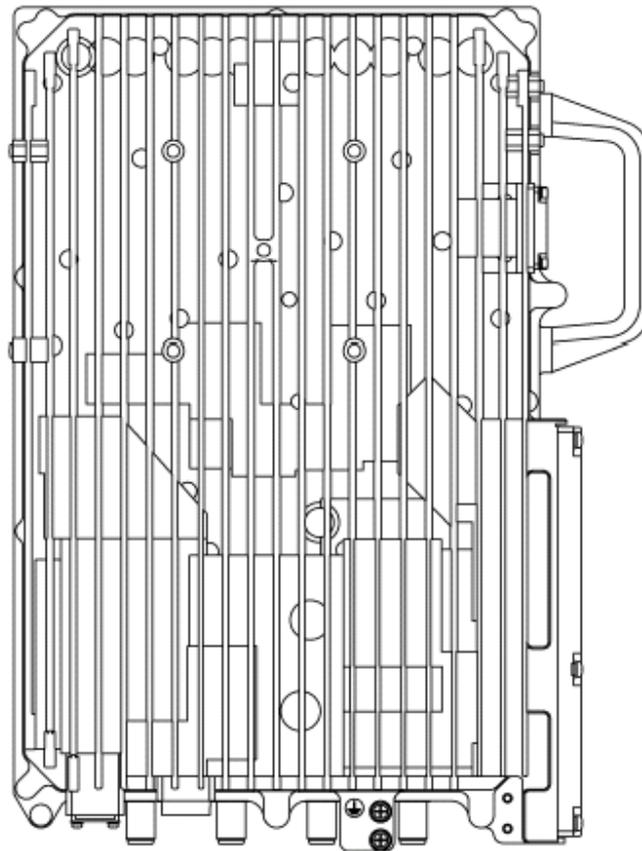


FIGURE 1 APPEARANCE OF ZXSDR R8964 S2600



## 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 Commission 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 24 Wireless Communication 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 ZTE Corporation to collect test data is located in the 1/F,B2 Wing, ZTE Plaza, Keji Road South, Shenzhen, Guangdong, 518057, P.R.China, Tel: +86-755-26771609, Fax: +86-755-26770347. Test site at ZTE 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. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 373926. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

# 2 SYSTEM TEST CONFIGURATION

## Description of Test Configuration

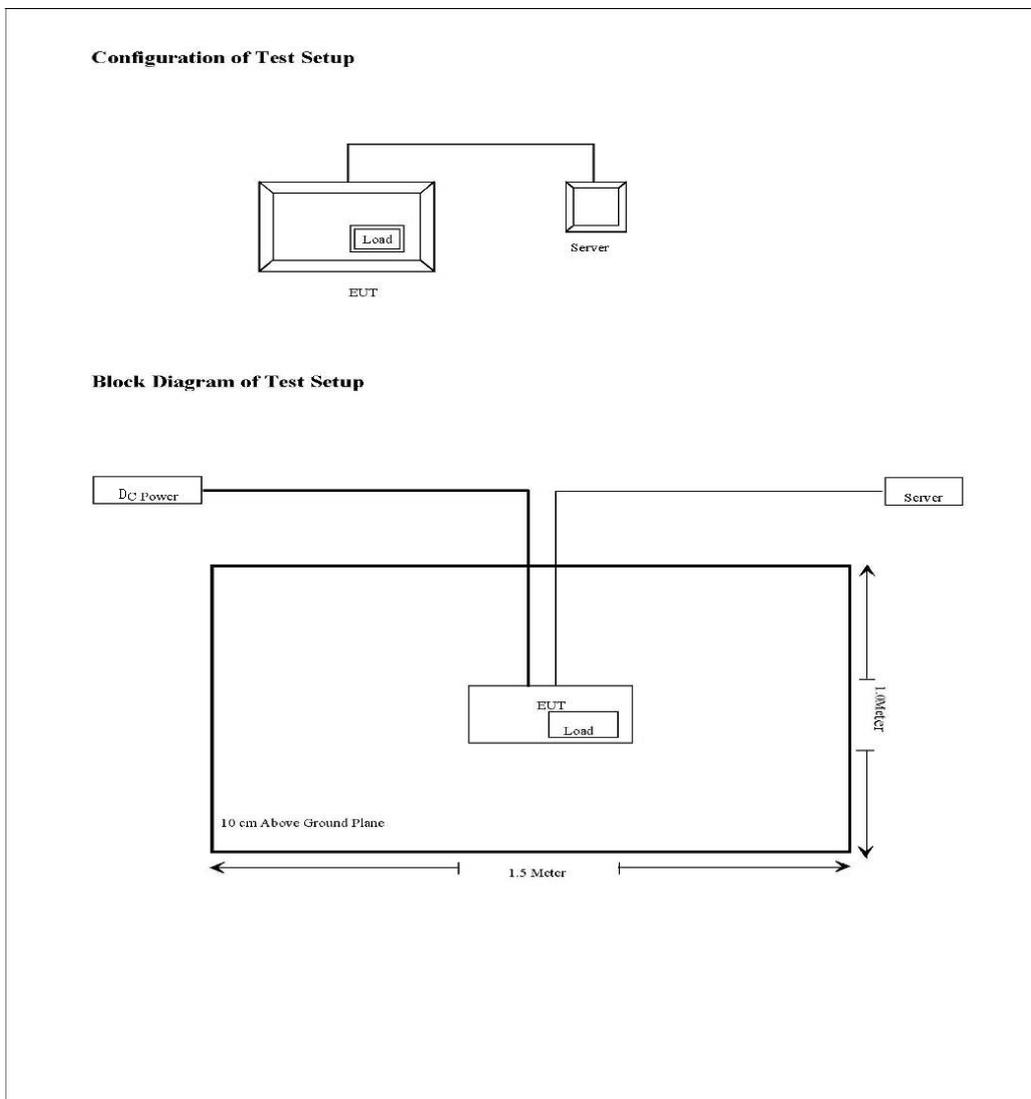
### Justification

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.





### 3 SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§ 2.1046 , §27.50	RF power output	Compliant
§ 2.1047	Modulation characteristics	Compliant
§ 2.1049	Occupied Bandwidth	Compliant
§ 2.1051, §27.53	Spurious emissions at antenna terminals	Compliant
§ 2.1053,§27.53	Field strength of spurious radiation.	Compliant
§ 2.1055	Frequency stability	Compliant

# 4 RF POWER OUTPUT

**Applicable Standard:** FCC § 2.1046 , §27.50

According to FCC §2.1046 & 27.50(h)

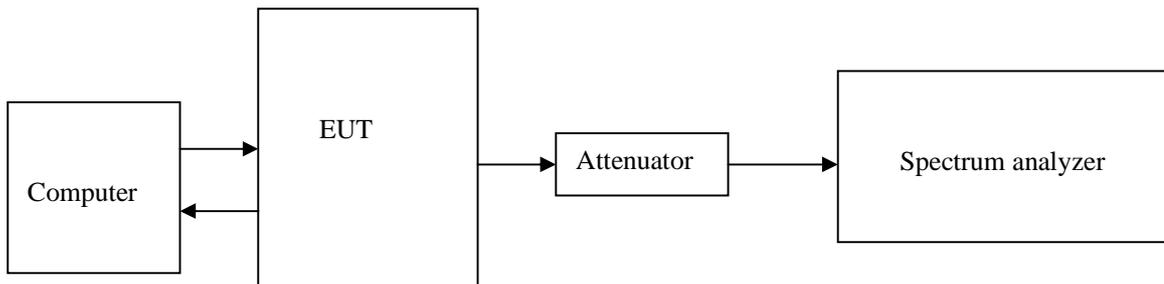
1) Main, booster and base stations. (i) The maximum EIRP of a main, booster or base station shall not exceed  $33 \text{ dBW} + 10\log(X/Y) \text{ dBW}$ , where X is the actual channel width in MHz and Y is either 6 MHz if prior to transition or the station is in the MBS following transition or 5.5 MHz if the station is in the LBS and UBS following transition, except as provided in paragraph (h)(1)(ii) of this section.

## Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9020A	MY49100675	2012.12.20	2013.12.20
DTS	DTS 40dB Attenuator	DTS100-40-3-1	09112005	2012.09.26	2013.09.26

**\*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 3.2dB, the detector is RMS and the peak-to-average ratio below 8dB.

Radiated power (dBm) = Conducted power (dBm) + Antenna gain (dBi) – Signal attenuation in the connecting cable between the transmitter and antenna (dB)

Antenna gain (dBi):18dBi

Signal attenuation in the connecting cable between the transmitter and antenna (dB):1dB



# Environmental Conditions

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

**Test Result:** Pass

**Test Mode:** Transmitting LTE

## Test Data:

Channel Bandwidth: 20M (1 port)

Port	Carrier Freq. (MHz)	Output Power					
		QPSK		16QAM		64QAM	
		dBm	W	dBm	W	dBm	W
1	2633.5	43.26	21.18	43.11	20.46	43.37	21.73
	2643.5	43.39	21.83	43.26	21.18	43.55	22.65
	2653.5	42.69	18.58	42.53	17.91	42.89	19.45
2	2633.5	42.72	18.71	42.55	17.99	42.83	19.19
	2643.5	42.70	18.62	43.14	20.61	43.01	20
	2653.5	42.91	19.54	43.09	20.37	43.04	20.14
3	2633.5	43.23	21.04	43.04	20.14	43.31	21.43
	2643.5	43.35	21.63	43.55	22.65	43.5	22.39
	2653.5	43.28	21.28	43.41	21.93	43.37	21.73
4	2633.5	42.59	18.16	42.77	18.92	42.72	18.71
	2643.5	43.51	22.44	43.36	21.68	43.65	23.17
	2653.5	43.46	22.18	43.63	23.07	43.57	22.75

Channel Bandwidth: 20M (4 ports)

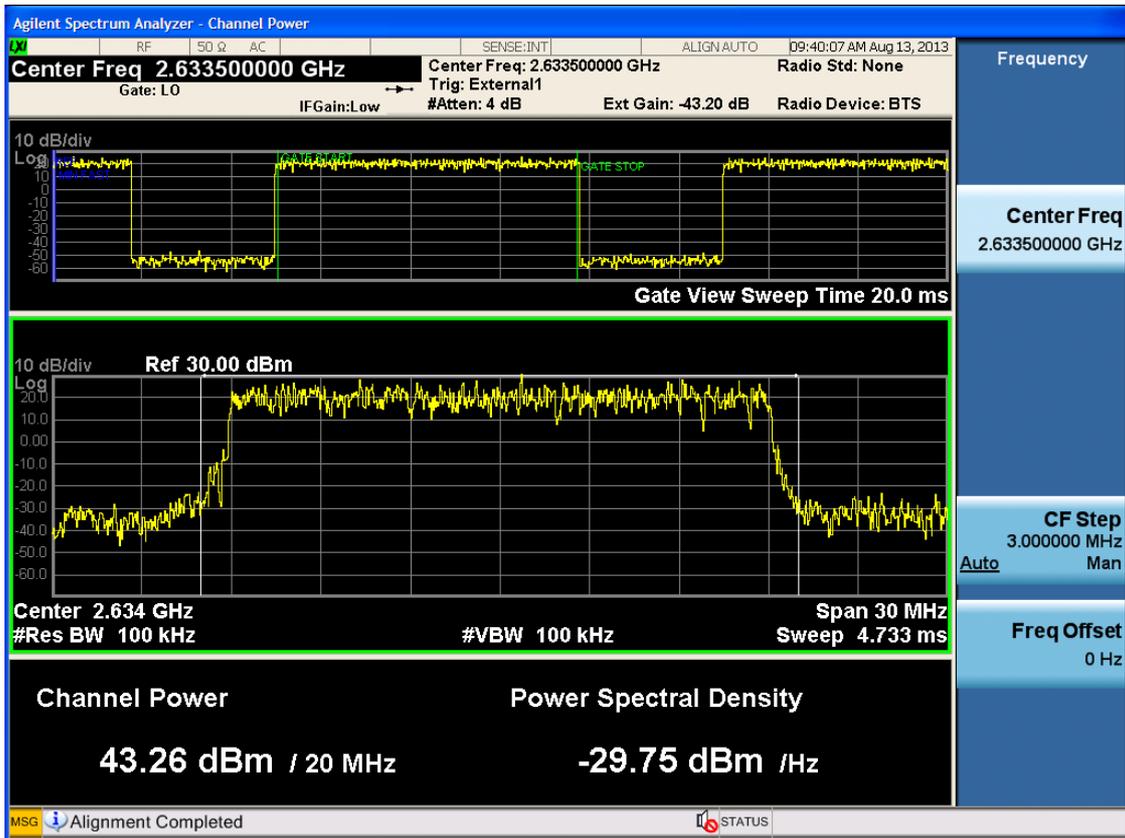
Carrier Freq. (MHz)	Output Power									limit (dB w)
	QPSK			16QAM			64QAM			
	dBm	EIRP (dBm)	EIRP (dBw)	dBm	EIRP (dBm)	EIRP (dBw)	dBm	EIRP (dBm)	EIRP (dBw)	
2633.5	48.98	65.98	35.98	48.89	65.89	35.89	49.09	66.09	36.09	<38.2
2643.5	49.27	66.27	36.27	49.35	66.35	36.35	49.46	66.46	36.46	<38.
2653.5	49.12	66.12	36.12	49.21	66.21	36.21	49.25	66.25	36.25	<38.

Channel Bandwidth: 20M+20M (1 port)

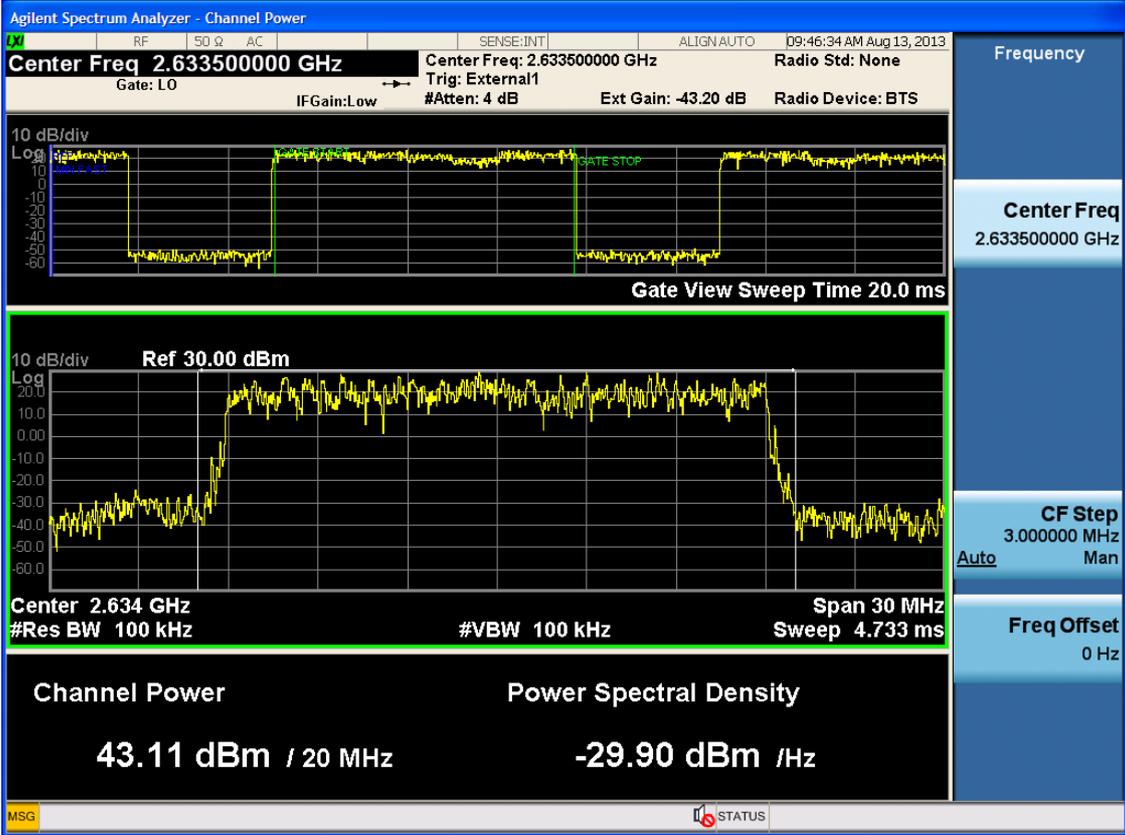
Port	Carrier Freq. c1+c2(MHz)	Output Power					
		QPSK		16QAM		64QAM	
		dBm	W	dBm	W	dBm	W
1	2633.5+2653.5	42.98	19.86	43.04	20.14	43.1	20.42
2		42.36	17.21	43.02	20.04	43.06	20.23
3		42.94	19.68	42.58	18.11	43.05	20.18
4		42.92	19.59	42.57	18.07	42.58	18.11

Channel Bandwidth: 20M+20M (4 ports)

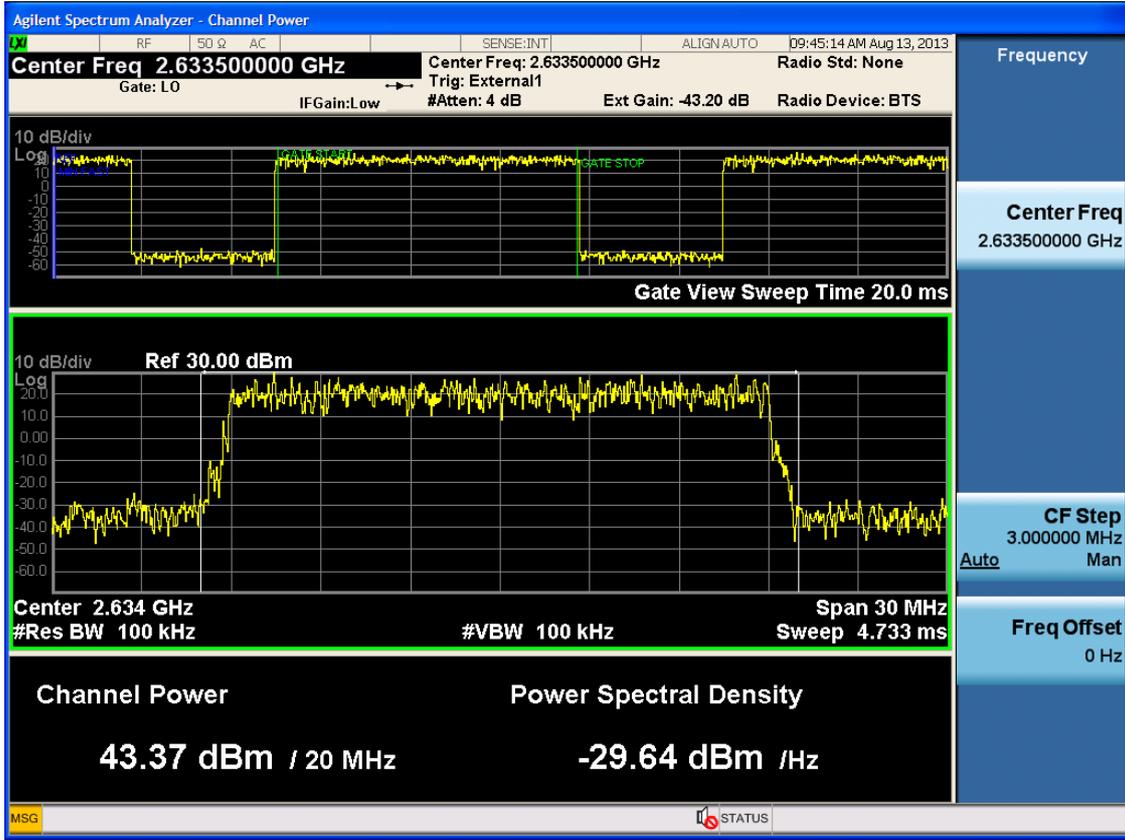
Carrier Freq. c1+c2(MHz)	Output Power									limit (dB W)
	QPSK			16QAM			64QAM			
	dBm	EIRP(dBm)	EIRP(dBw)	dBm	EIRP(dBm)	EIRP(dBw)	dBm	EIRP(dBm)	EIRP(dBw)	
2633.5+2653.5	48.83	65.83	35.83	48.8	65.8	35.8	49	66	36	<38.2



