



FCC RF Test Report

Product Name: Mobile WiFi

Model Number: E5776s-501

Report No: SYBH(Z-RF)006112012-2005

FCC ID: QISE5776s-501

IC : 6369A-E5776S

Reliability Laboratory of Huawei Technologies Co., Ltd.

Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District,
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Notice

1. The laboratory has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS), and accreditation number: L0310.
2. The laboratory has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements. The site recognition number is 97456.
3. The laboratory has been listed by industry Canada to perform electromagnetic emission measurement. The site recognition number is 6369A-2.
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8. Normally, the test report is only responsible for the samples that have undergone the test.
9. Context of the test report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of the laboratory.
10. The laboratory has Passed the accreditation by The American Association for Laboratory Accreditation (A2LA). The accreditation number is 2174.01.



Applicant:	Huawei Technologies Co., Ltd.
Address:	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
Date of Receipt Test Item:	Nov.,07, 2012
Start Date of Test:	Nov.,07, 2012
End Date of Test:	Nov.,16, 2012
Test Result:	Pass

Approved by Senior Engineer:

2012-11-16
Date

DaiLinjun
Name

Signature

Prepared by:

2012-11-16
Date

GuoXingxing
Name

Signature



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1 General Information

1.1 Applied Standard

Applied Rules: 47 CFR FCC Part 02:2011
47 CFR FCC Part 27 :2011
IC RSS-Gen (Issue 3)
IC RSS-199 (Issue 1)

Test Method: FCC KDB 971168 D01 Power Meas License Digital Systems v01
FCC KDB 662911 D01 Multiple Transmitter Output v01

1.2 Test Location

Test Location 1: Reliability Laboratory of Huawei Technologies Co., Ltd.
Address: Administration Building, Headquarters of Huawei Technologies Co., Ltd.,
Bantian, Longgang District, Shenzhen, 518129, P.R.C

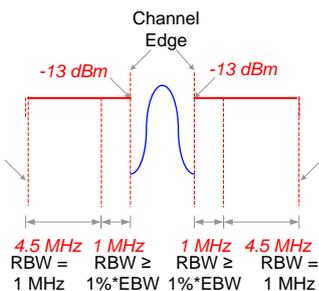
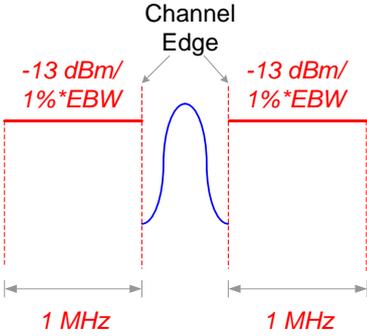
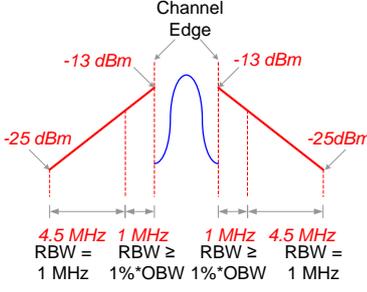
1.3 Test Environment Condition

Ambient Temperature: 19.5 to 25 °C
Ambient Relative Humidity: 40 to 55 %
Atmospheric Pressure: Not applicable



2 Summary

Table 1 Summary of Band 7 results

Test Item	FCC Rule No.	IC Rule No.	Requirements	Test Result	Verdict (NOTE 2)
RF Power Output	§2.1046, §27.50(h)	RSS-Gen, §4.8; RSS-199, §4.4	FCC: Pcond ≤ 2 W, EIRP ≤ 2 W (for Mobile); Pcond ≤ 2 W (for Others). IC: EIRP ≤ 2 W (for Mobile); Pcond ≤ 2 W, EIRP ≤ 40 W (for Others).	Appendix A	Pass
Bandwidth	§2.1049,	RSS-Gen, §4.6	OBW: No limit. EBW: No limit.	Appendix B	Pass
Band Edges Compliance	§2.1051, §27.53(m)	RSS-Gen, §4.9; RSS-199, §4.5; RSS-199, §4.2	FCC/Mobile:  FCC/Fixed:  IC/Mobile:  IC/Other:	Appendix C	Pass



Test Item	FCC Rule No.	IC Rule No.	Requirements	Test Result	Verdict (NOTE 2)
			<p>Channel Edge</p> <p>-13 dBm/ 1%*OBW</p> <p>-13 dBm/ 1%*OBW</p> <p>1 MHz</p> <p>1 MHz</p>		
Spurious Emission at Antenna Terminals	§2.1051, §27.53(m)	RSS-Gen, §4.9; RSS-199, §4.5; RSS-199, §4.2	<p>FCC/Fixed & IC/Other:</p> <p>Channel Edge</p> <p>-13 dBm/ 1 MHz</p> <p>-13 dBm/ 1 MHz</p> <p>9 kHz 1 MHz 1 MHz 10th harmonics</p> <p>FCC/Mobile & IC/Mobile:</p> <p>Channel Edge</p> <p>-25 dBm/ 1 MHz</p> <p>-25 dBm/ 1 MHz</p> <p>9 kHz 5.5 MHz 5.5 MHz 10th harmonics</p>	Appendix D	Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(m)	RSS-Gen, §4.9; RSS-199, §4.5	<p>FCC/Fixed & IC/Other:</p> <p>Channel Edge</p> <p>-13 dBm/ 1 MHz</p> <p>-13 dBm/ 1 MHz</p> <p>9 kHz 1 MHz 1 MHz 10th harmonics</p> <p>FCC/Mobile & IC/Mobile:</p> <p>Channel Edge</p> <p>-25 dBm/ 1 MHz</p> <p>-25 dBm/ 1 MHz</p> <p>9 kHz 5.5 MHz 5.5 MHz 10th harmonics</p>	Appendix E	Pass
Frequency Stability	§2.1055, §27.54	RSS-Gen, §4.7; RSS-199, §4.3	Within authorized bands of operation/frequency block.	Appendix F	Pass
Receiver Spurious Emissions (NOTE 1)	---	RSS-Gen, §4.10; RSS-Gen, §6; RSS-199, §4.6	Radiated limit: RSS-Gen, §6.1 field strength limit. Conducted limit: ≤ -57 dBm/120 kHz (CISPR-QP), from 30 MHz to 1000 MHz, and ≤ -53 dBm/1 MHz (AV), from 1 GHz to 3 rd harmonics.	Appendix G	Pass



Test Item	FCC Rule No.	IC Rule No.	Requirements	Test Result	Verdict (NOTE 2)
Photos of Test Setups	---	---	---	Appendix H	---
NOTE 1: For Receiver Spurious Emissions, If the receiver has a detachable antenna of known impedance, antenna conducted spurious emissions measurement is permitted as an alternative to radiated measurement. However, the radiated method is recommended. The antenna conducted test shall be performed with the antenna disconnected and the receiver antenna terminals connected to a measuring instrument having equal impedance to that specified for the antenna.					
NOTE 2: For the verdict, the "N/A" denotes "not applicable", the "N/T" denotes "not tested".					



3 Product Description

3.1 Product Information

3.1.1 General Description

E5776s-501 is a LTE/UMTS/GSM triple mode and WiFi Wireless mobile Router; it can be used as a WiFi hotspot based on standard of IEEE802.11b/g/n. It supports 3G WCDMA and 4G LTE wireless internet accessing function. About 3G WCDMA wireless mode, it supports WCDMA and HSDPA/HSUPA/HSPA+/DC-HSDPA, operating in Band1、Band2、Band4、Band 5; and the 4G LTE operating in Band4、Band7; and GSM operating in GSM850MHz and GSM1900MHz.The WiFi frequency is 2.4GHz.

E5776s-501 supports 1Tx2Rx for 3G WCDMA and 4G LTE. WiFi supports 2Tx2Rx.

3.1.2 Board Information

Table 2 Board Information

Mobile WiFi		
E5776s-501		
Board and Module		
Equipment Designation / Description	Software Version	Hardware Version
MAINBOARD	21.202.11.01.00	CL2E5776SM



4 Test Description

4.1 Supported Frequency Range

Characteristics	Description
Downlink	2620 to 2690 MHz;
Uplink	2500 to 2570 MHz;

4.2 Transmitter / Receiver Characteristics

Characteristics	Description
System Type	LTE
TX Output Power (per Antenna Port)	LTE system: 23dBm
Channel Spacing(s) / Bandwidth(s)	LTE system: 5 MHz, 10 MHz, 15 MHz, 20 MHz
Designation of Emissions	LTE system: 4M48G7D (5 MHz ,QPSK modulation), 4M47W7D (5 MHz ,16QAM modulation), 8M93G7D (10 MHz QPSK modulation), 8M94W7D (10 MHz 16QAM modulation), 13M44G7D (15MHz QPSK modulation), 13M42W7D (15MHz 16QAM modulation), 17M89G7D (20 MHz QPSK modulation), 17M91W7D (20 MHz 16QAM modulation),

4.3 Antenna Gain

Antenna Gain(dBi) to LTE Band 7	2.7
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5 General Test Conditions / Configurations

5.1 RF Channels under Test

Test Mode	TX / RX	RF Channel		
		Low (B)	Middle (M)	High (T)
LTE Band 7	TX (5M)	Channel 20775	Channel 21100	Channel 21425
		2502.5 MHz	2535 MHz	2567.5 MHz
	TX (10M)	Channel 20800	Channel 21100	Channel 21400
		2505 MHz	2535 MHz	2565 MHz
	TX (15M)	Channel 20825	Channel 21100	Channel 21375
		2507.5 MHz	2535 MHz	2562.5 MHz
	TX (20M)	Channel 20850	Channel 21100	Channel 21350
		2510 MHz	2535 MHz	2560 MHz
	RX (5M)	Channel 2775	Channel 3100	Channel 3425
		2622.5 MHz	2655 MHz	2687.5 MHz
	RX (10M)	Channel 2800	Channel 3100	Channel 3400
		2625 MHz	2655 MHz	2685 MHz
	RX (15M)	Channel 2825	Channel 3100	Channel 3375
		2627.5 MHz	2655 MHz	2682.5 MHz
	RX (20M)	Channel 2850	Channel 3100	Channel 3350
		2630 MHz	2655 MHz	2680 MHz

5.2 Test Modes

Test Mode	Test Modes Description
TM1	LTE QPSK modulation
TM2	LTE 16QAM modulation



5.3 Test Environment

Environment Parameter	Selected Values During Tests	
Relative Humidity	Ambient	
Temperature	TN	Ambient
Voltage	VL	3.6V
	VN	3.7V
	VH	4.2V

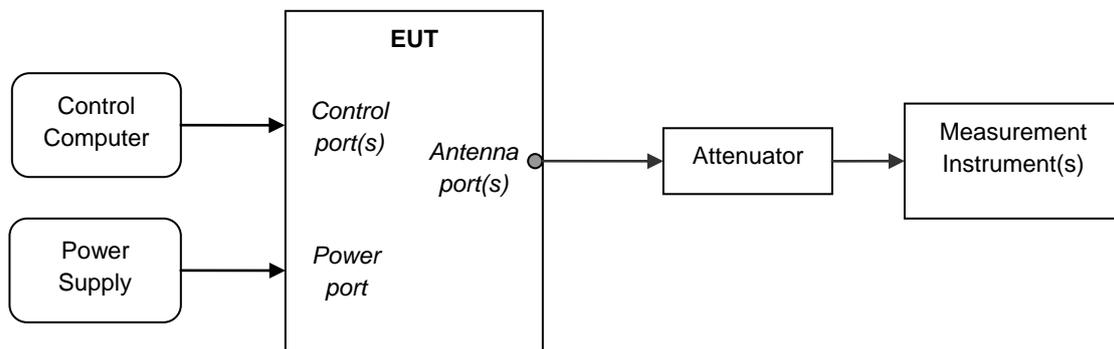
NOTE: VL= lower extreme test voltage
VN= nominal voltage
VH= upper extreme test voltage
TN= normal temperature

5.4 Test Setup

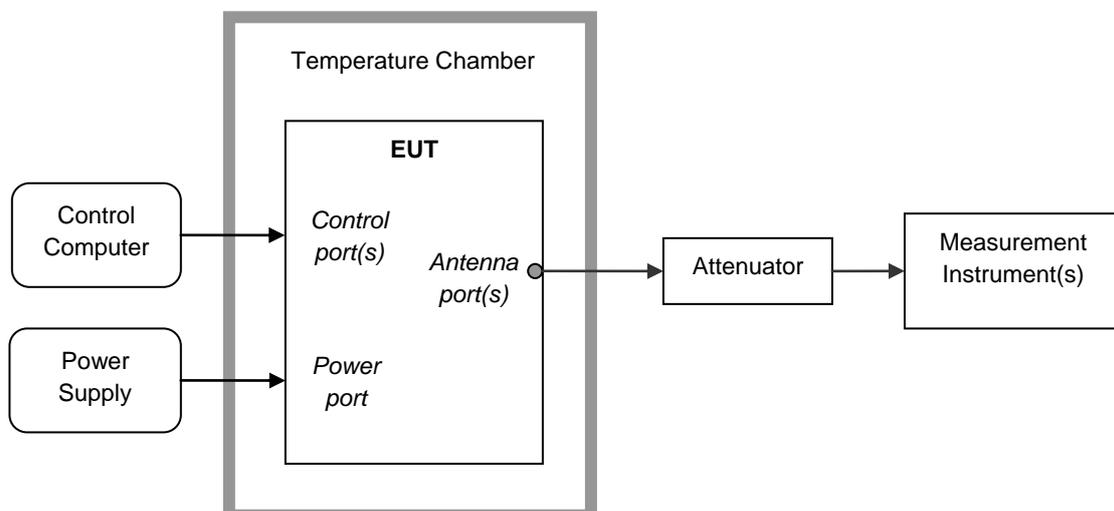
5.4.1 General Test Setup Configurations

Configuration	Description
Test Antenna Ports	Until otherwise declared, all TX tests are ONLY performed at the main Transmitter antenna port (e.g. TRXA, TXA and so on) of the EUT, and all RX tests are ONLY performed at the main Receiver antenna port (e.g. TRXA, RXA and so on) of the EUT.
Multiple RF Sources	Other than the tested RF source of the EUT, other RF source(s) are disabled or shutdown during measurements.

5.4.2 Test Setup 1



5.4.3 Test Setup 2





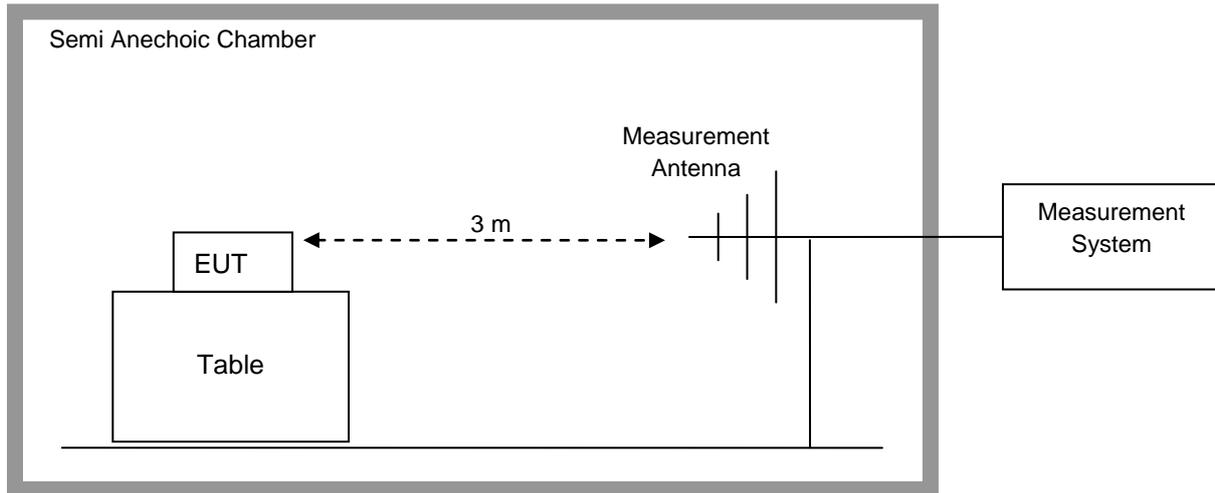
5.4.4 Test Setup 3

NOTE1: Effective radiated power (ERP) or Effective Isotropic radiated power (EIRP) refers to the EUT radiation power output, assuming all emissions are radiated from half-wave dipole antennas or horn antennas.

NOTE2: The EUT was set on insulator 80cm above the Ground Plane. The setup and test methods were according to ANSI-TIA-603C 2004. The measurements were carried through with a Rohde and Schwarz Test Receiver and control software.

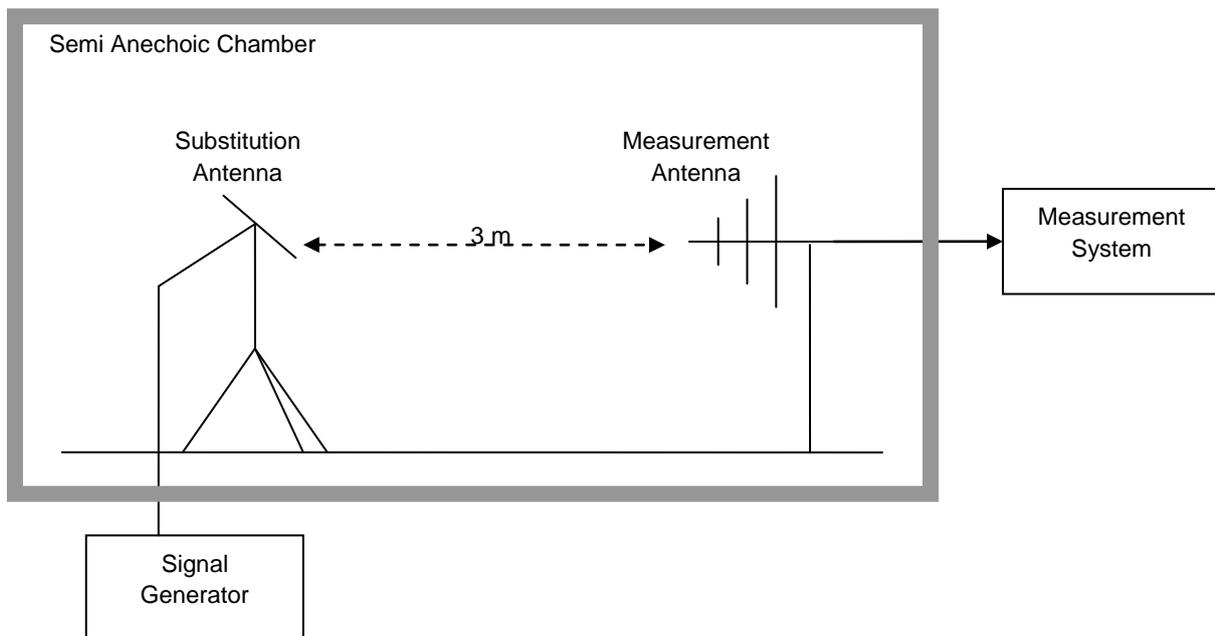
Step 1: Pre-test to find the Maximum ERP or EIRP

1. Connect the test system according to the following figure. EUT is running for 30 minutes before test, and measurement instruments are warming-up for 30 minutes.
2. Set up communication link between Universal radio communication tester and EUT, set EUT working frequency, and control EUT to transmit at maximum power.
3. Set the center frequency of the signal analyzer or receiver to the EUT's operating frequency, the RBW is equal to the emission bandwidth of the signal. Set RMS detector for the test, and the span is equal to 2 times of emission bandwidth, the other settings should remain automatic. Normally, the height range of antenna was 1m to 4m, the azimuth range of turntable was 0° to 360°. The receiver antenna has two polarizations V and H. A portable or small unlicensed wireless device shall be placed on a non-metallic test fixture or other non-metallic support during testing. The supporting fixture shall permit orientation of the EUT in each of three orthogonal (x, y, z) axis positions such that emissions from the EUT are maximized. Measure the EUT maximum RF power and record the result.
4. Changing EUT working frequency and measuring the RF power at channel L, M, H respectively. Complete the test data.



Step 2: Substitution method to verify the maximum ERP or EIRP

1. Measurement setup is according to the following figure. EUT was substituted by antenna, and the polarization is identical with the test antenna; the signal generator was connected to the substitution antenna.
2. The radiated output power, measured by signal analyzer set, is the same as recorded in above. Then this power level is matched by a signal from a calibrated signal generator which is substituted for EUT. The power supplied by the generator is then equal to the ERP or EIRP after corrected by the antenna gain and cable loss.





5.5 Test Conditions

Test Case	Test Conditions	
Transmitter Output Power	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 1 & Test Setup 3
	Detector	RMS
	RF Channels (TX)	B, M, T
	Test Mode	TM1/TM2
Modulation Characteristics	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 1
	RF Channels (TX)	M
	Test Mode	TM1/TM2
Occupied Bandwidth	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 1
	Detector	RMS
	RF Channels (TX)	B, M, T
	Test Mode	TM1/TM2
Band Edges Compliance	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 1
	Detector	RMS
	RF Channels (TX)	B, T
	Test Mode	TM1/TM2
Spurious Emission at Antenna Terminals	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 1
	Detector	PK
	RF Channels (TX)	B, M, T
	Test Mode	TM1
Field Strength of Spurious Radiation	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 3
	Detector	PK
	RF Channels (TX)	M
	Test Mode	TM1
Frequency Stability	Test Configuration	(1) -30 °C to +50 °C with step 10 °C at Rated Voltage; (2) VL VN VH Voltage at Ambient Temperature.
	Test Setup	Test Setup 2
	RF Channels (TX)	M
	Test Mode	TM1/TM2



6 Main Test Instruments

Table 3 Main Test Equipments

Equipment Name	Manufacturer	Model	Serial Number	Cal Date	Cal. Due
Power supply	KEITHLEY	2303	1288003	2012-11-09	2013-11-08
Universal Radio Communication Tester	R&S	CMU200	117341	2012-01-13	2013-01-12
Universal Radio Communication Tester	Agilent	E5515C	MY50260239	2012-11-09	2013-11-08
Spectrum Analyzer	Agilent	E4440A	MY49420179	2012-07-18	2013-07-17
Signal Analyzer	R&S	FSQ31	200021	2012-11-09	2013-11-08
Temperature Chamber	WEISS	WKL64	24600294	2012-02-14	2013-02-13
Signal generator	Agilent	E8257D	MY49281095	2012-07-10	2013-07-09
Spectrum analyzer	R&S	FSU3	200474	2012-03-06	2013-03-05
Spectrum analyzer	R&S	FSU43	100144	2012-03-06	2013-03-05
Double-Ridged Waveguide Horn Antenna (1G~18GHz)	R&S	HF907	100304	2012-04-06	2013-04-05
Double-Ridged Waveguide Horn Antenna (1G~18GHz)	R&S	HF907	100391	2012-04-06	2013-04-05
Trilog Broadband Antenna (30M~3GHz)	SCHWARZBECK	VULB 9163	9163-521	2012-07-18	2013-07-17
Pyramidal Horn Antenna(26GHz-40GHz)	ETS-Lindgren	3160-10	00123940	2012-02-28	2013-02-27
Pyramidal Horn Antenna(18GHz-26.5GHz)	ETS-Lindgren	3160-09	00125912	2012-02-28	2013-02-27
Universal Radio Communication Tester	R & S	CMW500	20347676	2012-09-08	2013-09-07
Universal Radio Communication Tester	Anritsu	MT8820C	6200971028	2012-05-05	2013-05-04



7 Measurement Uncertainty

For a 95% confidence level (k=2), the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 as following:

Test Item		Extended Uncertainty
Transmitter Output Power	Power (dBm)	U =0.39 dB
Occupied Bandwidth	Magnitude (%)	U=0.2%
Band Edge Compliance	Disturbance Power (dBm)	U=2.0 dB
Conducted Spurious Emissions	Disturbance Power (dBm)	U=2.0 dB
Field Strength of Spurious Radiation	ERP (dBm)	U=4.6 dB (30 MHz – 1GHz) U=3.0 dB (above 1 GHz)
Frequency Stability	Frequency Accuracy (ppm)	U=0.21 ppm

END



Appendix A

Transmitter Output Power

According to FCC Part 2.1046 & FCC Part 27C & 27M



Conducted Power of Transmitter

Table 1 Measurement Results (LTE) BAND 7

TM1 & TM2 RF Output Power(Conducted) BAND 7				
Test Mode	TN/VN			
	Modulation	RB	Measured (dBm)	Limit (dBm)
Channel (L) 5MHz(BW)	QPSK	1RB#0	22.26	33.0
		1RB#max	22.12	33.0
		12RB#6	22.10	33.0
		Full	21.98	33.0
	16QAM	1RB#0	21.77	33.0
		1RB#max	21.77	33.0
		12RB#6	21.01	33.0
		Full	20.90	33.0
Channel (L) 10MHz(BW)	QPSK	1RB#0	22.23	33.0
		1RB#max	22.29	33.0
		25RB#13	21.79	33.0
		Full	21.81	33.0
	16QAM	1RB#0	21.74	33.0
		1RB#max	21.85	33.0
		25RB#13	20.58	33.0
		Full	20.59	33.0
Channel (L) 15MHz(BW)	QPSK	1RB#0	22.33	33.0
		1RB#max	22.42	33.0
		36RB#18	21.53	33.0
		Full	21.79	33.0
	16QAM	1RB#0	22.07	33.0
		1RB#max	22.17	33.0
		36RB#18	20.54	33.0
		Full	20.66	33.0
Channel (L) 20MHz(BW)	QPSK	1RB#0	22.41	33.0
		1RB#max	22.64	33.0
		50RB#25	21.47	33.0
		Full	21.86	33.0
	16QAM	1RB#0	22.08	33.0
		1RB#max	22.32	33.0



		50RB#25	20.31	33.0
		Full	20.64	33.0
Channel (M) 5MHz(BW)	QPSK	1RB#0	22.12	33.0
		1RB#max	21.82	33.0
		12RB#6	21.76	33.0
		Full	21.52	33.0
	16QAM	1RB#0	21.62	33.0
		1RB#max	21.43	33.0
		12RB#6	20.67	33.0
		Full	20.41	33.0
Channel (M) 10MHz(BW)	QPSK	1RB#0	22.14	33.0
		1RB#max	21.95	33.0
		25RB#13	21.51	33.0
		Full	21.30	33.0
	16QAM	1RB#0	21.74	33.0
		1RB#max	21.56	33.0
		25RB#13	20.41	33.0
		Full	20.17	33.0
Channel (M) 15MHz(BW)	QPSK	1RB#0	22.41	33.0
		1RB#max	21.78	33.0
		36RB#18	21.64	33.0
		Full	21.42	33.0
	16QAM	1RB#0	22.02	33.0
		1RB#max	21.53	33.0
		36RB#18	20.54	33.0
		Full	20.30	33.0
Channel (M) 20MHz(BW)	QPSK	1RB#0	22.54	33.0
		1RB#max	21.79	33.0
		50RB#25	21.41	33.0
		Full	21.38	33.0
	16QAM	1RB#0	22.06	33.0
		1RB#max	21.44	33.0
		50RB#25	20.28	33.0
		Full	20.26	33.0
Channel (H) 5MHz(BW)	QPSK	1RB#0	21.83	33.0
		1RB#max	21.84	33.0
		12RB#6	21.68	33.0
		Full	21.56	33.0



	16QAM	1RB#0	21.40	33.0
		1RB#max	21.46	33.0
		12RB#6	20.59	33.0
		Full	20.44	33.0
Channel (H) 10MHz(BW)	QPSK	1RB#0	21.74	33.0
		1RB#max	22.05	33.0
		25RB#13	21.50	33.0
		Full	21.29	33.0
	16QAM	1RB#0	21.39	33.0
		1RB#max	21.77	33.0
		25RB#13	20.38	33.0
		Full	20.16	33.0
Channel (H) 15MHz(BW)	QPSK	1RB#0	21.94	33.0
		1RB#max	22.09	33.0
		36RB#18	21.63	33.0
		Full	21.51	33.0
	16QAM	1RB#0	21.60	33.0
		1RB#max	21.73	33.0
		36RB#18	20.53	33.0
		Full	20.39	33.0
Channel (H) 20MHz(BW)	QPSK	1RB#0	21.90	33.0
		1RB#max	22.12	33.0
		50RB#25	21.62	33.0
		Full	21.51	33.0
	16QAM	1RB#0	21.61	33.0
		1RB#max	21.77	33.0
		50RB#25	20.49	33.0
		Full	20.38	33.0



Peak-to-Average Ratio

Table 2 Measurement Results (LTE) BAND 7

Peak-to-Average Ratio				
Test Mode	TN/VN			
	Modulation	RB	Measured (dB)	Limit (dB)
Channel (L) 5MHz(BW)	QPSK	1RB#0	4.63	13
		1RB#max	4.17	13
		12RB#6	5.21	13
		Full	5.63	13
	16QAM	1RB#0	5.58	13
		1RB#max	5.11	13
		12RB#6	6.35	13
		Full	6.50	13
Channel (L) 10MHz(BW)	QPSK	1RB#0	4.52	13
		1RB#max	4.06	13
		25RB#13	5.29	13
		Full	5.33	13
	16QAM	1RB#0	5.42	13
		1RB#max	4.92	13
		25RB#13	6.15	13
		Full	6.27	13
Channel (L) 15MHz(BW)	QPSK	1RB#0	4.76	13
		1RB#max	4.09	13
		36RB#18	5.36	13
		Full	5.43	13
	16QAM	1RB#0	5.36	13
		1RB#max	4.97	13
		36RB#18	6.07	13
		Full	6.29	13
Channel (L) 20MHz(BW)	QPSK	1RB#0	4.57	13
		1RB#max	3.67	13
		50RB#25	5.15	13
		Full	5.34	13
	16QAM	1RB#0	5.44	13



		1RB#max	4.79	13
		50RB#25	6.06	13
		Full	6.17	13
Channel (M) 5MHz(BW)	QPSK	1RB#0	4.19	13
		1RB#max	3.83	13
		12RB#6	5.12	13
		Full	5.04	13
	16QAM	1RB#0	5.49	13
		1RB#max	4.96	13
		12RB#6	6.16	13
Channel (M) 10MHz(BW)	QPSK	1RB#0	4.73	13
		1RB#max	3.65	13
		25RB#13	5.20	13
		Full	6.29	13
	16QAM	1RB#0	5.65	13
		1RB#max	5.14	13
		25RB#13	6.16	13
		Full	6.21	13
Channel (M) 15MHz(BW)	QPSK	1RB#0	4.95	13
		1RB#max	4.33	13
		36RB#18	5.59	13
		Full	5.67	13
	16QAM	1RB#0	5.57	13
		1RB#max	5.05	13
		36RB#18	6.07	13
		Full	6.14	13
Channel (M) 20MHz(BW)	QPSK	1RB#0	4.30	13
		1RB#max	3.89	13
		50RB#25	5.29	13
		Full	5.36	13
	16QAM	1RB#0	5.66	13
		1RB#max	4.56	13
		50RB#25	6.13	13
		Full	6.24	13
Channel (H) 5MHz(BW)	QPSK	1RB#0	4.87	13
		1RB#max	4.49	13
		12RB#6	5.37	13



	16QAM	Full	5.49	13
		1RB#0	5.77	13
		1RB#max	4.94	13
		12RB#6	6.24	13
		Full	6.29	13
Channel (H) 10MHz(BW)	QPSK	1RB#0	4.74	13
		1RB#max	3.67	13
		25RB#13	5.03	13
		Full	5.19	13
	16QAM	1RB#0	5.31	13
		1RB#max	4.99	13
		25RB#13	6.11	13
		Full	6.16	13
Channel (H) 15MHz(BW)	QPSK	1RB#0	4.23	13
		1RB#max	3.90	13
		36RB#18	5.10	13
		Full	5.24	13
	16QAM	1RB#0	5.13	13
		1RB#max	4.79	13
		36RB#18	6.01	13
		Full	6.09	13
Channel (H) 20MHz(BW)	QPSK	1RB#0	4.71	13
		1RB#max	3.96	13
		50RB#25	5.02	13
		Full	5.14	13
	16QAM	1RB#0	5.50	13
		1RB#max	5.05	13
		50RB#25	6.10	13
		Full	6.21	13



Effective Isotropic Radiated Power of Transmitter (EIRP)

Table 3 Substitution Results (LTE) BAND 7

Test Mode			Meas. Level [dBm]	Substitution Antenna Type	SGP[dBm]	Substitution Gain [dBi]	Cable Loss [dB]	Substitution Level (EIRP) [dBm]	FCC limit [dBm]	Result
Channel	Modulation	RB								
Channel (L) 5MHz(BW)	QPSK	1 RB/#0	24.96	Horn Ant.	21.43	4.5	1	24.93	33	Pass
		1 RB/#max	24.82	Horn Ant.	21.29	4.5	1	24.79	33	Pass
		12 RB/#6	24.80	Horn Ant.	21.27	4.5	1	24.77	33	Pass
		Full	24.68	Horn Ant.	21.15	4.5	1	24.65	33	Pass
	16QAM	1 RB/#0	24.47	Horn Ant.	20.94	4.5	1	24.44	33	Pass
		1 RB/#max	24.47	Horn Ant.	20.94	4.5	1	24.44	33	Pass
		12 RB/#6	23.71	Horn Ant.	20.18	4.5	1	23.68	33	Pass
		Full	23.60	Horn Ant.	20.07	4.5	1	23.57	33	Pass
Channel (L) 10MHz(BW)	QPSK	1 RB/#0	24.93	Horn Ant.	21.40	4.5	1	24.90	33	Pass
		1 RB/#max	24.99	Horn Ant.	21.46	4.5	1	24.96	33	Pass
		25 RB/#13	24.49	Horn Ant.	20.96	4.5	1	24.46	33	Pass
		Full	24.51	Horn Ant.	20.98	4.5	1	24.48	33	Pass
	16QAM	1 RB/#0	24.44	Horn Ant.	20.91	4.5	1	24.41	33	Pass



		1 RB/#max	24.55	Horn Ant.	21.02	4.5	1	24.52	33	Pass
		25 RB/#13	23.28	Horn Ant.	19.75	4.5	1	23.25	33	Pass
		Full	23.29	Horn Ant.	19.76	4.5	1	23.26	33	Pass
Channel (L) 15MHz(BW)	QPSK	1 RB/#0	25.03	Horn Ant.	21.50	4.5	1	25.00	33	Pass
		1 RB/#max	25.12	Horn Ant.	21.59	4.5	1	25.09	33	Pass
		36 RB/#18	24.23	Horn Ant.	20.70	4.5	1	24.20	33	Pass
		Full	24.49	Horn Ant.	20.96	4.5	1	24.46	33	Pass
	16QAM	1 RB/#0	24.77	Horn Ant.	21.24	4.5	1	24.74	33	Pass
		1 RB/#max	24.87	Horn Ant.	21.34	4.5	1	24.84	33	Pass
		36 RB/#18	23.24	Horn Ant.	19.71	4.5	1	23.21	33	Pass
		Full	23.36	Horn Ant.	19.83	4.5	1	23.33	33	Pass
Channel (L) 20MHz(BW)	QPSK	1 RB/#0	25.11	Horn Ant.	21.58	4.5	1	25.08	33	Pass
		1 RB/#max	25.34	Horn Ant.	21.81	4.5	1	25.31	33	Pass
		50 RB/#25	24.17	Horn Ant.	20.64	4.5	1	24.14	33	Pass
		Full	24.56	Horn Ant.	21.03	4.5	1	24.53	33	Pass
	16QAM	1 RB/#0	24.78	Horn Ant.	21.25	4.5	1	24.75	33	Pass
		1 RB/#max	25.02	Horn Ant.	21.49	4.5	1	24.99	33	Pass
		50 RB/#25	23.01	Horn Ant.	19.48	4.5	1	22.98	33	Pass
		Full	23.34	Horn Ant.	19.81	4.5	1	23.31	33	Pass



Channel (M) 5MHz(BW)	QPSK	1 RB/#0	24.82	Horn Ant.	21.29	4.5	1	24.79	33	Pass
		1 RB/#max	24.52	Horn Ant.	20.99	4.5	1	24.49	33	Pass
		12 RB/#6	24.46	Horn Ant.	20.93	4.5	1	24.43	33	Pass
		Full	24.22	Horn Ant.	20.69	4.5	1	24.19	33	Pass
	16QAM	1 RB/#0	24.32	Horn Ant.	20.79	4.5	1	24.29	33	Pass
		1 RB/#max	24.13	Horn Ant.	20.60	4.5	1	24.10	33	Pass
		12 RB/#6	23.37	Horn Ant.	19.84	4.5	1	23.34	33	Pass
		Full	23.11	Horn Ant.	19.58	4.5	1	23.08	33	Pass
Channel (M) 10MHz(BW)	QPSK	1 RB/#0	24.84	Horn Ant.	21.31	4.5	1	24.81	33	Pass
		1 RB/#max	24.65	Horn Ant.	21.12	4.5	1	24.62	33	Pass
		25 RB/#13	24.21	Horn Ant.	20.68	4.5	1	24.18	33	Pass
		Full	24.00	Horn Ant.	20.47	4.5	1	23.97	33	Pass
	16QAM	1 RB/#0	24.44	Horn Ant.	20.91	4.5	1	24.41	33	Pass
		1 RB/#max	24.26	Horn Ant.	20.73	4.5	1	24.23	33	Pass
		25 RB/#13	23.11	Horn Ant.	19.58	4.5	1	23.08	33	Pass
		Full	22.87	Horn Ant.	19.34	4.5	1	22.84	33	Pass
Channel (M) 15MHz(BW)	QPSK	1 RB/#0	25.11	Horn Ant.	21.58	4.5	1	25.08	33	Pass
		1 RB/#max	24.48	Horn Ant.	20.95	4.5	1	24.45	33	Pass
		36 RB/#18	24.34	Horn Ant.	20.81	4.5	1	24.31	33	Pass



		Full	24.12	Horn Ant.	20.59	4.5	1	24.09	33	Pass
	16QAM	1 RB/#0	24.72	Horn Ant.	21.19	4.5	1	24.69	33	Pass
		1 RB/#max	24.23	Horn Ant.	20.70	4.5	1	24.20	33	Pass
		36 RB/#18	23.24	Horn Ant.	19.71	4.5	1	23.21	33	Pass
		Full	23.00	Horn Ant.	19.47	4.5	1	22.97	33	Pass
Channel (M) 20MHz(BW)	QPSK	1 RB/#0	25.24	Horn Ant.	21.71	4.5	1	25.21	33	Pass
		1 RB/#max	24.49	Horn Ant.	20.96	4.5	1	24.46	33	Pass
		50 RB/#25	24.11	Horn Ant.	20.58	4.5	1	24.08	33	Pass
		Full	24.08	Horn Ant.	20.55	4.5	1	24.05	33	Pass
	16QAM	1 RB/#0	24.76	Horn Ant.	21.23	4.5	1	24.73	33	Pass
		1 RB/#max	24.14	Horn Ant.	20.61	4.5	1	24.11	33	Pass
		50 RB/#25	22.98	Horn Ant.	19.45	4.5	1	22.95	33	Pass
		Full	22.96	Horn Ant.	19.43	4.5	1	22.93	33	Pass
Channel (H) 5MHz(BW)	QPSK	1 RB/#0	24.53	Horn Ant.	20.70	4.8	1	24.50	33	Pass
		1 RB/#max	24.54	Horn Ant.	20.71	4.8	1	24.51	33	Pass
		12 RB/#6	24.38	Horn Ant.	20.55	4.8	1	24.35	33	Pass
		Full	24.26	Horn Ant.	20.43	4.8	1	24.23	33	Pass
	16QAM	1 RB/#0	24.10	Horn Ant.	20.27	4.8	1	24.07	33	Pass
		1 RB/#max	24.16	Horn Ant.	20.33	4.8	1	24.13	33	Pass



		12 RB/#6	23.29	Horn Ant.	19.46	4.8	1	23.26	33	Pass
		Full	23.14	Horn Ant.	19.31	4.8	1	23.11	33	Pass
Channel (H) 10MHz(BW)	QPSK	1 RB/#0	24.44	Horn Ant.	20.61	4.8	1	24.41	33	Pass
		1 RB/#max	24.75	Horn Ant.	20.92	4.8	1	24.72	33	Pass
		25 RB/#13	24.20	Horn Ant.	20.37	4.8	1	24.17	33	Pass
		Full	23.99	Horn Ant.	20.16	4.8	1	23.96	33	Pass
	16QAM	1 RB/#0	24.09	Horn Ant.	20.26	4.8	1	24.06	33	Pass
		1 RB/#max	24.47	Horn Ant.	20.64	4.8	1	24.44	33	Pass
		25 RB/#13	23.08	Horn Ant.	19.25	4.8	1	23.05	33	Pass
		Full	22.86	Horn Ant.	19.03	4.8	1	22.83	33	Pass
Channel (H) 15MHz(BW)	QPSK	1 RB/#0	24.64	Horn Ant.	20.81	4.8	1	24.61	33	Pass
		1 RB/#max	24.79	Horn Ant.	20.96	4.8	1	24.76	33	Pass
		36 RB/#18	24.33	Horn Ant.	20.50	4.8	1	24.30	33	Pass
		Full	24.21	Horn Ant.	20.38	4.8	1	24.18	33	Pass
	16QAM	1 RB/#0	24.30	Horn Ant.	20.47	4.8	1	24.27	33	Pass
		1 RB/#max	24.43	Horn Ant.	20.60	4.8	1	24.40	33	Pass
		36 RB/#18	23.23	Horn Ant.	19.40	4.8	1	23.20	33	Pass
		Full	23.09	Horn Ant.	19.26	4.8	1	23.06	33	Pass
Channel (H)	QPSK	1 RB/#0	24.60	Horn Ant.	20.77	4.8	1	24.57	33	Pass



20MHz(B W)		1 RB/#max	24.82	Horn Ant.	20.99	4.8	1	24.79	33	Pass
		50 RB/#25	24.32	Horn Ant.	20.49	4.8	1	24.29	33	Pass
		Full	24.21	Horn Ant.	20.38	4.8	1	24.18	33	Pass
	16QA M	1 RB/#0	24.31	Horn Ant.	20.48	4.8	1	24.28	33	Pass
		1 RB/#max	24.47	Horn Ant.	20.64	4.8	1	24.44	33	Pass
		50 RB/#25	23.19	Horn Ant.	19.36	4.8	1	23.16	33	Pass
		Full	23.08	Horn Ant.	19.25	4.8	1	23.05	33	Pass

Note: a, For getting the EIRP (Efficient Isotropic Radiated Power) in substitution method, the following formula should be taken to calculate it,

$$\text{EIRP [dBm]} = \text{SGP [dBm]} - \text{Cable Loss [dB]} + \text{Gain [dBi]}$$

b, SGP=Signal Generator Level

END



Appendix B

Occupied Bandwidth

According to FCC part 2.1049 & FCC Part 27C & 27M



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Result Table

NOTE: All relevant operation modes have been tested, and the full RB data is included in this report.

Table 1 Measurement Results (LTE) BAND 7

Test Mode	Carrier Conf.	RF Ch.	RB	Occupied Bandwidth [MHz]	-26dB BW [MHz]	Verdict
TM1	5 MHz	L	1RB#0	0.405	0.536	Pass
			1RB#max	0.403	0.554	Pass
			Partial RBs /RB #6	2.217	3.015	Pass
			Full RBs	4.480	4.833	Pass
		M	1RB#0	0.390	0.559	Pass
			1RB#max	0.399	0.561	Pass
			Partial RBs /RB #6	2.213	2.976	Pass
			Full RBs	4.477	4.832	Pass
		H	1RB#0	0.383	0.541	Pass
			1RB#0	0.397	0.546	Pass
			Partial RBs /RB #6	2.216	3.037	Pass
			Full RBs	4.477	4.827	Pass
	10 MHz	L	1RB#0	0.564	0.748	Pass
			1RB#max	0.568	0.749	Pass
			Partial RBs /RB #13	4.572	5.371	Pass
			Full RBs	8.929	9.532	Pass
		M	1RB#0	0.555	0.738	Pass
			1RB#max	0.573	0.764	Pass
			Partial RBs /RB #13	4.571	5.301	Pass
			Full RBs	8.939	9.538	Pass
		H	1RB#0	0.557	0.752	Pass
			1RB#max	0.570	0.763	Pass
			Partial RBs /RB #13	4.579	5.367	Pass
			Full RBs	8.937	9.540	Pass
	15 MHz	L	1RB#0	0.764	1.011	Pass
			1RB#max	0.741	0.997	Pass
			Partial RBs /RB #18	6.592	7.545	Pass
			Full RBs	13.420	14.385	Pass
		M	1RB#0	0.750	1.009	Pass
			1RB#max	0.744	1.010	Pass
			Partial RBs /RB #18	6.598	7.490	Pass
			Full RBs	13.440	14.324	Pass
		H	1RB#0	0.751	1.005	Pass
			1RB#max	0.746	0.995	Pass
			Partial RBs /RB #18	6.587	7.482	Pass
			Full RBs	13.418	14.298	Pass
20 MHz	L	1RB#0	0.929	1.251	Pass	
		1RB#max	0.934	1.258	Pass	
		Partial RBs /RB #25	9.120	10.107	Pass	
		Full RBs	17.890	19.028	Pass	
	M	1RB#0	0.928	1.249	Pass	
		1RB#max	0.934	1.256	Pass	
		Partial RBs /RB #25	9.119	10.145	Pass	
		Full RBs	17.892	19.037	Pass	



Test Mode	Carrier Conf.	RF Ch.	RB	Occupied Bandwidth [MHz]	-26dB BW [MHz]	Verdict	
TM2		H	1RB#0	0.931	1.255	Pass	
			1RB#max	0.934	1.254	Pass	
			Partial RBs /RB #25	9.110	10.097	Pass	
			Full RBs	17.891	19.025	Pass	
	5 MHz	L	1RB#0	0.410	0.549	Pass	
			1RB#max	0.396	0.532	Pass	
			Partial RBs /RB #6	2.222	3.200	Pass	
			Full RBs	4.478	4.841	Pass	
		M	1RB#0	0.401	0.550	Pass	
			1RB#max	0.395	0.541	Pass	
			Partial RBs /RB #6	2.219	3.049	Pass	
			Full RBs	4.476	4.861	Pass	
		H	1RB#0	0.394	0.532	Pass	
			1RB#max	0.404	0.561	Pass	
			Partial RBs /RB #6	2.219	3.215	Pass	
			Full RBs	4.477	4.847	Pass	
		10 MHz	L	1RB#0	0.557	0.741	Pass
				1RB#max	0.568	0.764	Pass
				Partial RBs /RB #13	4.580	5.679	Pass
				Full RBs	8.941	9.569	Pass
			M	1RB#0	0.559	0.755	Pass
				1RB#max	0.564	0.751	Pass
				Partial RBs /RB #13	4.577	5.525	Pass
				Full RBs	8.936	9.550	Pass
			H	1RB#0	0.558	0.745	Pass
				1RB#max	0.564	0.747	Pass
				Partial RBs /RB #13	4.580	5.476	Pass
				Full RBs	8.940	9.557	Pass
	15 MHz	L	1RB#0	0.762	1.019	Pass	
			1RB#max	0.744	1.004	Pass	
			Partial RBs /RB #18	6.600	7.853	Pass	
			Full RBs	13.421	14.360	Pass	
		M	1RB#0	0.748	1.006	Pass	
			1RB#max	0.746	0.993	Pass	
			Partial RBs /RB #18	6.593	7.605	Pass	
			Full RBs	13.425	14.392	Pass	
		H	1RB#0	0.759	1.030	Pass	
			1RB#max	0.741	0.999	Pass	
			Partial RBs /RB #18	6.598	7.690	Pass	
			Full RBs	13.424	14.335	Pass	
20 MHz	L	1RB#0	0.927	1.259	Pass		
		1RB#max	0.930	1.249	Pass		
		Partial RBs /RB #25	9.129	10.287	Pass		
		Full RBs	17.902	19.072	Pass		
	M	1RB#0	0.928	1.247	Pass		
		1RB#max	0.932	1.256	Pass		
		Partial RBs /RB #25	9.125	10.253	Pass		
		Full RBs	17.910	19.051	Pass		



Test Mode	Carrier Conf.	RF Ch.	RB	Occupied Bandwidth [MHz]	-26dB BW [MHz]	Verdict
		H	1RB#0	0.928	1.251	Pass
			1RB#max	0.934	1.255	Pass
			Partial RBs /RB #25	9.129	10.294	Pass
			Full RBs	17.898	19.055	Pass