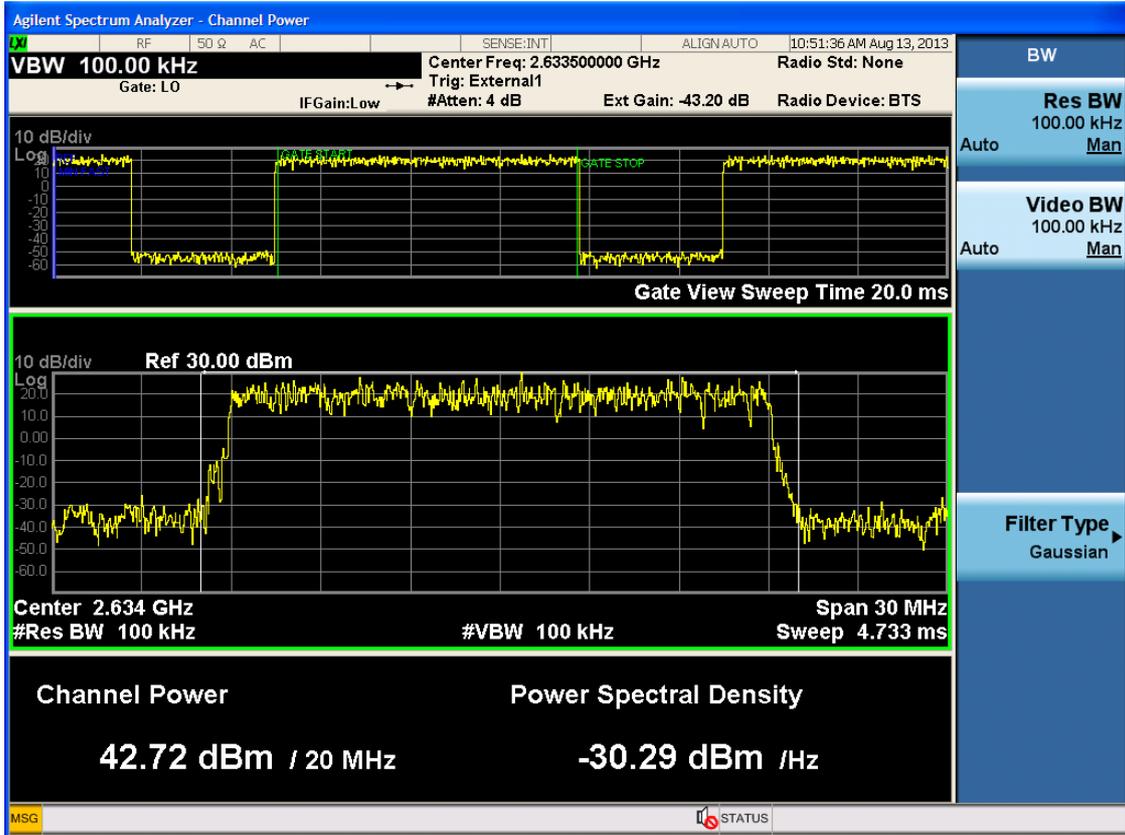
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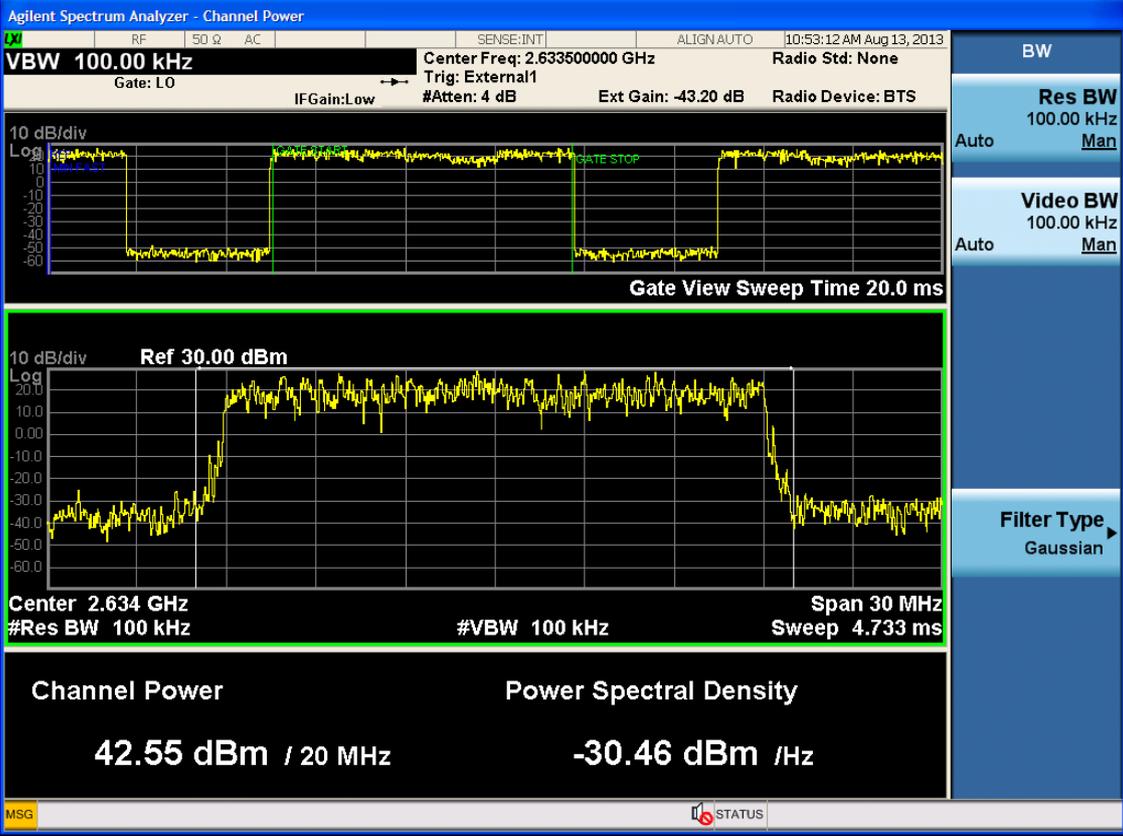
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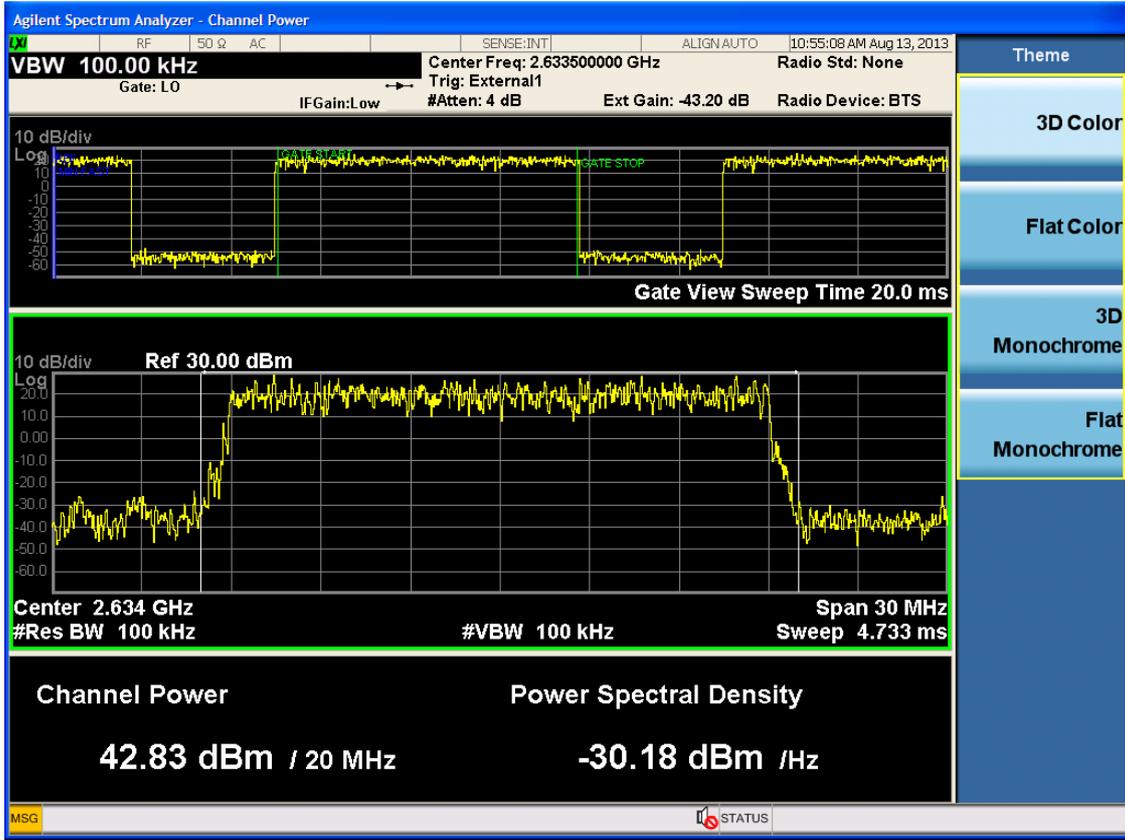
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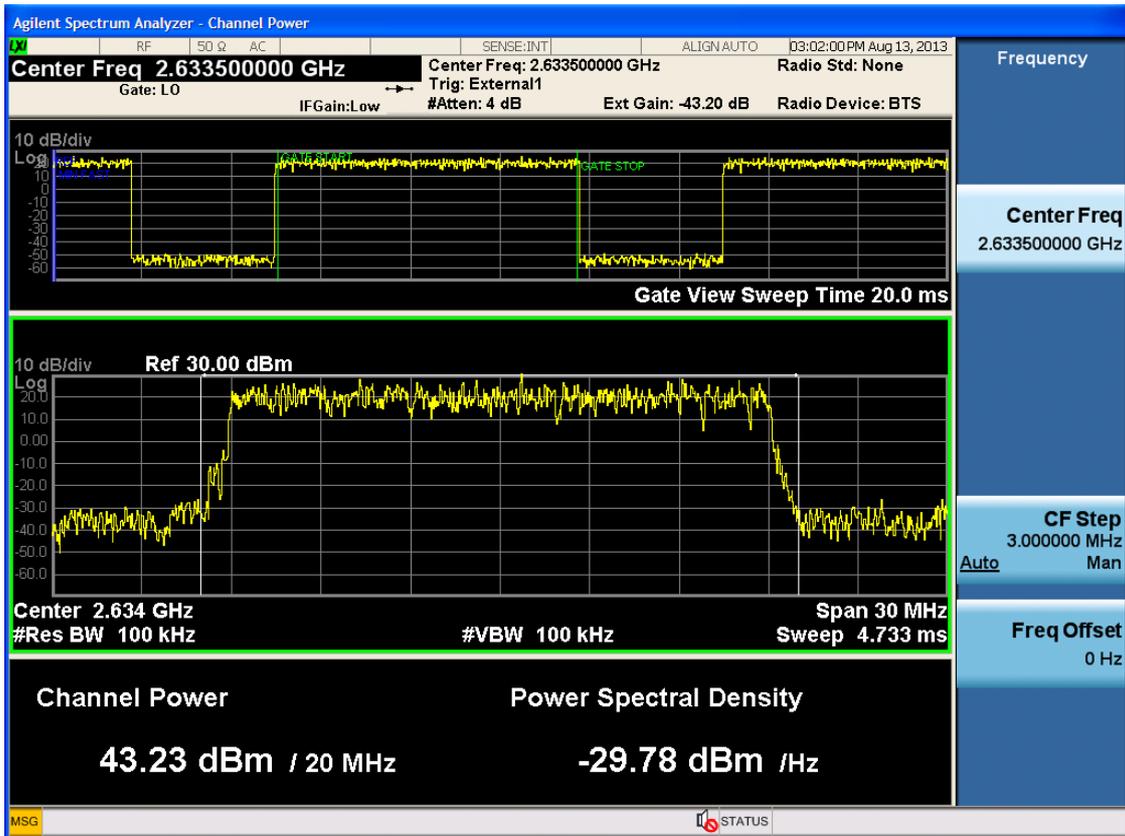
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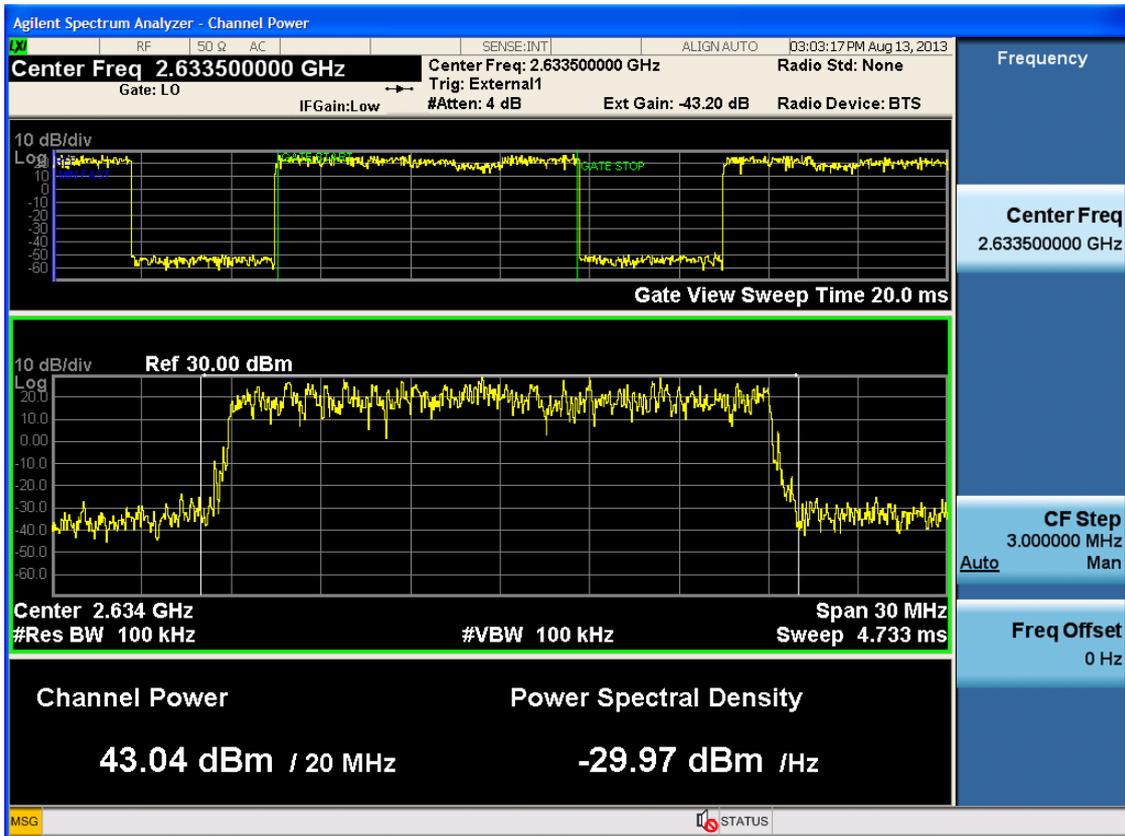
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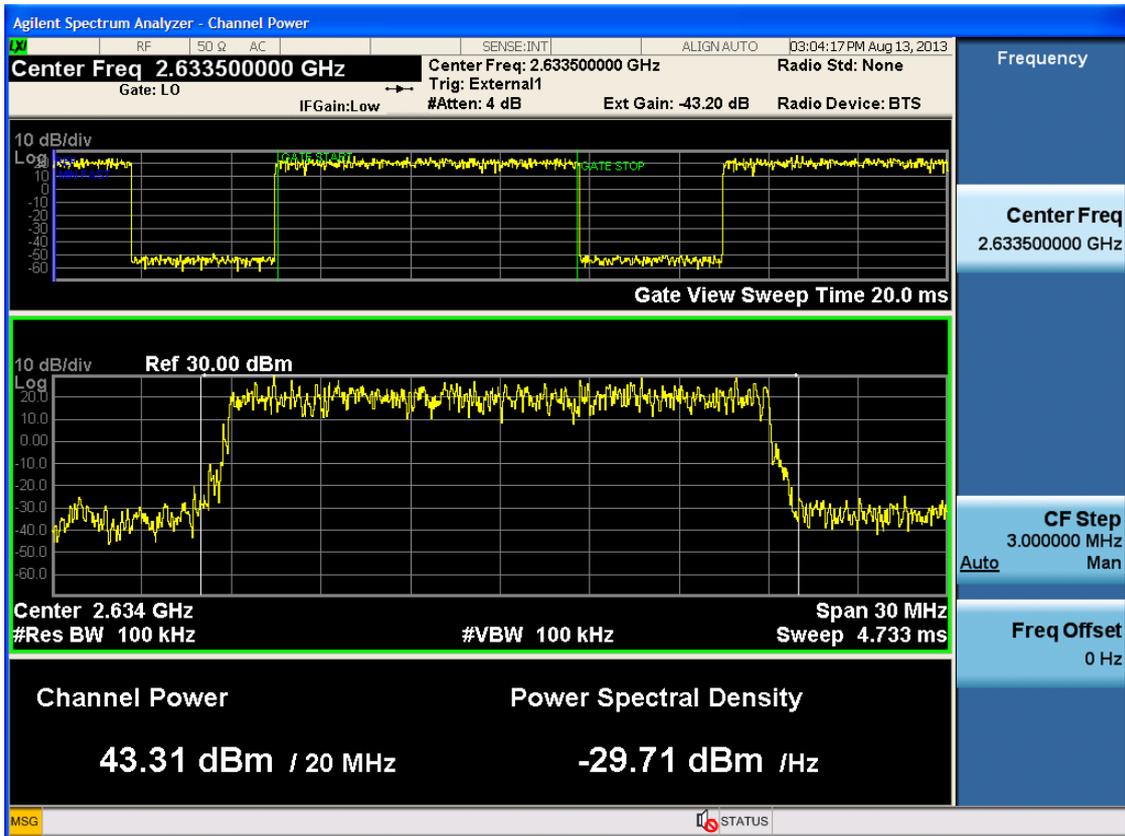
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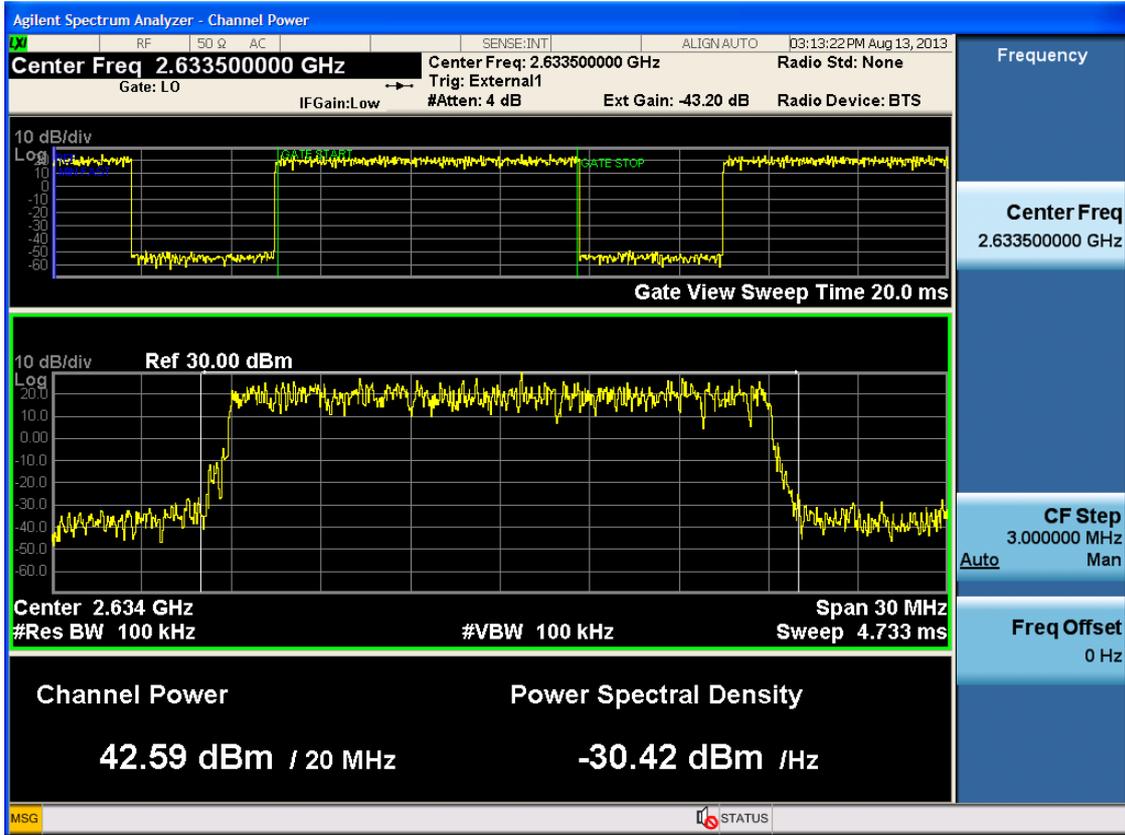
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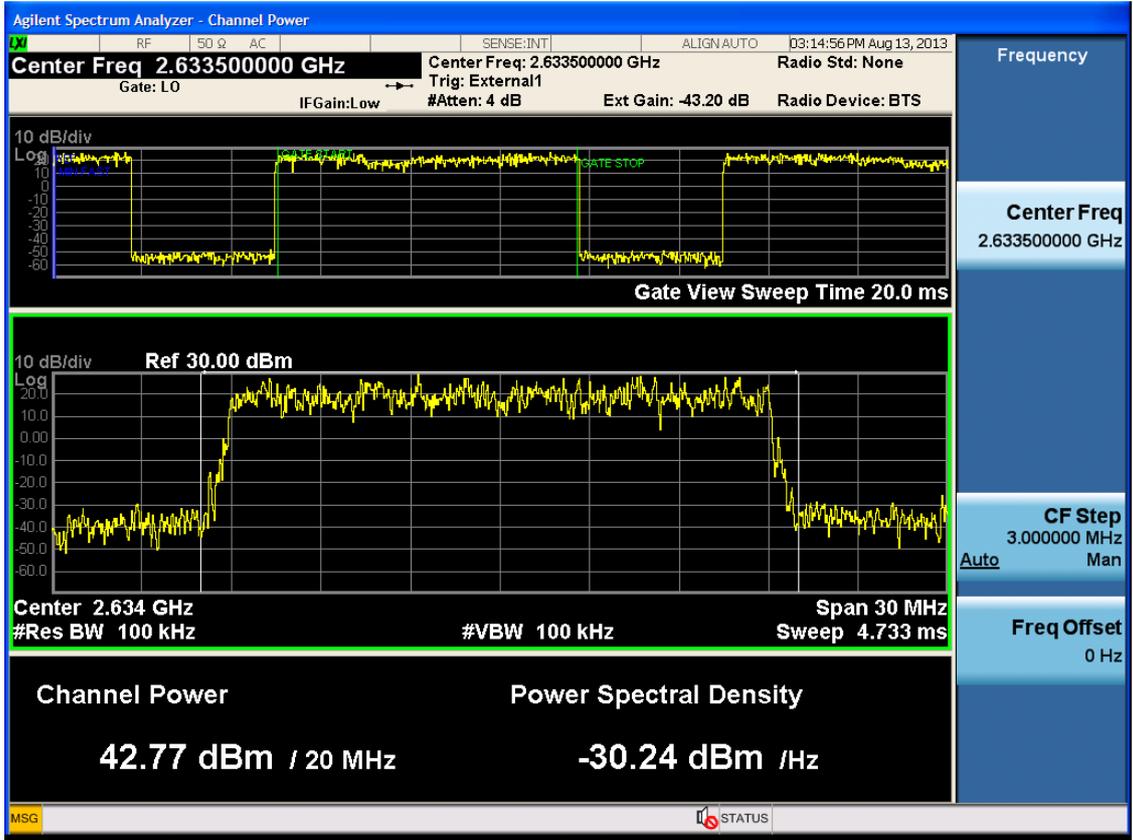
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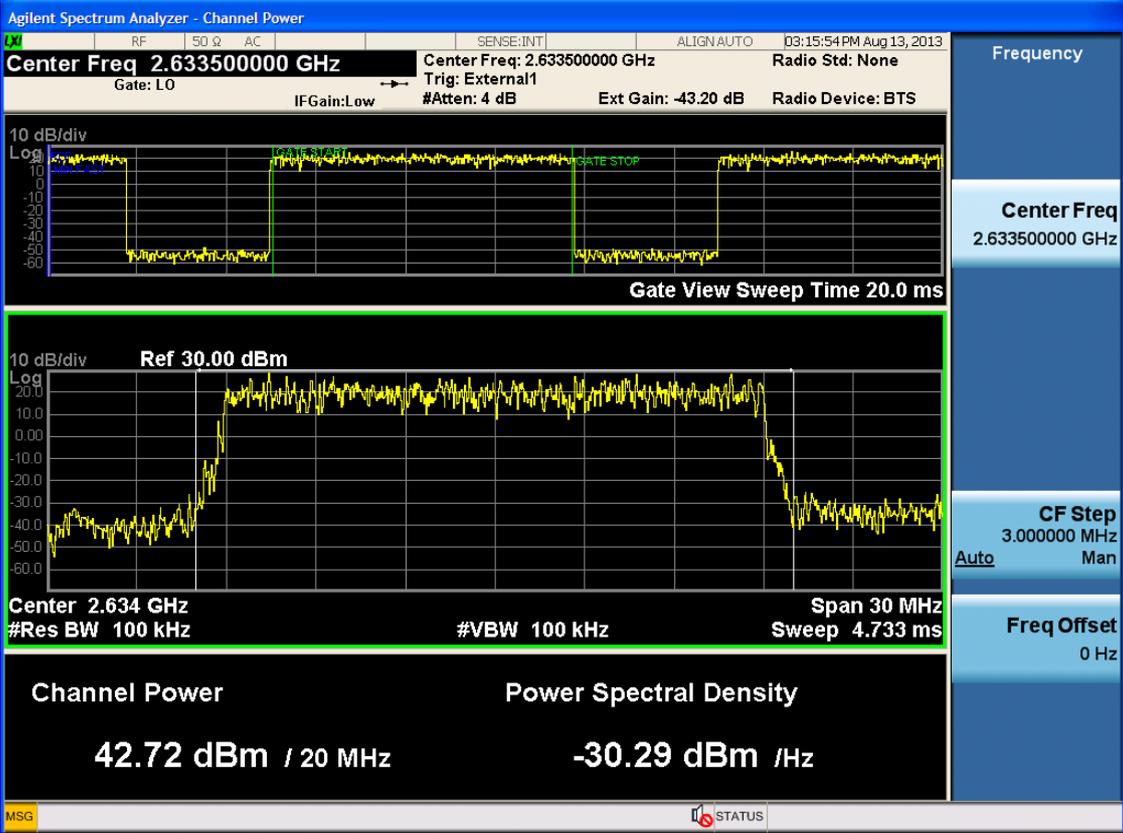
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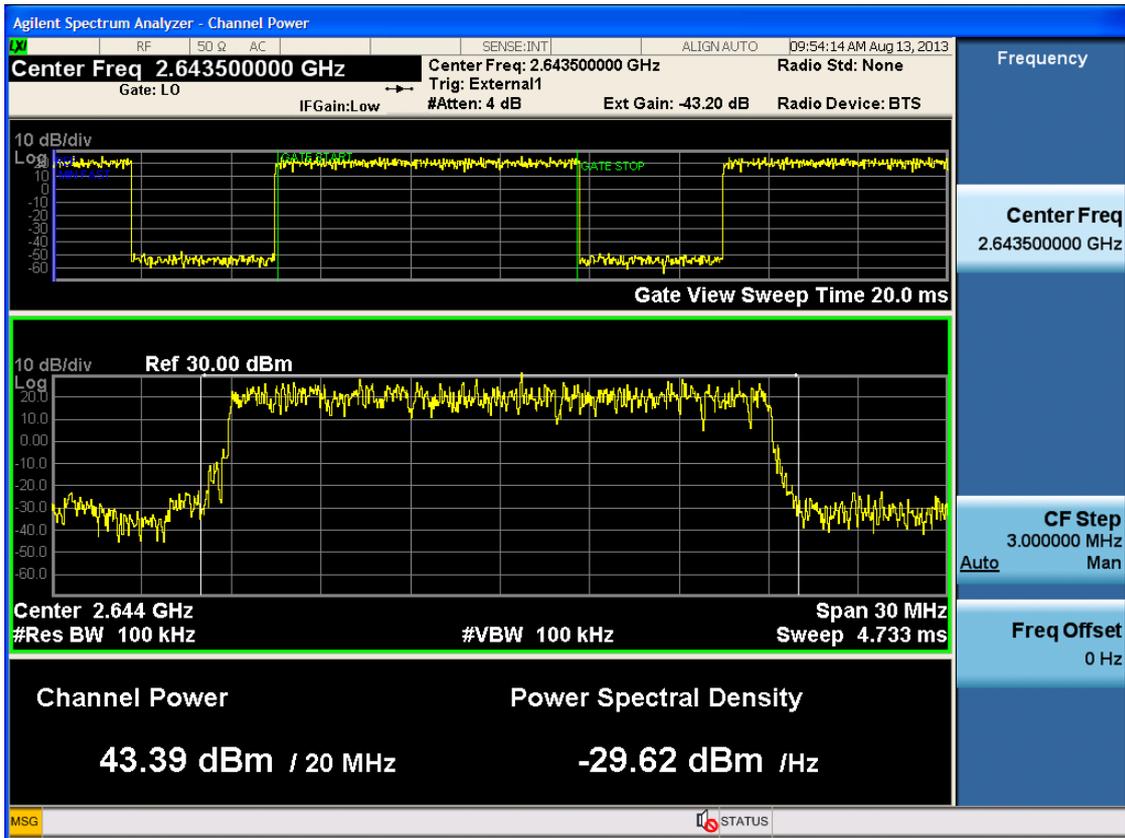
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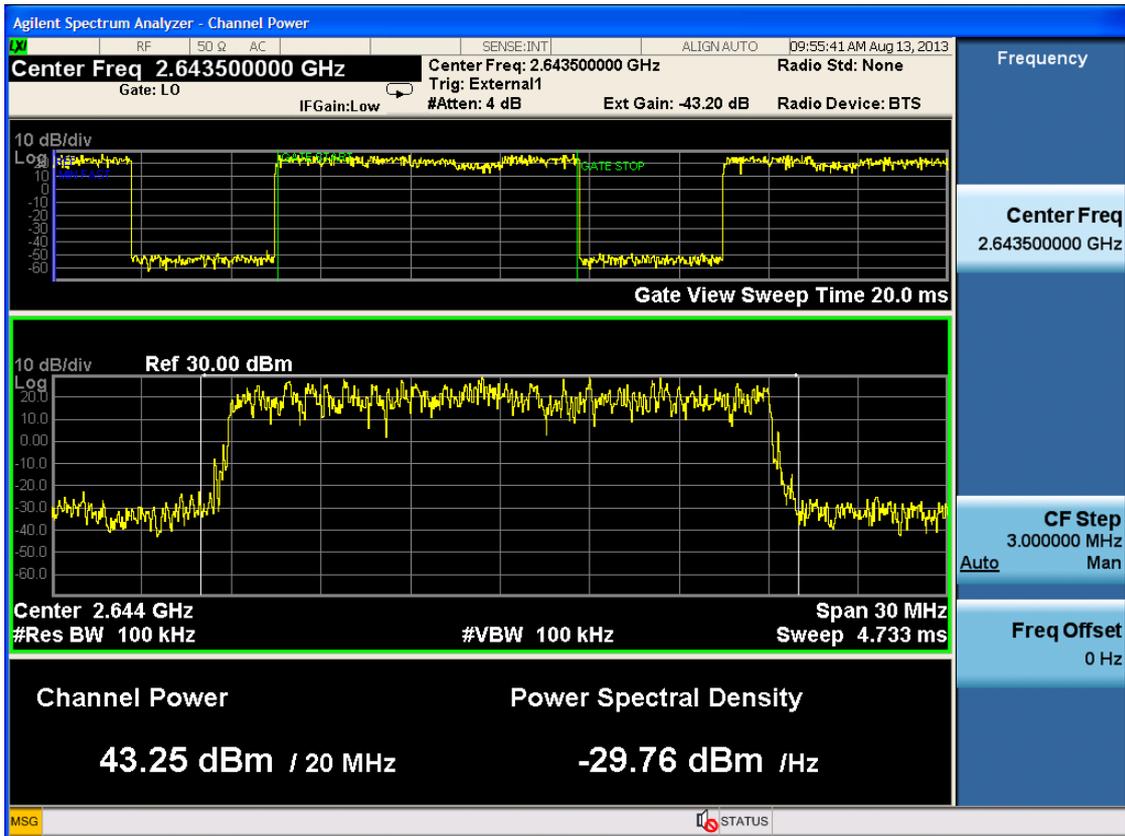
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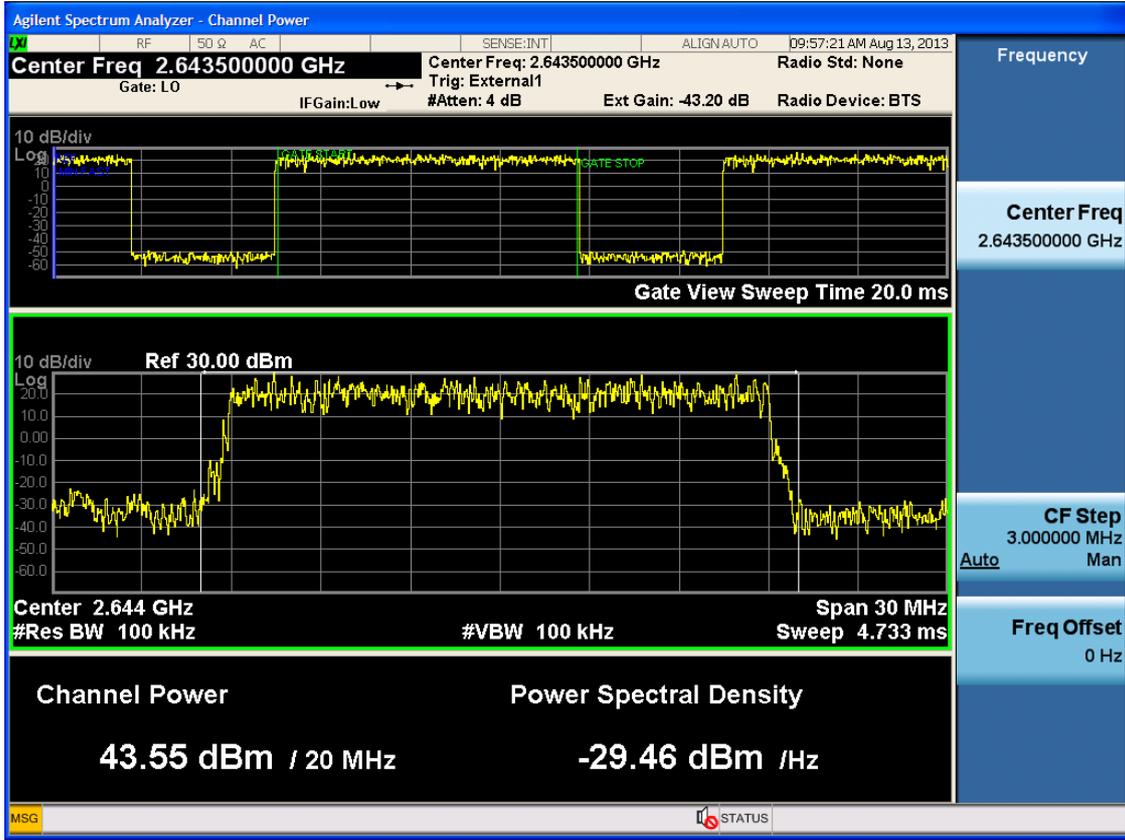
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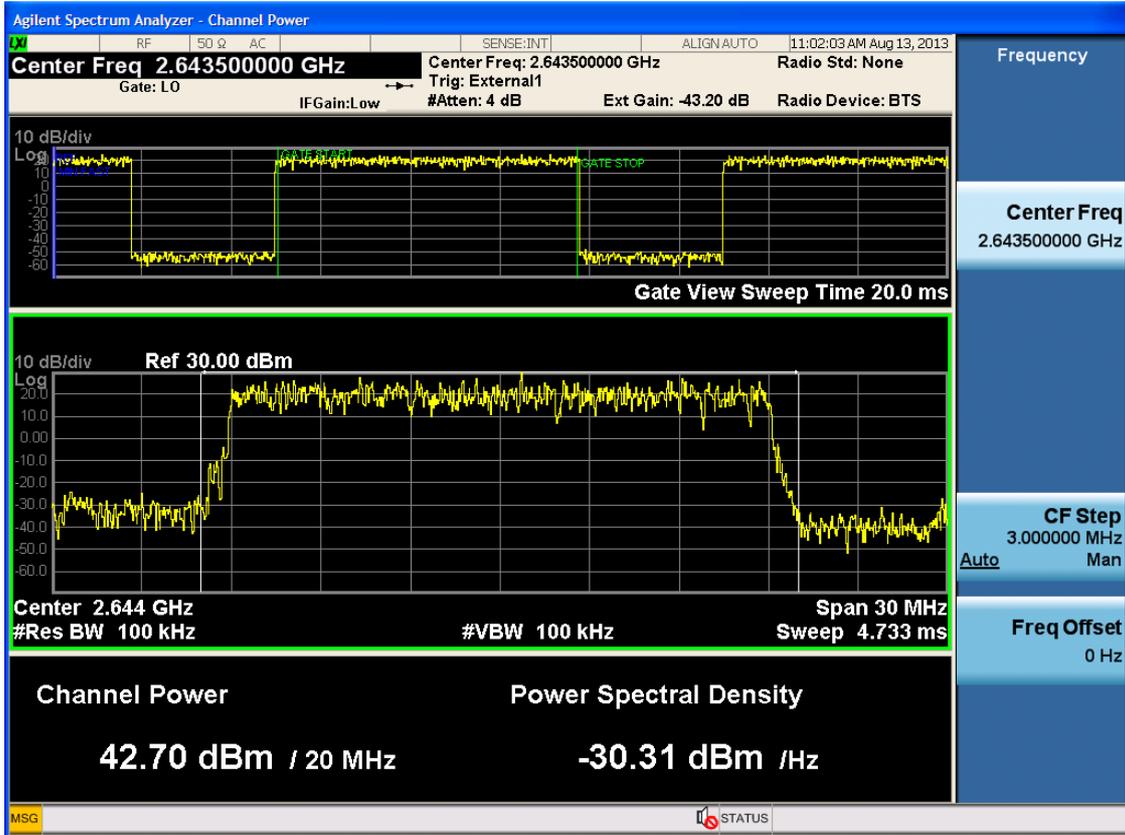
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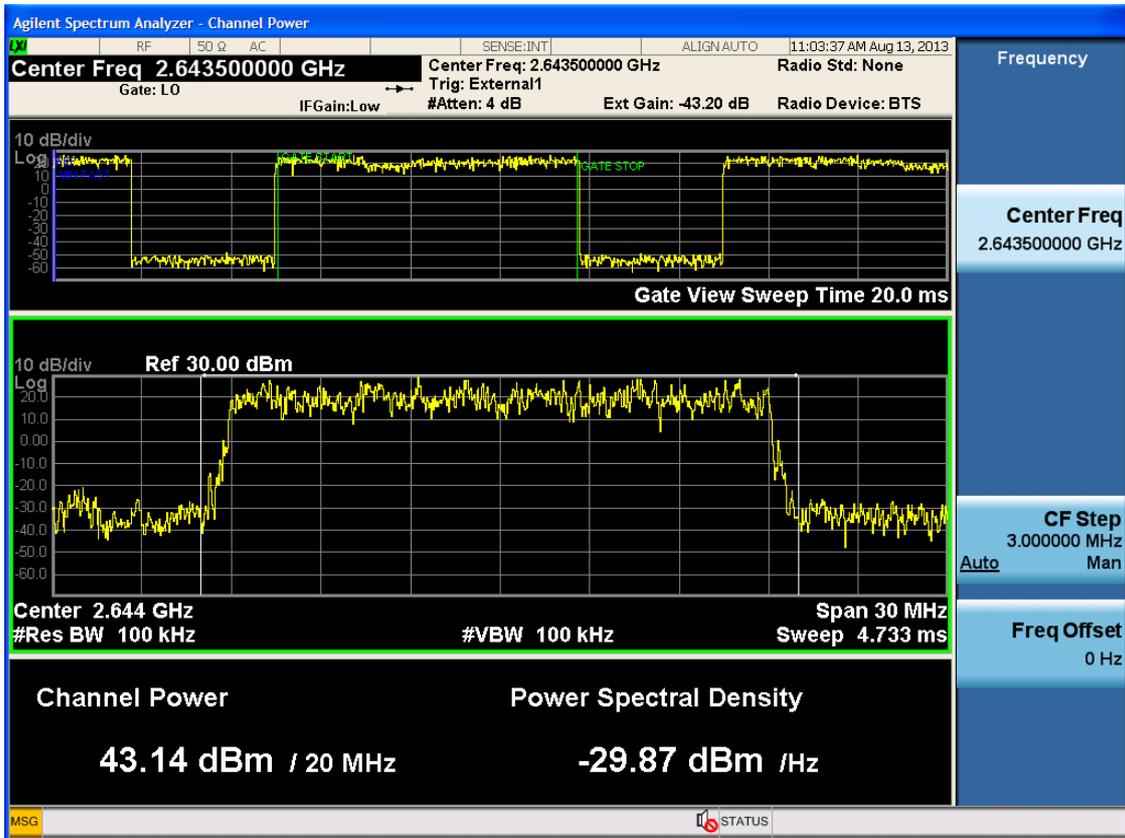
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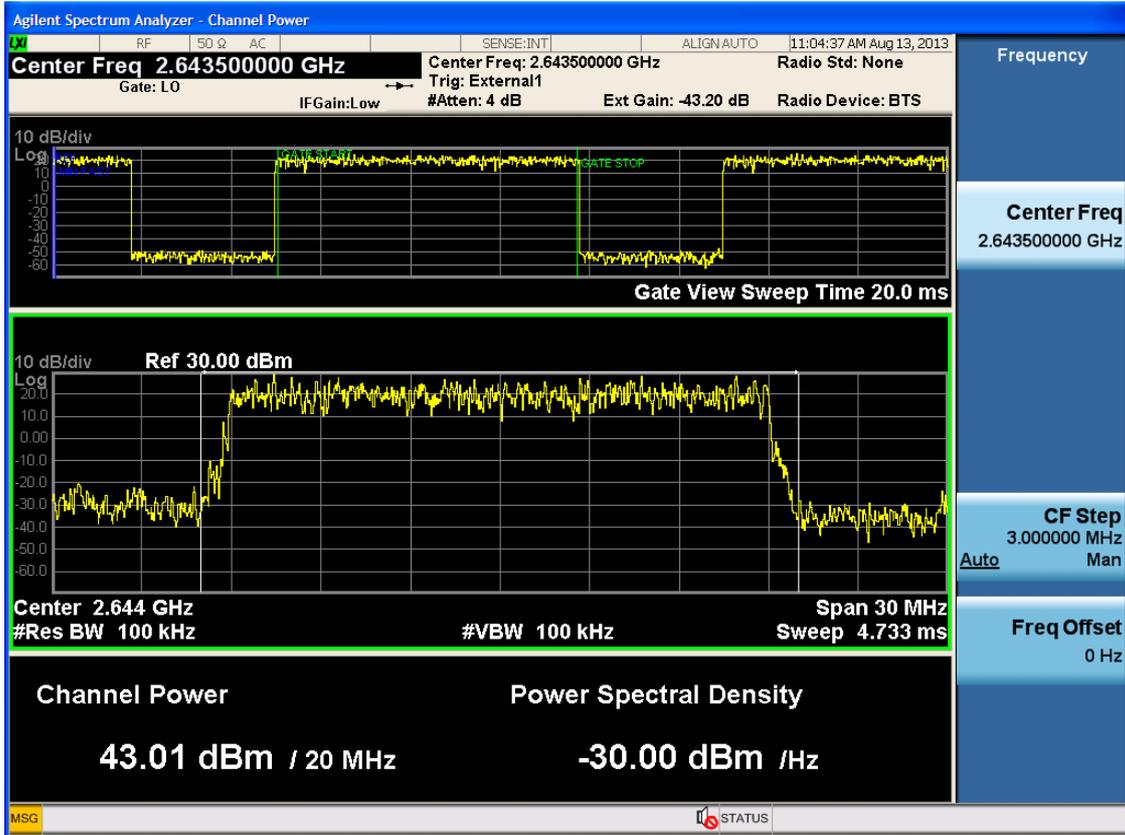
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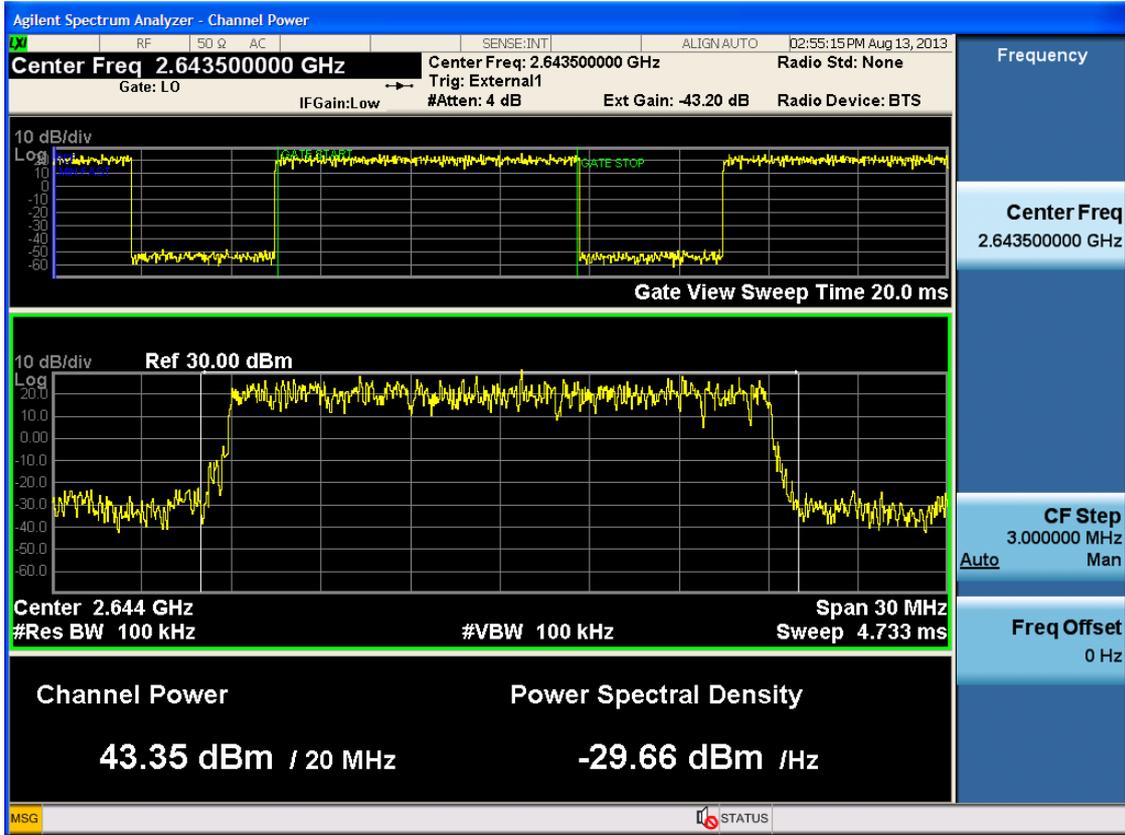
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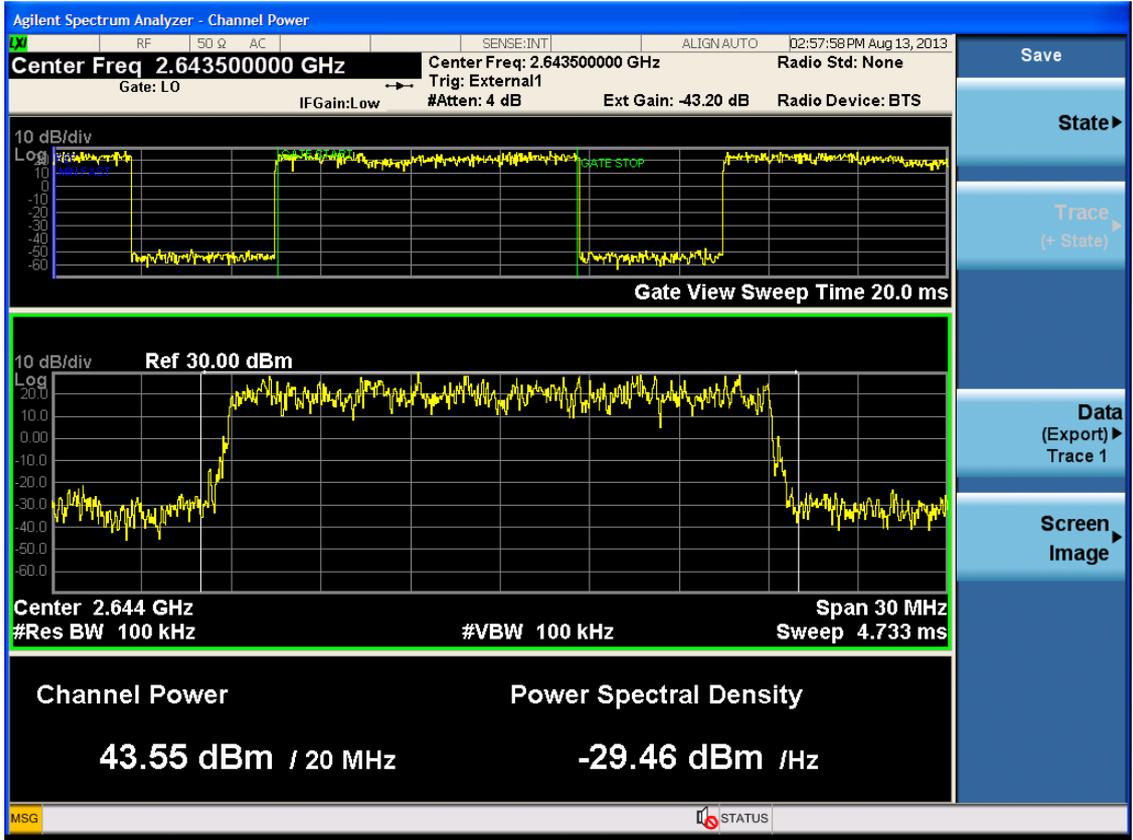
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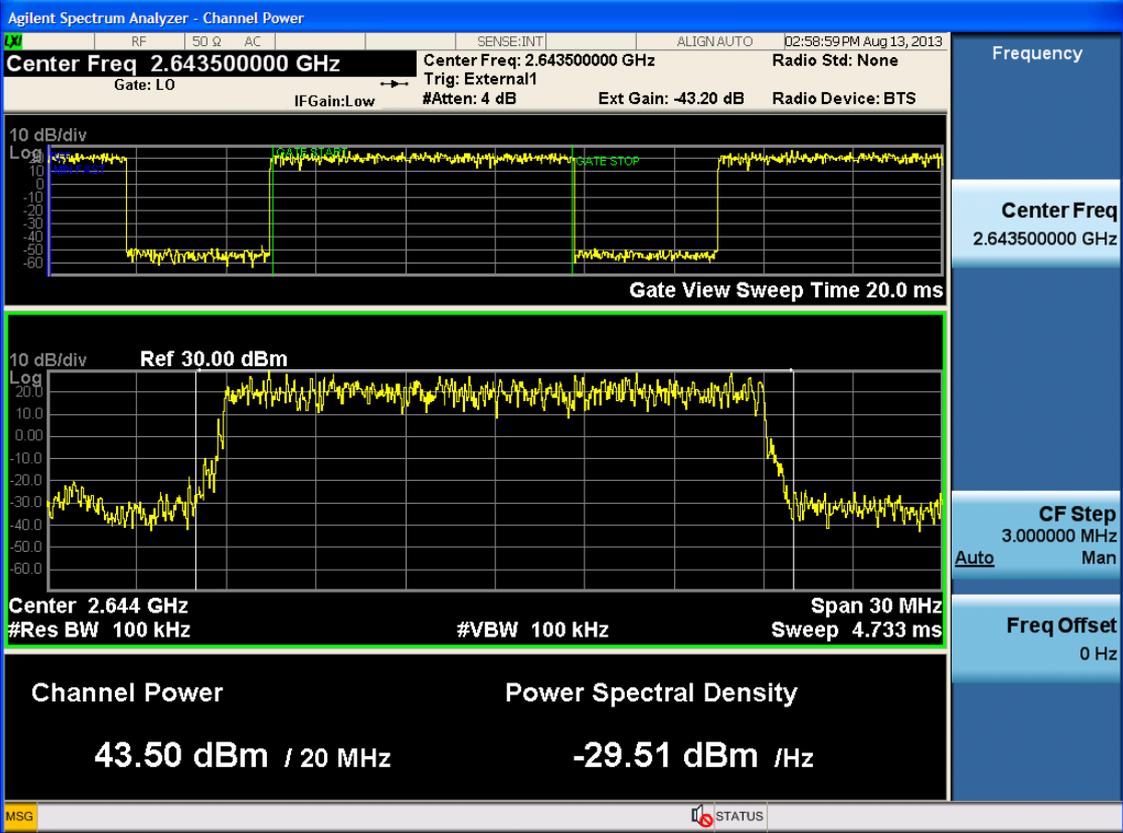
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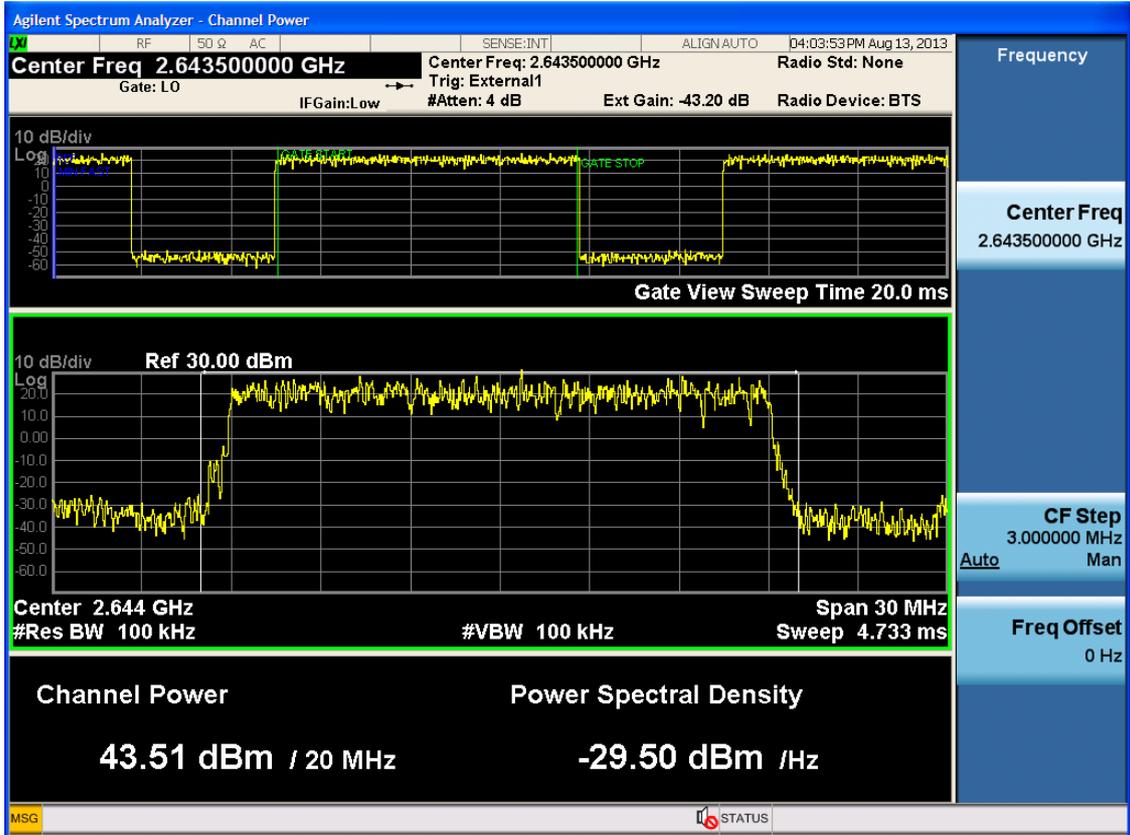
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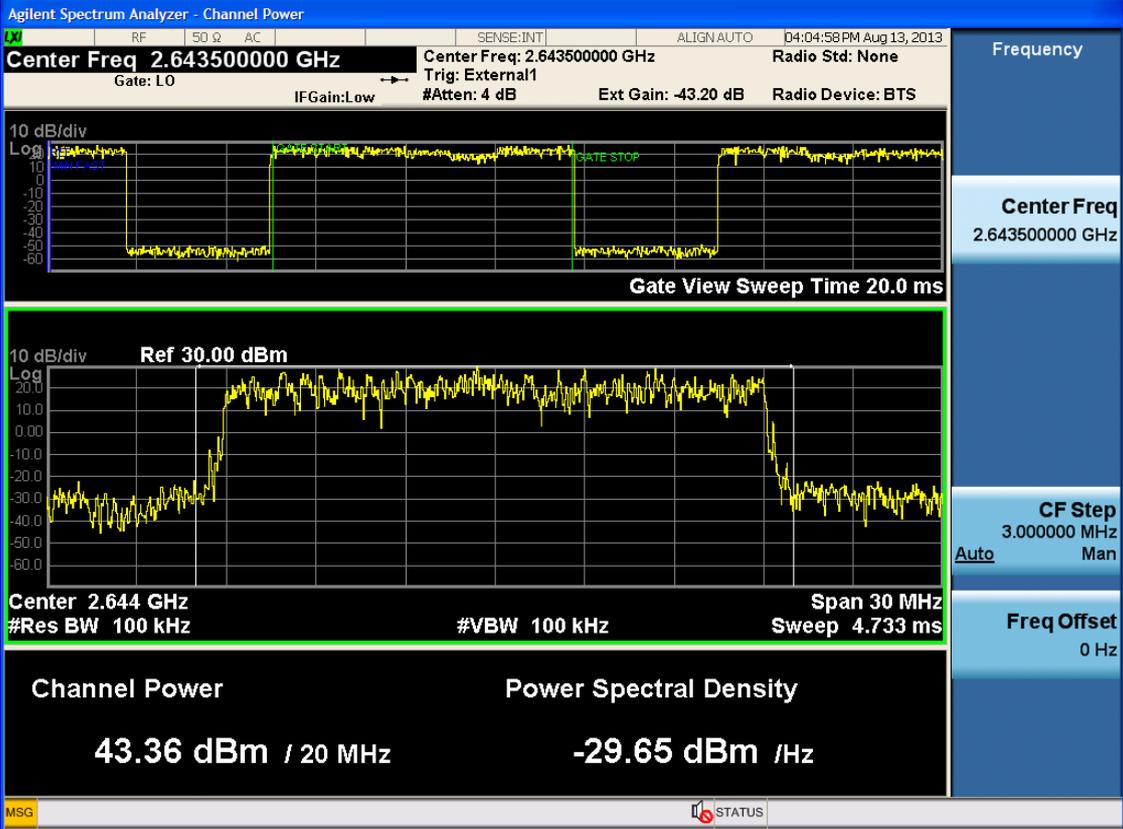
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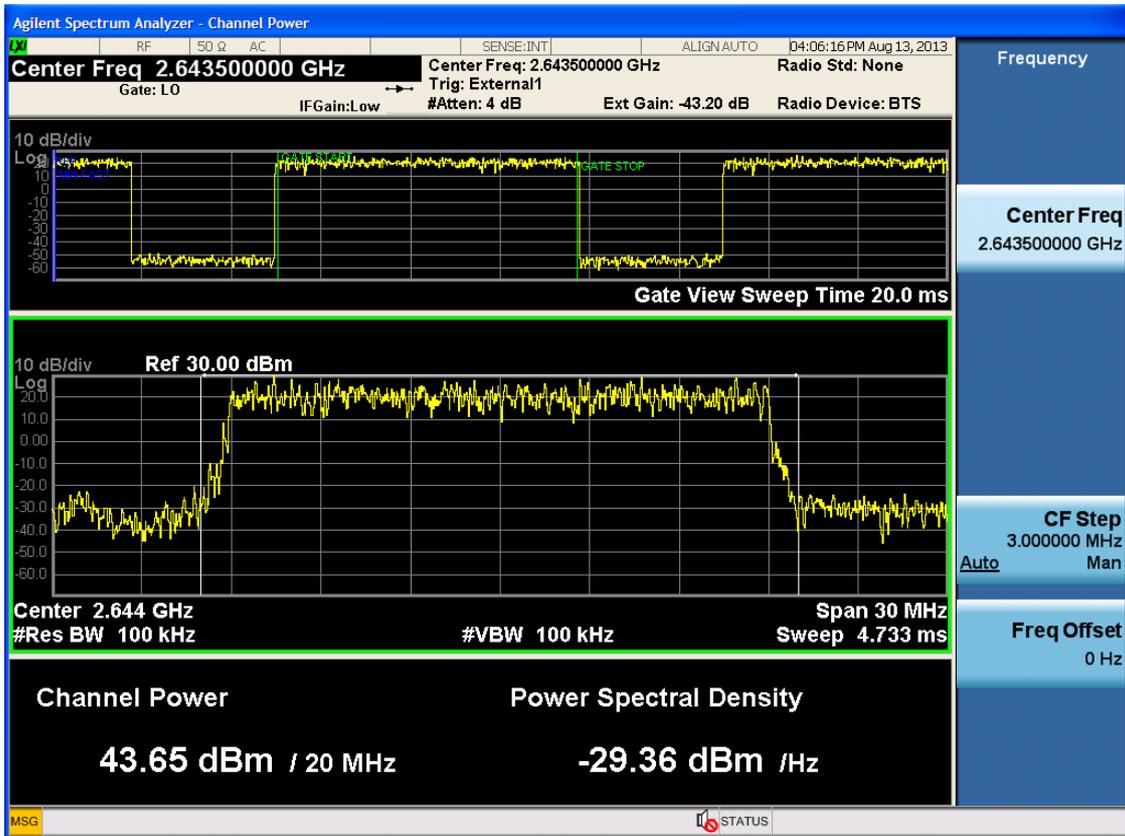
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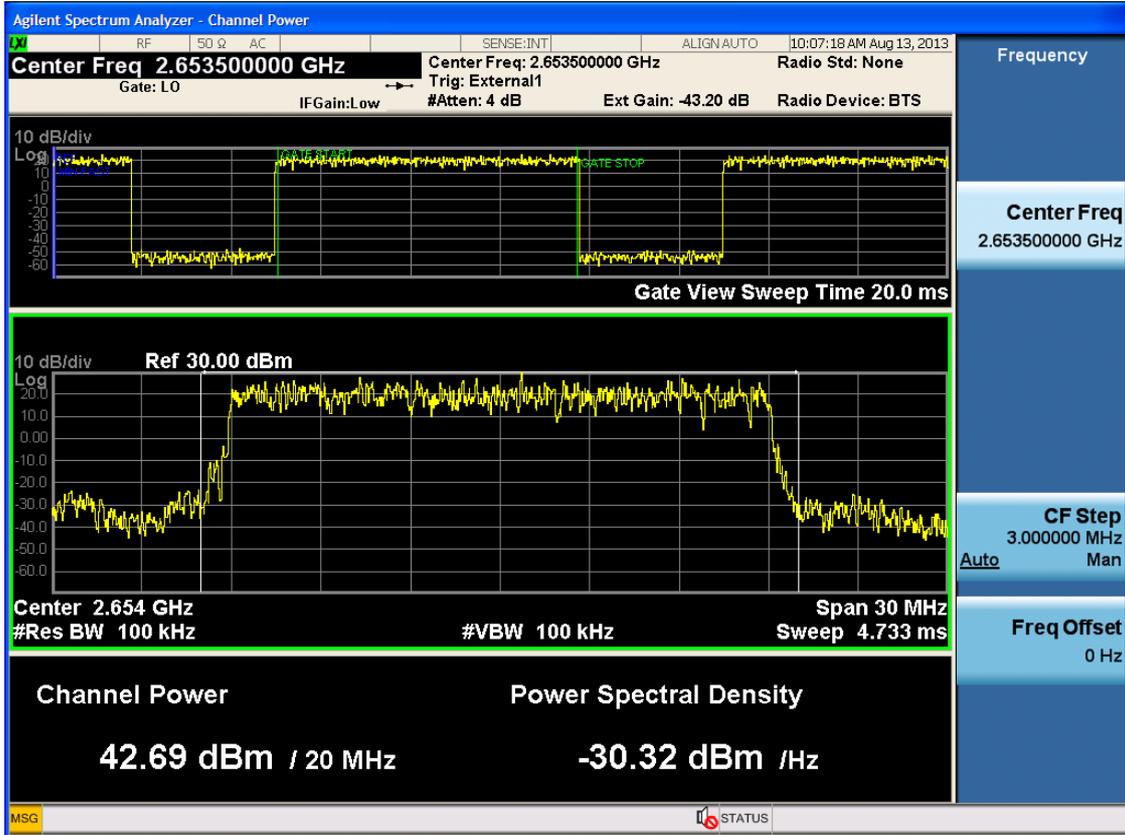
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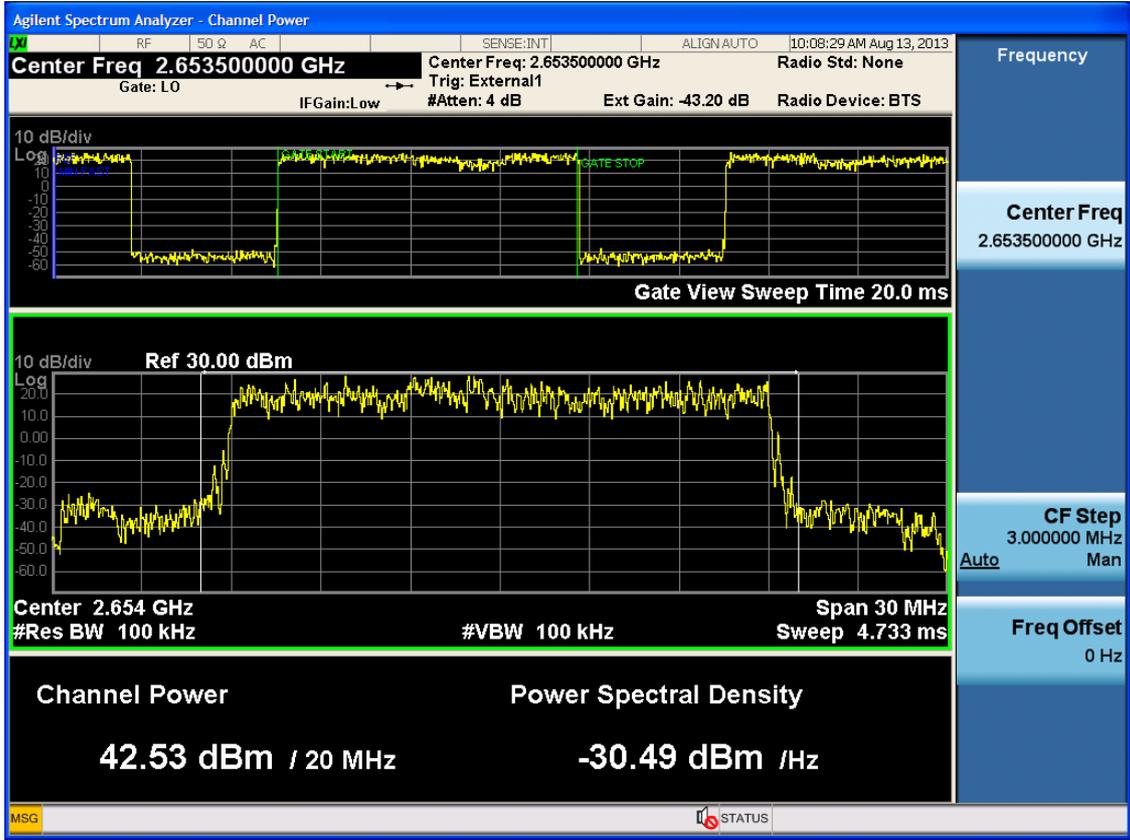
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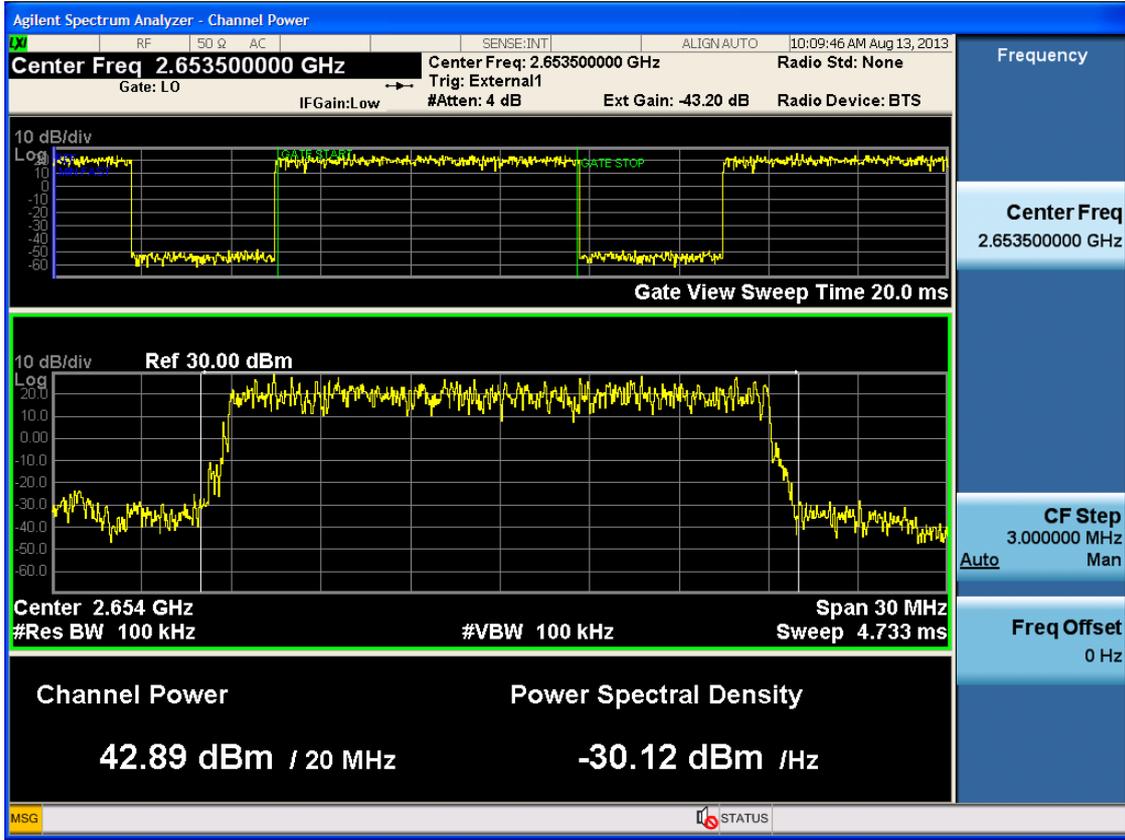
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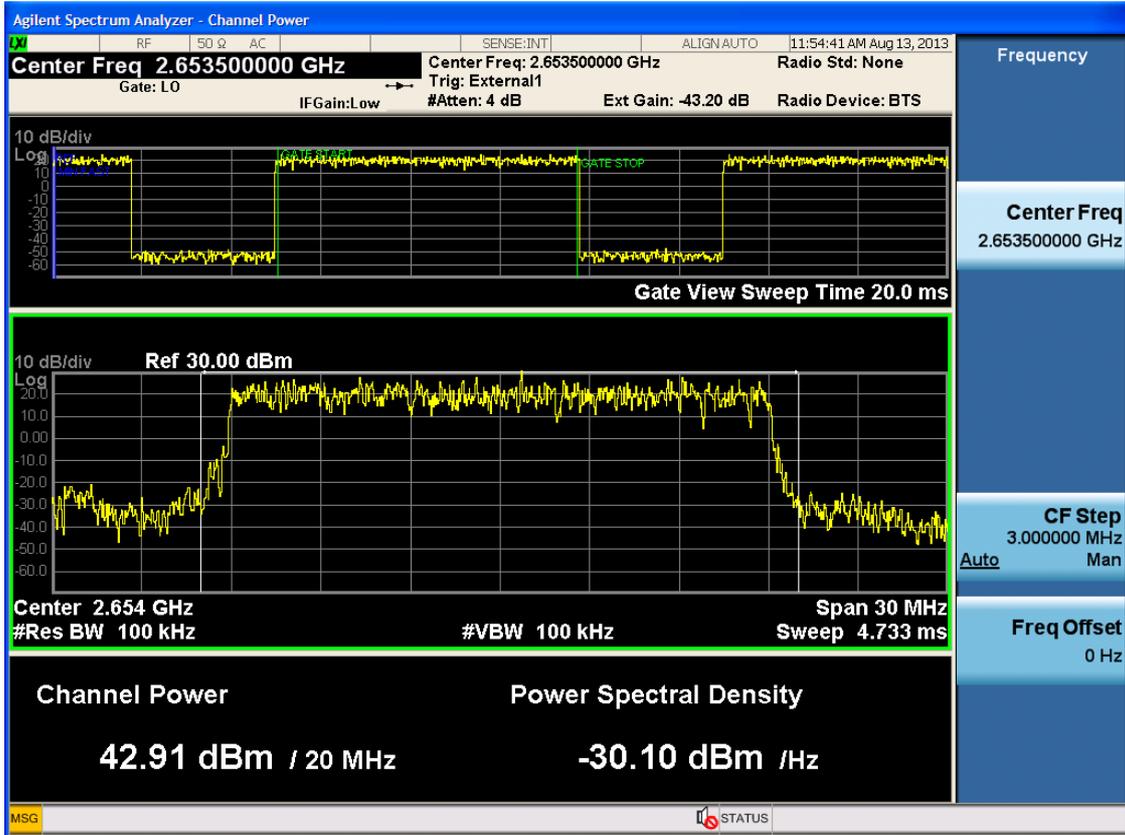
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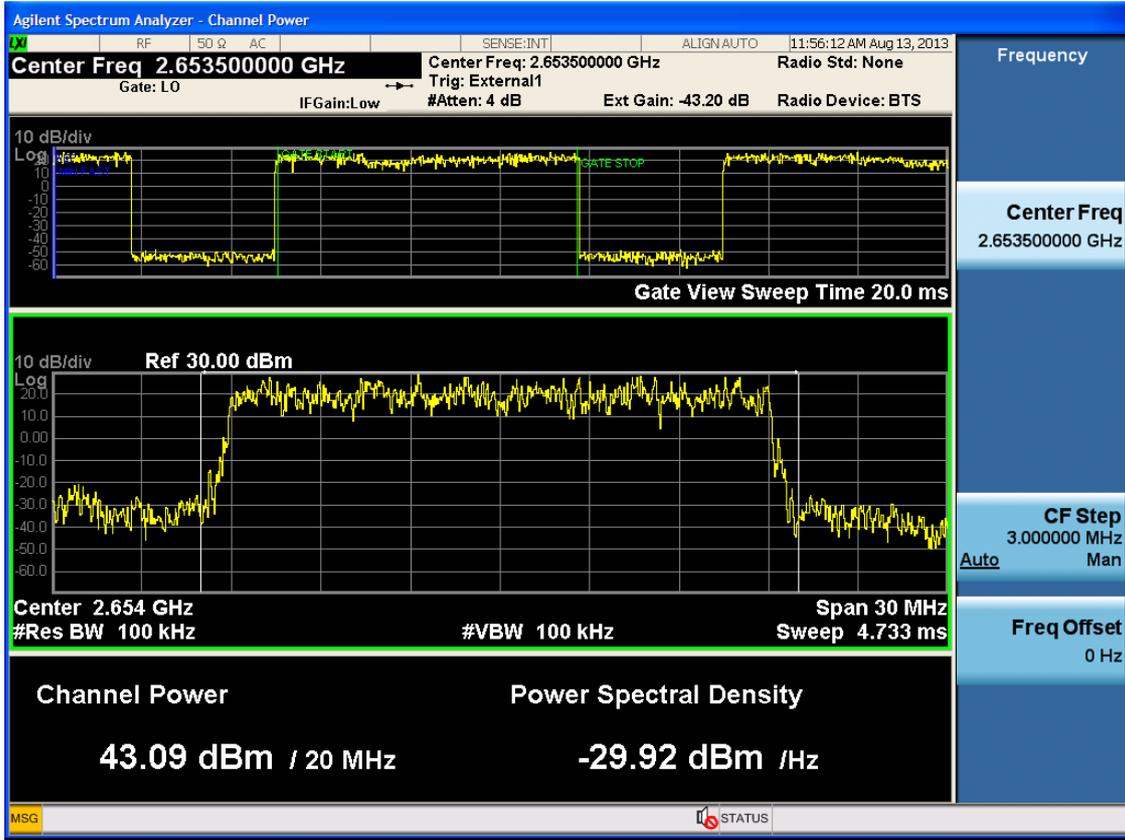