1 For Band 7

1.1 Test Mode=TM1

1.1.1 Channel Bandwidth = Lowest (5 MHz)

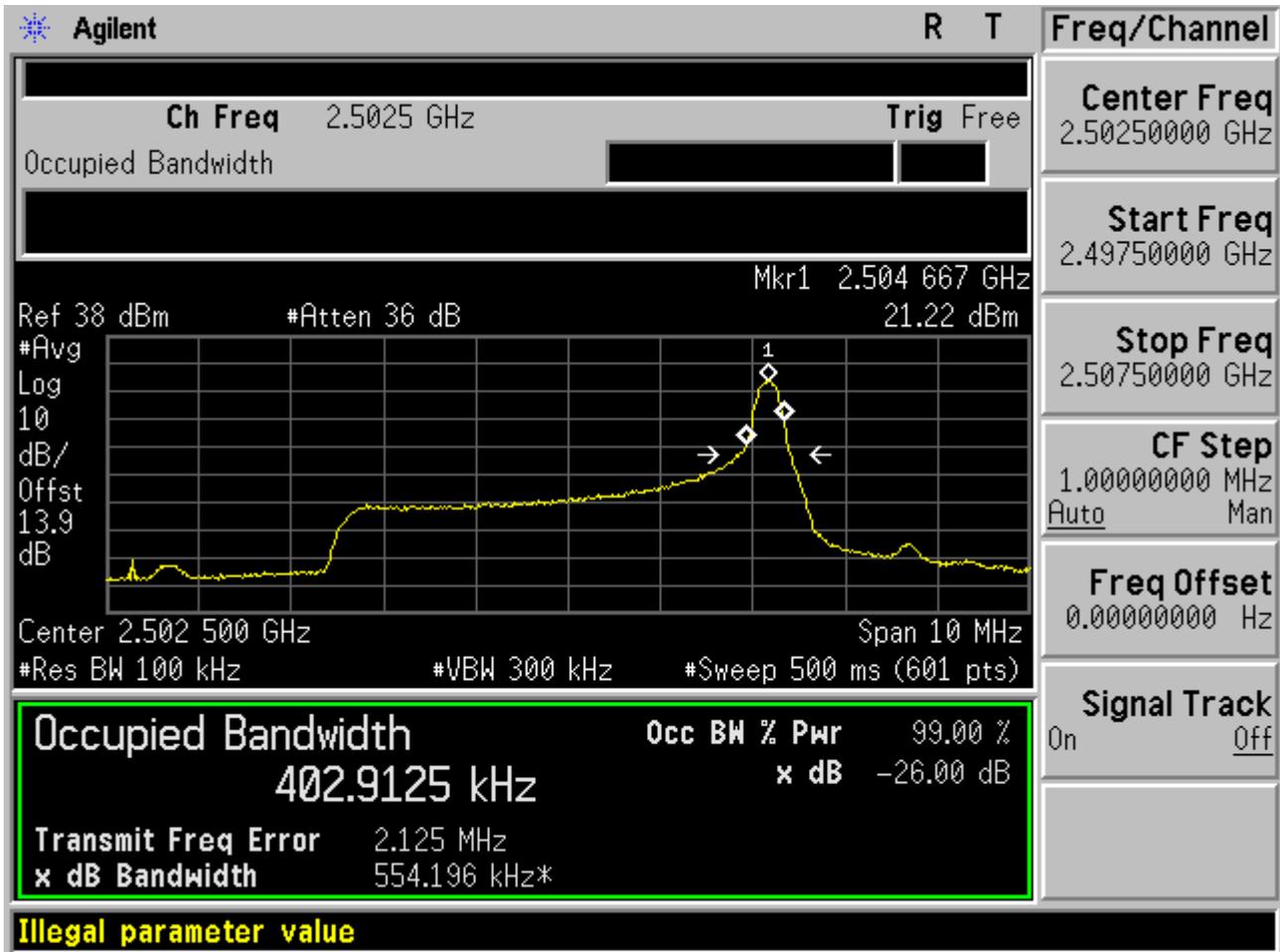
1.1.1.1 Channel = B

1.1.1.1.1 QPSK/1RB#0



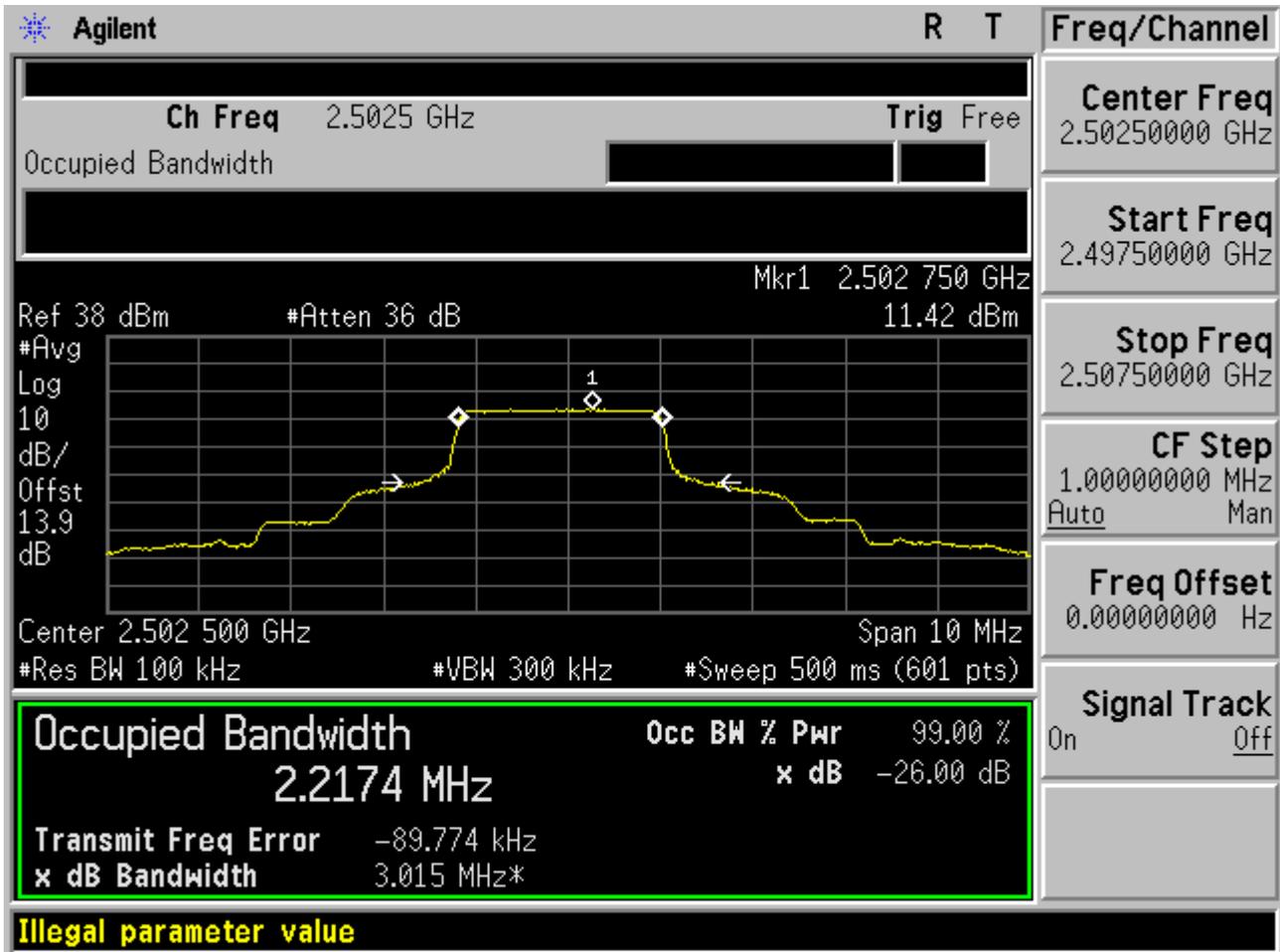


1.1.1.1.2 QPSK/1RB#max



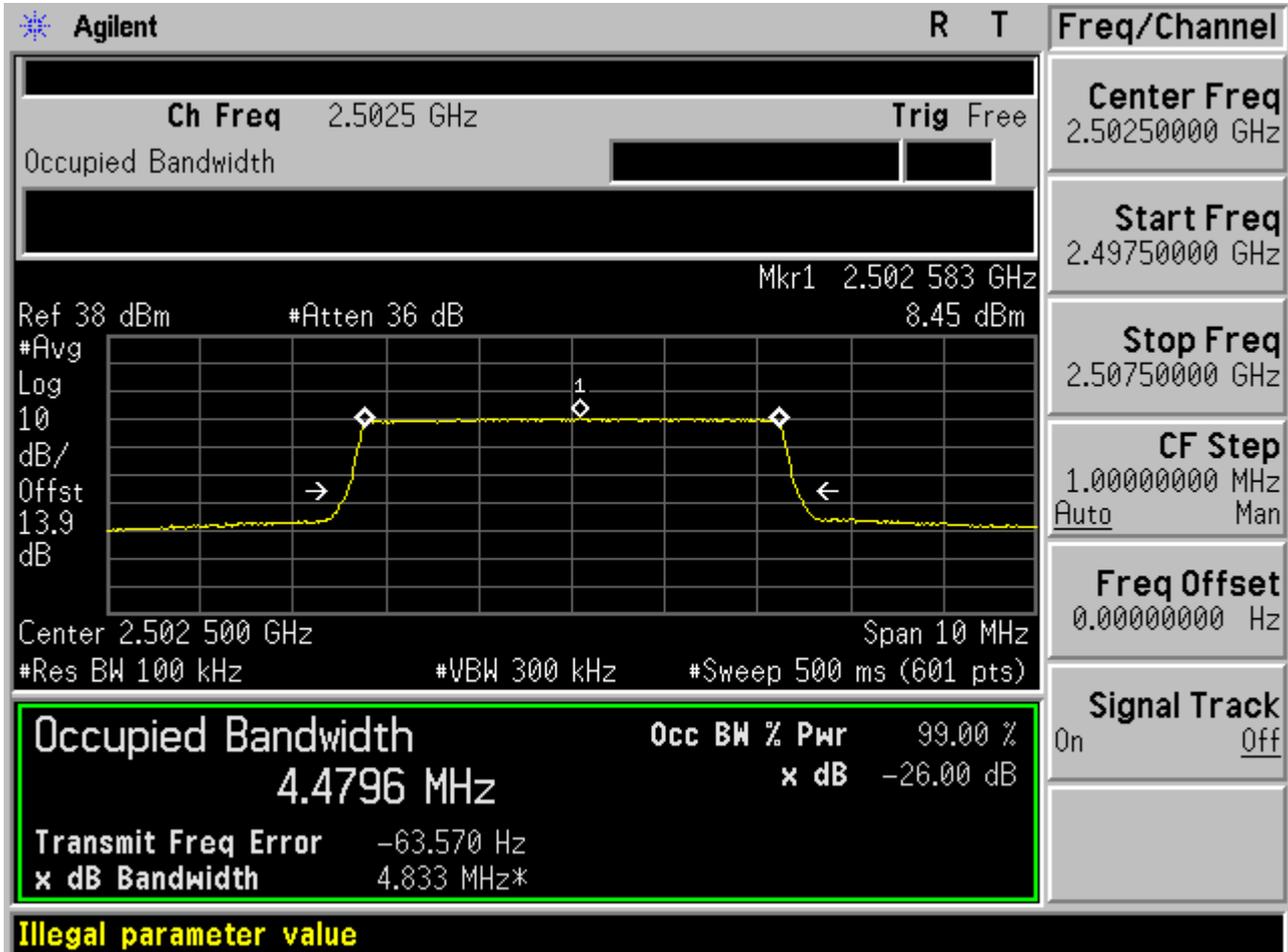


1.1.1.1.3 QPSK/ Partial RBs /RB #6





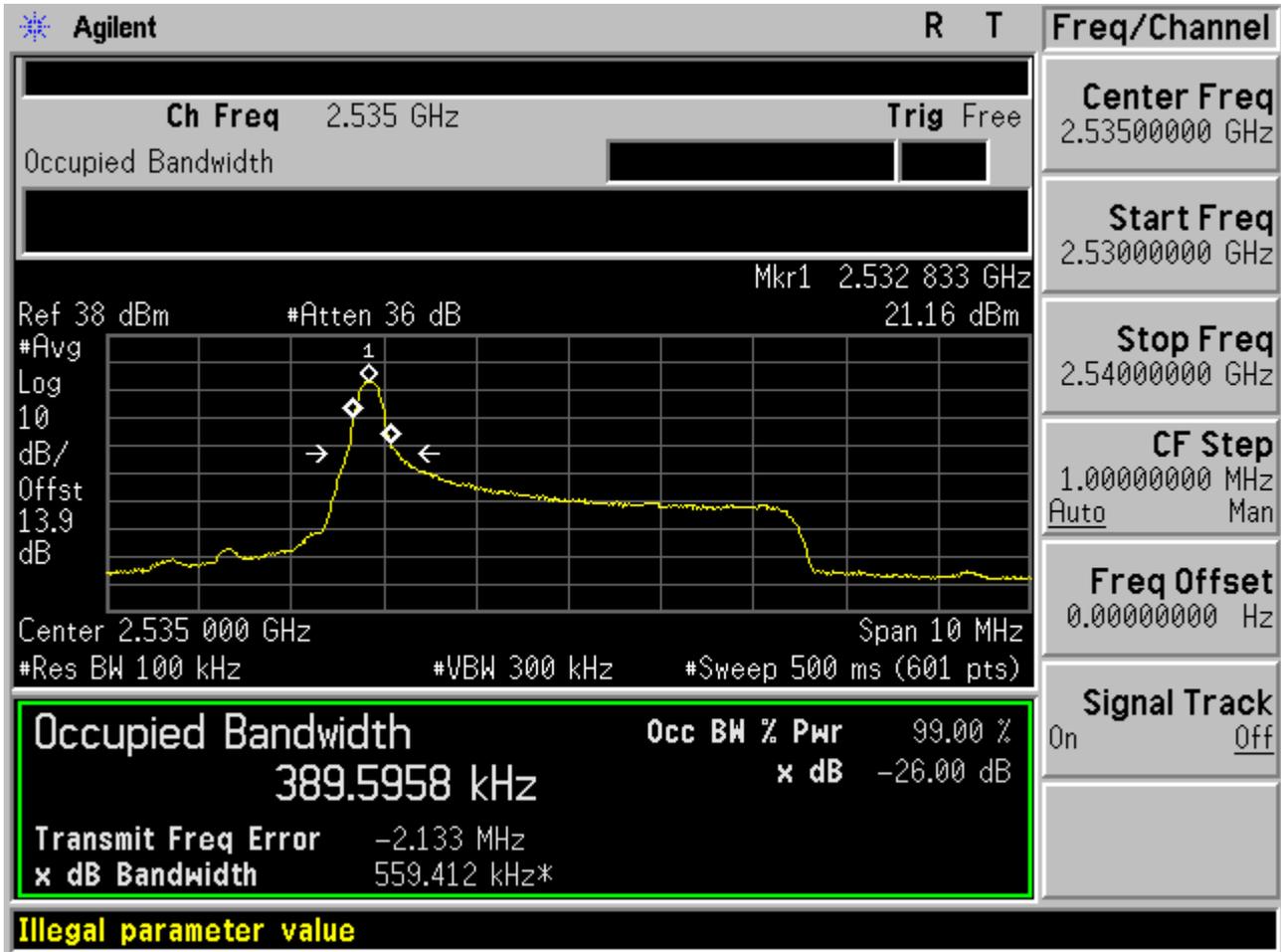
1.1.1.1.4 QPSK/full RBs





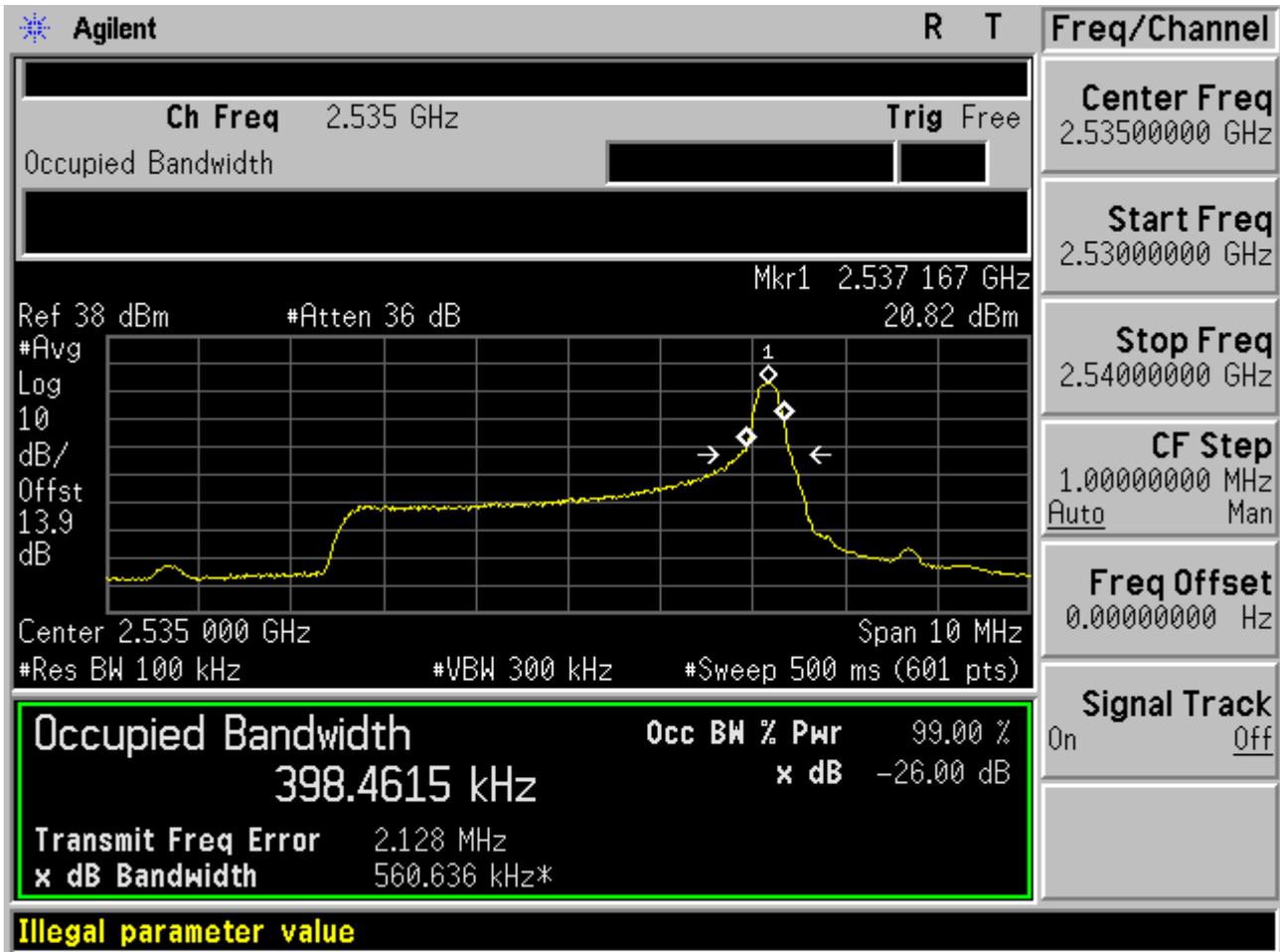
1.1.1.2 Channel =M

1.1.1.2.1 QPSK/1RB#0



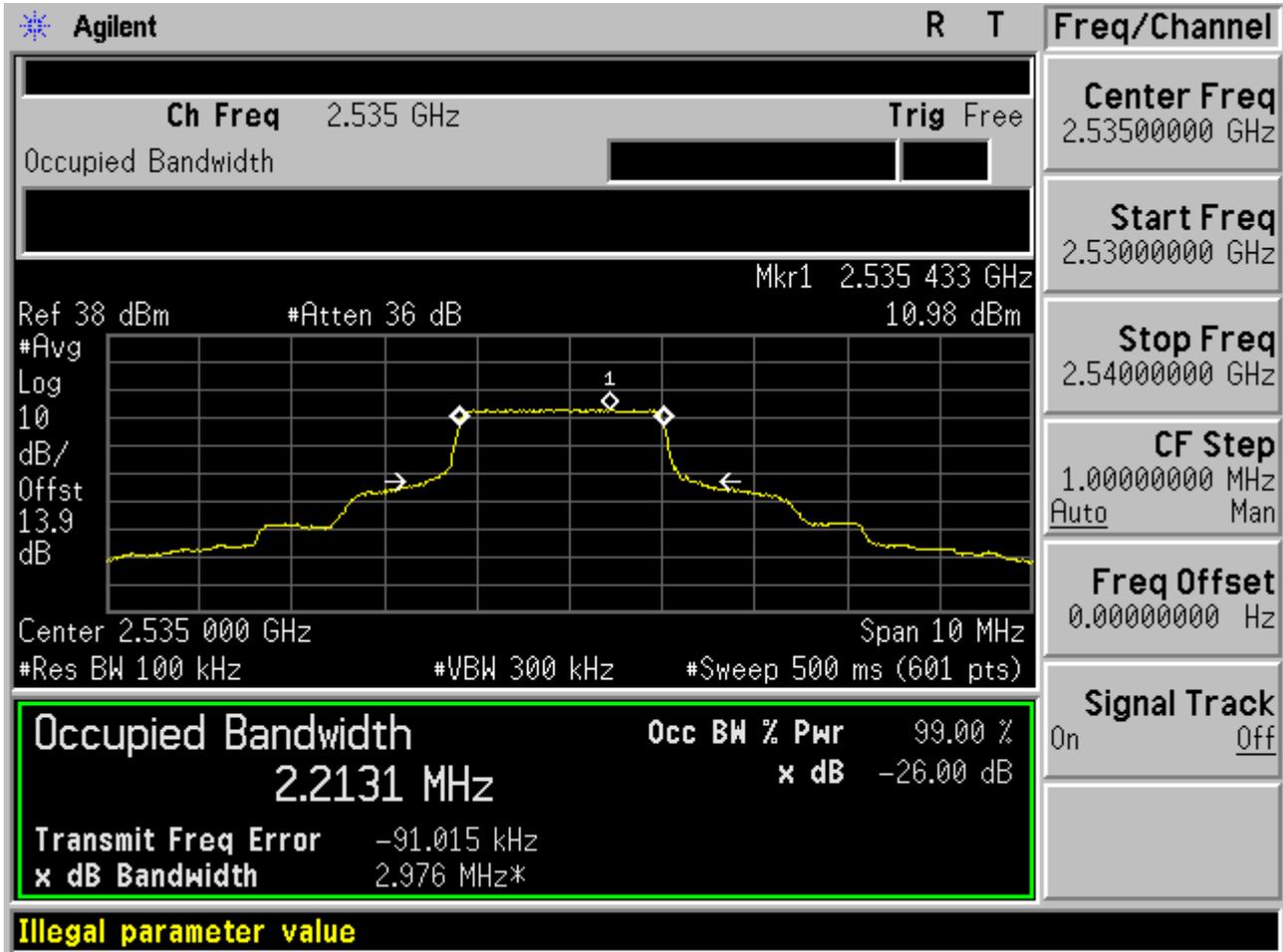


1.1.1.2.2 QPSK/1RB#max



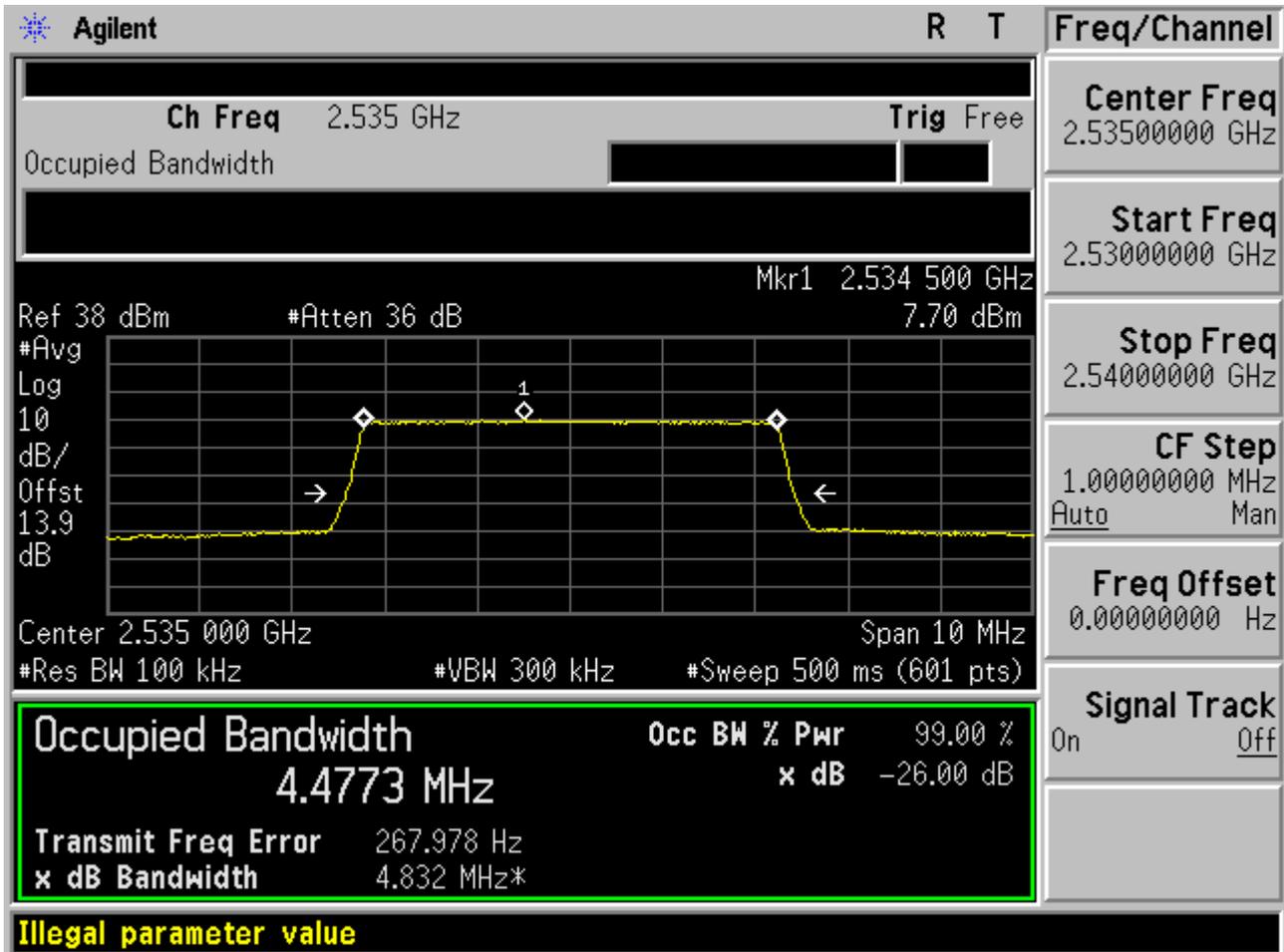


1.1.1.2.3 QPSK/ Partial RBs /RB #6





1.1.1.2.4 QPSK/full RBs





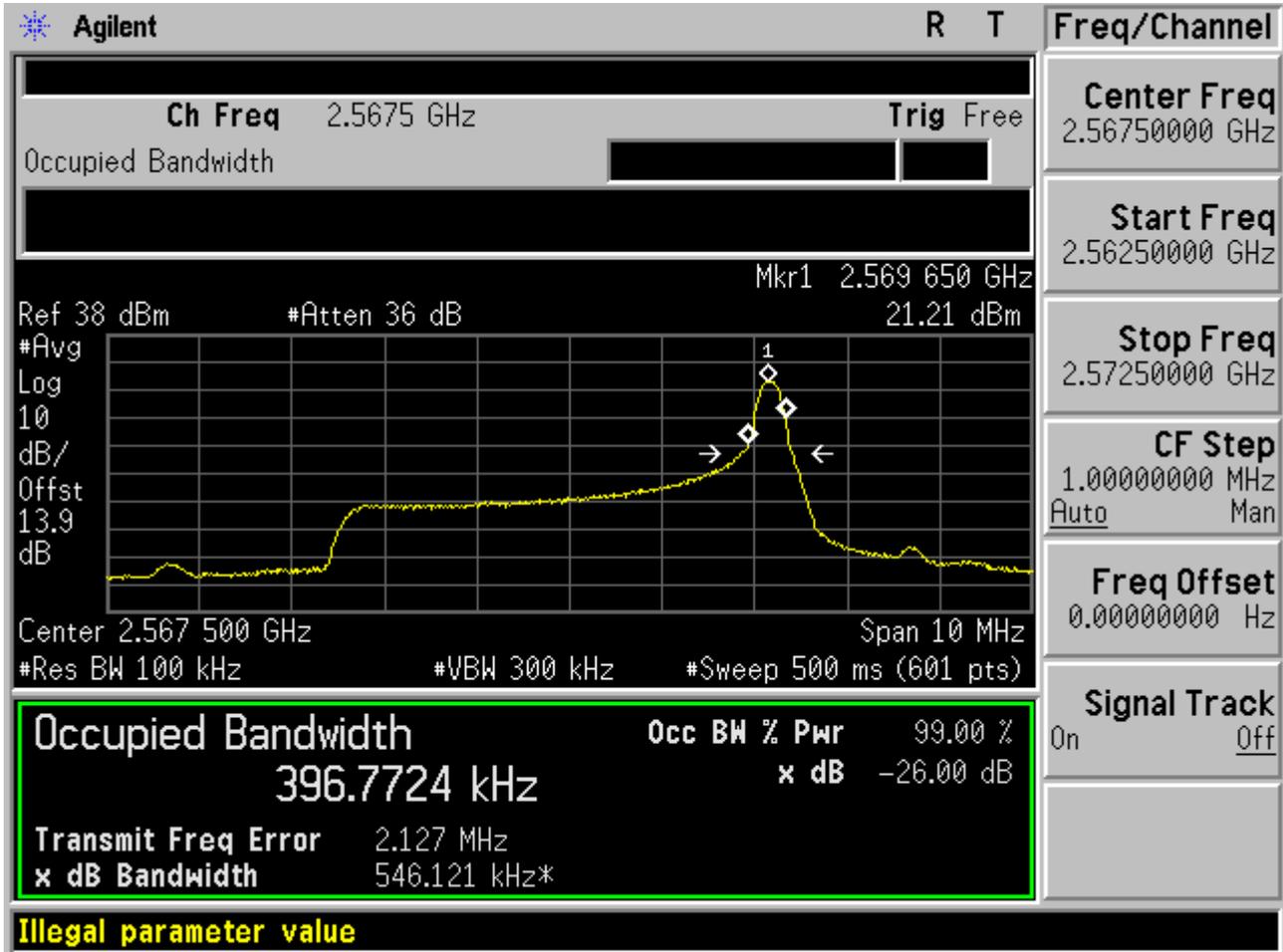
1.1.1.3 Channel =T

1.1.1.3.1 QPSK/1RB#0



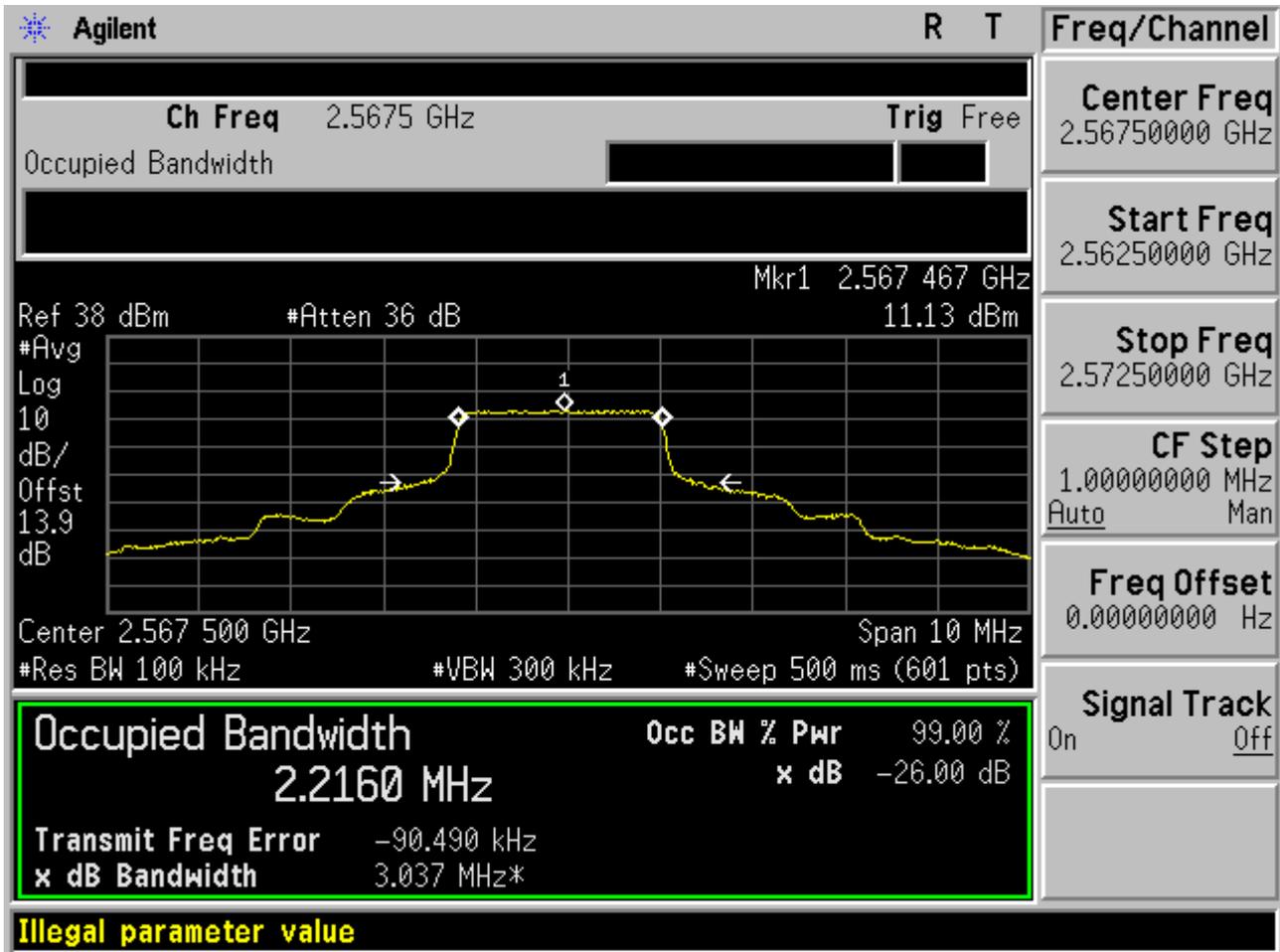


1.1.1.3.2 QPSK/1RB#max



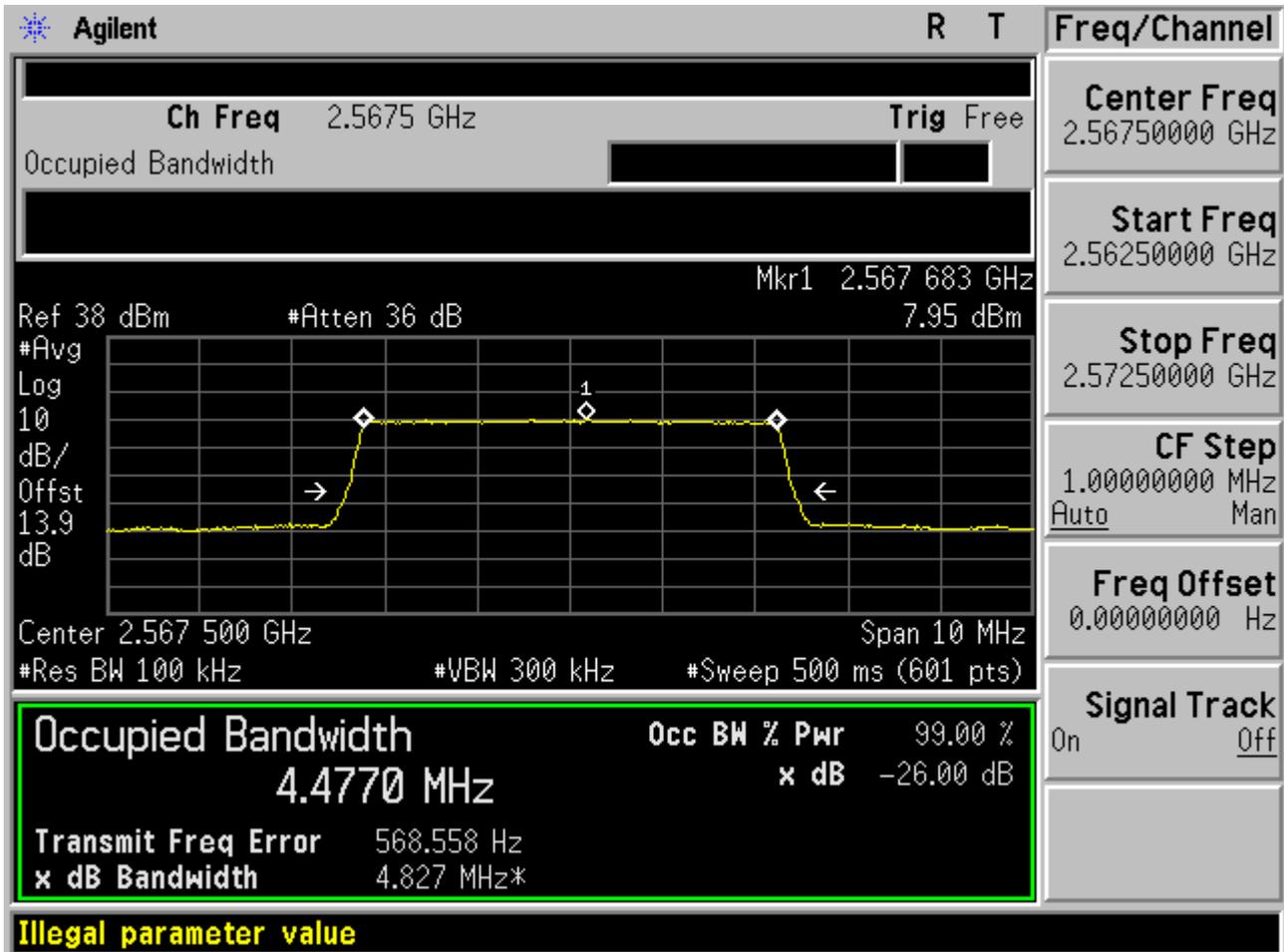


1.1.1.3.3 QPSK/ Partial RBs /RB #6





1.1.1.3.4 QPSK/full RBs

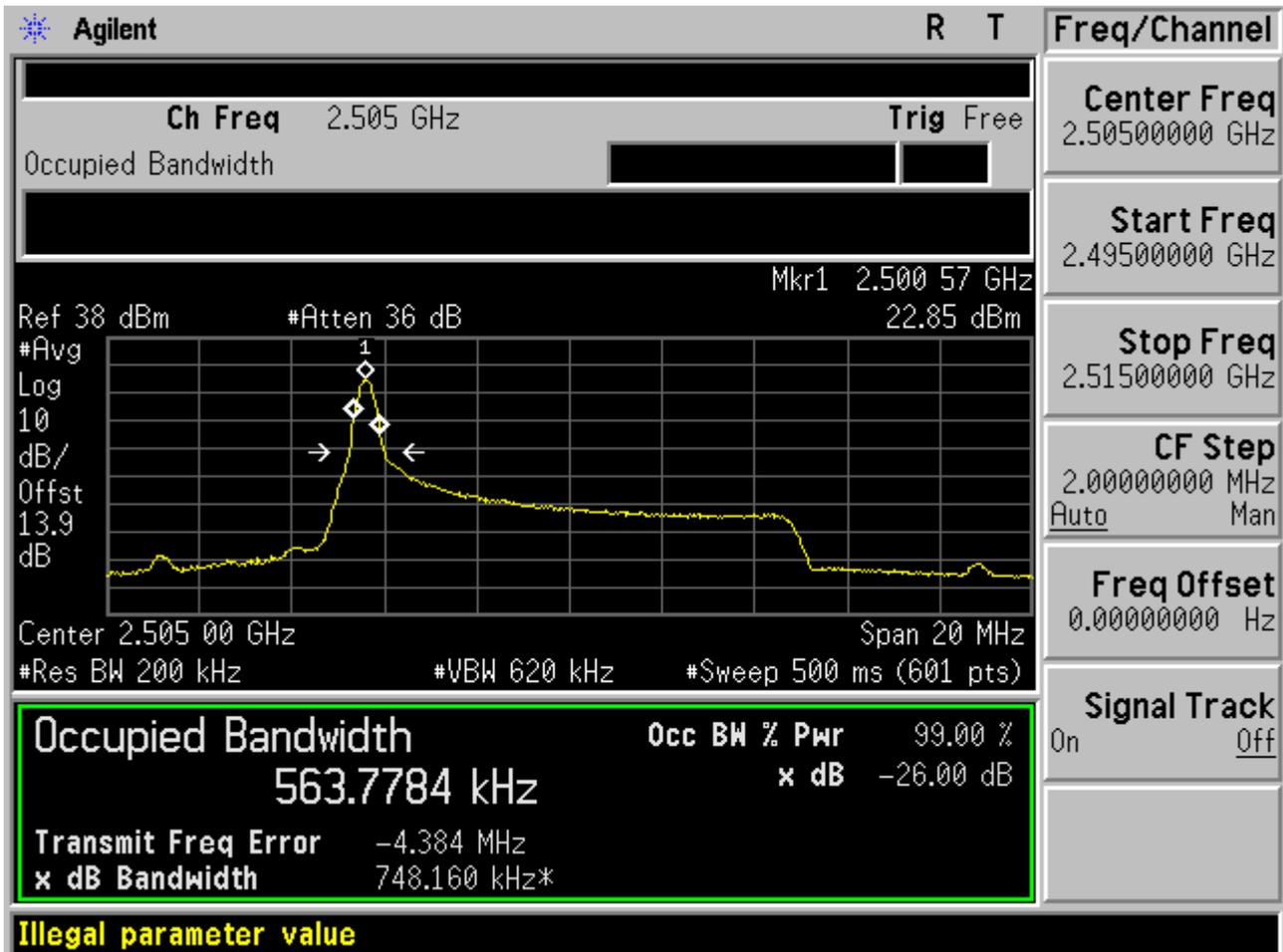




1.1.2 Channel Bandwidth = 10 MHz

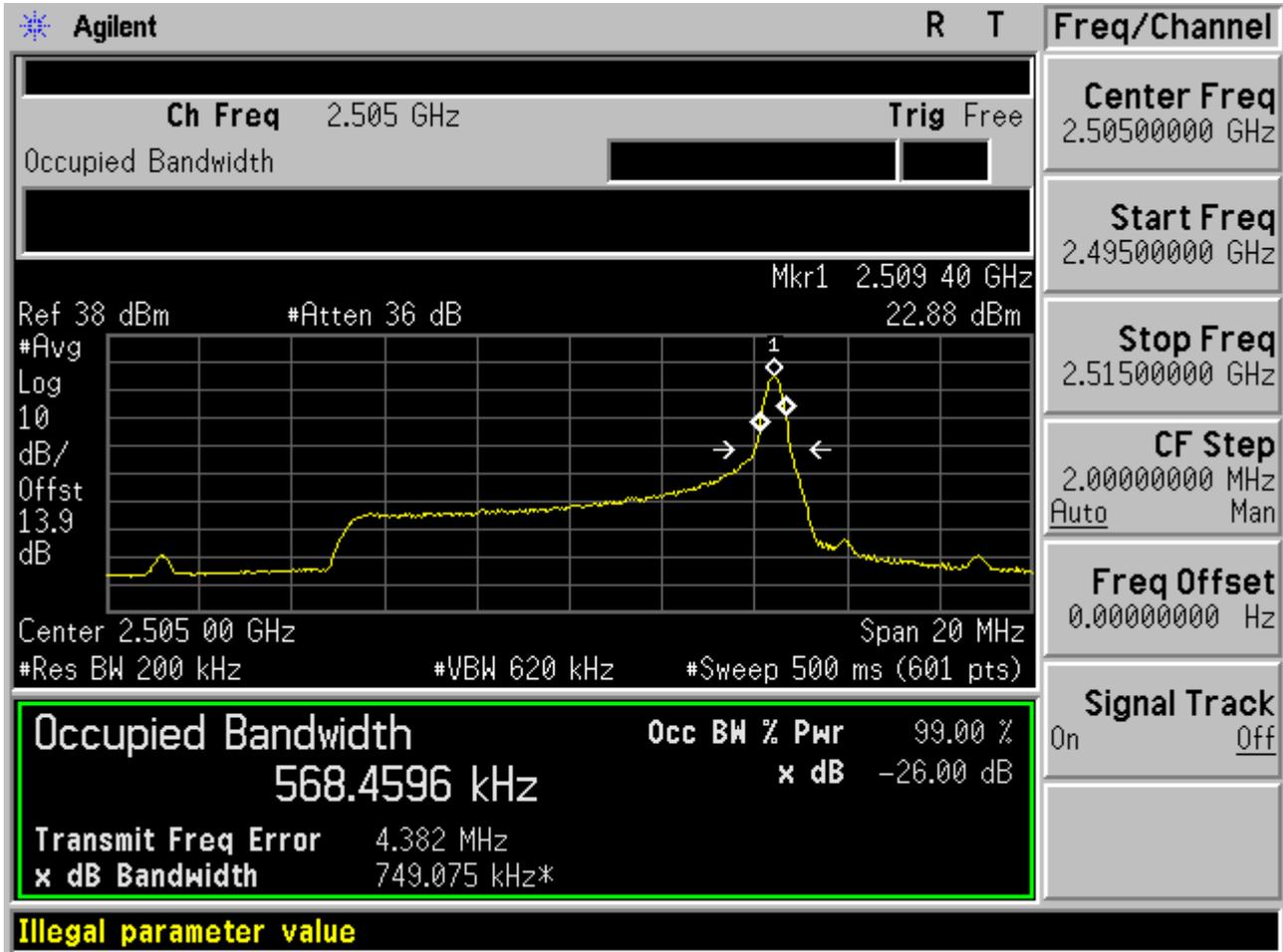
1.1.2.1 Channel = B

1.1.2.1.1 QPSK/1RB#0



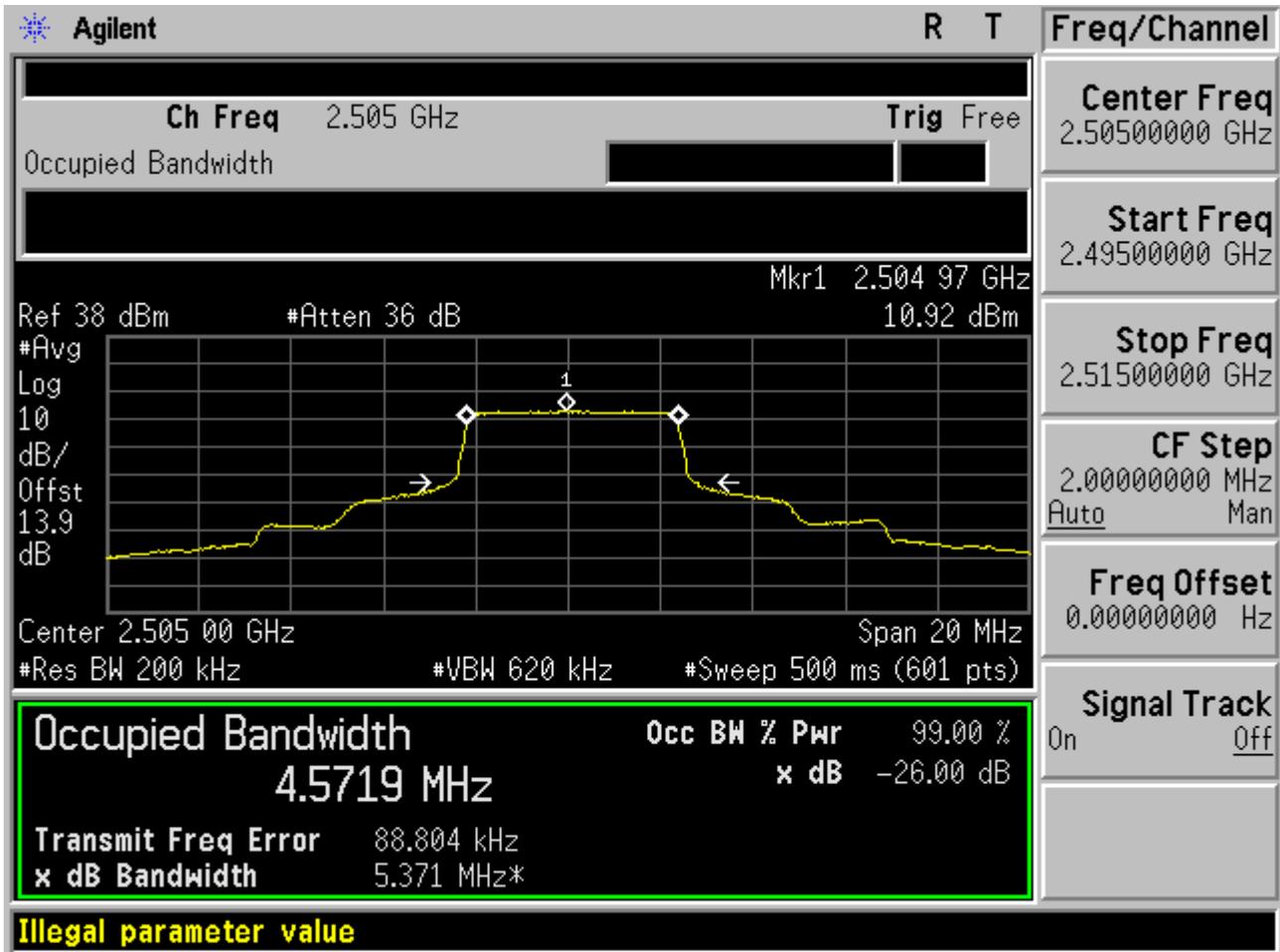


1.1.2.1.2 QPSK/1RB#max



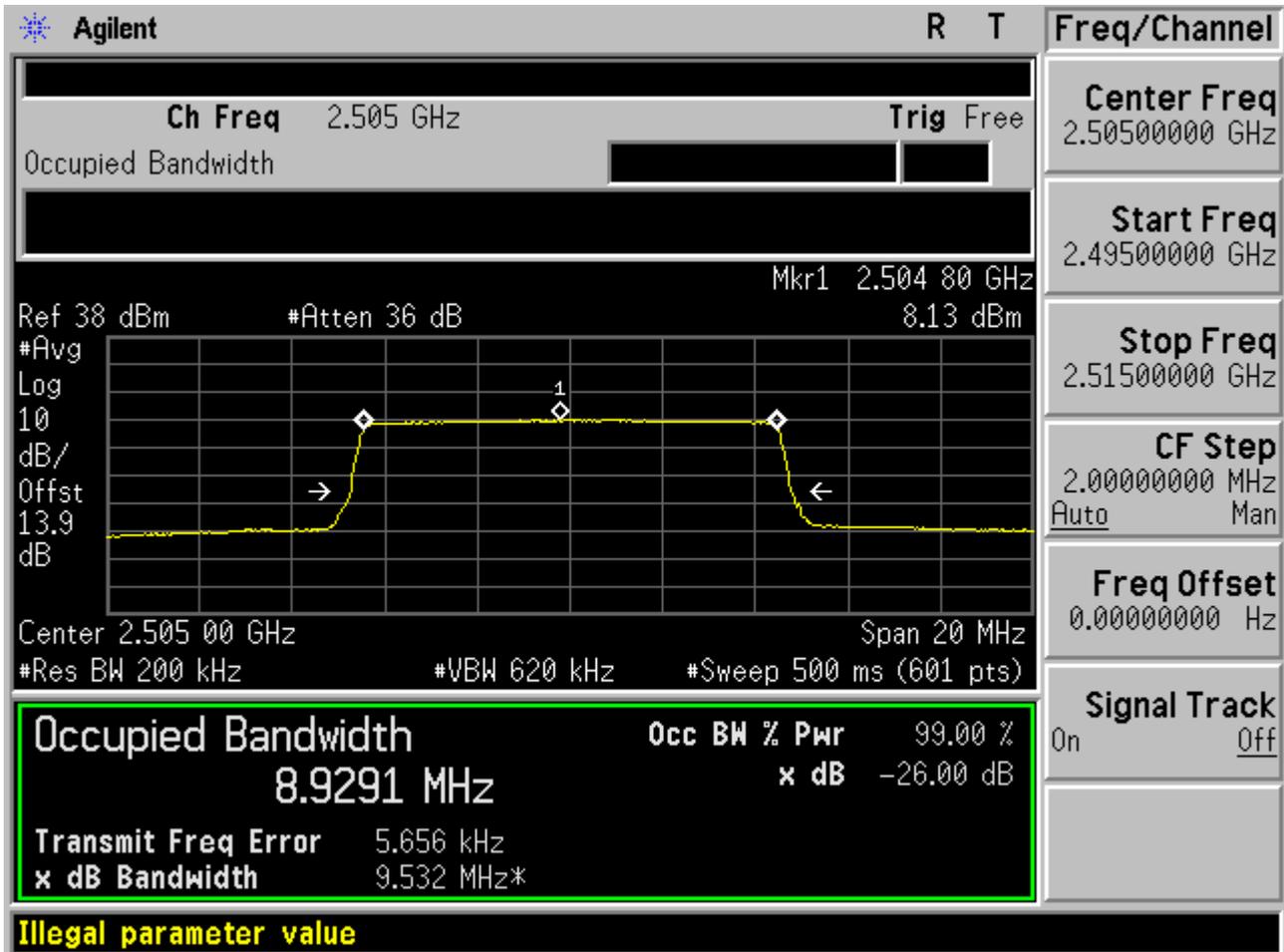


1.1.2.1.3 QPSK/ Partial RBs /RB #13





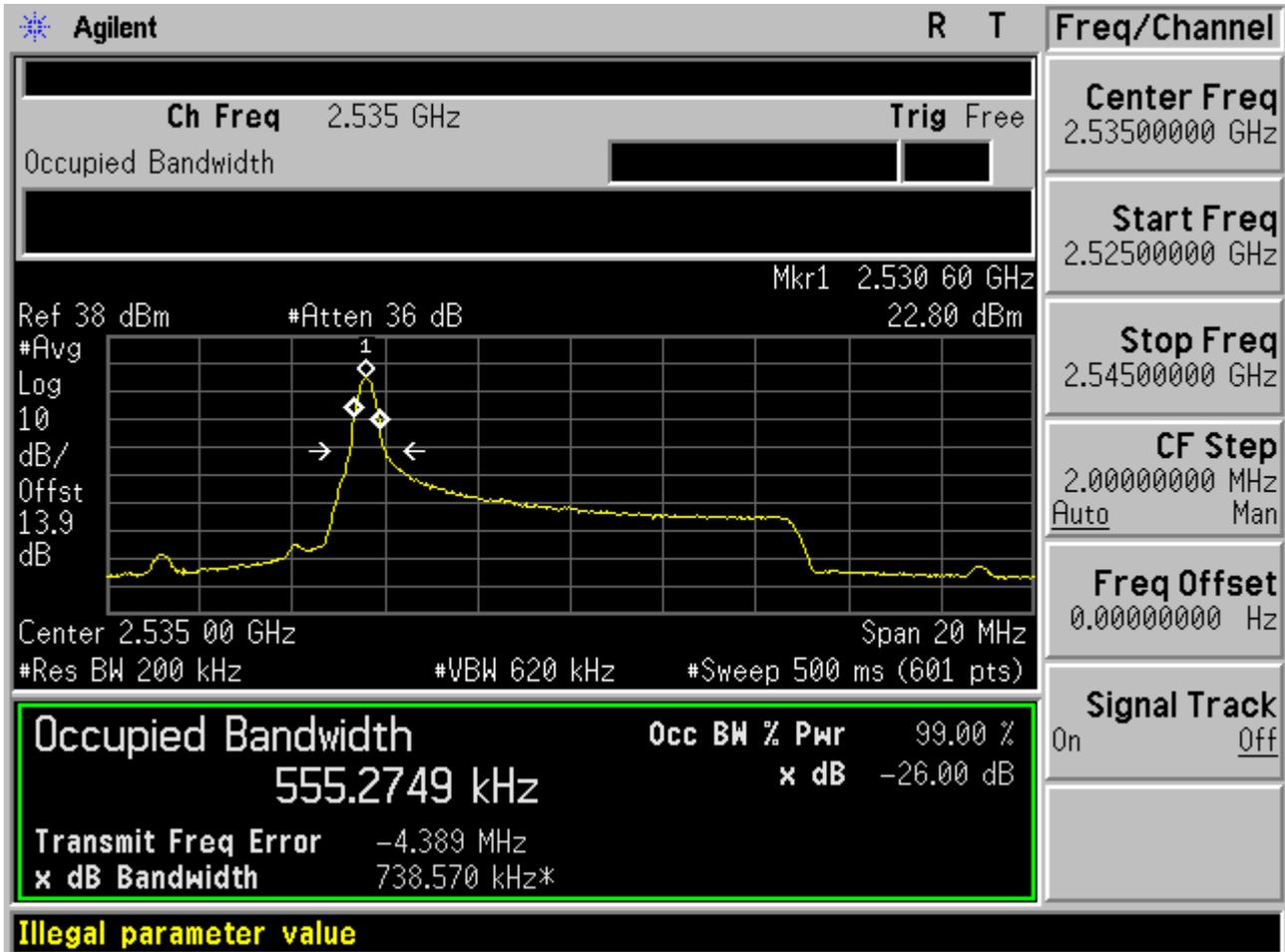
1.1.2.1.4 QPSK/full RBs





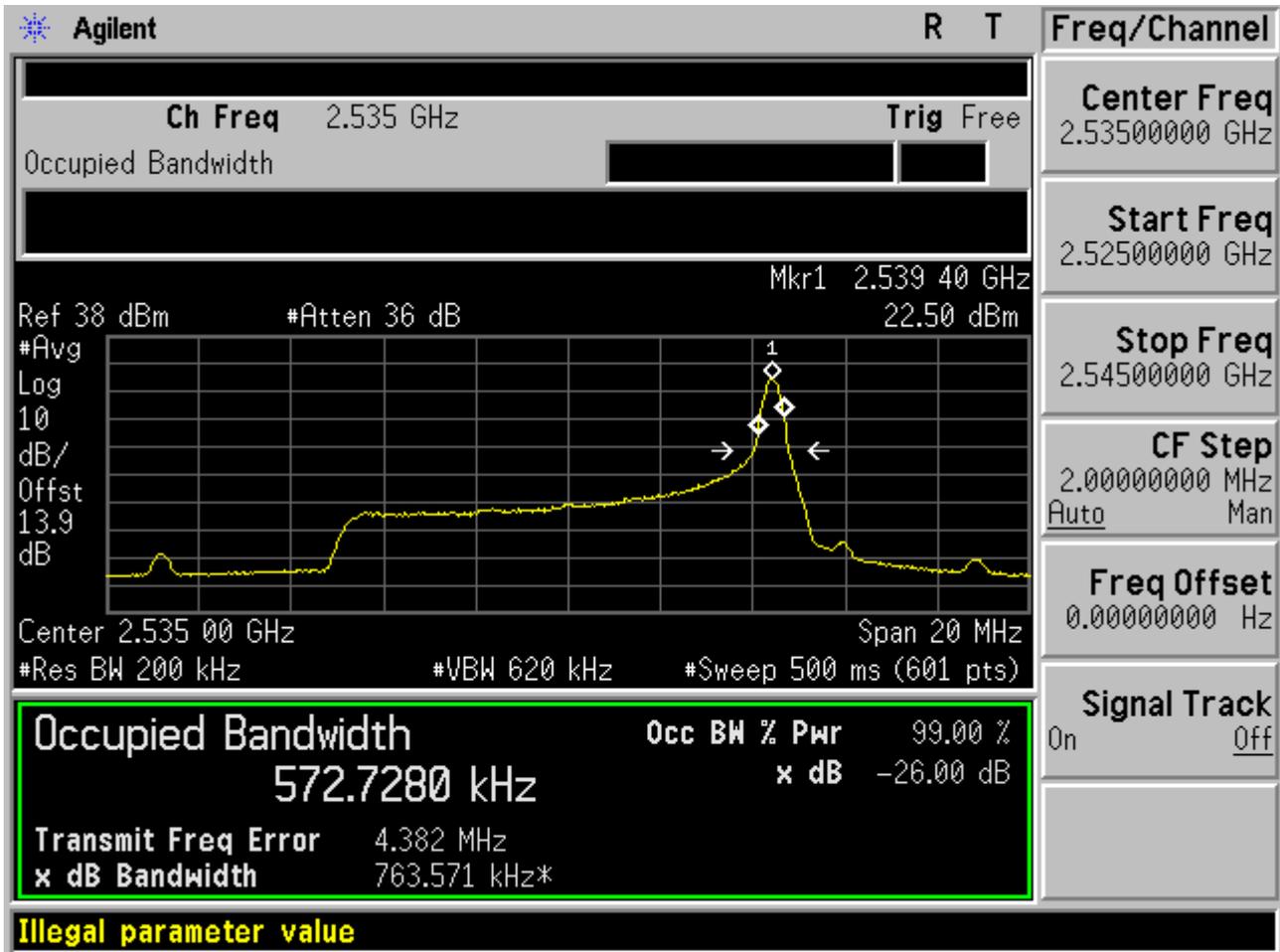
1.1.2.2 Channel =M

1.1.2.2.1 QPSK/1RB#0



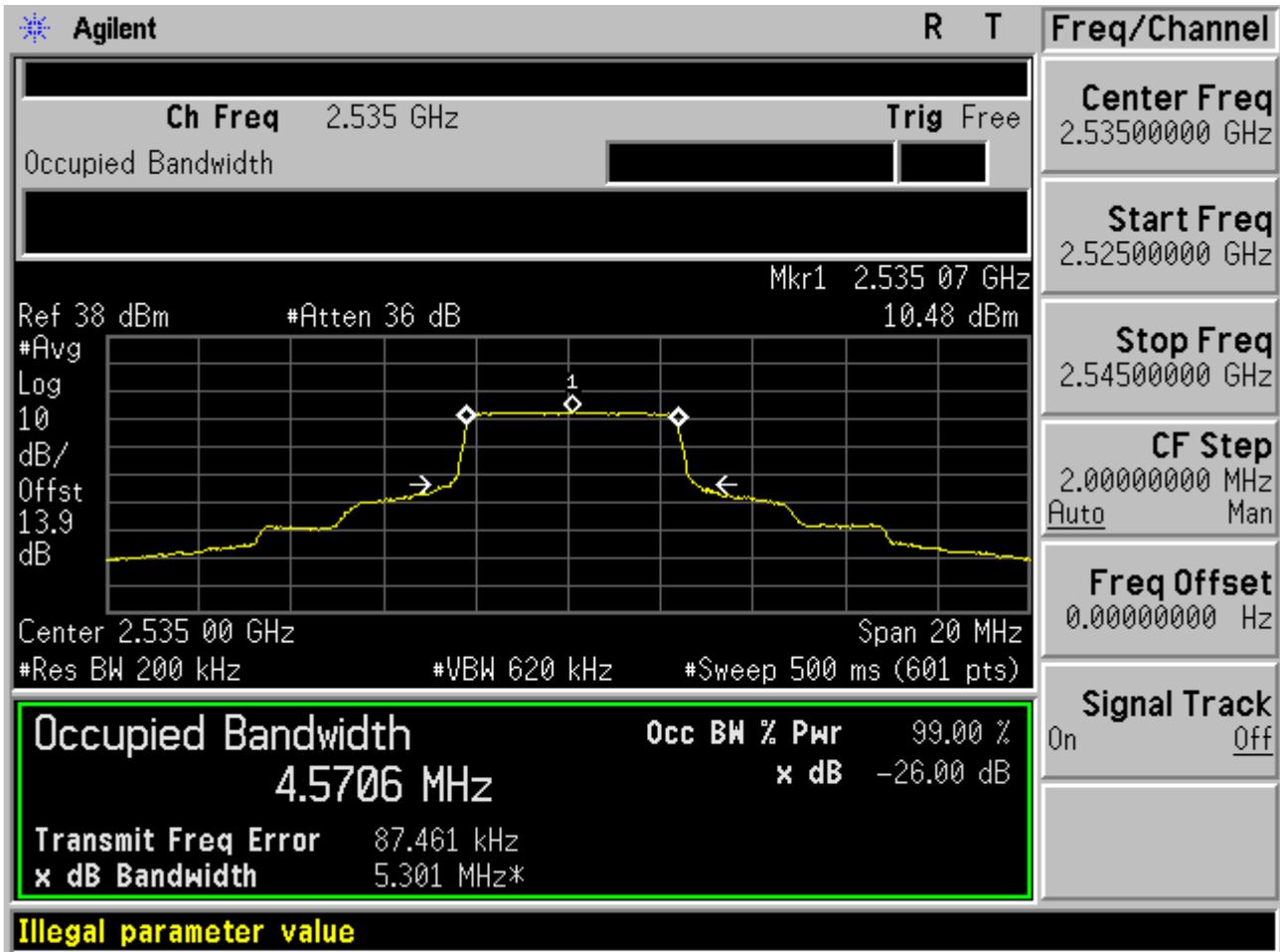


1.1.2.2.2 QPSK/1RB#max



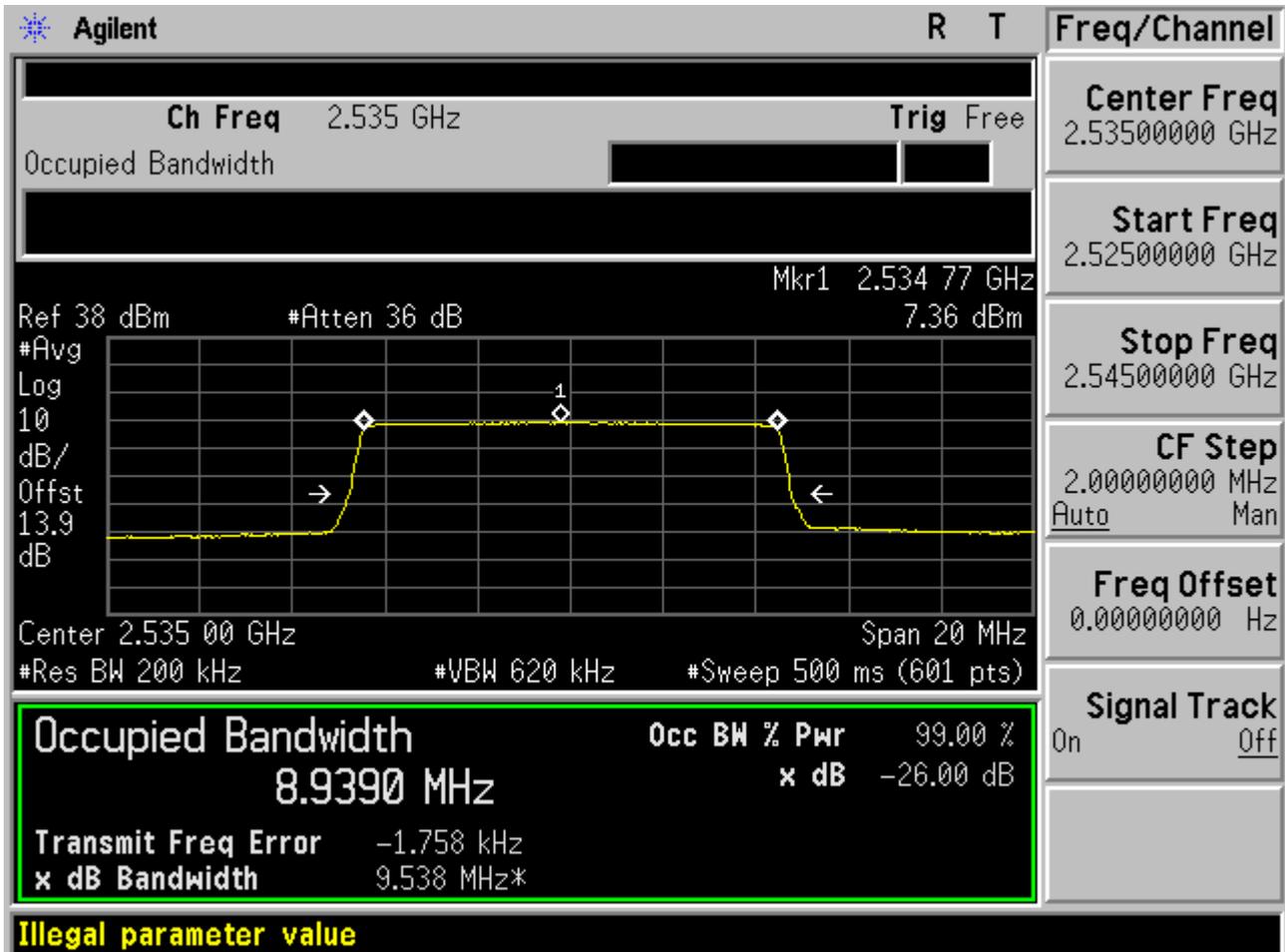


1.1.2.2.3 QPSK/ Partial RBs /RB #13





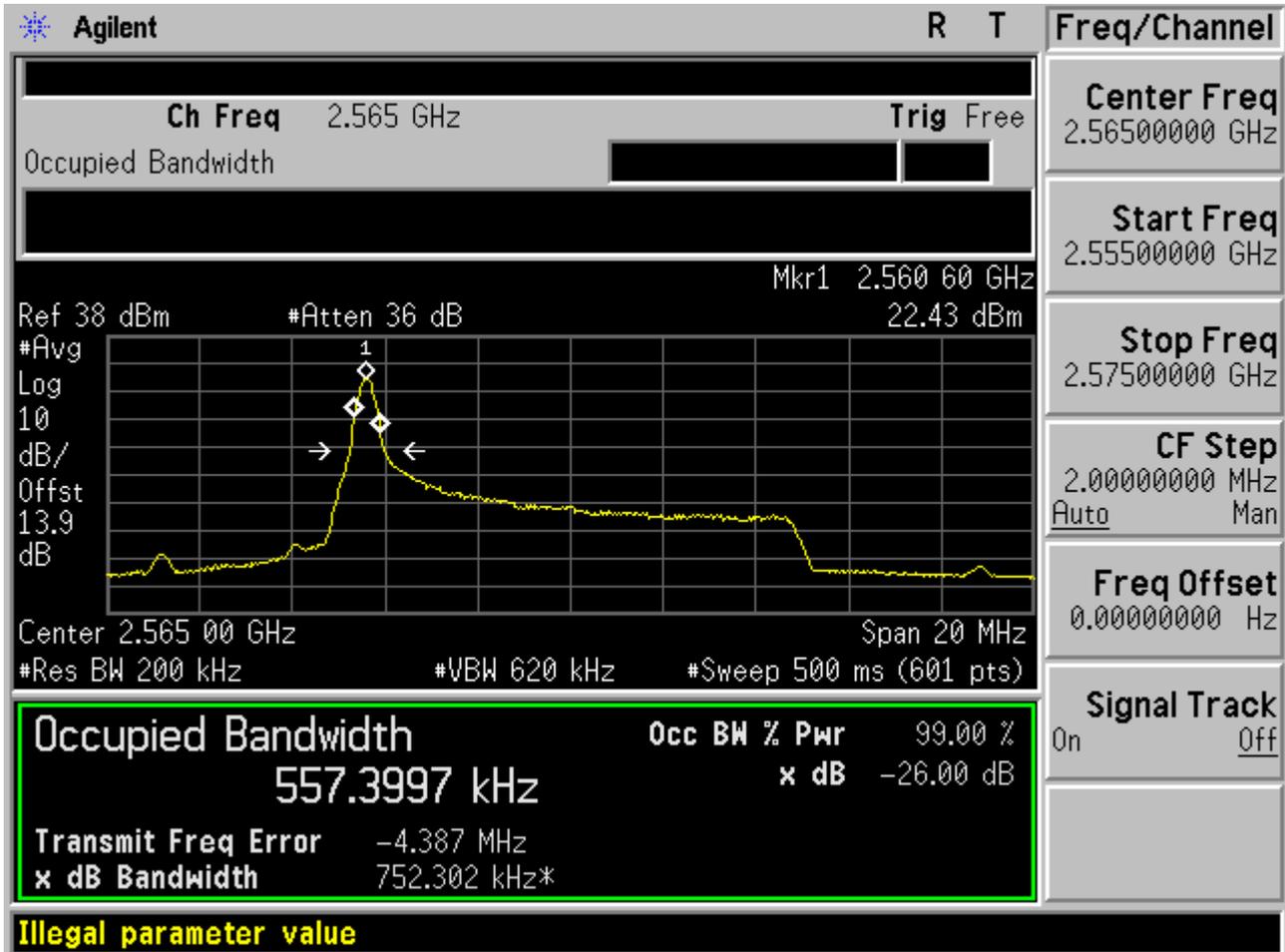
1.1.2.2.4 QPSK/full RBs





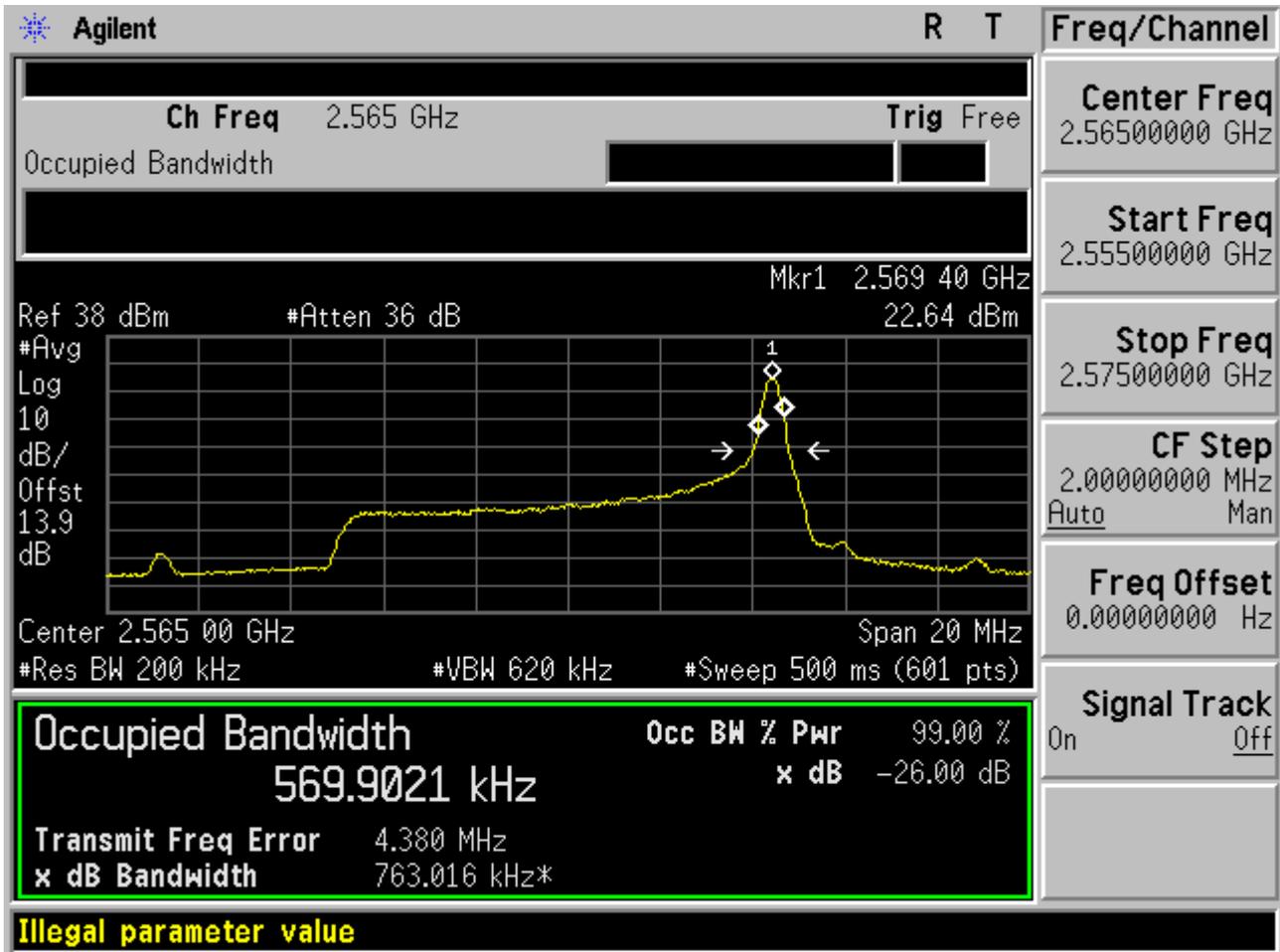
1.1.2.3 Channel =T

1.1.2.3.1 QPSK/1RB#0



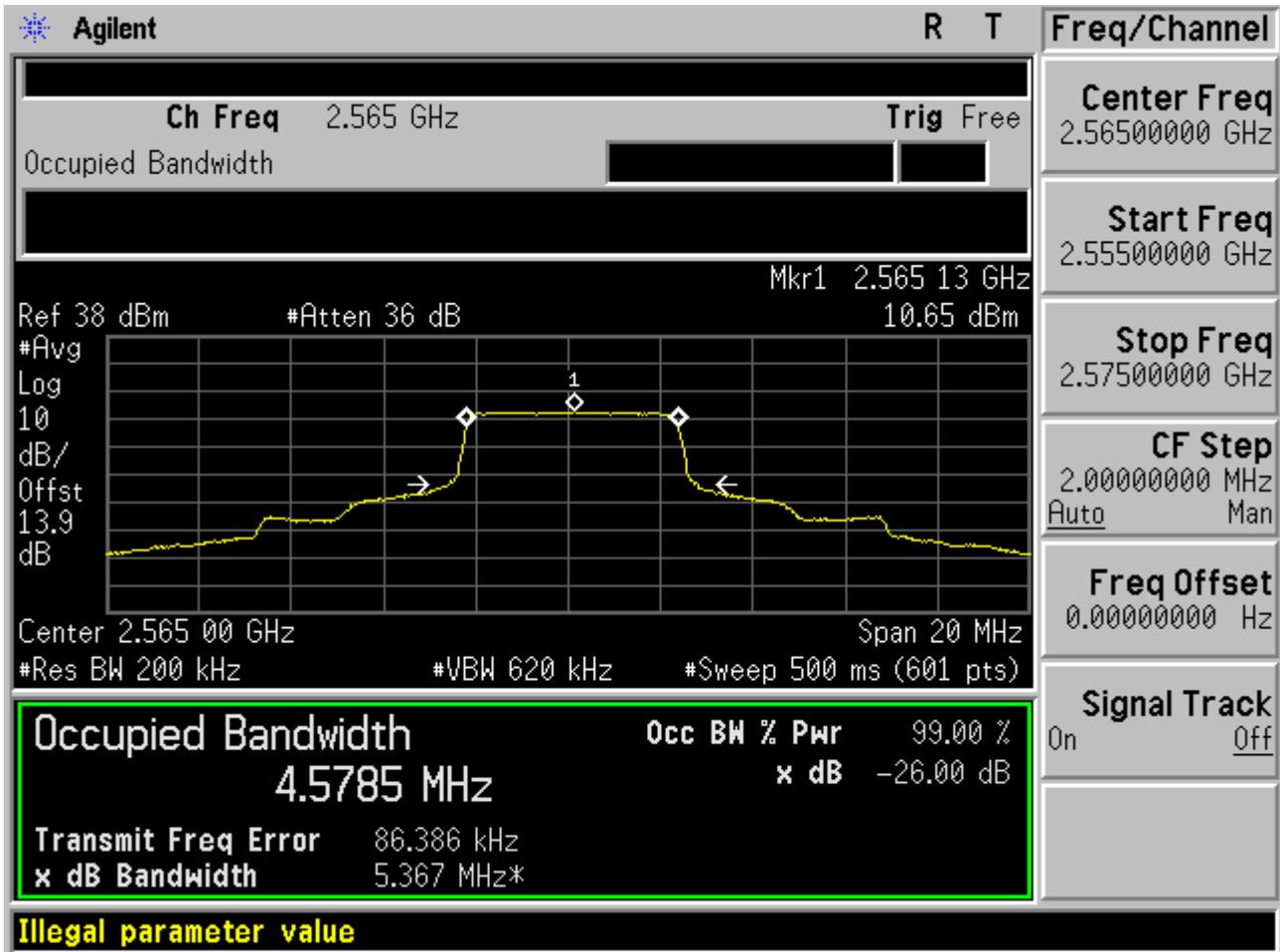


1.1.2.3.2 QPSK/1RB#max



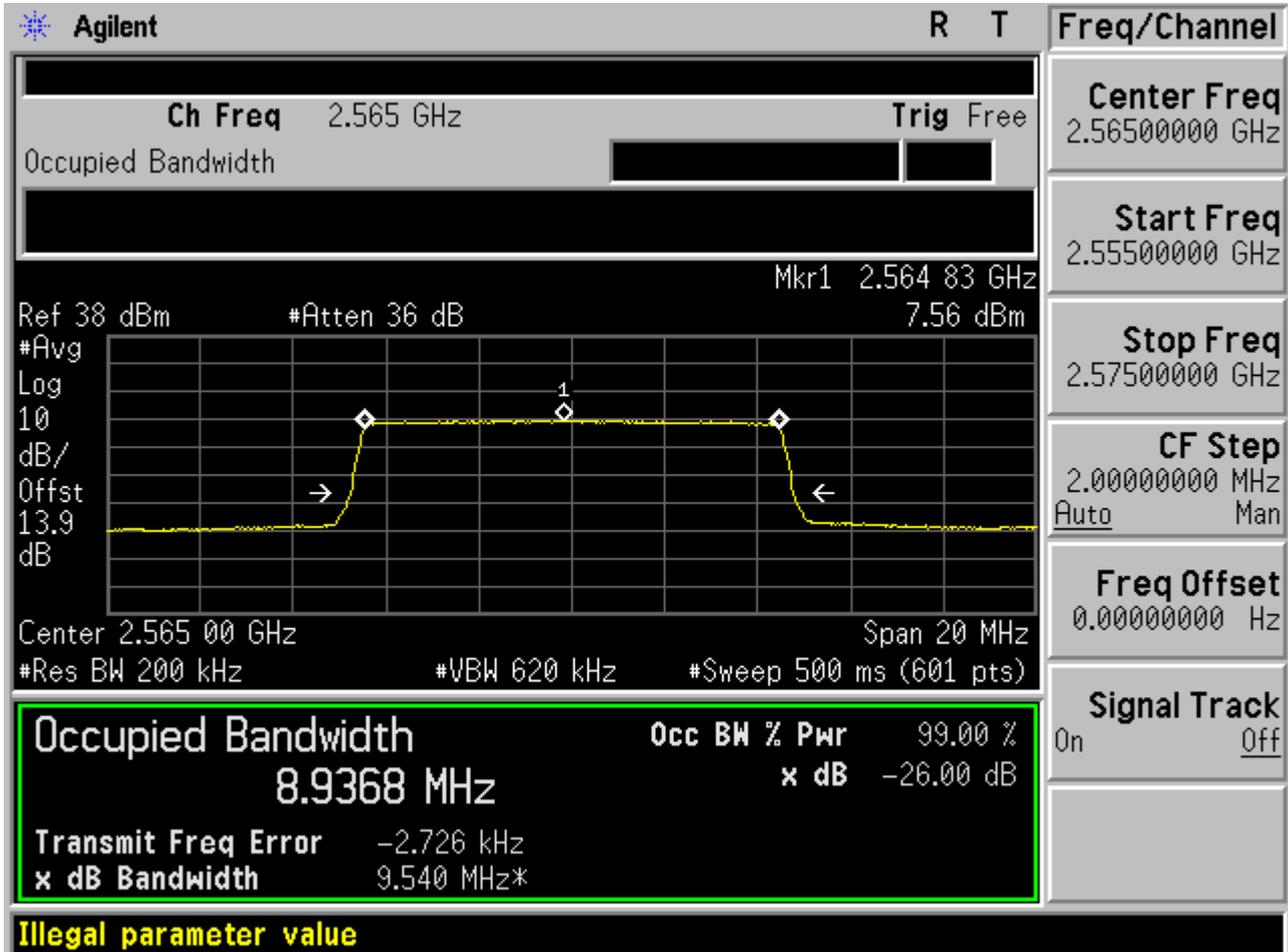


1.1.2.3.3 QPSK/ Partial RBs /RB #13





1.1.2.3.4 QPSK/full RBs

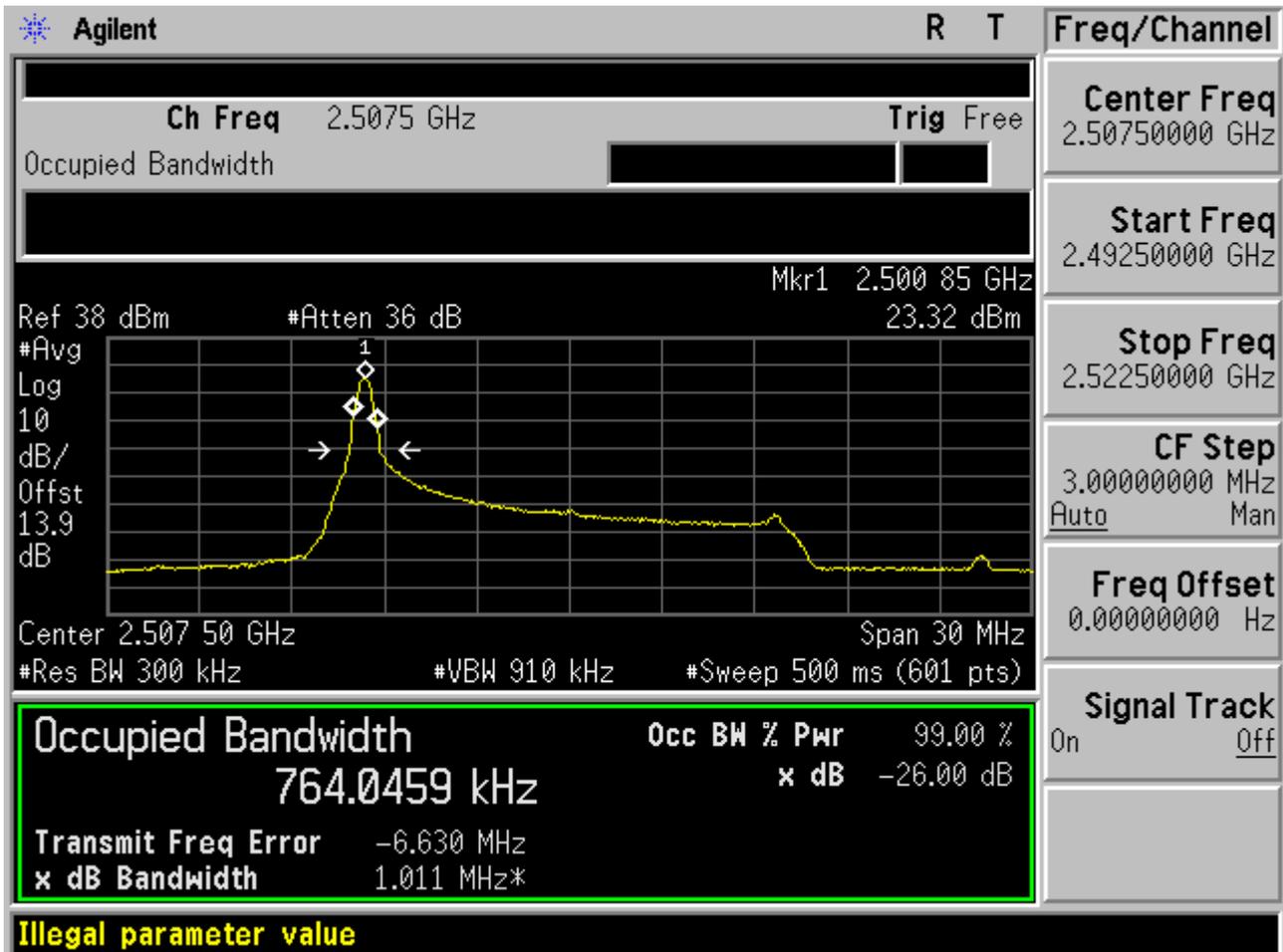




1.1.3 Channel Bandwidth = 15 MHz