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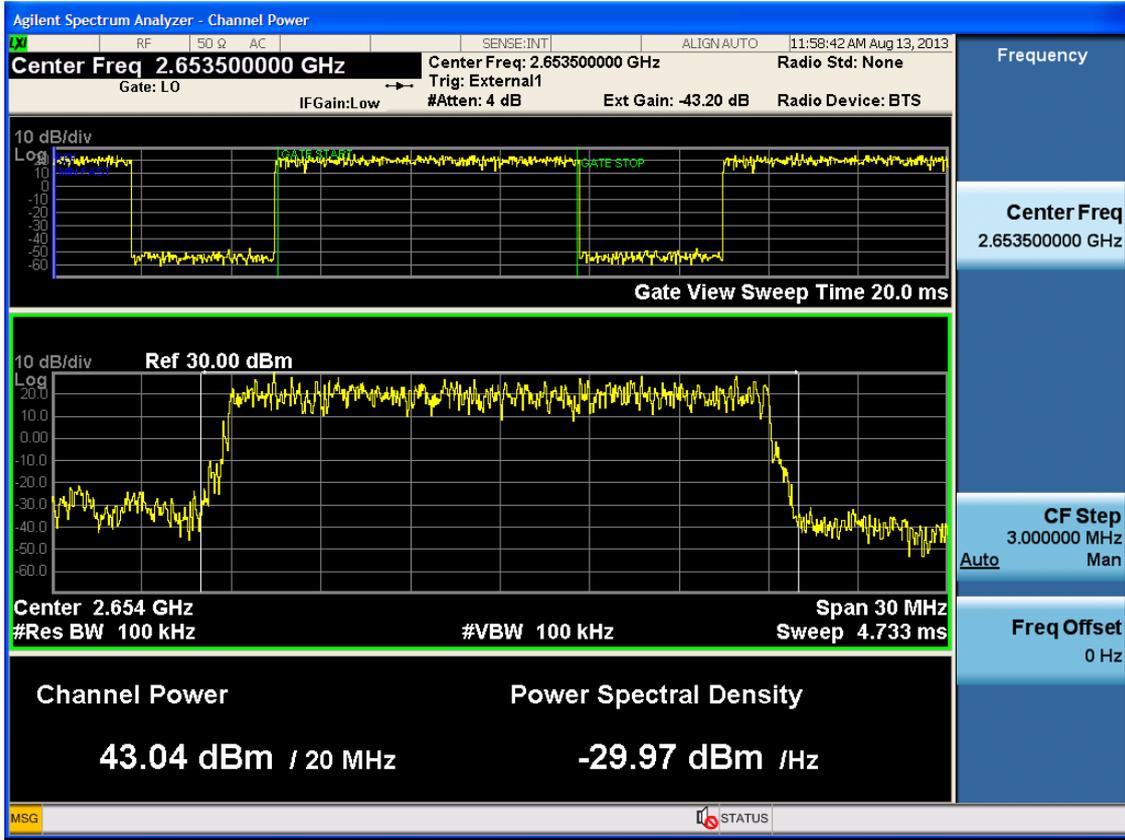
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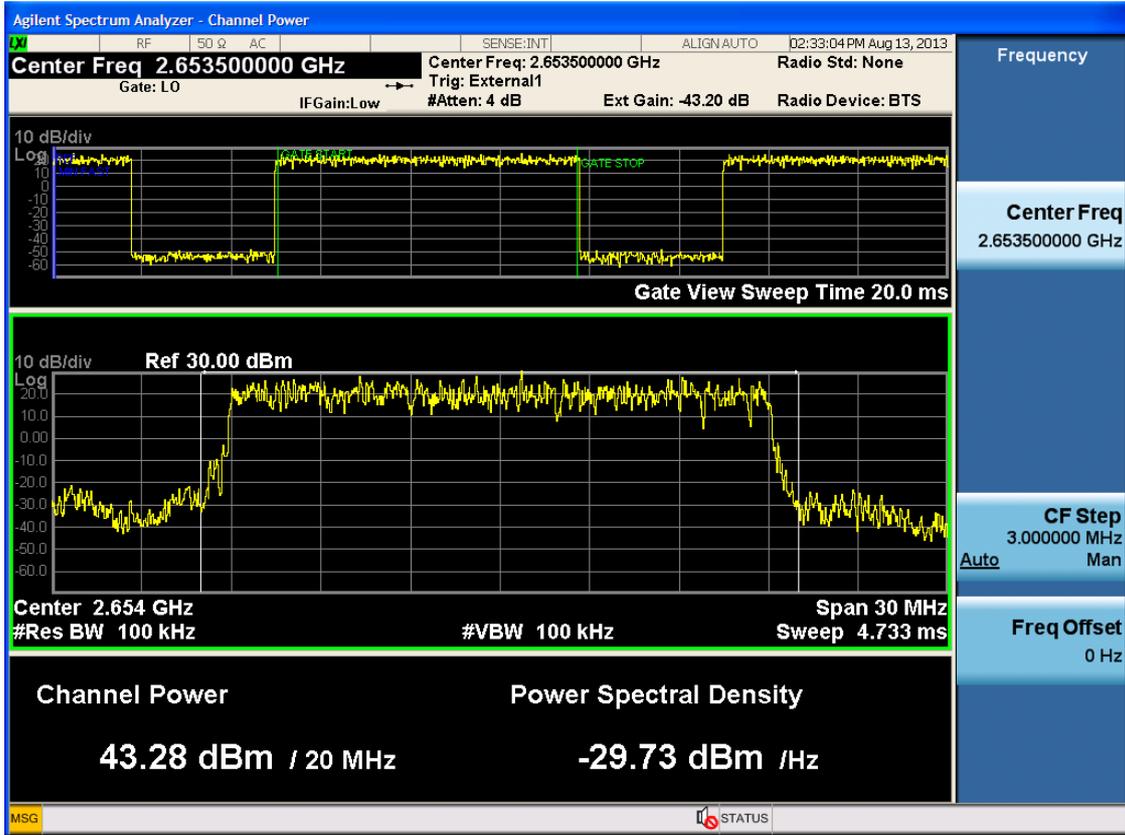
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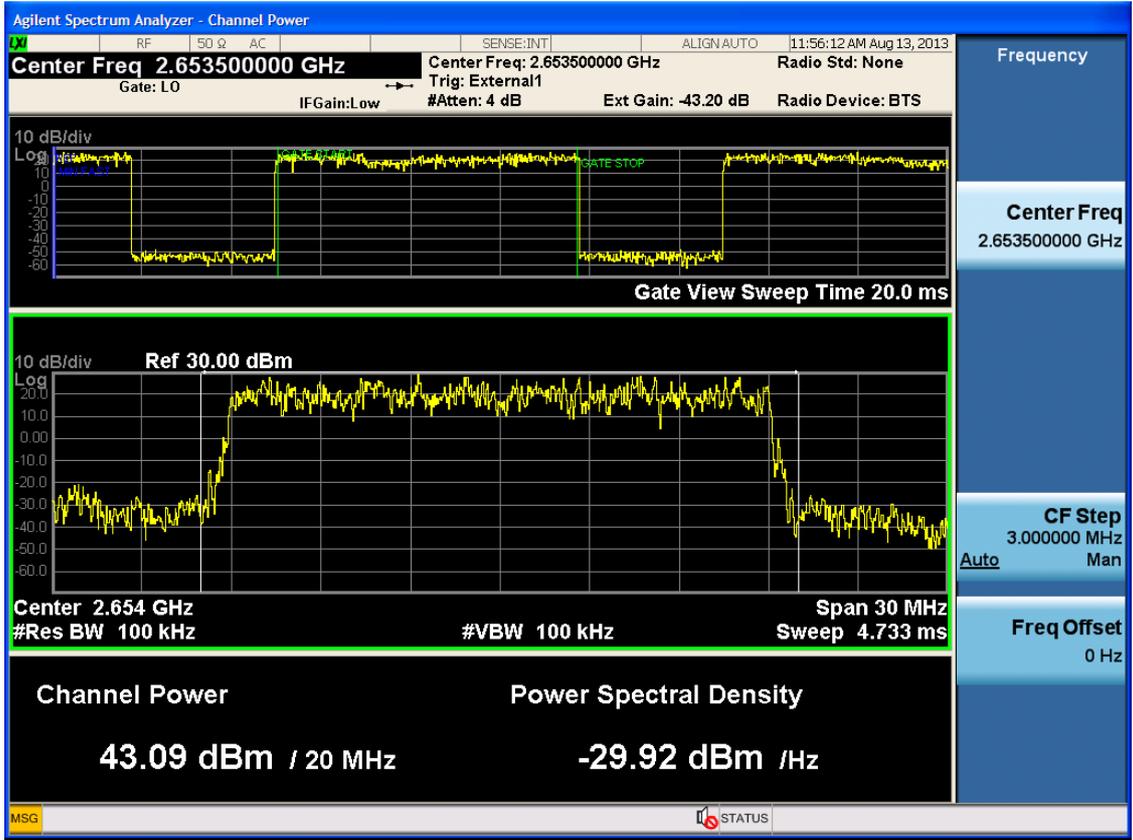
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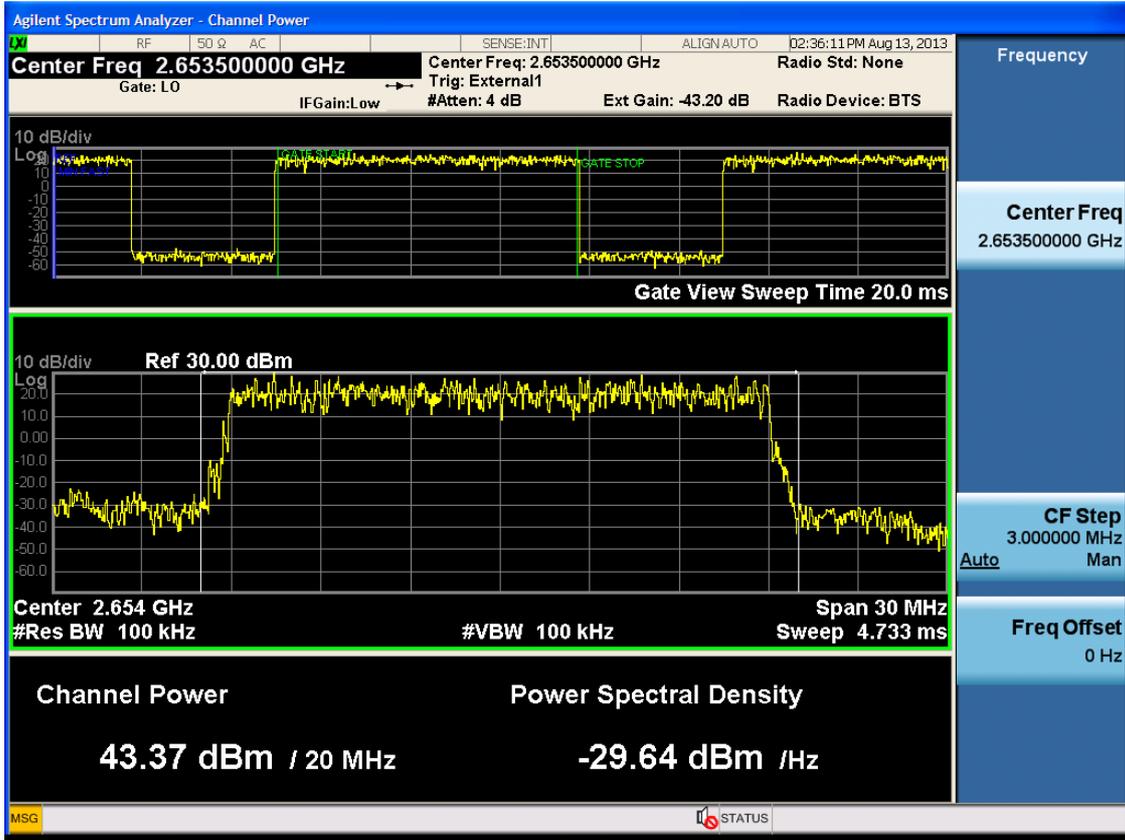
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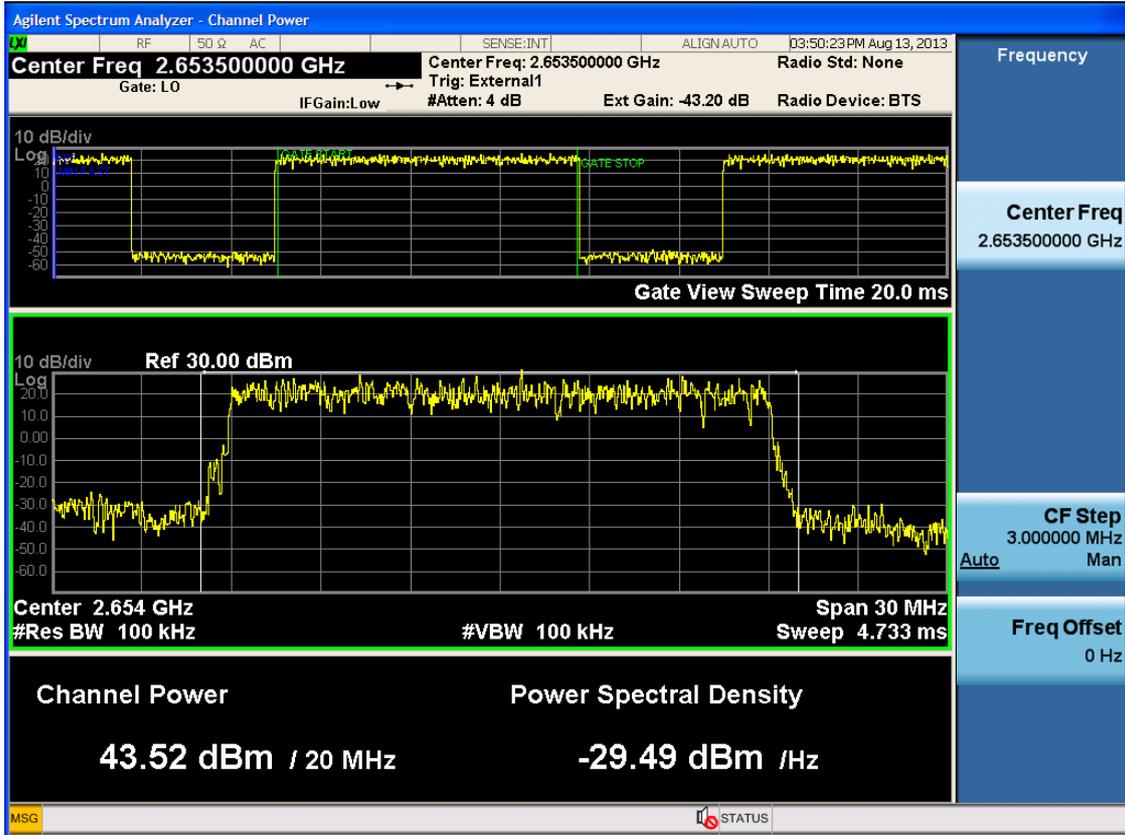
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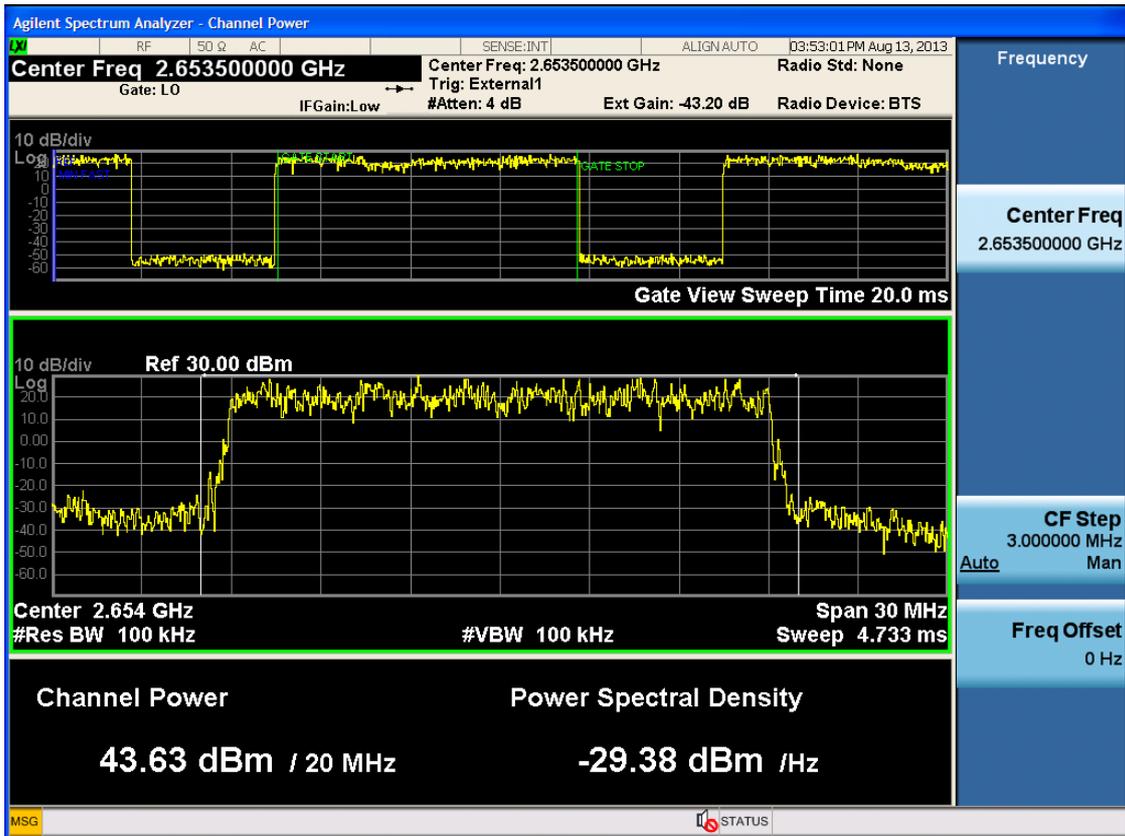
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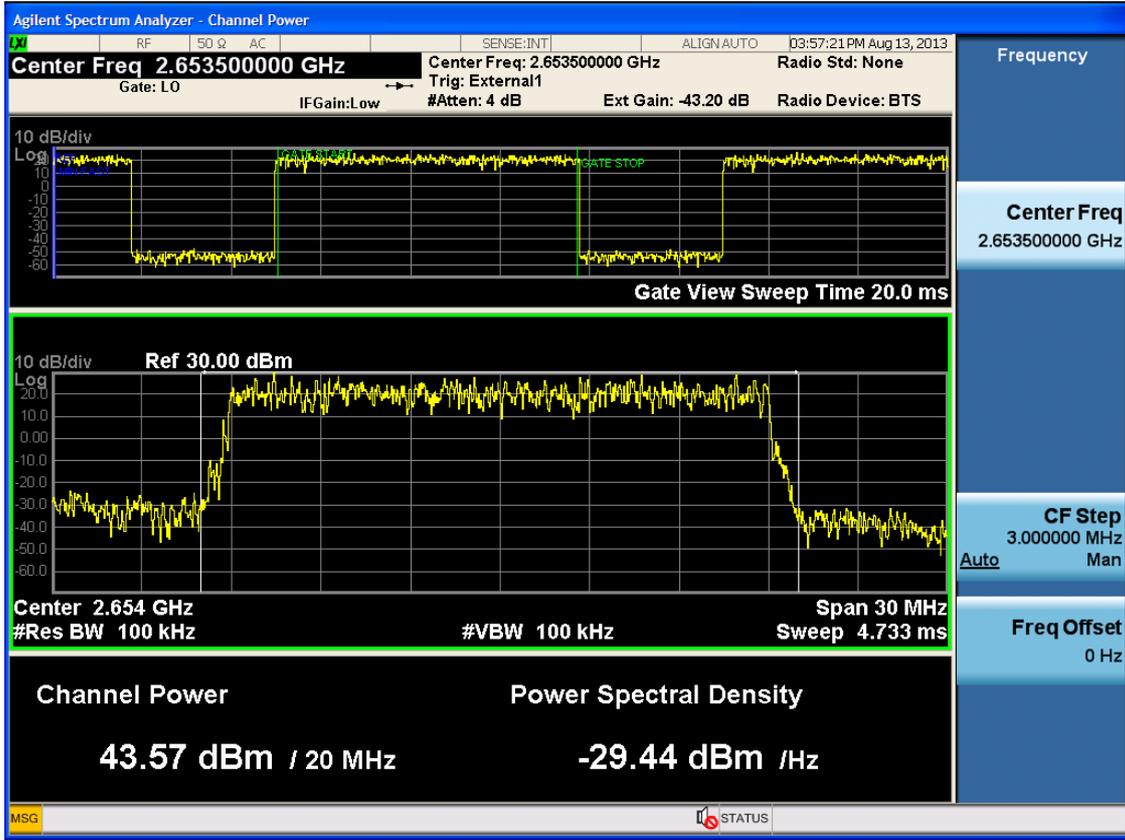
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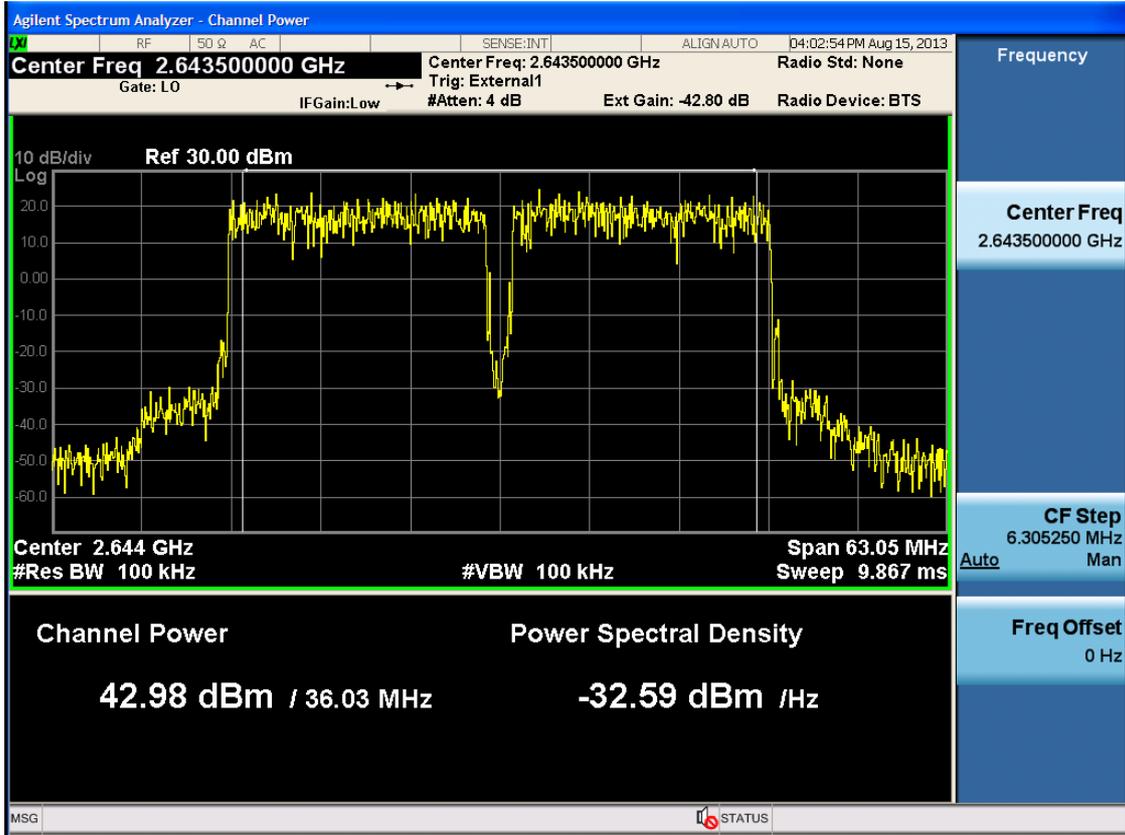
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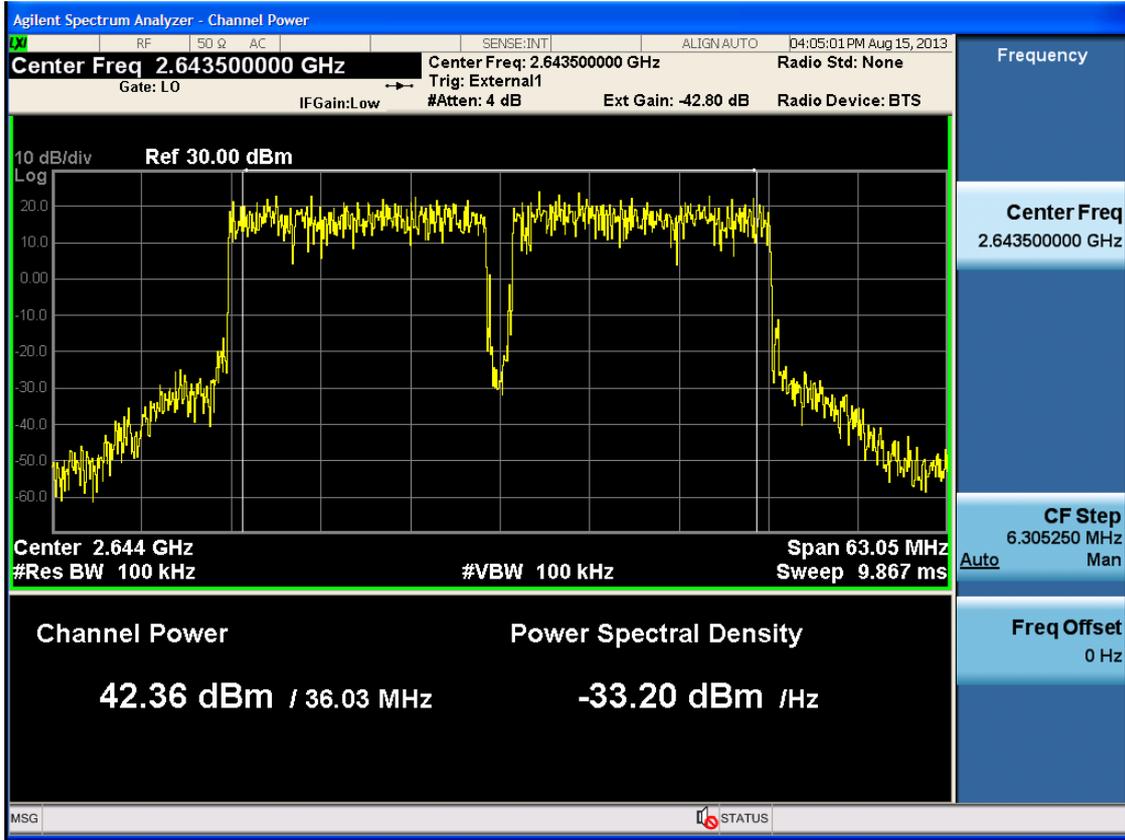
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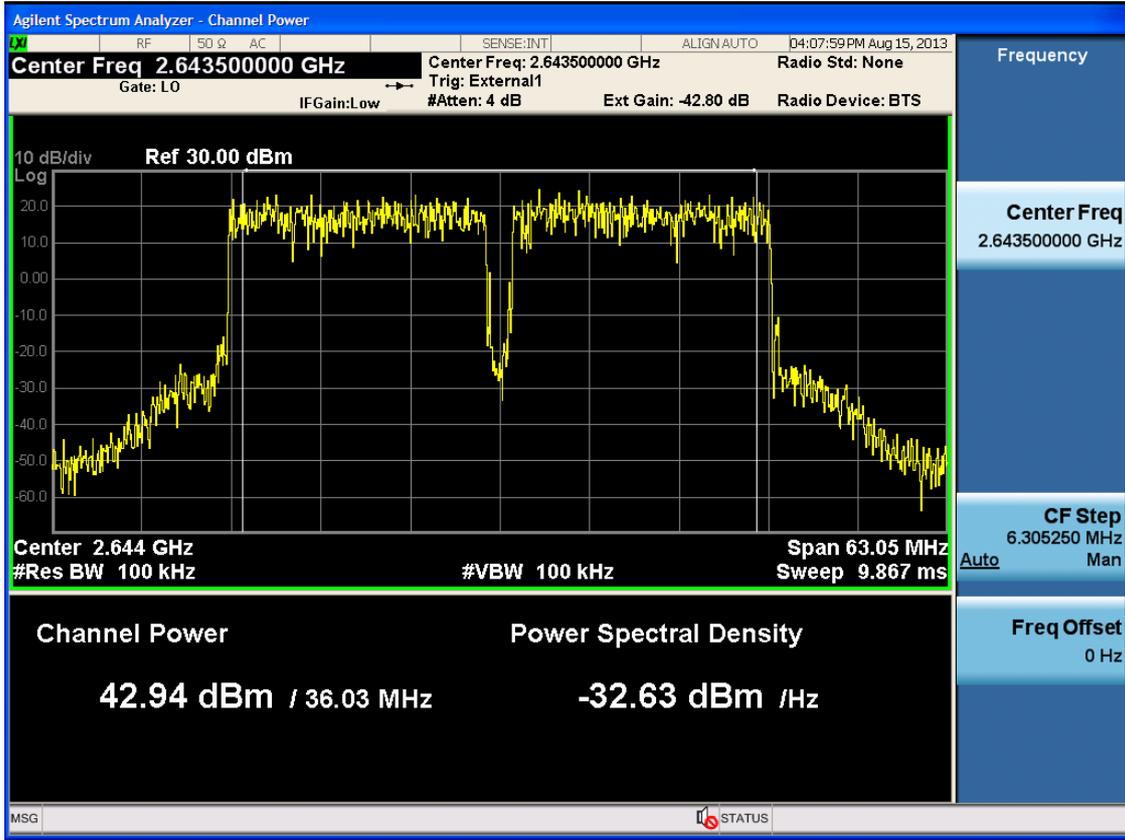
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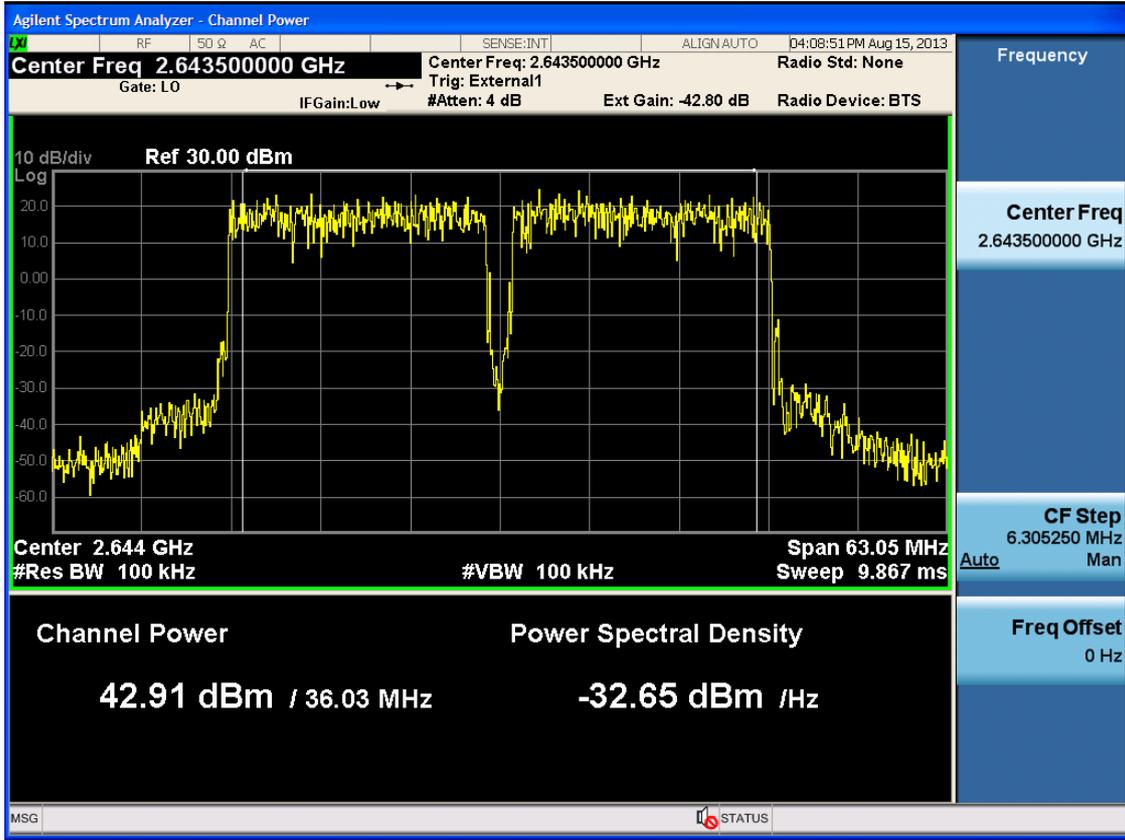
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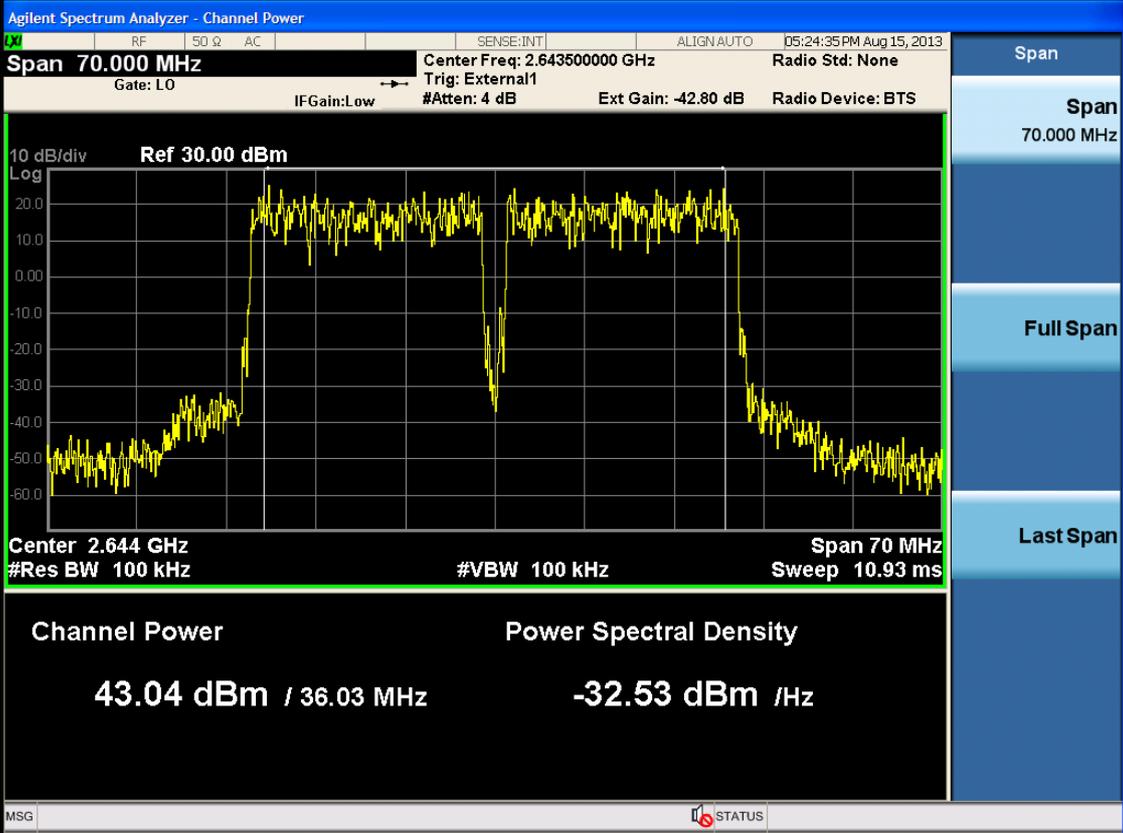
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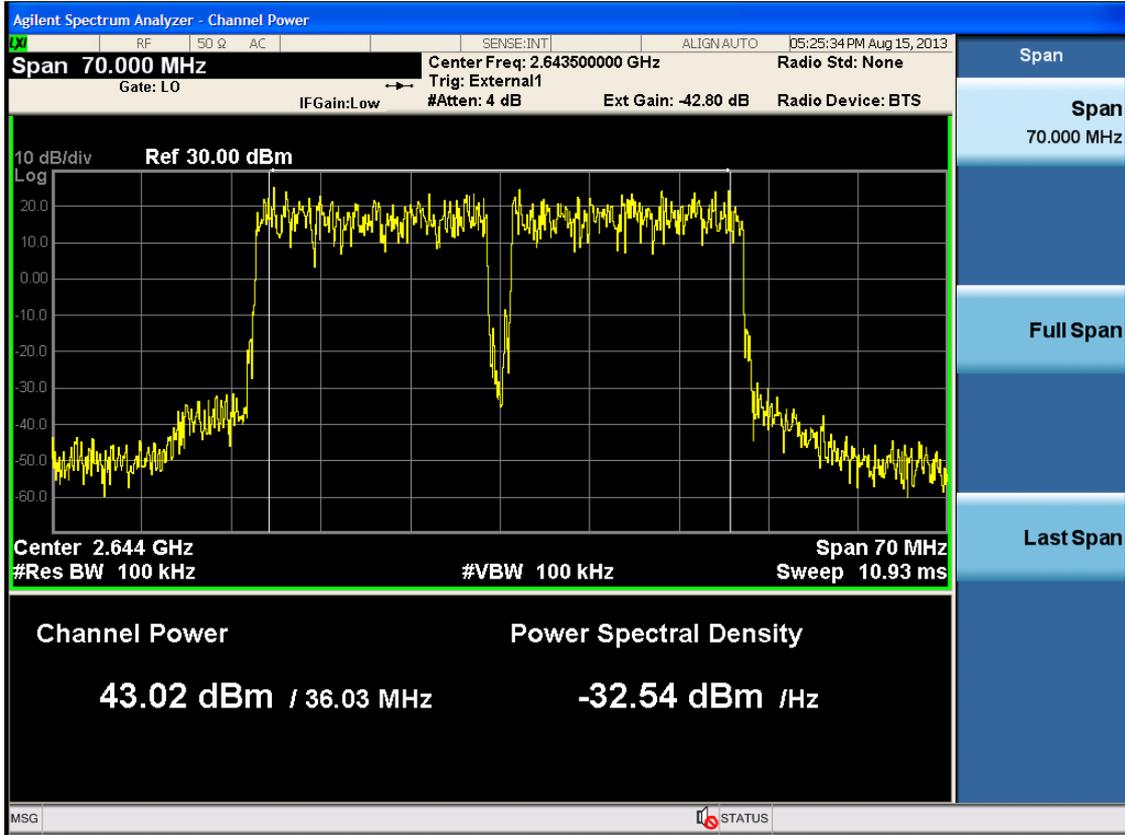
20M+20M-2633.5+2653.5MHz -QPSK-Port3