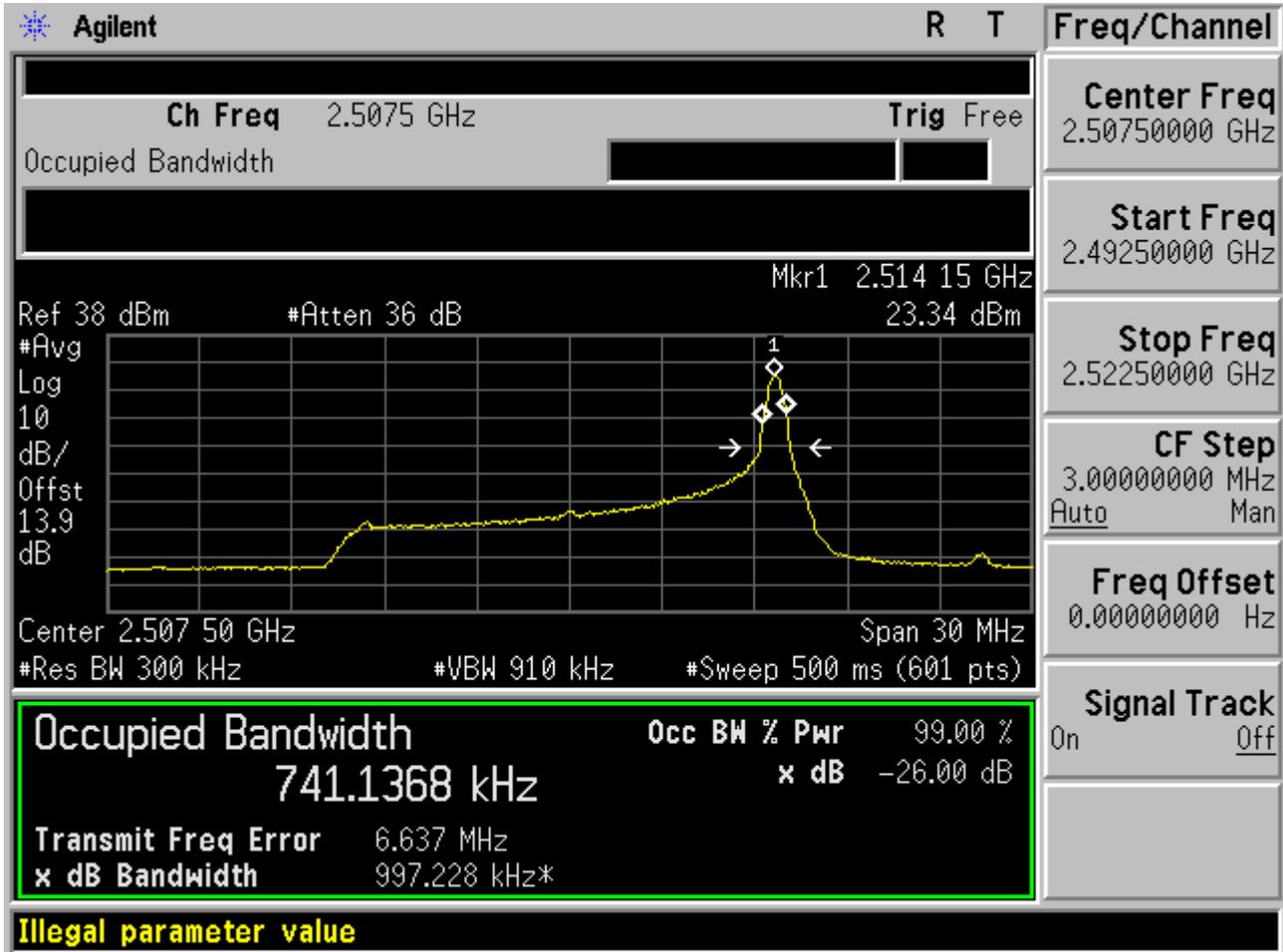
1.1.3.1 Channel = B

1.1.3.1.1 QPSK/1RB#0



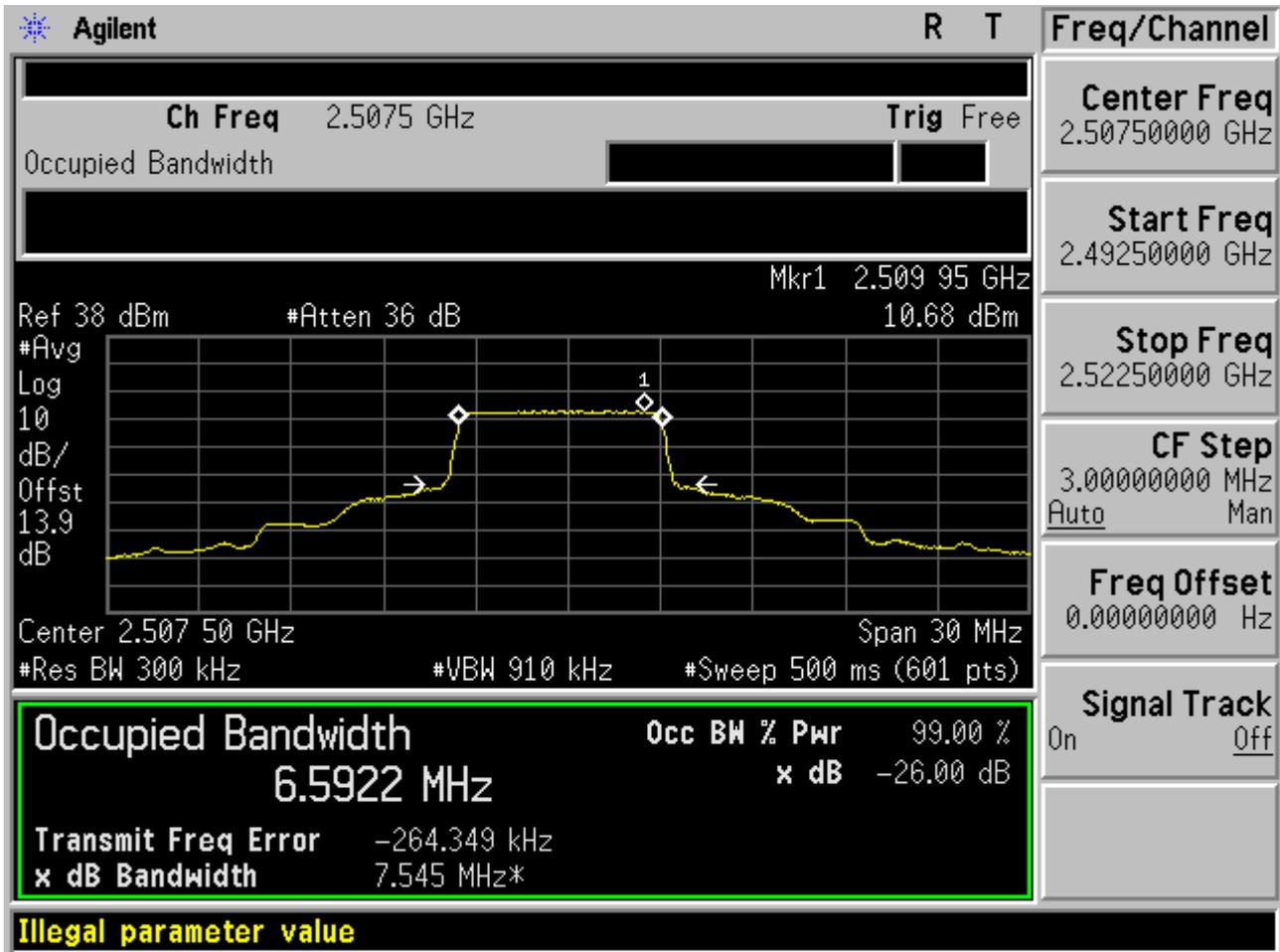


1.1.3.1.2 QPSK/1RB#max



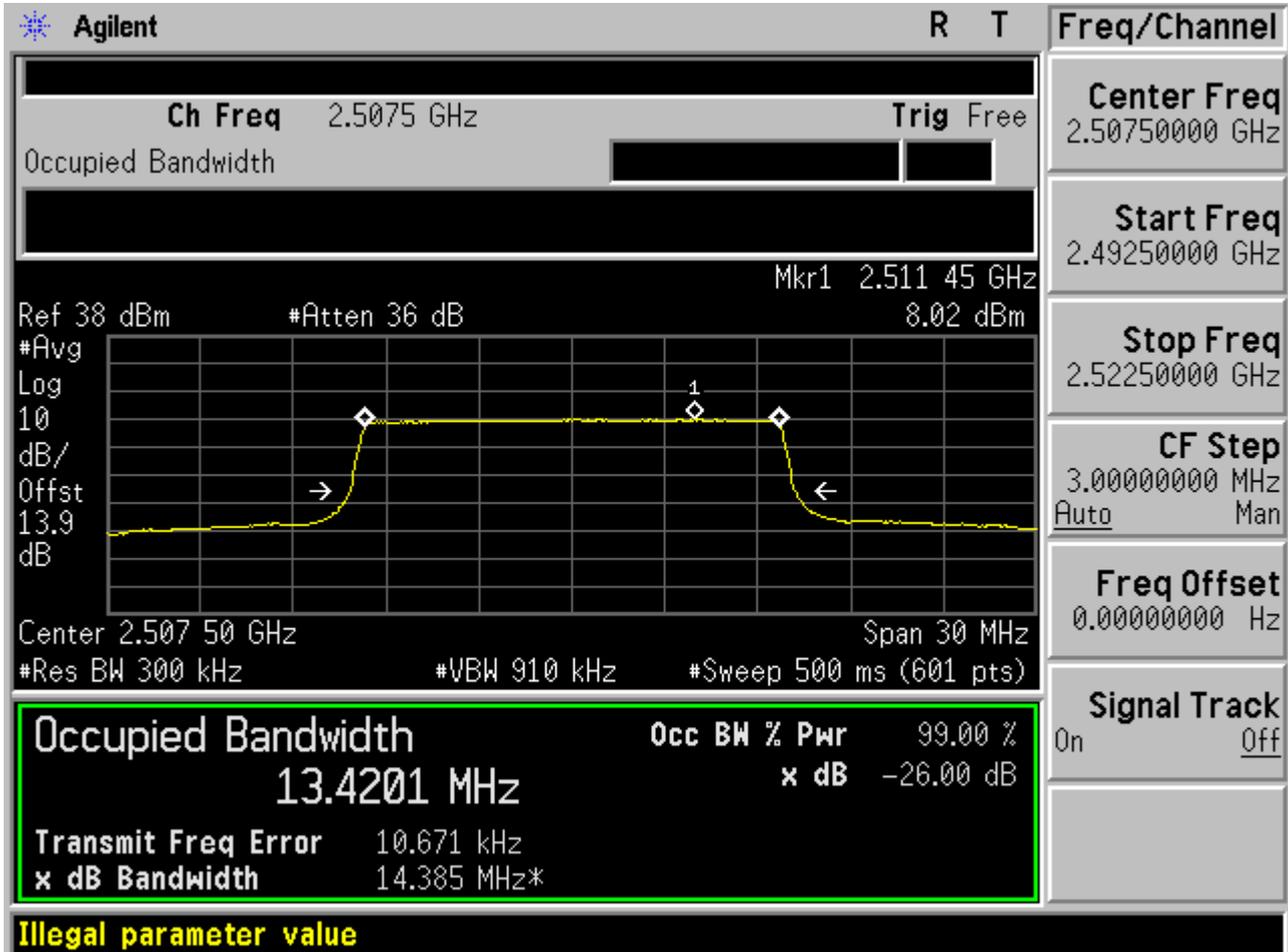


1.1.3.1.3 QPSK/ Partial RBs /RB #18





1.1.3.1.4 QPSK/full RBs





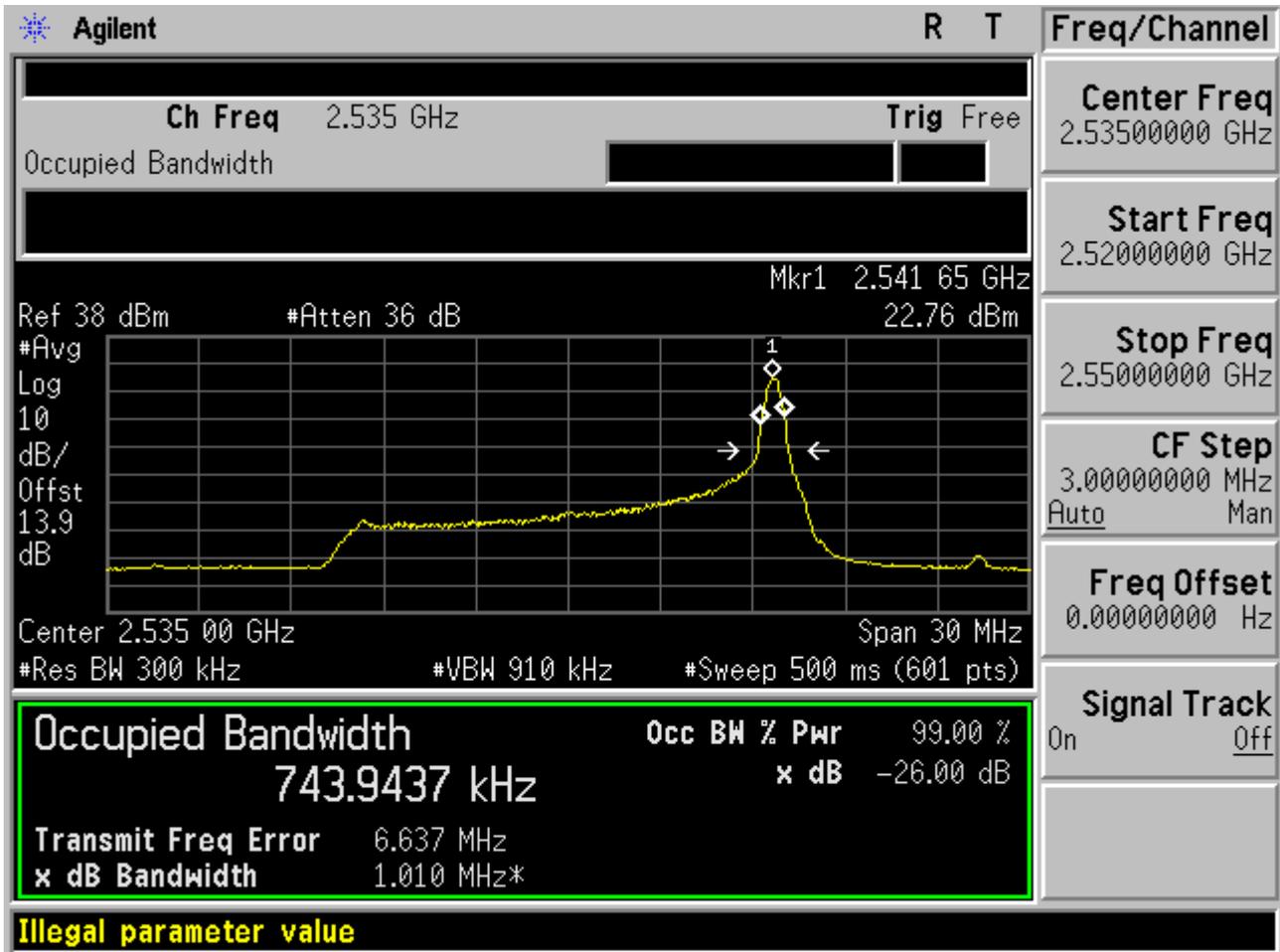
1.1.3.2 Channel =M

1.1.3.2.1 QPSK/1RB#0



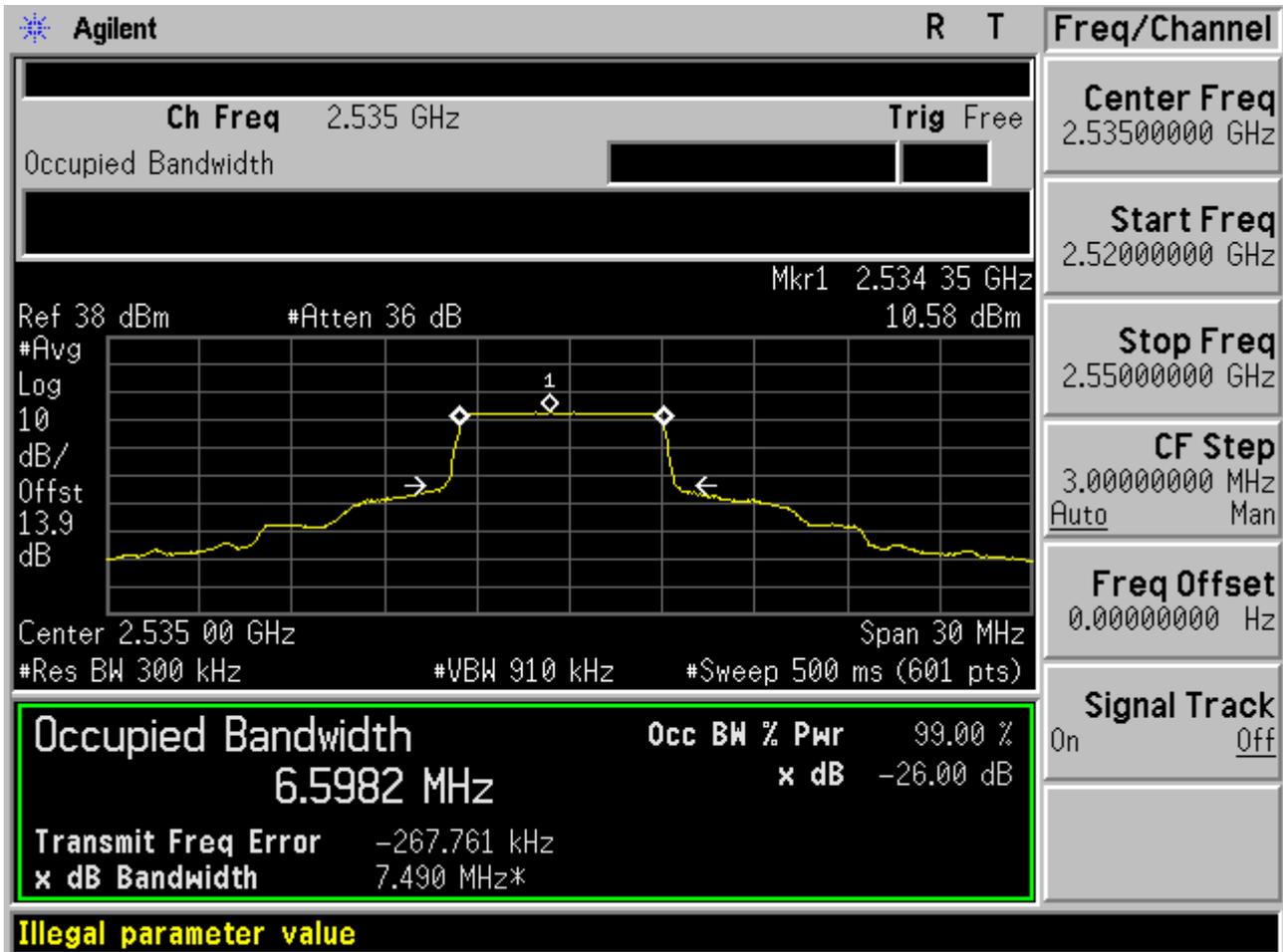


1.1.3.2.2 QPSK/1RB#max



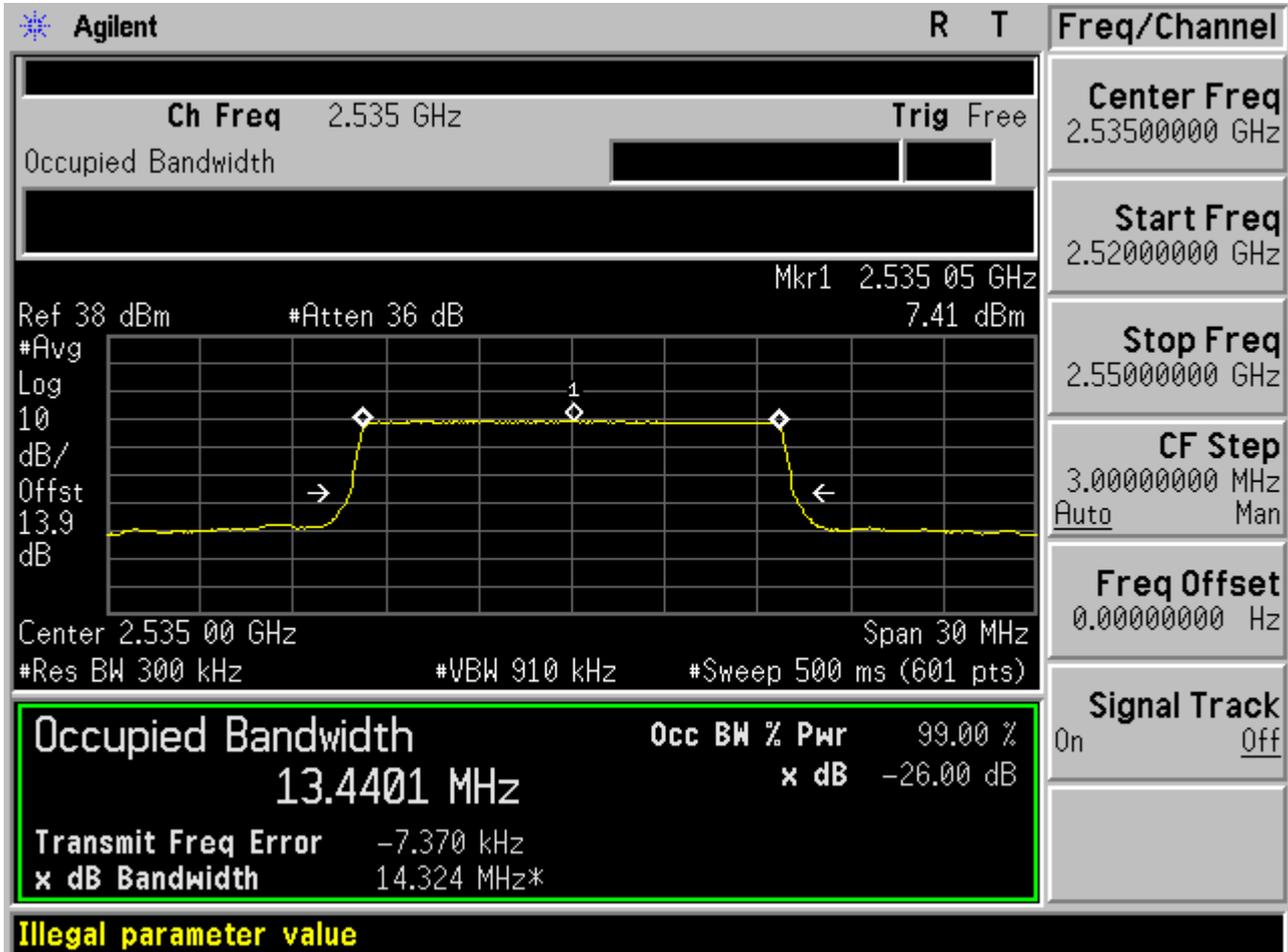


1.1.3.2.3 QPSK/ Partial RBs /RB #18





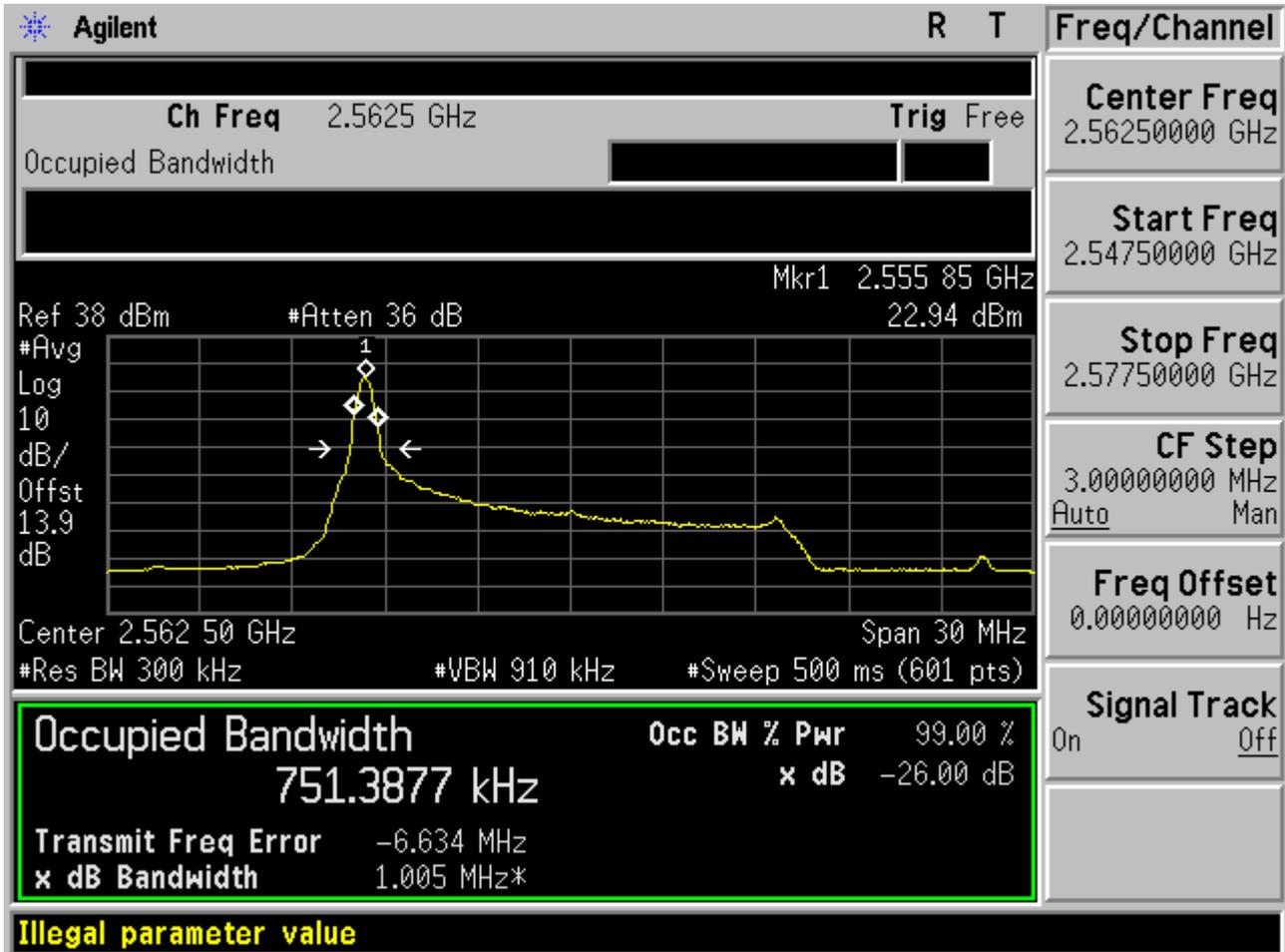
1.1.3.2.4 QPSK/full RBs





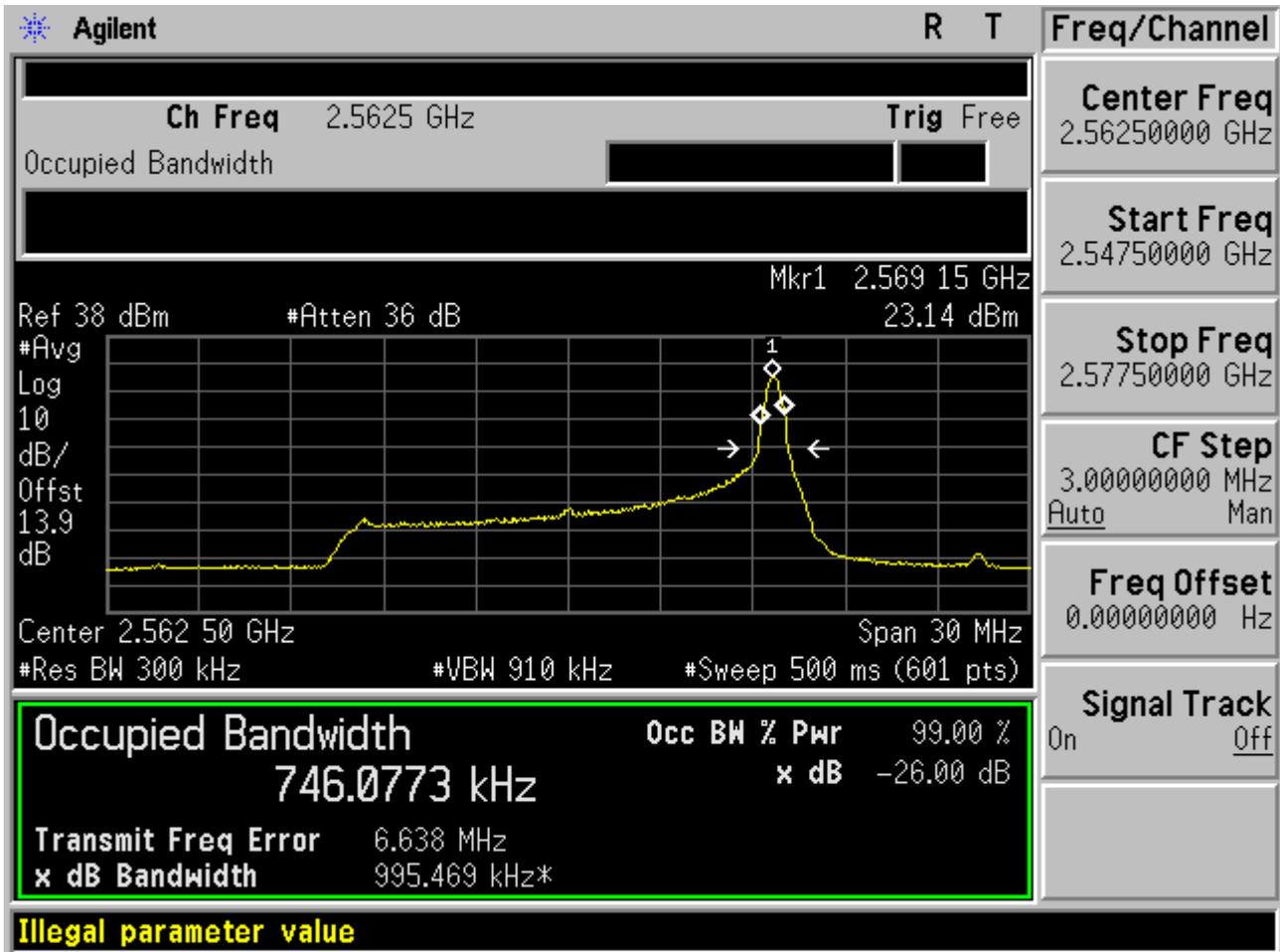
1.1.3.3 Channel =T

1.1.3.3.1 QPSK/1RB#0



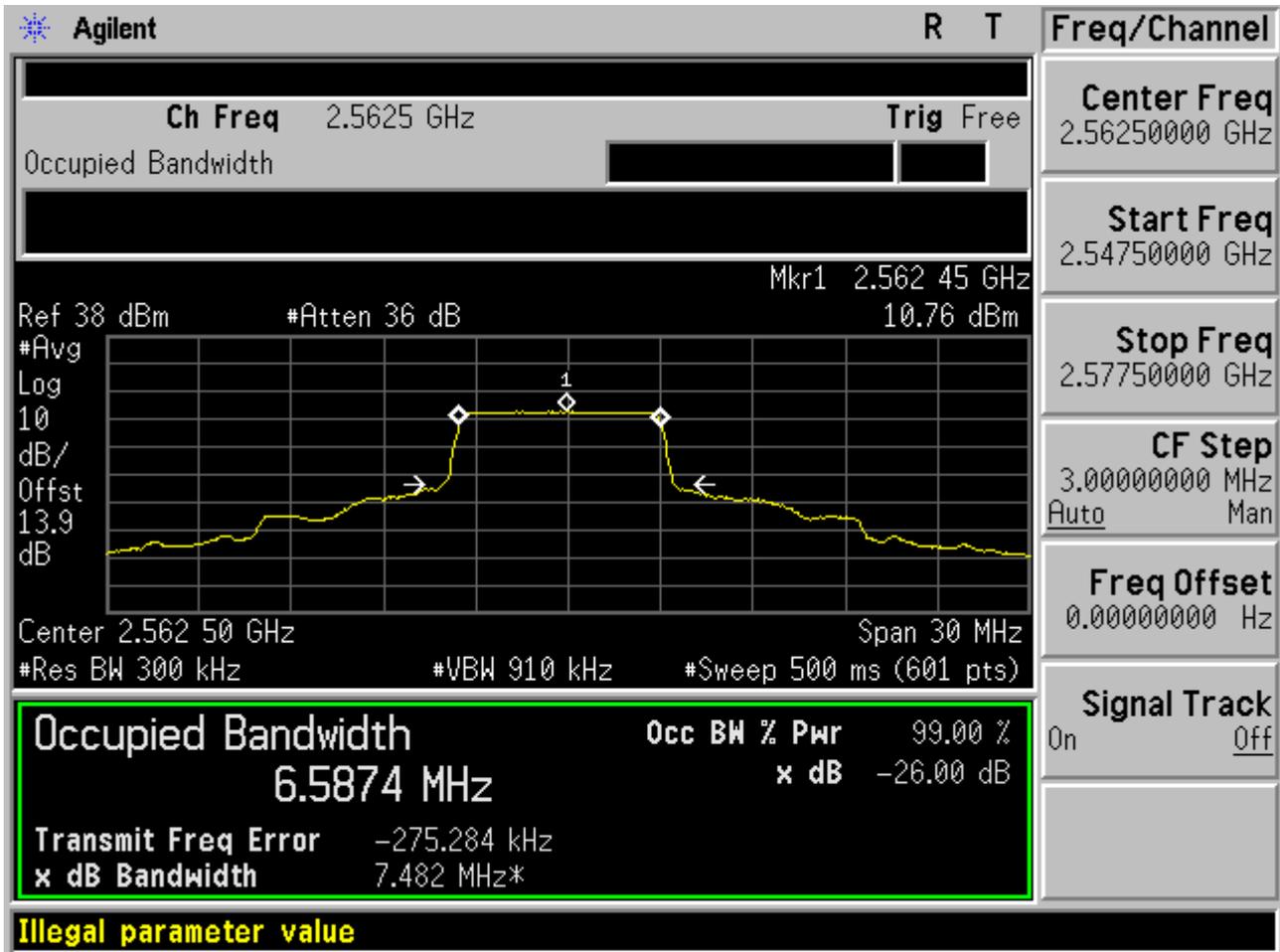


1.1.3.3.2 QPSK/1RB#max



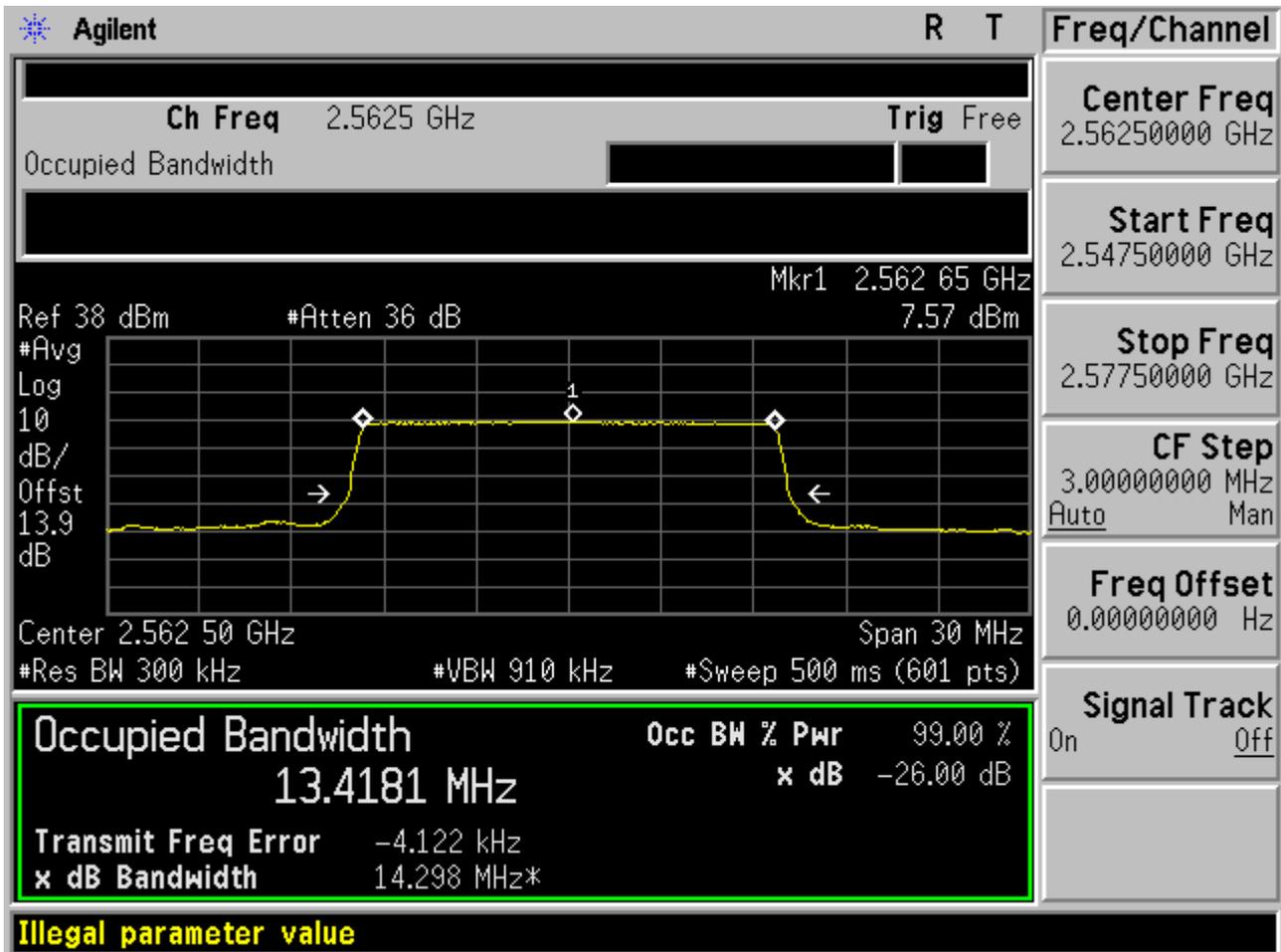


1.1.3.3.3 QPSK/ Partial RBs /RB #18





1.1.3.3.4 QPSK/full RBs

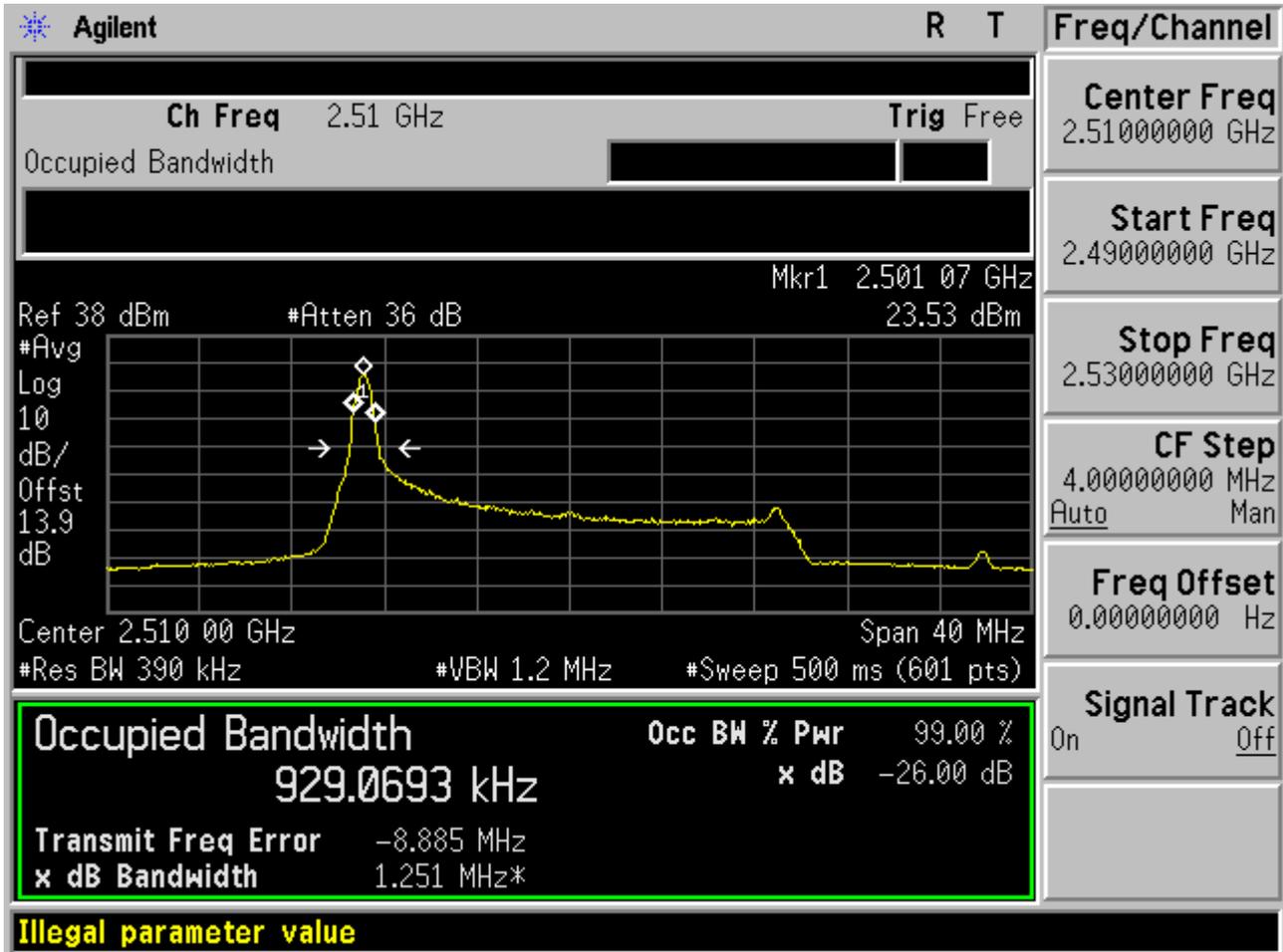




1.1.4 Channel Bandwidth = Highest (20 MHz)

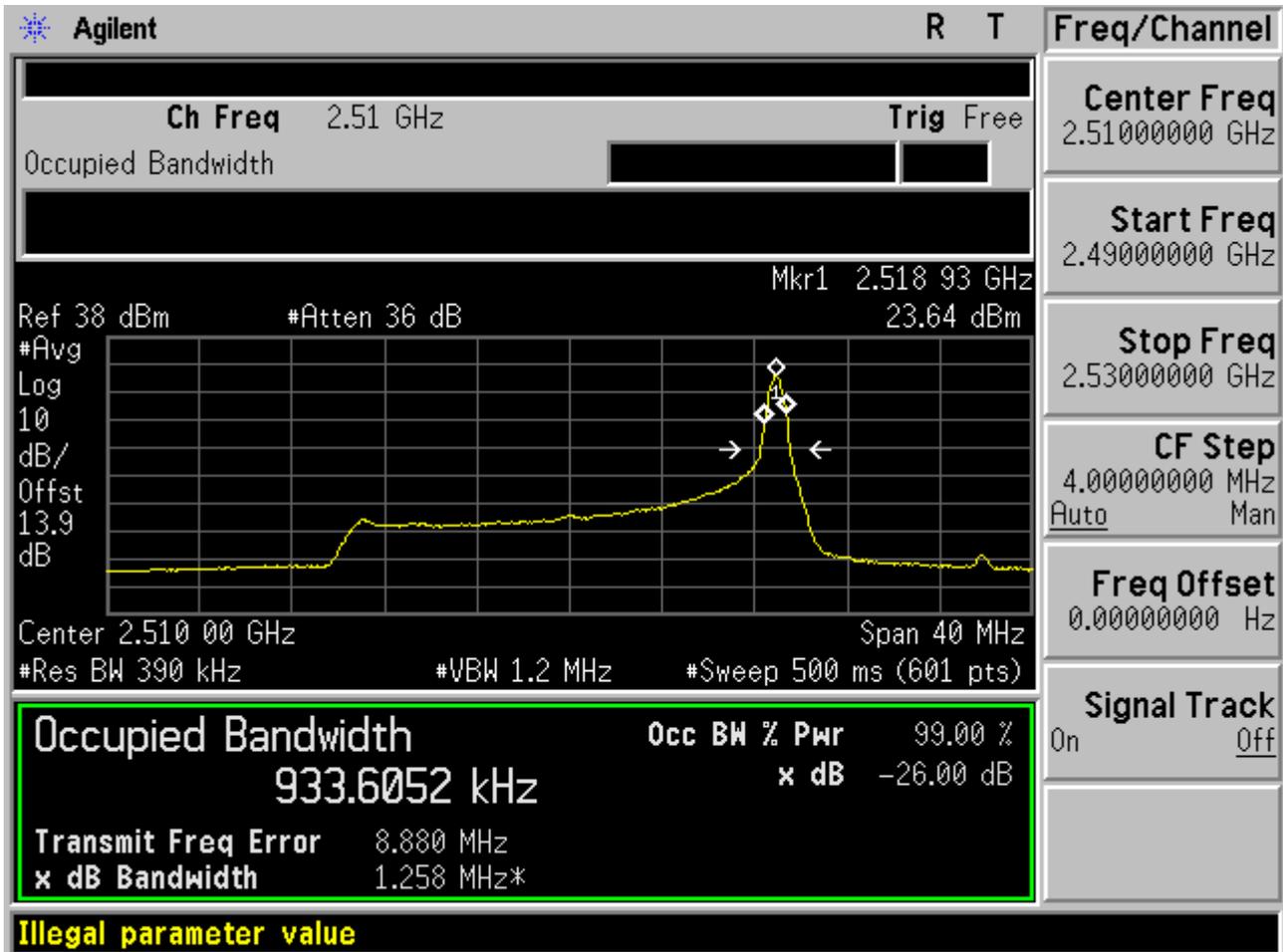
1.1.4.1 Channel = B

1.1.4.1.1 QPSK/1RB#0



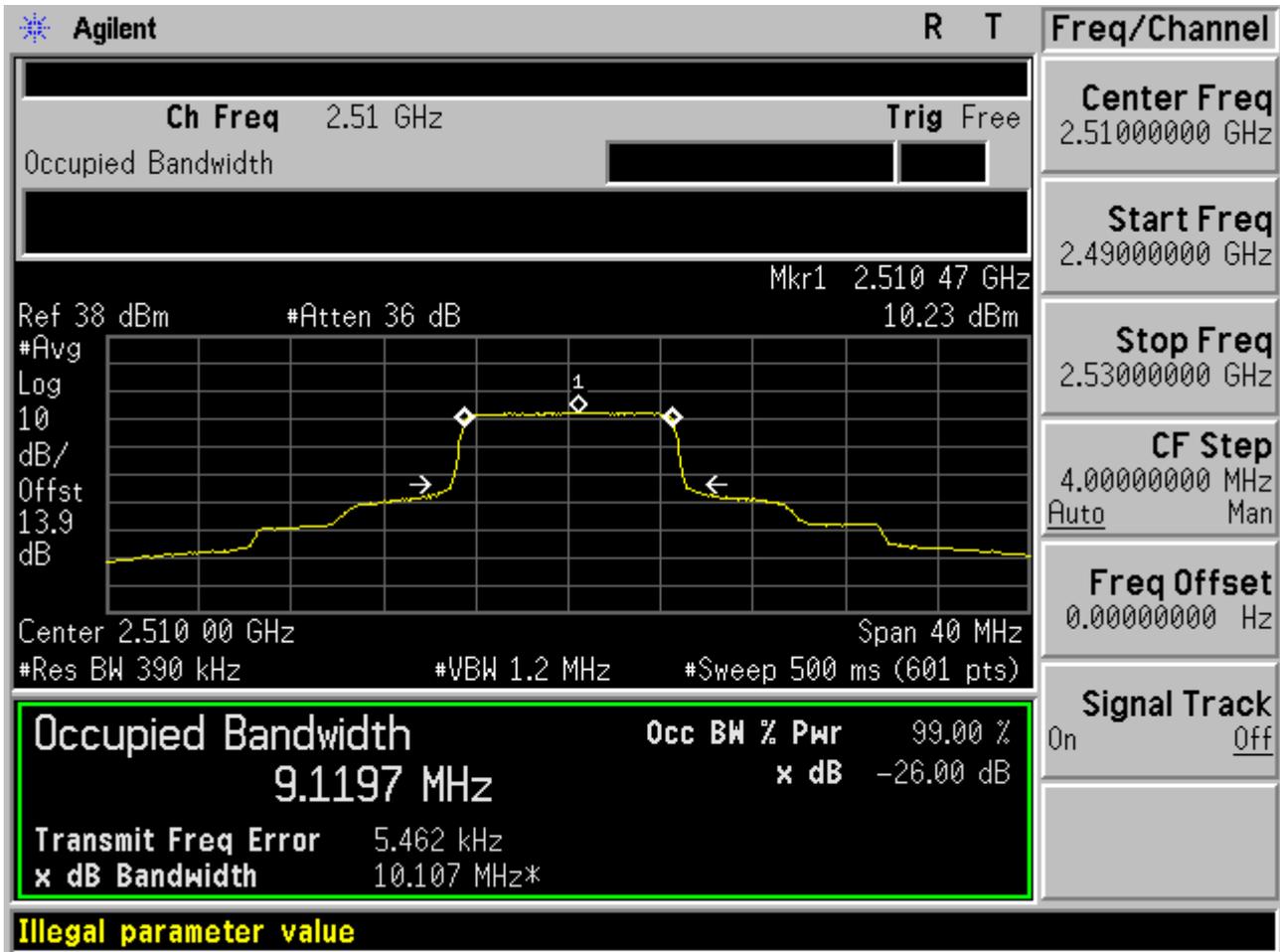


1.1.4.1.2 QPSK/1RB#max



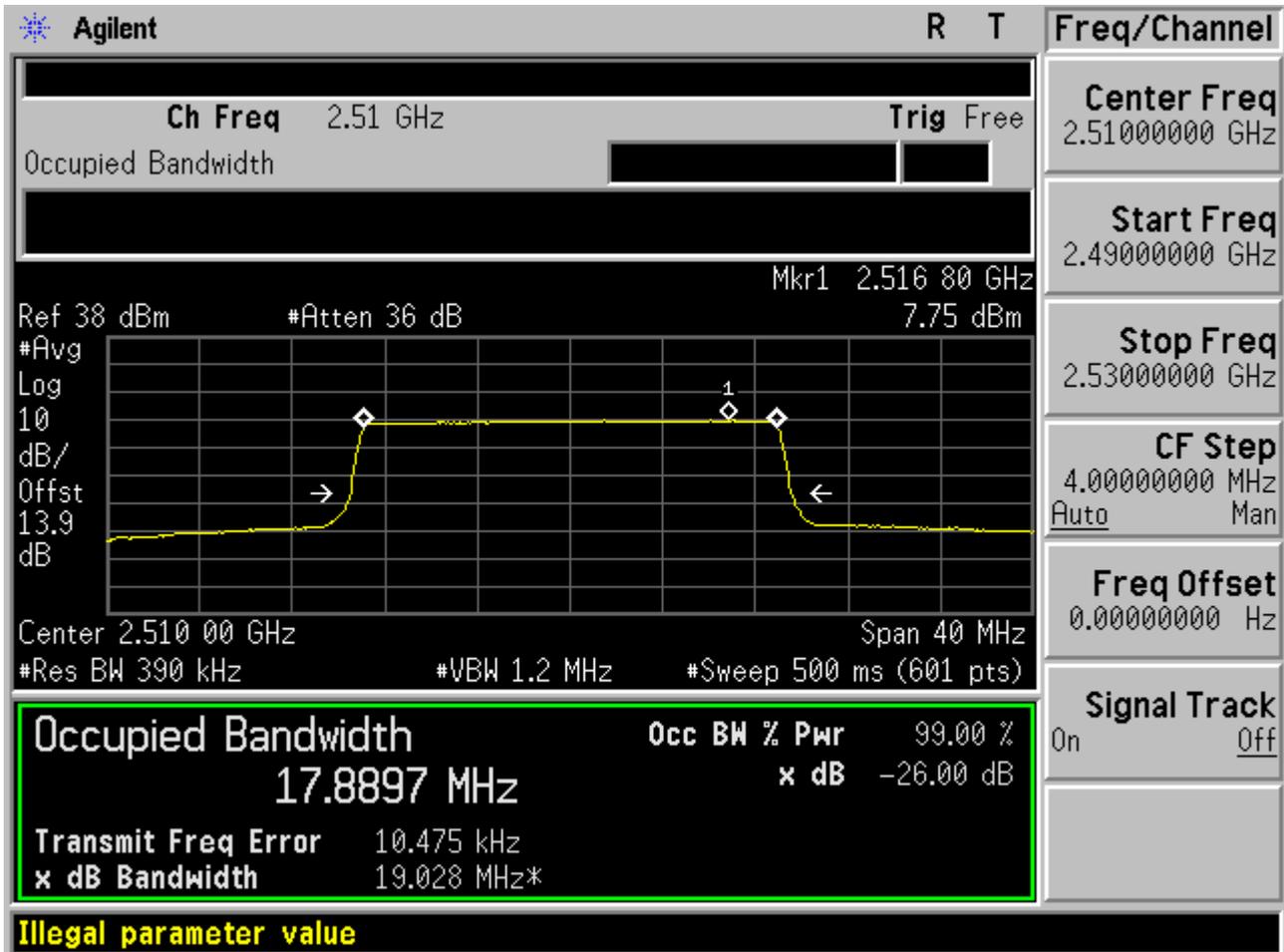


1.1.4.1.3 QPSK/ Partial RBs /RB #25





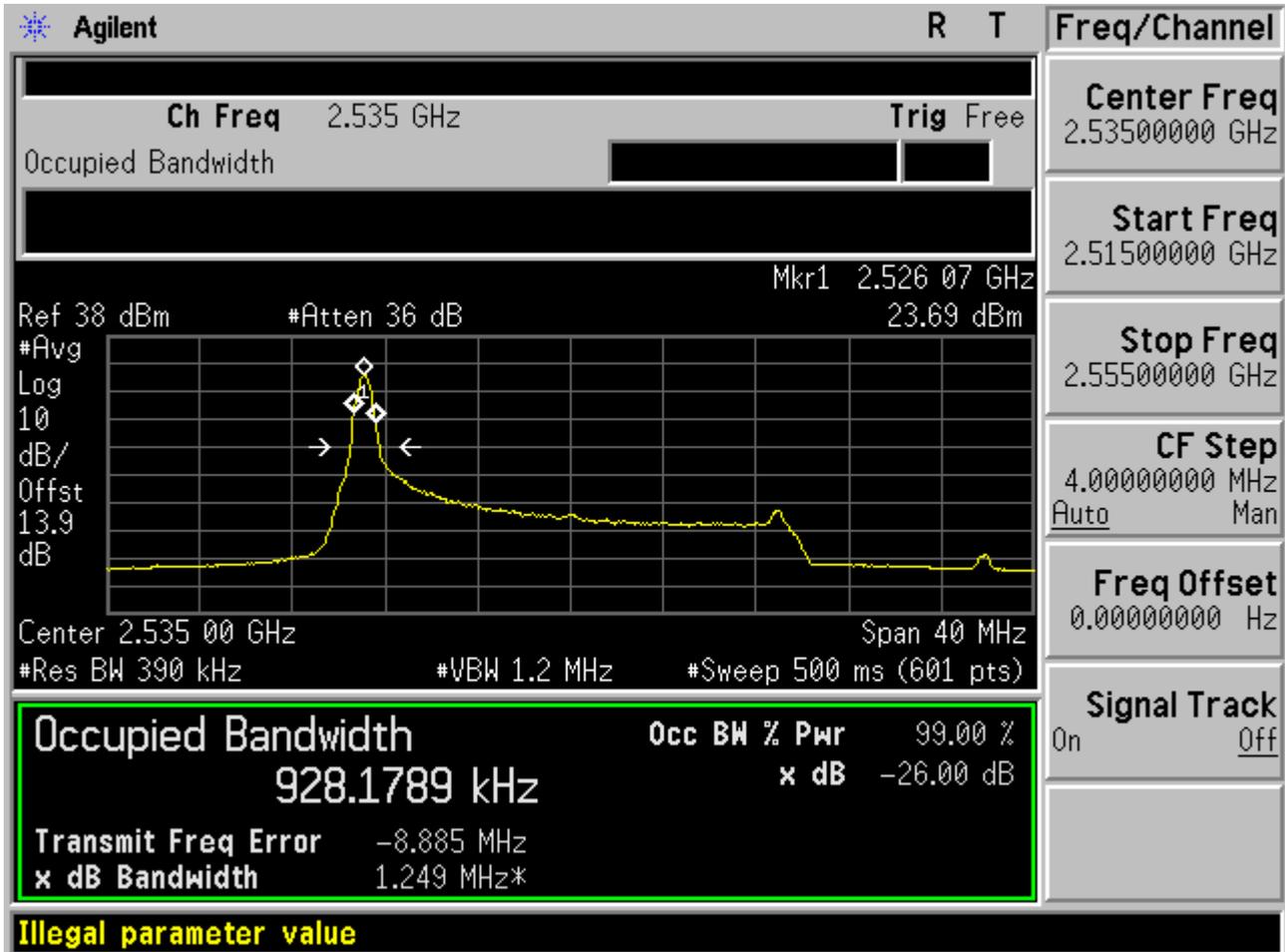
1.1.4.1.4 QPSK/full RBs





1.1.4.2 Channel =M

1.1.4.2.1 QPSK/1RB#0



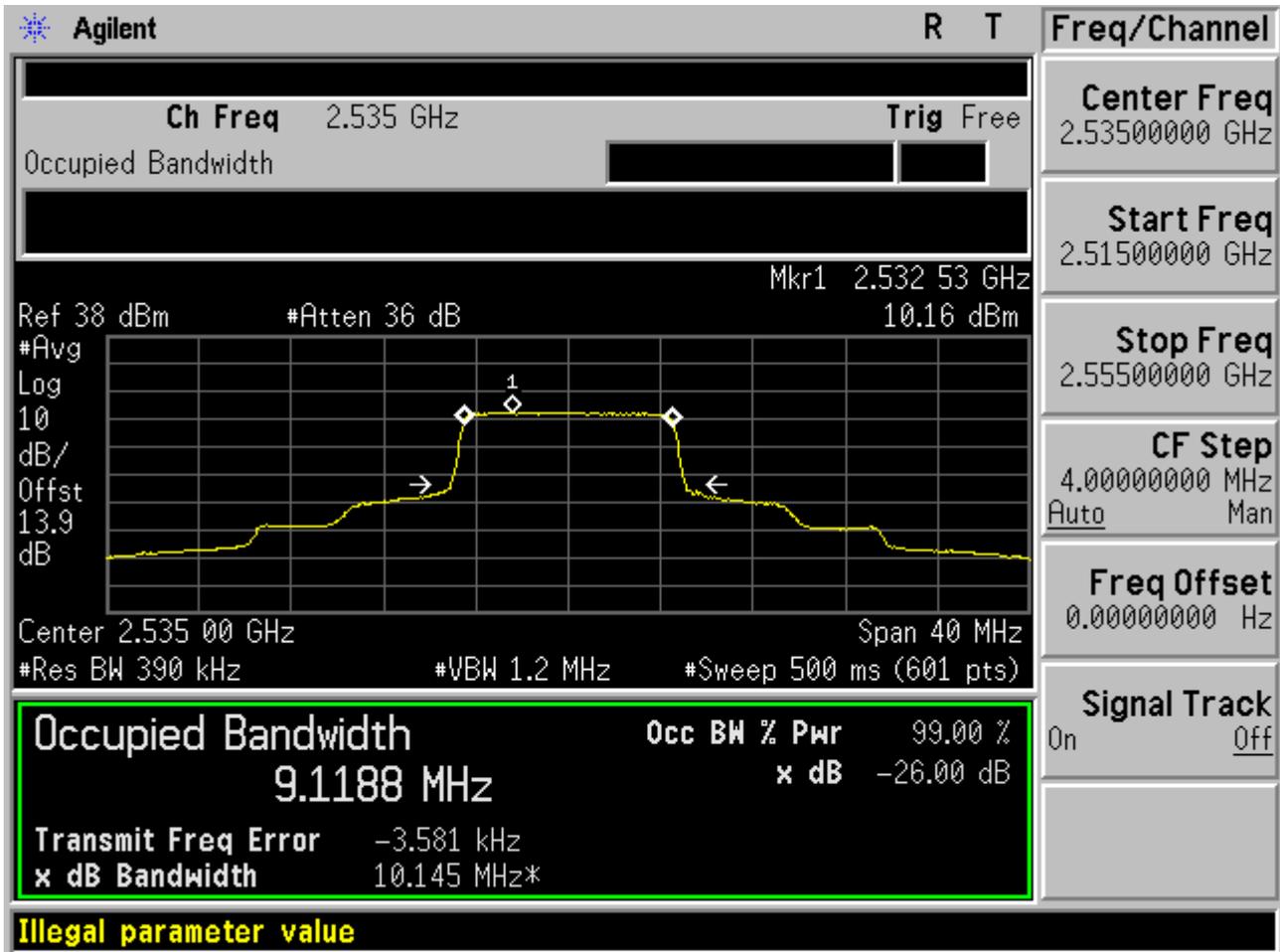


1.1.4.2.2 QPSK/1RB#max

Agilent		R	T	Freq/Channel	
Ch Freq 2.535 GHz		Trig Free		Center Freq 2.53500000 GHz	
Occupied Bandwidth				Start Freq 2.51500000 GHz	
				Stop Freq 2.55500000 GHz	
Ref 38 dBm #Atten 36 dB		Mkr1 2.543 87 GHz 23.04 dBm		CF Step 4.00000000 MHz Auto Man	
#Avg Log 10 dB/Offst 13.9 dB 				Freq Offset 0.00000000 Hz	
Center 2.535 00 GHz		Span 40 MHz		Signal Track On Off	
#Res BW 390 kHz		#VBW 1.2 MHz #Sweep 500 ms (601 pts)			
Occupied Bandwidth 933.8275 kHz		Occ BW % Pwr 99.00 % x dB -26.00 dB			
Transmit Freq Error 8.881 MHz		x dB Bandwidth 1.256 MHz*			
Illegal parameter value					