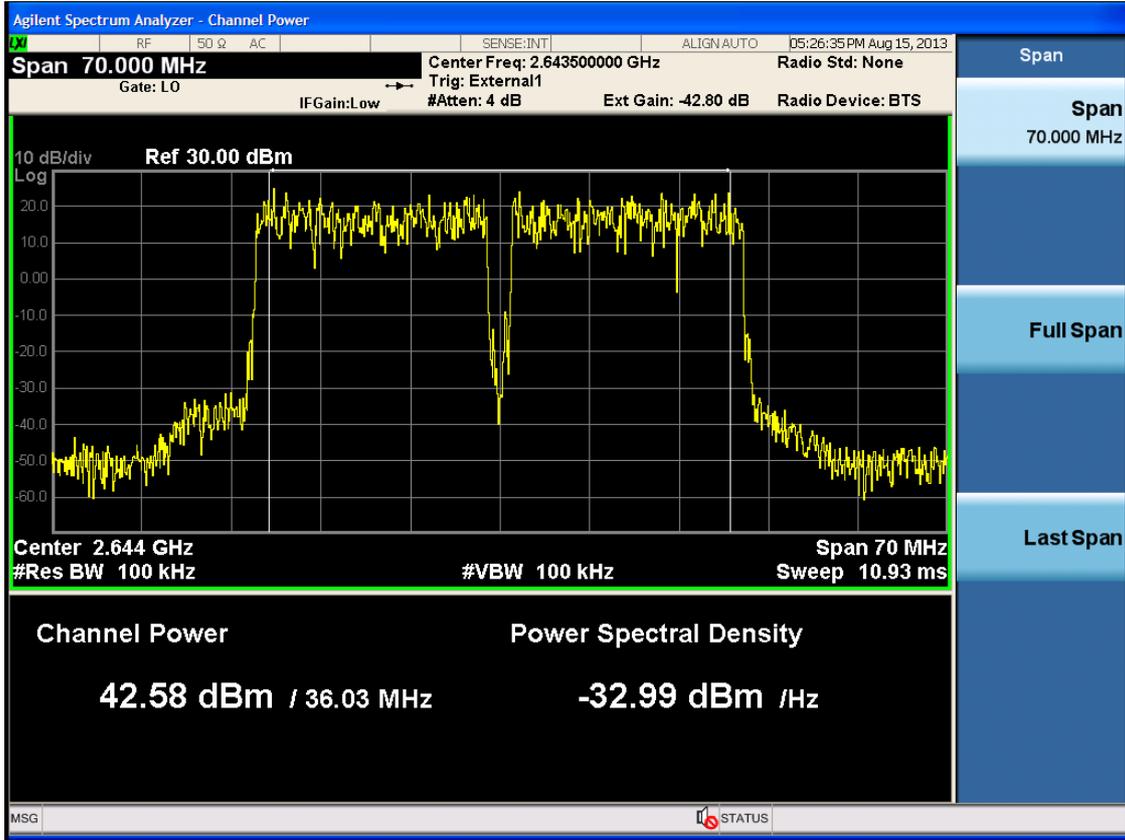
20M+20M-2633.5+2653.5MHz -QPSK-Port4



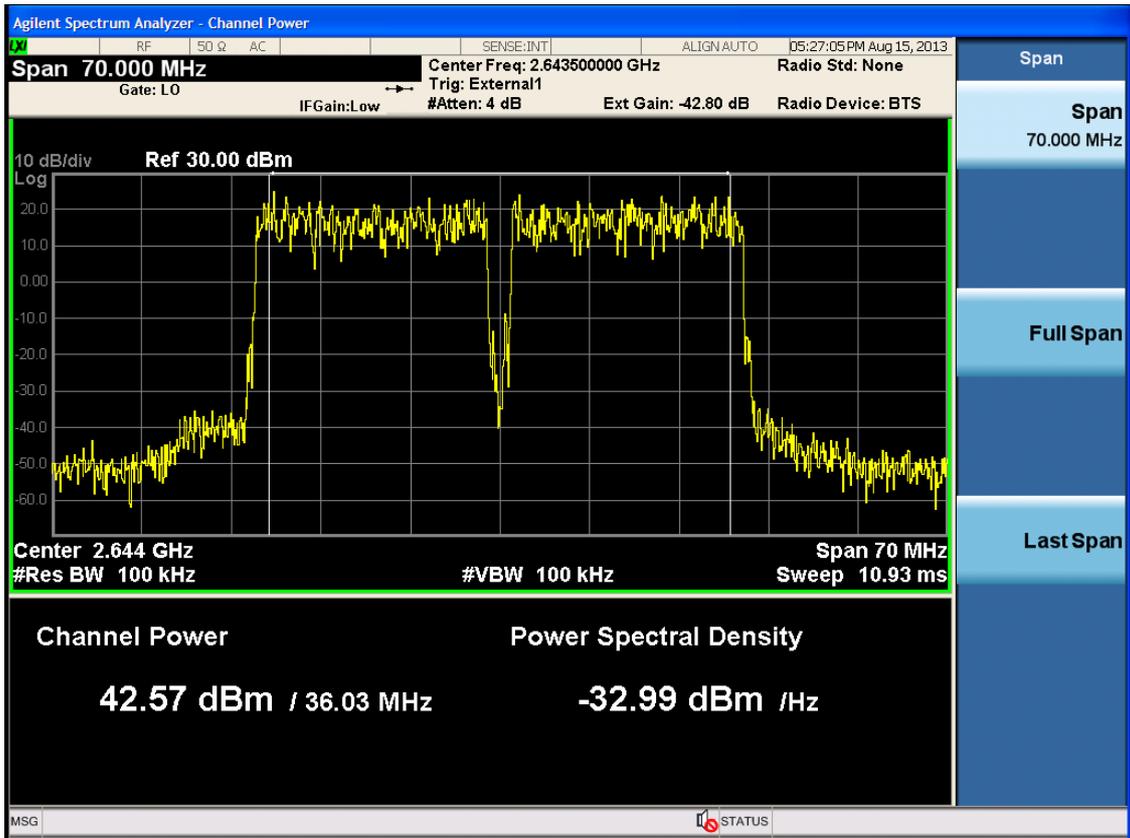
20M+20M-2633.5+2653.5MHz -16QAM-Port1



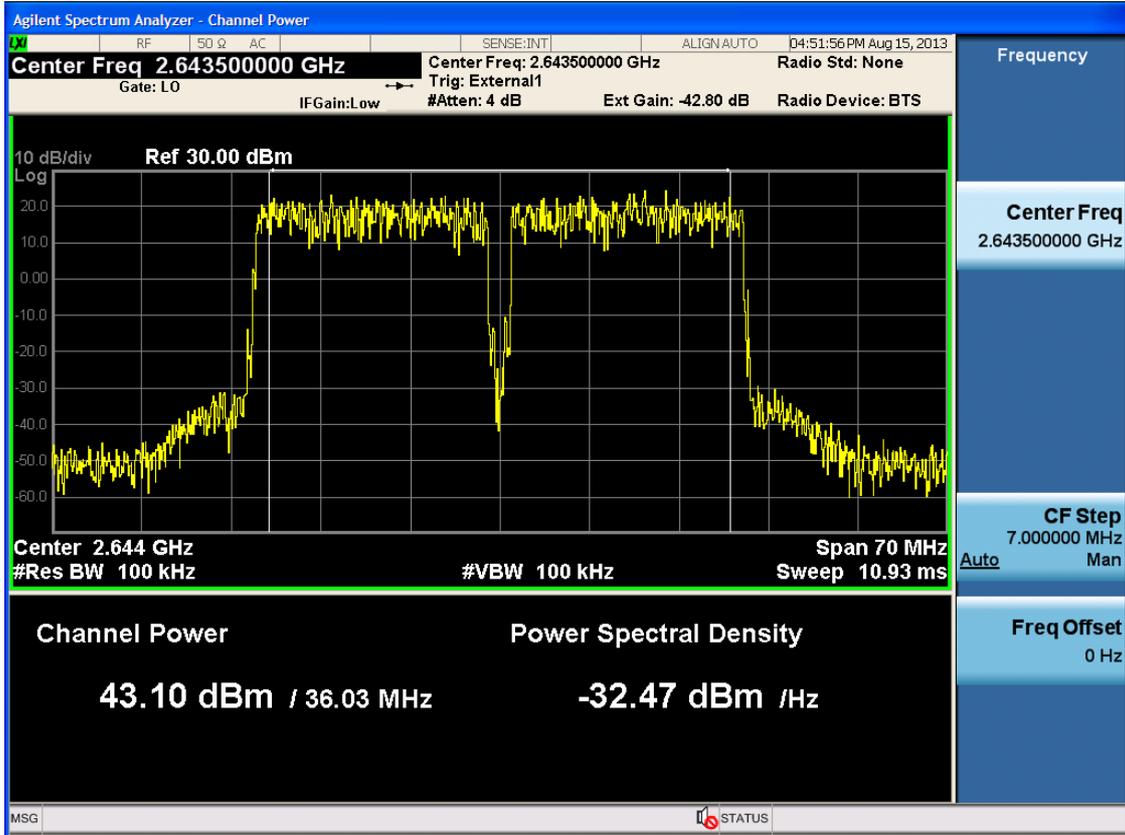
20M+20M-2633.5+2653.5MHz -16QAM-Port2



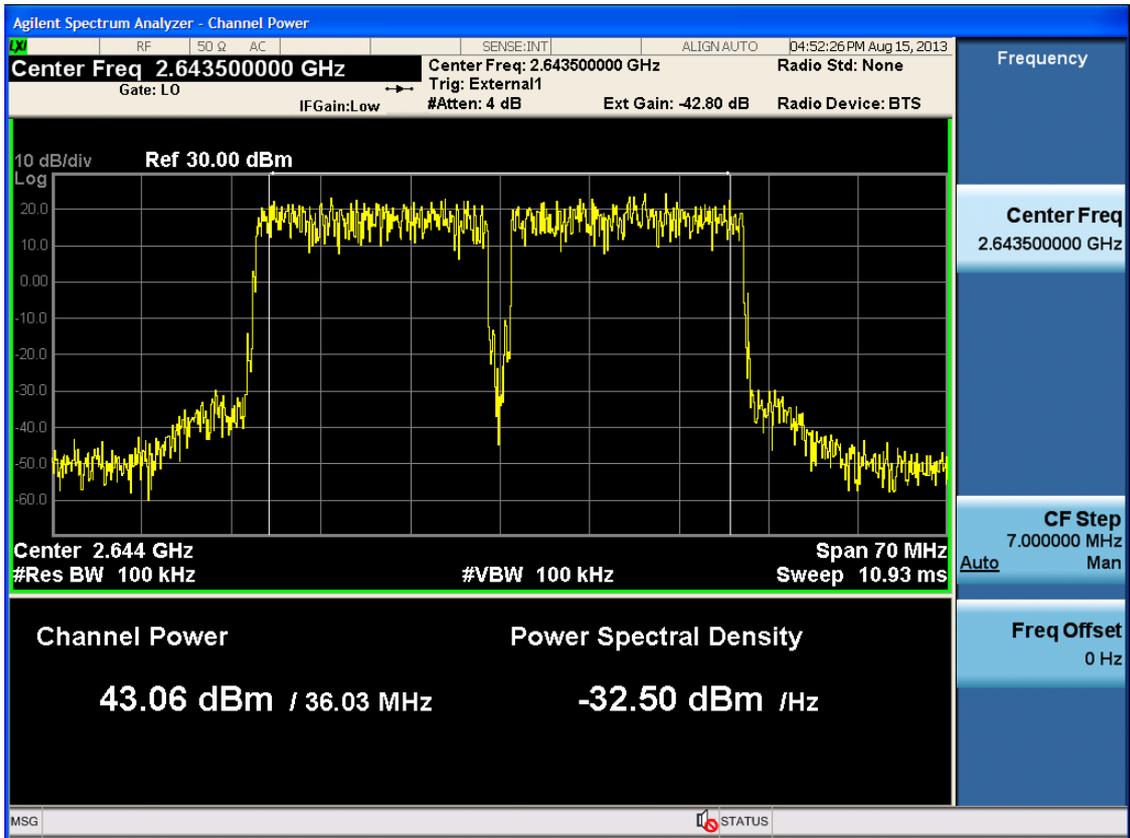
20M+20M-2633.5+2653.5MHz -16QAM-Port3



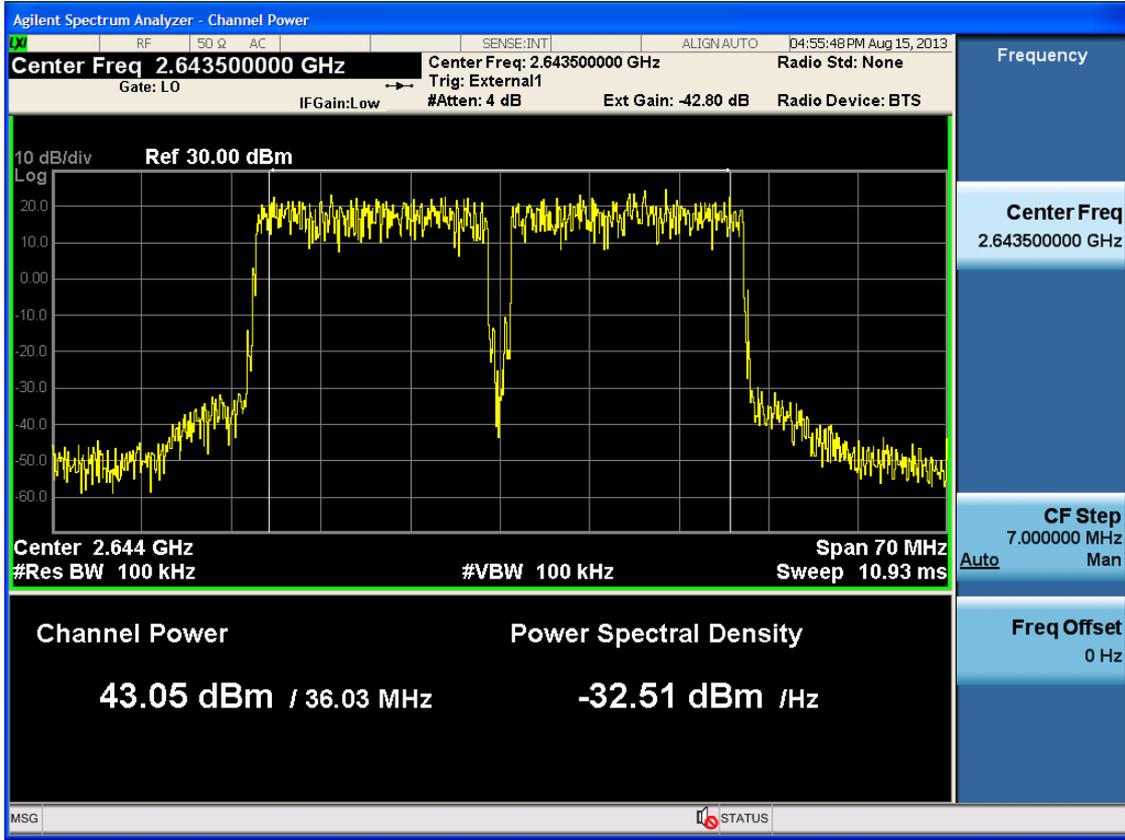
20M+20M-2633.5+2653.5MHz -16QAM-Port4



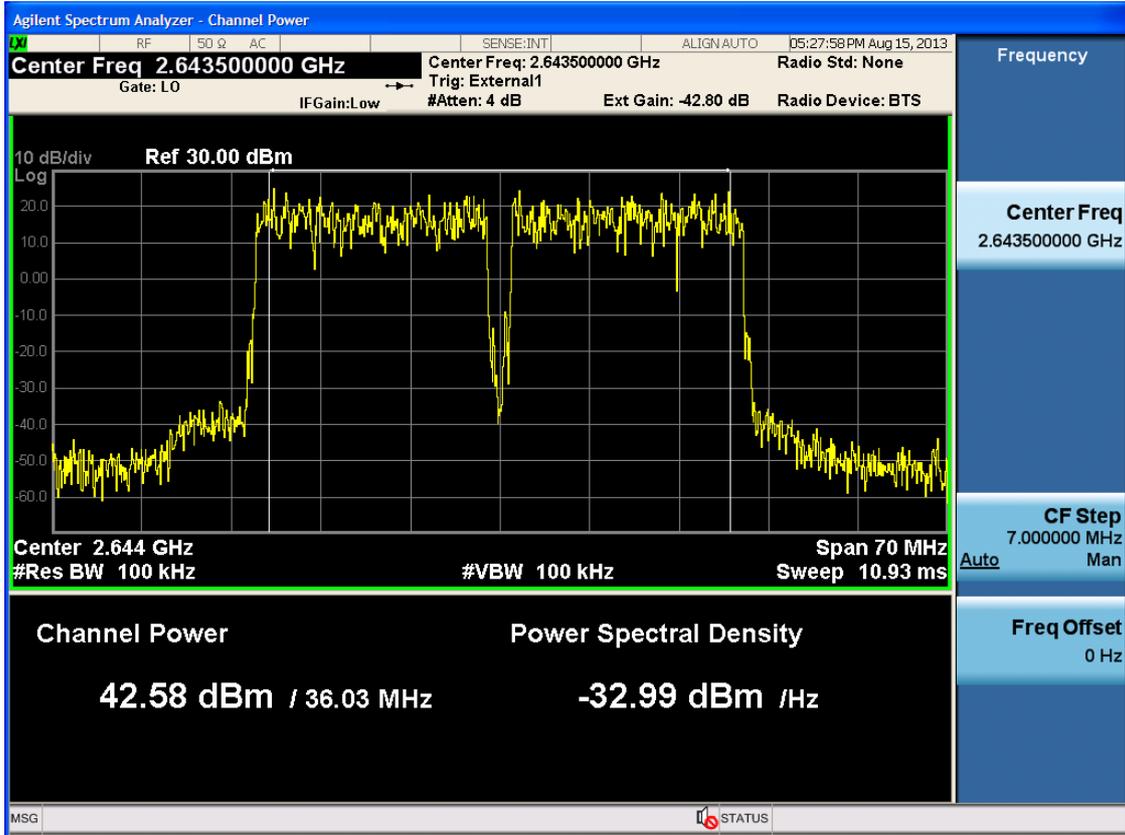
20M+20M-2633.5+2653.5MHz -64QAM-Port1



20M+20M-2633.5+2653.5MHz -64QAM-Port2



20M+20M-2633.5+2653.5MHz -64QAM-Port3



20M+20M-2633.5+2653.5MHz -64QAM-Port4

## 5 MODULATION CHARACTERISTICS

According to FCC §2.1047, Part 27 C there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

# 6 OCCUPIED BANDWIDTH

## Applicable Standard: FCC §2.1049

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power.

## Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9020A	MY49100675	2012.12.20	2013.12.20
DTS	DTS 40dB Attenuator	DTS100-40-3-1	09112005	2012.09.26	2013.09.26

**\*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 out of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation. 99%Power bandwidth was recorded.

## Environmental Conditions

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



**Test Result:** Pass

**Test Mode:** Transmitting LTE

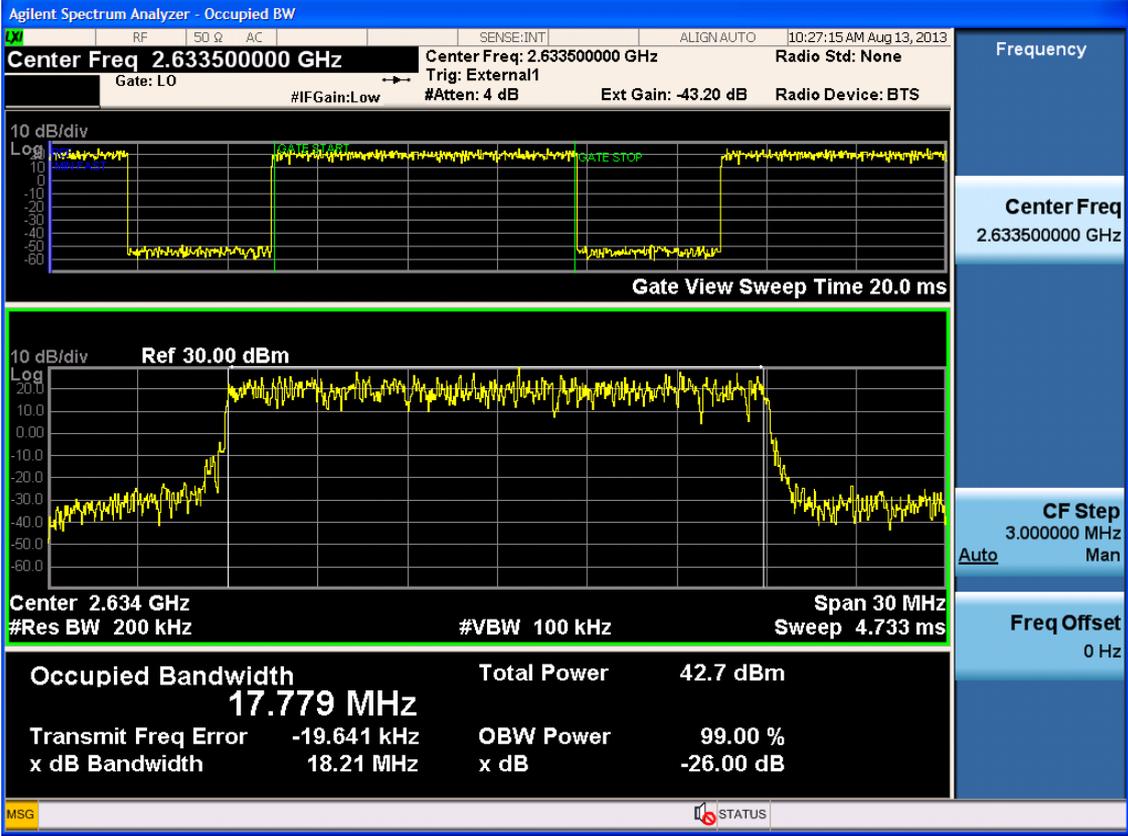
**Test Data**

Channel Bandwidth: 20M

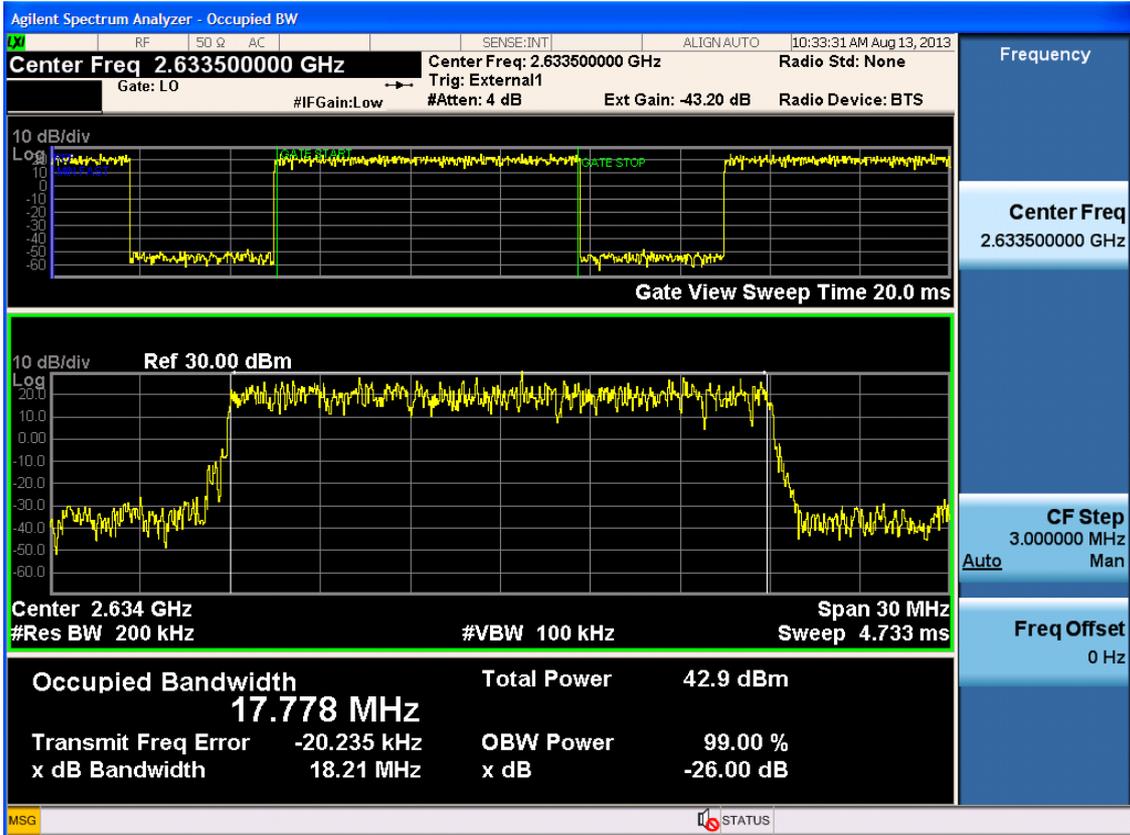
Port	Carrier Freq. (MHz)	Occupied Bandwidth(MHz)		
		QPSK	16QAM	64QAM
1	2633.5	17.779	17.767	17.884
	2643.5	17.779	17.676	17.885
	2653.5	17.770	17.792	17.882
2	2633.5	17.778	17.788	17.883
	2643.5	17.776	17.766	17.883
	2653.5	17.770	17.692	17.882
3	2633.5	17.776	17.768	17.882
	2643.5	17.776	17.791	17.884
	2653.5	17.765	17.768	17.880
4	2633.5	17.776	17.789	17.883
	2643.5	17.776	17.766	17.885
	2653.5	17.767	17.790	17.882

Channel Bandwidth: 20M+20M

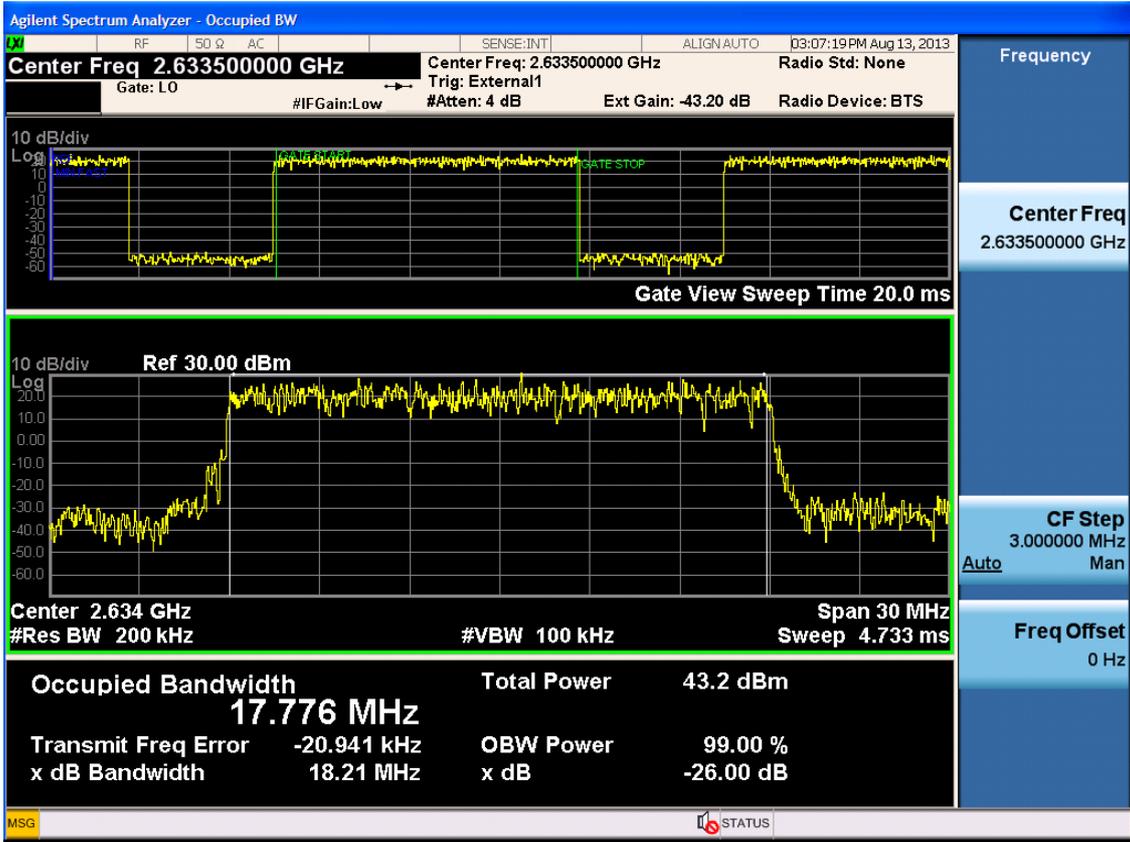
Port	Carrier Freq. c1+c2(MHz)	Occupied Bandwidth(MHz)		
		QPSK	16QAM	64QAM
1	2633.5+2653.5	37.622	37.326	37.573
2		37.613	37.329	37.568
3		37.614	37.321	37.571
4		37.608	37.324	37.574