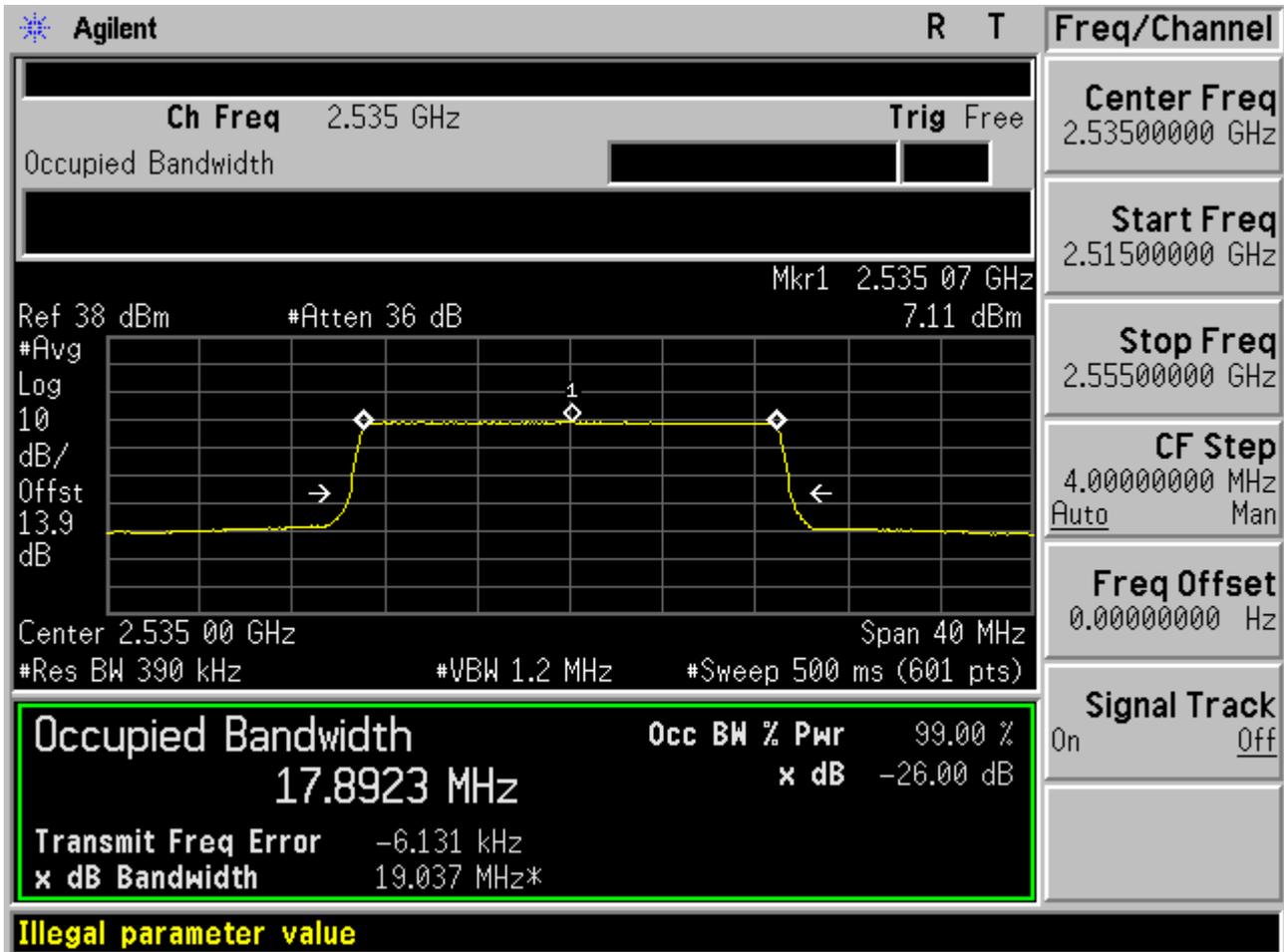


1.1.4.2.3 QPSK/ Partial RBs /RB #25





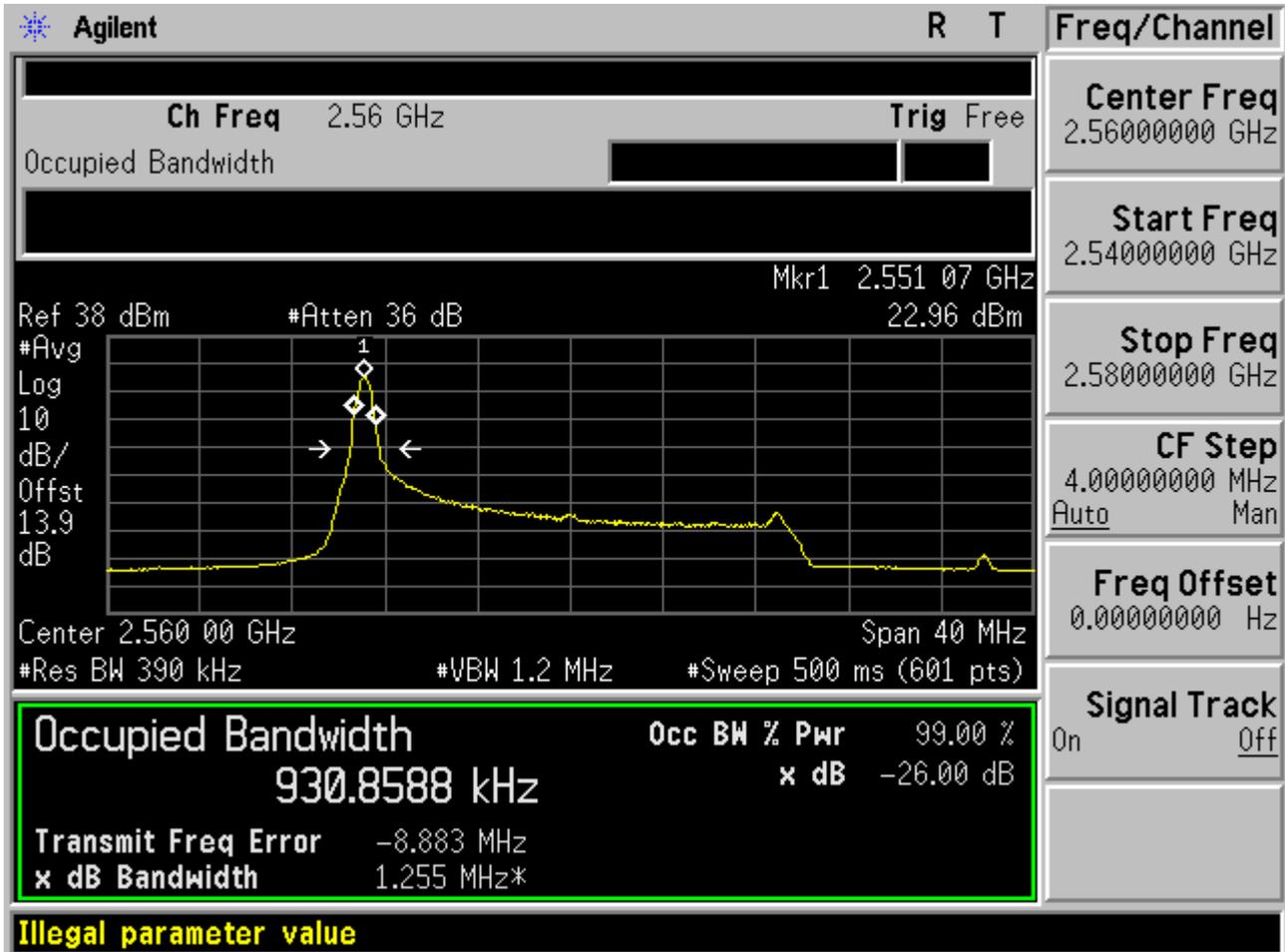
1.1.4.2.4 QPSK/full RBs





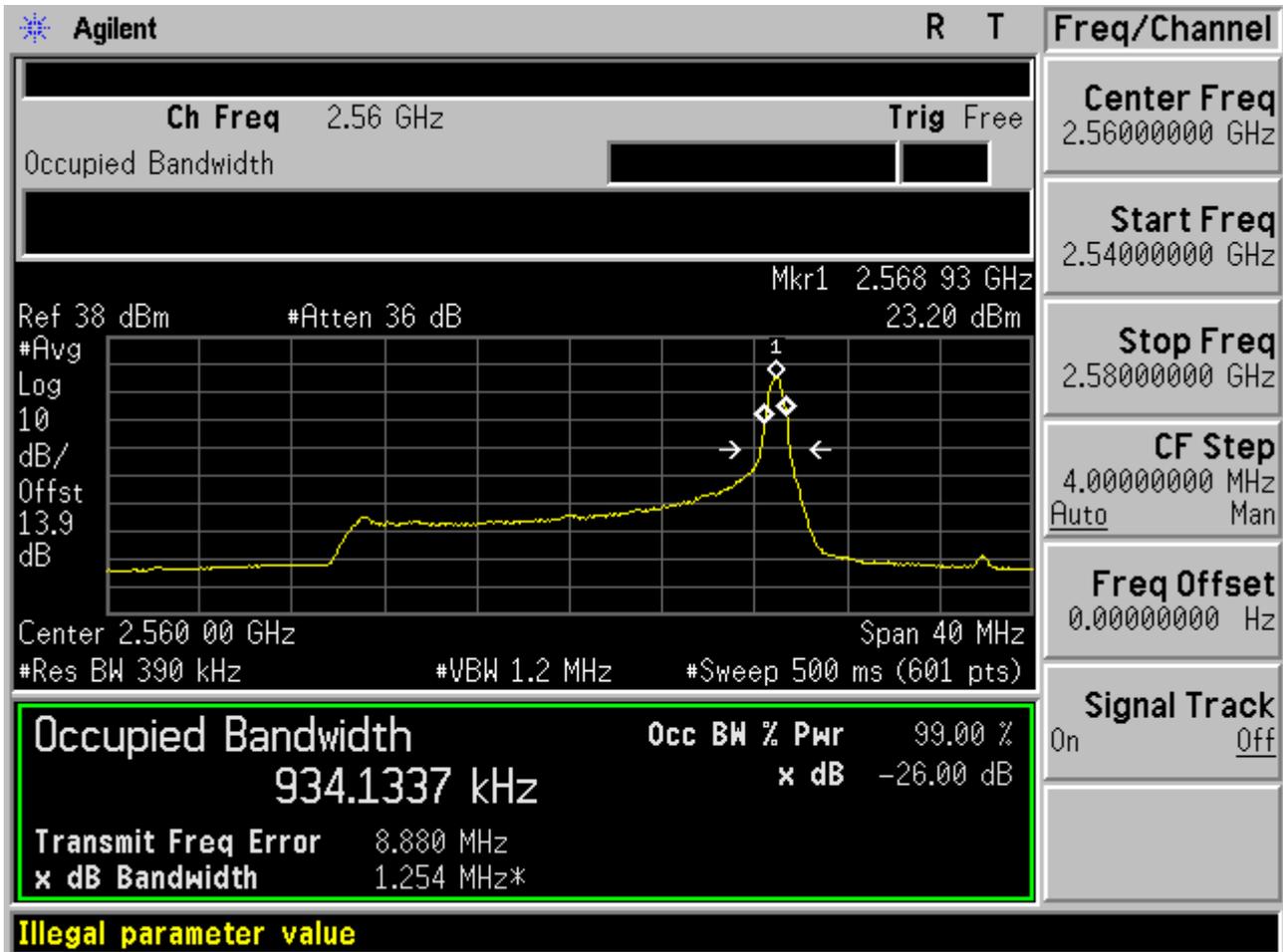
1.1.4.3 Channel =T

1.1.4.3.1 QPSK/1RB#0



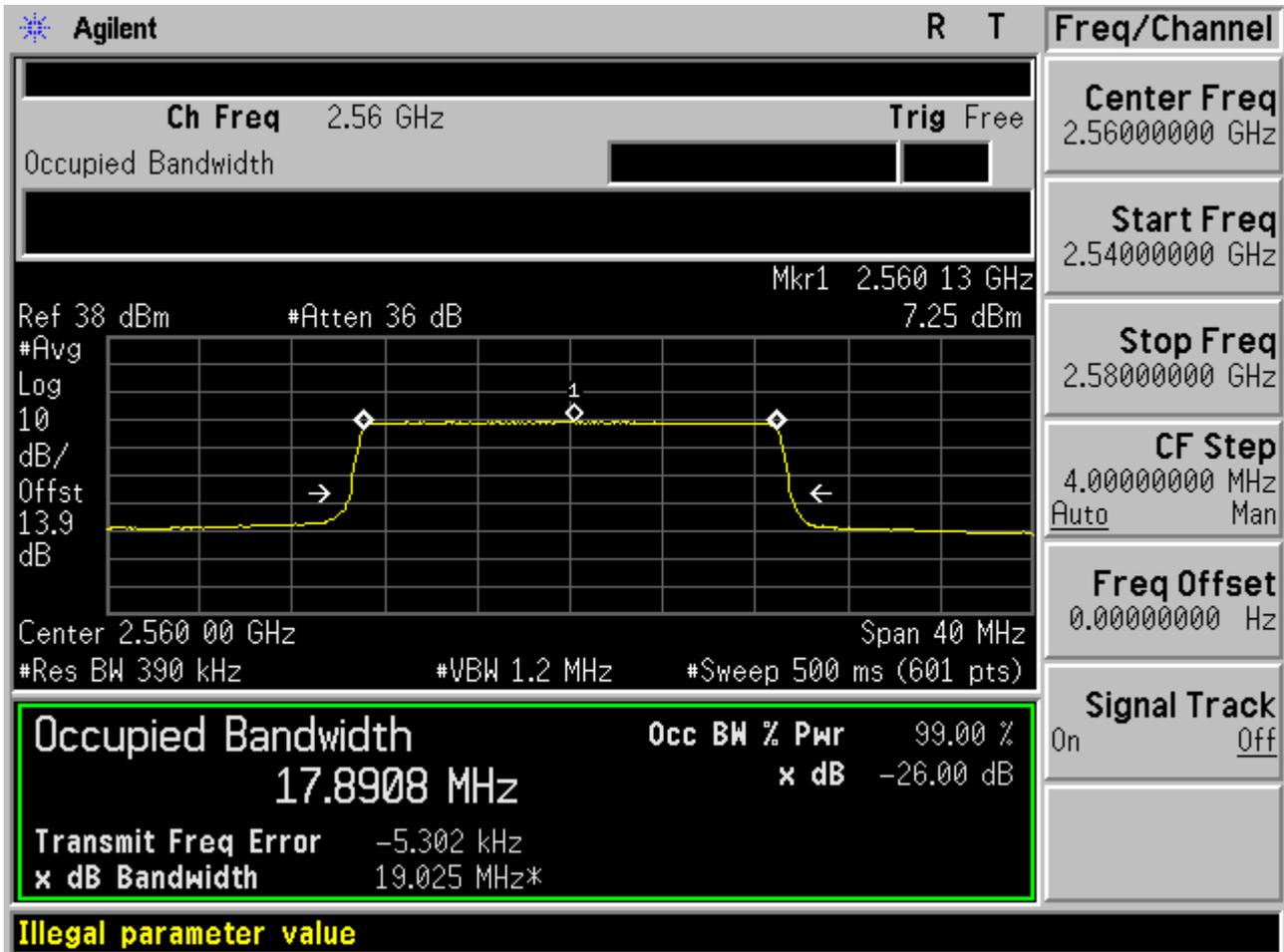


1.1.4.3.2 QPSK/1RB#max





1.1.4.3.4 QPSK/full RBs





1.2 Test Mode=TM2

1.2.1 Channel Bandwidth = Lowest (5 MHz)

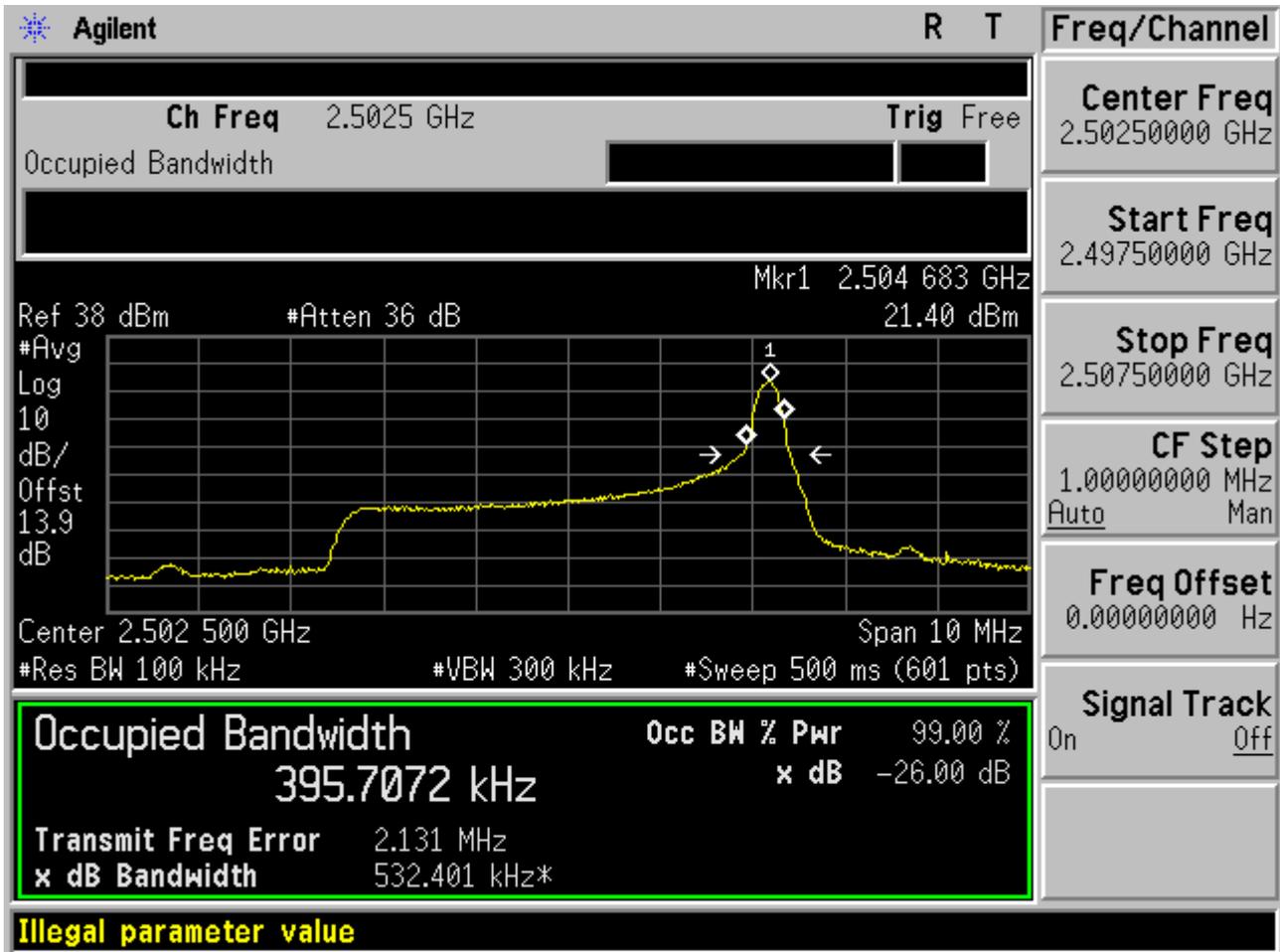
1.2.1.1 Channel = B

1.2.1.1.1 16QAM/1RB#0



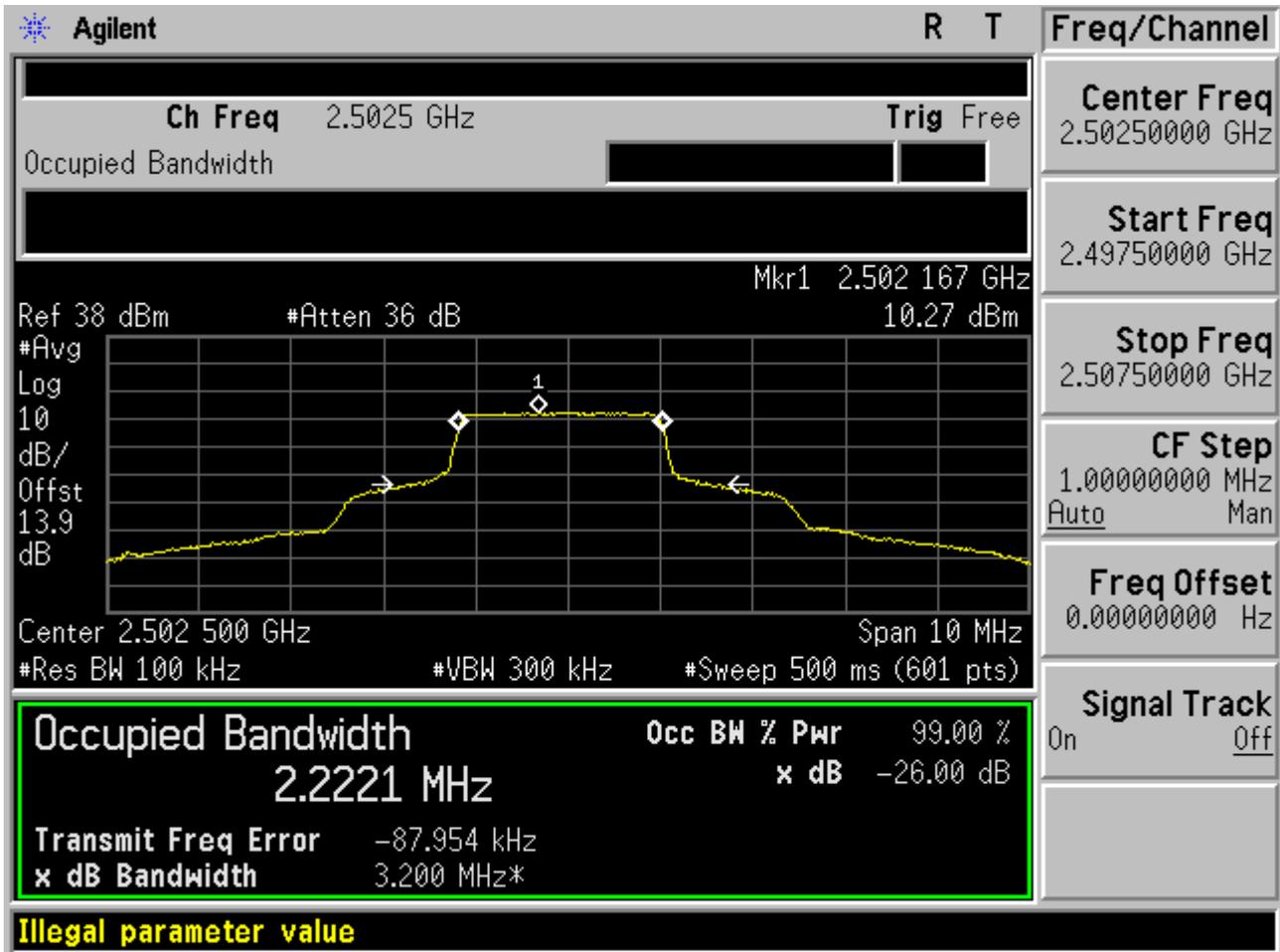


1.2.1.1.2 16QAM/1RB#max



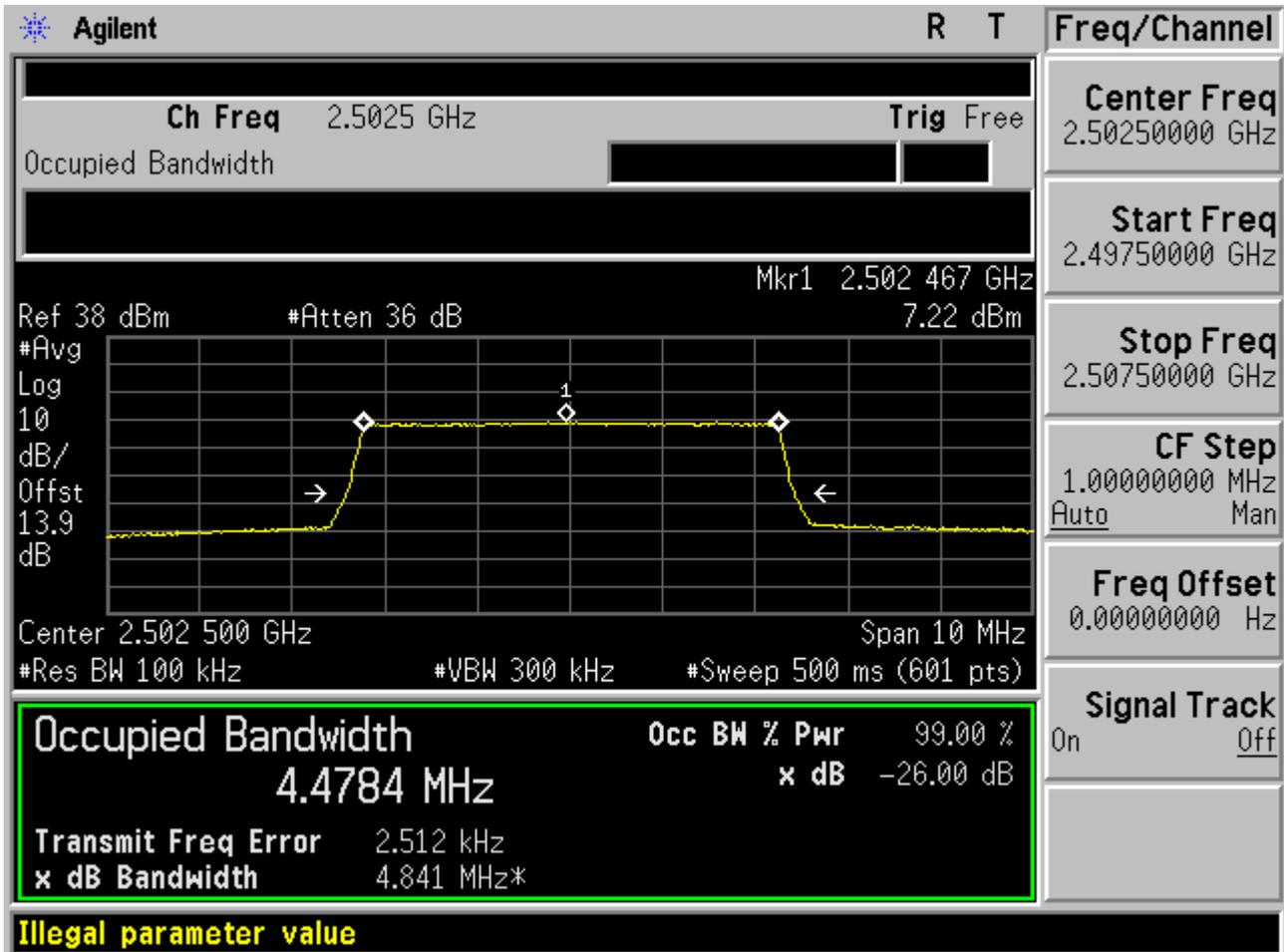


1.2.1.1.3 16QAM/ Partial RBs /RB #6





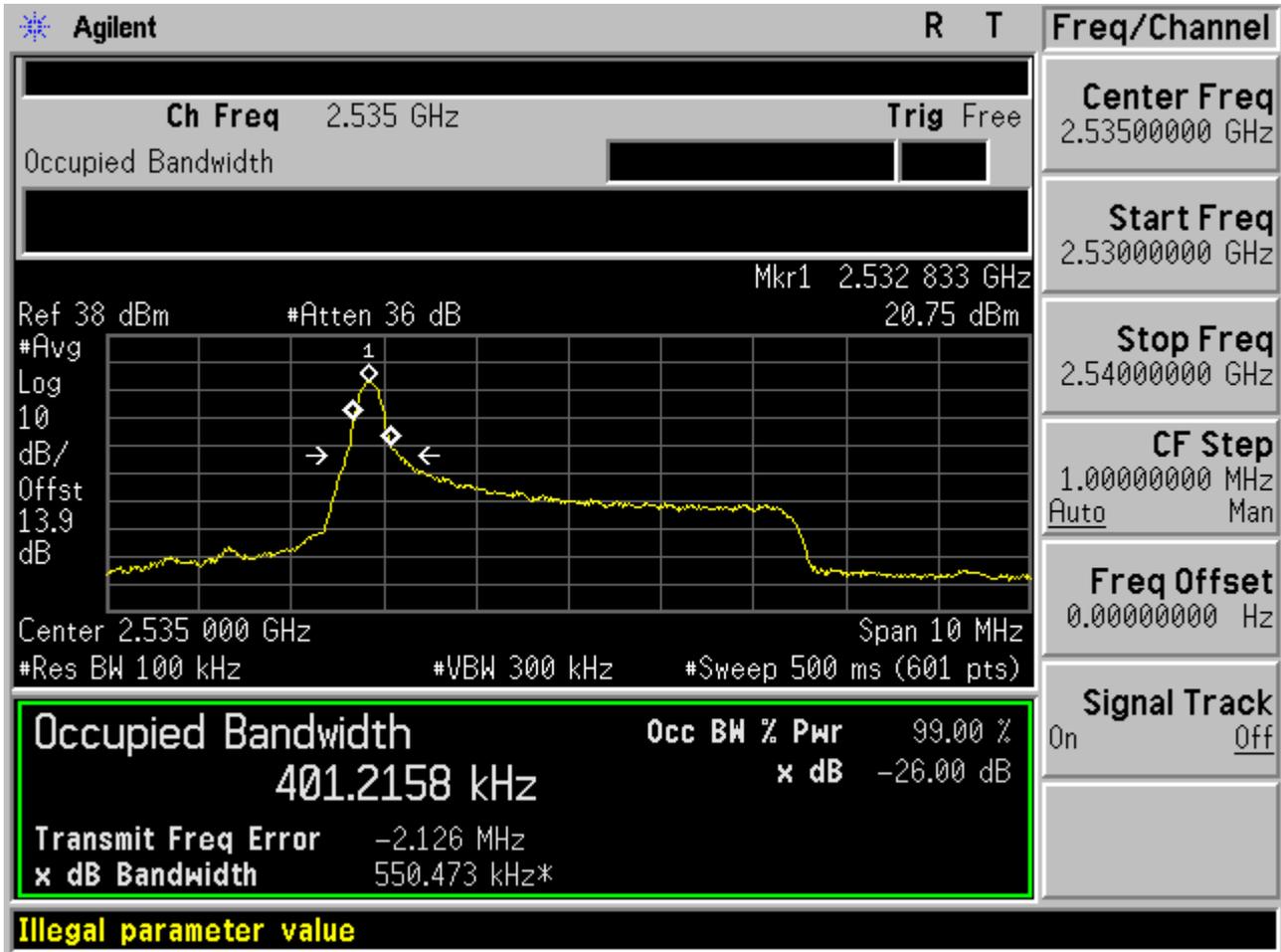
1.2.1.1.4 16QAM/full RBs





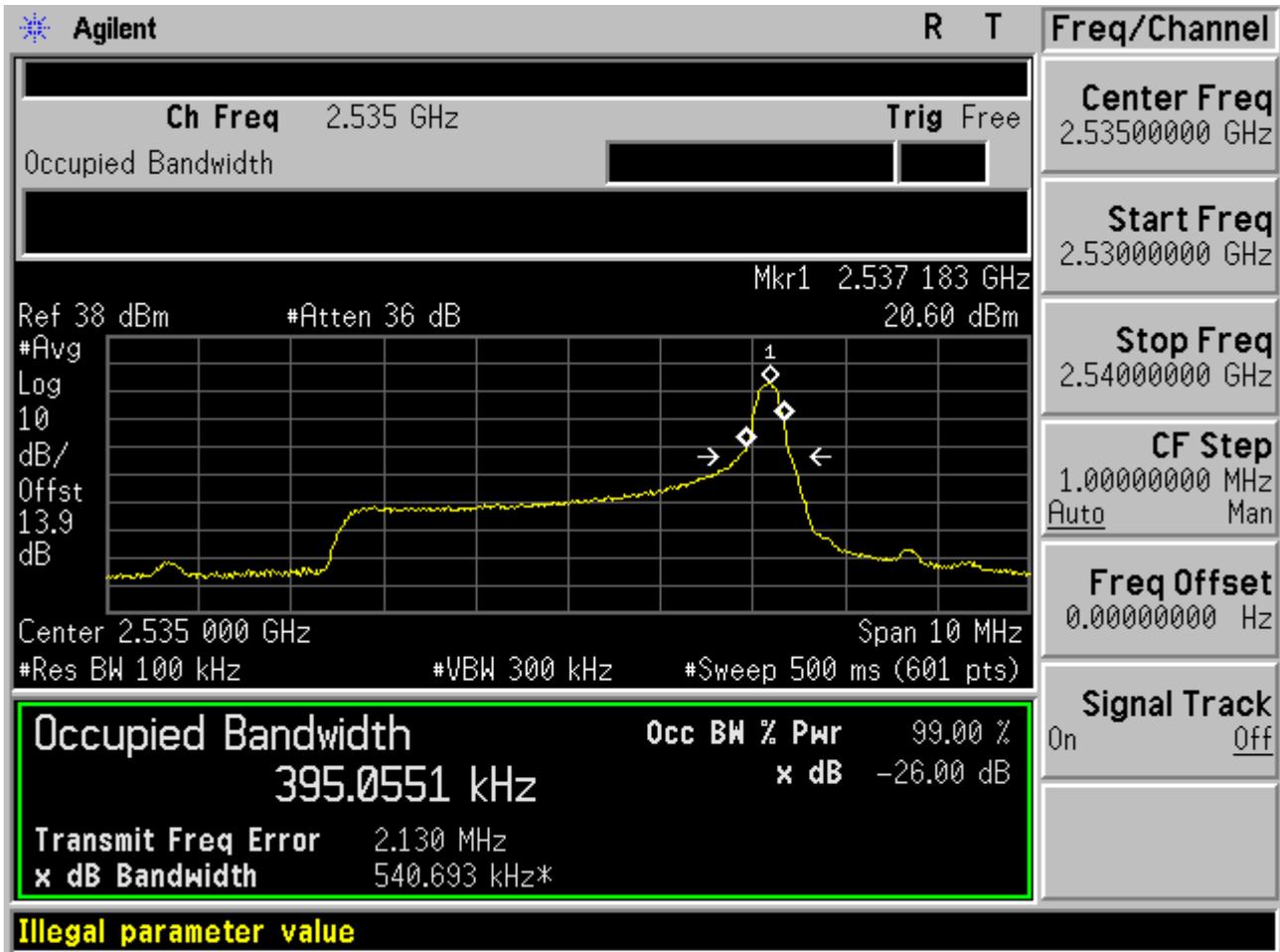
1.2.1.2 Channel =M

1.2.1.2.1 16QAM/1RB#0



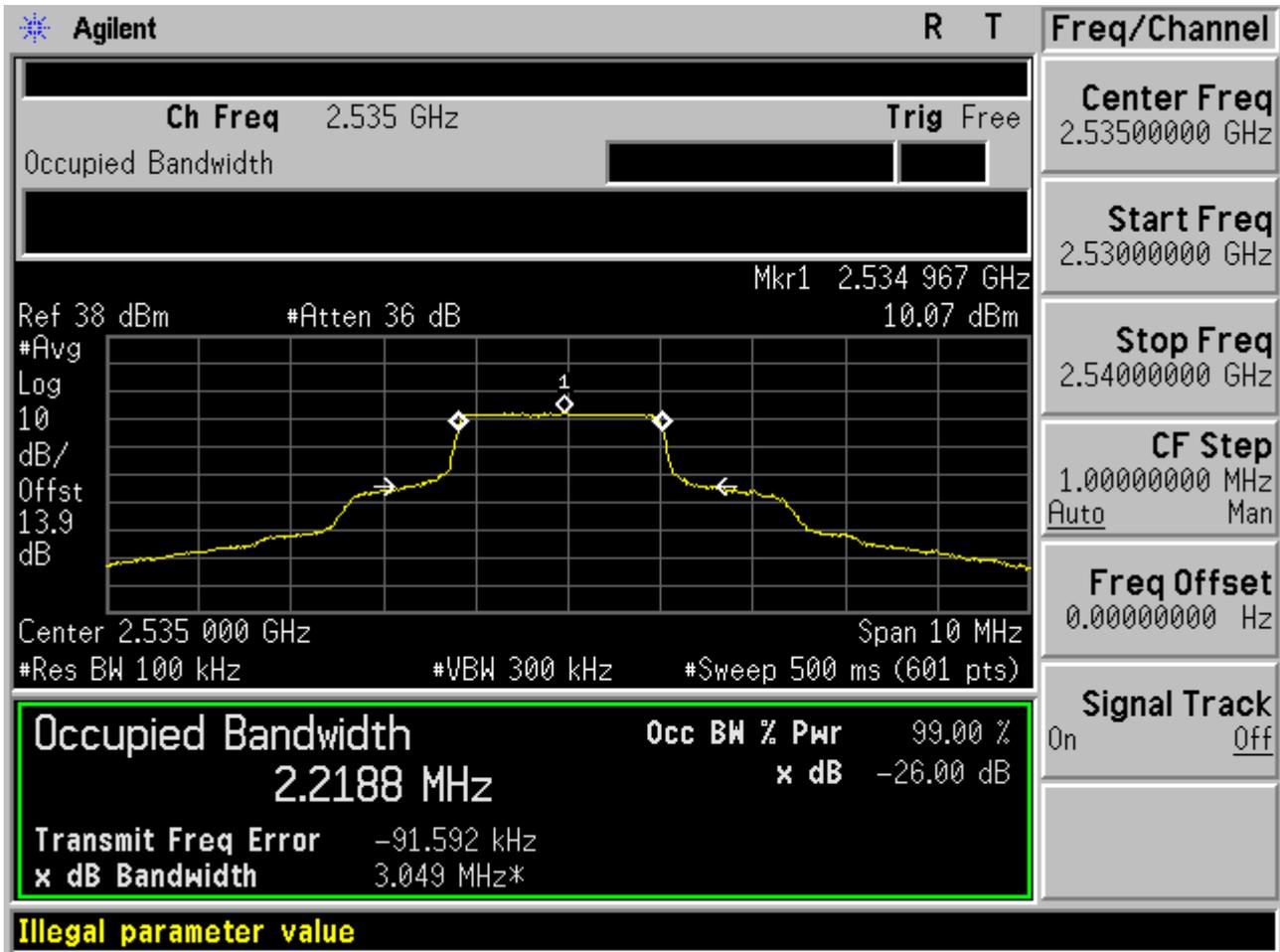


1.2.1.2.2 16QAM/1RB#max



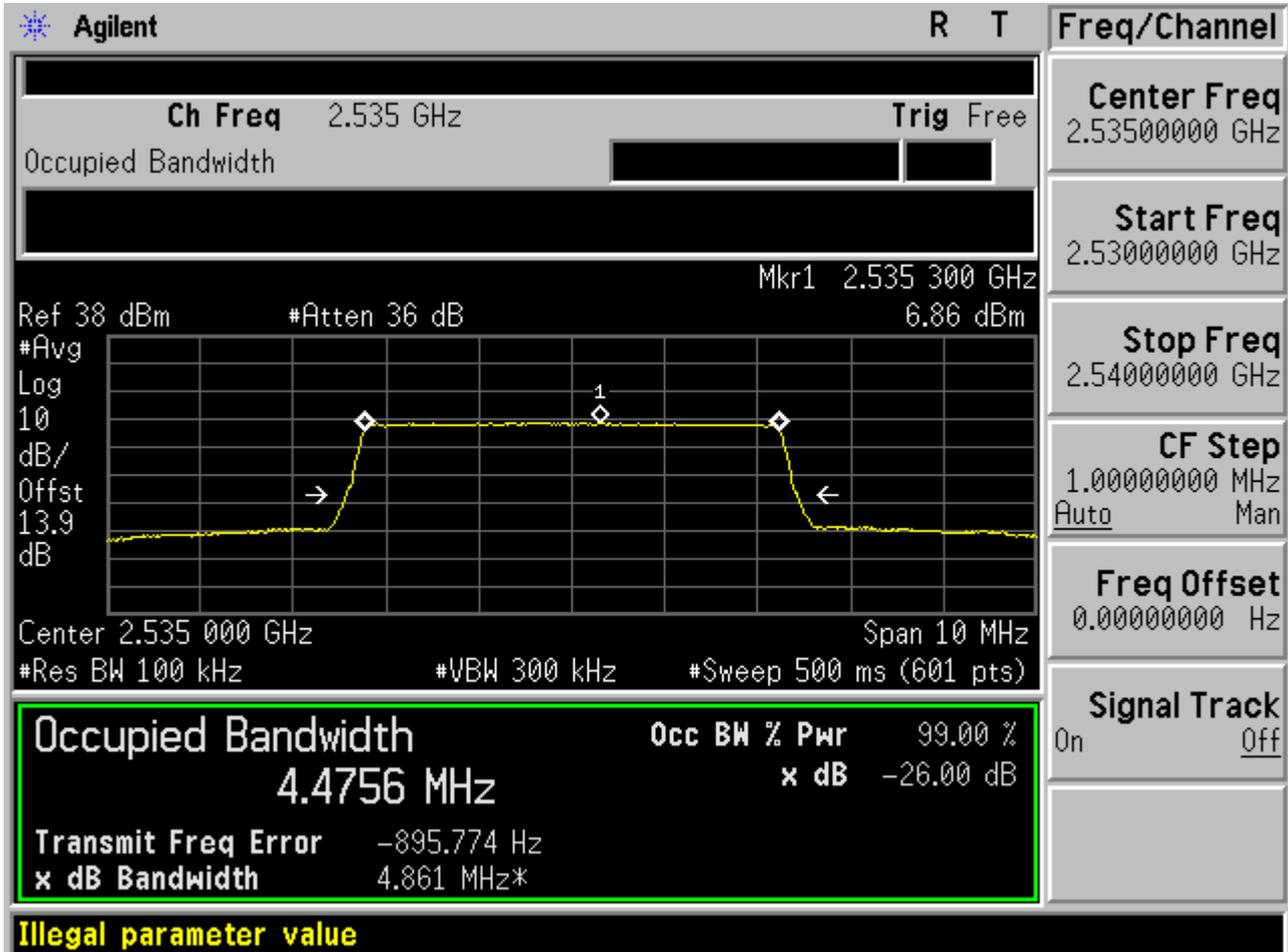


1.2.1.2.3 16QAM/ Partial RBs /RB #6





1.2.1.2.4 16QAM/full RBs





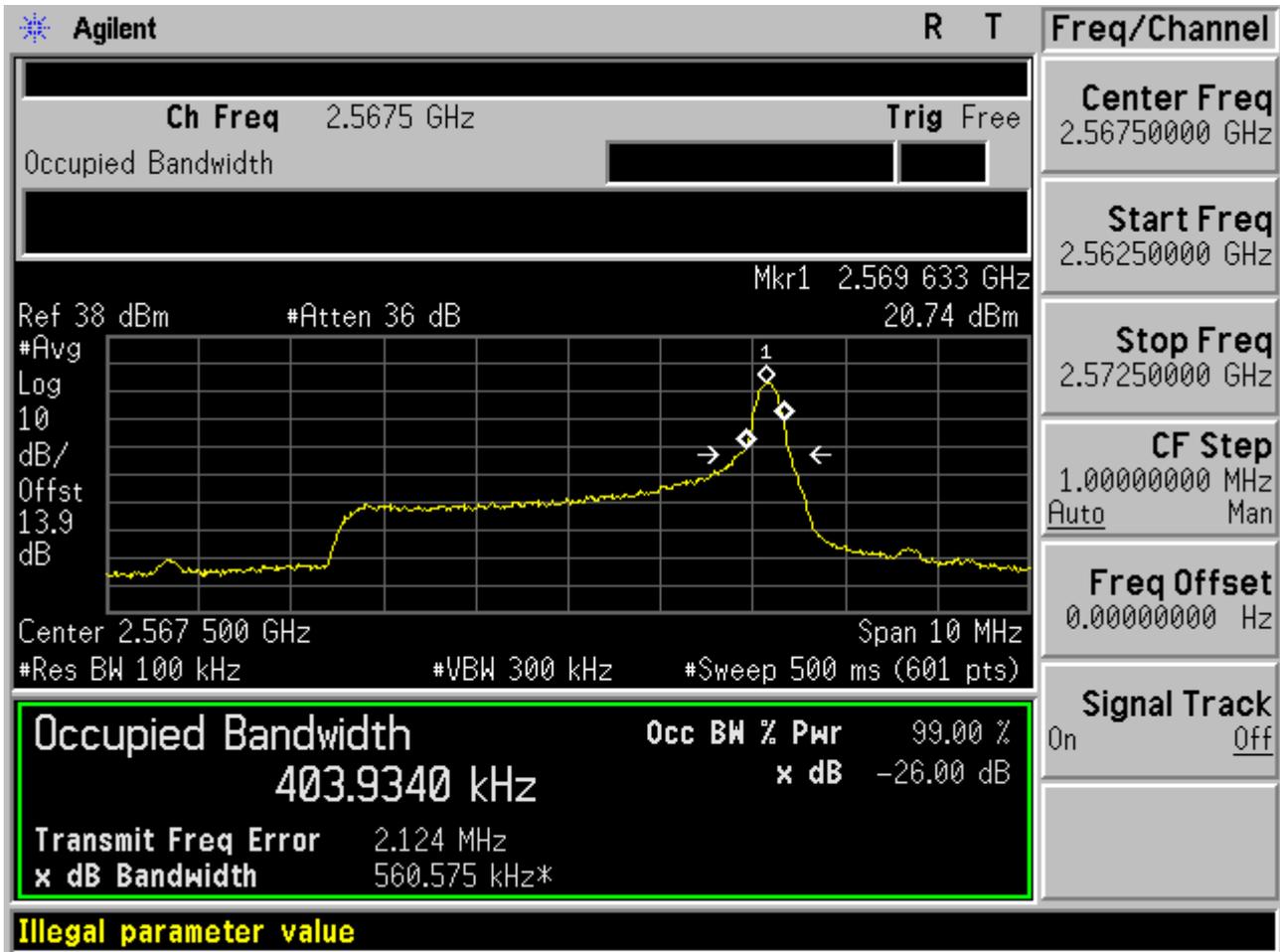
1.2.1.3 Channel =T

1.2.1.3.1 16QAM/1RB#0



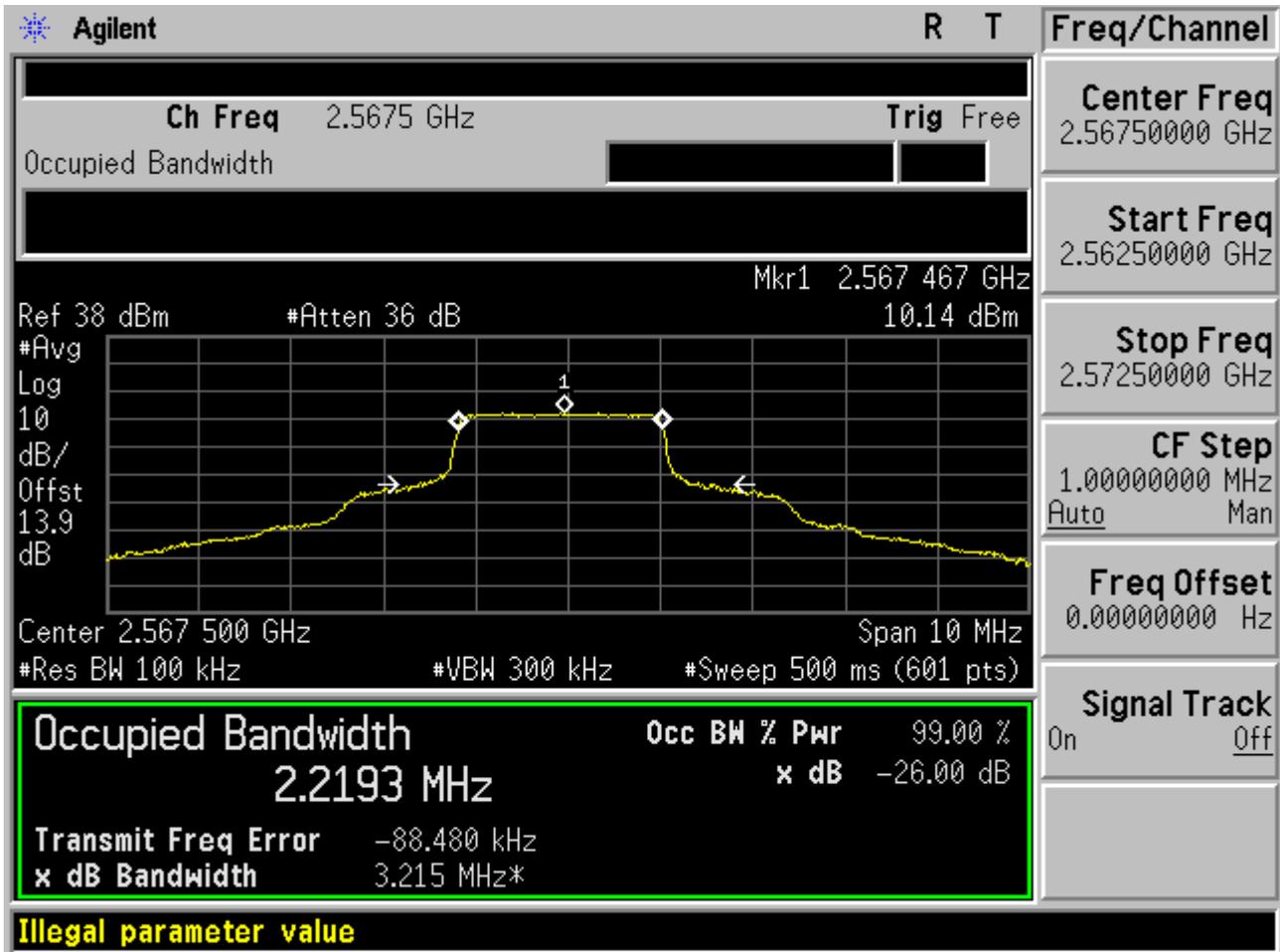


1.2.1.3.2 16QAM/1RB#max



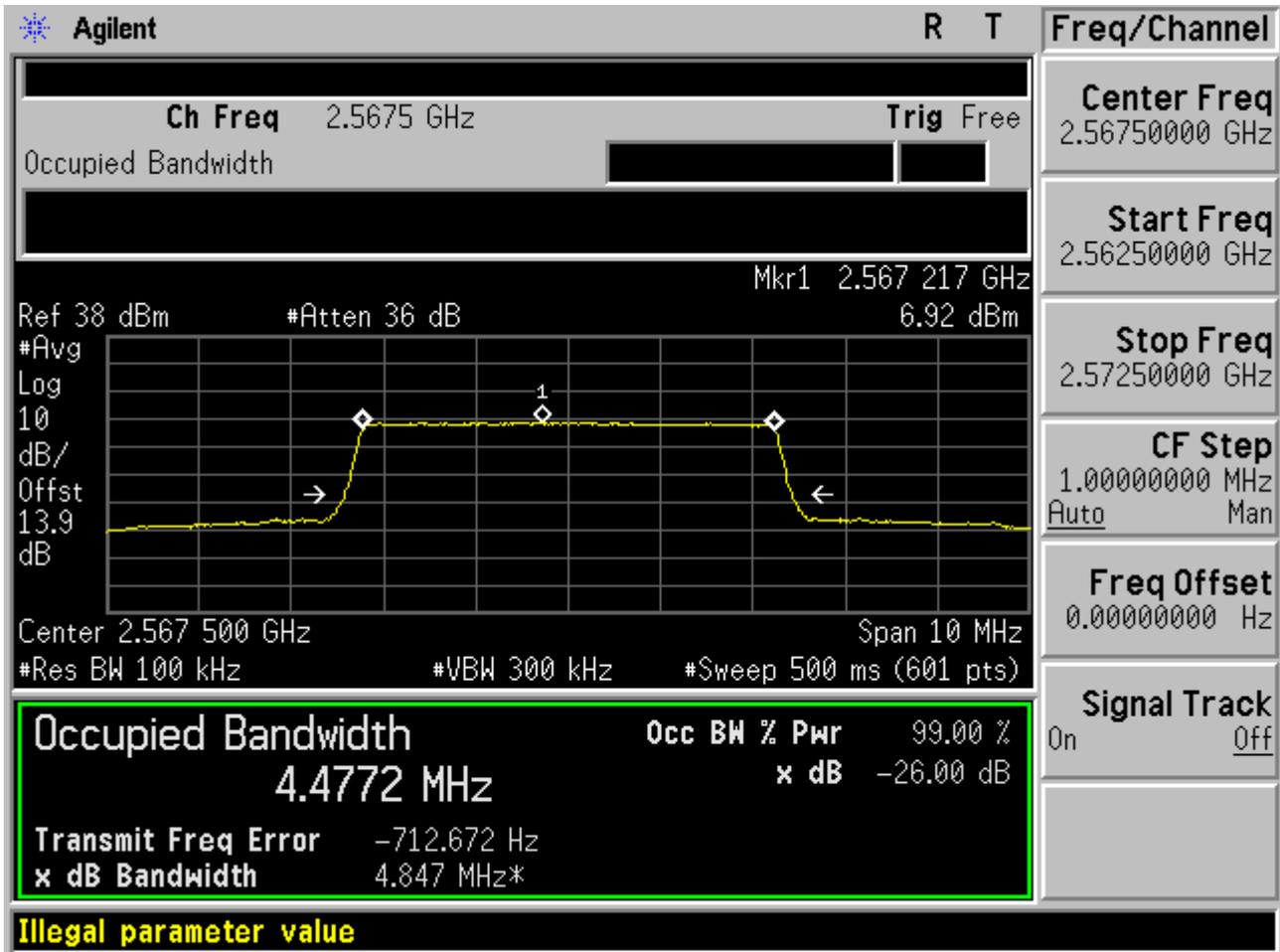


1.2.1.3.3 16QAM/ Partial RBs /RB #6





1.2.1.3.4 16QAM/full RBs

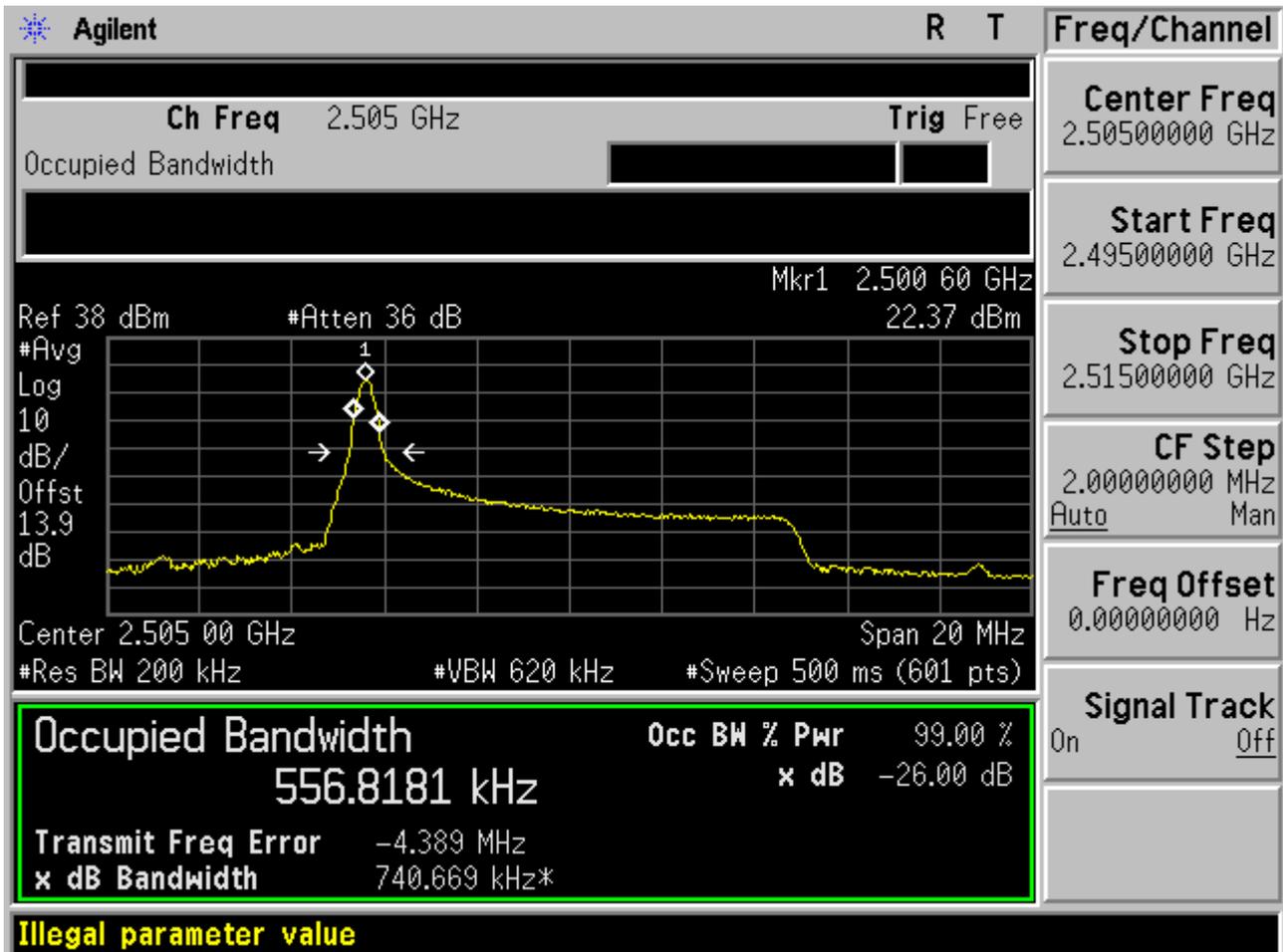




1.2.2 Channel Bandwidth = 10 MHz

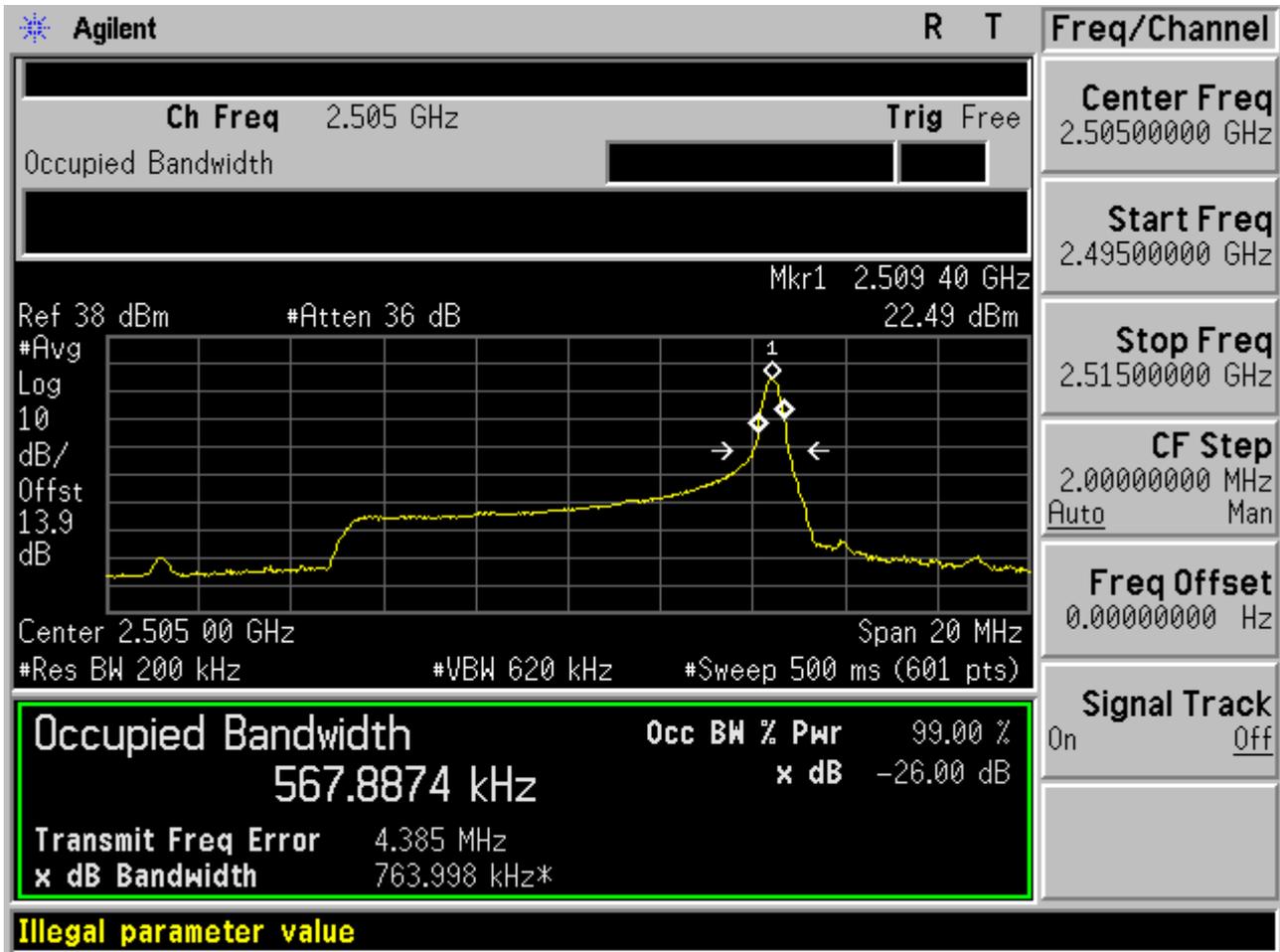
1.2.2.1 Channel = B

1.2.2.1.1 16QAM/1RB#0



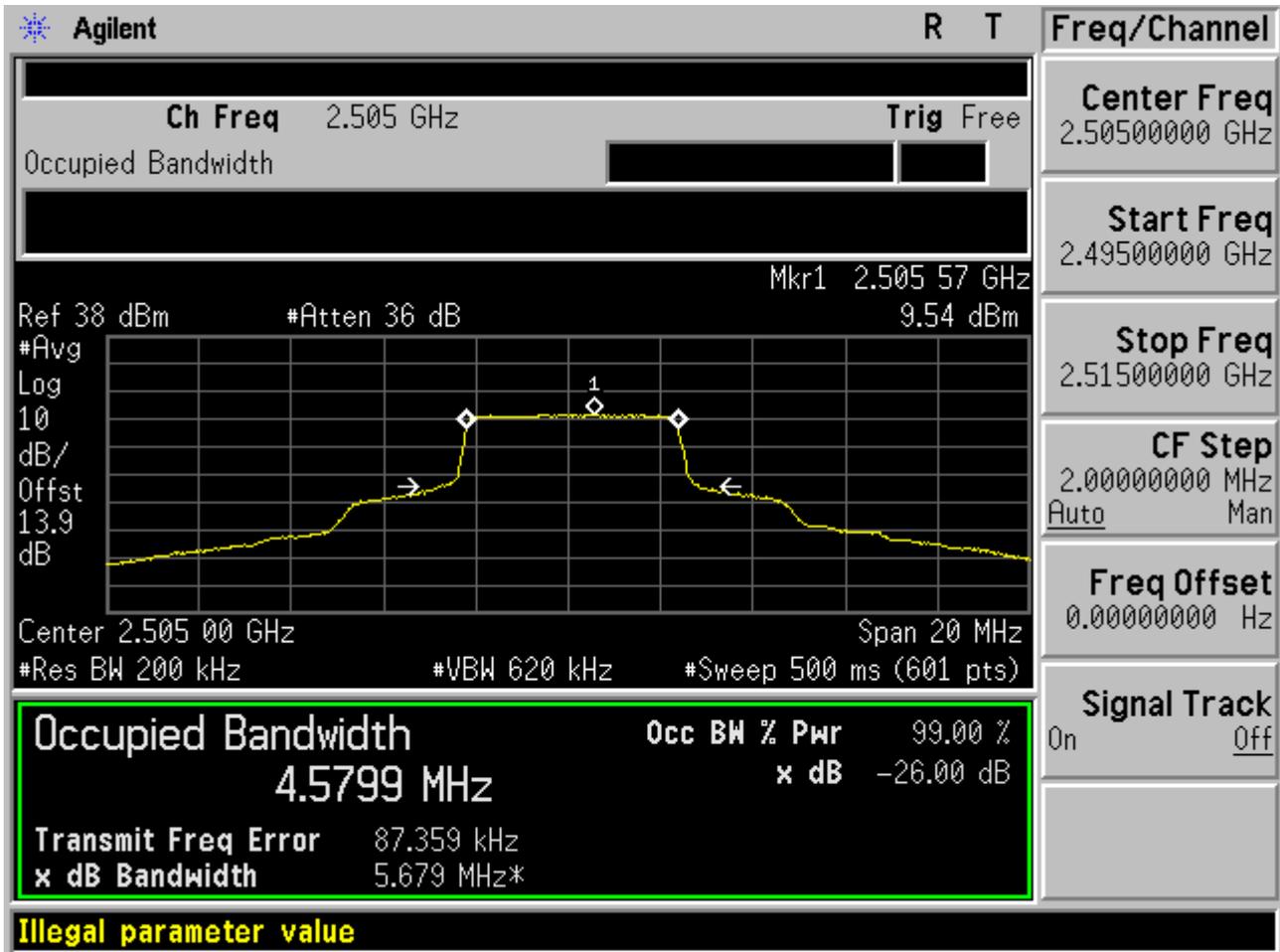