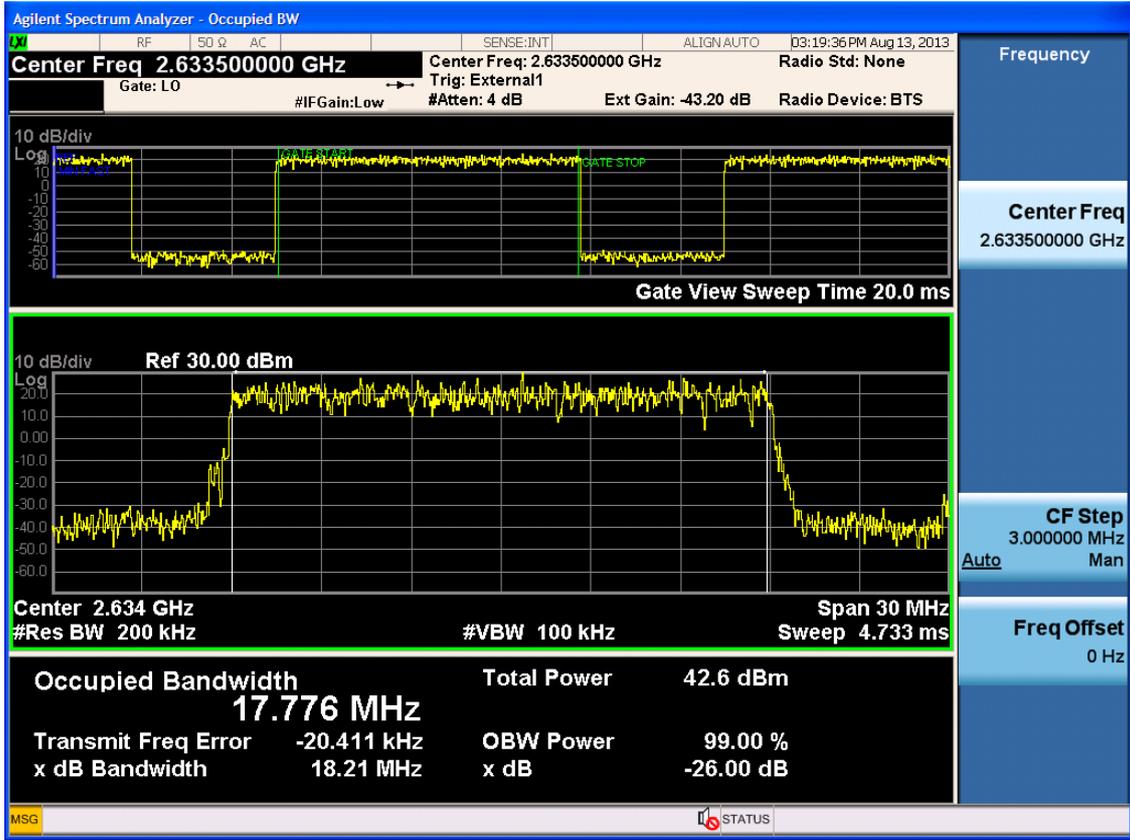
20M-2633.5MHz-QPSK-Port1



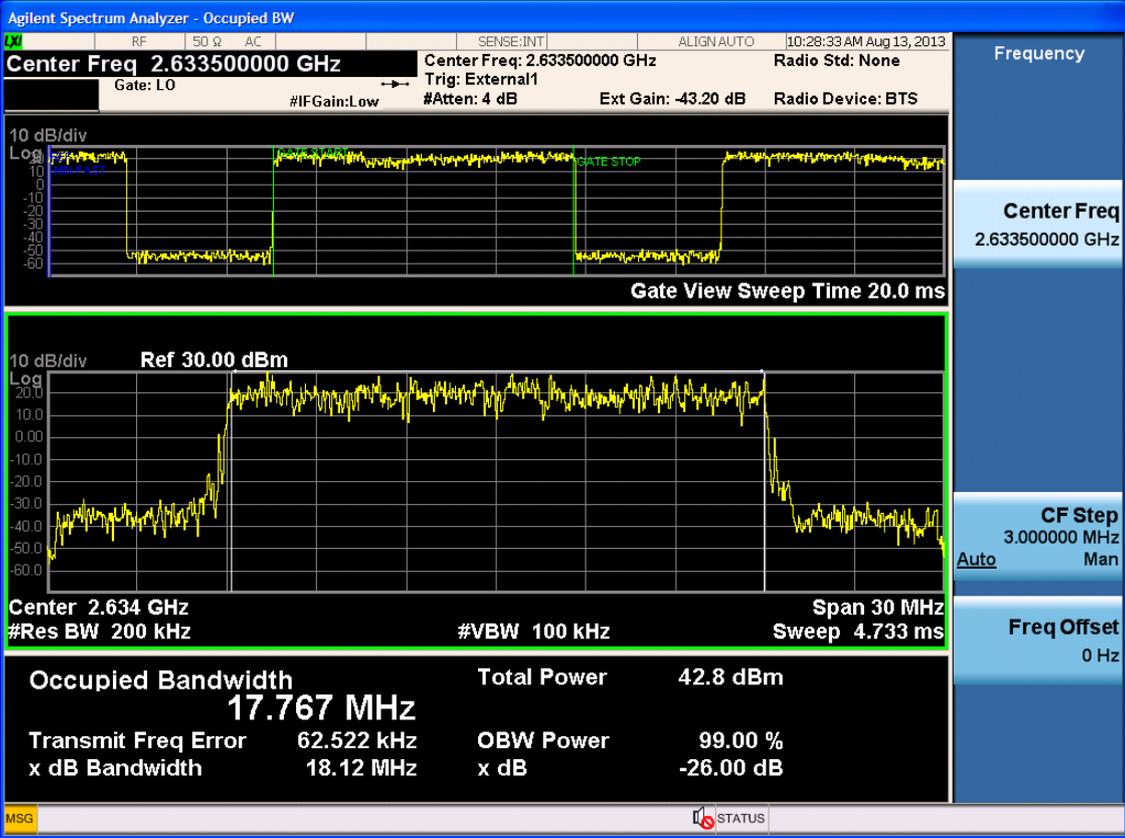
20M-2633.5MHz-QPSK-Port2



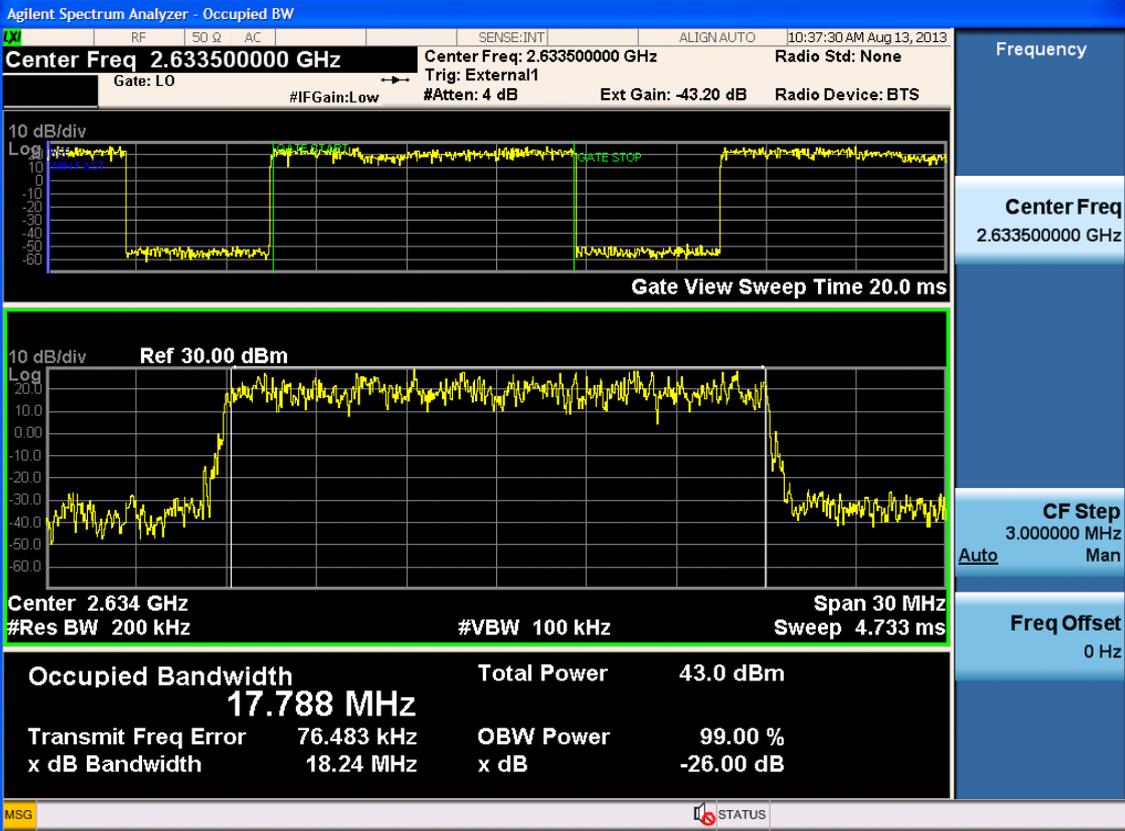
20M-2633.5MHz-QPSK-Port3



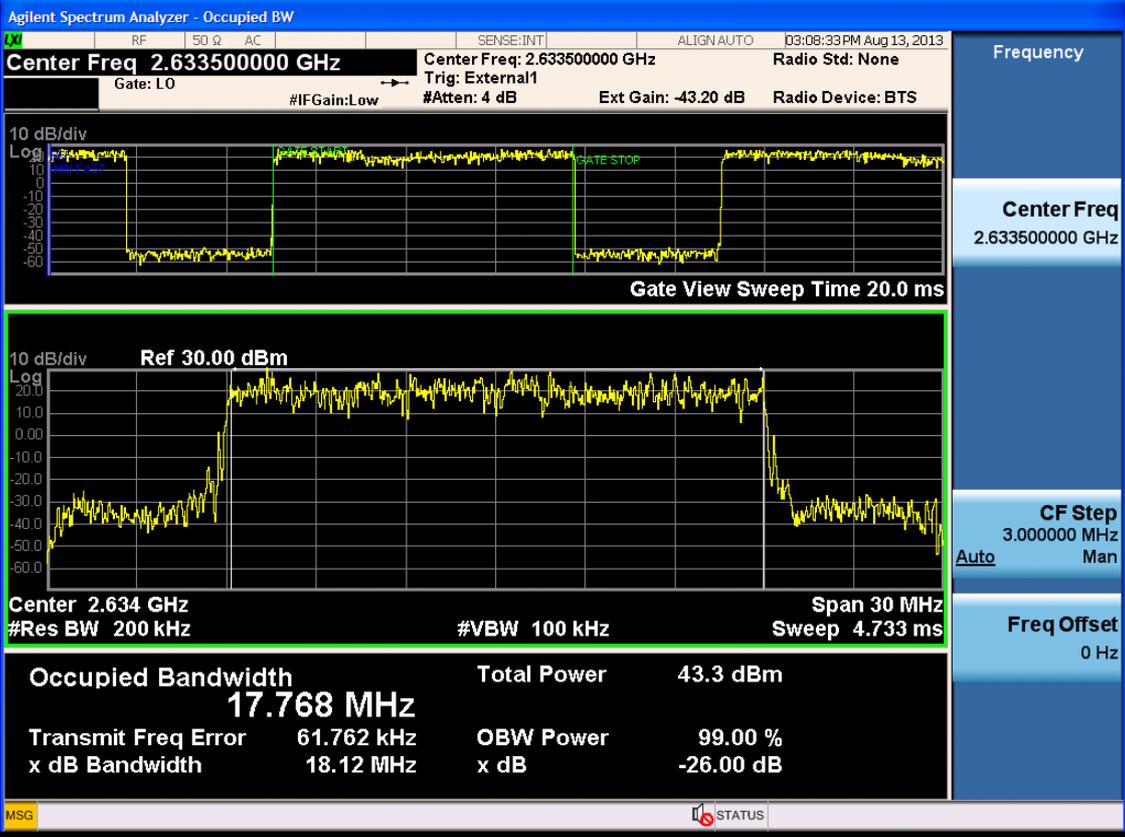
20M-2633.5MHz-QPSK-Port4



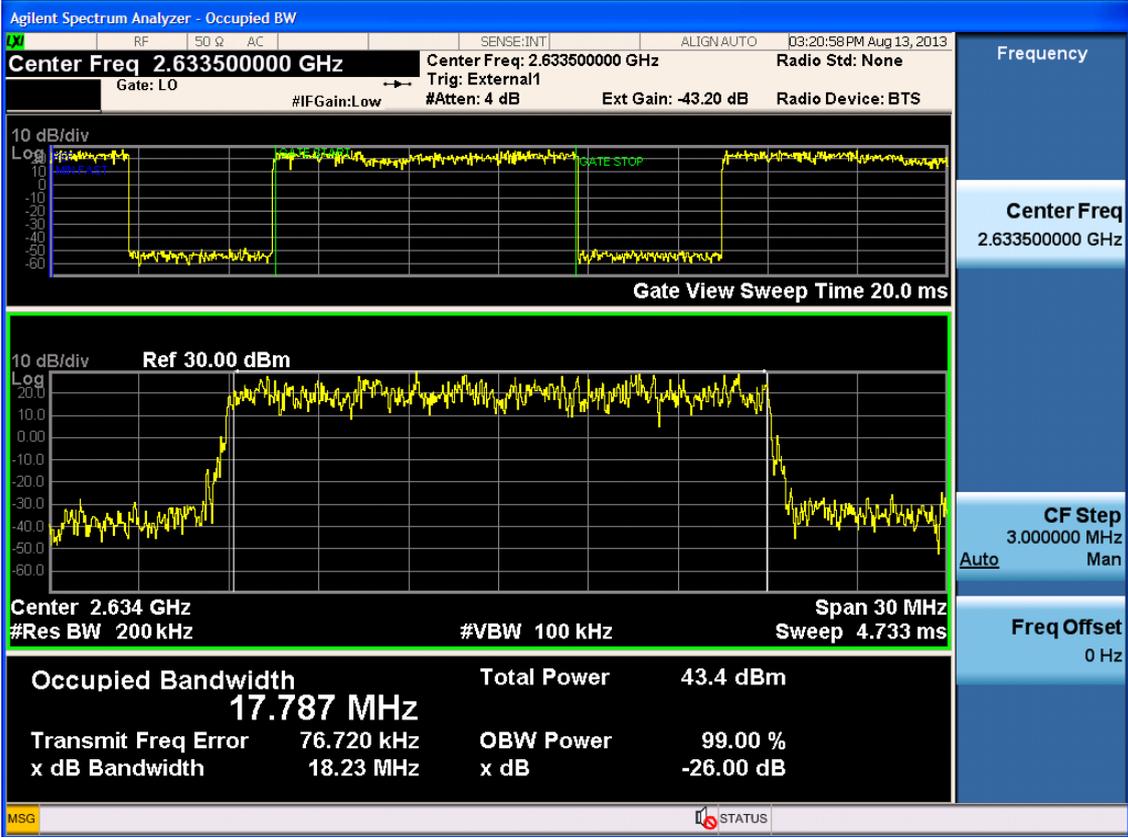
20M-2633.5MHz-16QAM-Port1



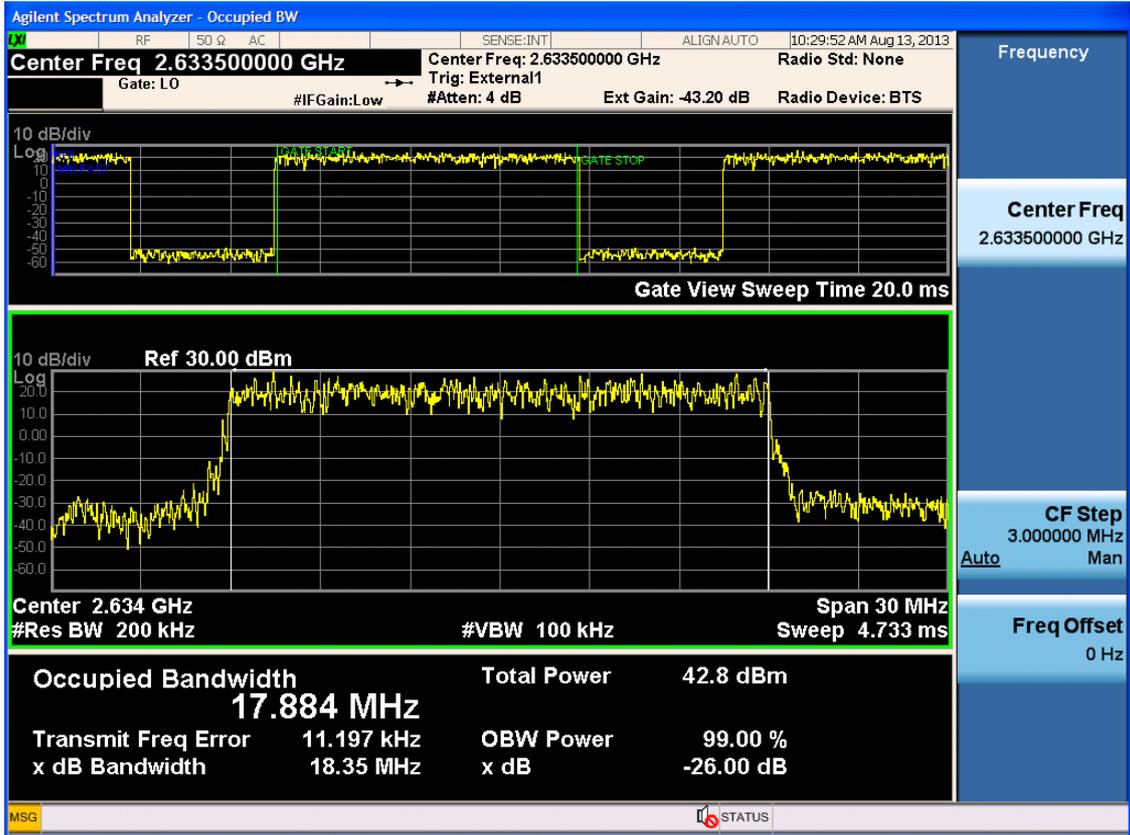
20M-2633.5MHz-16QAM-Port2



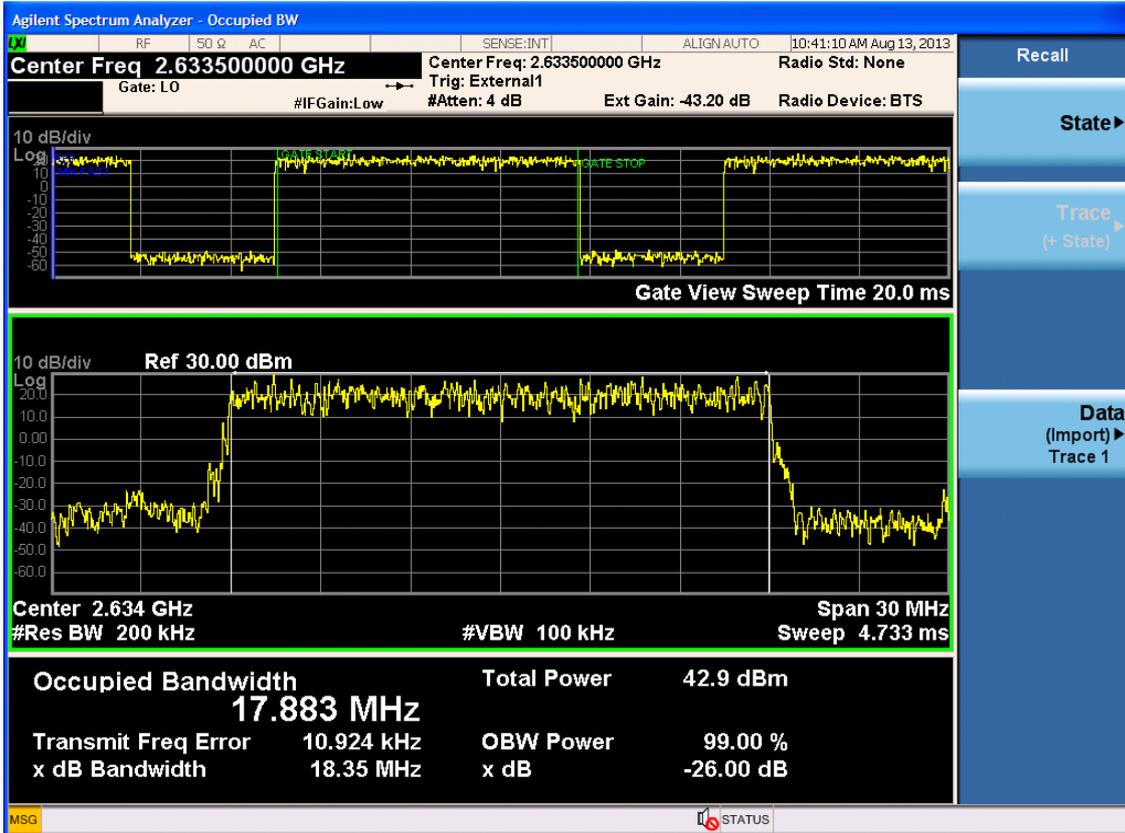
20M-2633.5MHz-16QAM-Port3



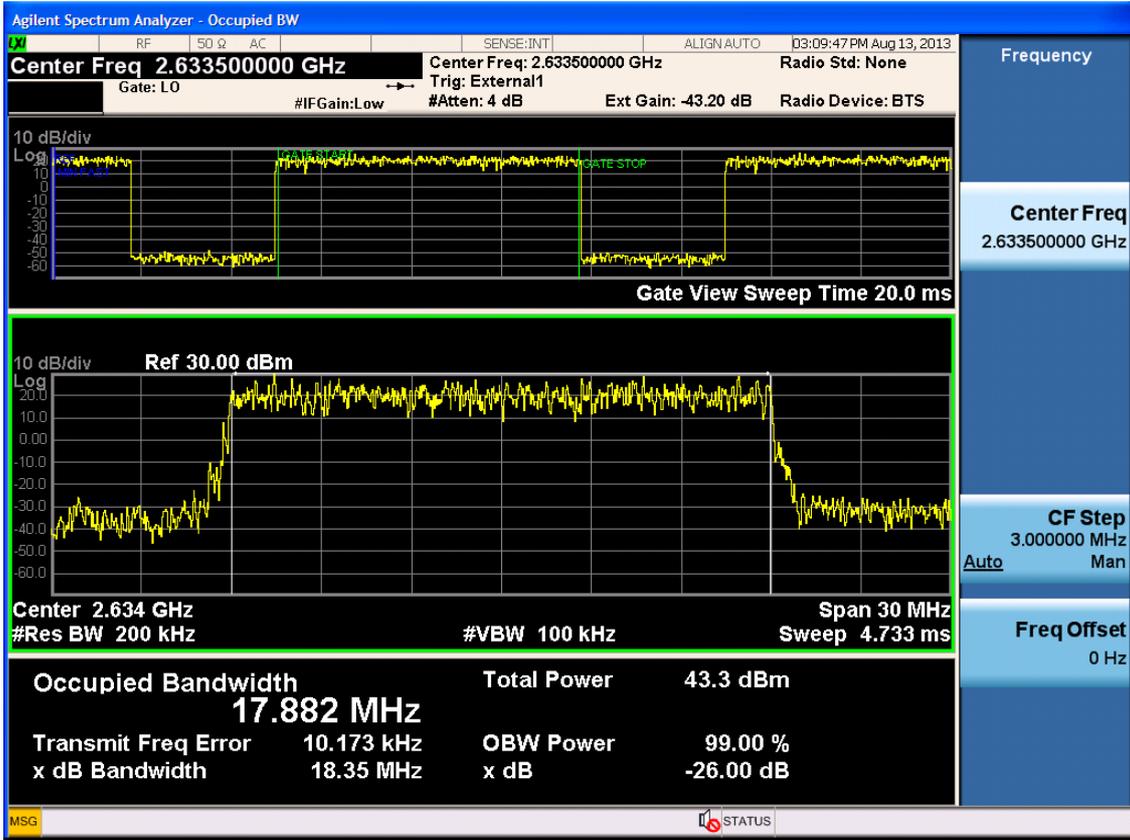
20M-2633.5MHz-16QAM-Port4



20M-2633.5MHz-64QAM-Port1



20M-2633.5MHz-64QAM-Port2



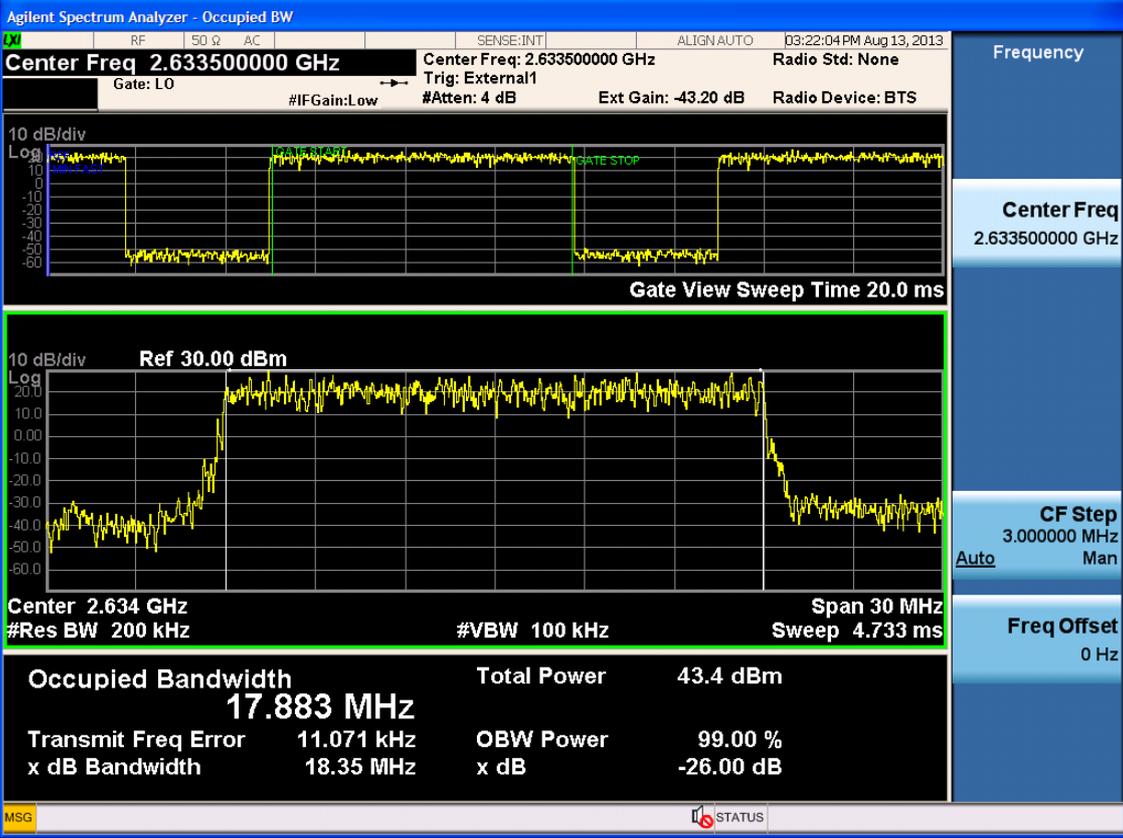
Frequency

Center Freq  
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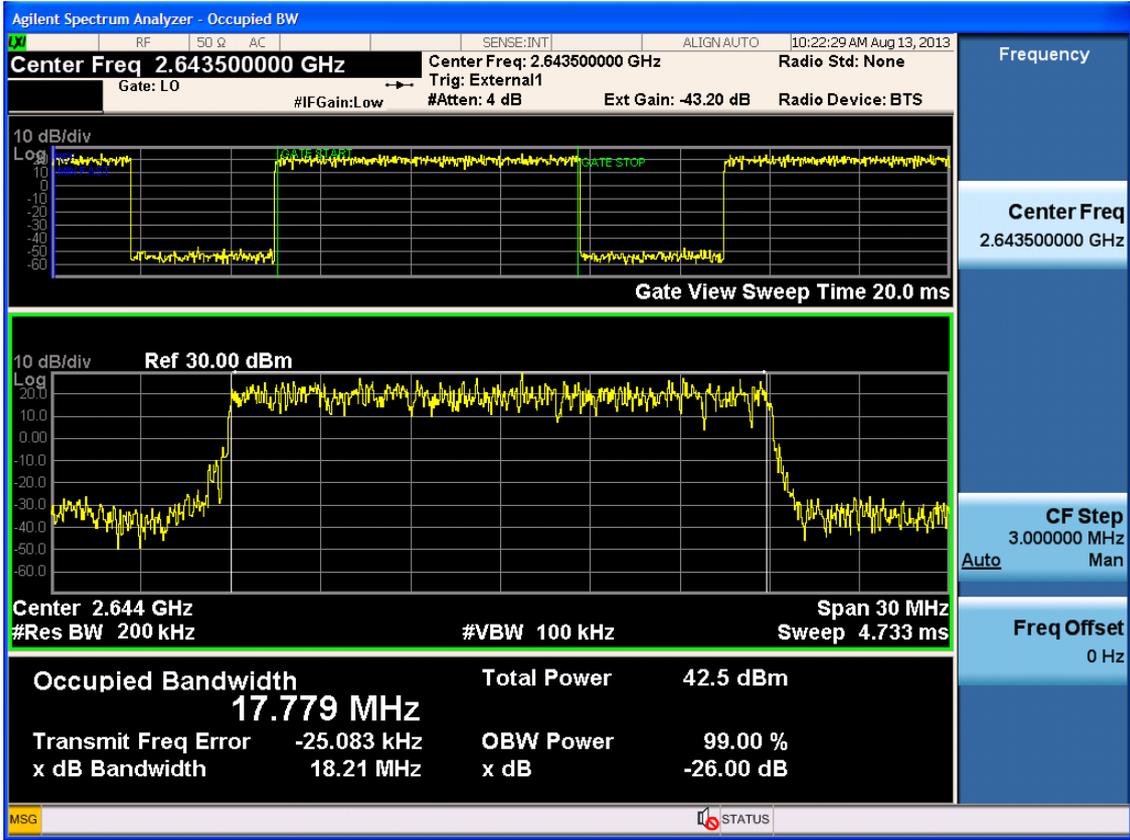
CF Step  
3.000000 MHz  
Auto Man

Freq Offset  
0 Hz

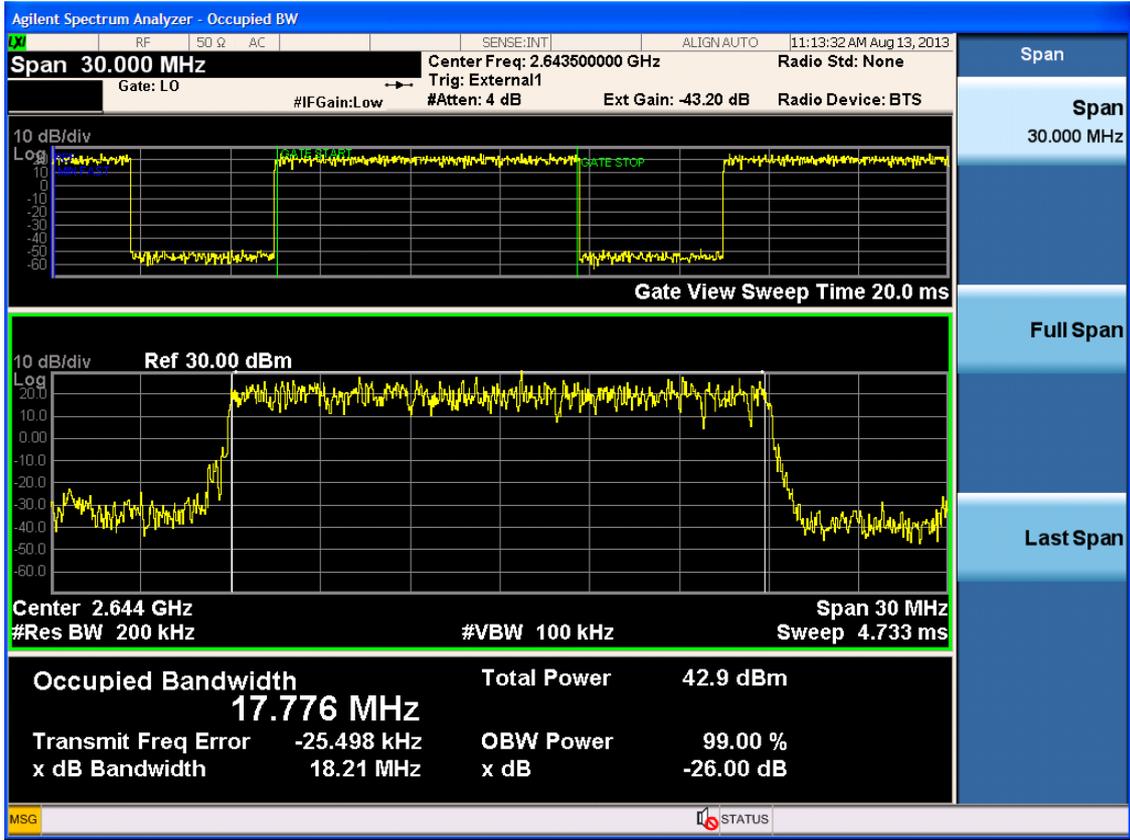
20M-2633.5MHz-64QAM-Port3



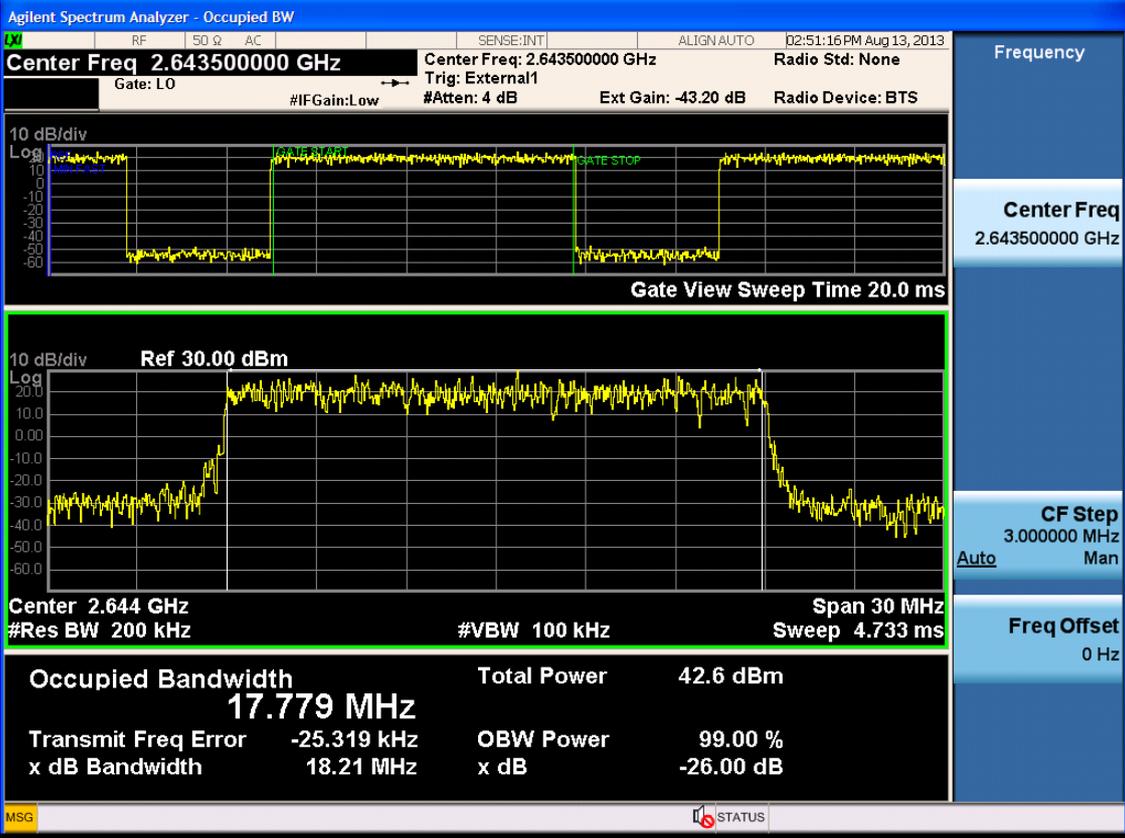
20M-2633.5MHz-64QAM-Port4



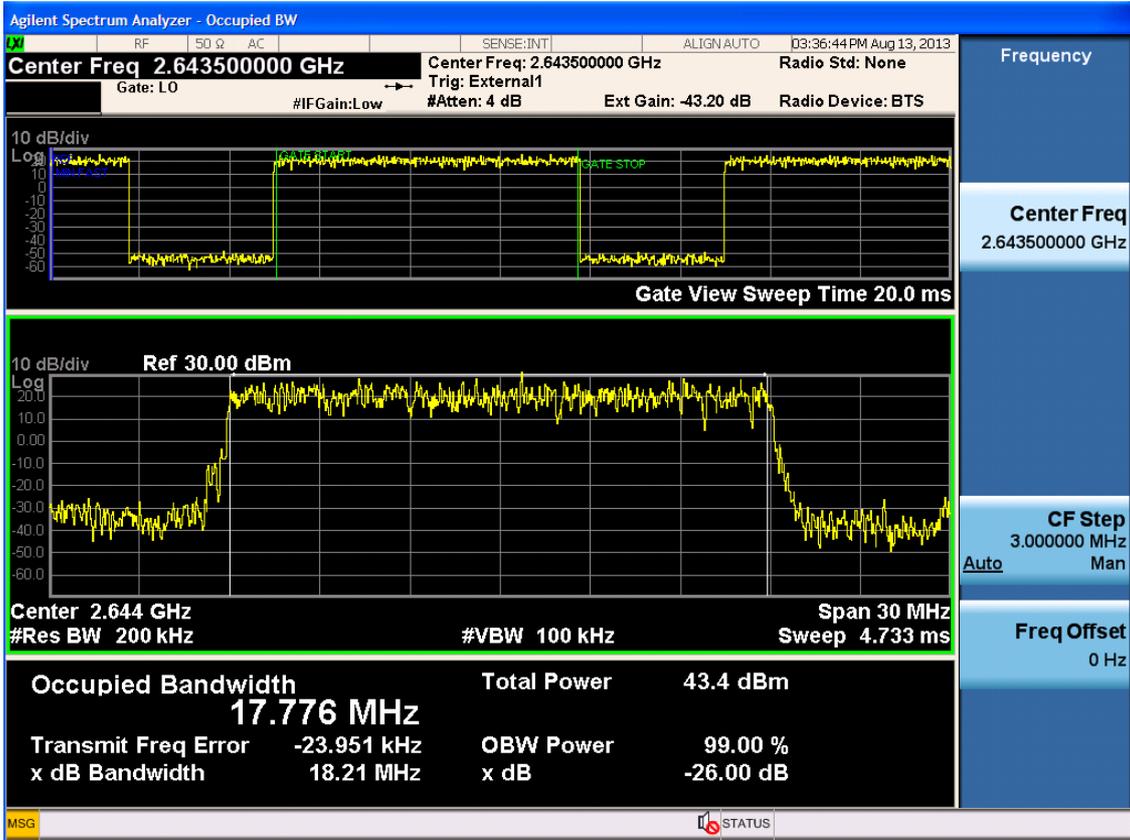
20M-2643.5MHz-QPSK-Port1



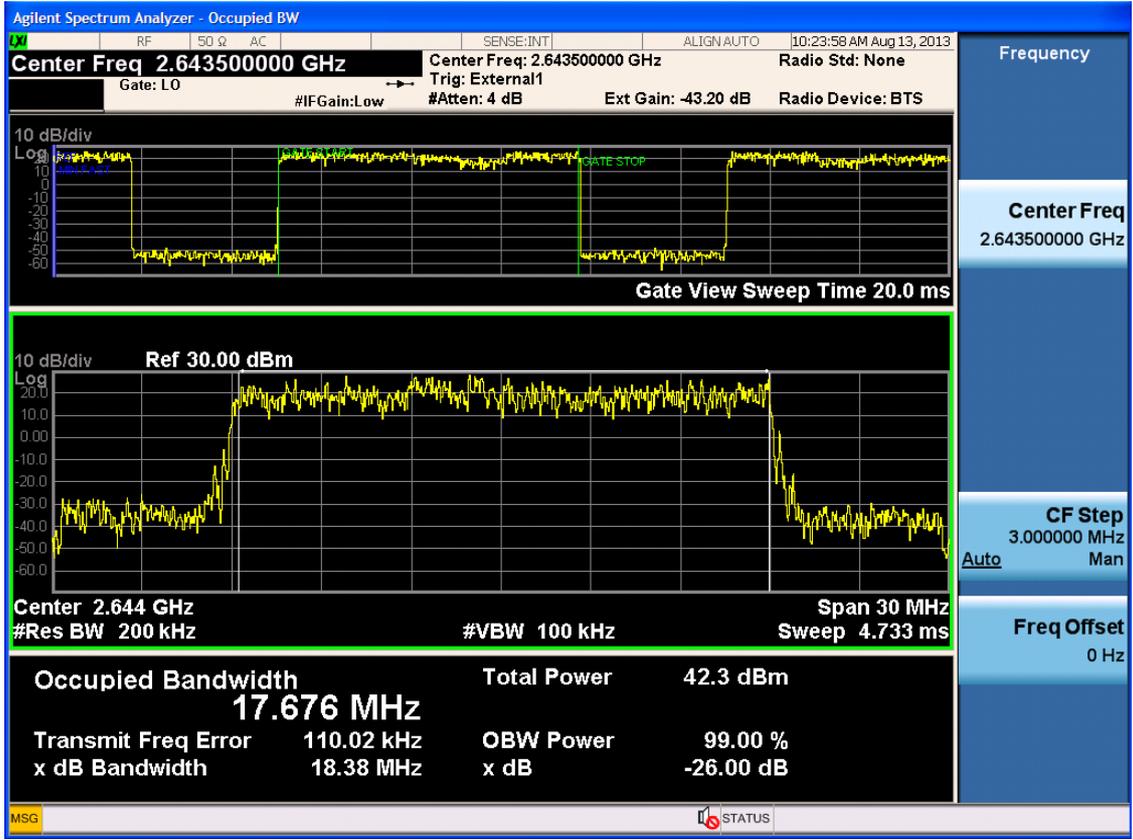
20M-2643.5MHz-QPSK-Port2



20M-2643.5MHz-QPSK-Port3

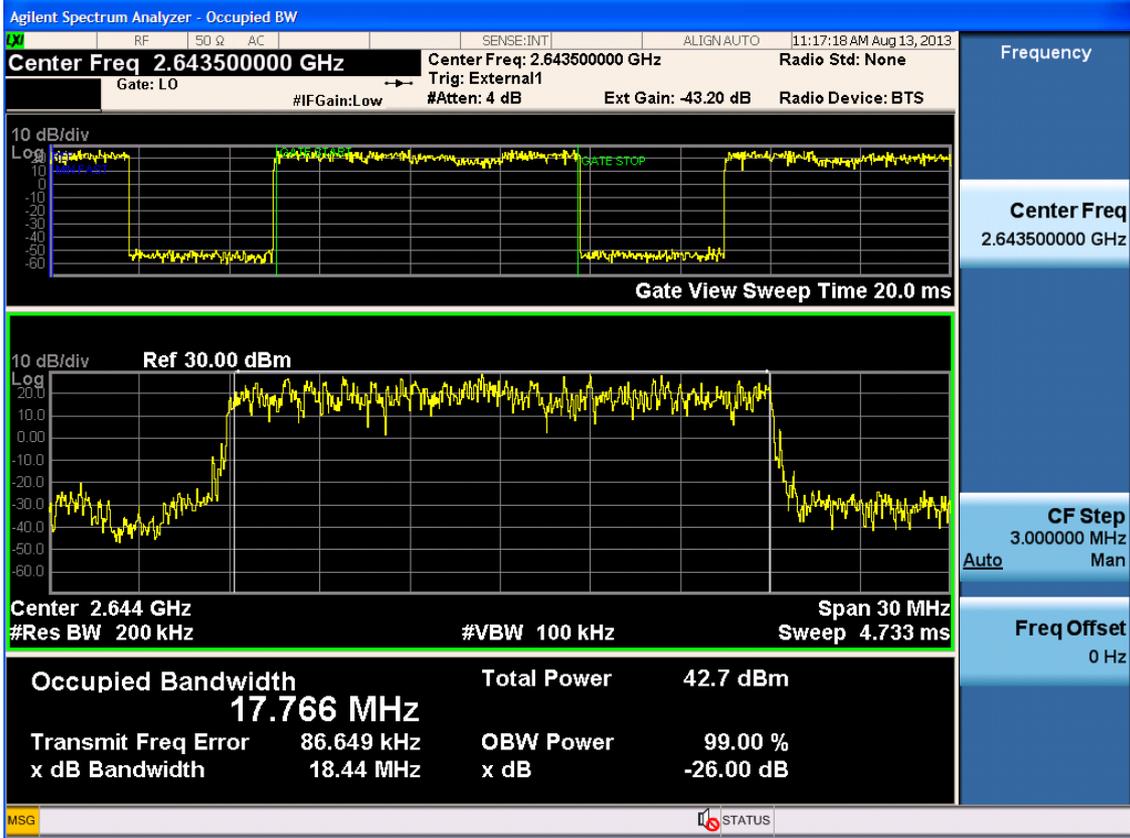


20M-2643.5MHz-QPSK-Port4



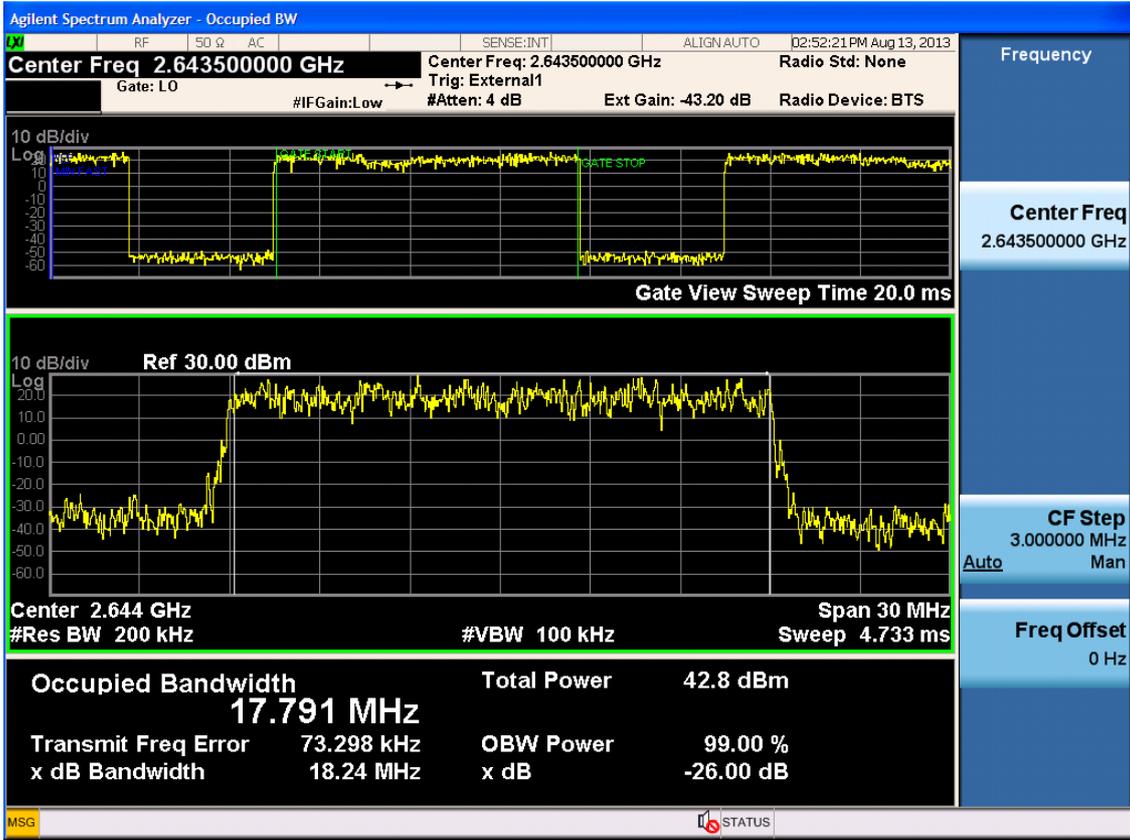
Frequency	Center Freq 2.643500000 GHz
CF Step	3.000000 MHz Auto Man
Freq Offset	0 Hz

20M-2643.5MHz-16QAM-Port1

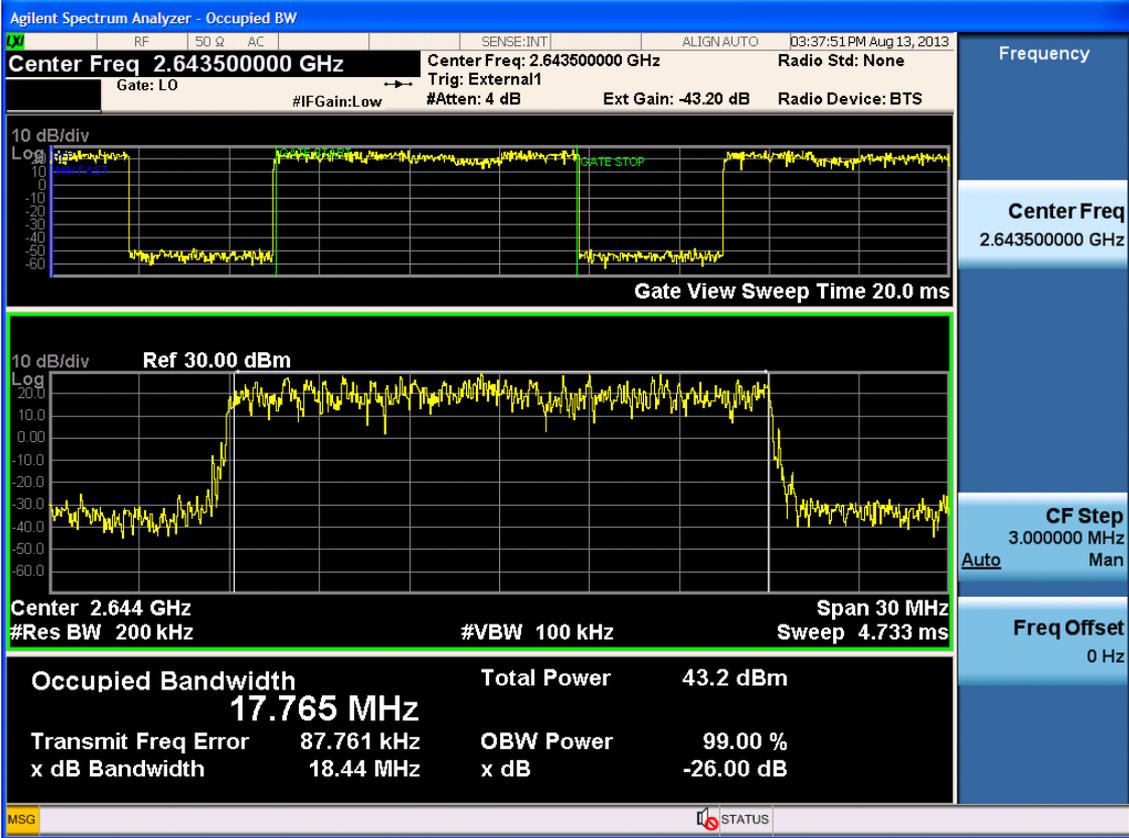


Frequency	Center Freq 2.643500000 GHz
CF Step	3.000000 MHz Auto Man
Freq Offset	0 Hz