1.2.2.1.2 16QAM/1RB#max



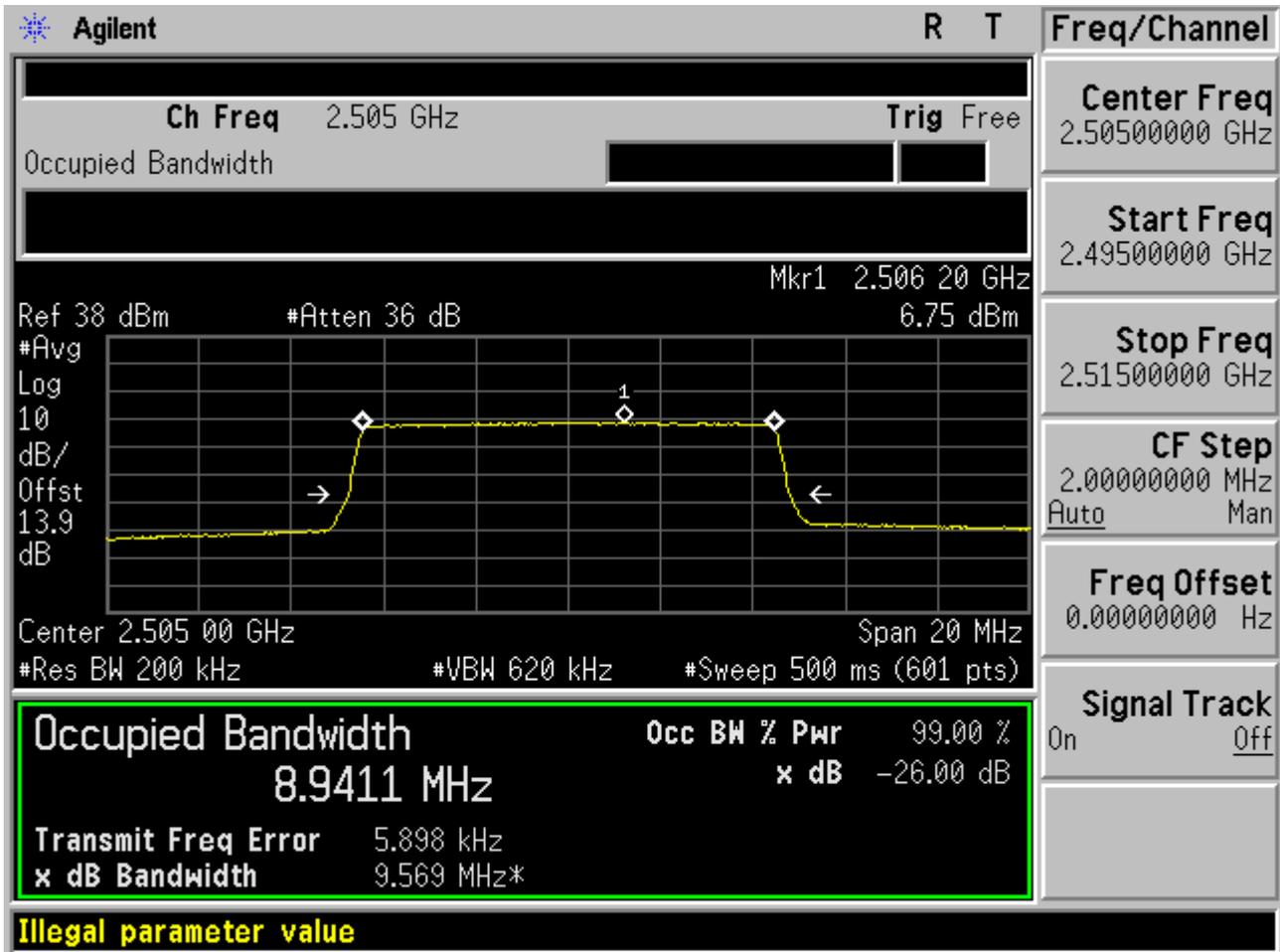


1.2.2.1.3 16QAM/ Partial RBs /RB #13





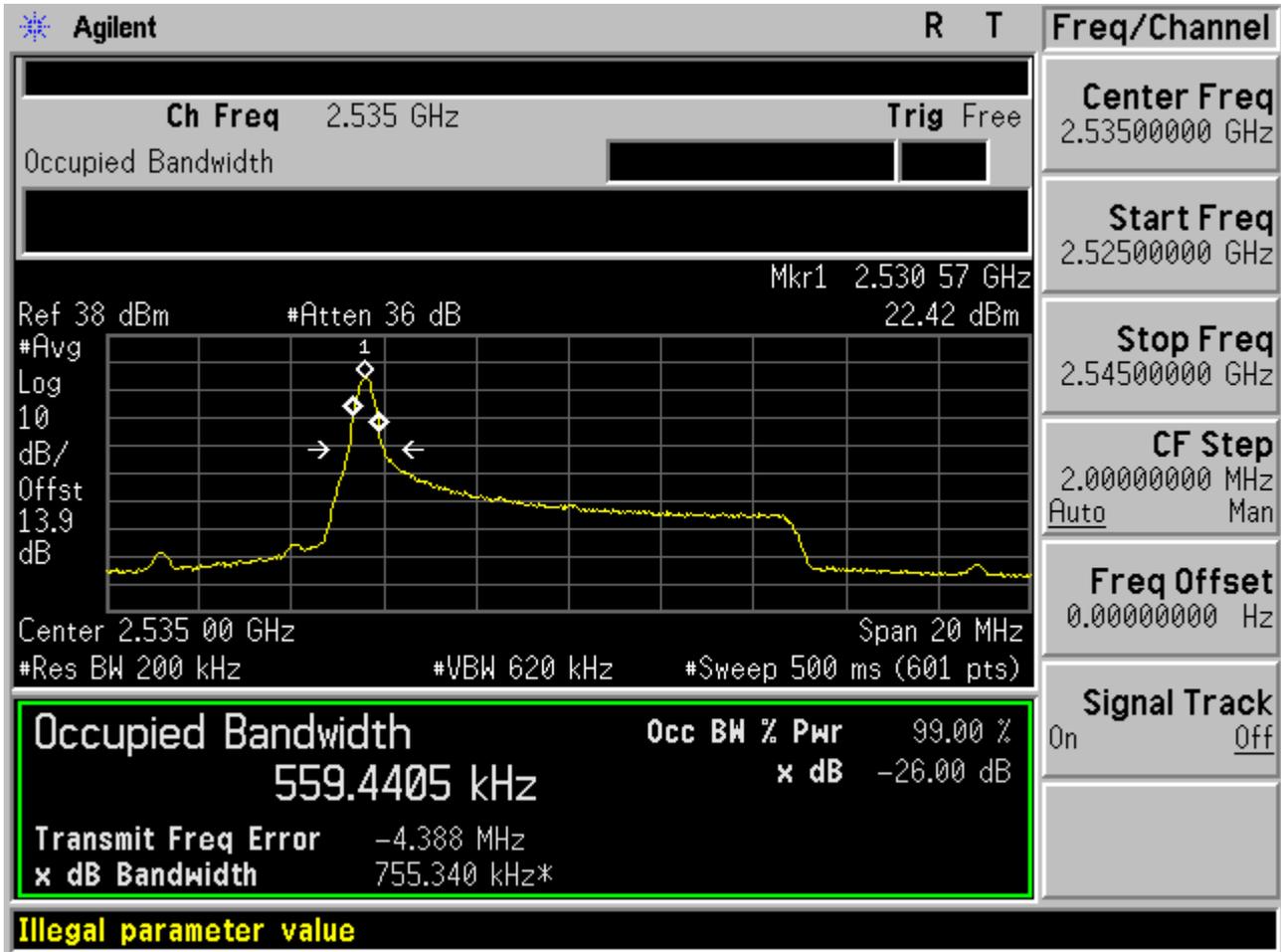
1.2.2.1.4 16QAM/full RBs





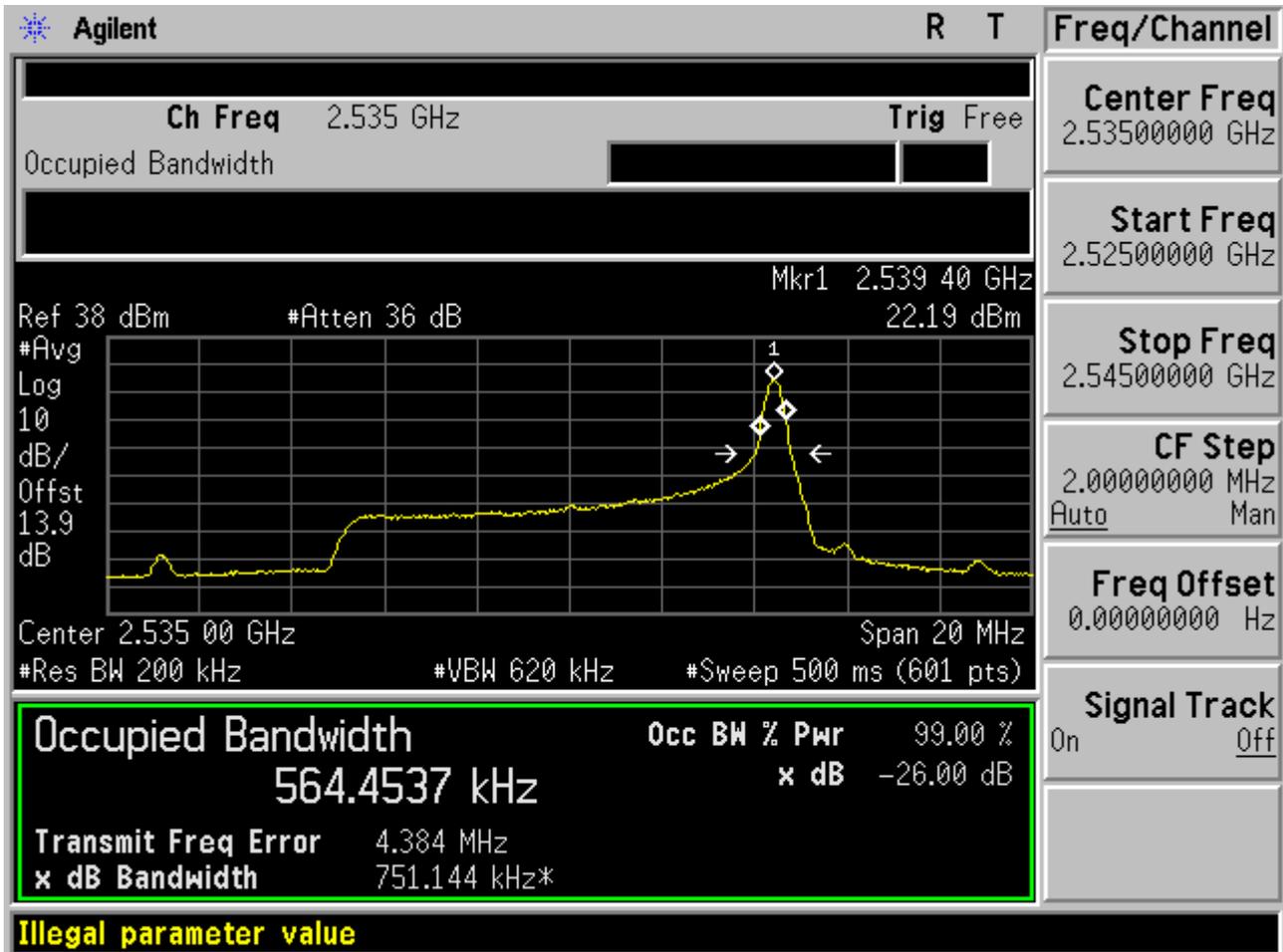
1.2.2.2 Channel =M

1.2.2.2.1 16QAM/1RB#0



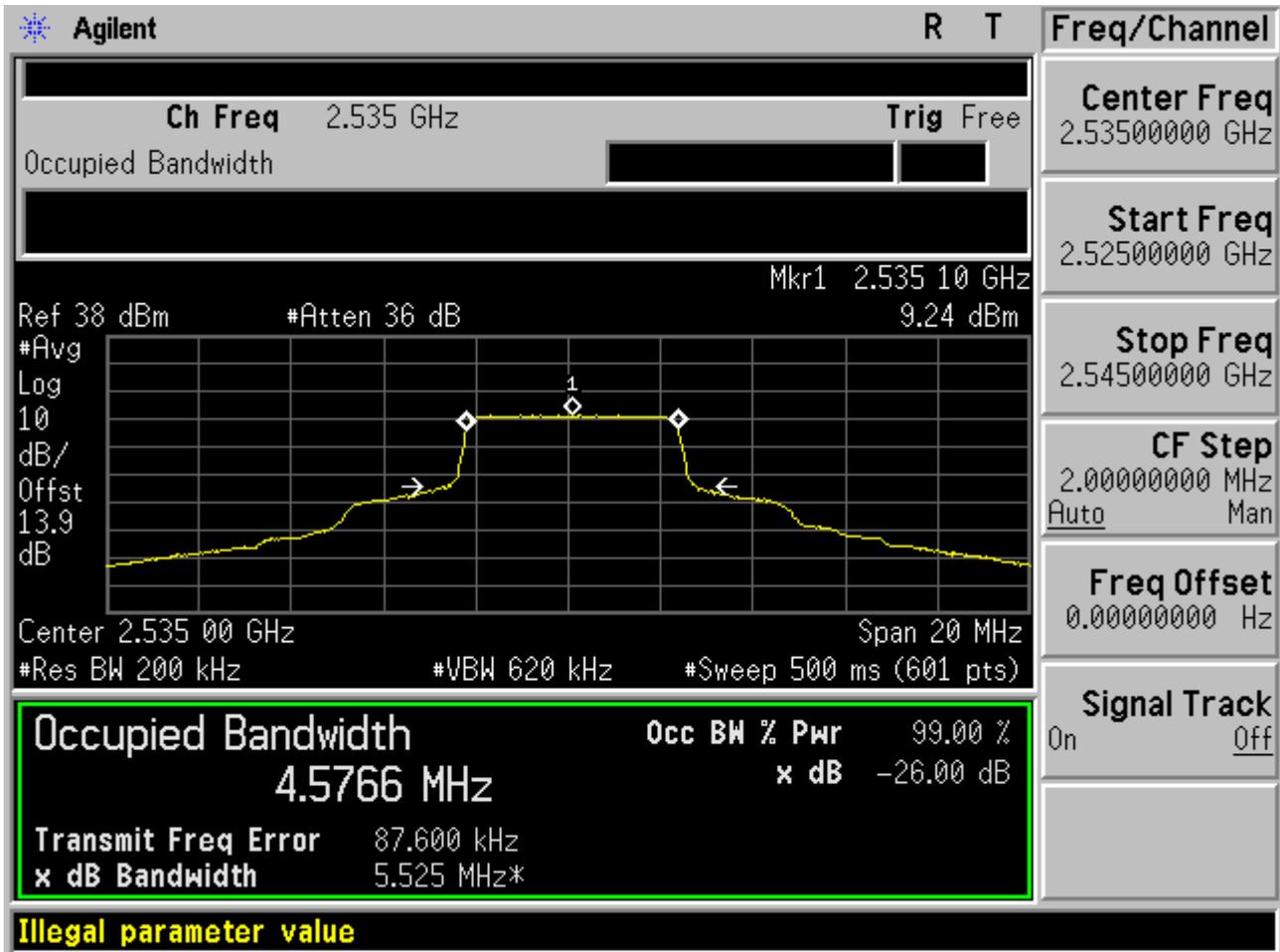


1.2.2.2.2 16QAM/1RB#max



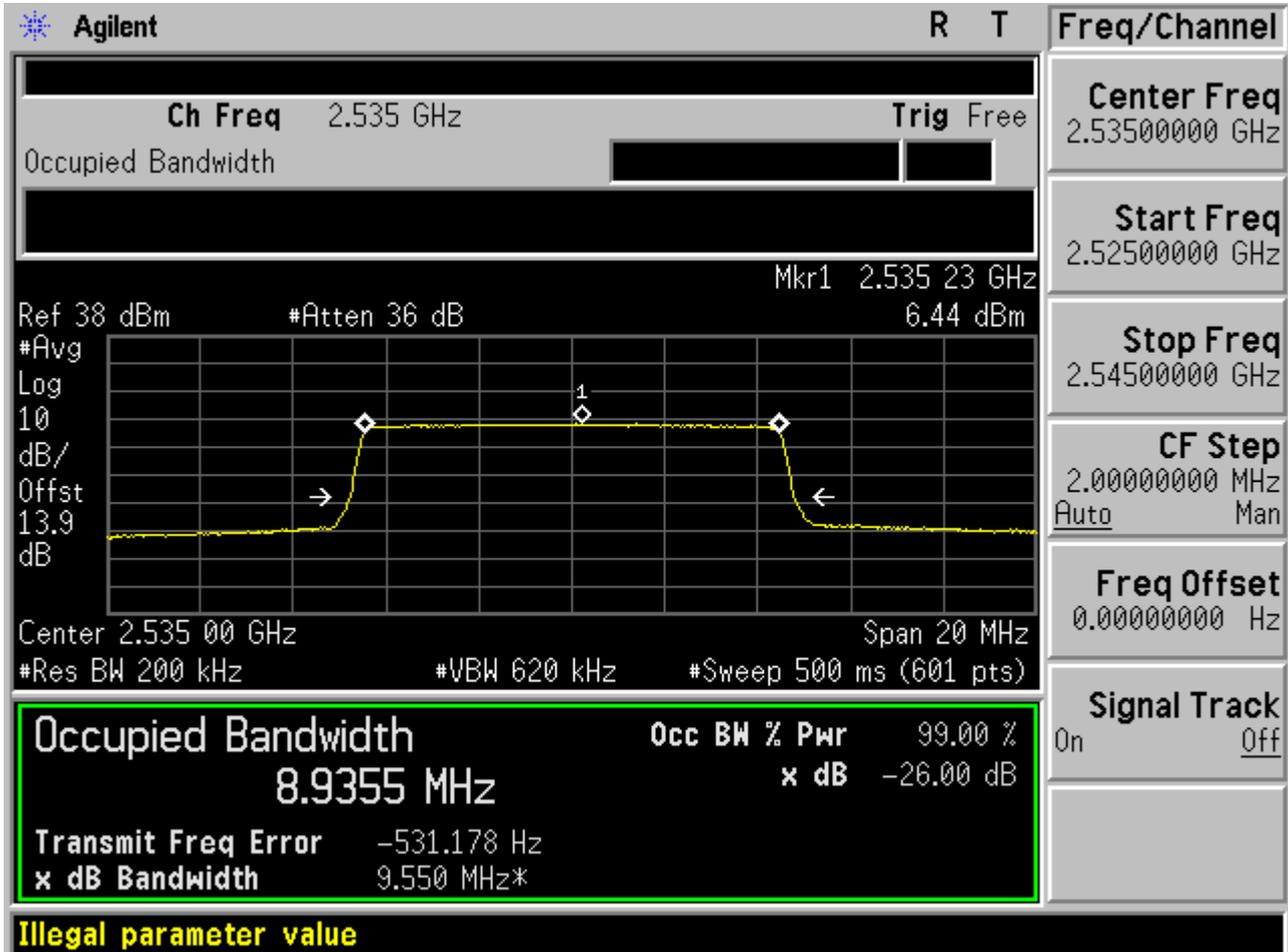


1.2.2.2.3 16QAM/ Partial RBs /RB #13





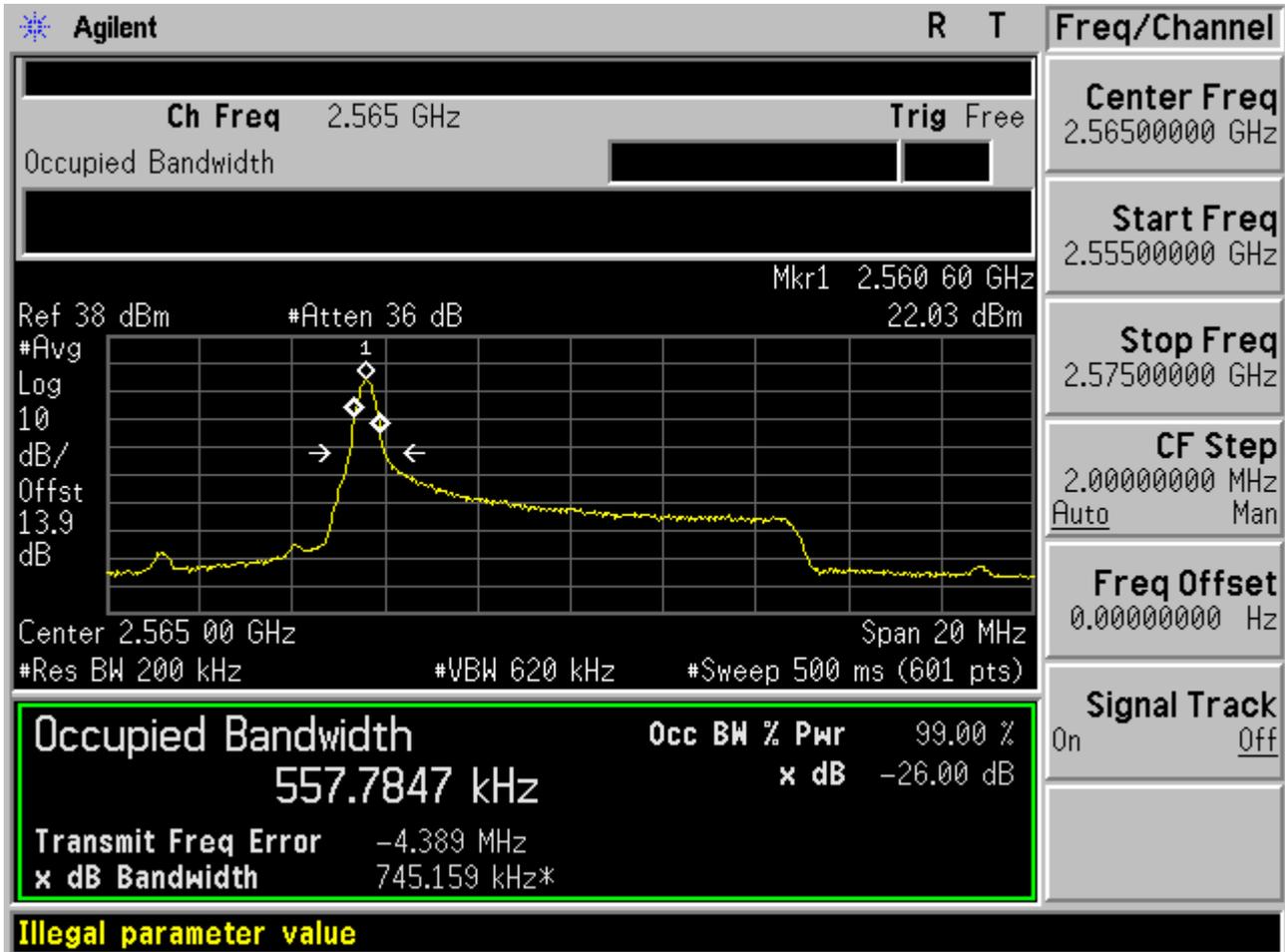
1.2.2.2.4 16QAM/full RBs





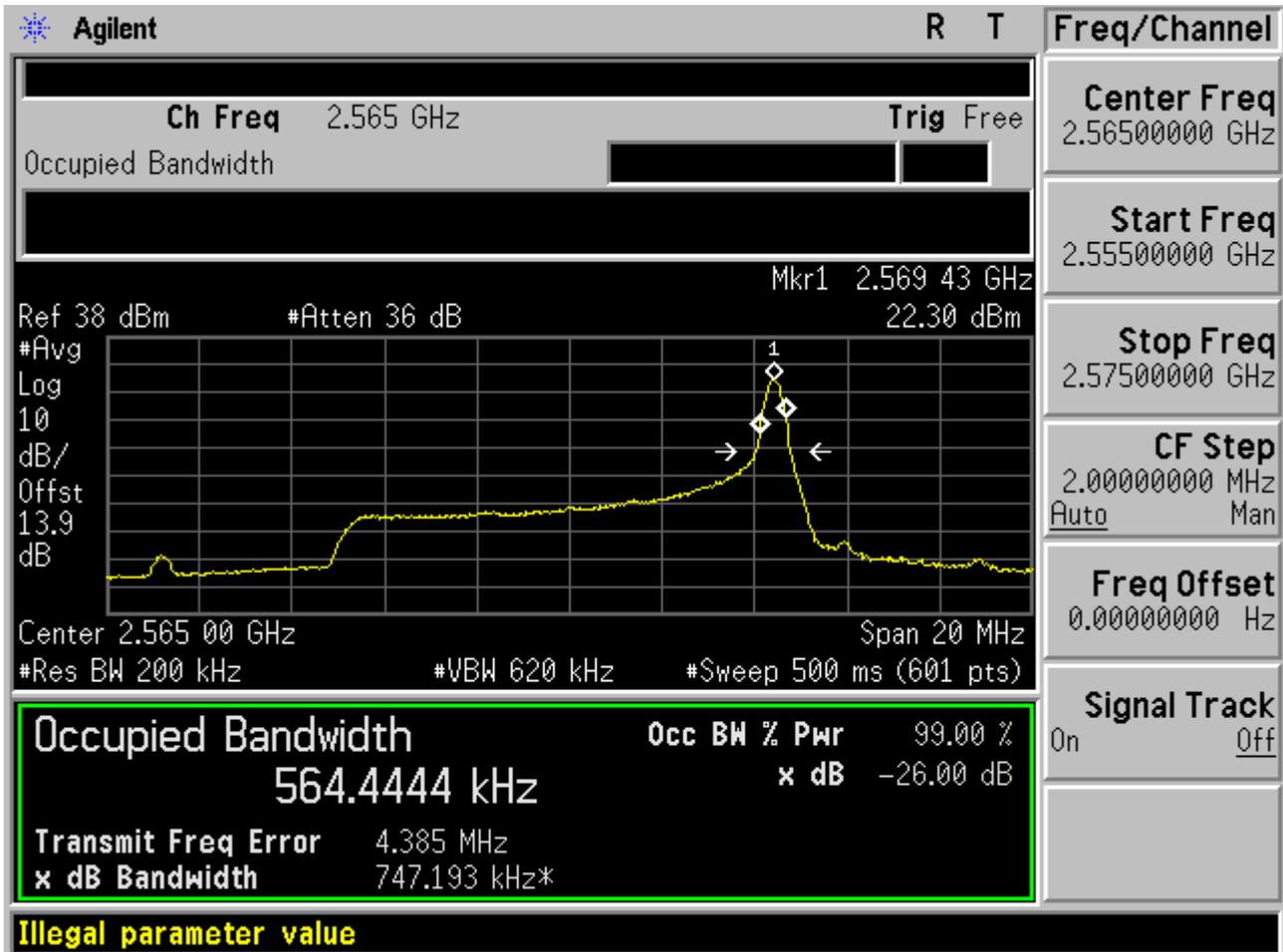
1.2.2.3 Channel =T

1.2.2.3.1 16QAM/1RB#0



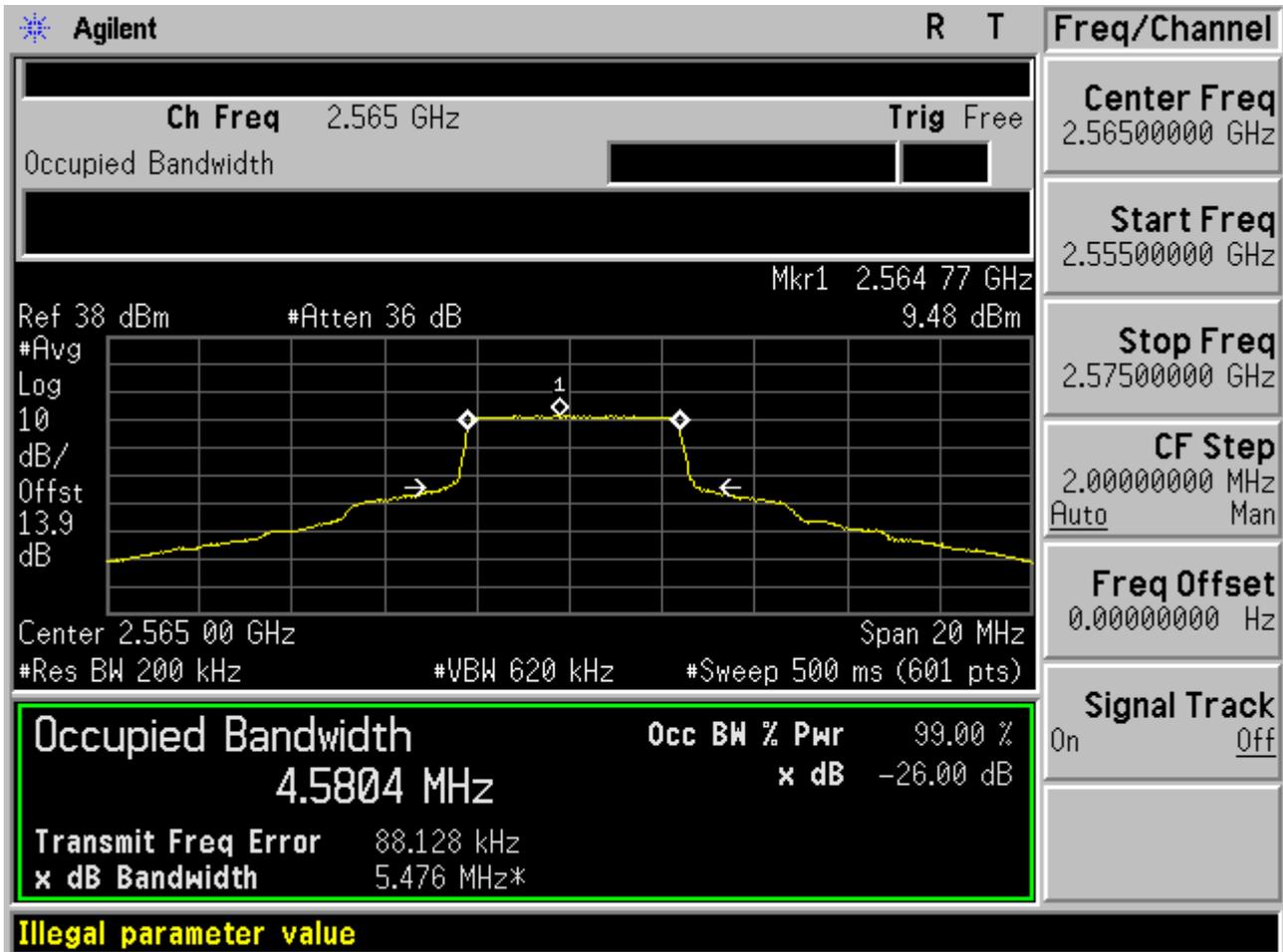


1.2.2.3.2 16QAM/1RB#max



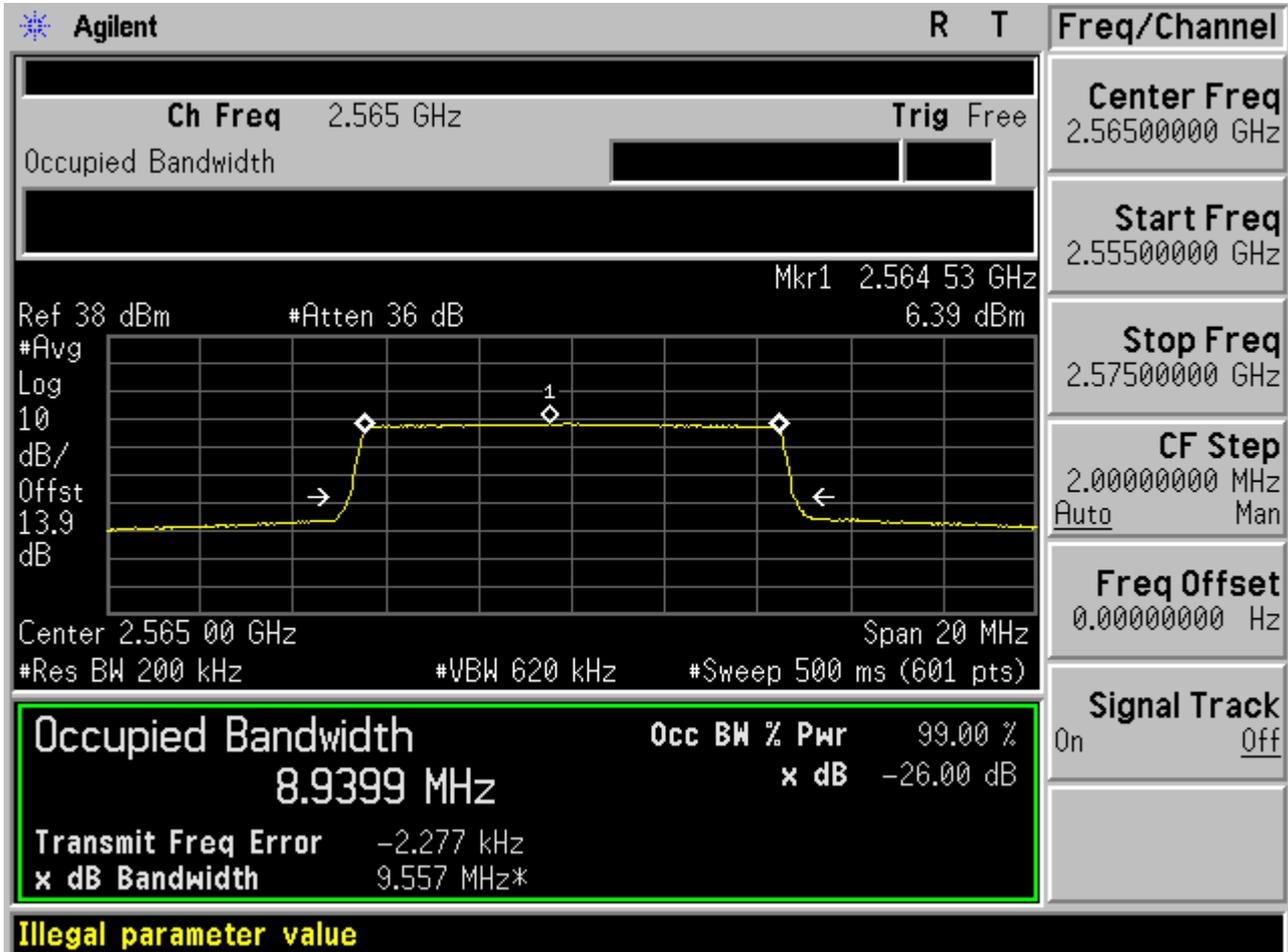


1.2.2.3.3 16QAM/ Partial RBs /RB #13





1.2.2.3.4 16QAM/full RBs





1.2.3 Channel Bandwidth = 15 MHz

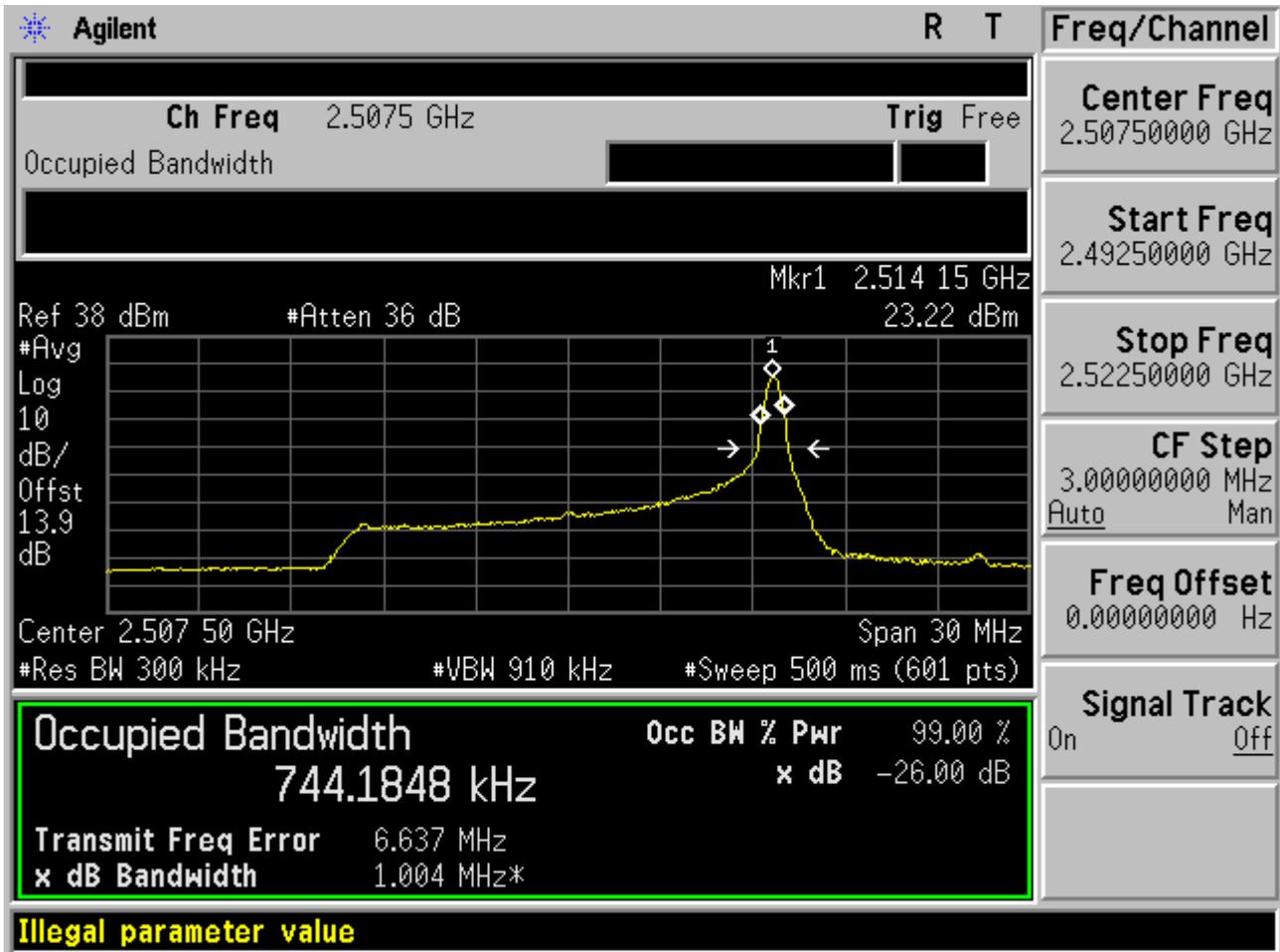
1.2.3.1 Channel = B

1.2.3.1.1 16QAM/1RB#0



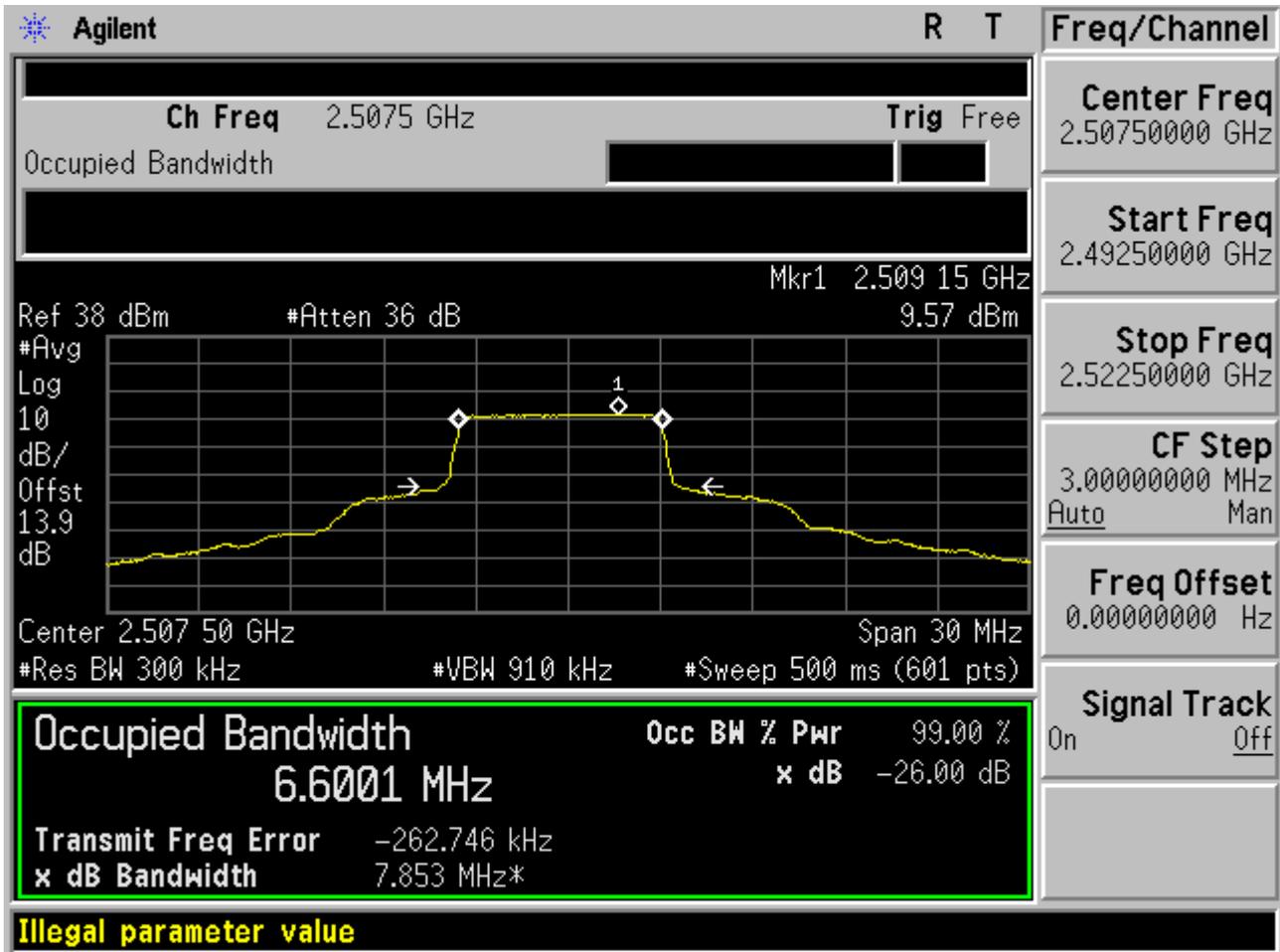


1.2.3.1.2 16QAM/1RB#max



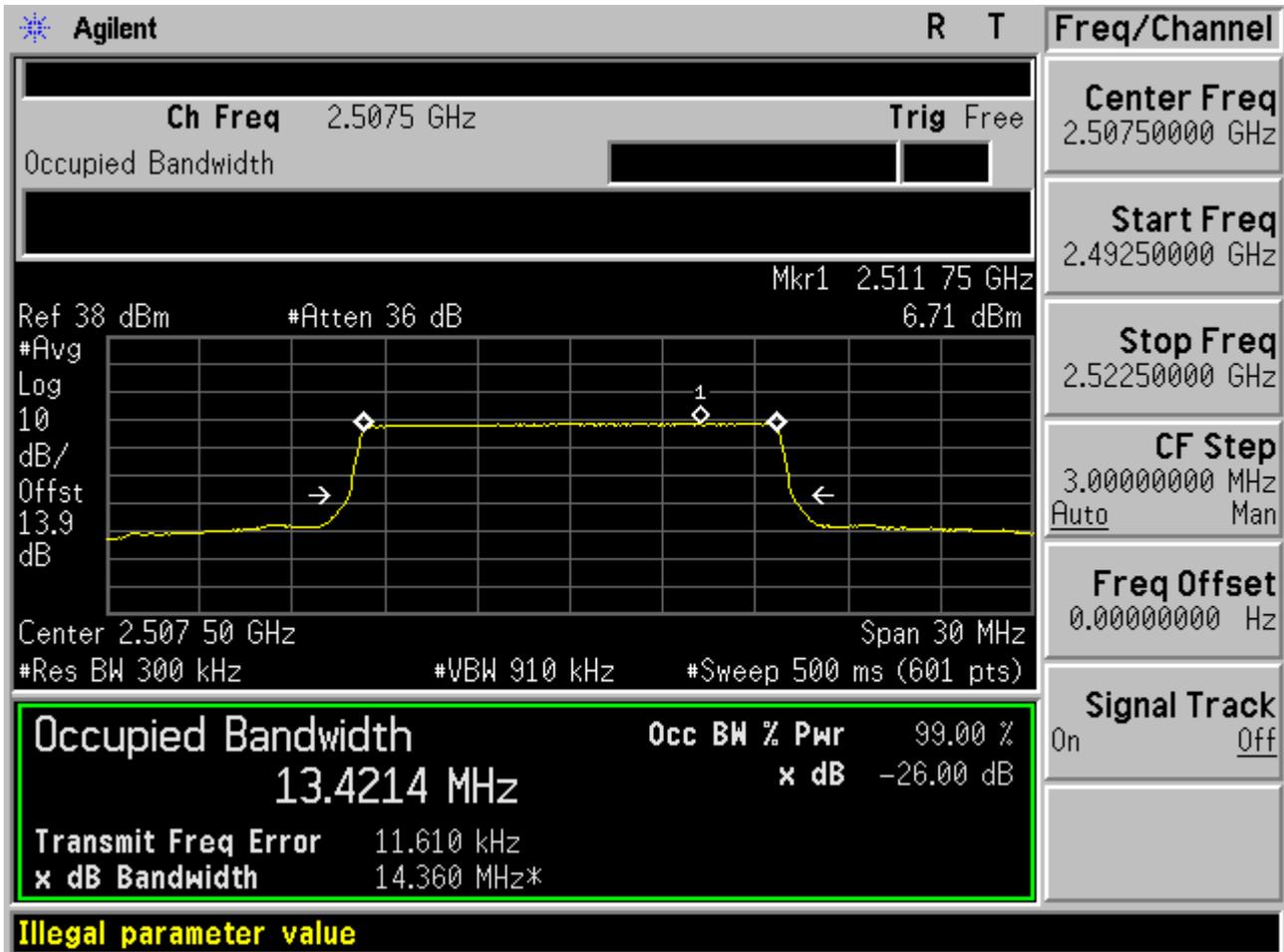


1.2.3.1.3 16QAM/ Partial RBs /RB #18





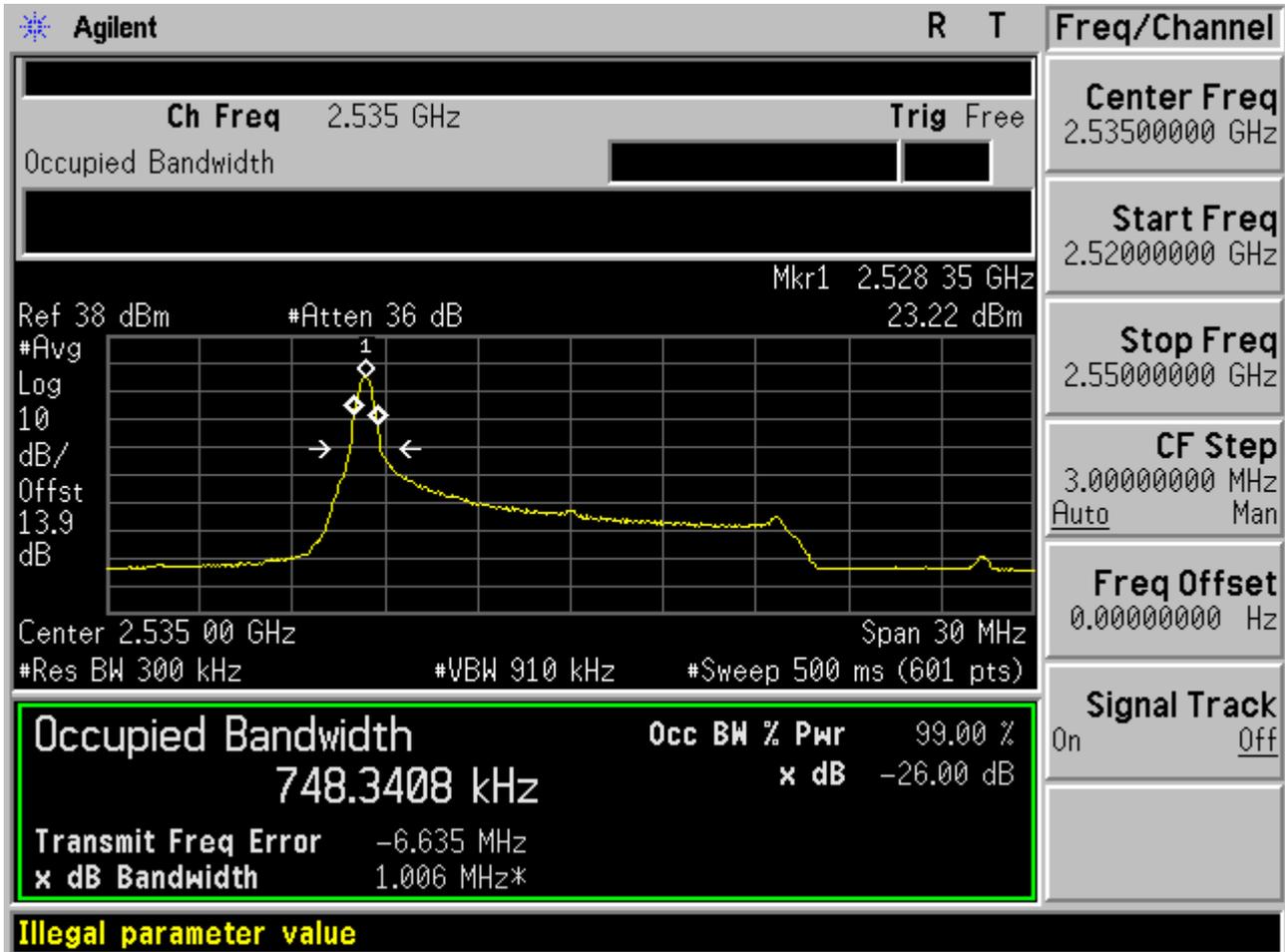
1.2.3.1.4 16QAM/full RBs





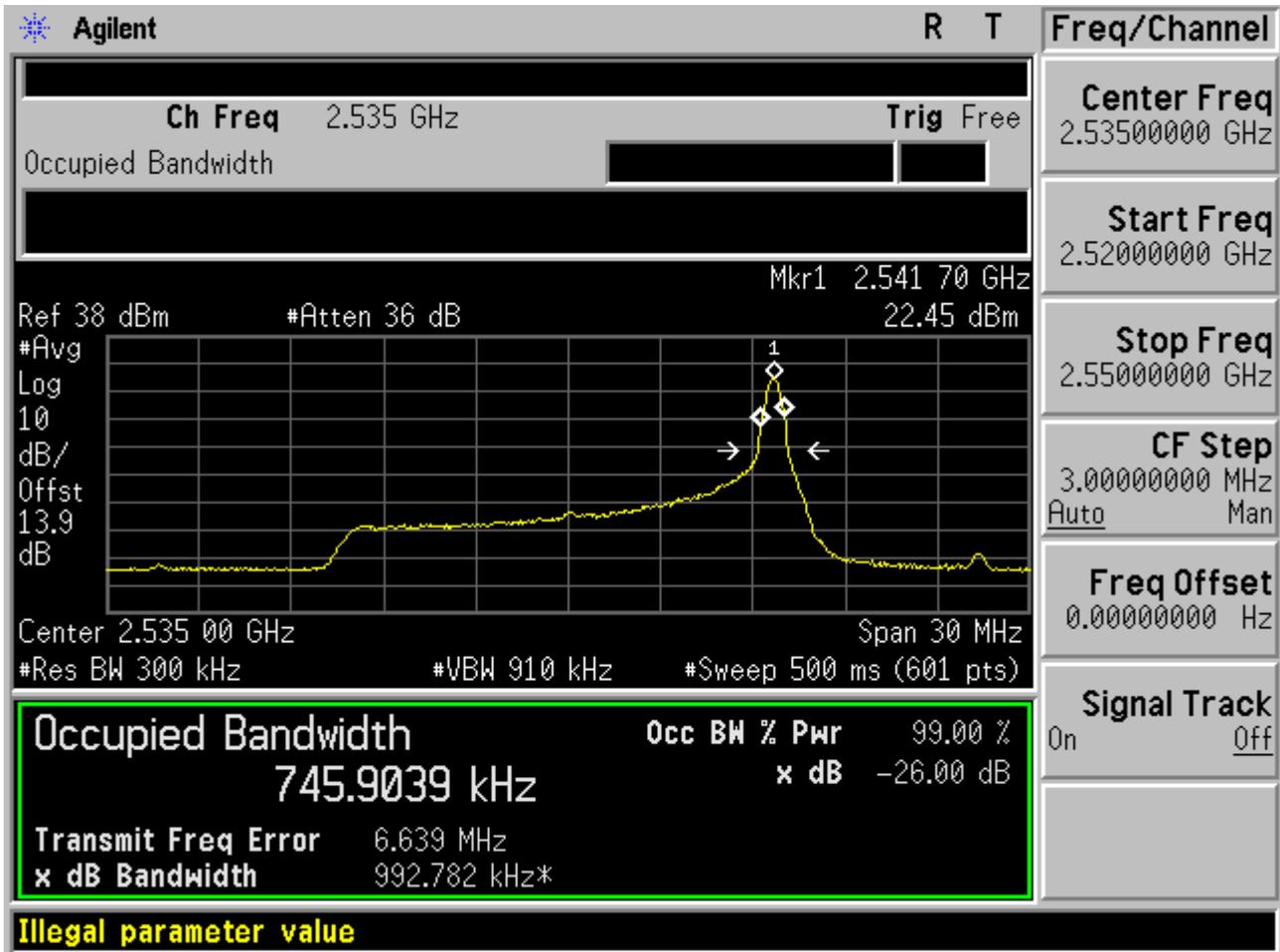
1.2.3.2 Channel =M

1.2.3.2.1 16QAM/1RB#0



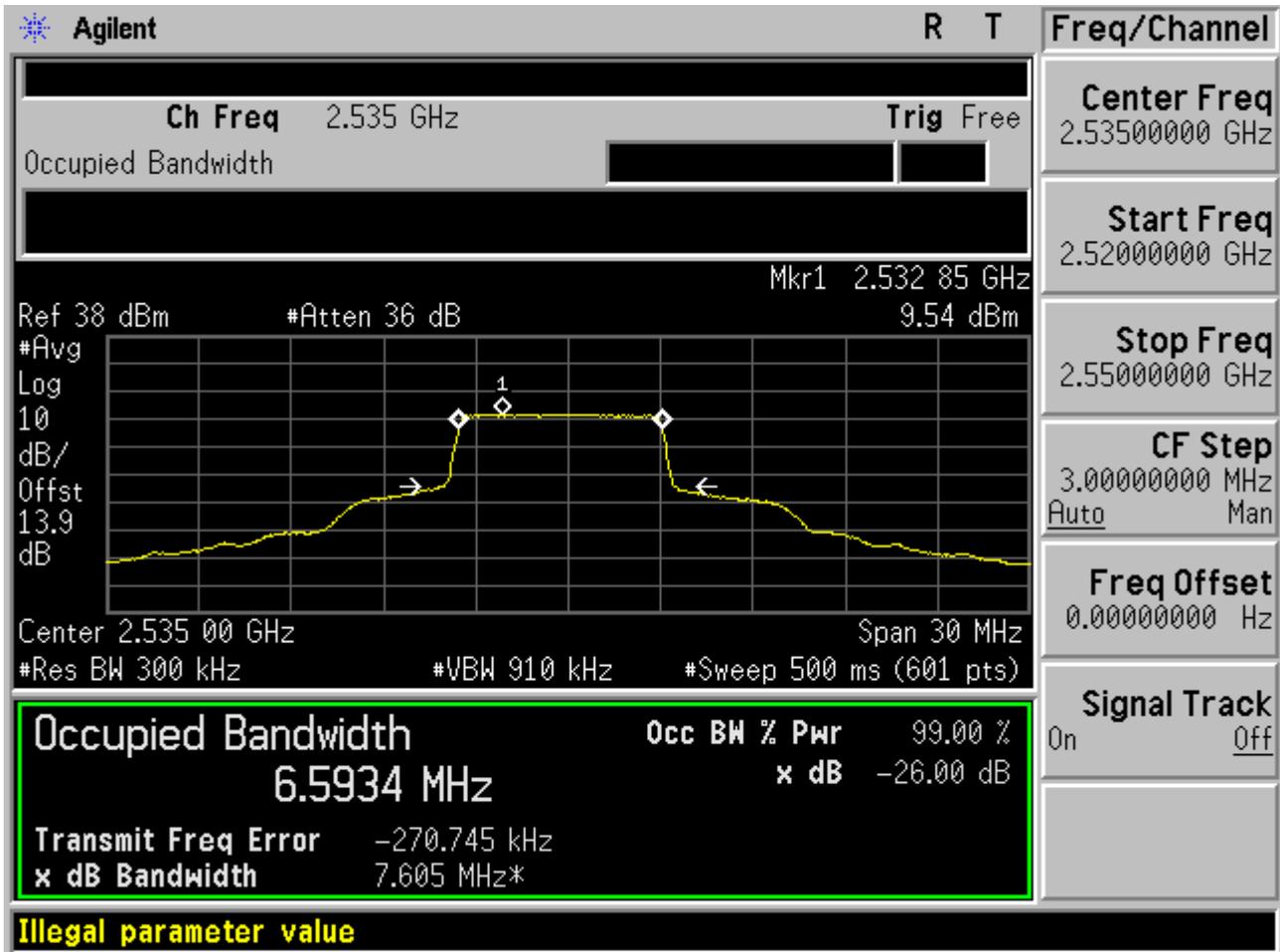


1.2.3.2.2 16QAM/1RB#max



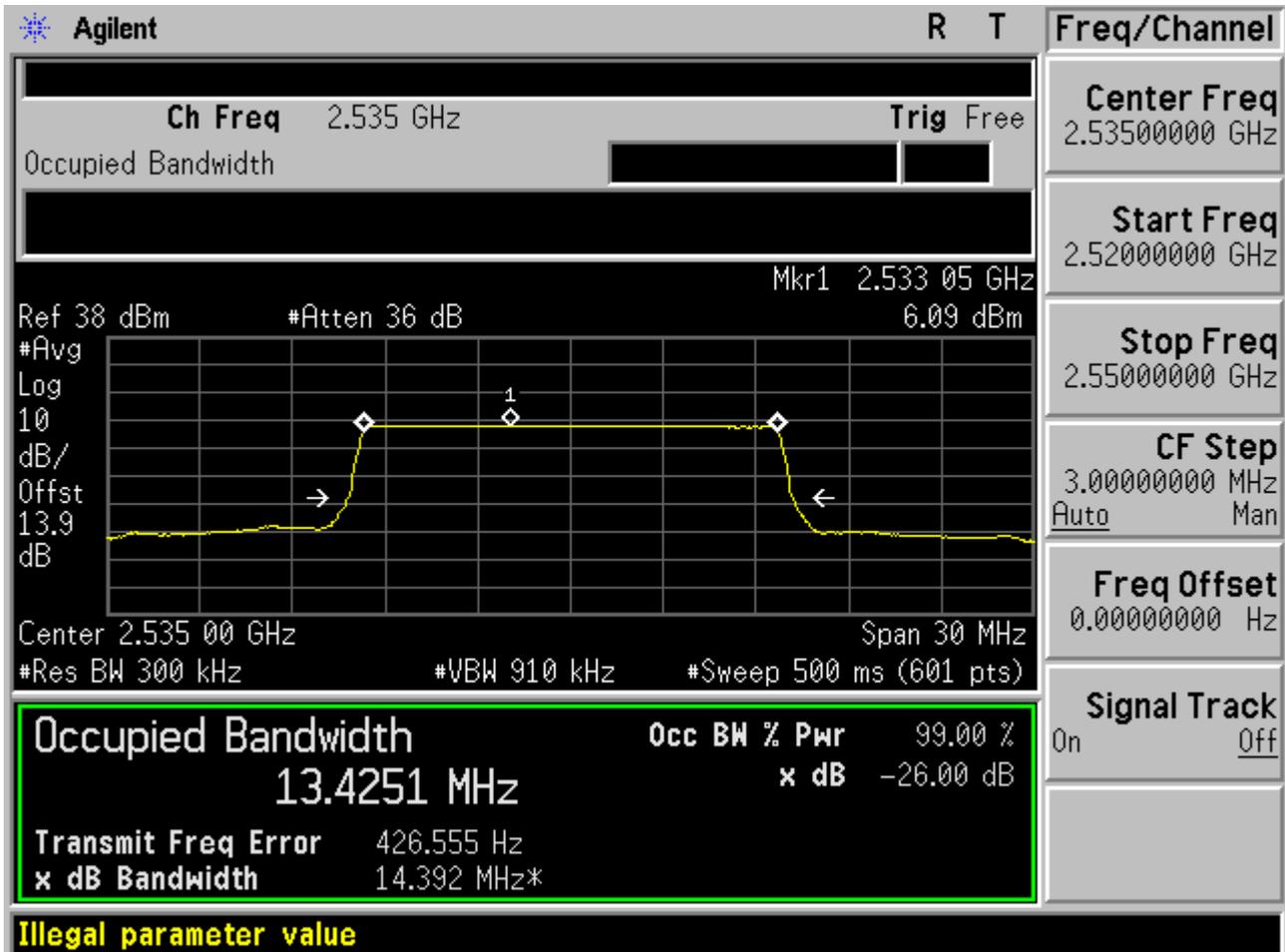


1.2.3.2.3 16QAM/ Partial RBs /RB #18





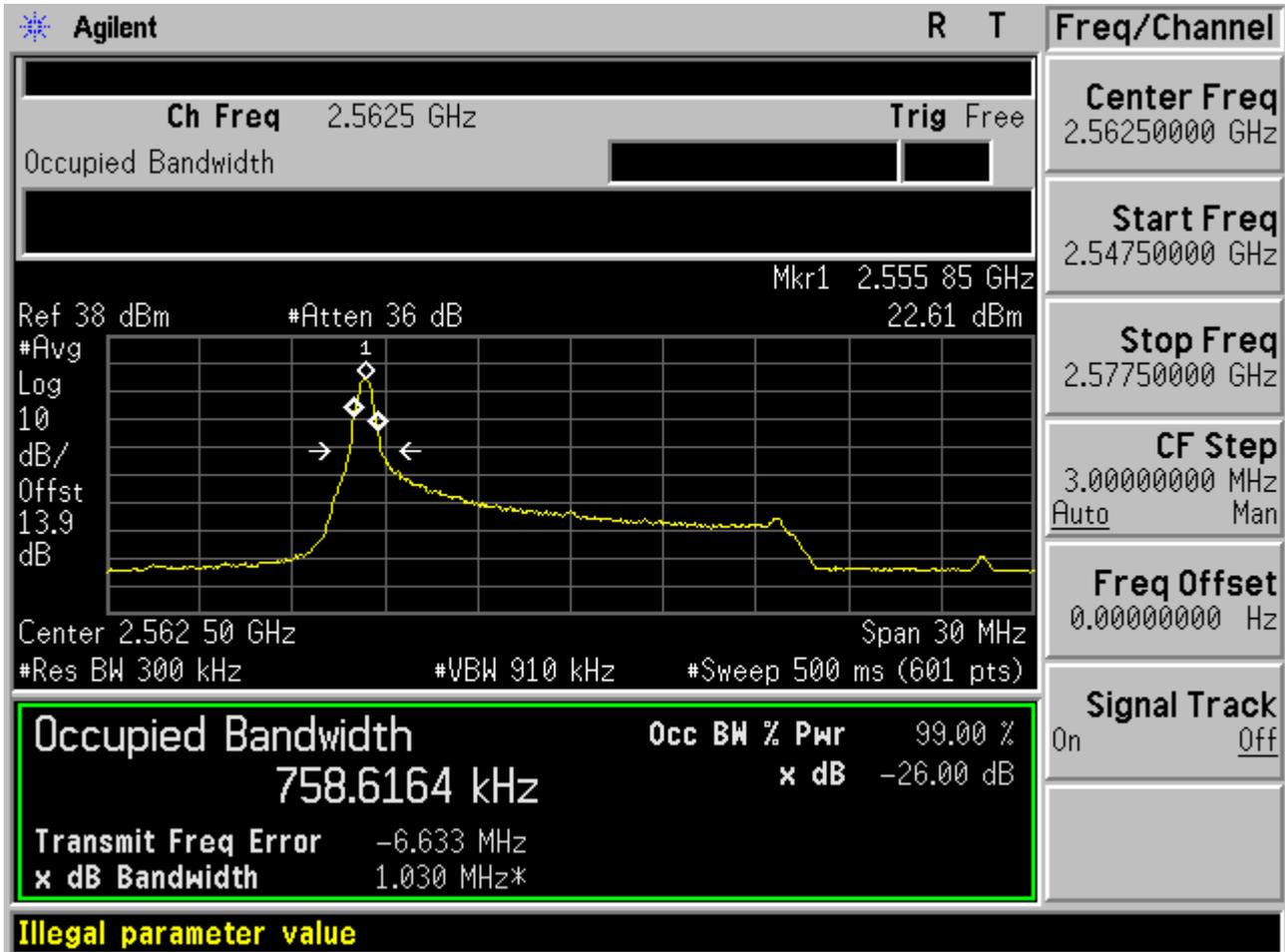
1.2.3.2.4 16QAM/full RBs