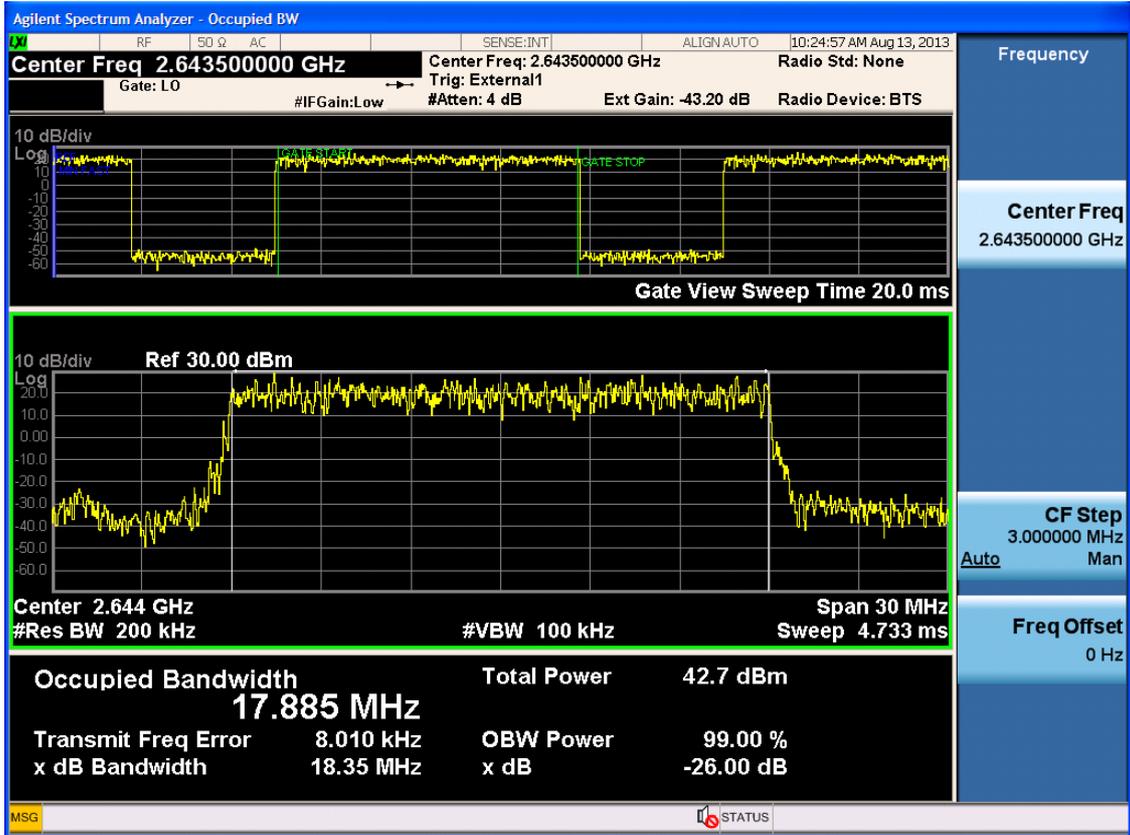
20M-2643.5MHz-16QAM-Port2



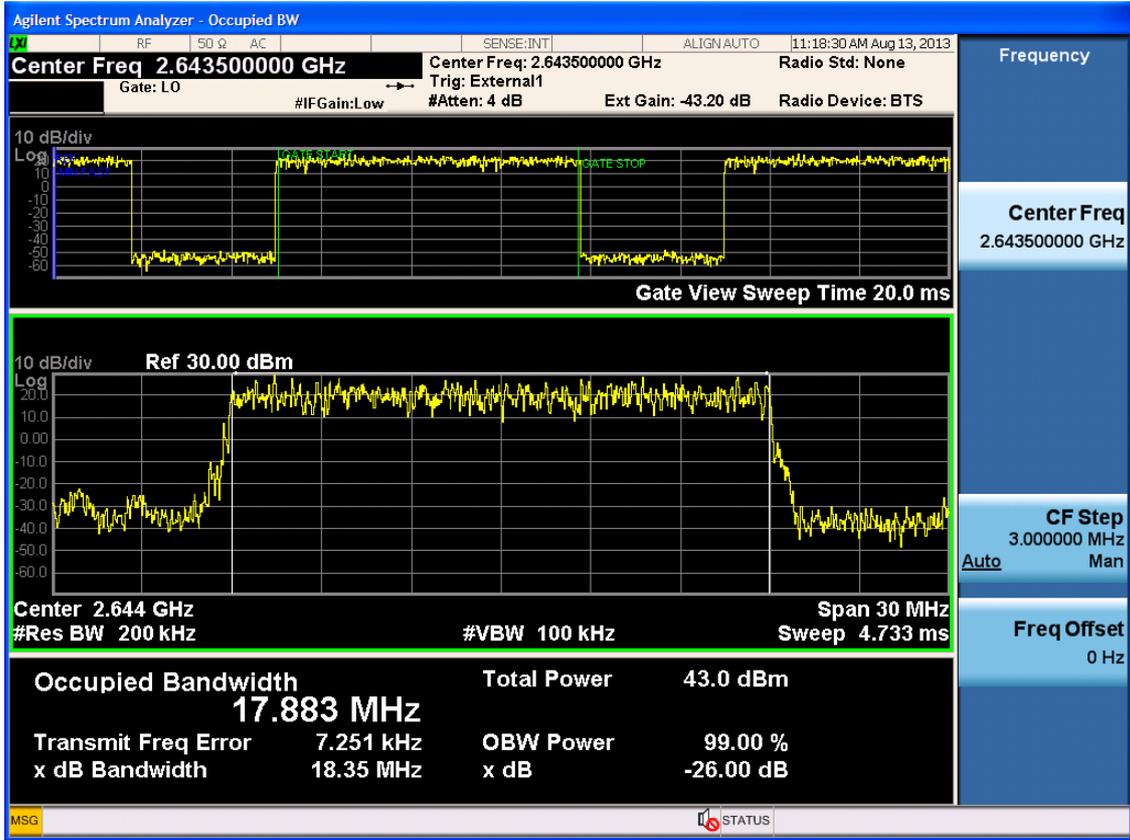
20M-2643.5MHz-16QAM-Port3



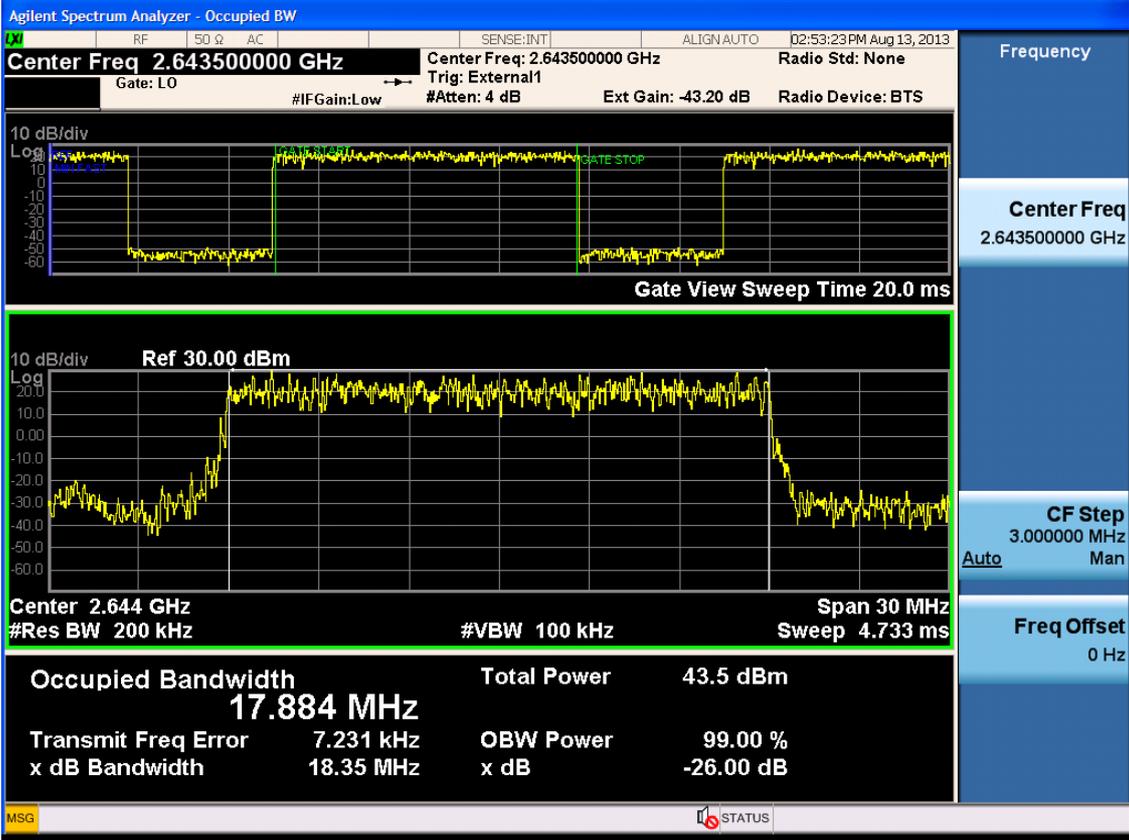
20M-2643.5MHz-16QAM-Port4



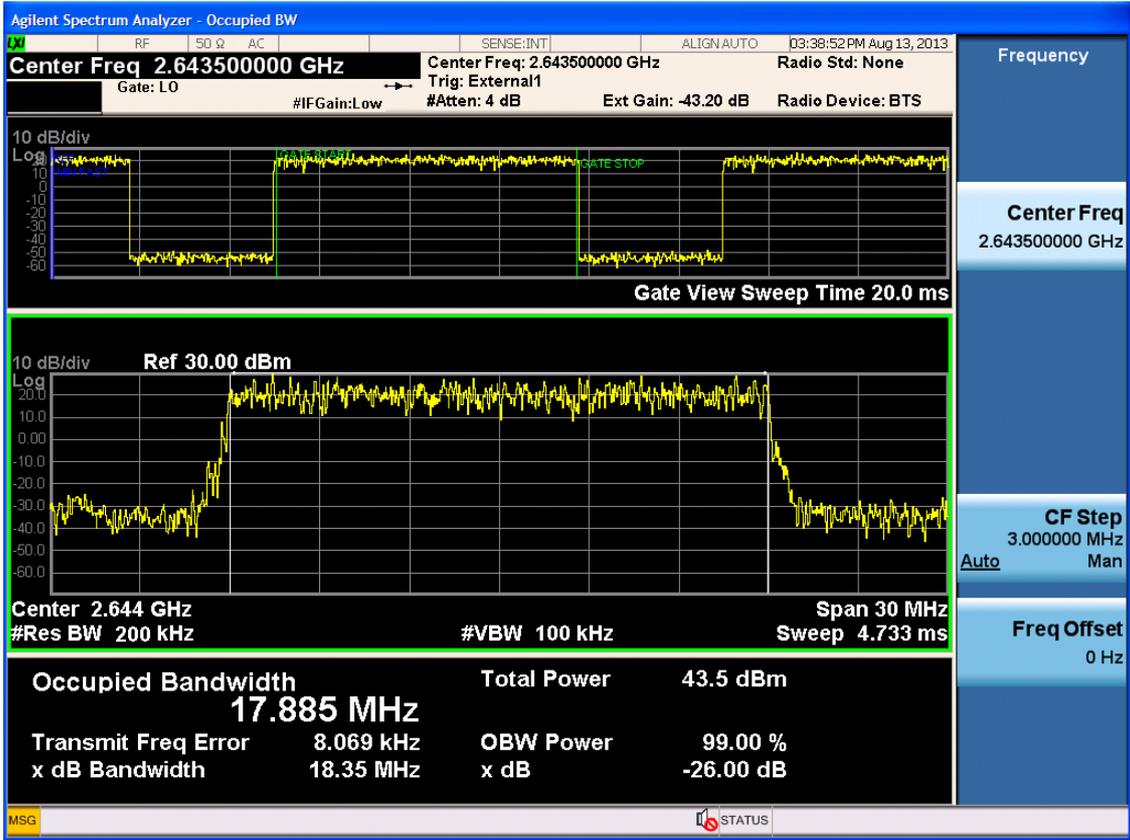
20M-2643.5MHz-64QAM-Port1



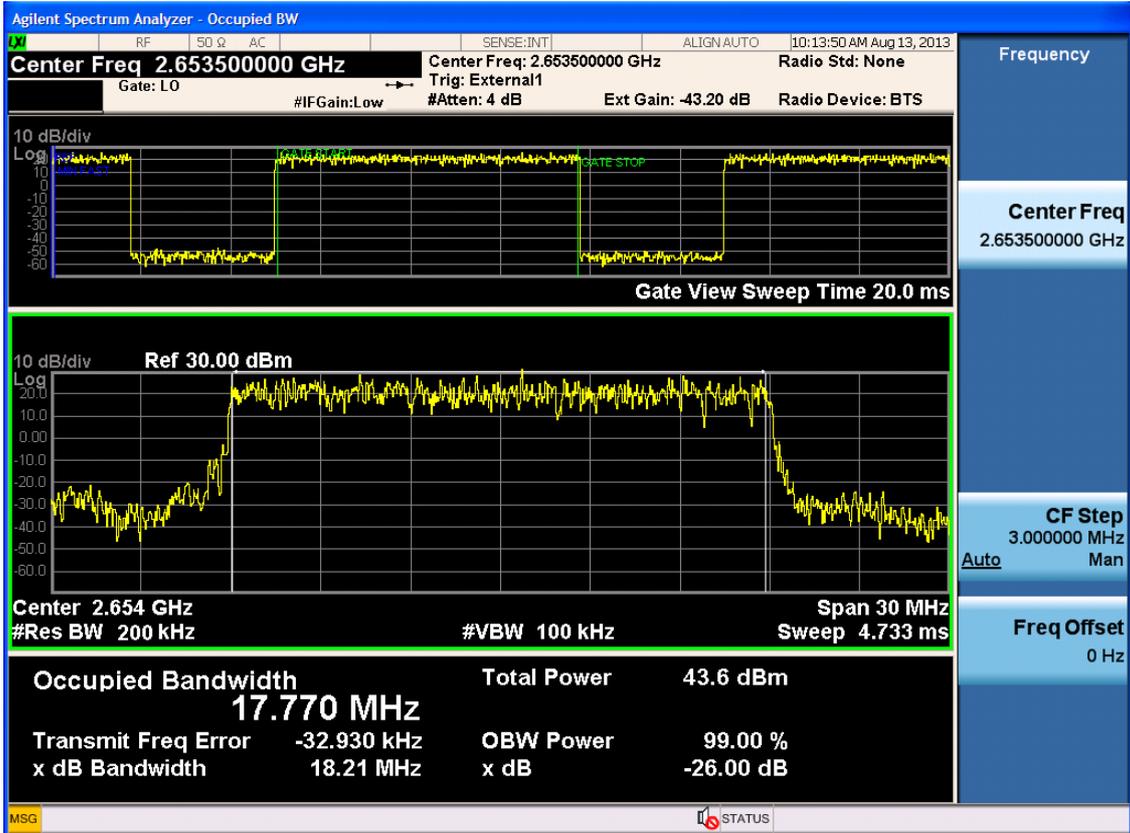
20M-2643.5MHz-64QAM-Port2



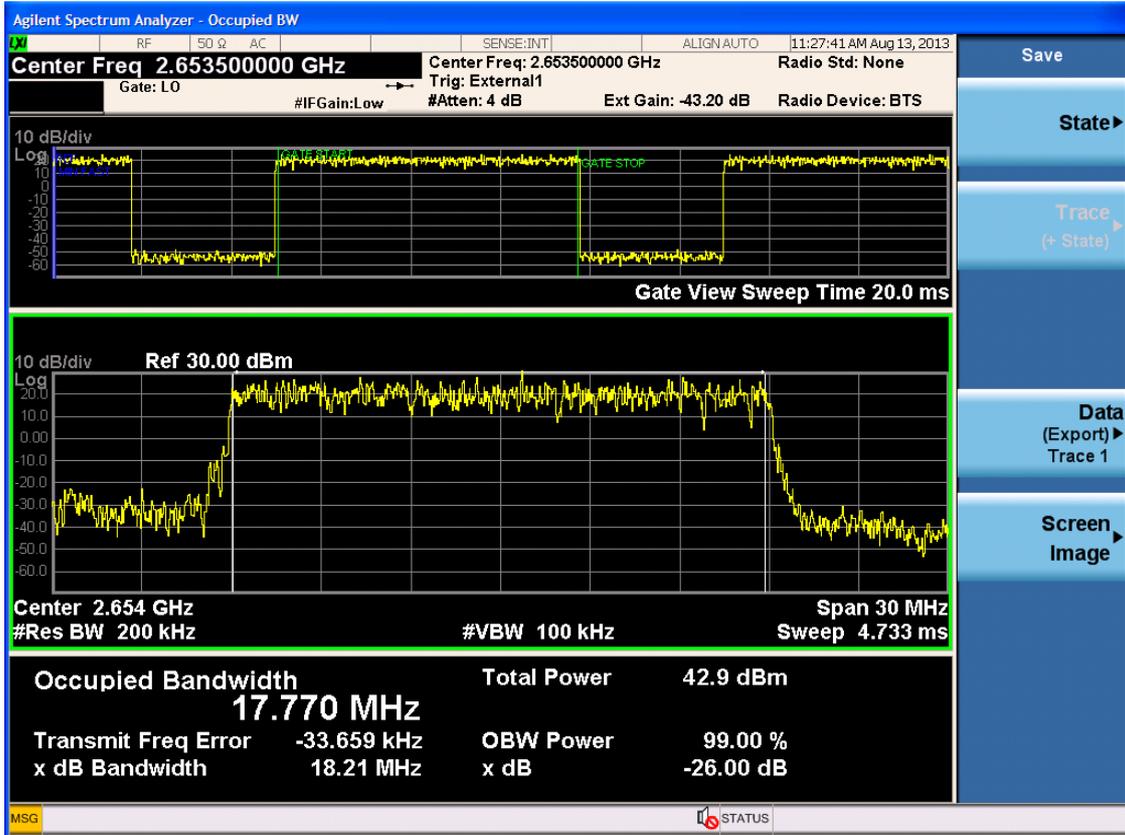
20M-2643.5MHz-64QAM-Port3



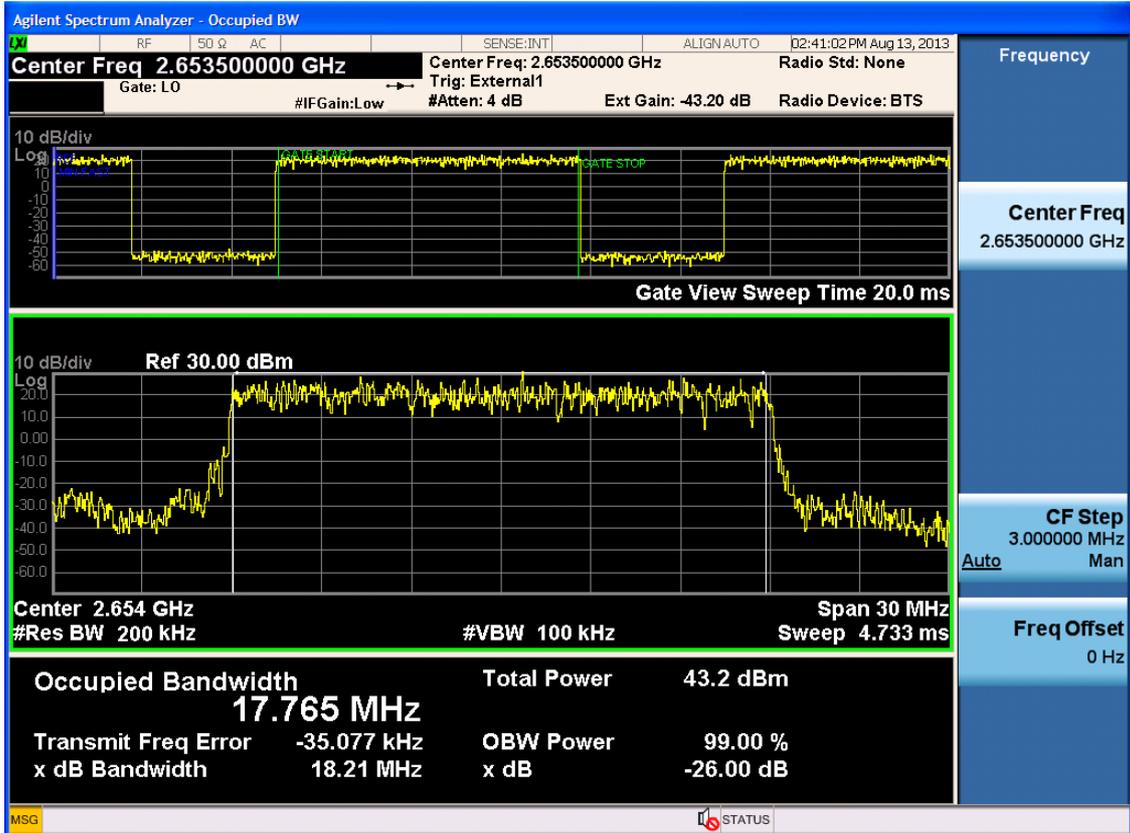
20M-2643.5MHz-64QAM-Port4



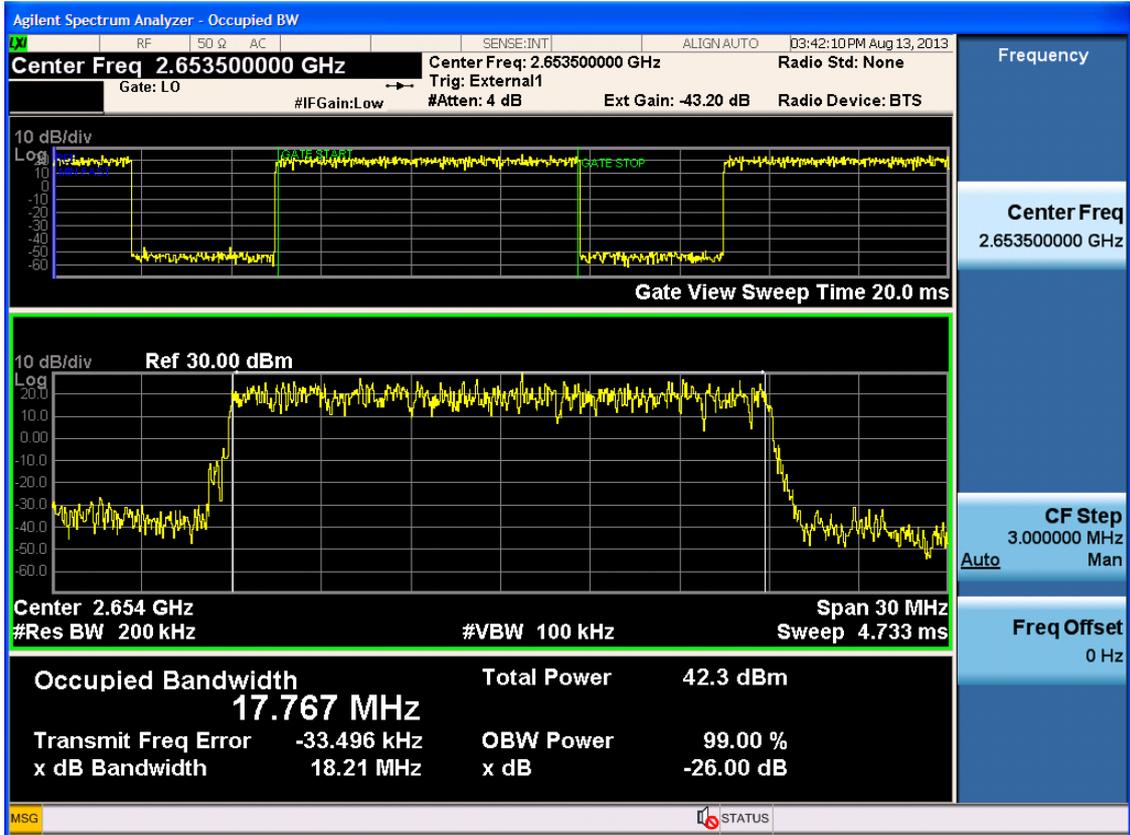
20M-2653.5MHz-QPSK-Port1



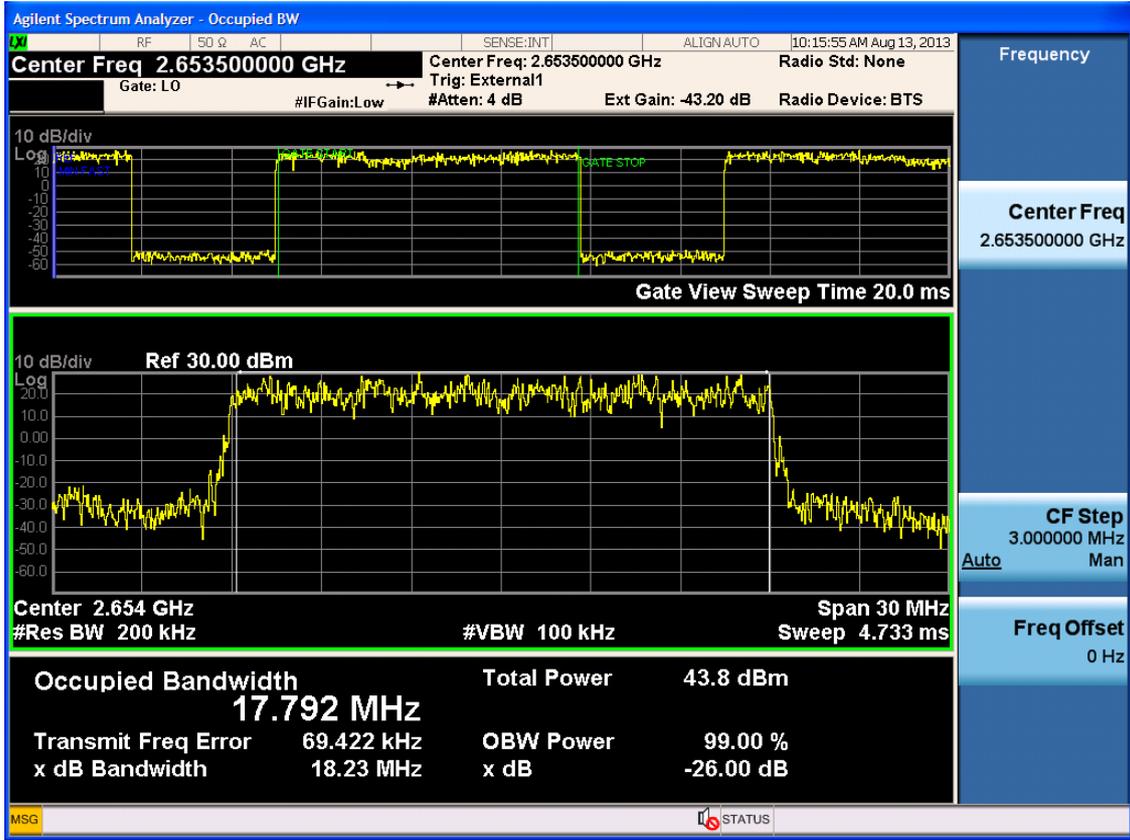
20M-2653.5MHz-QPSK-Port2



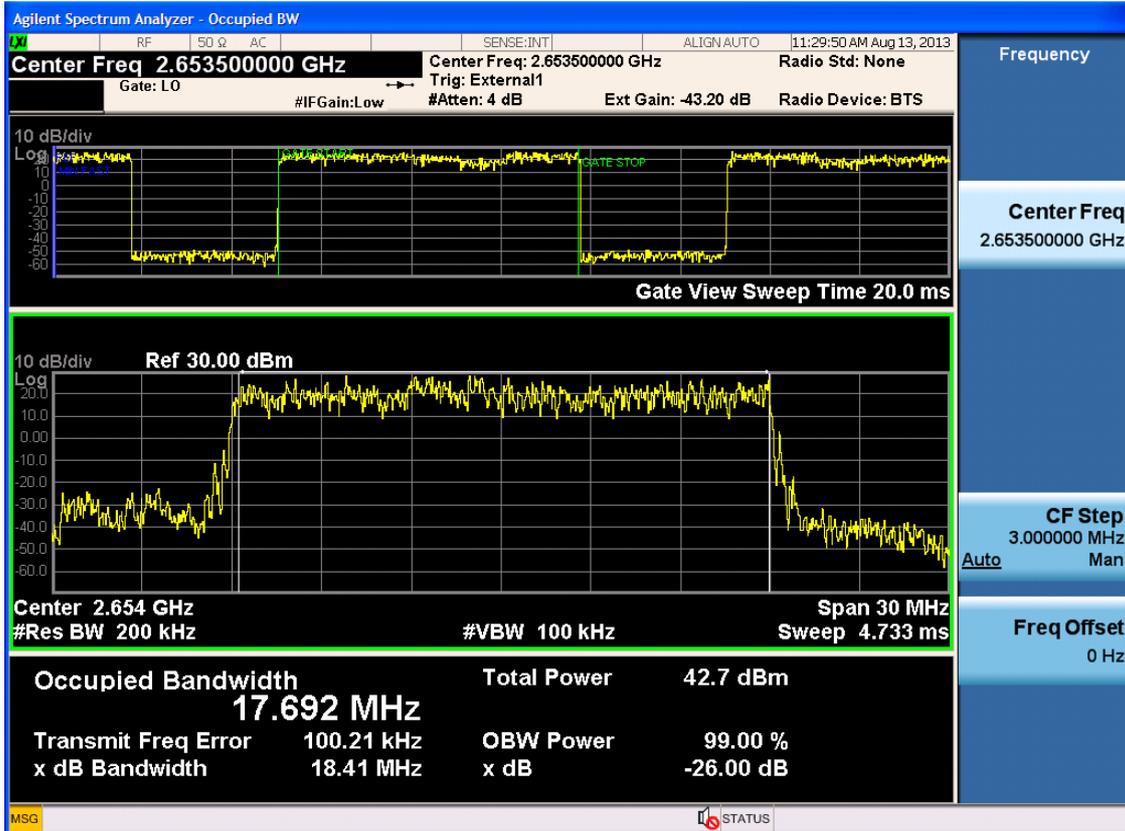
20M-2653.5MHz-QPSK-Port3



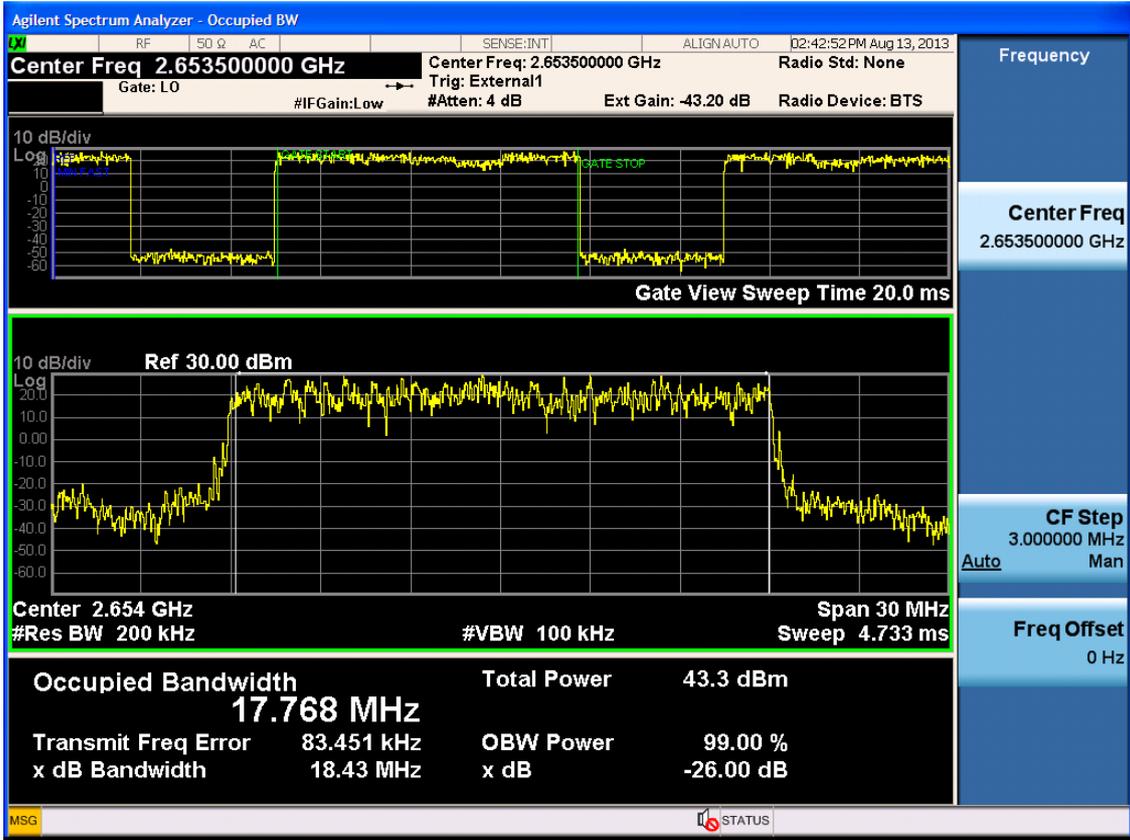
20M-2653.5MHz-QPSK-Port4



20M-2653.5MHz-16QAM-Port1



20M-2653.5MHz-16QAM-Port2



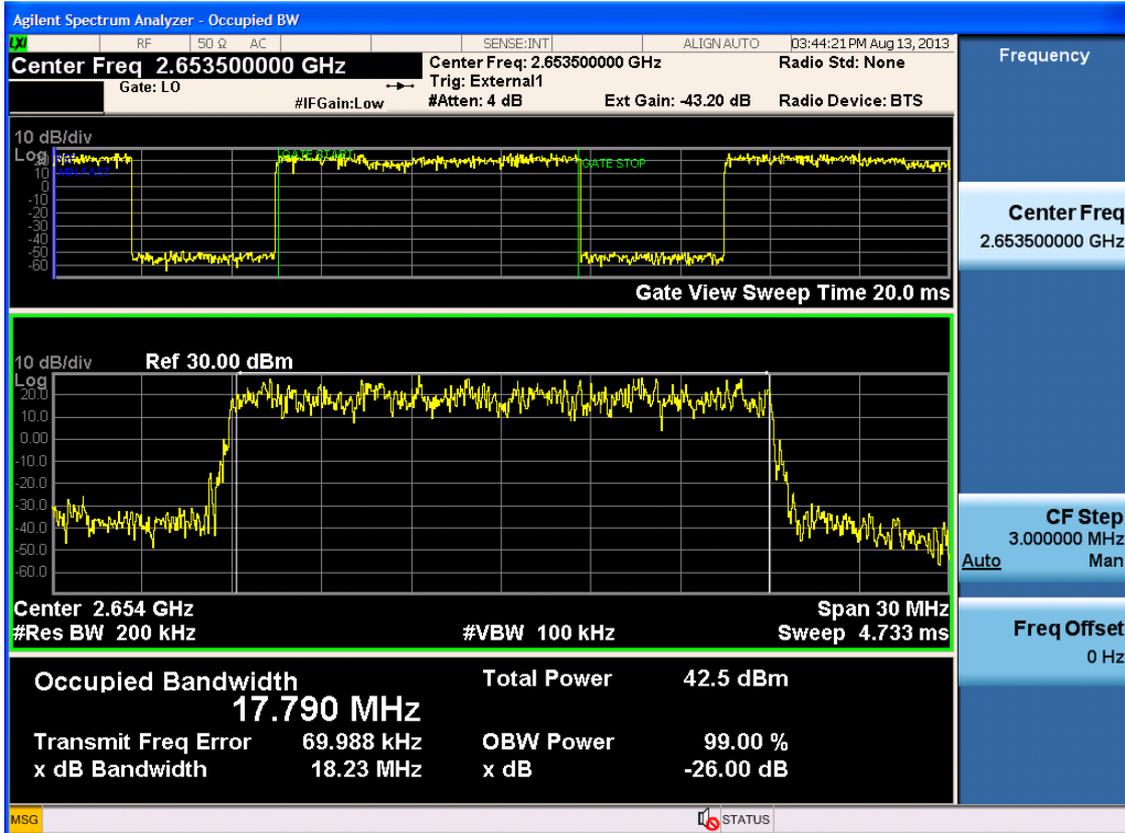
Frequency

Center Freq  
2.653500000 GHz

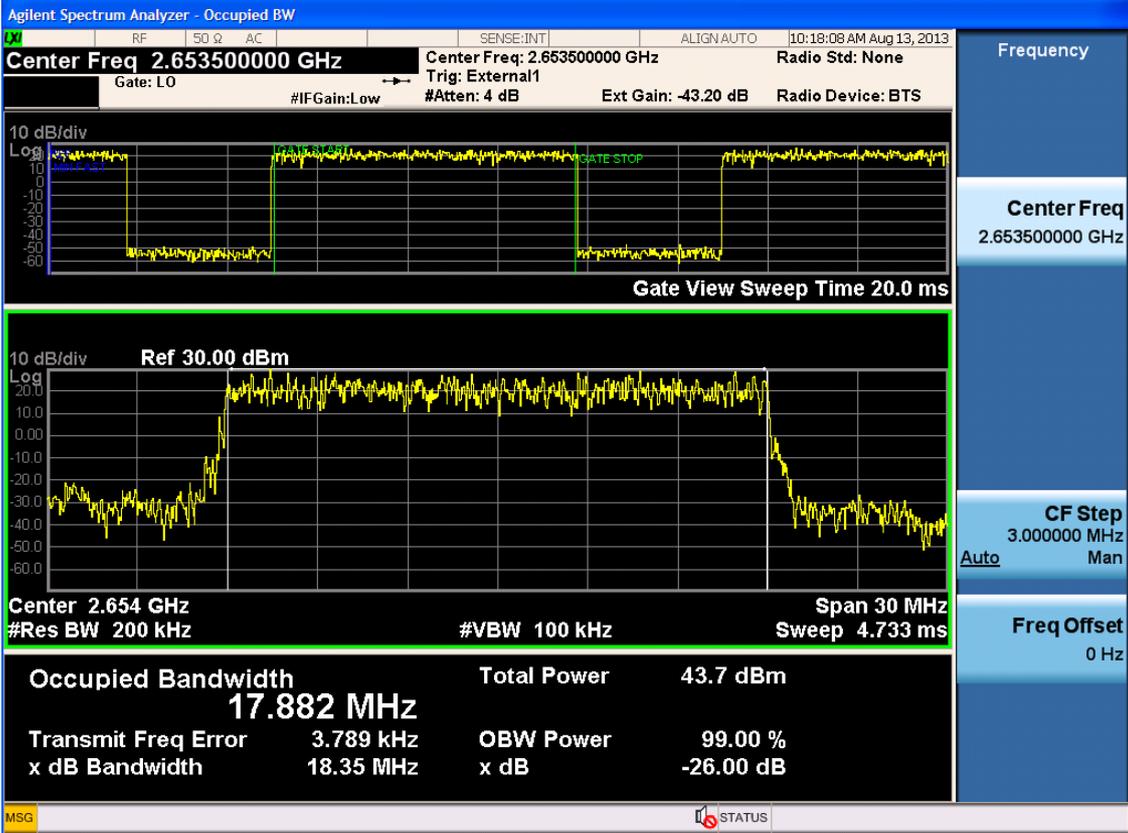
CF Step  
3.000000 MHz  
Auto Man

Freq Offset  
0 Hz

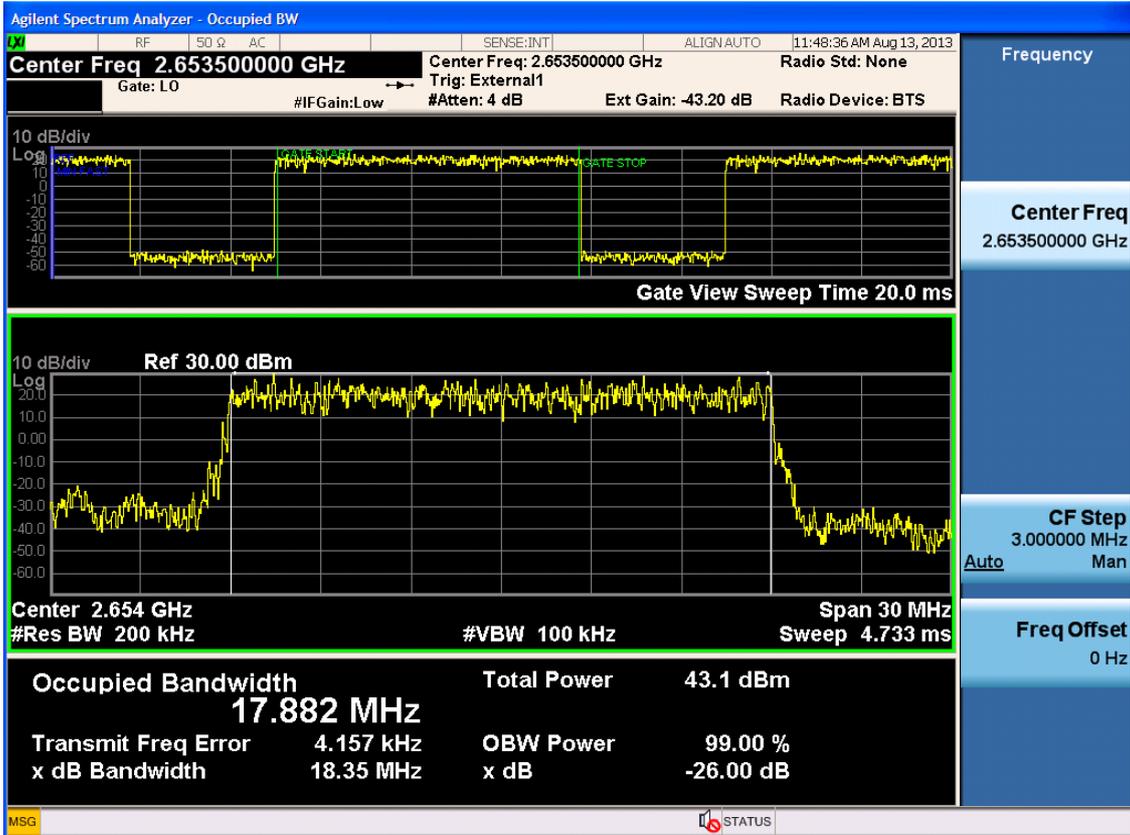
20M-2653.5MHz-16QAM-Port3



20M-2653.5MHz-16QAM-Port4



20M-2653.5MHz-64QAM-Port1



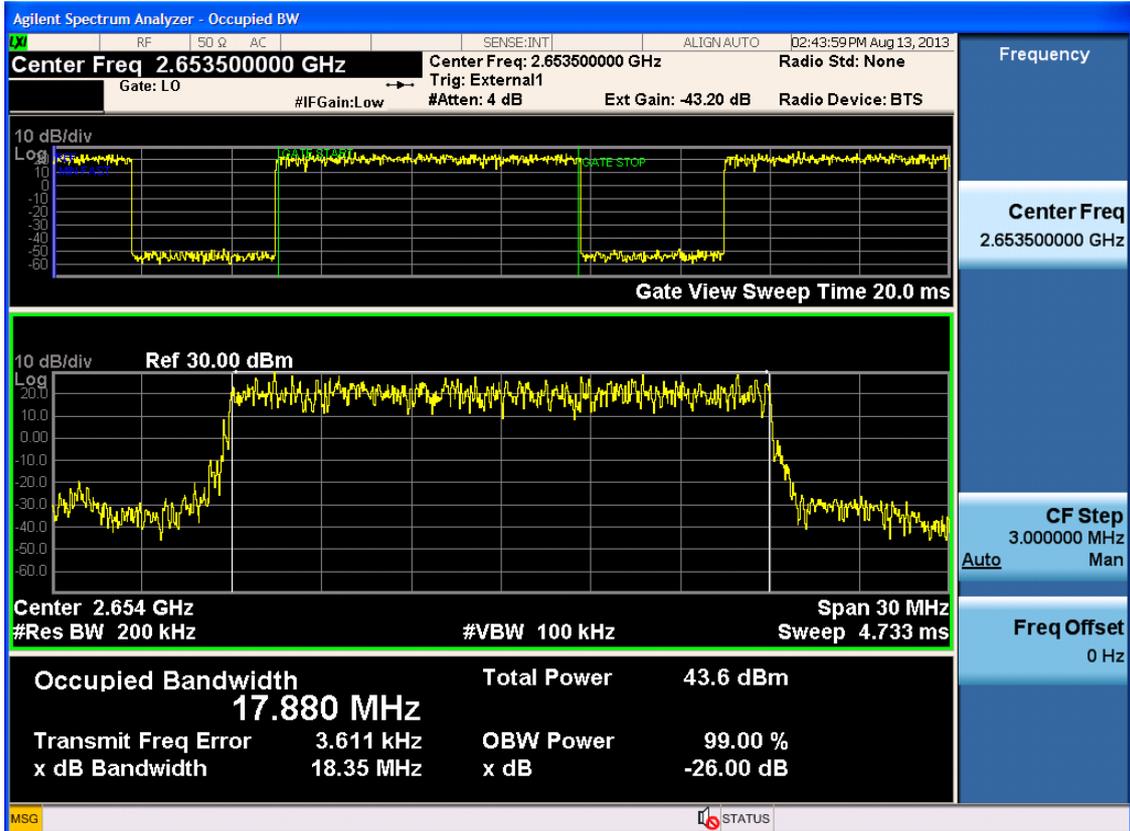
Frequency

Center Freq  
2.653500000 GHz

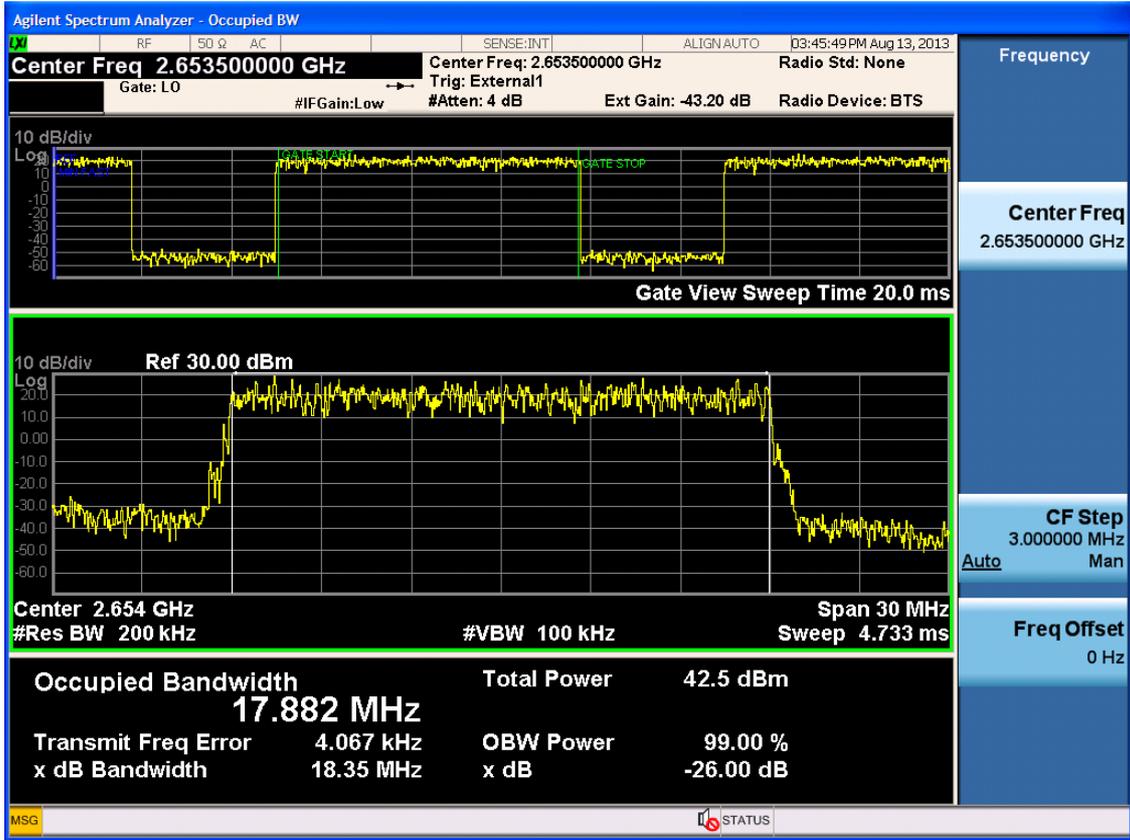
CF Step  
3.000000 MHz  
Auto Man

Freq Offset  
0 Hz

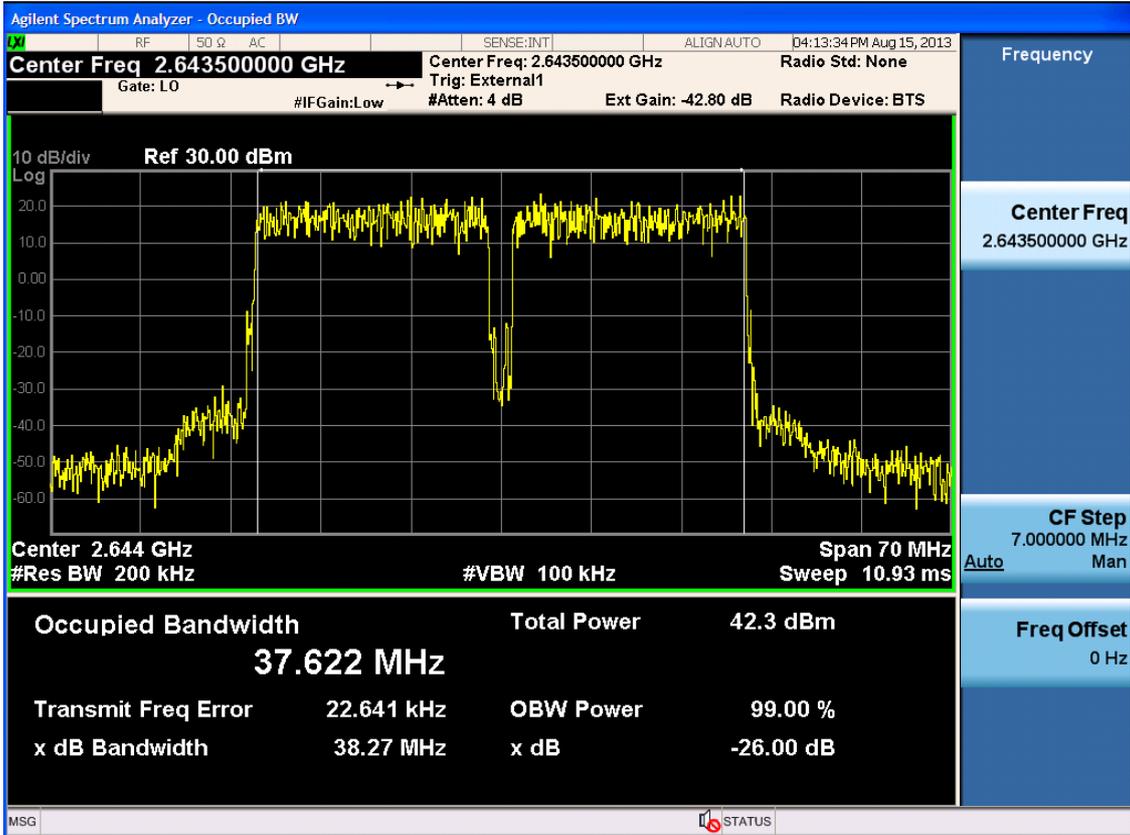
20M-2653.5MHz-64QAM-Port2



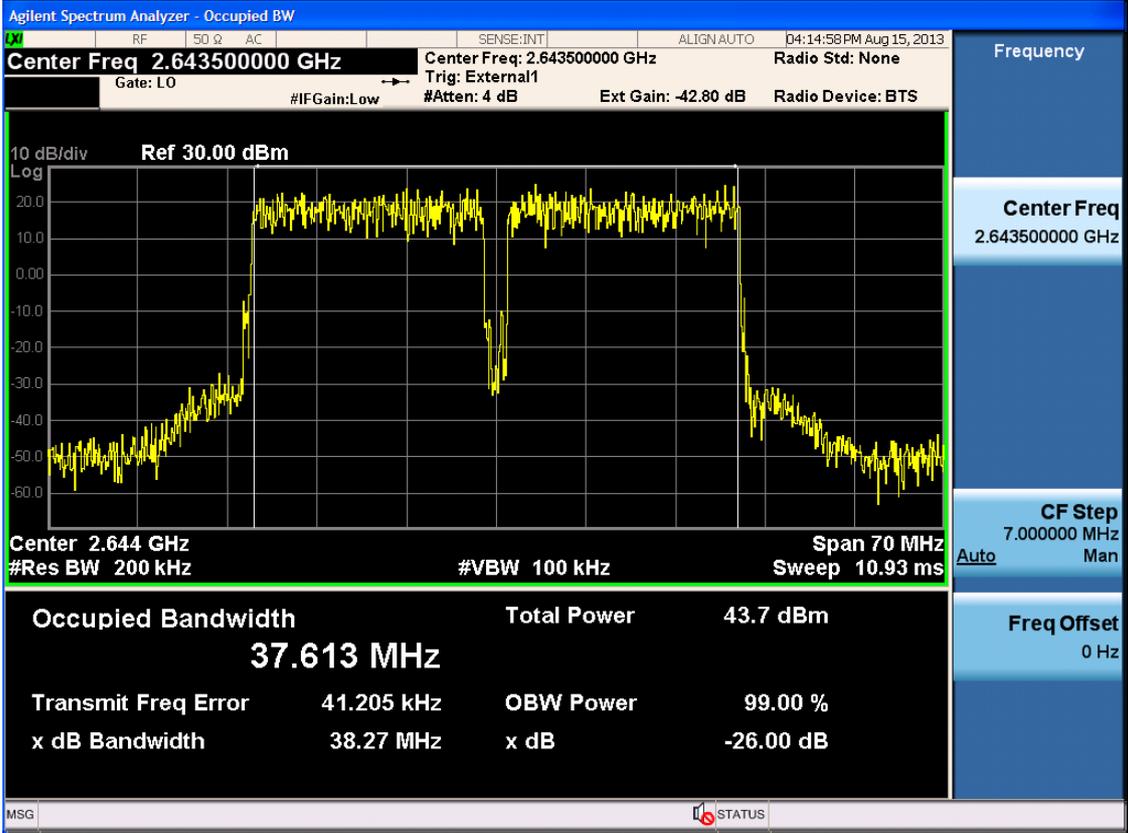
20M-2653.5MHz-64QAM-Port3



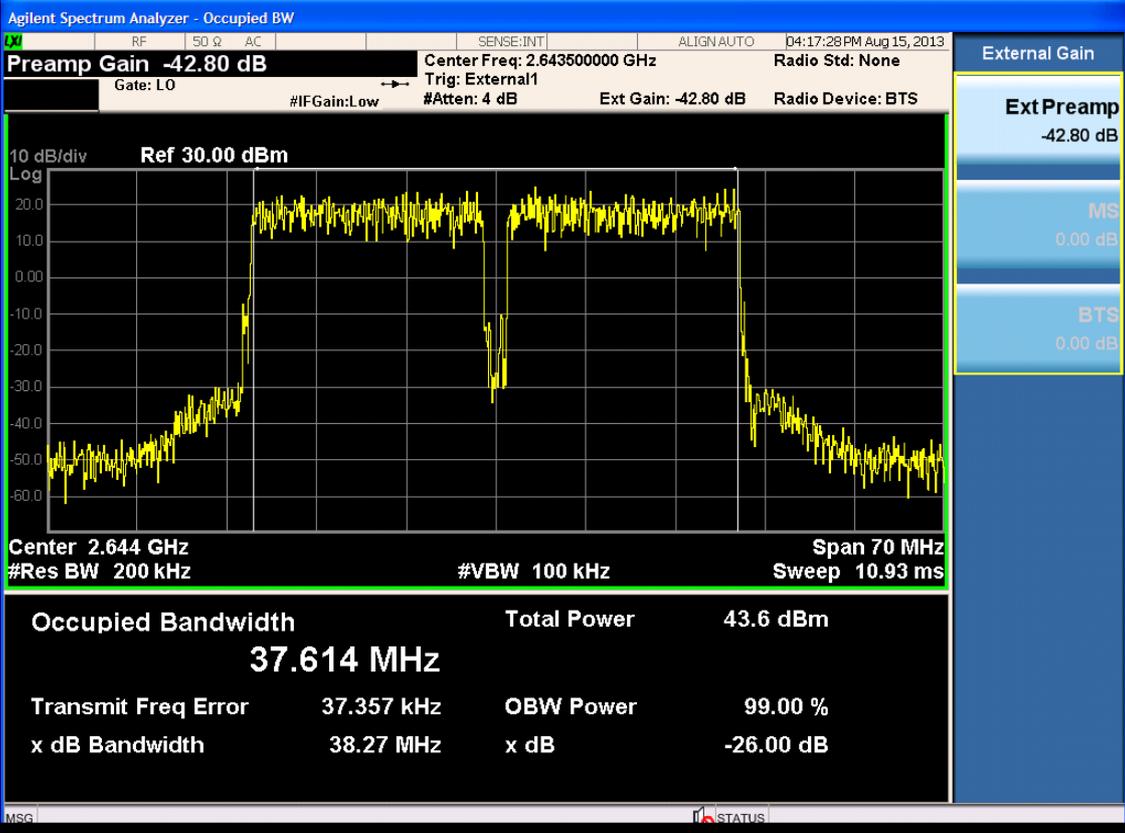
20M-2653.5MHz-64QAM-Port4



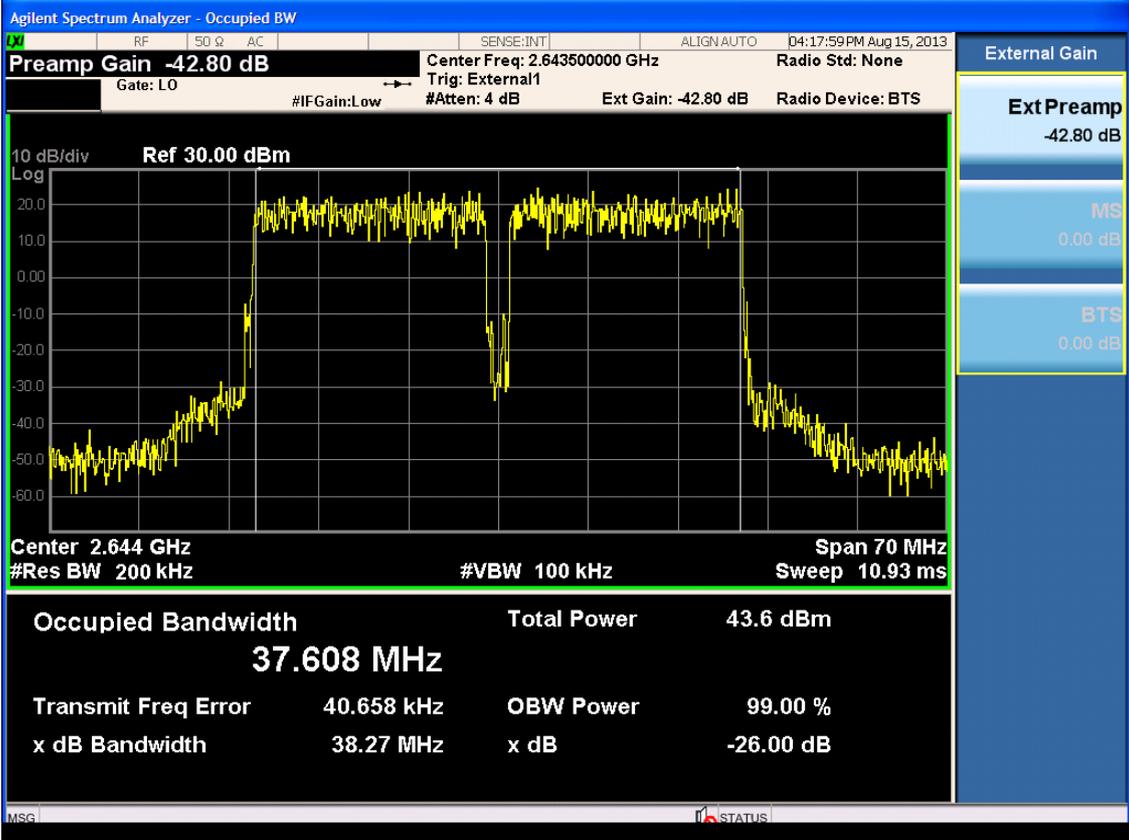
20M+20M-2633.5+2653.5MHz -QPSK-Port1



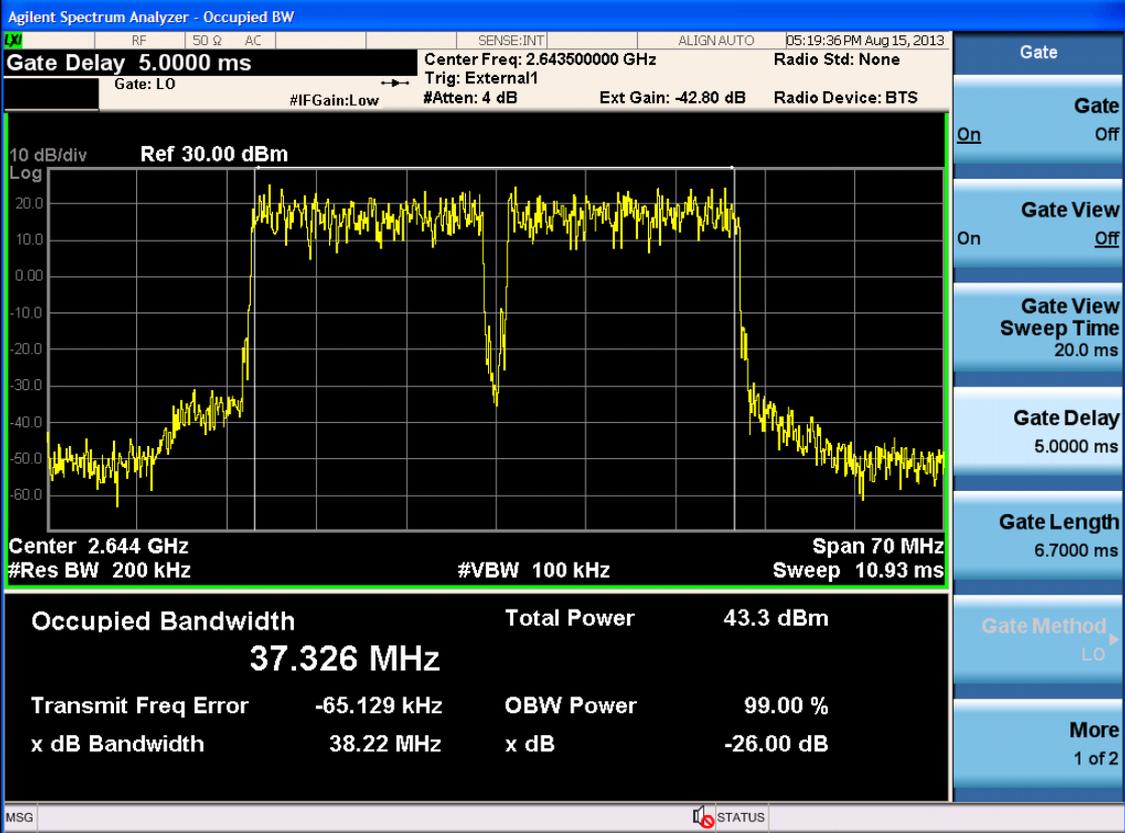
20M+20M-2633.5+2653.5MHz -QPSK-Port2



20M+20M-2633.5+2653.5MHz -QPSK-Port3



20M+20M-2633.5+2653.5MHz -QPSK-Port4



20M+20M-2633.5+2653.5MHz -16QAM-Port1