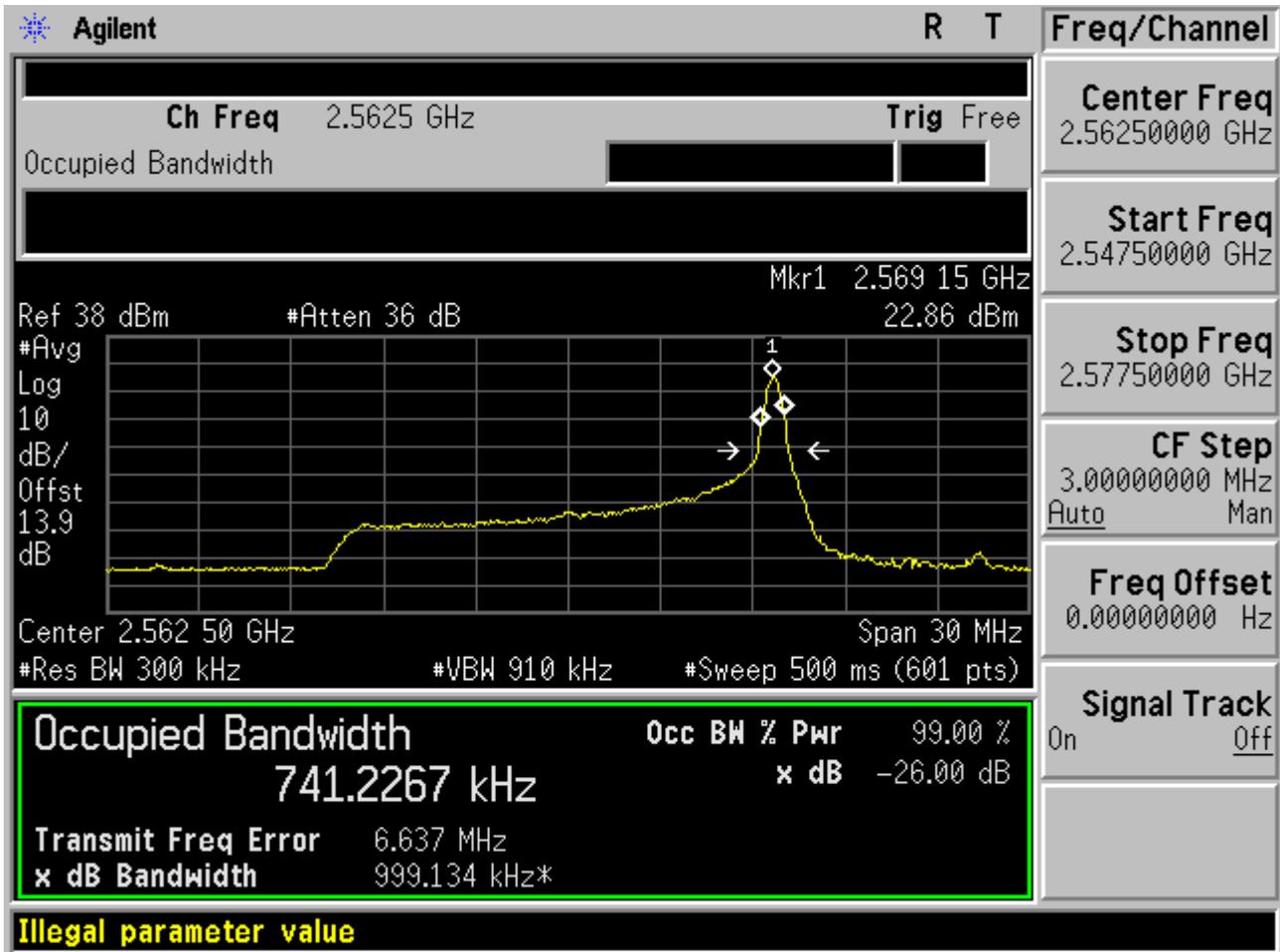
1.2.3.3 Channel =T

1.2.3.3.1 16QAM/1RB#0



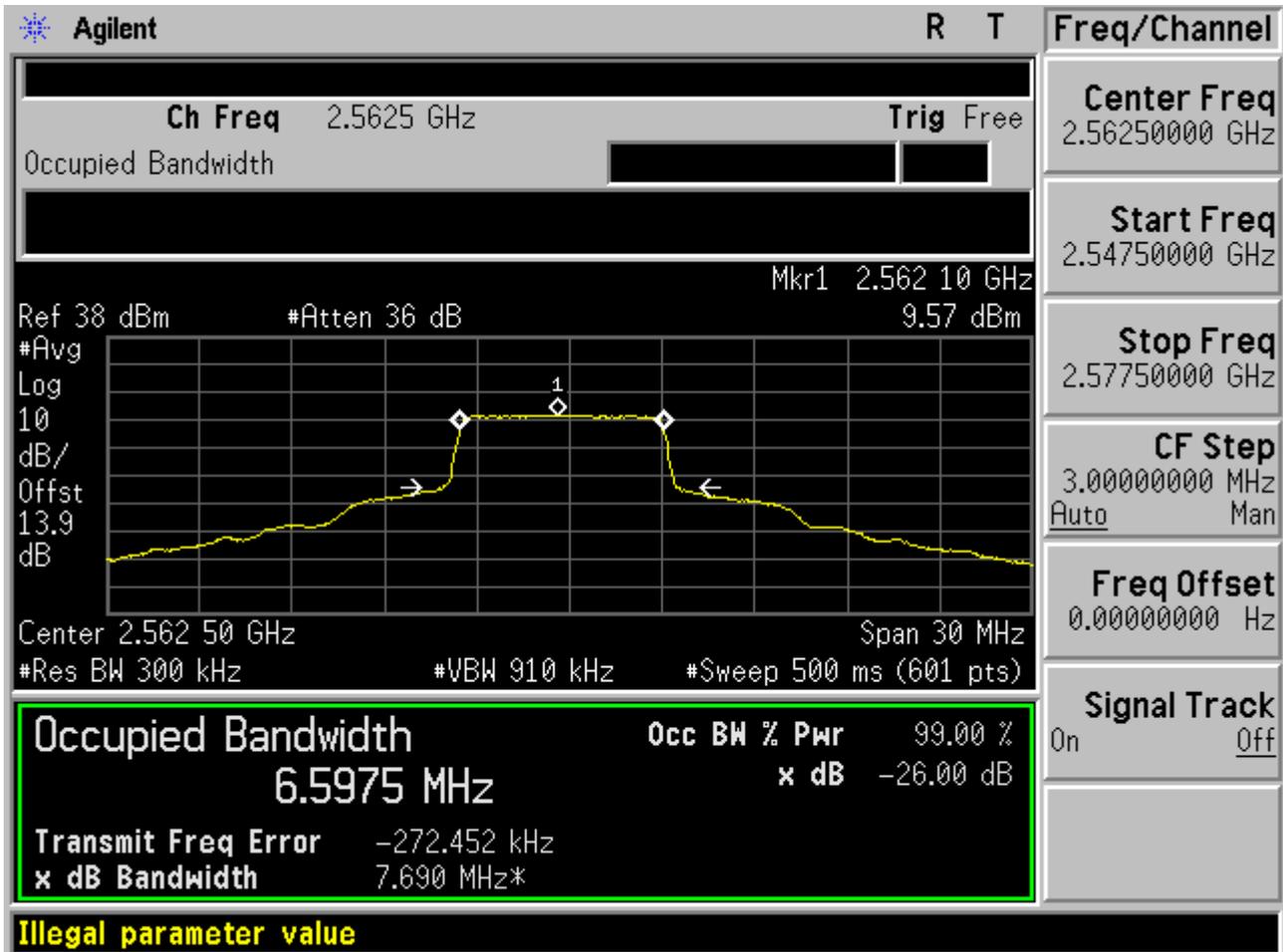


1.2.3.3.2 16QAM/1RB#max



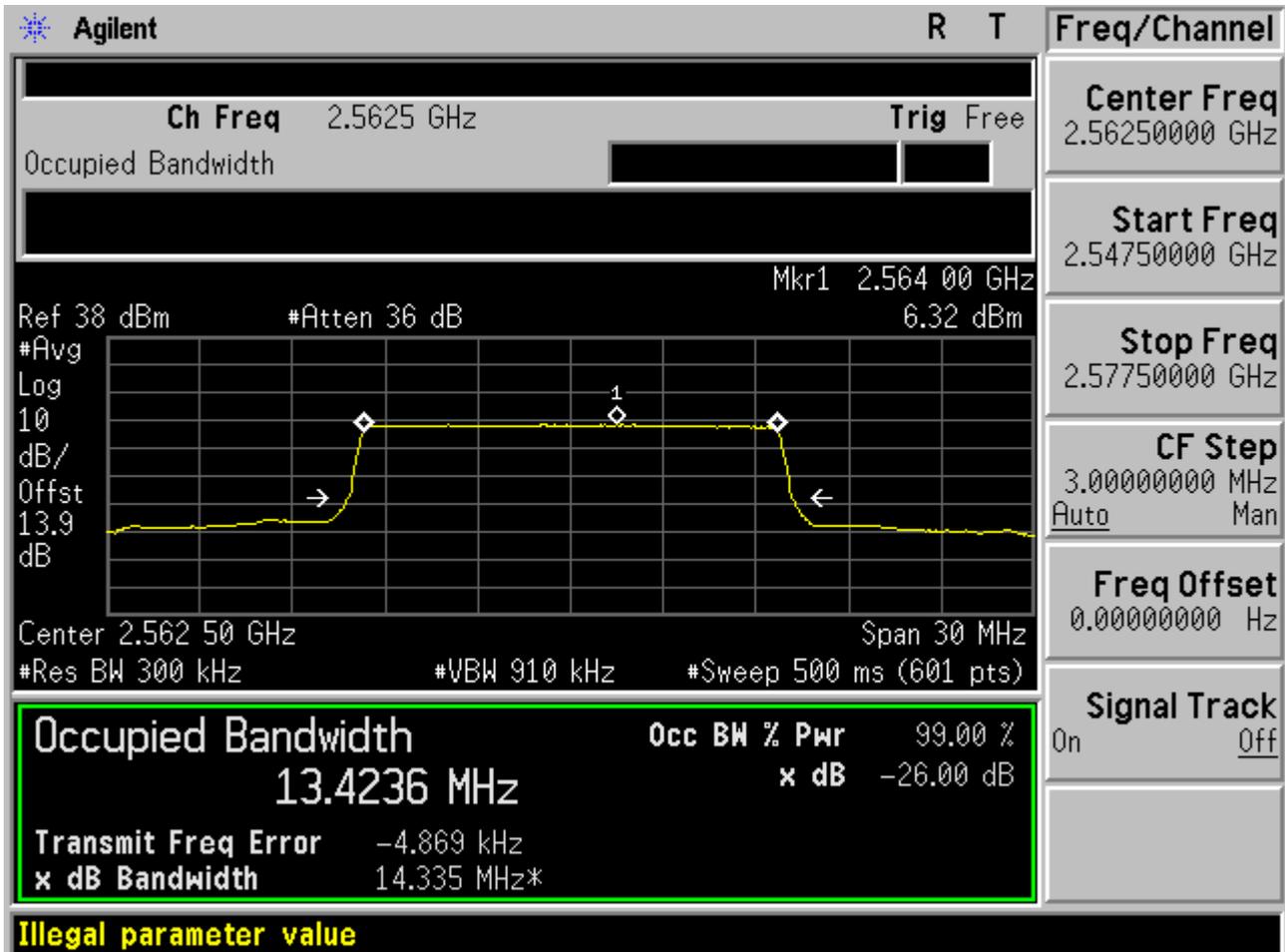


1.2.3.3.3 16QAM/ Partial RBs /RB #18





1.2.3.3.4 16QAM/full RBs

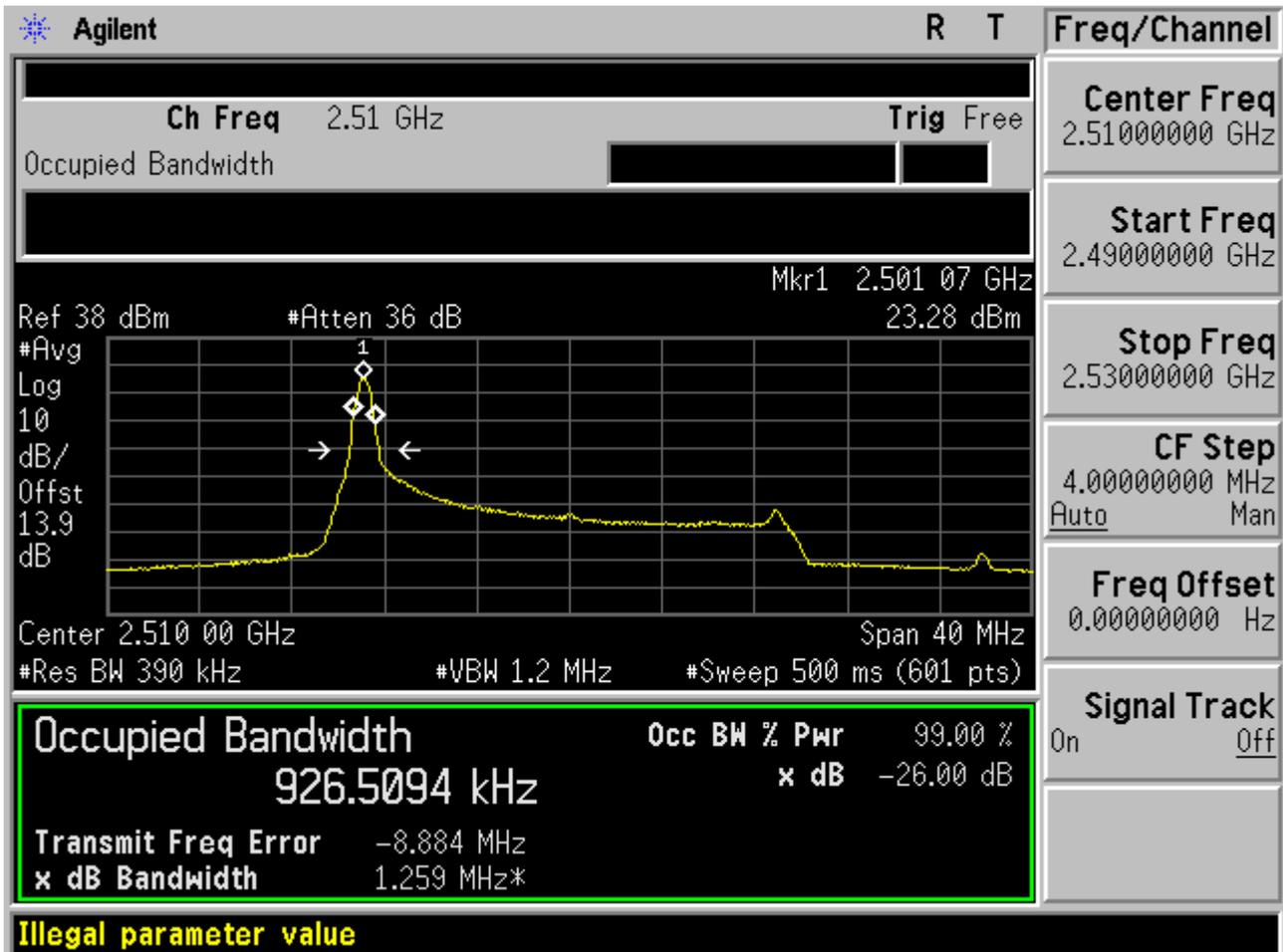




1.2.4 Channel Bandwidth = Highest (20 MHz)

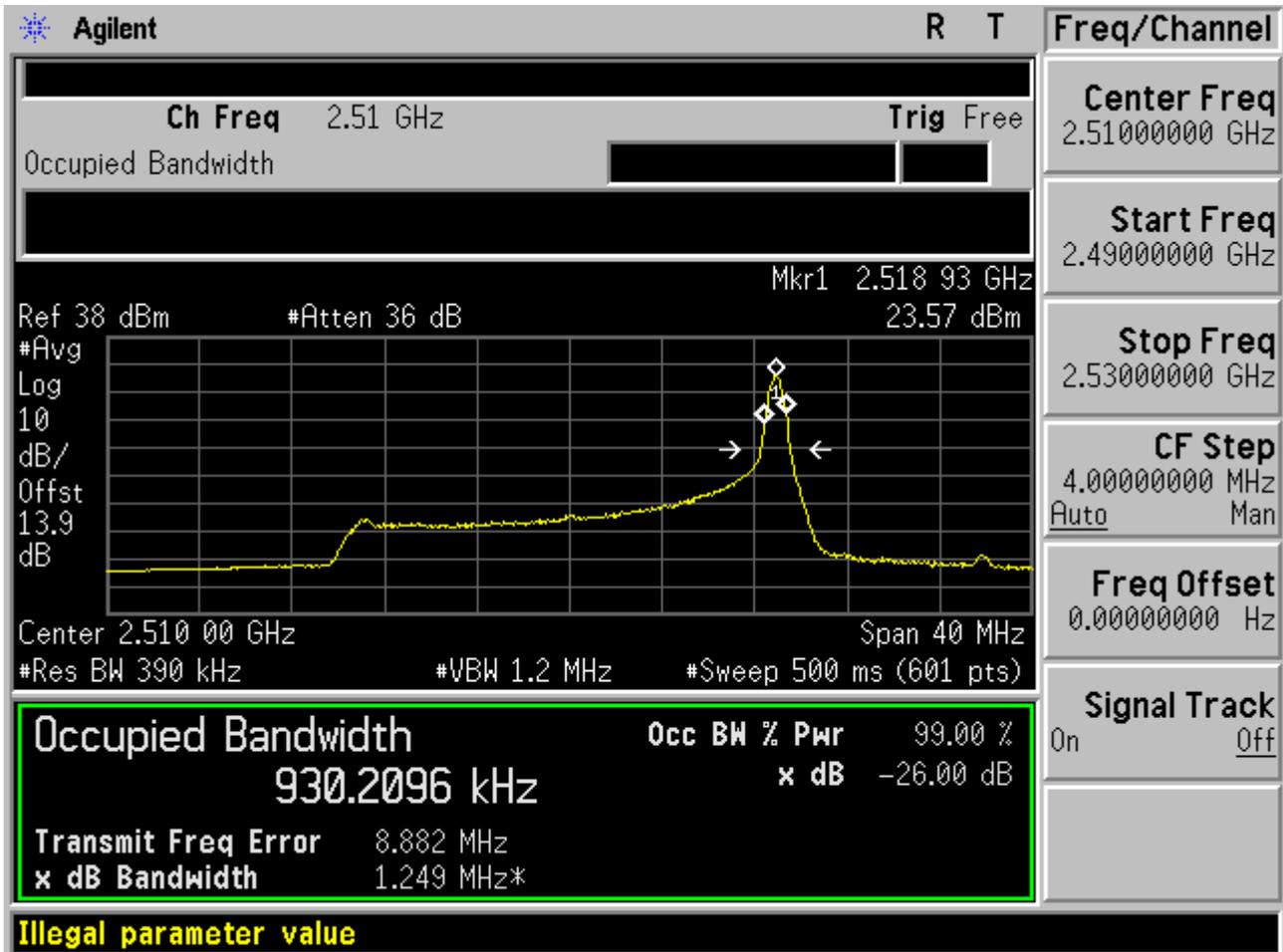
1.2.4.1 Channel = B

1.2.4.1.1 16QAM/1RB#0



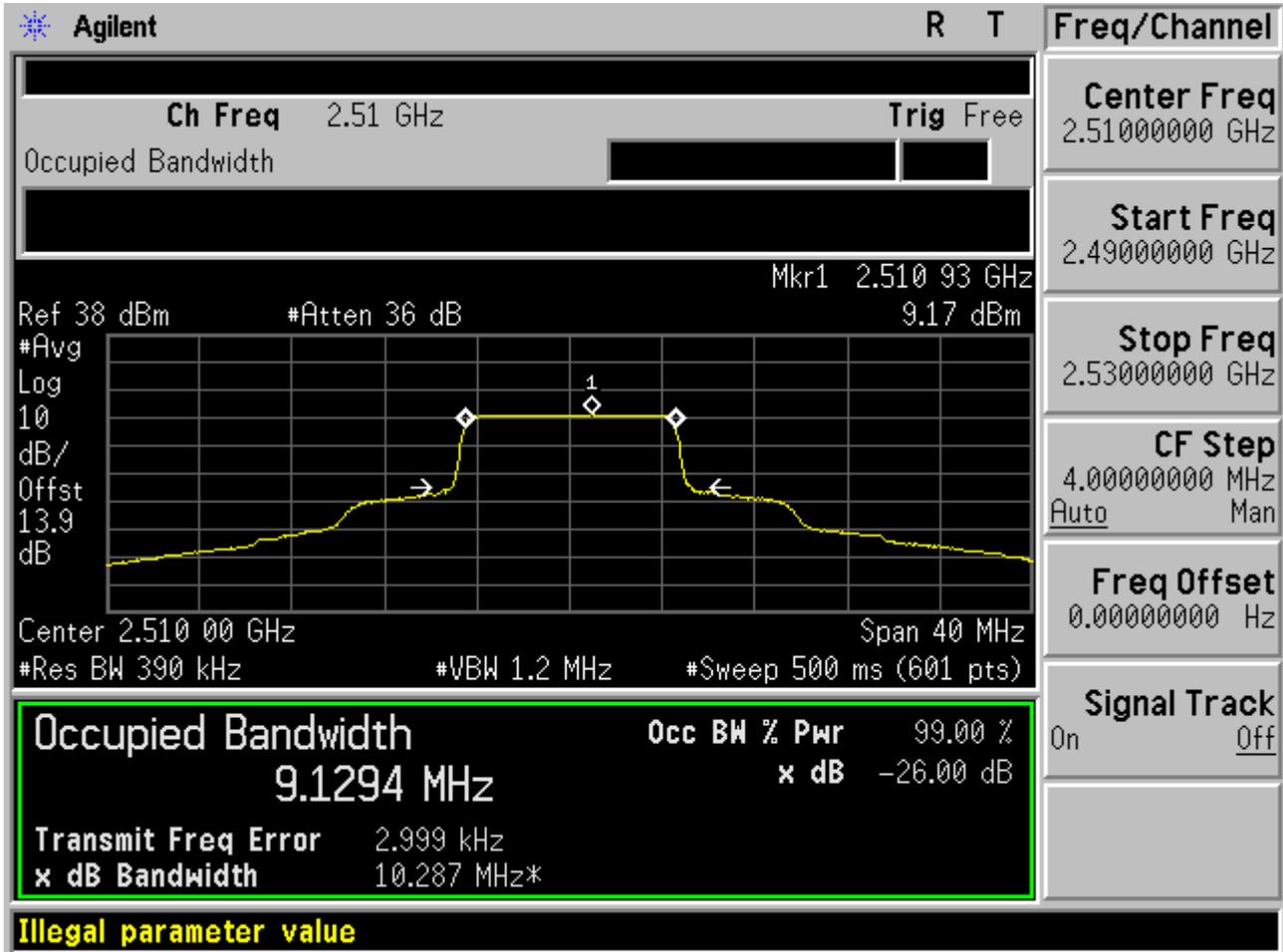


1.2.4.1.2 16QAM/1RB#max



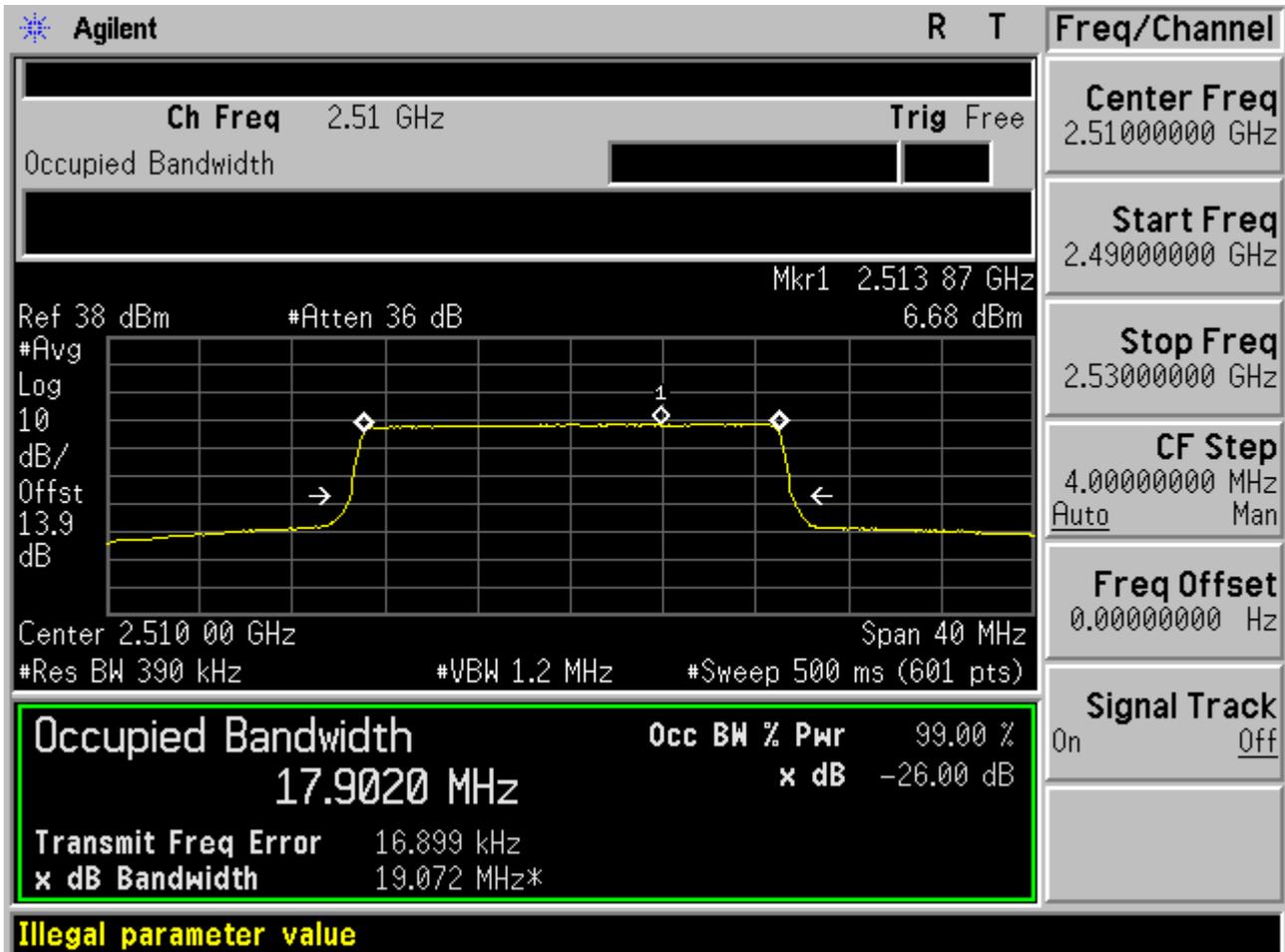


1.2.4.1.3 16QAM/ Partial RBs /RB #25





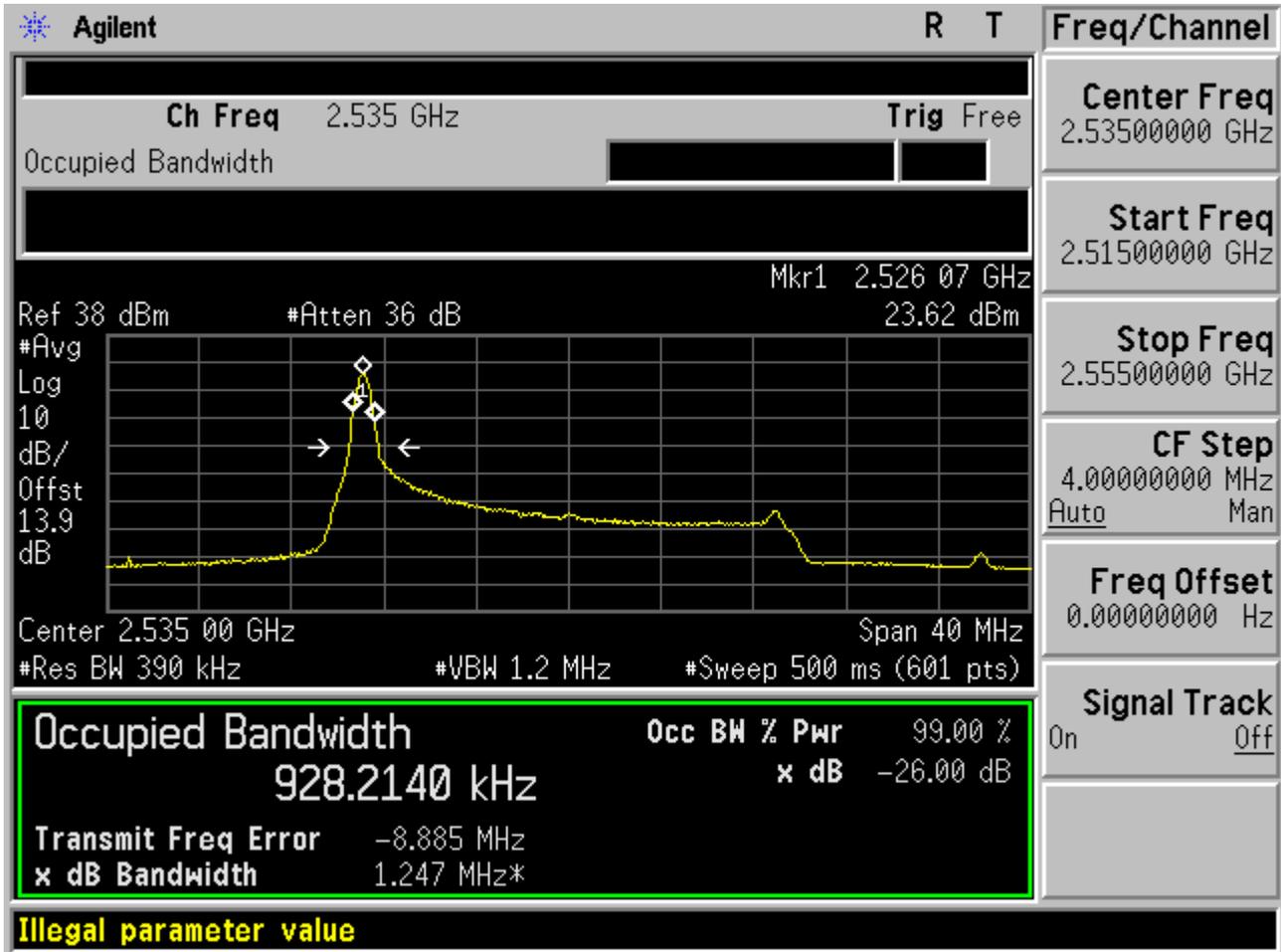
1.2.4.1.4 16QAM/full RBs





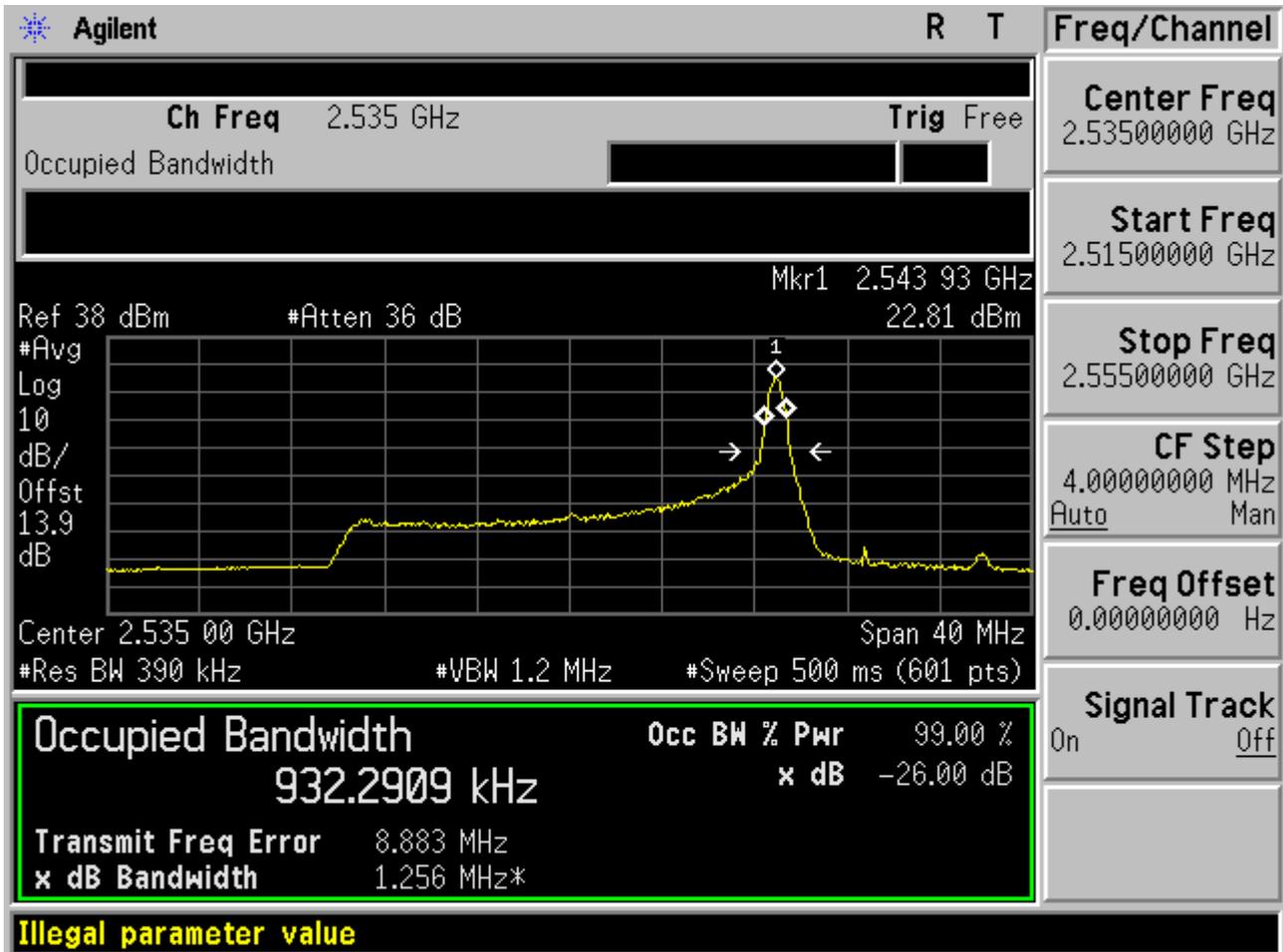
1.2.4.2 Channel =M

1.2.4.2.1 16QAM/1RB#0



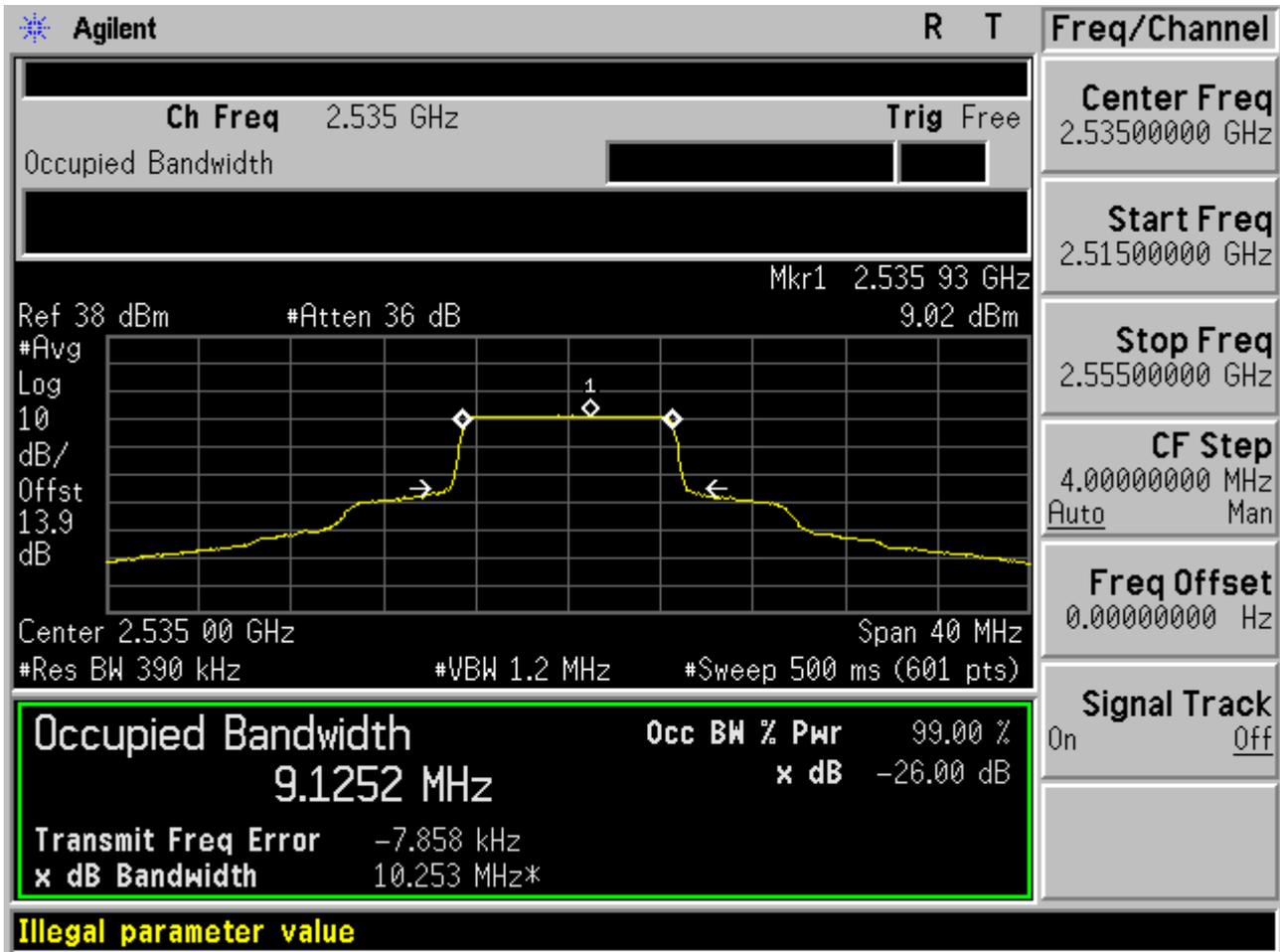


1.2.4.2.2 16QAM/1RB#max



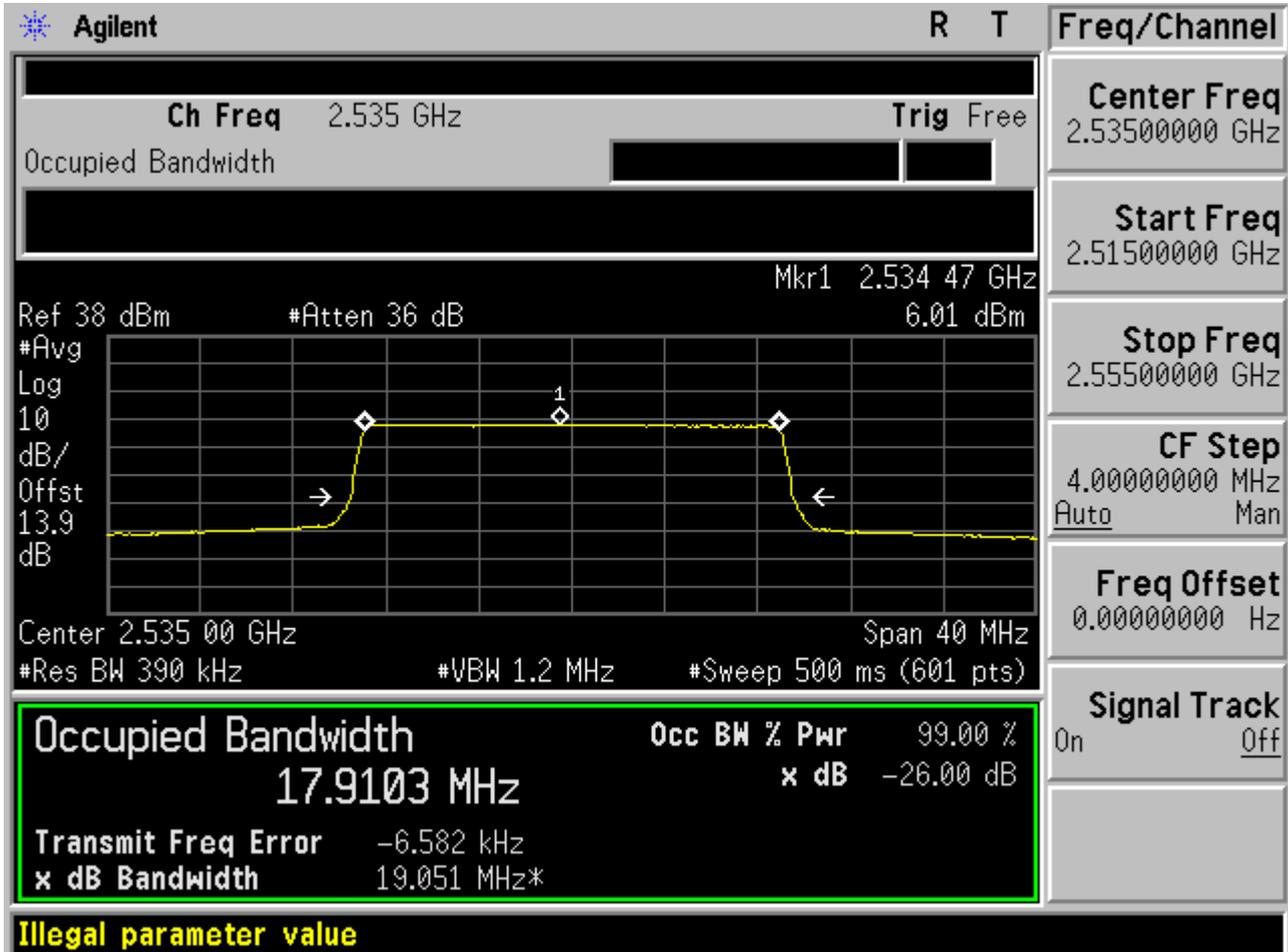


1.2.4.2.3 16QAM/ Partial RBs /RB #25





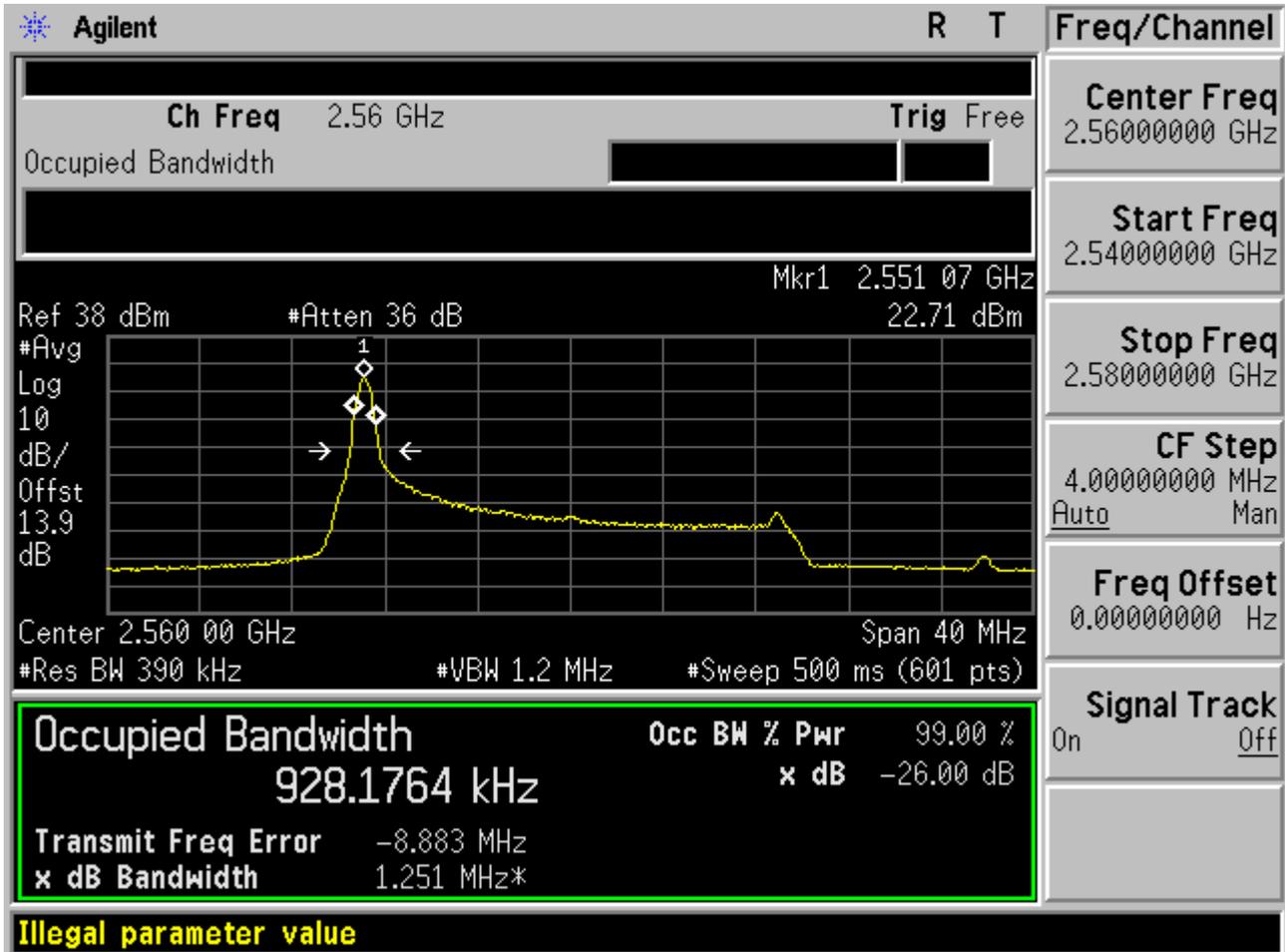
1.2.4.2.4 16QAM/full RBs





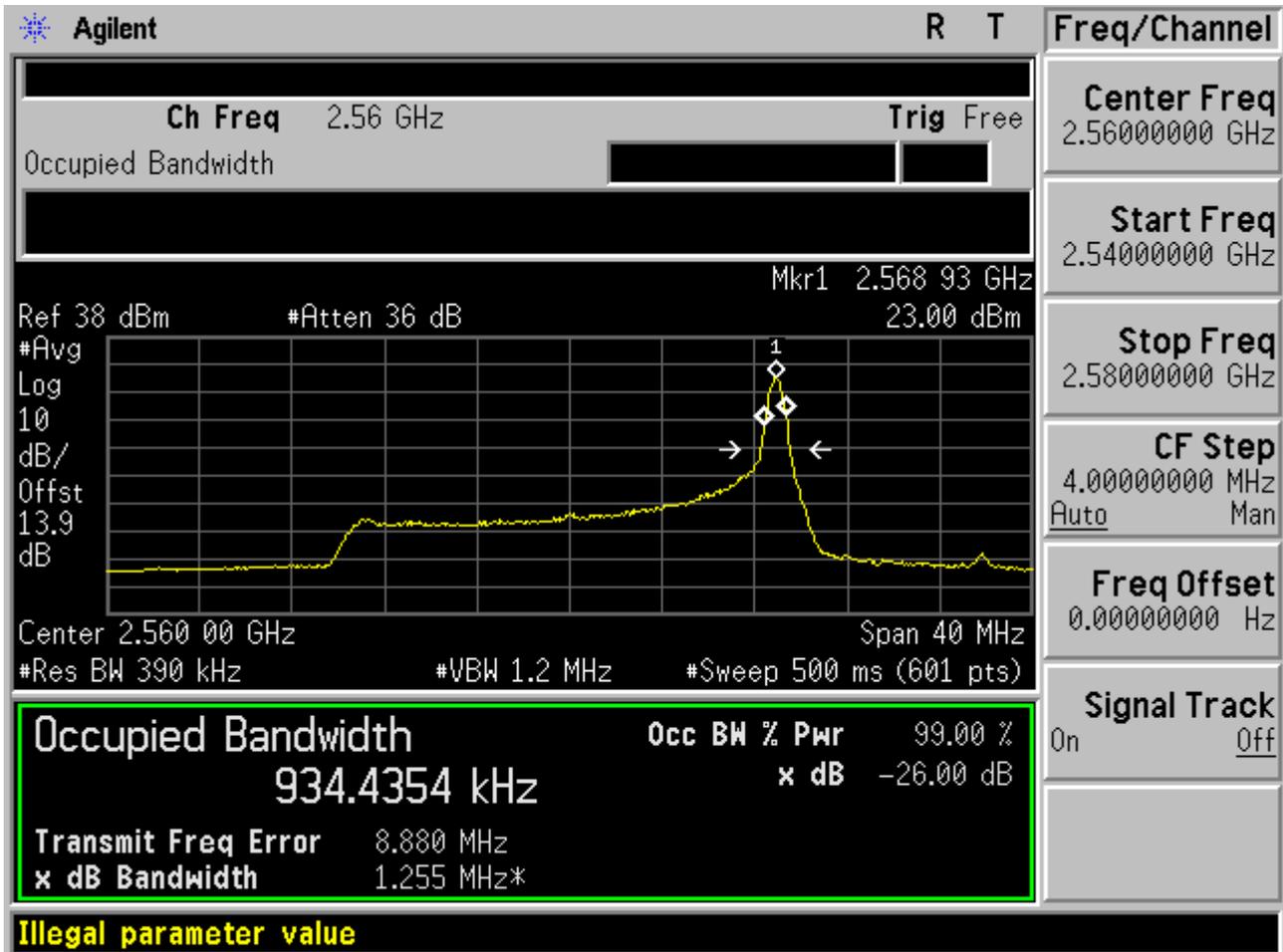
1.2.4.3 Channel =T

1.2.4.3.1 16QAM/1RB#0



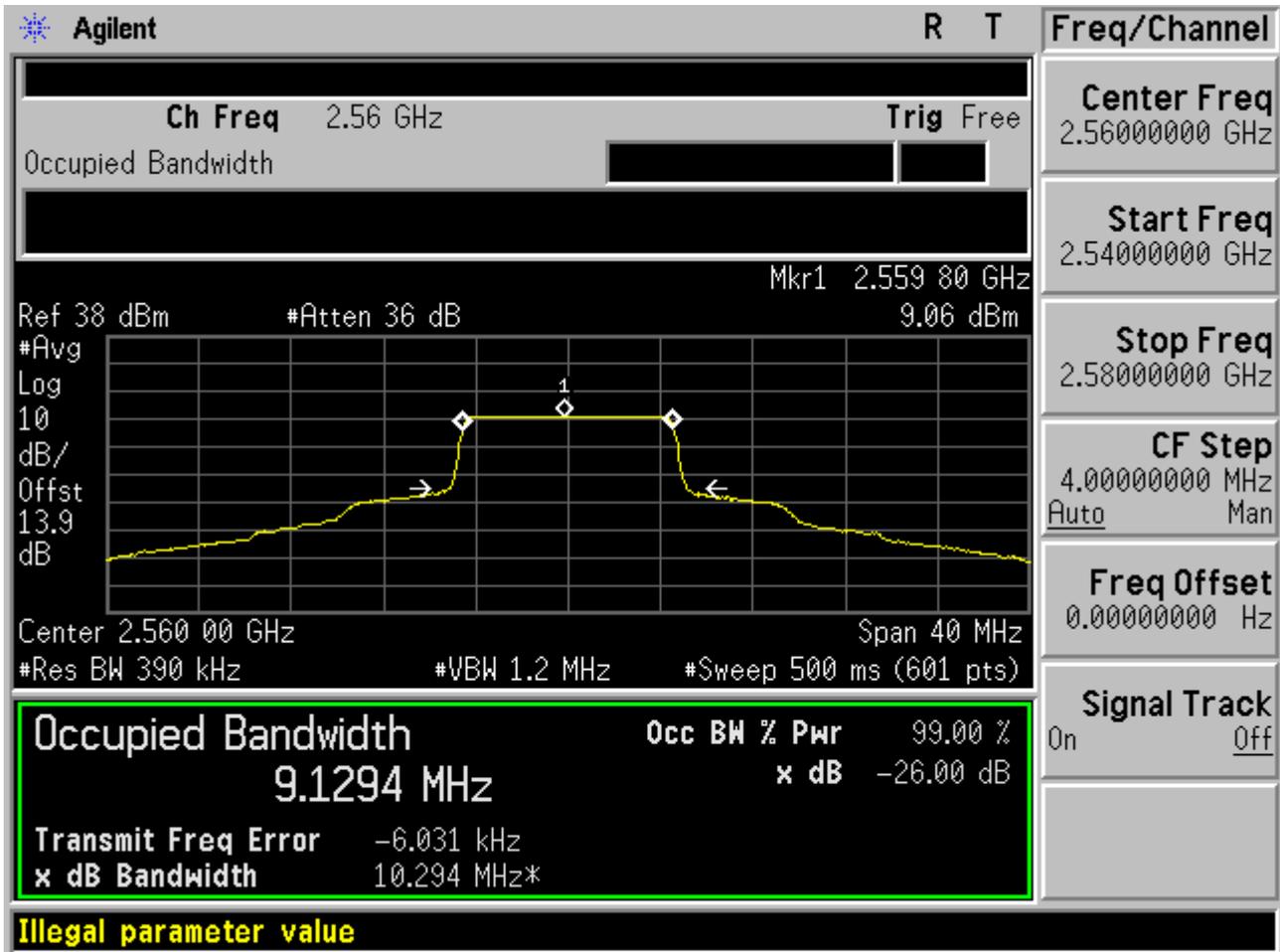


1.2.4.3.2 16QAM/1RB#max



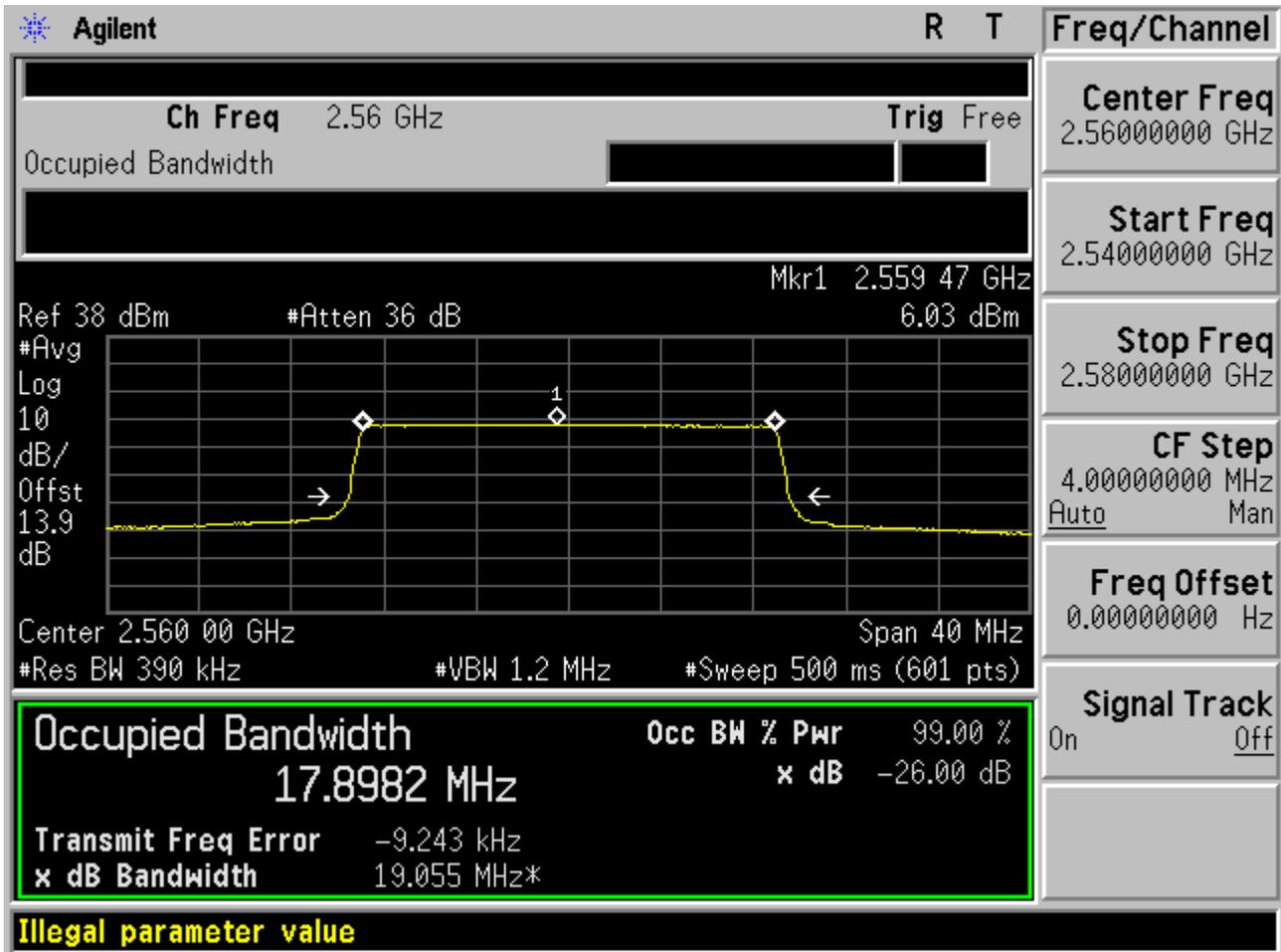


1.2.4.3.3 16QAM/ Partial RBs /RB #25





1.2.4.3.4 16QAM/full RBs



END



Appendix C

Band Edges Compliance

According to FCC Part 2.1051 & FCC Part 27C & 27M



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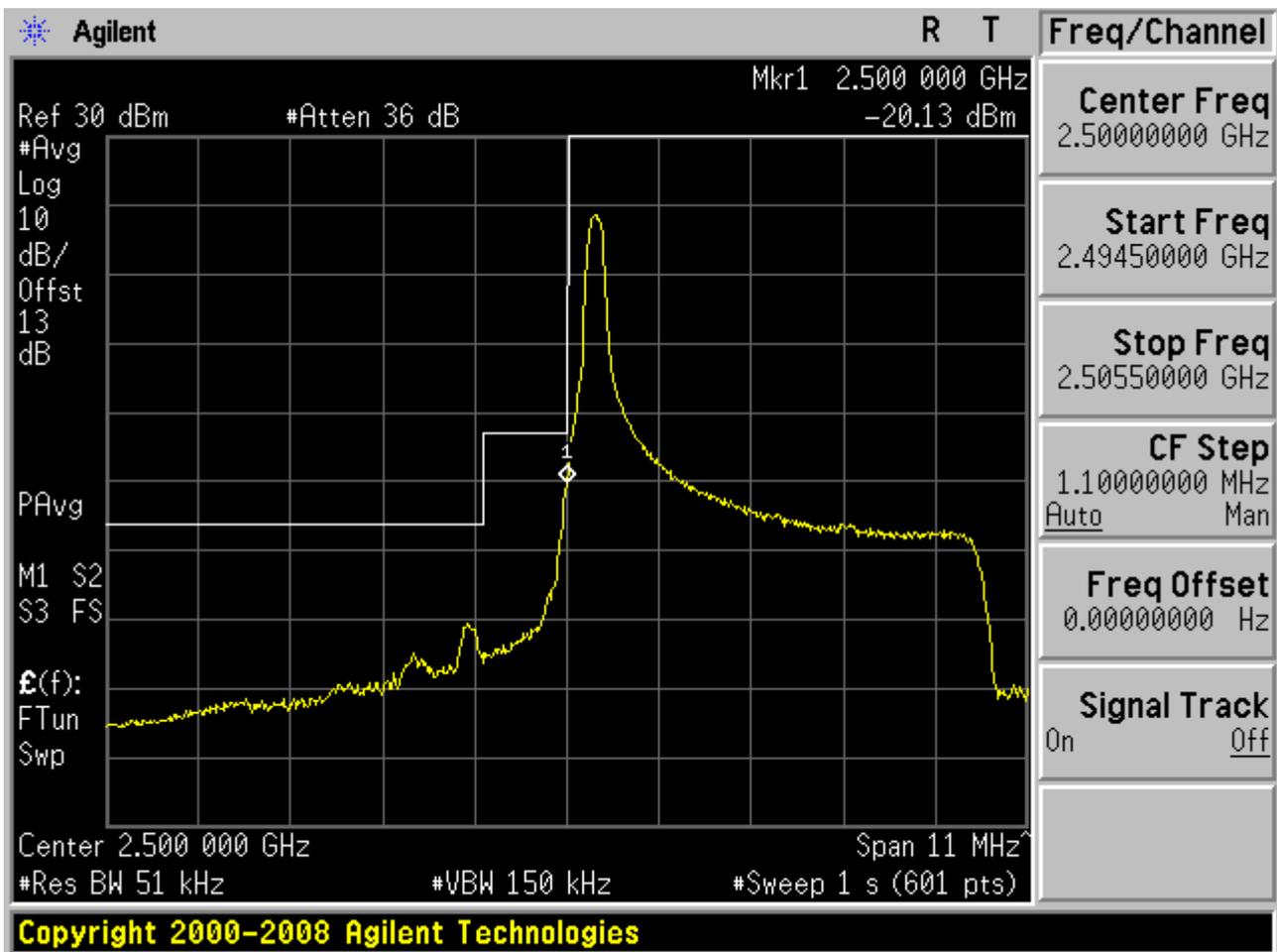
1 For Band 7

1.1 Test Mode=TM1

1.1.1 Channel Bandwidth = Lowest (5 MHz)

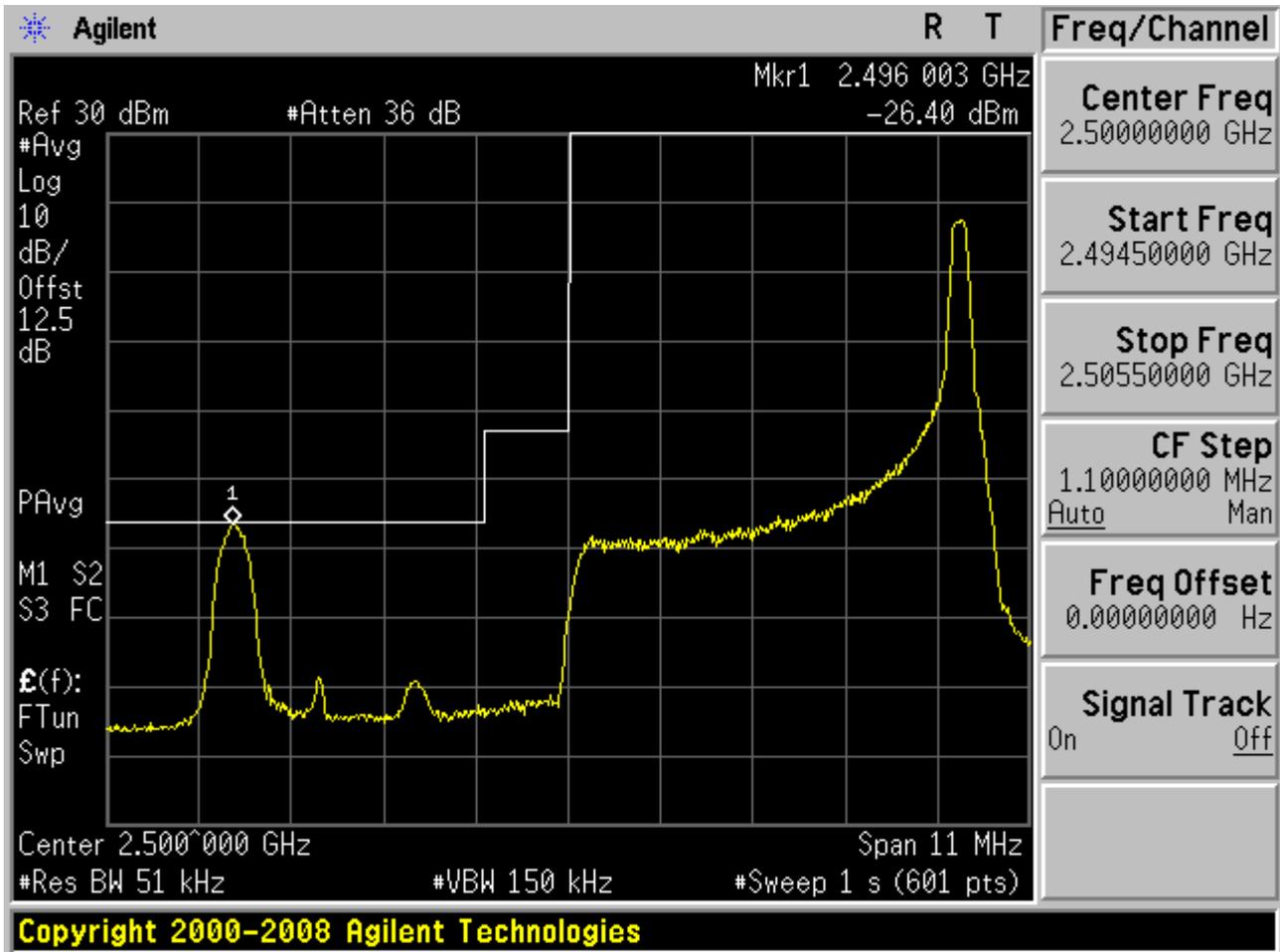
1.1.1.1 Channel= B

1.1.1.1.1 QPSK/1RB #0



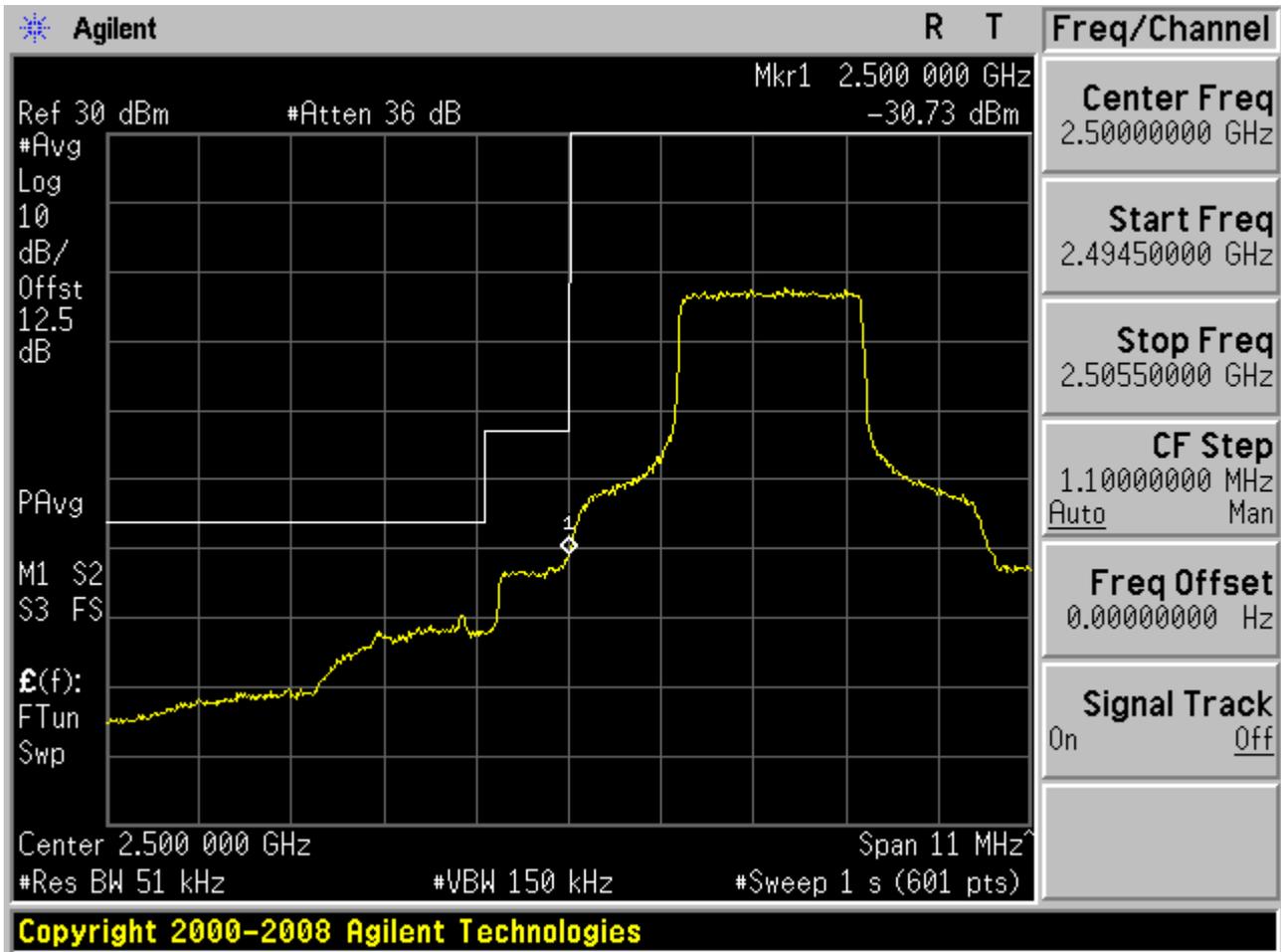


1.1.1.1.2 QPSK/1RB #max



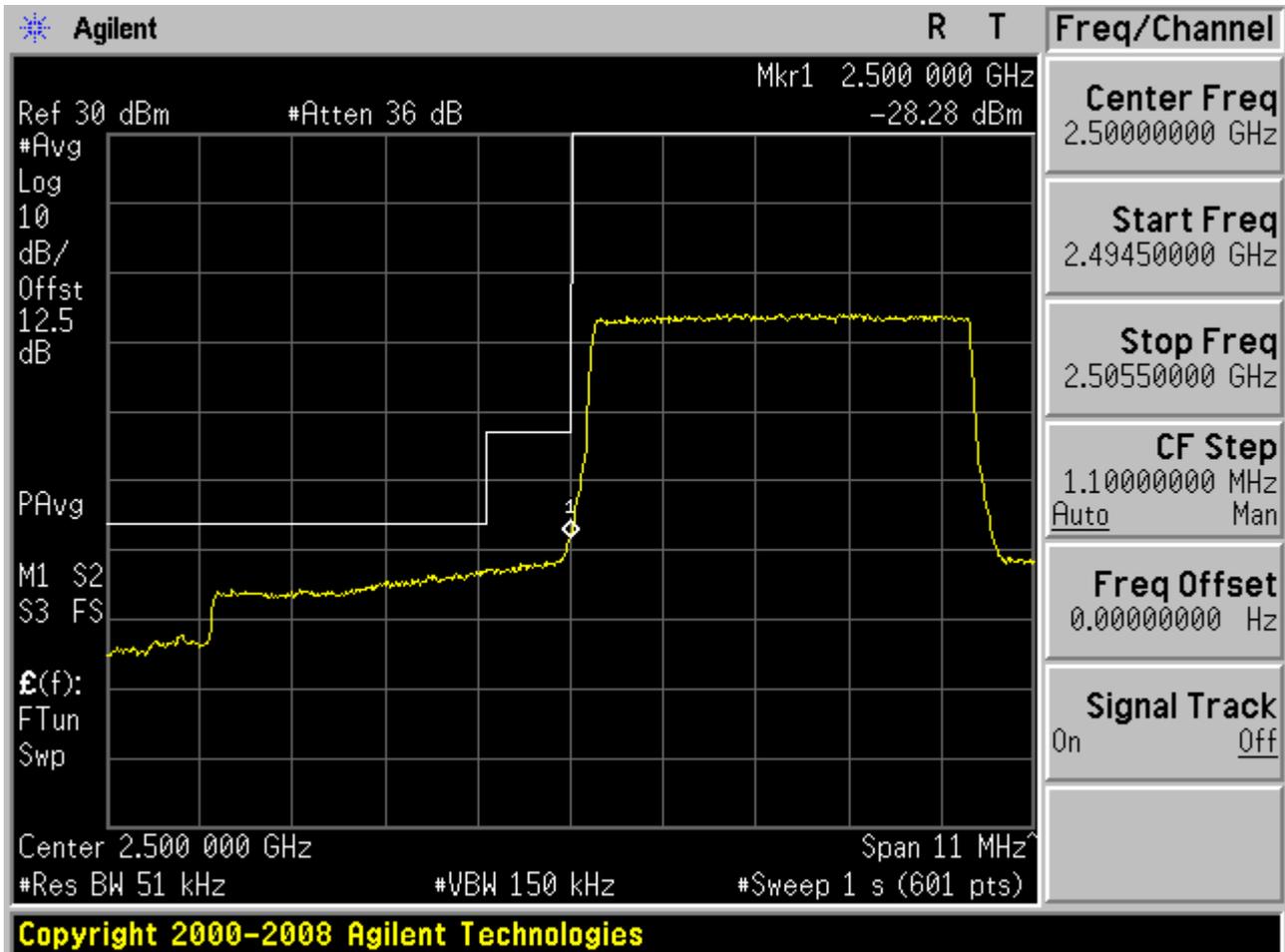


1.1.1.1.3 QPSK/Partial RBs /RB #6





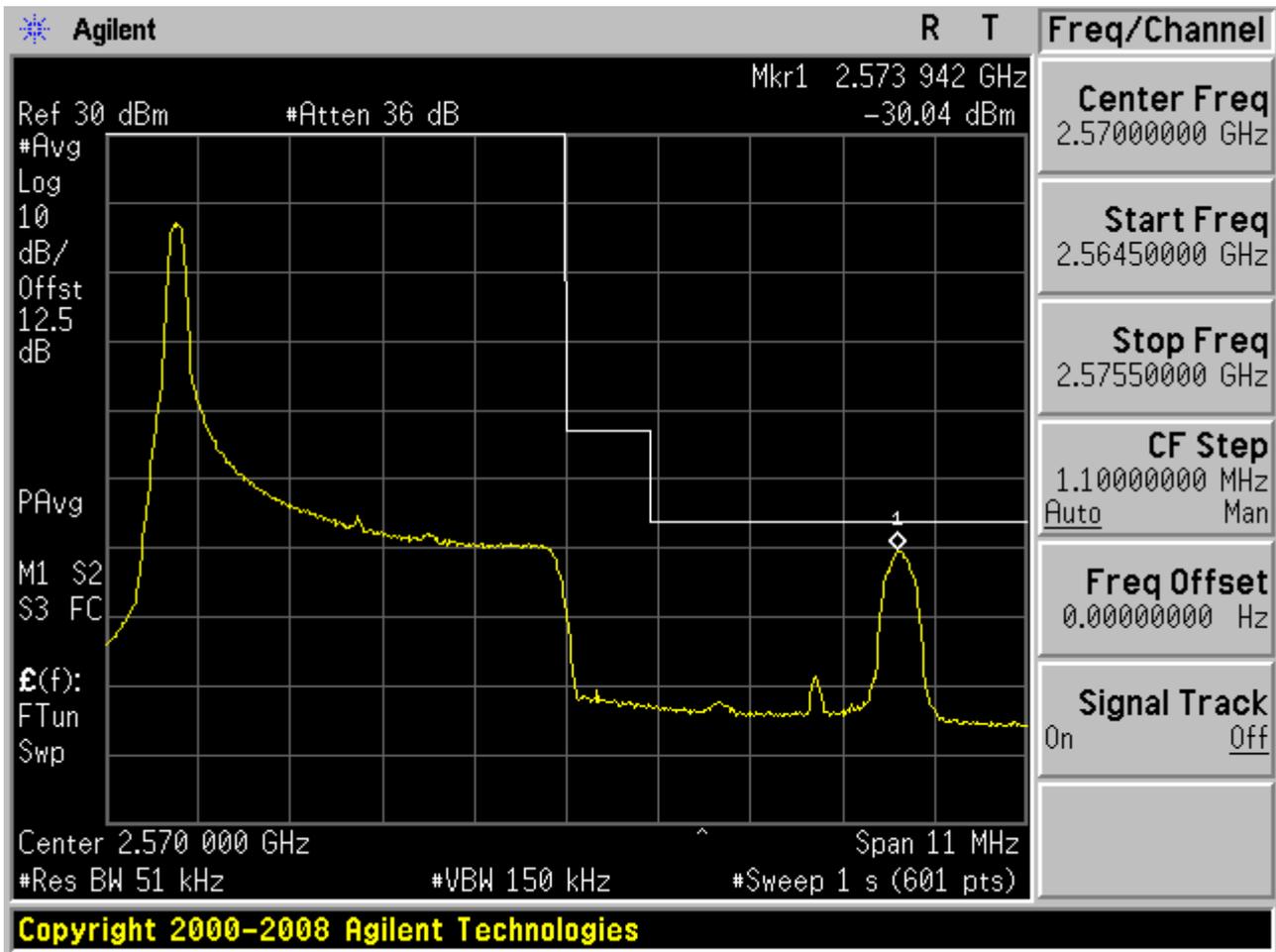
1.1.1.1.4 QPSK/full RBs





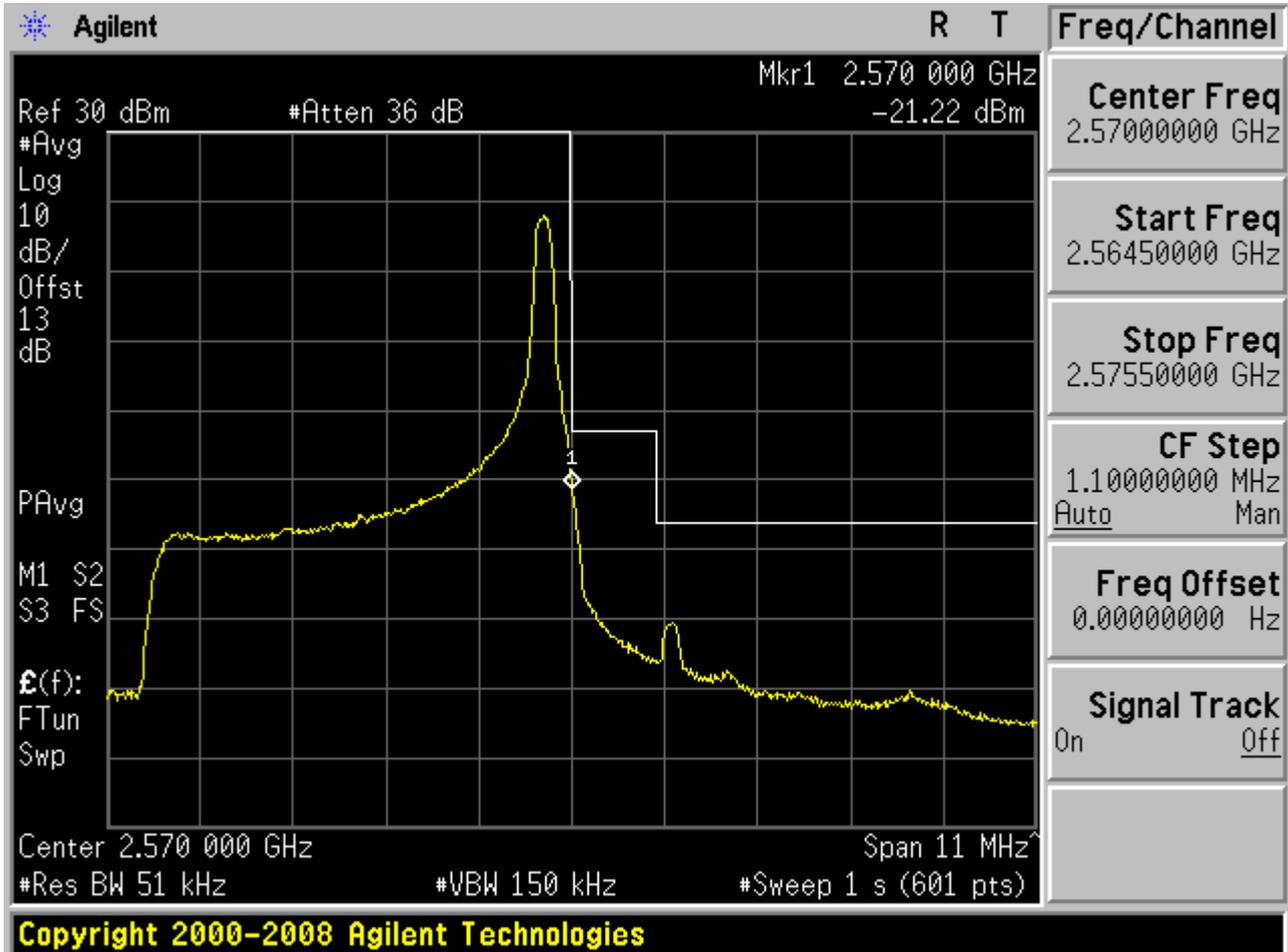
1.1.1.2 Channel= T

1.1.1.2.1 QPSK/1RB #0



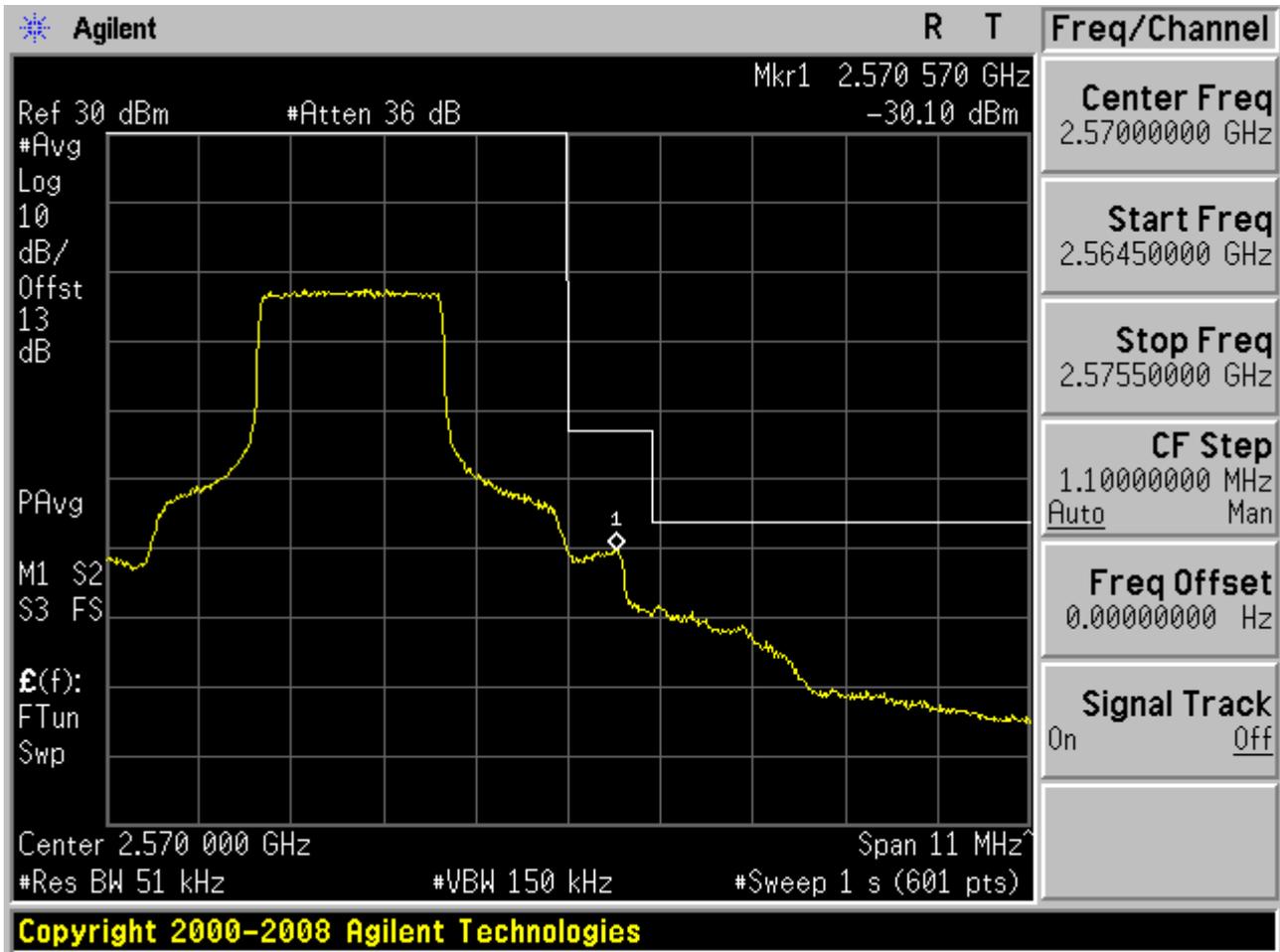


1.1.1.2.2 QPSK/1RB #max



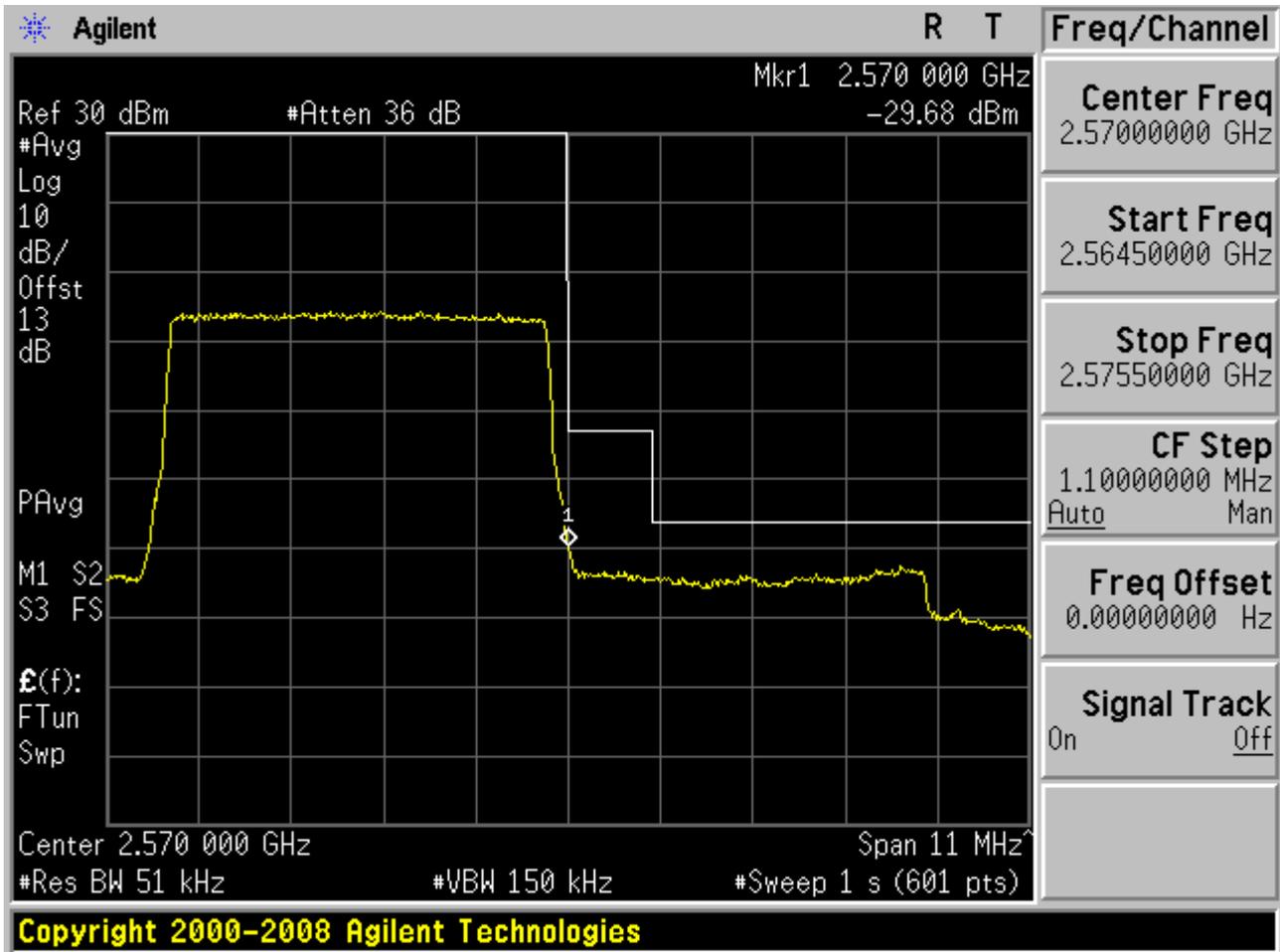


1.1.1.2.3 QPSK/Partial RBs /RB #6





1.1.1.2.4 QPSK/full RBs

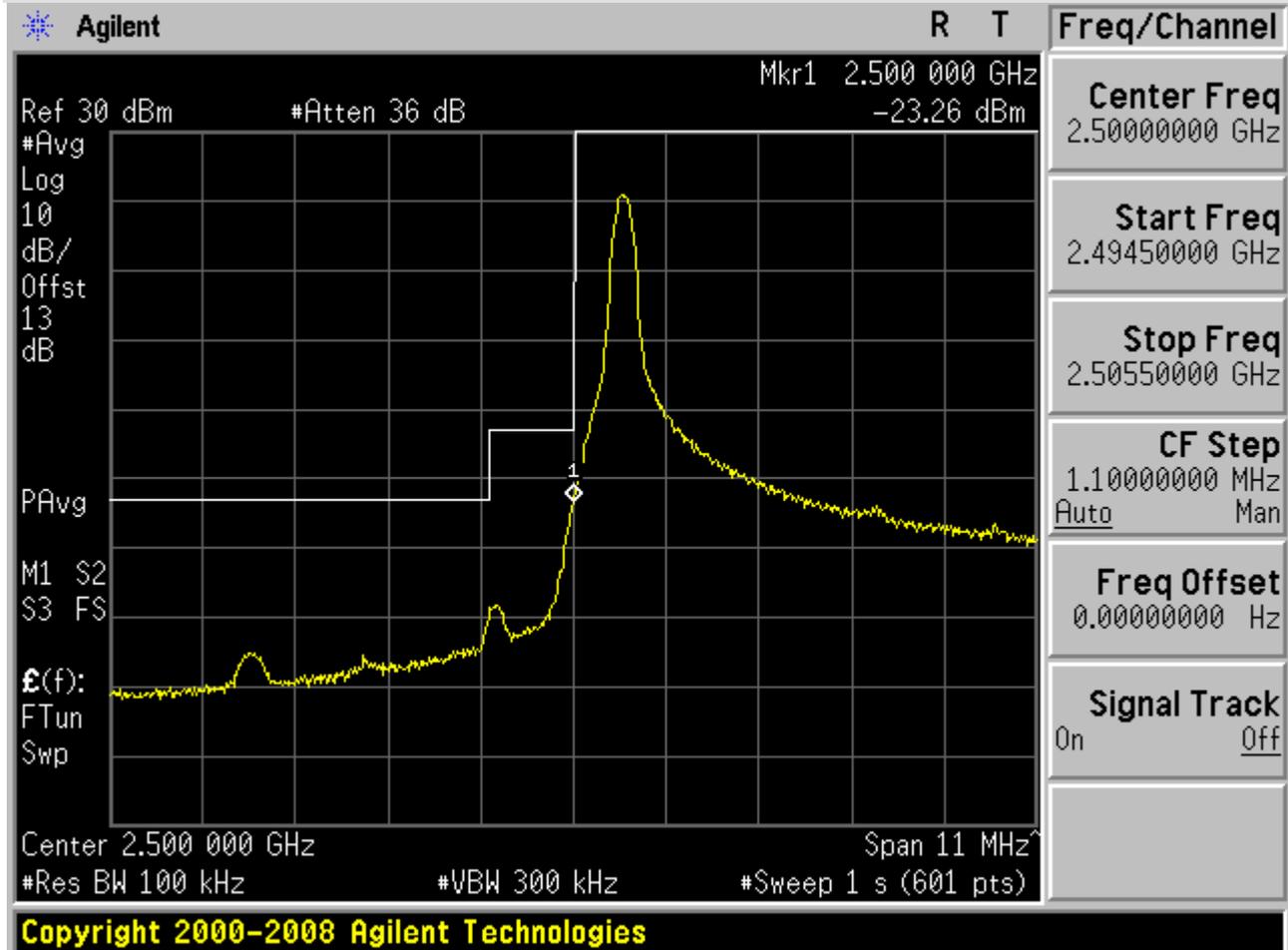




1.1.2 Channel Bandwidth = 10 MHz

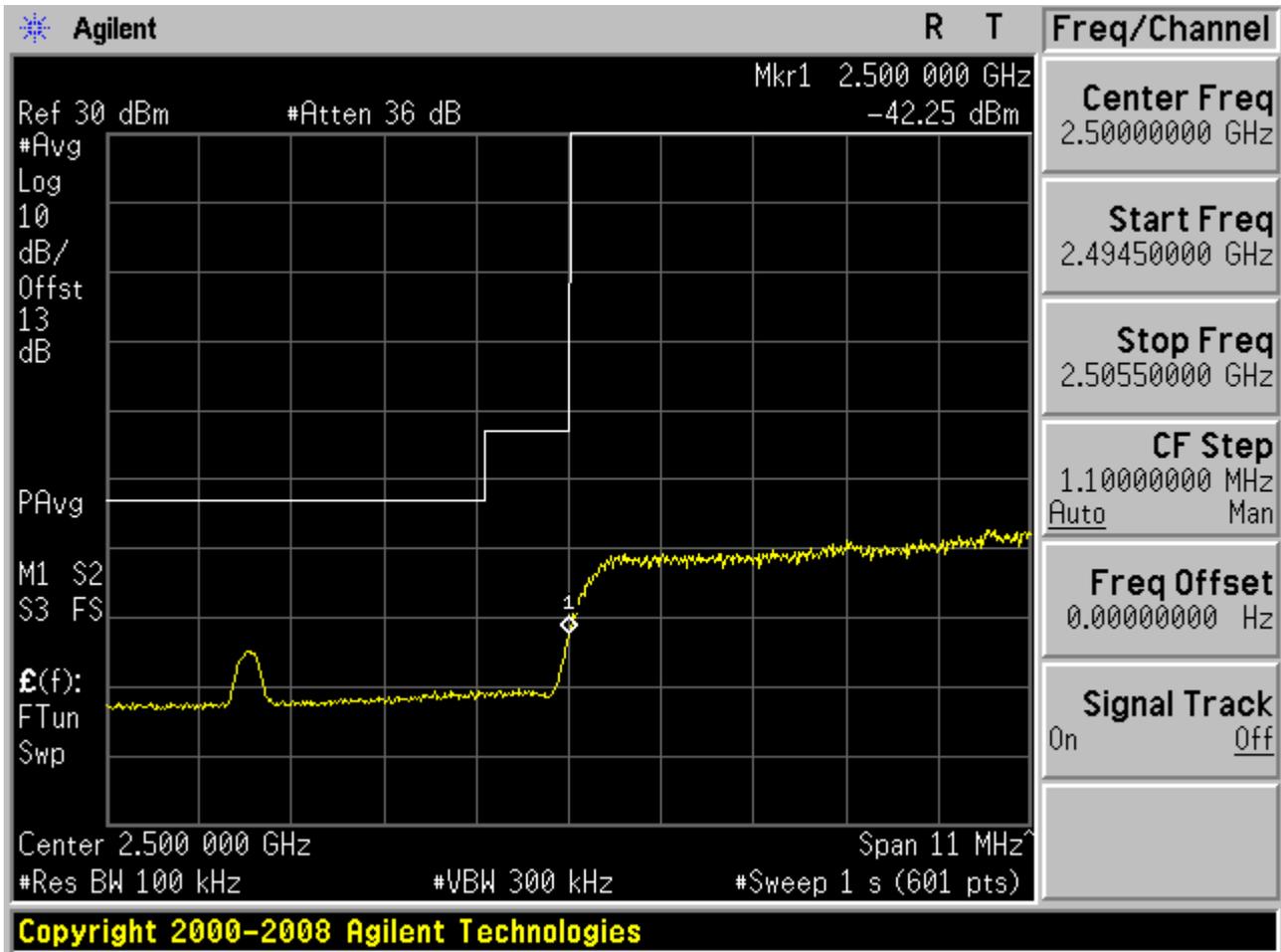
1.1.2.1 Channel= B

1.1.2.1.1 QPSK/1RB #0



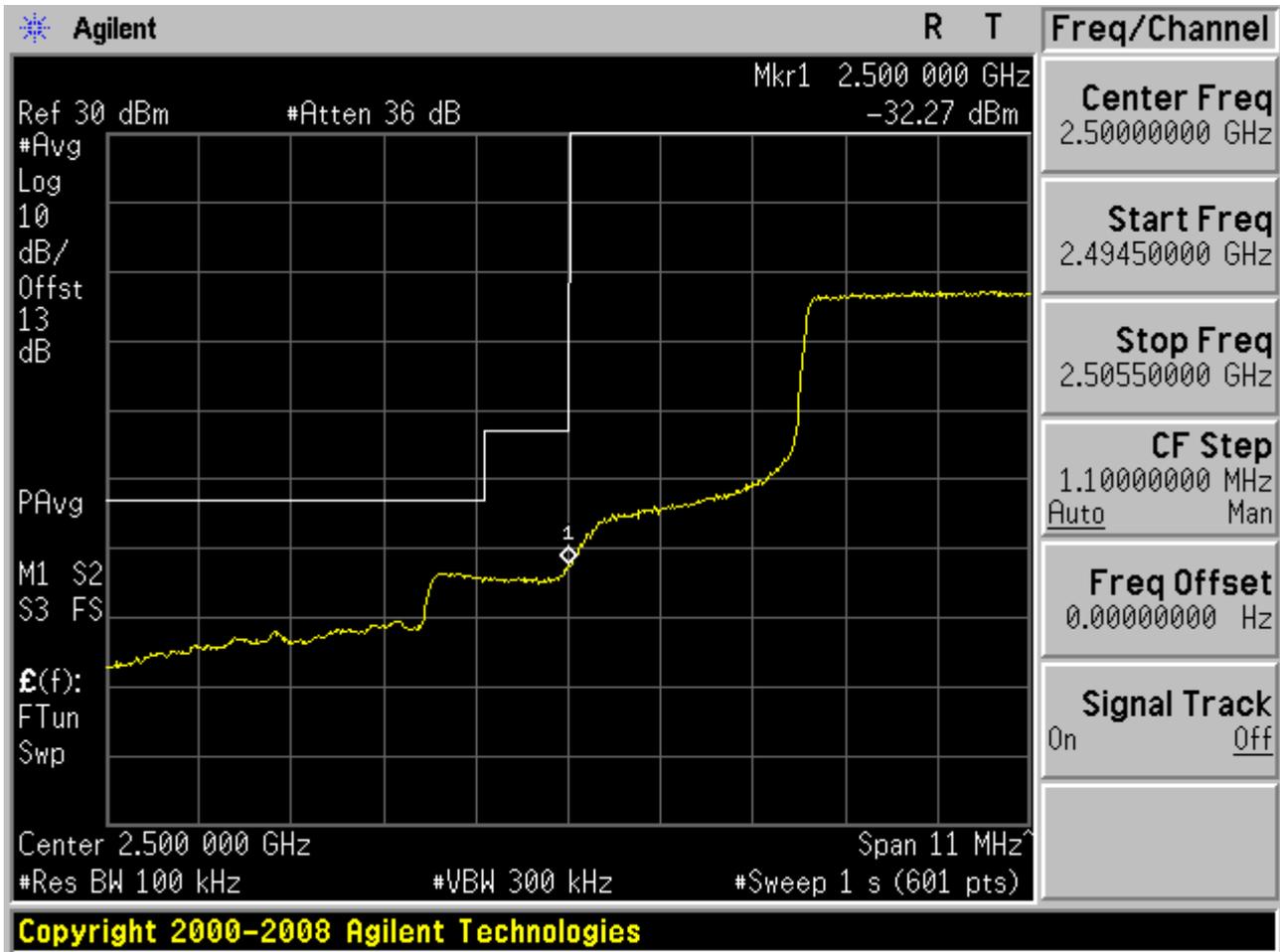


1.1.2.1.2 QPSK/1RB #max



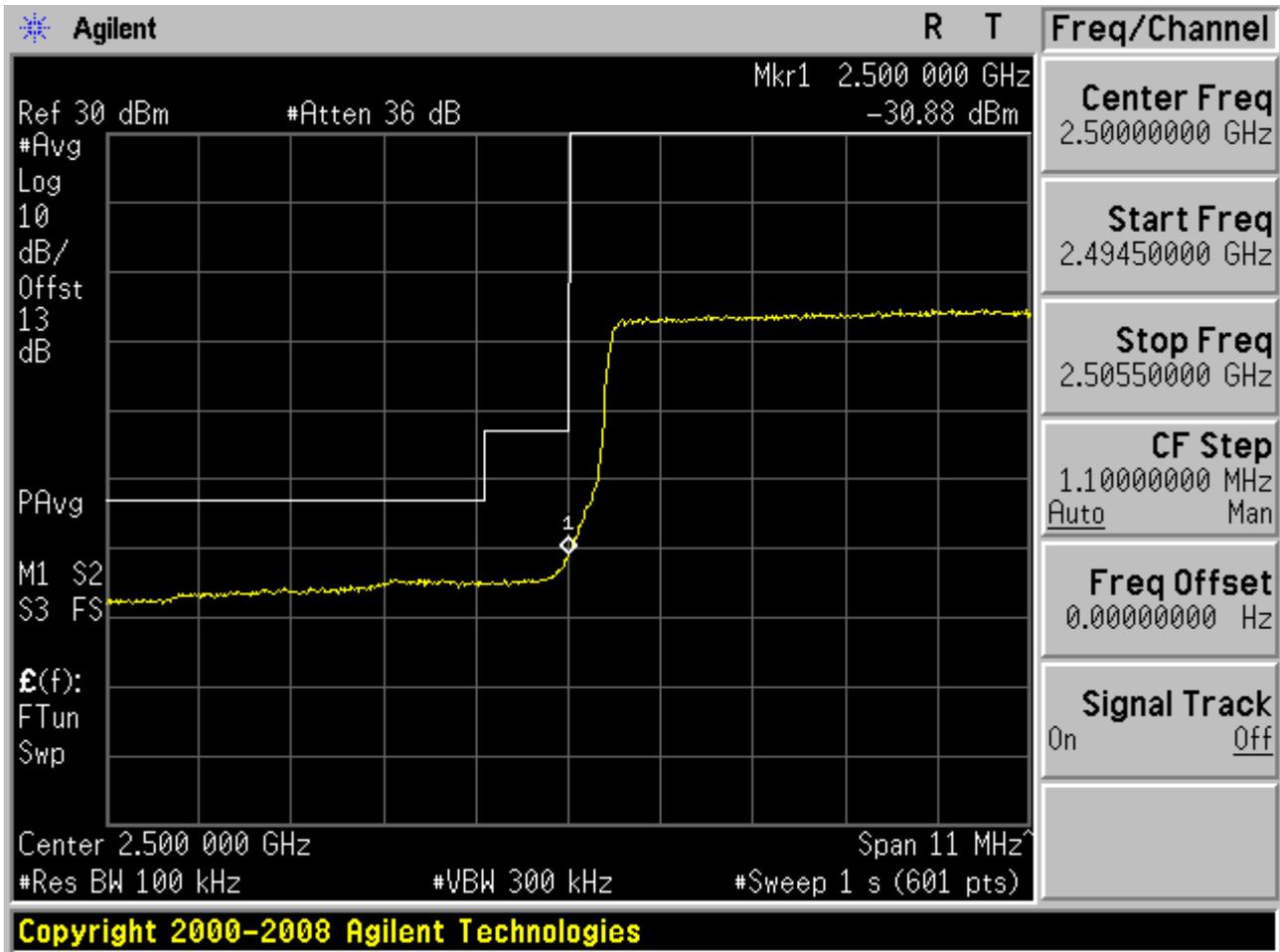


1.1.2.1.3 QPSK/Partial RBs /RB #13





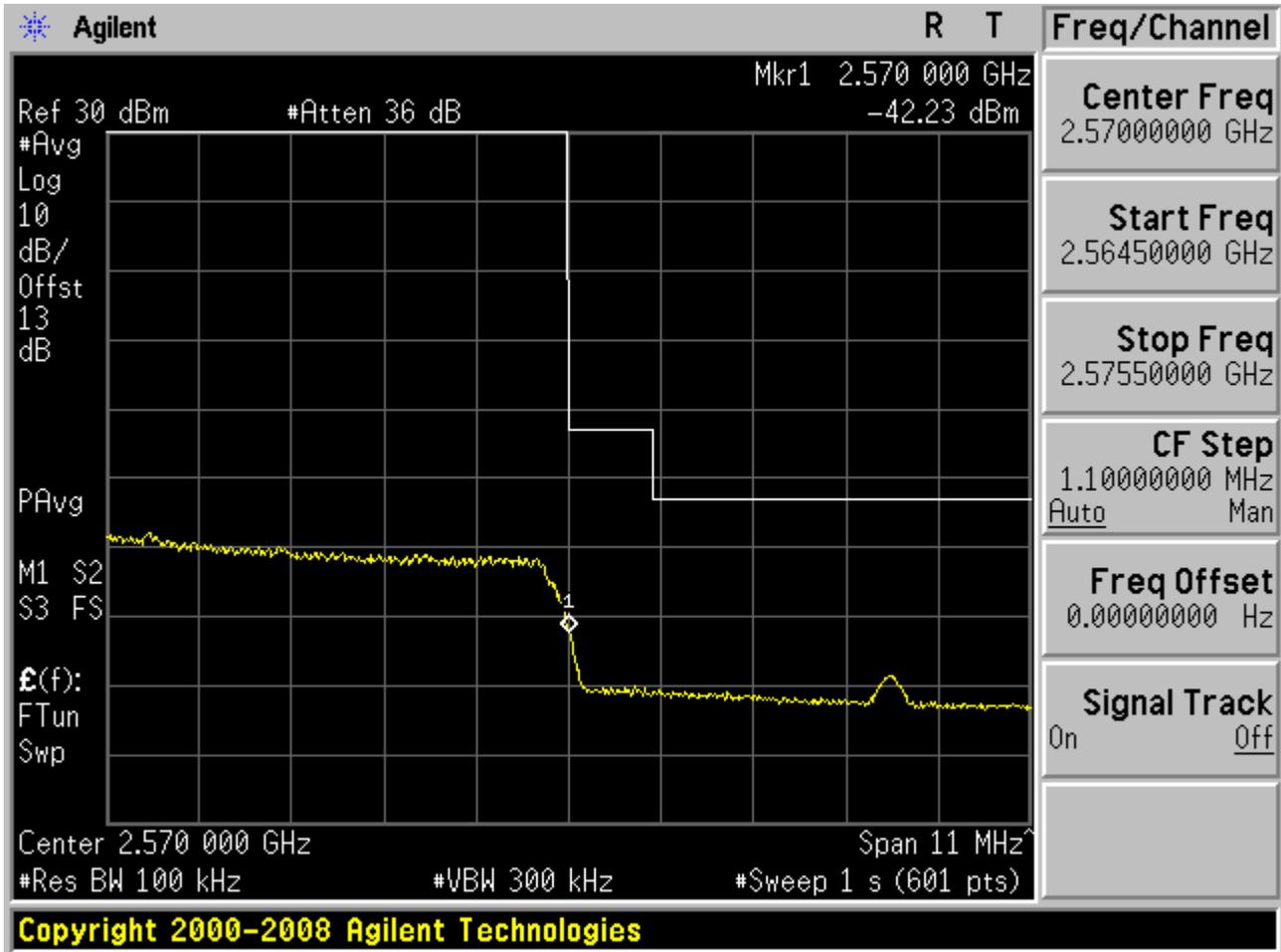
1.1.2.1.4 QPSK/full RBs





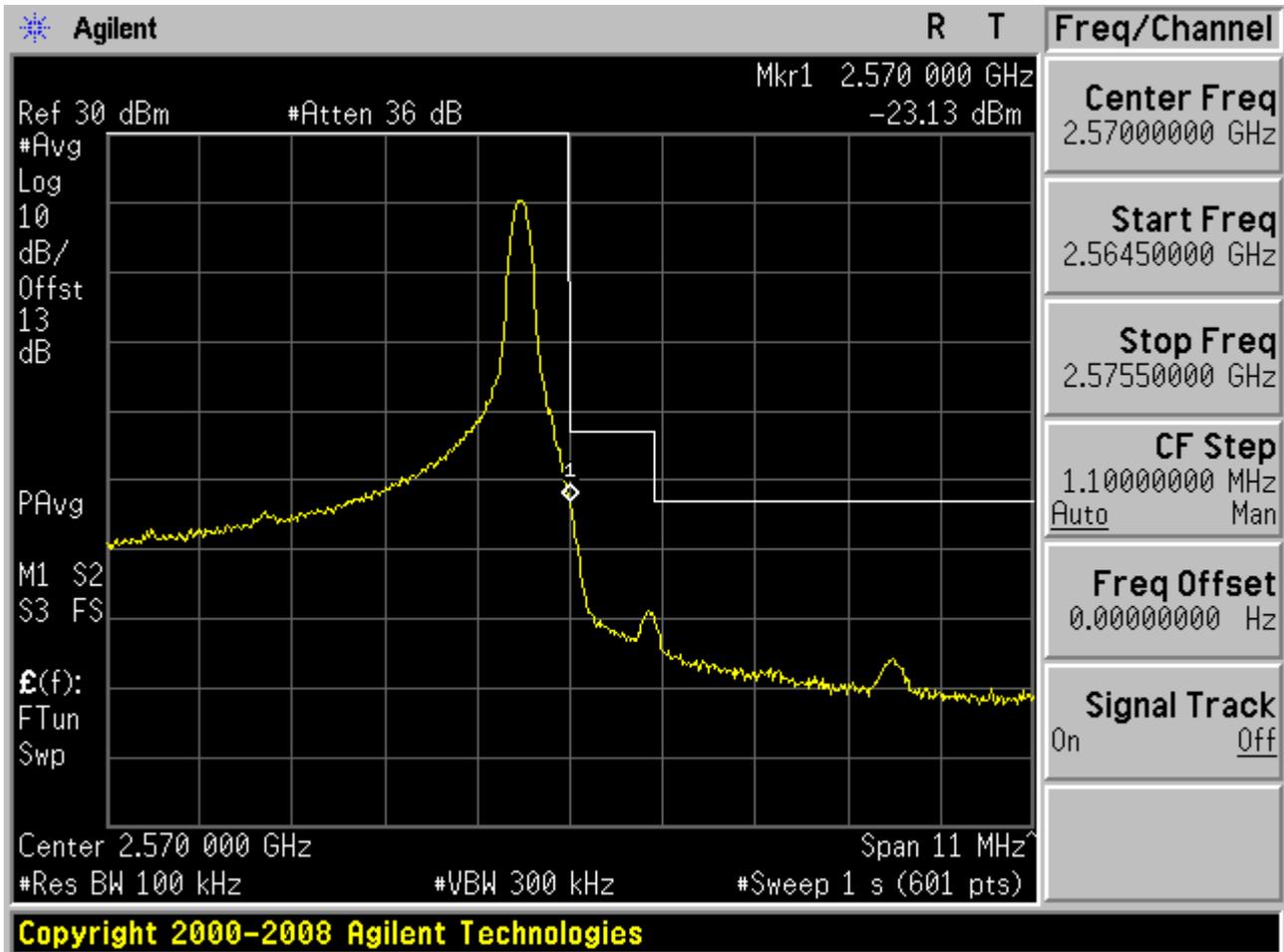
1.1.2.2 Channel= T

1.1.2.2.1 QPSK/1RB #0



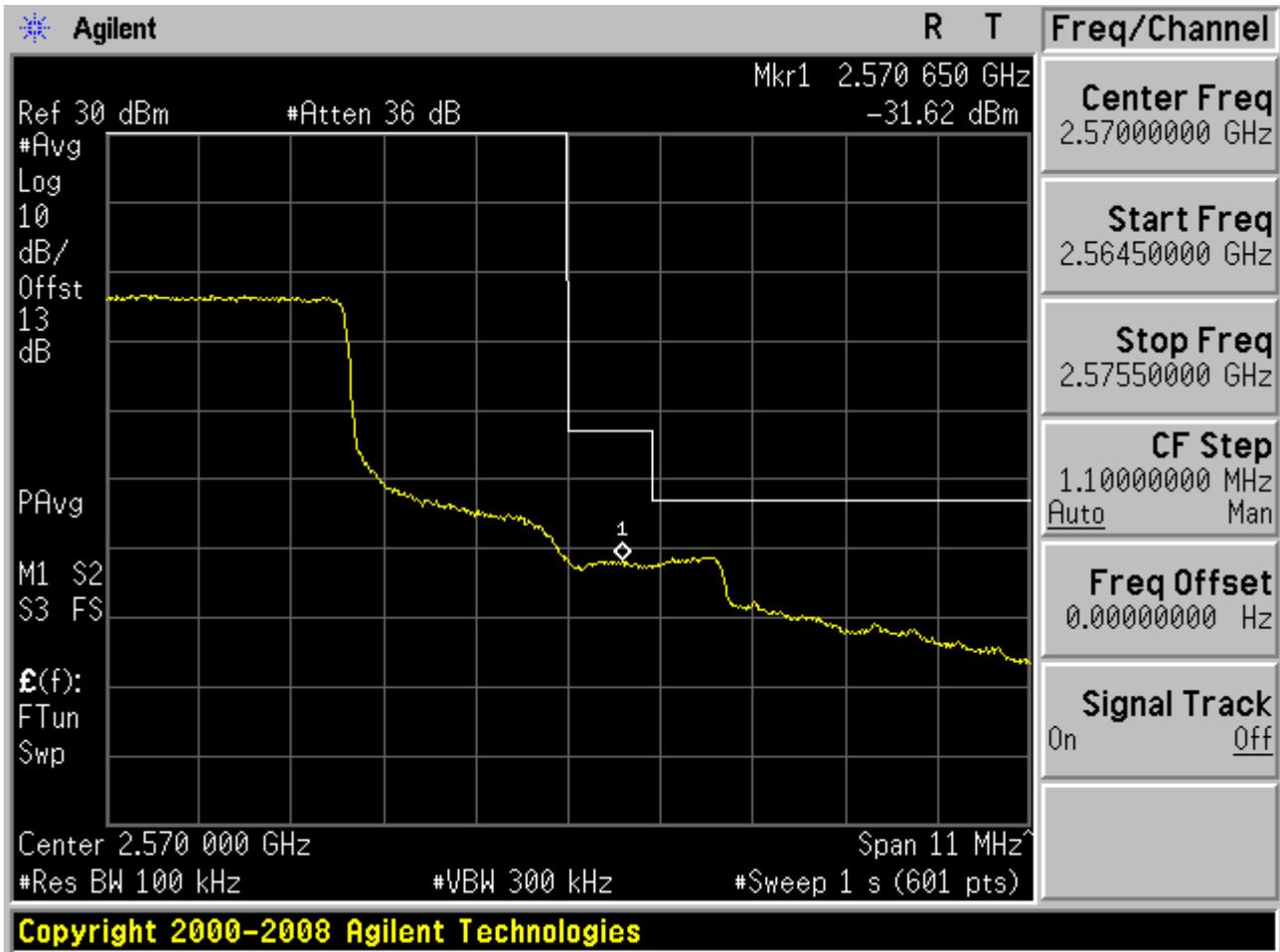


1.1.2.2.2 QPSK/1RB #max



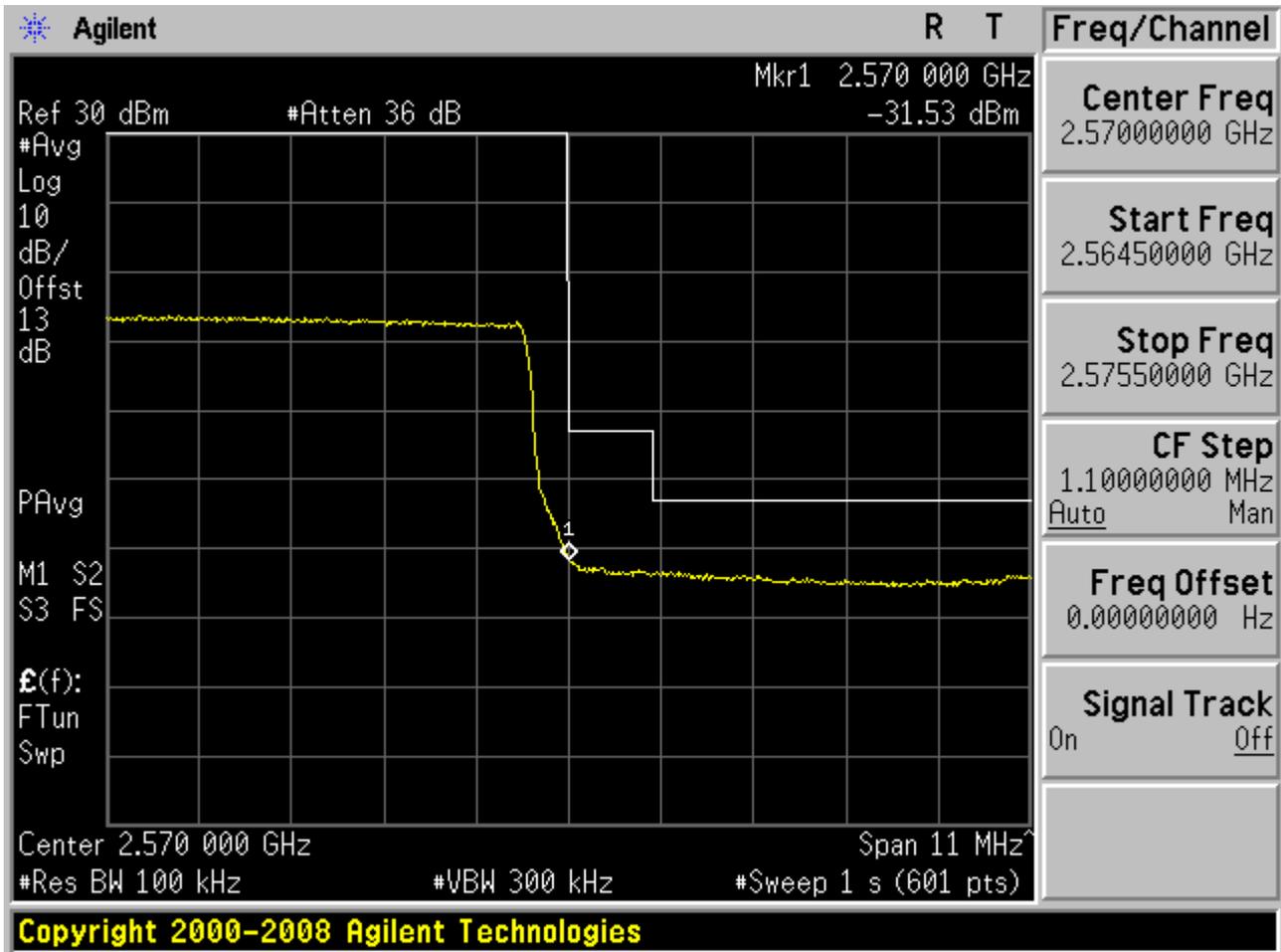


1.1.2.2.3 QPSK/Partial RBs /RB #13





1.1.2.2.4 QPSK/full RBs

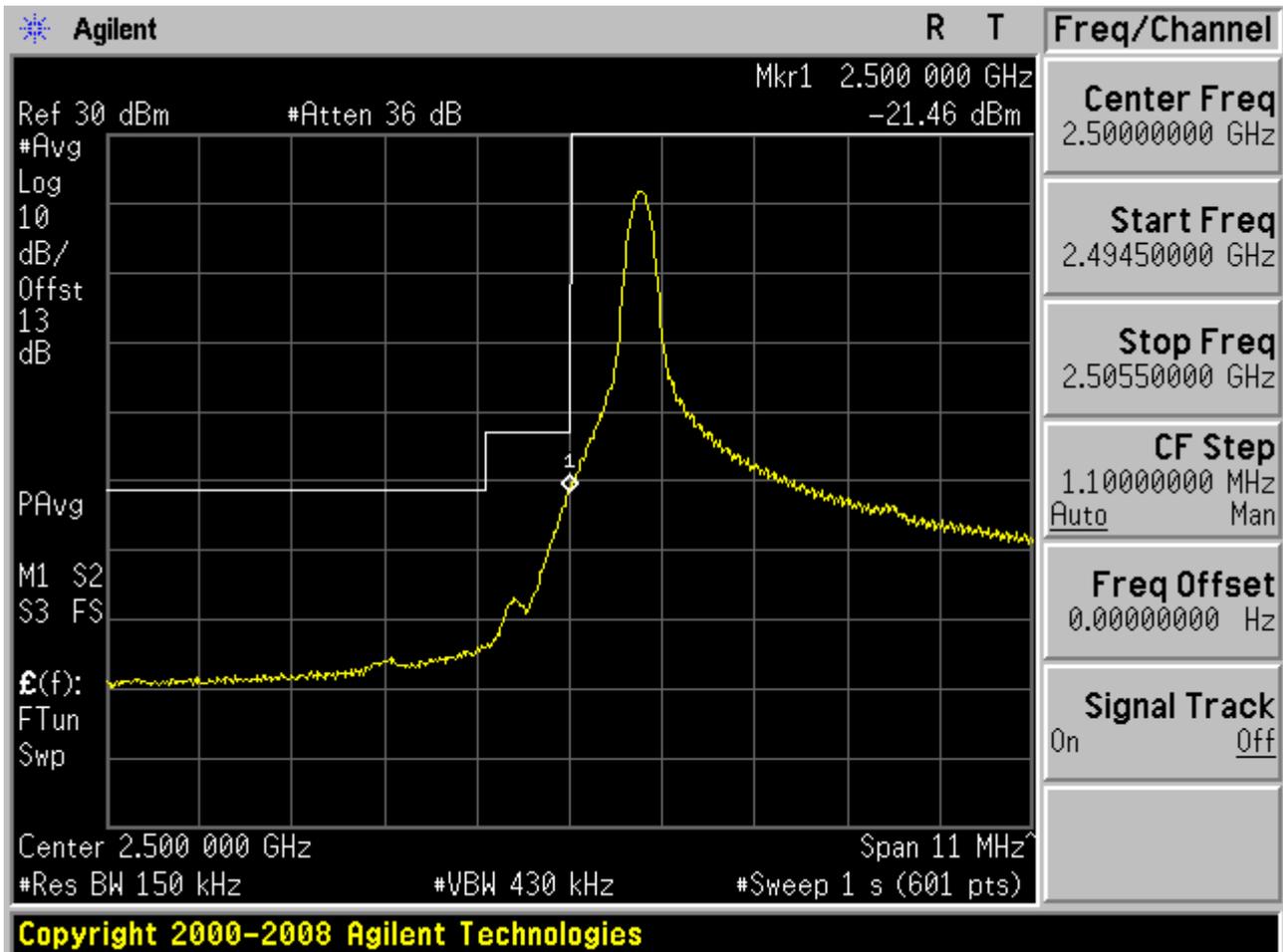




1.1.3 Channel Bandwidth = 15 MHz

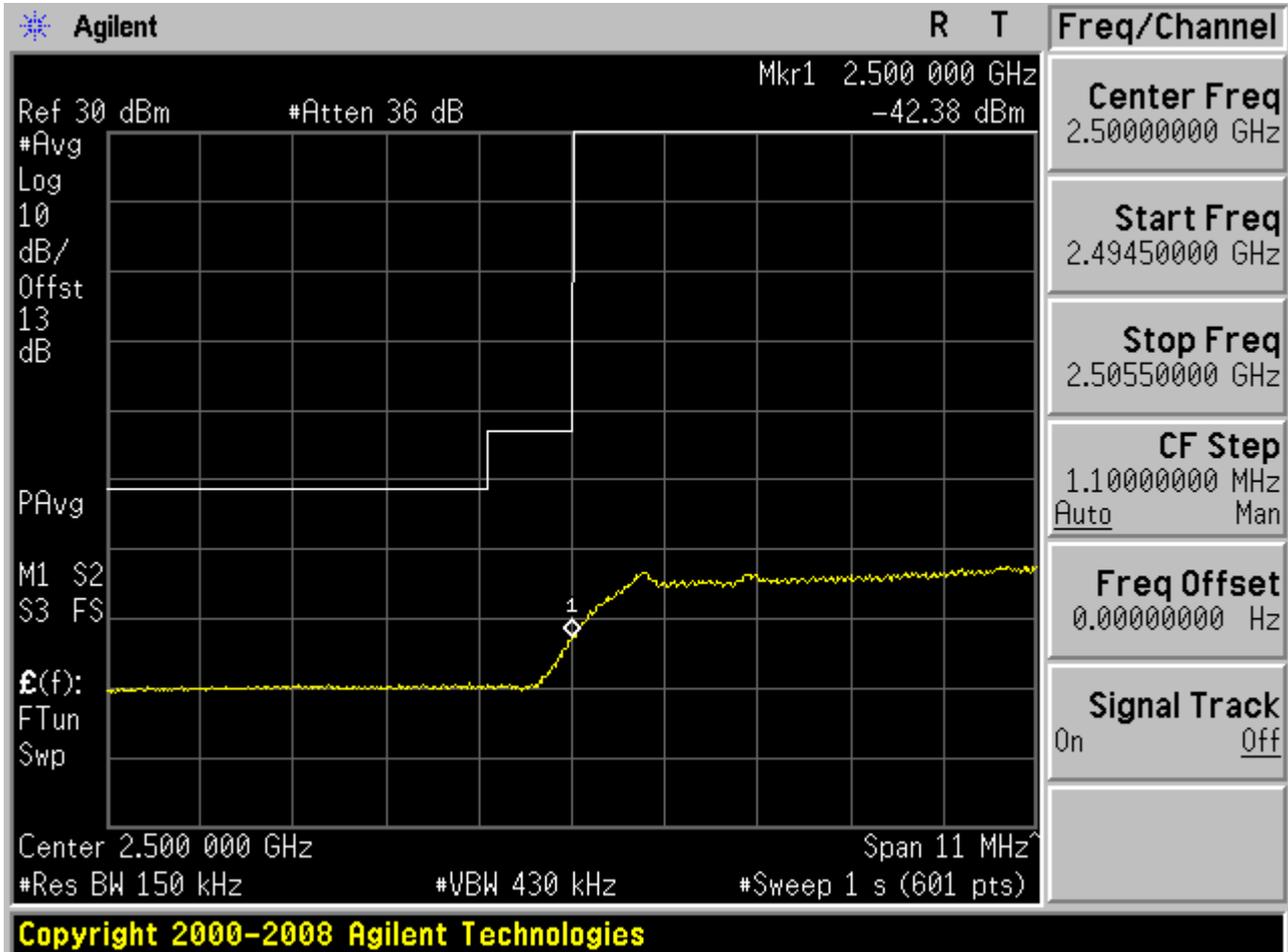
1.1.3.1 Channel= B

1.1.3.1.1 QPSK/1RB #0



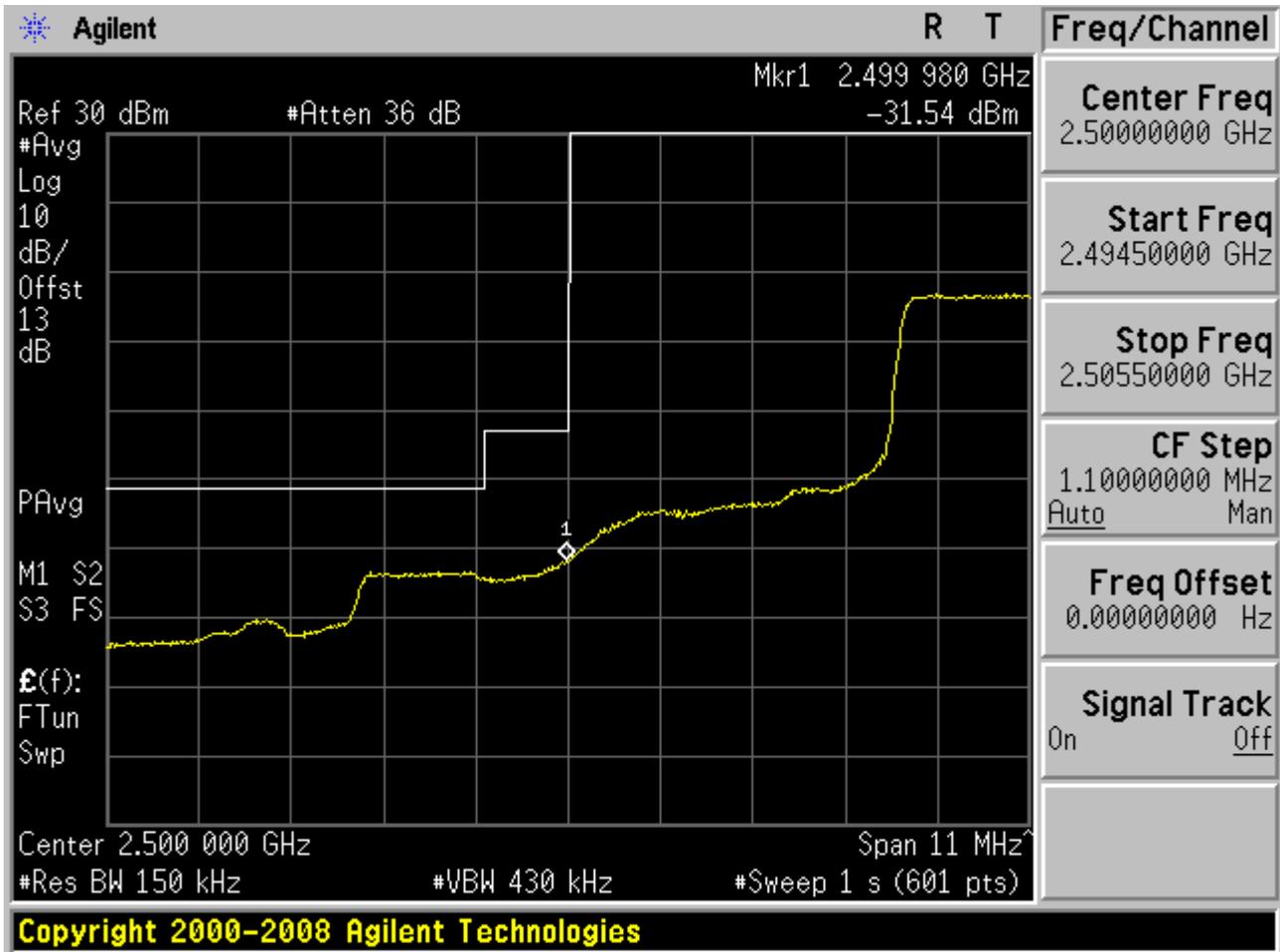


1.1.3.1.2 QPSK/1RB #max



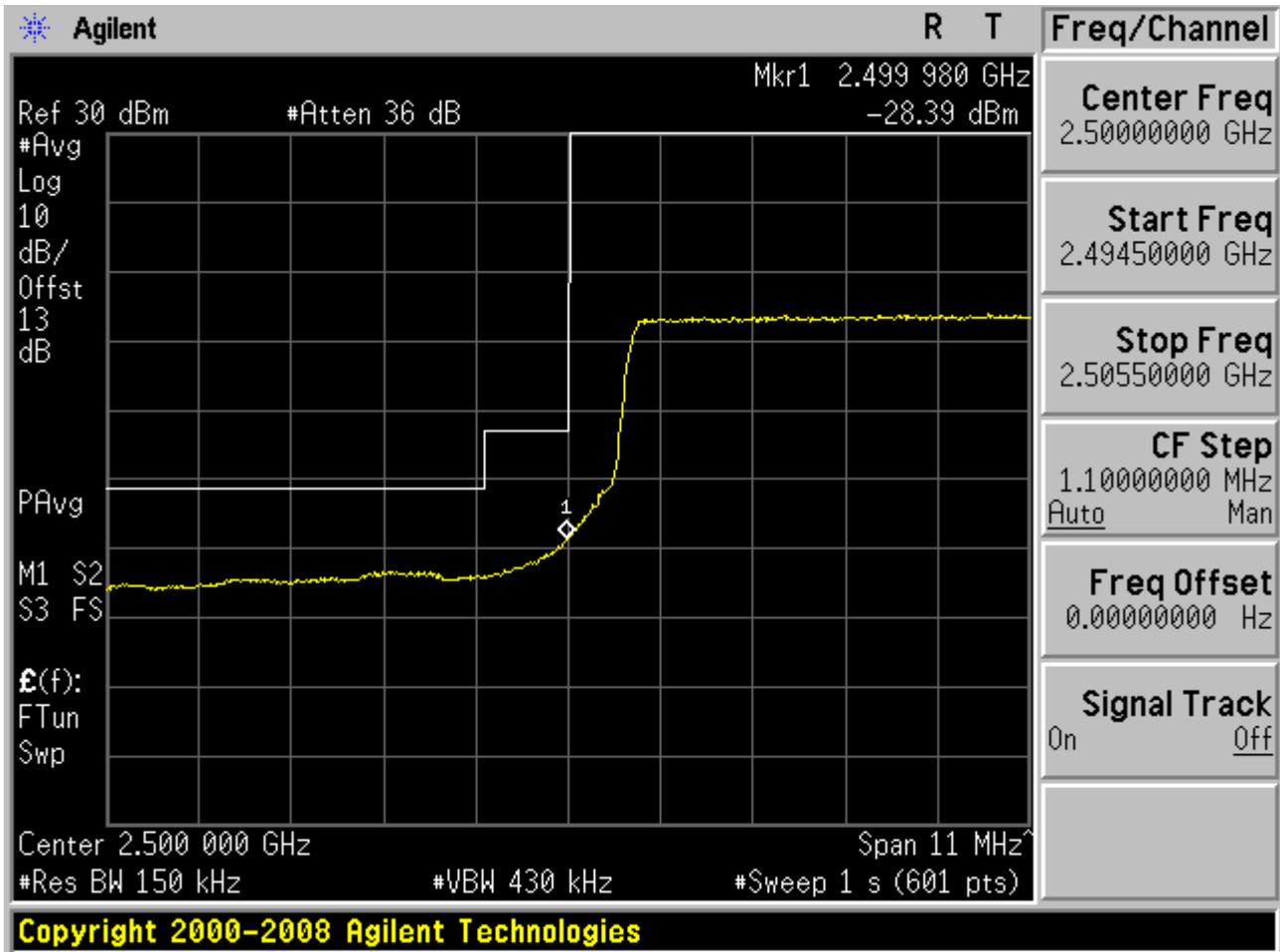


1.1.3.1.3 QPSK/Partial RBs /RB #18





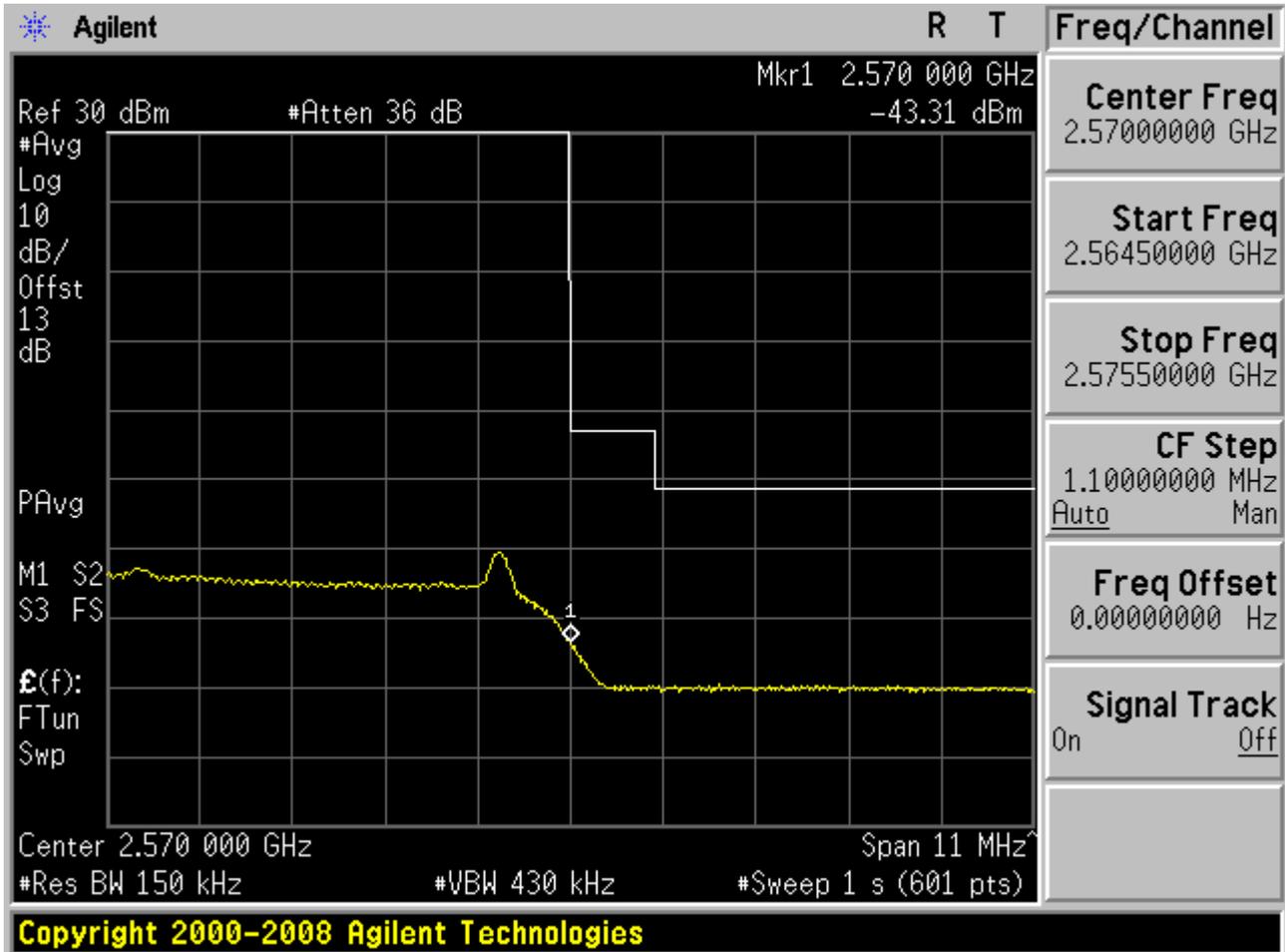
1.1.3.1.4 QPSK/full RBs





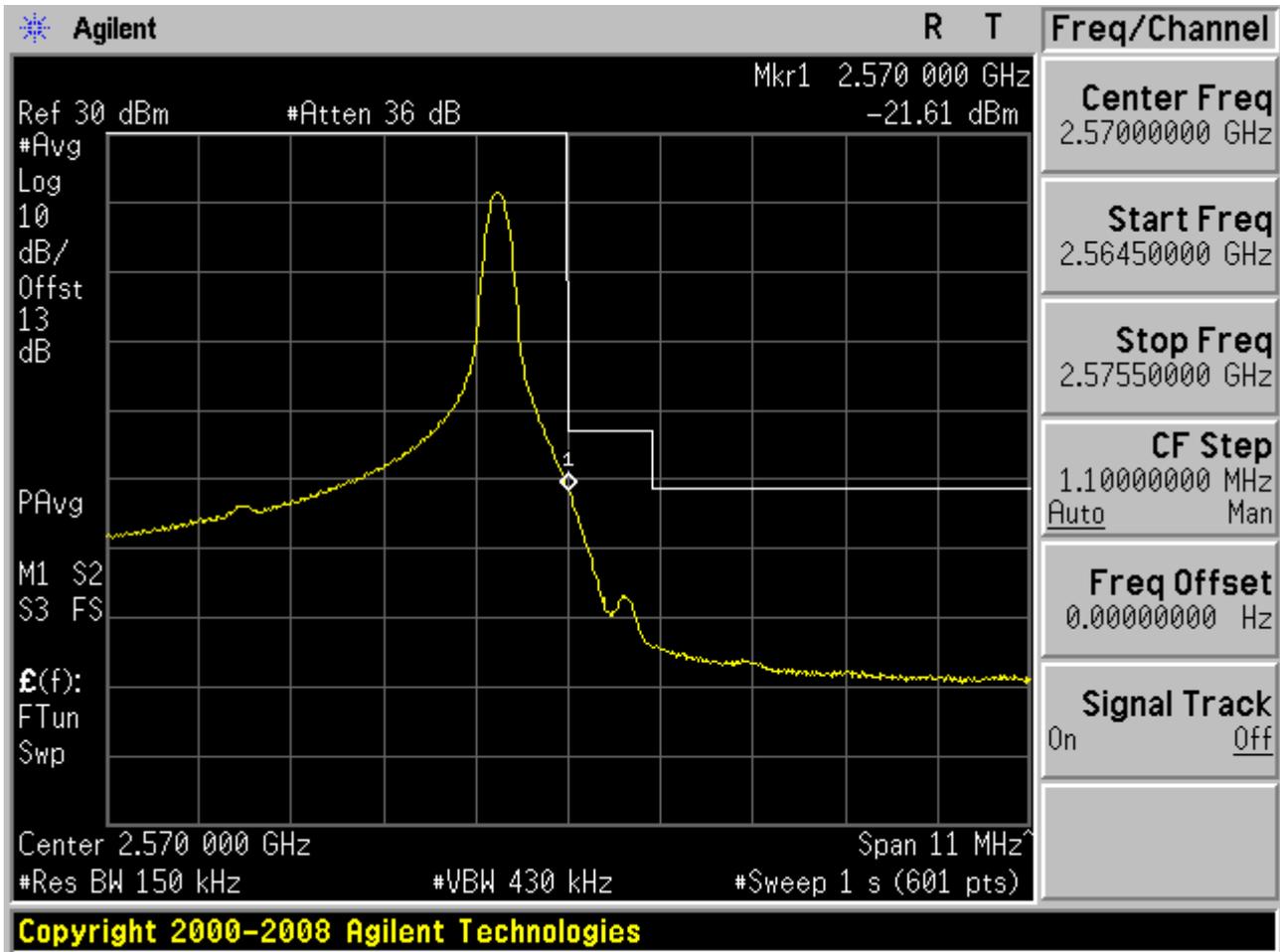
1.1.3.2 Channel= T

1.1.3.2.1 QPSK/1RB #0



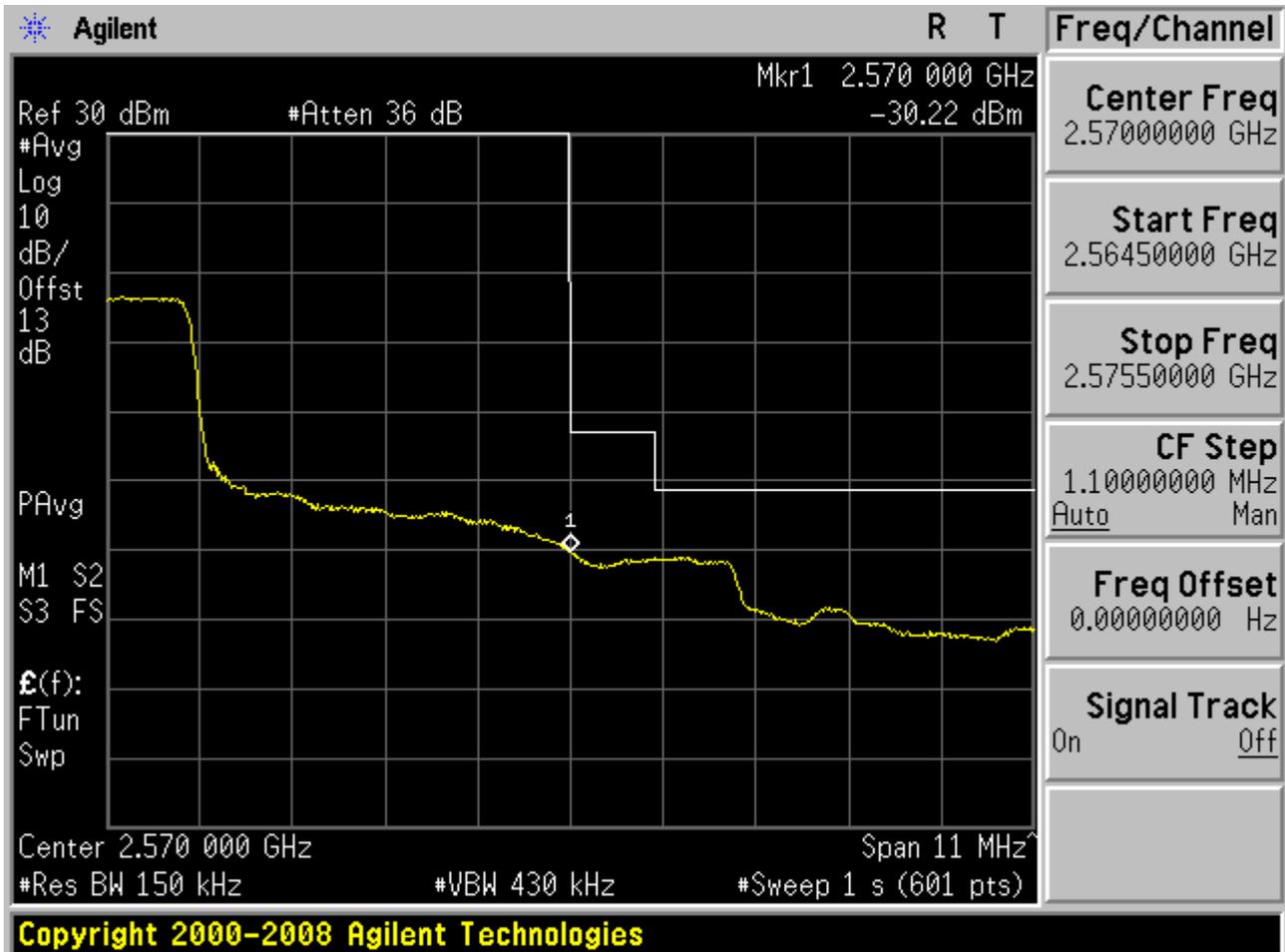


1.1.3.2.2 QPSK/1RB #max



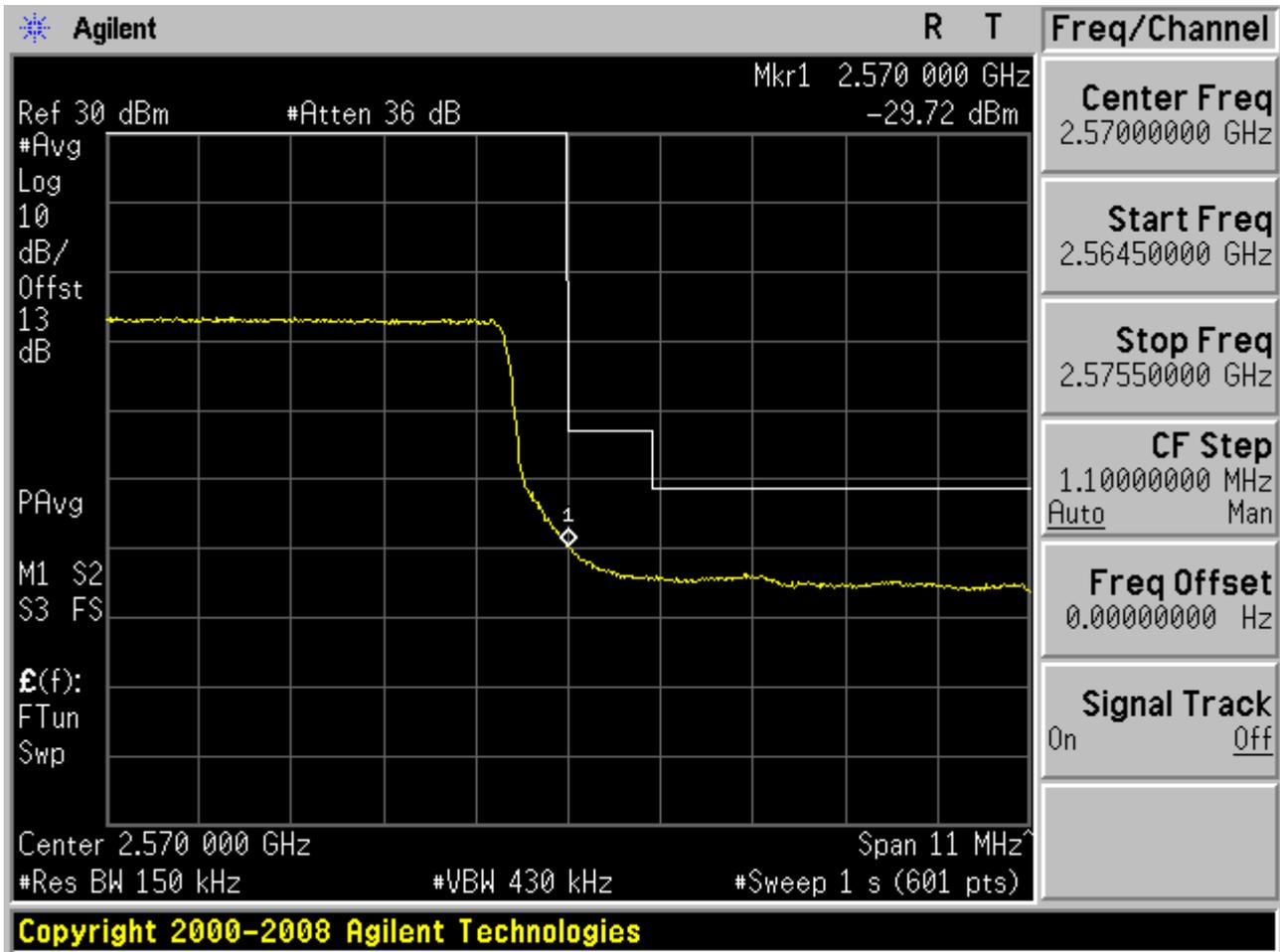


1.1.3.2.3 QPSK/Partial RBs /RB #18





1.1.3.2.4 QPSK/full RBs

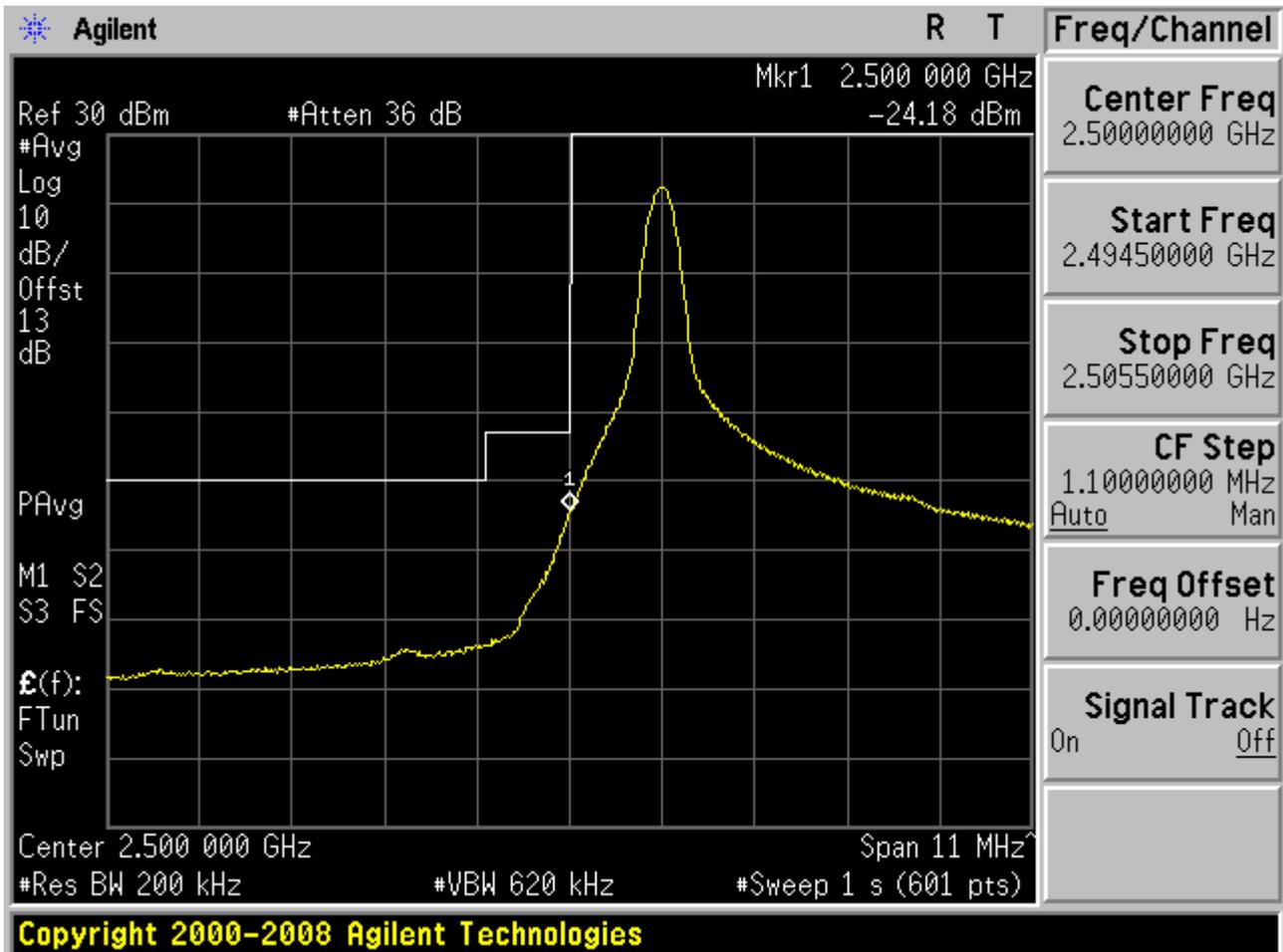




1.1.4 Channel Bandwidth = Highest (20 MHz)

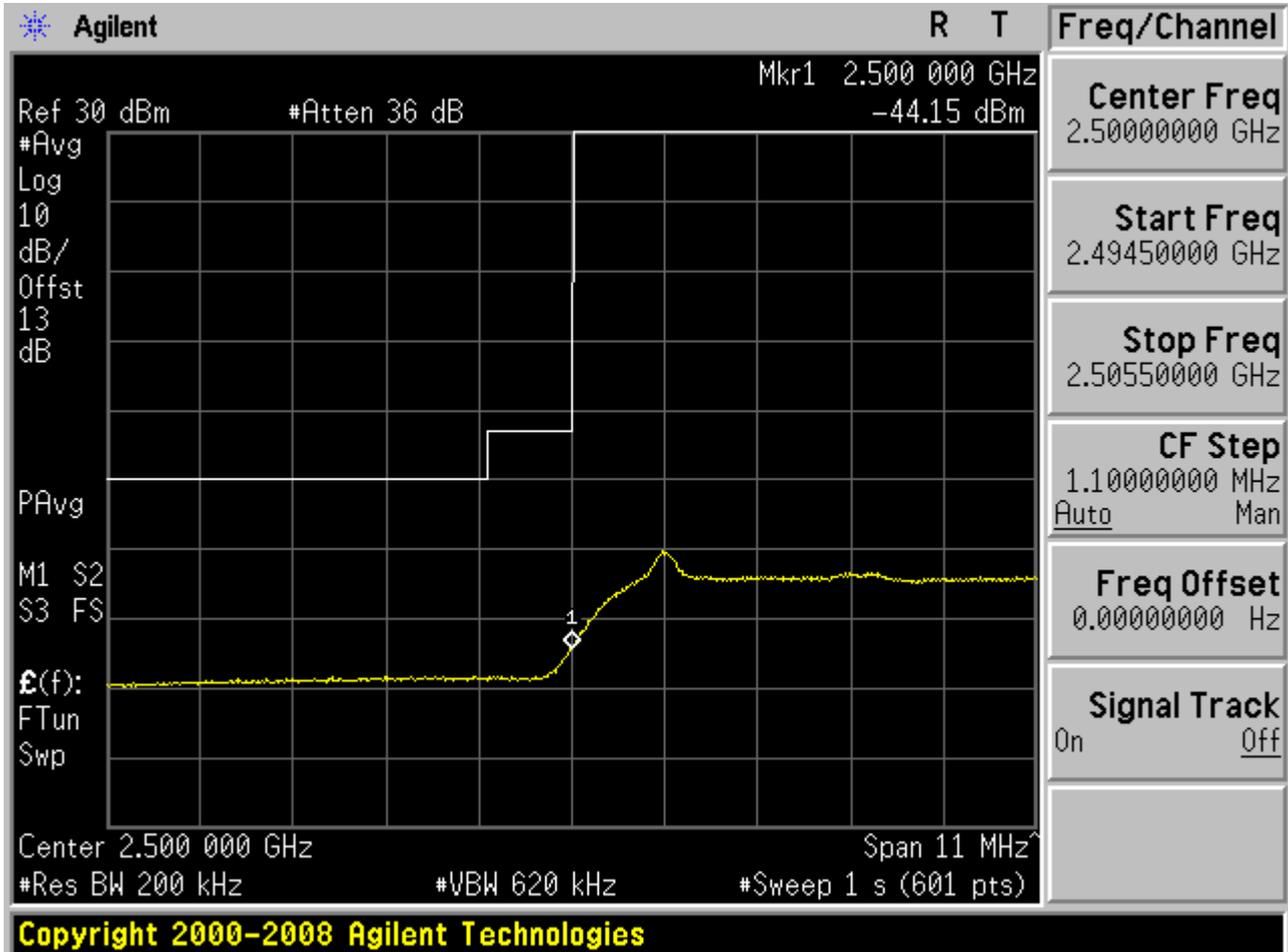
1.1.4.1 Channel= B

1.1.4.1.1 QPSK/1RB #0



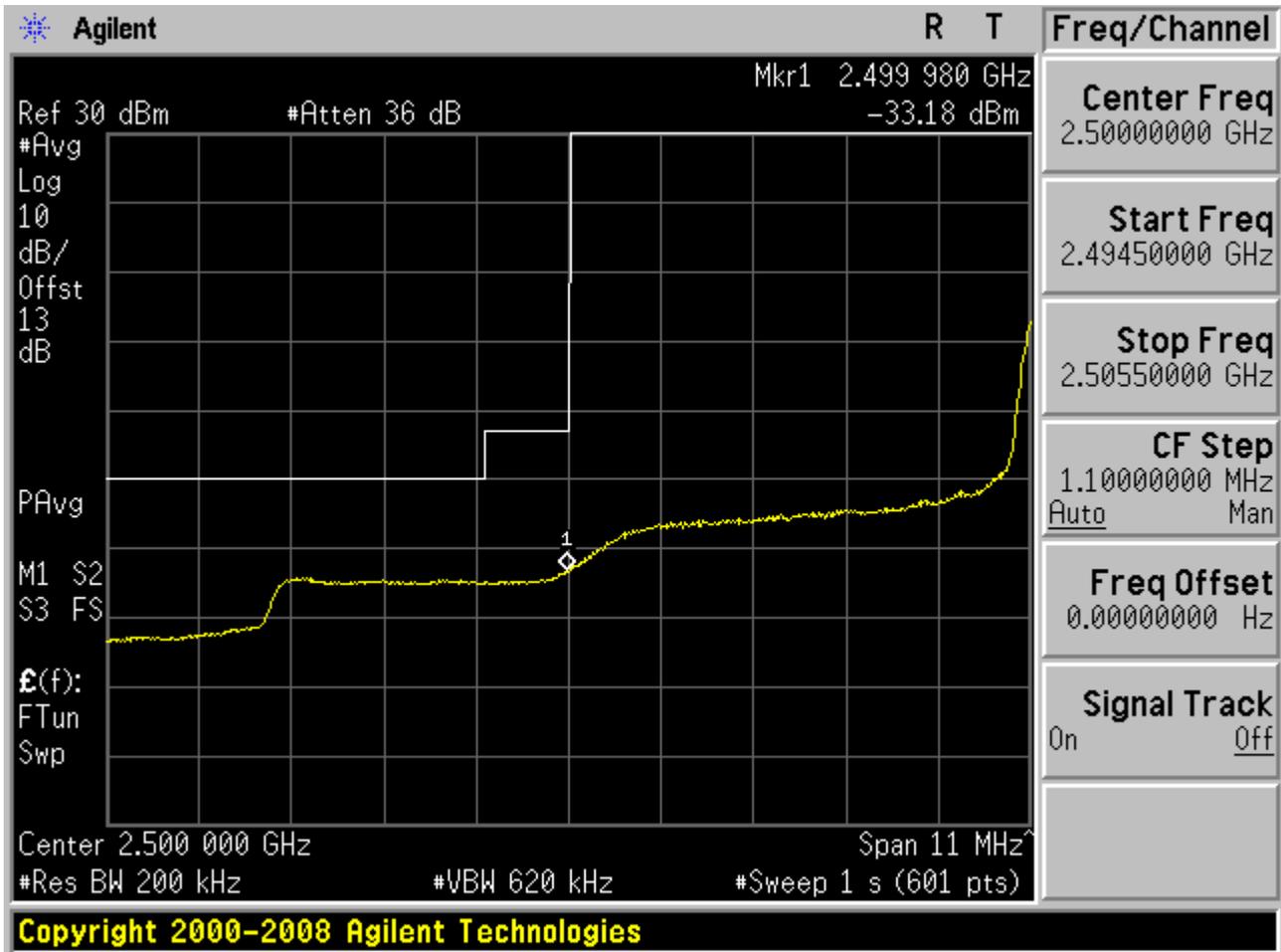


1.1.4.1.2 QPSK/1RB #max



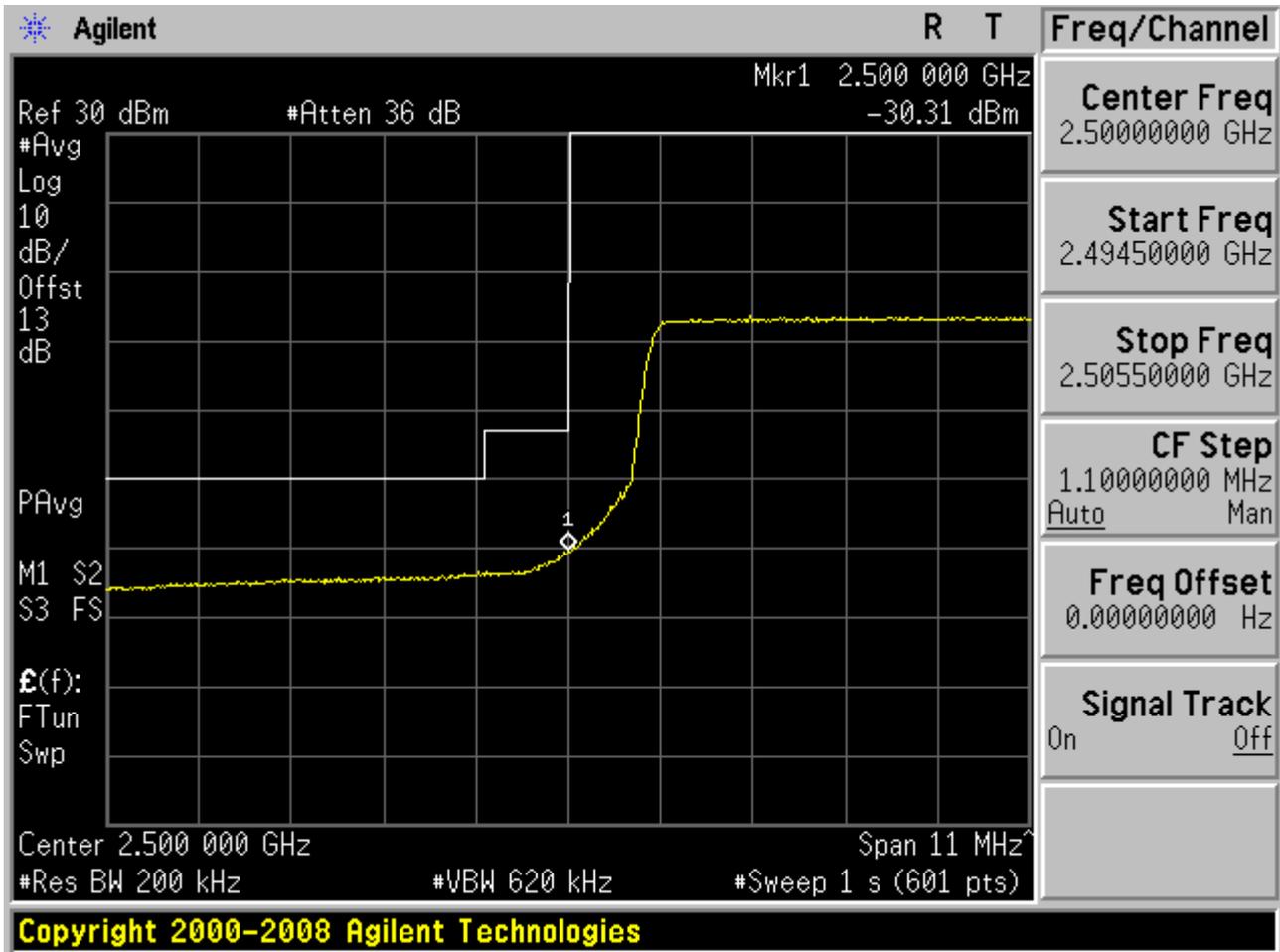


1.1.4.1.3 QPSK/Partial RBs /RB #25





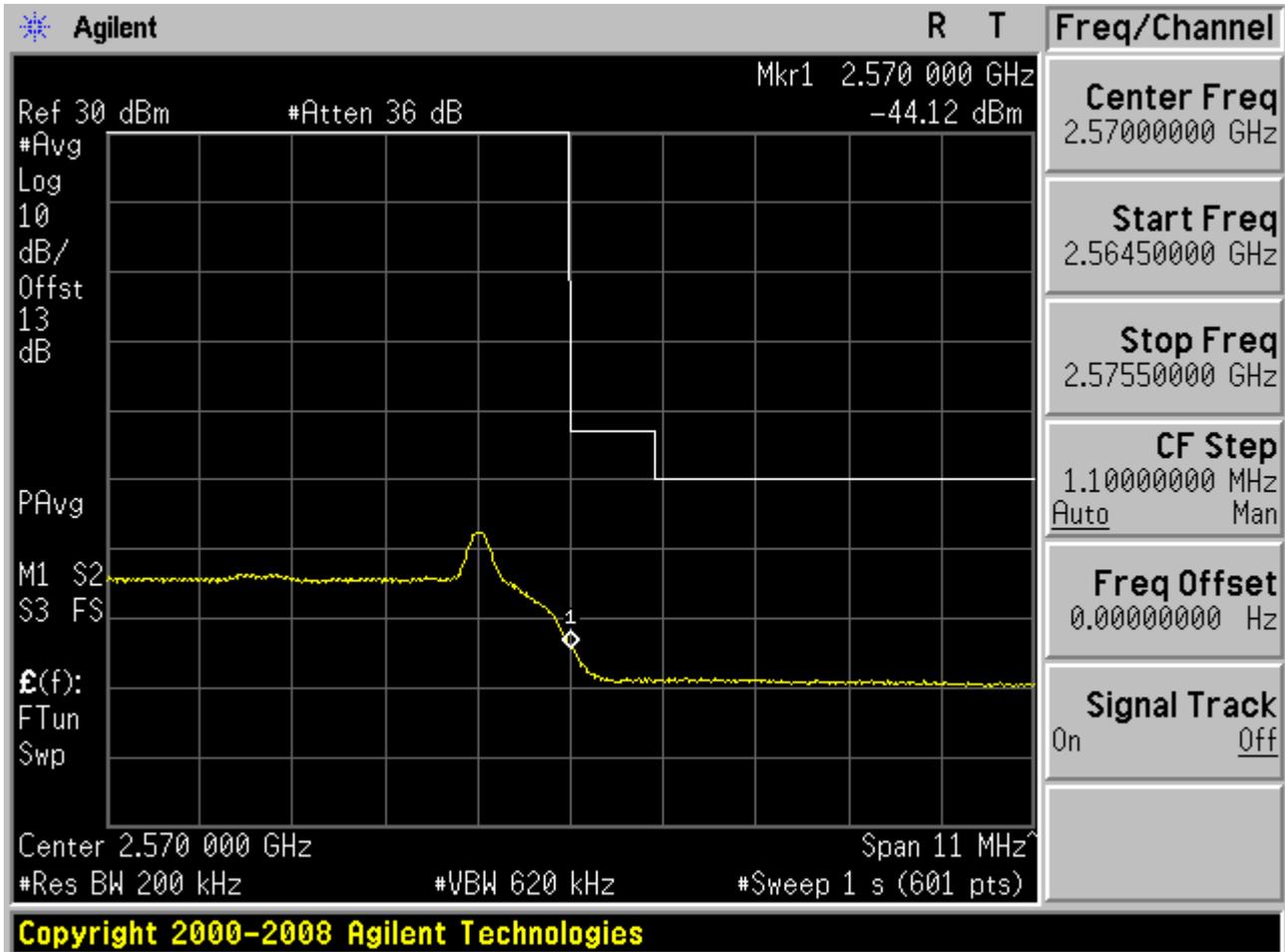
1.1.4.1.4 QPSK/full RBs





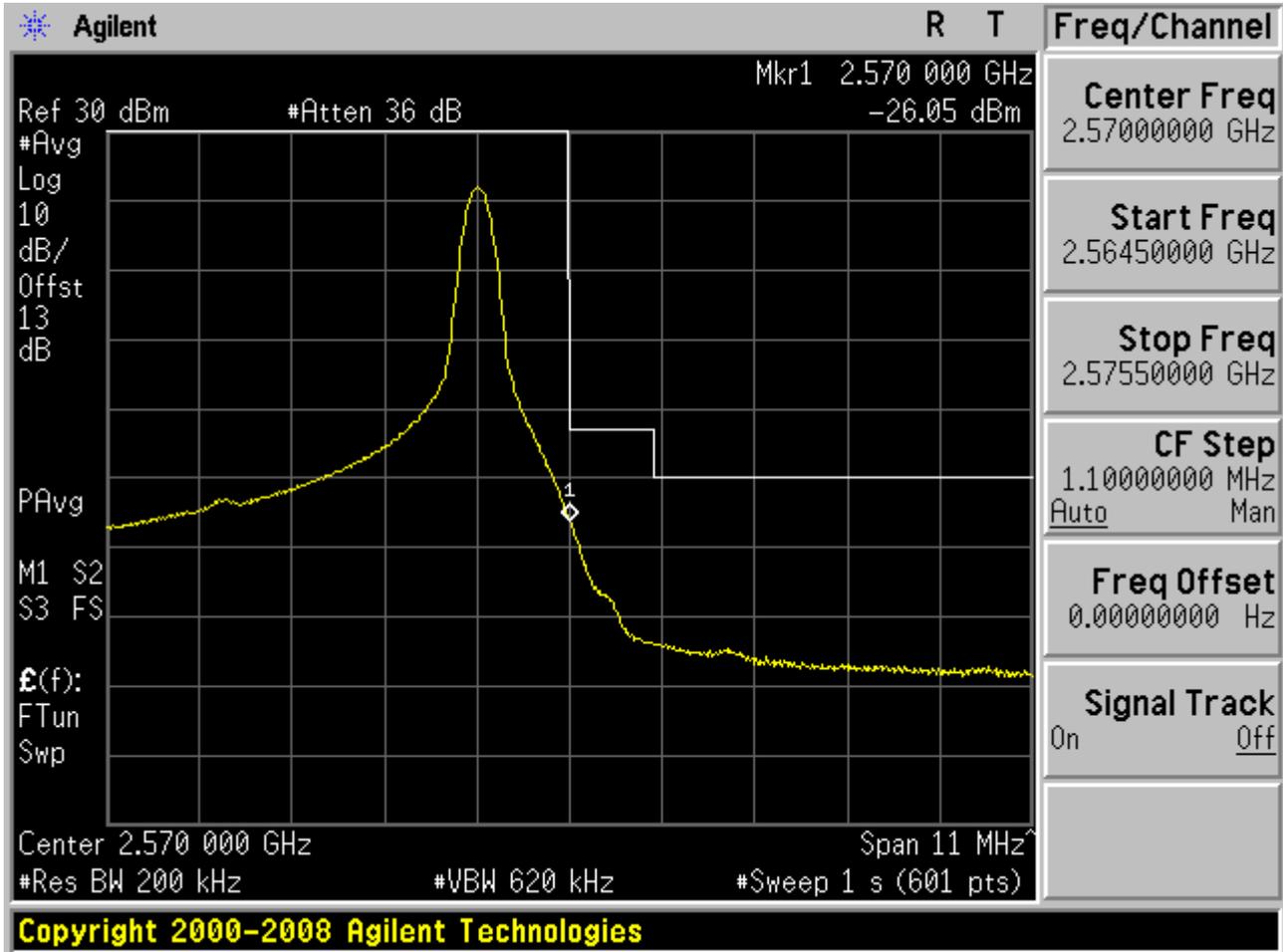
1.1.4.2 Channel= T

1.1.4.2.1 QPSK/1RB #0



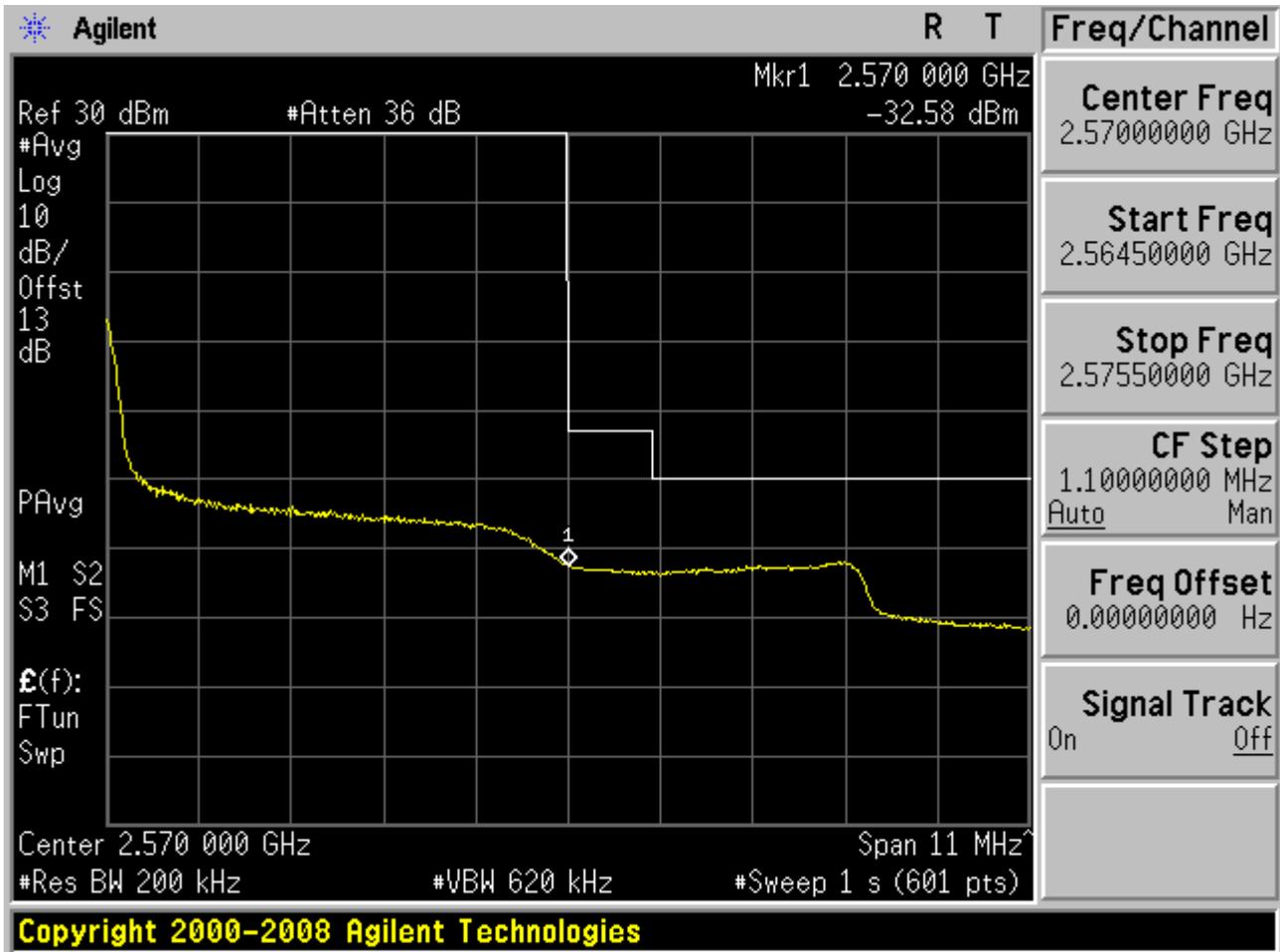


1.1.4.2.2 QPSK/1RB #max



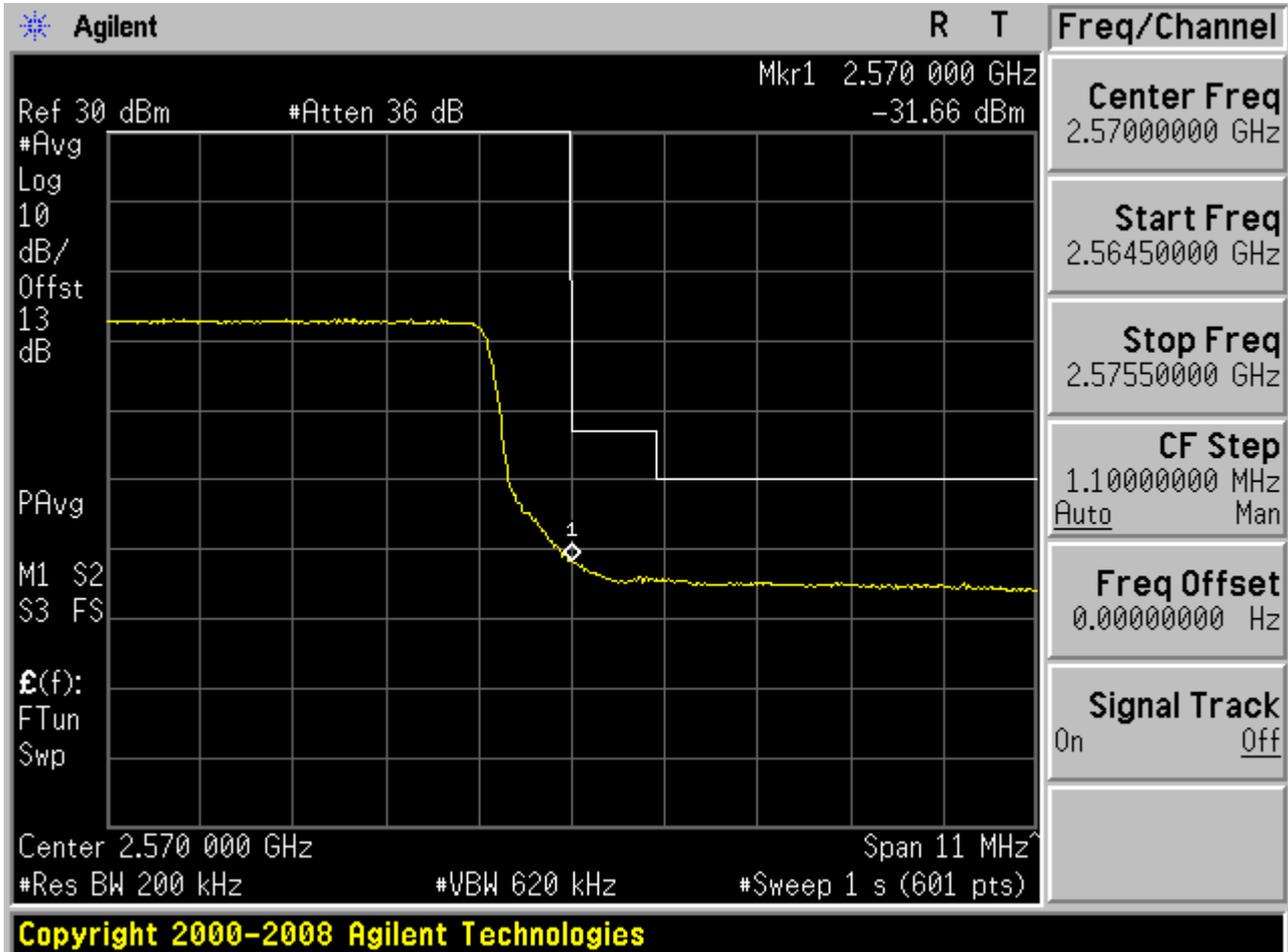


1.1.4.2.3 QPSK/Partial RBs /RB #25





1.1.4.2.4 QPSK/full RBs



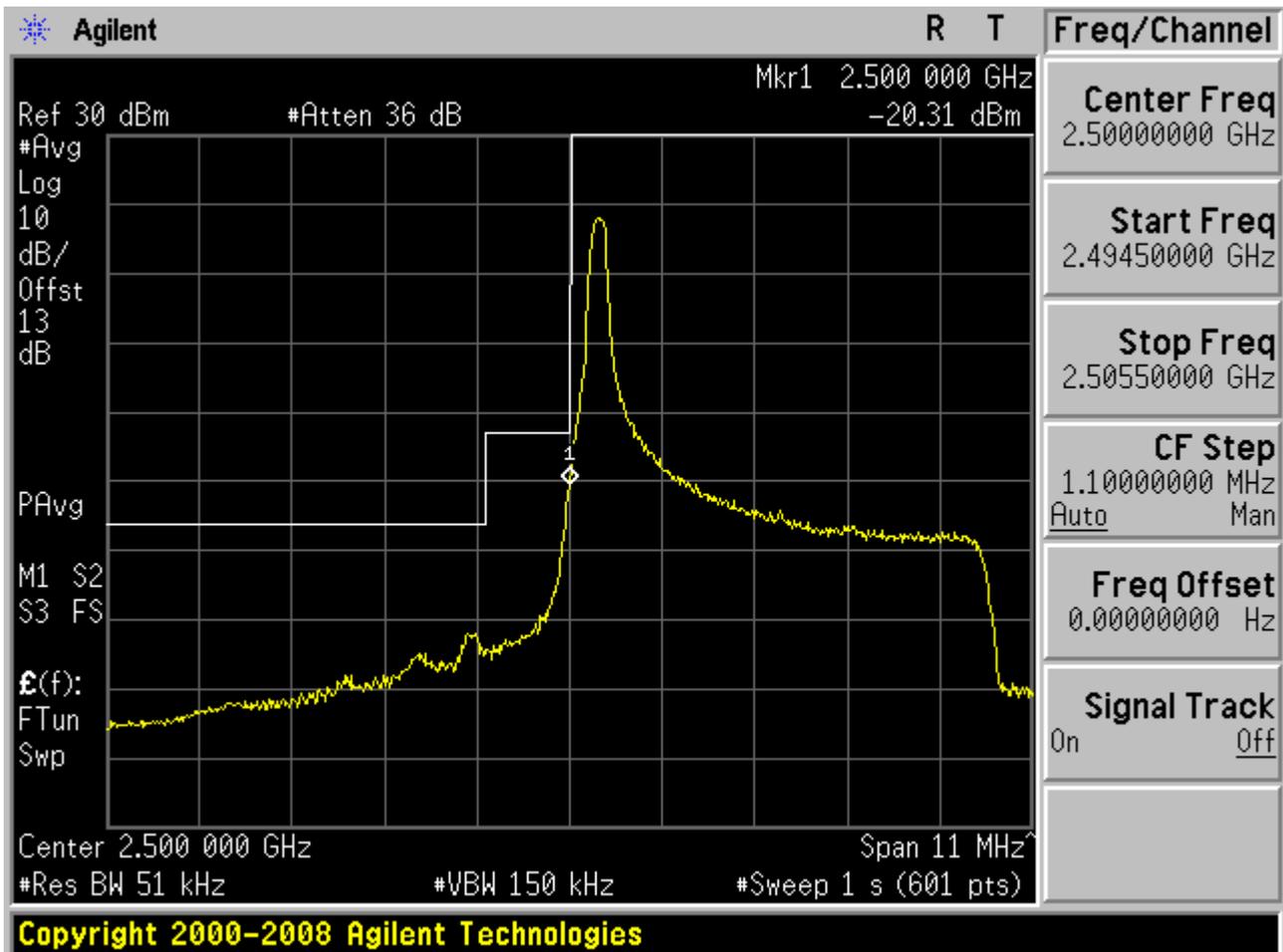


1.2 Test Mode=TM2

1.2.1 Channel Bandwidth = Lowest (5 MHz)

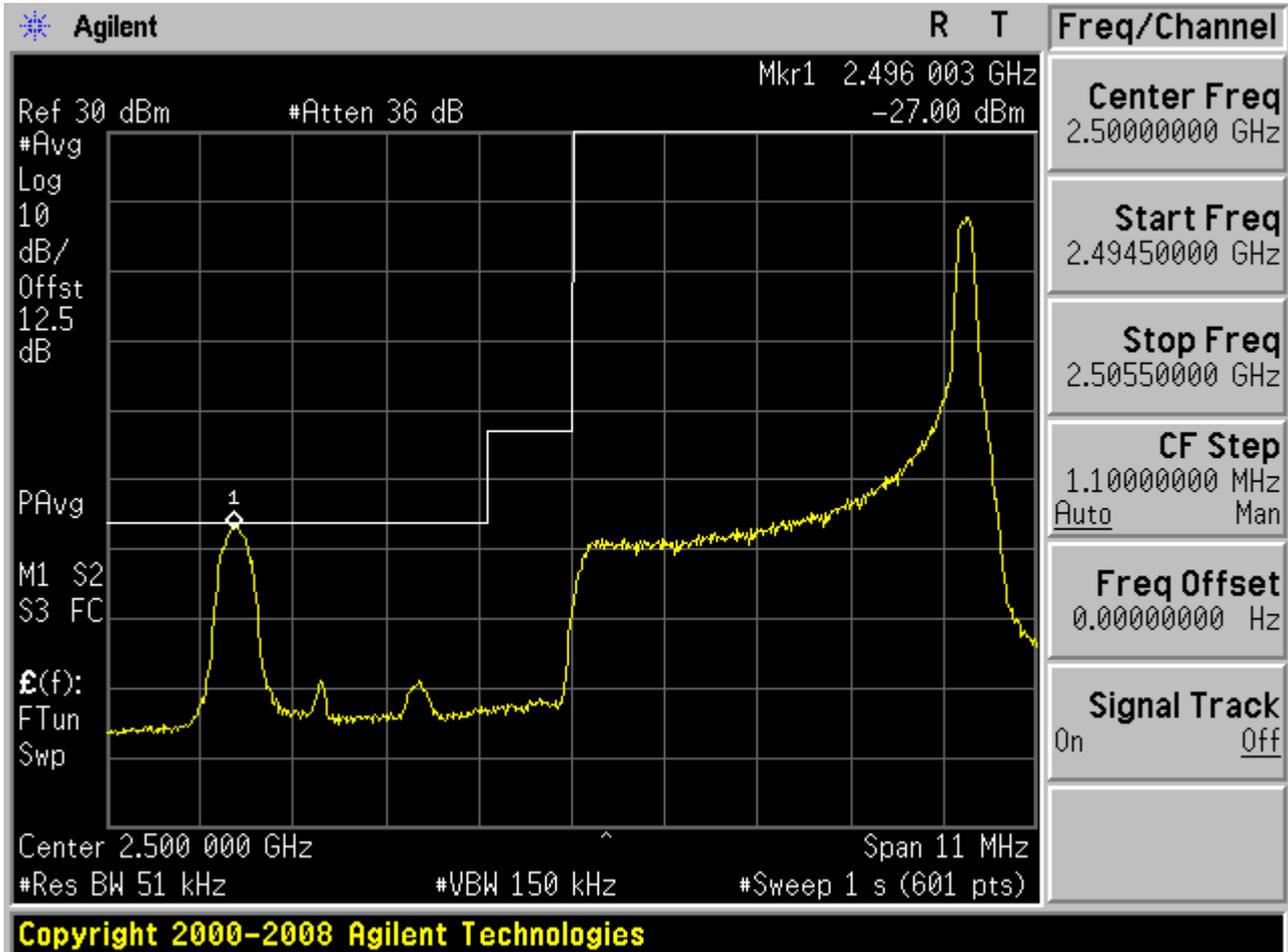
1.2.1.1 Channel= B

1.2.1.1.1 16QAM/1RB #0



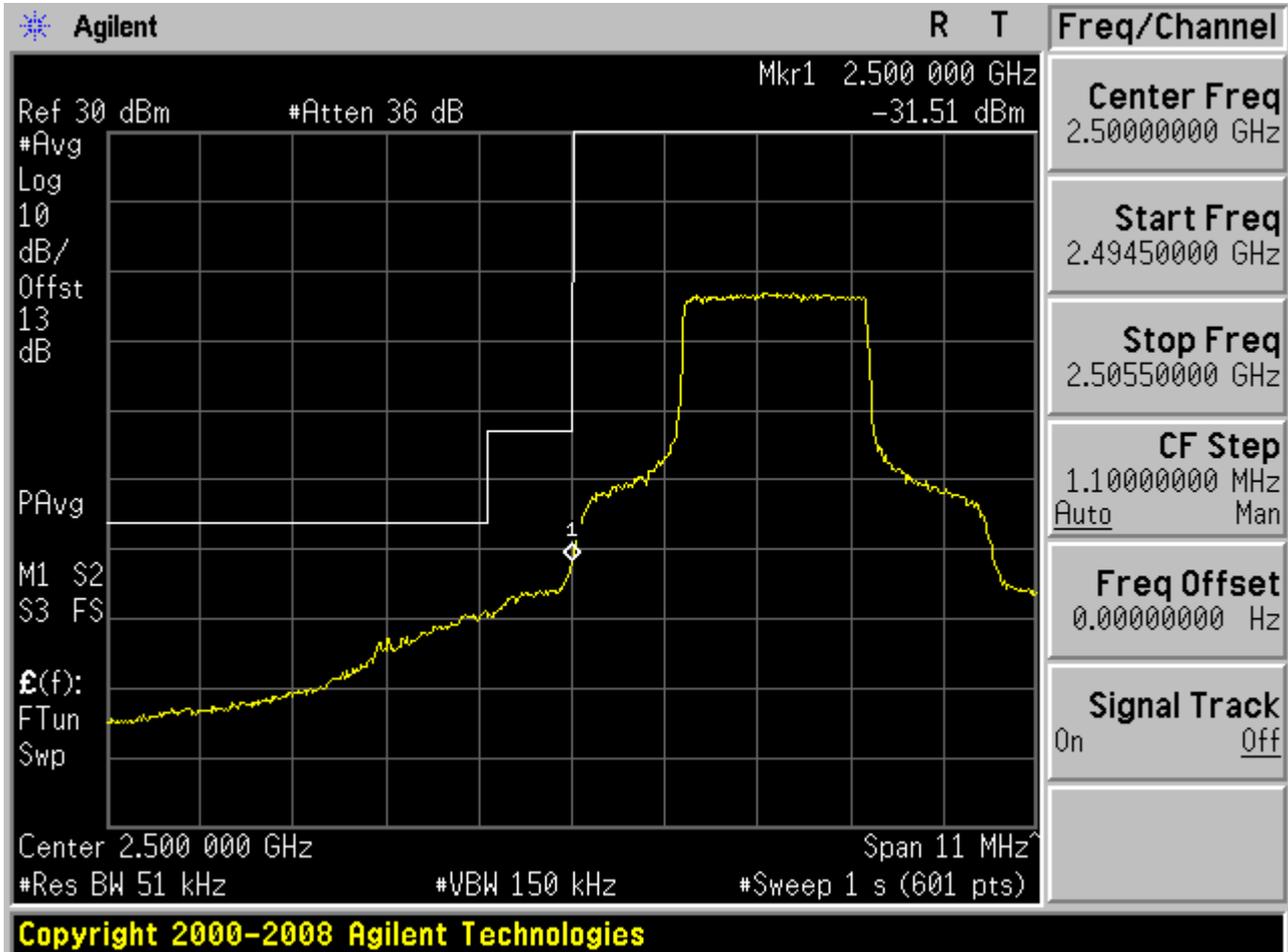


1.2.1.1.2 16QAM/1RB #max



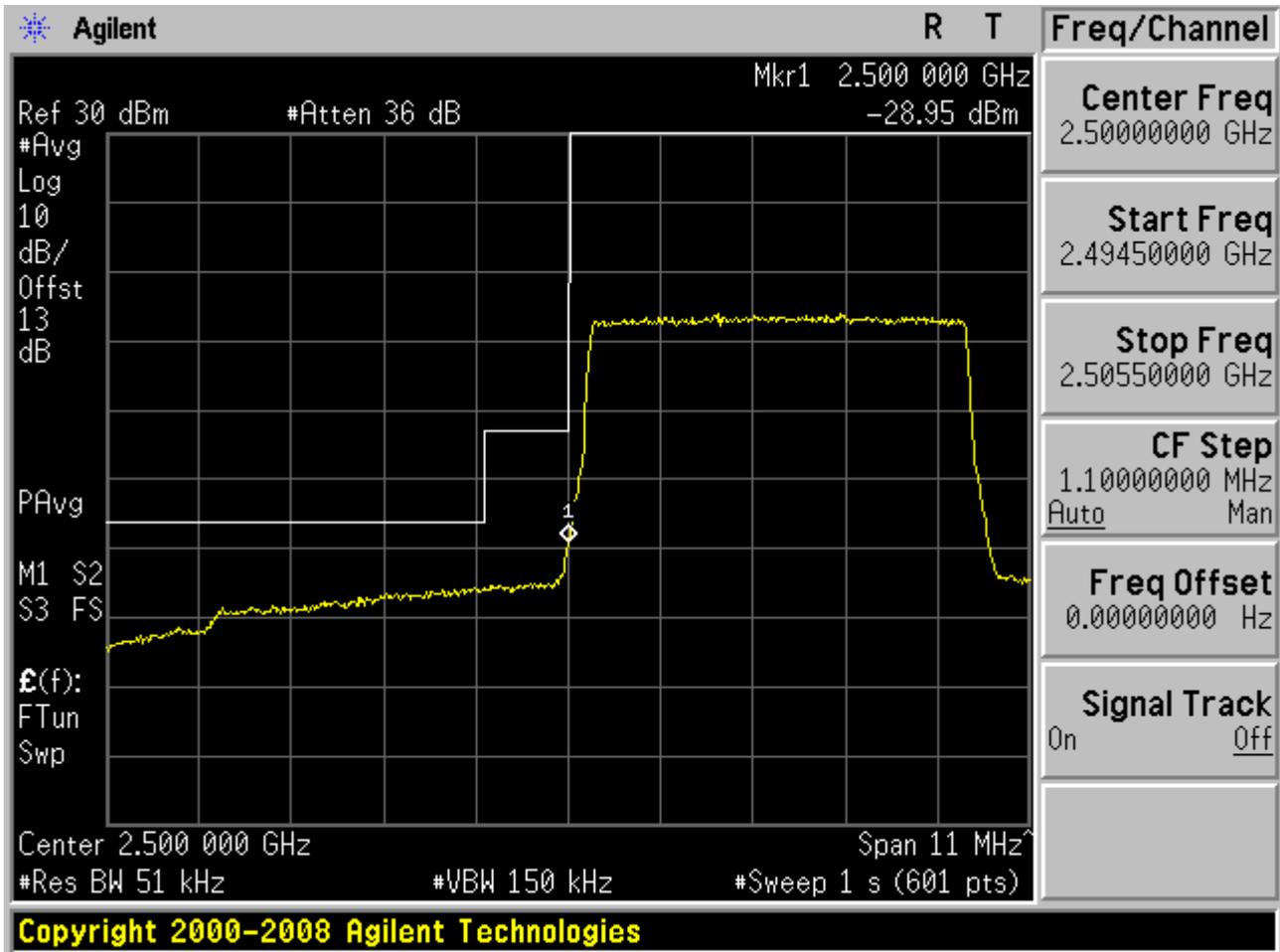


1.2.1.1.3 16QAM /Partial RBs /RB #6





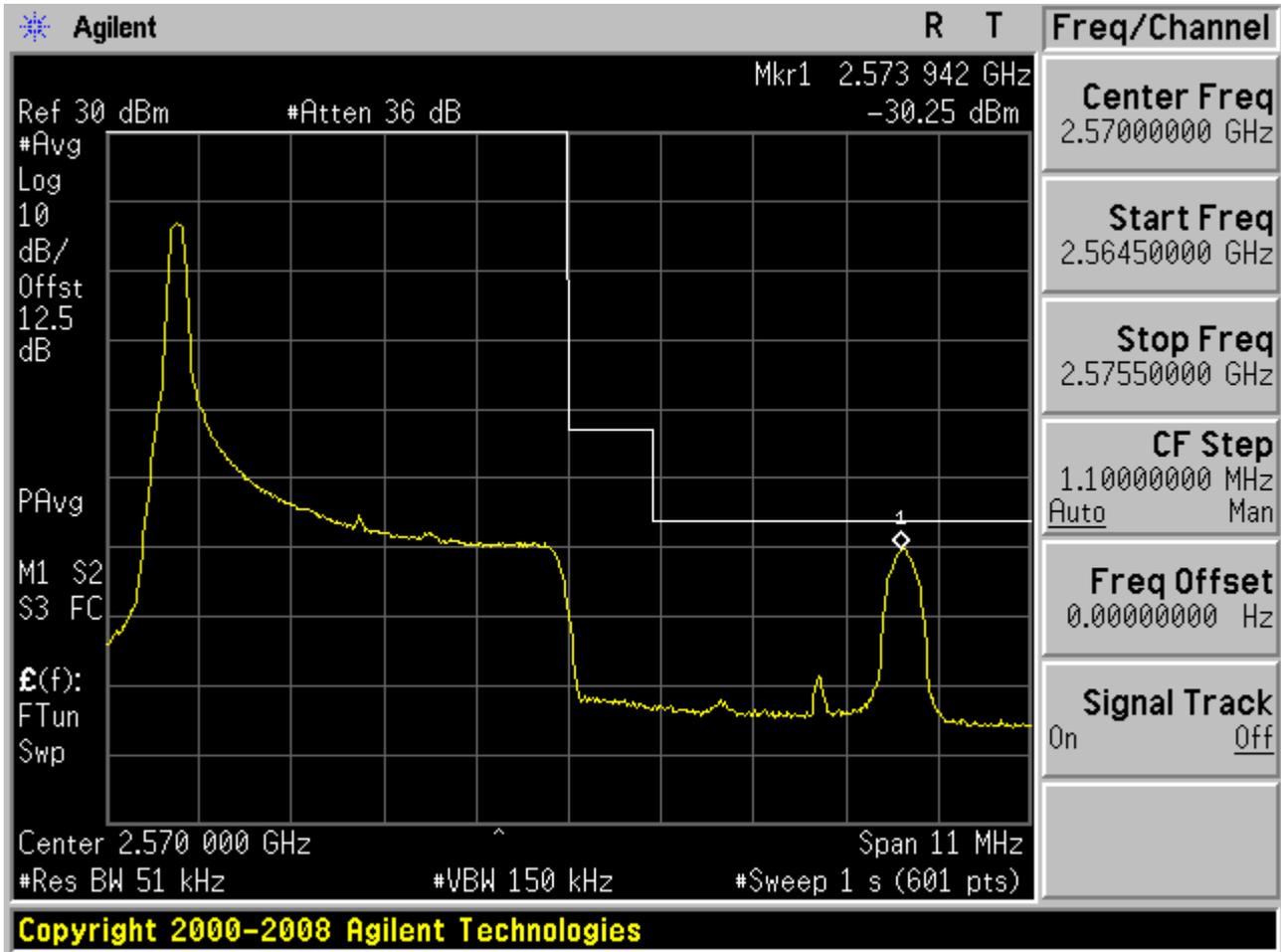
1.2.1.1.4 16QAM /full RBs





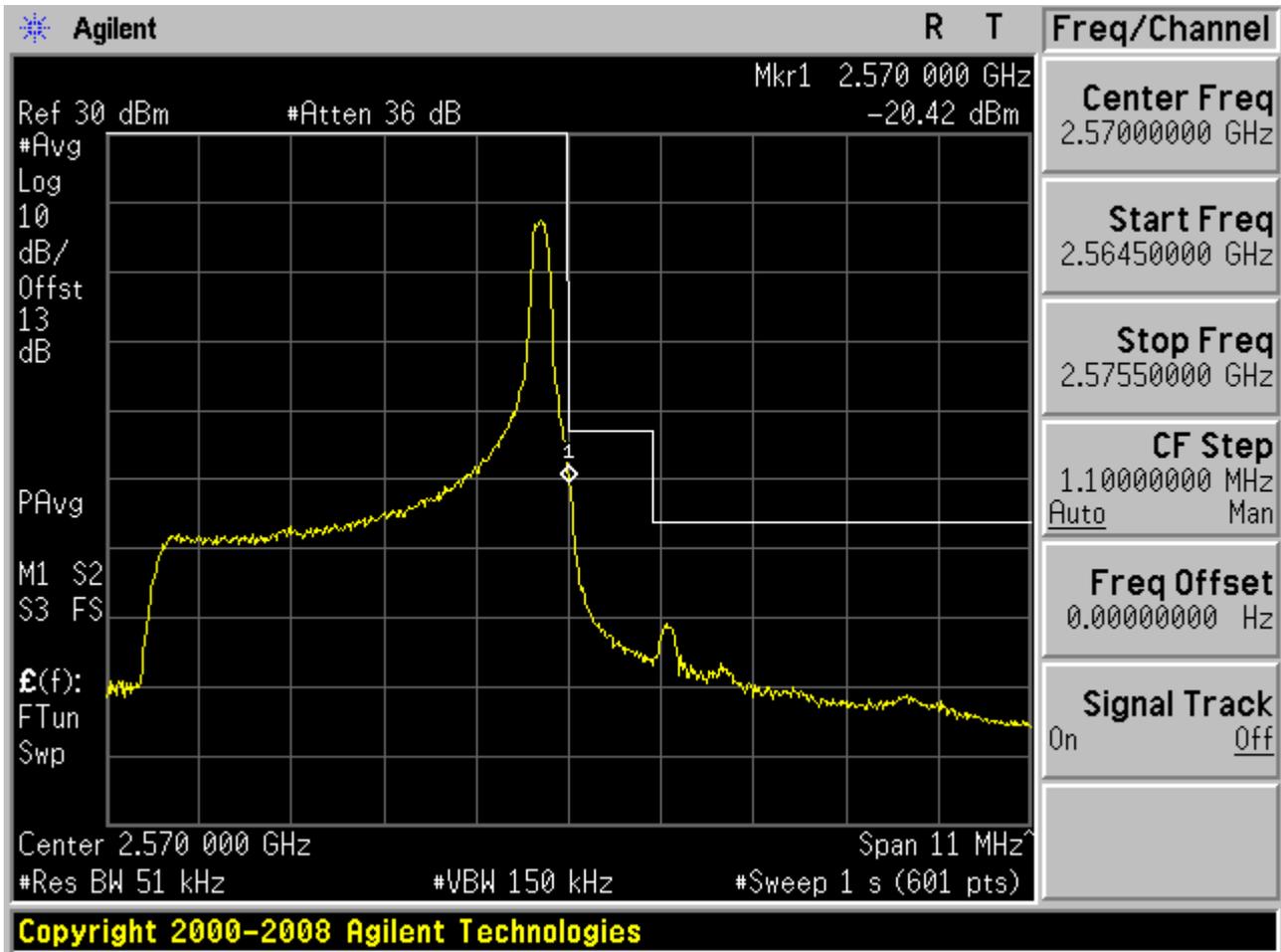
1.2.1.2 Channel= T

1.2.1.2.1 16QAM/1RB #0



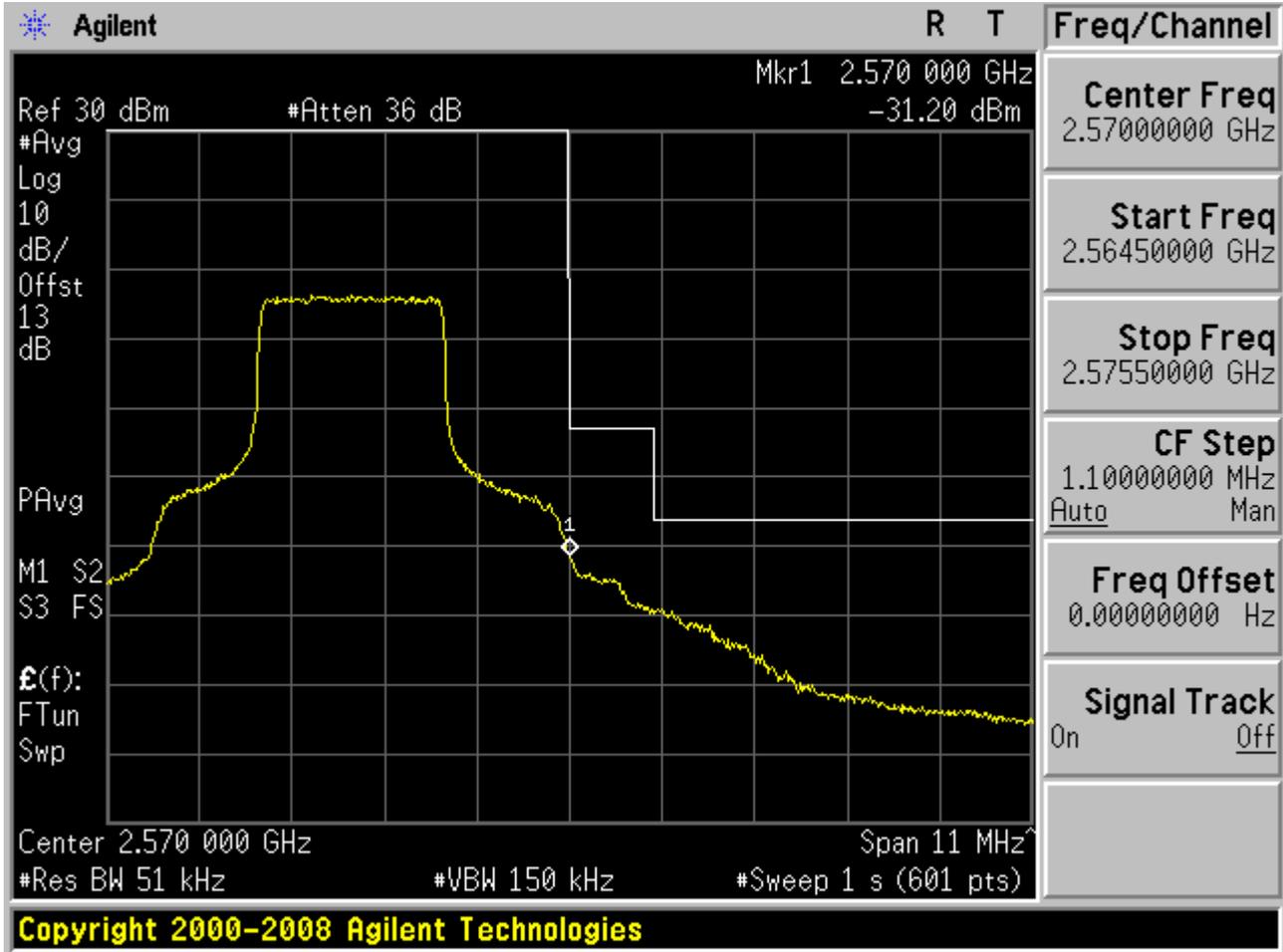


1.2.1.2.2 16QAM/1RB #max



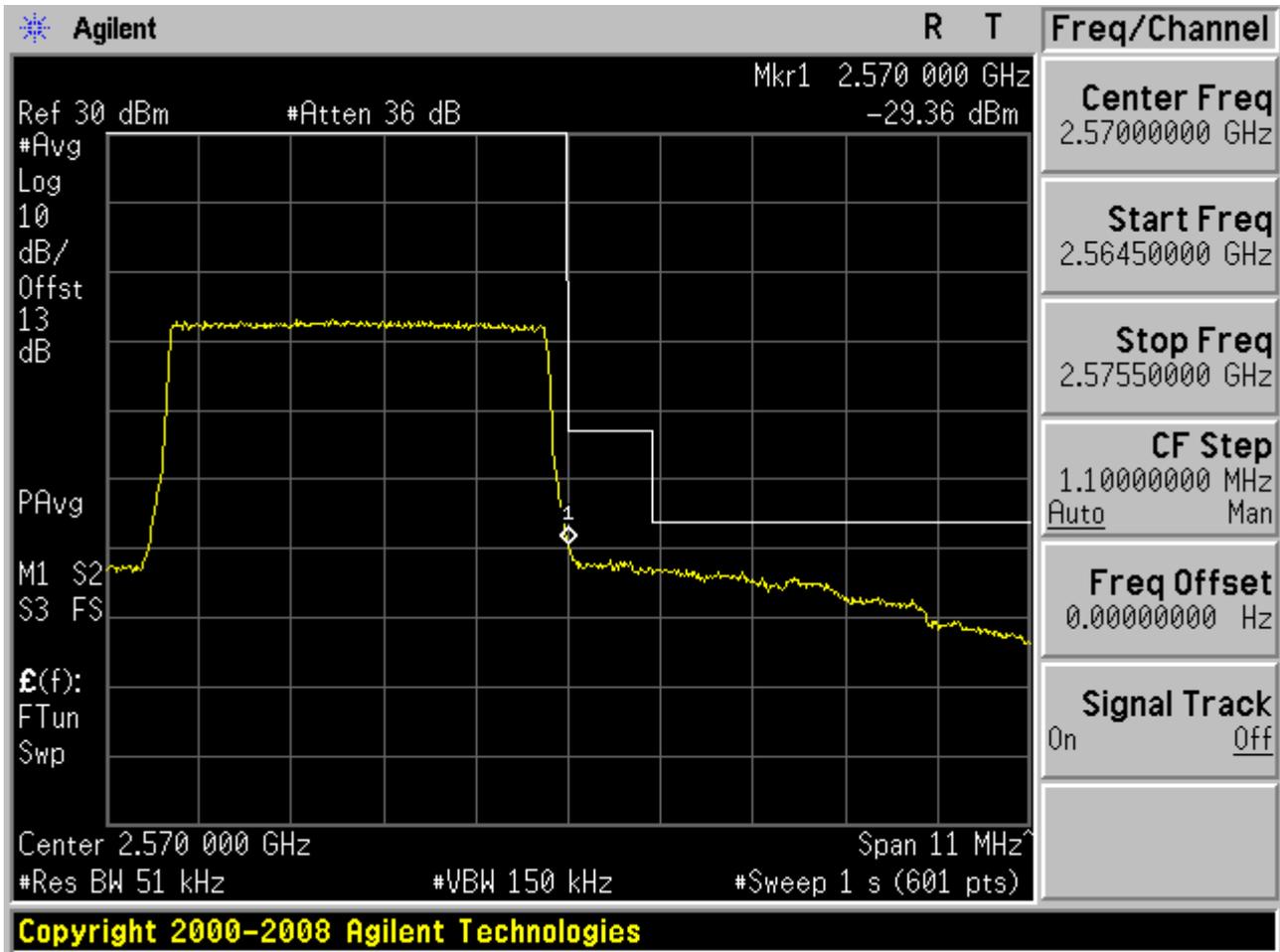


1.2.1.2.3 16QAM /Partial RBs /RB #6





1.2.1.2.4 16QAM /full RBs

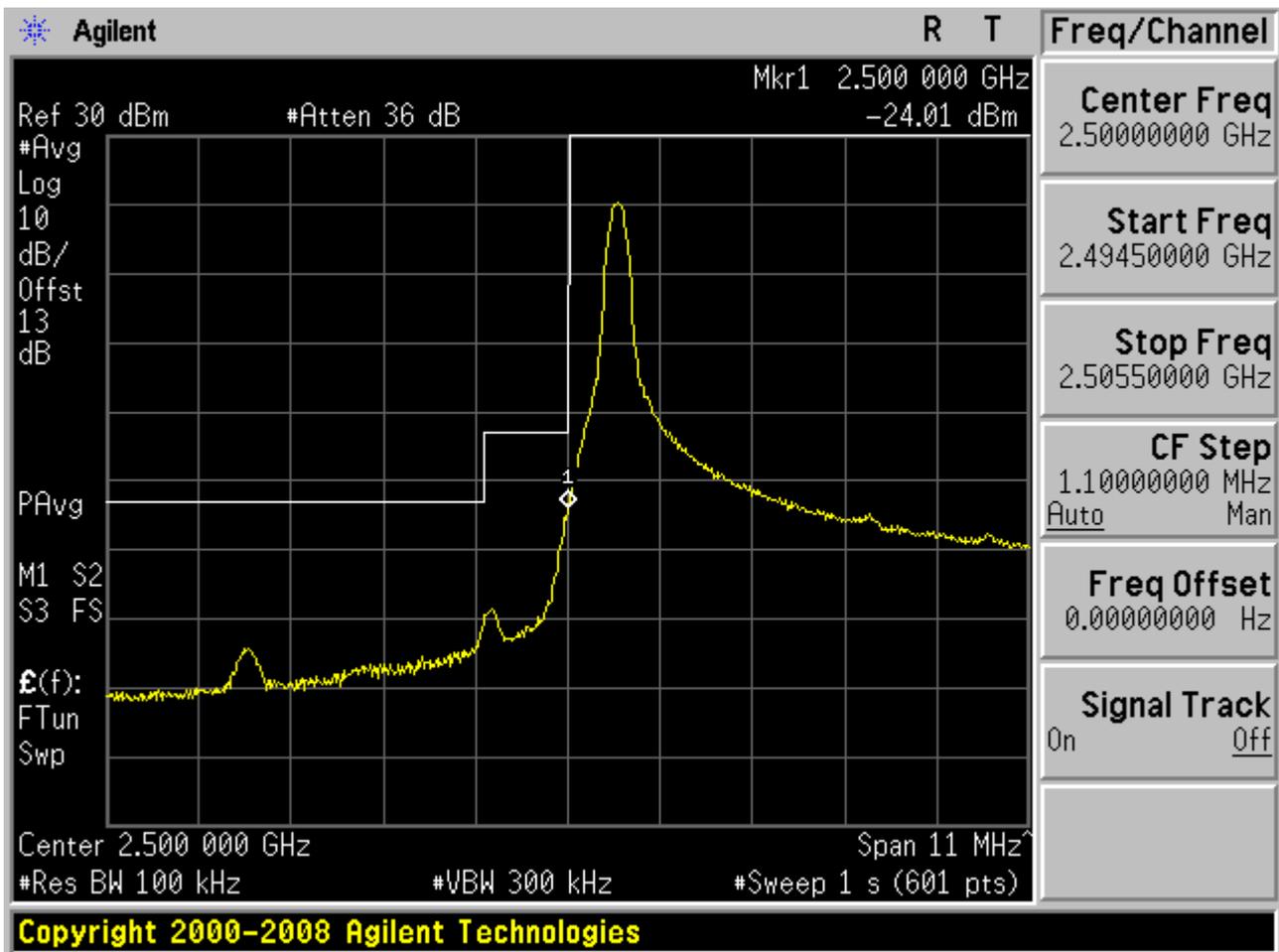




1.2.2 Channel Bandwidth = 10 MHz

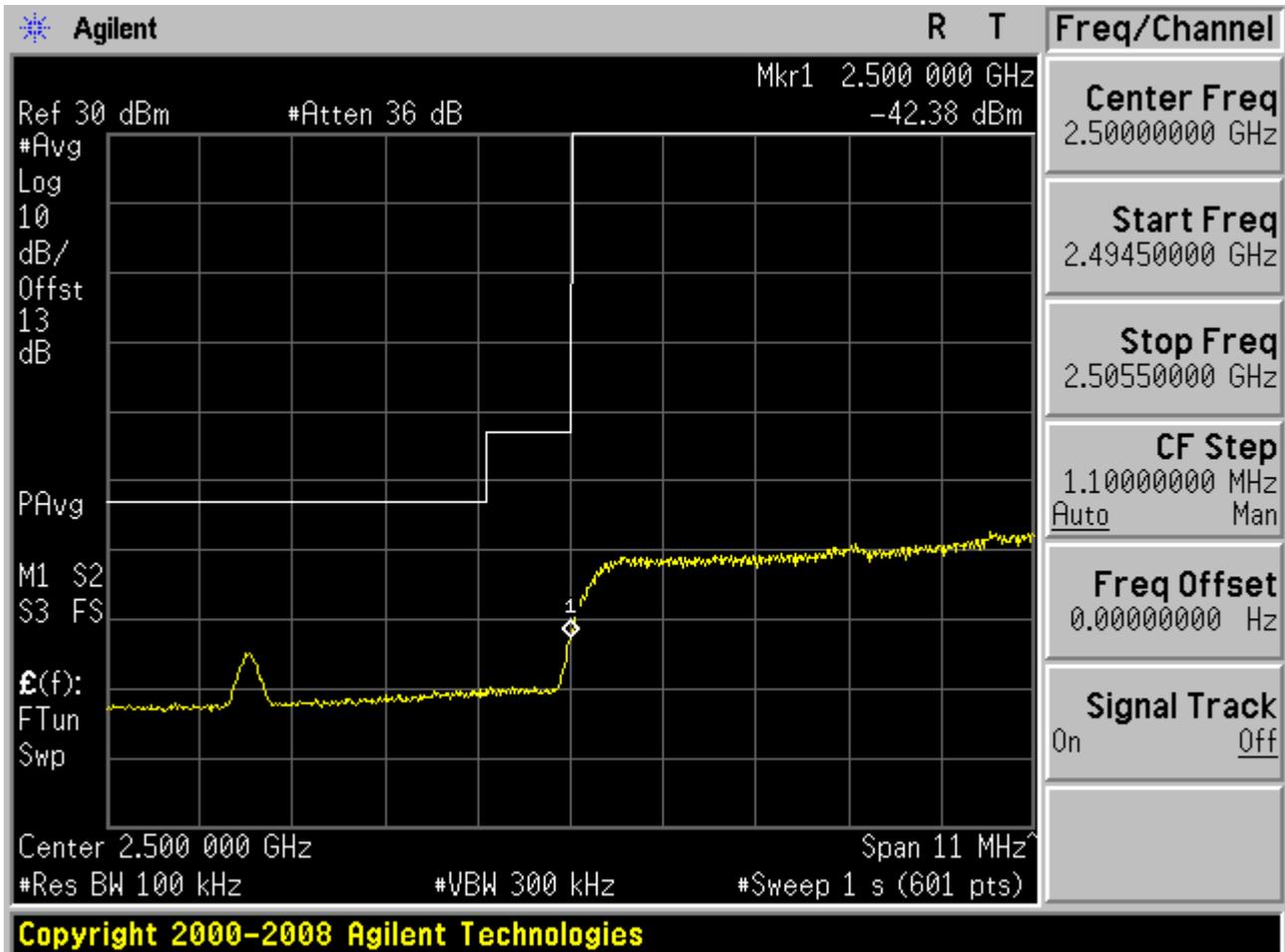
1.2.2.1 Channel= B

1.2.2.1.1 16QAM/1RB #0



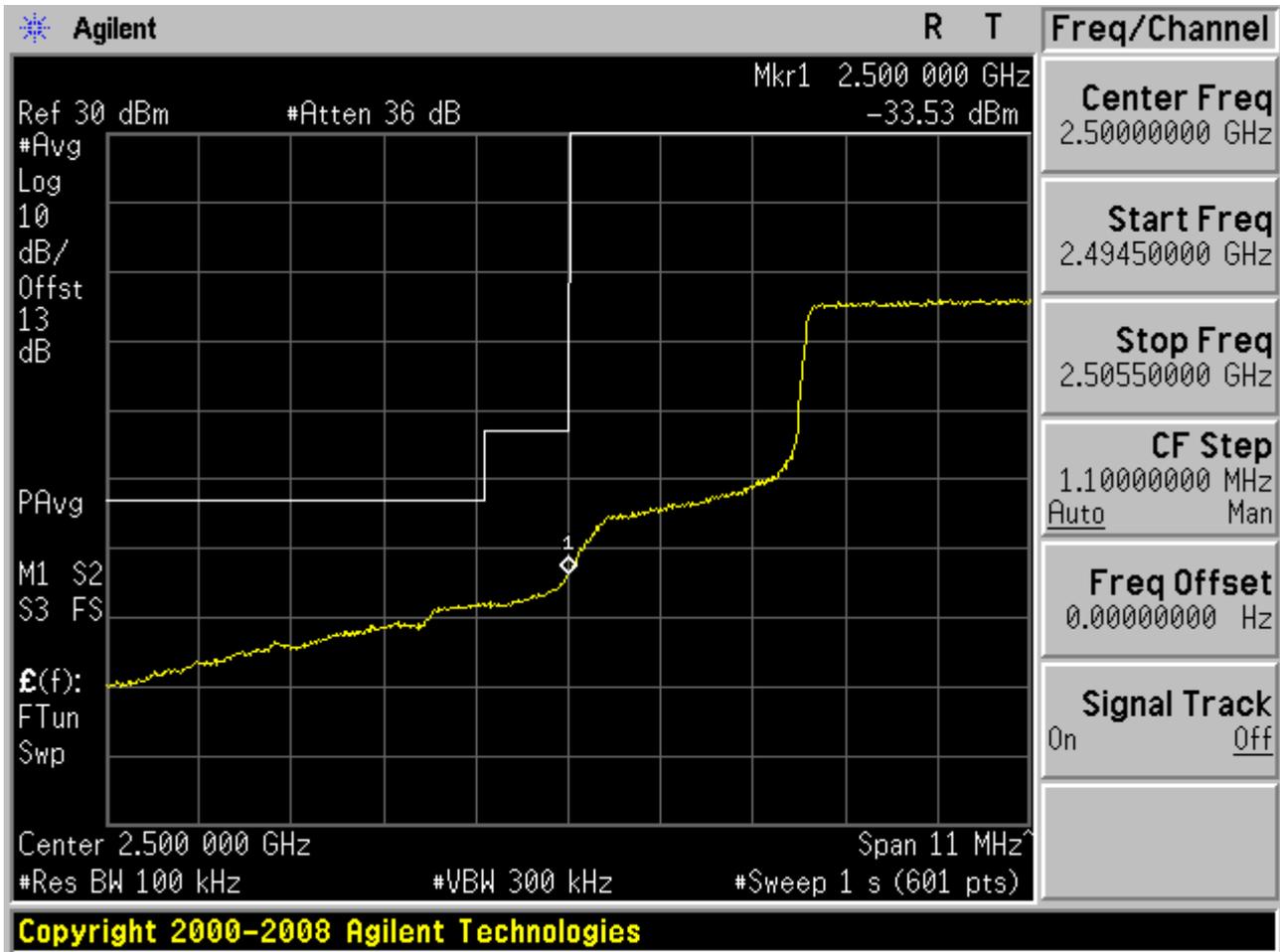


1.2.2.1.2 16QAM/1RB #max



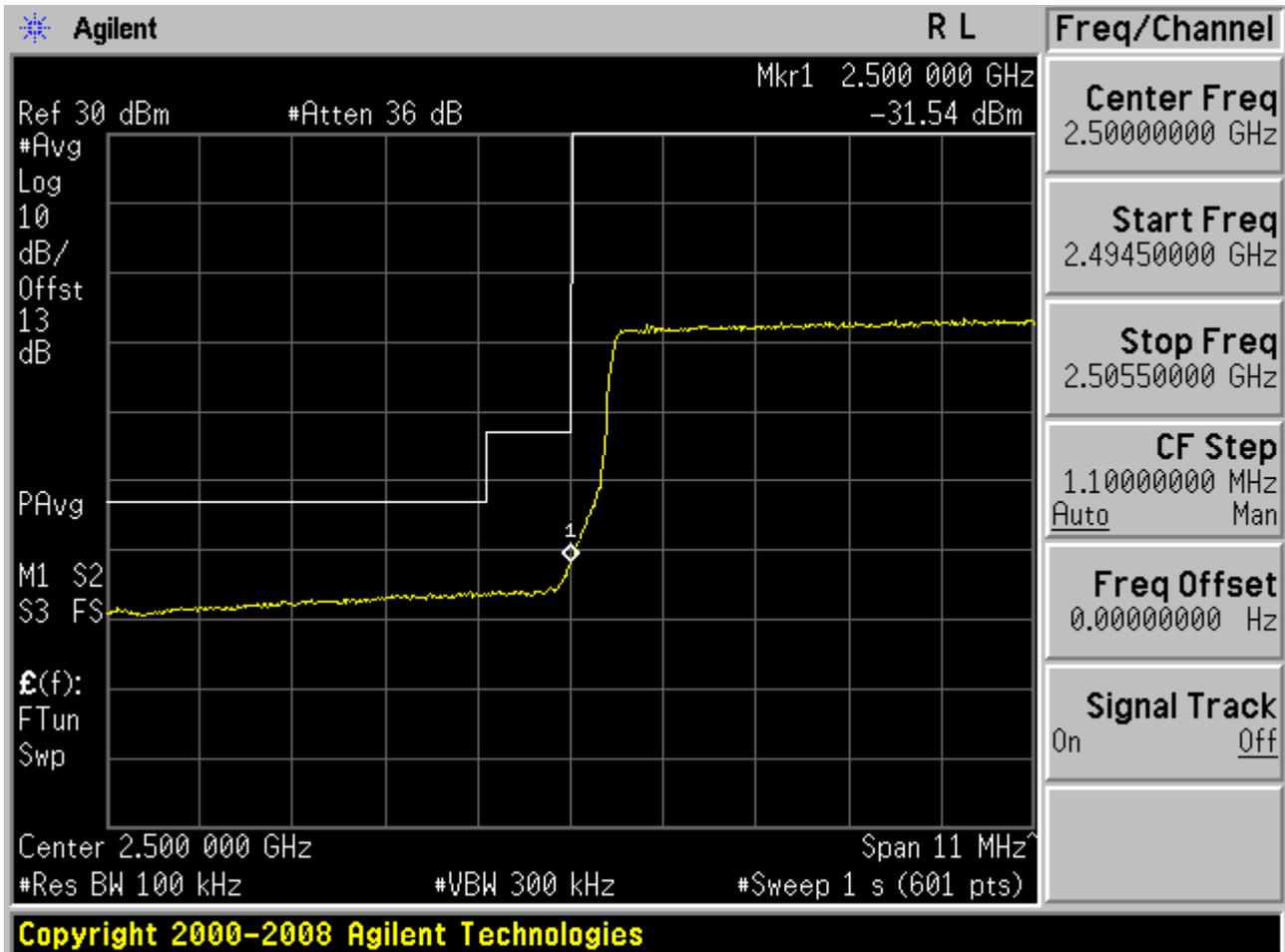


1.2.2.1.3 16QAM /Partial RBs /RB #13





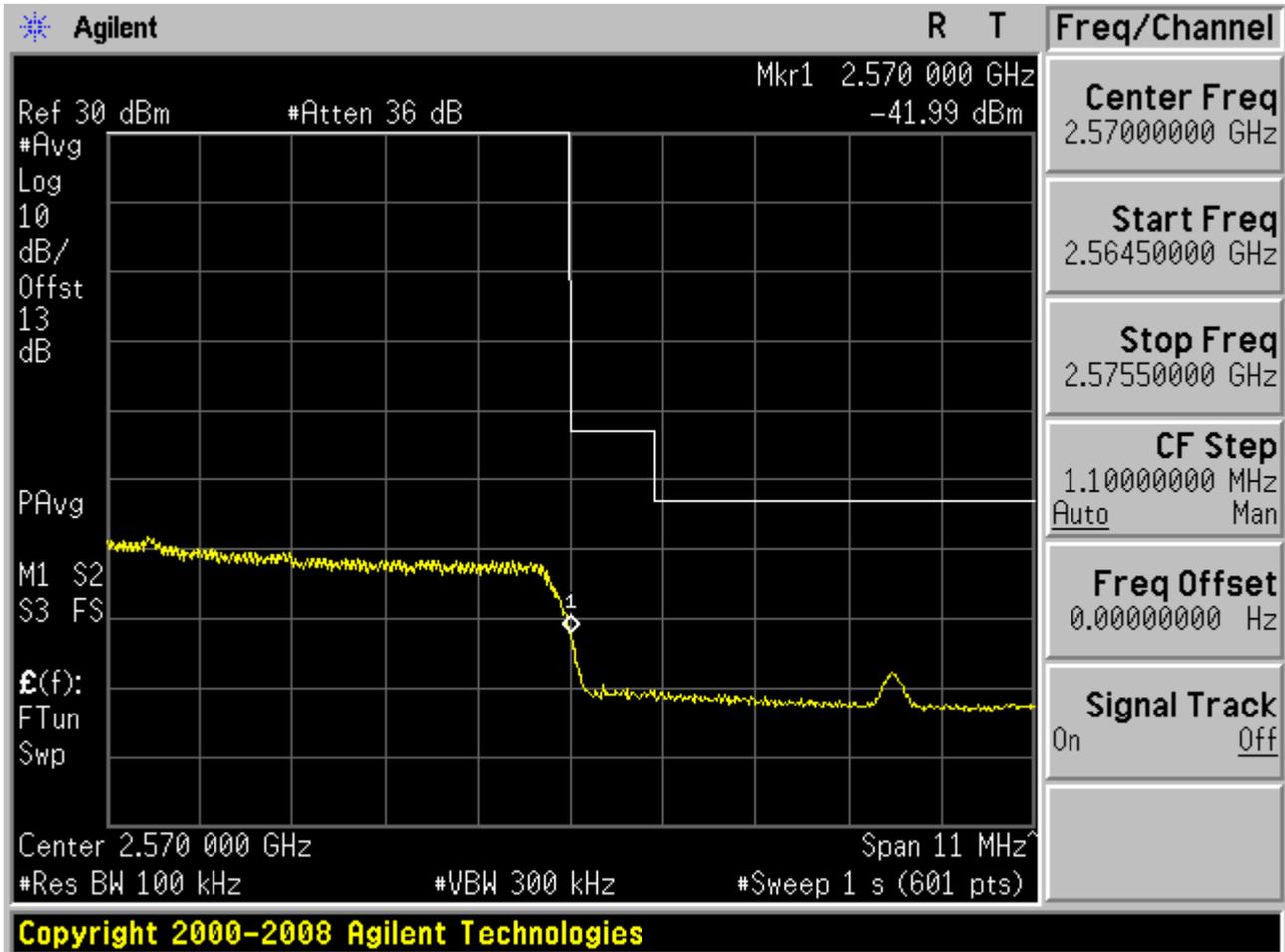
1.2.2.1.4 16QAM /full RBs





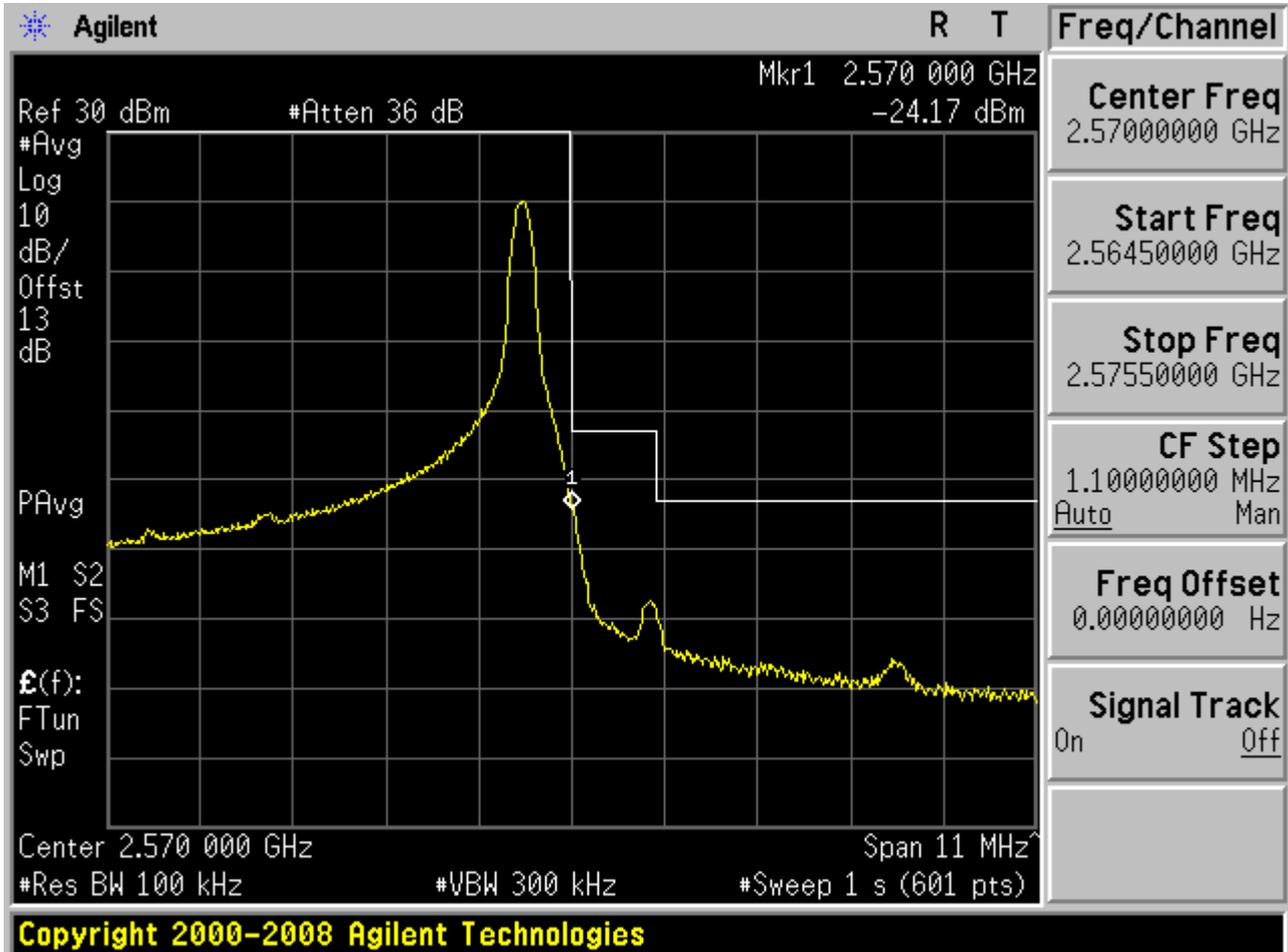
1.2.2.2 Channel= T

1.2.2.2.1 16QAM/1RB #0



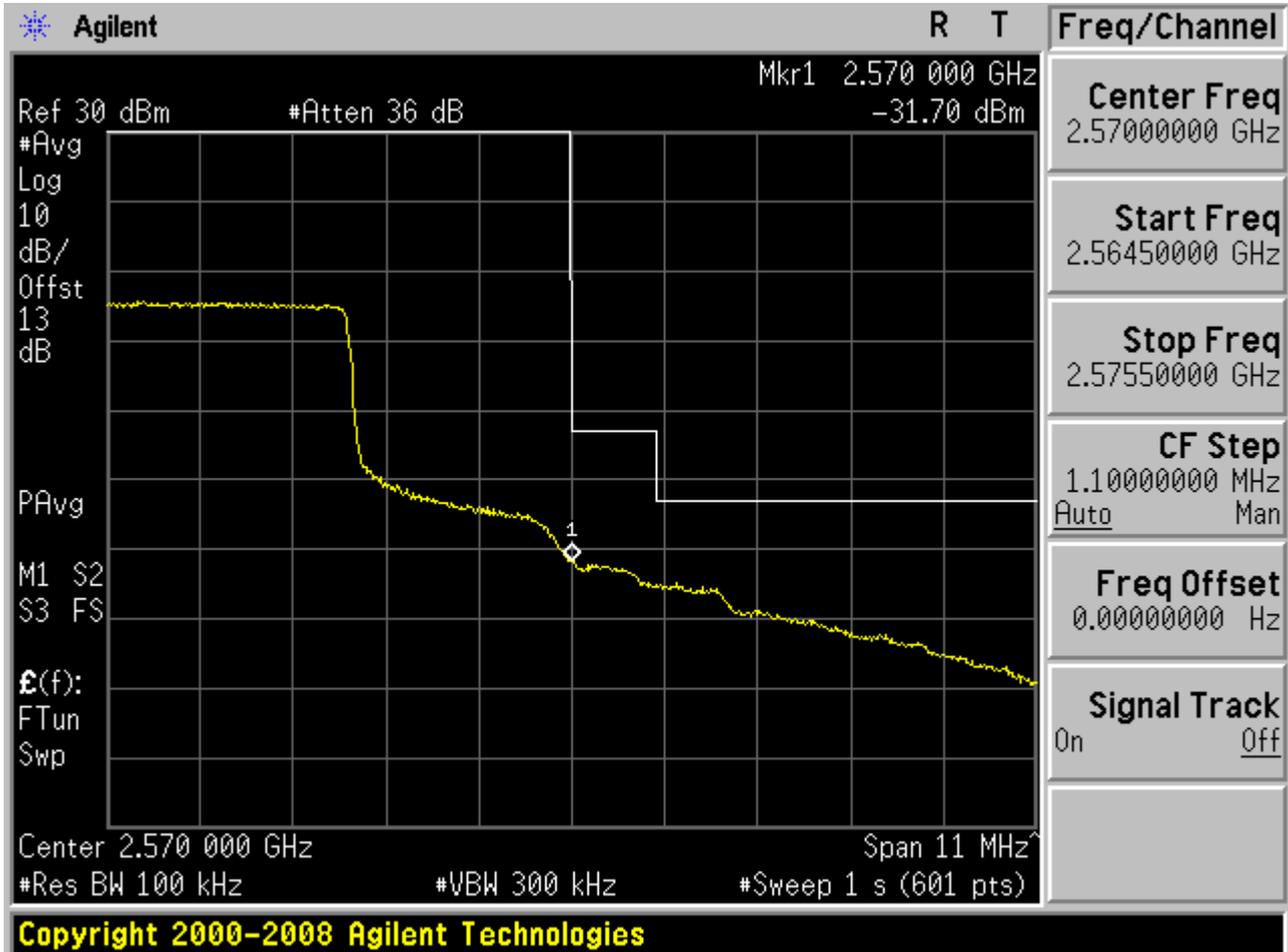


1.2.2.2.2 16QAM/1RB #max



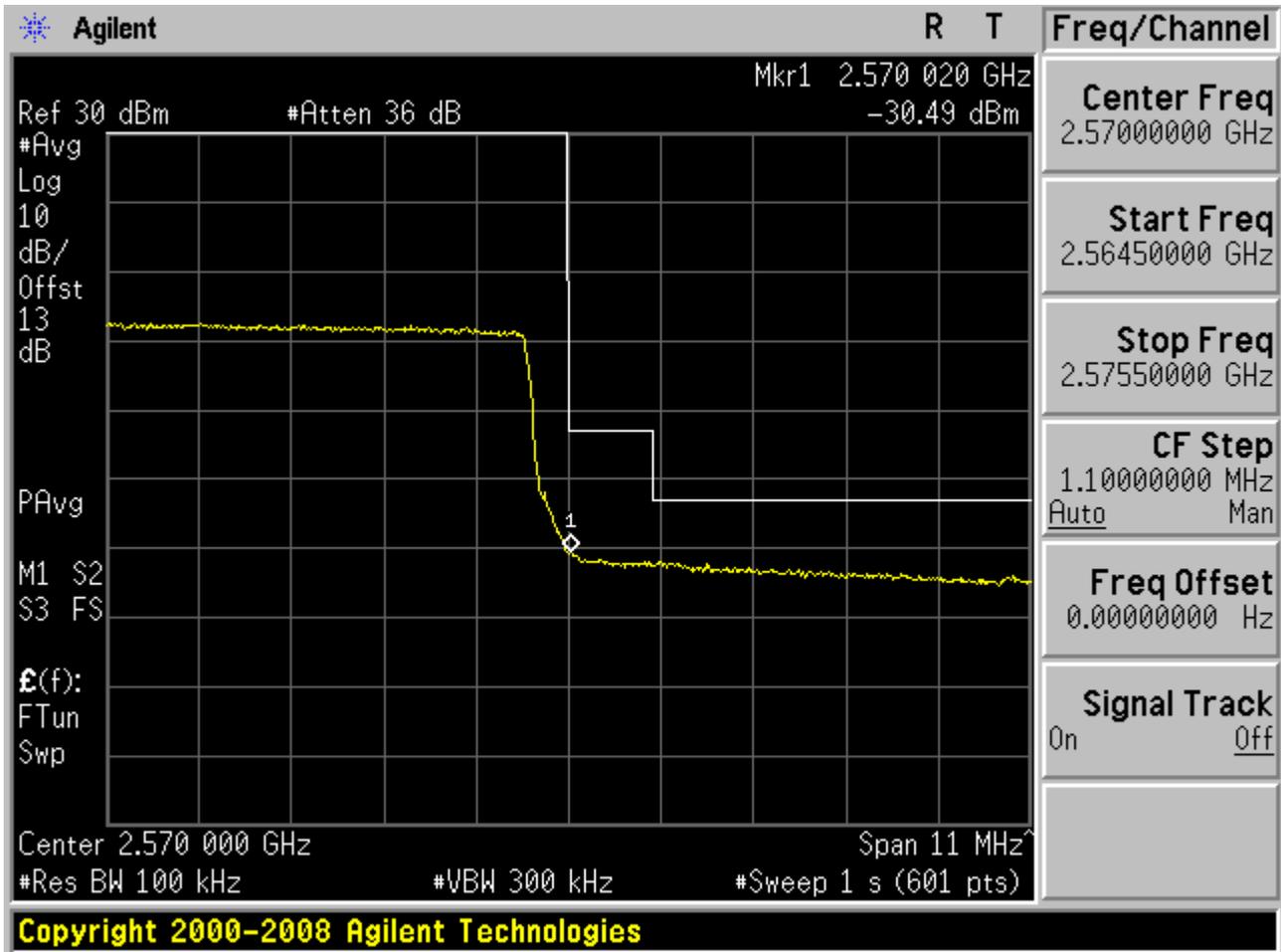


1.2.2.2.3 16QAM /Partial RBs /RB #13





1.2.2.2.4 16QAM /full RBs

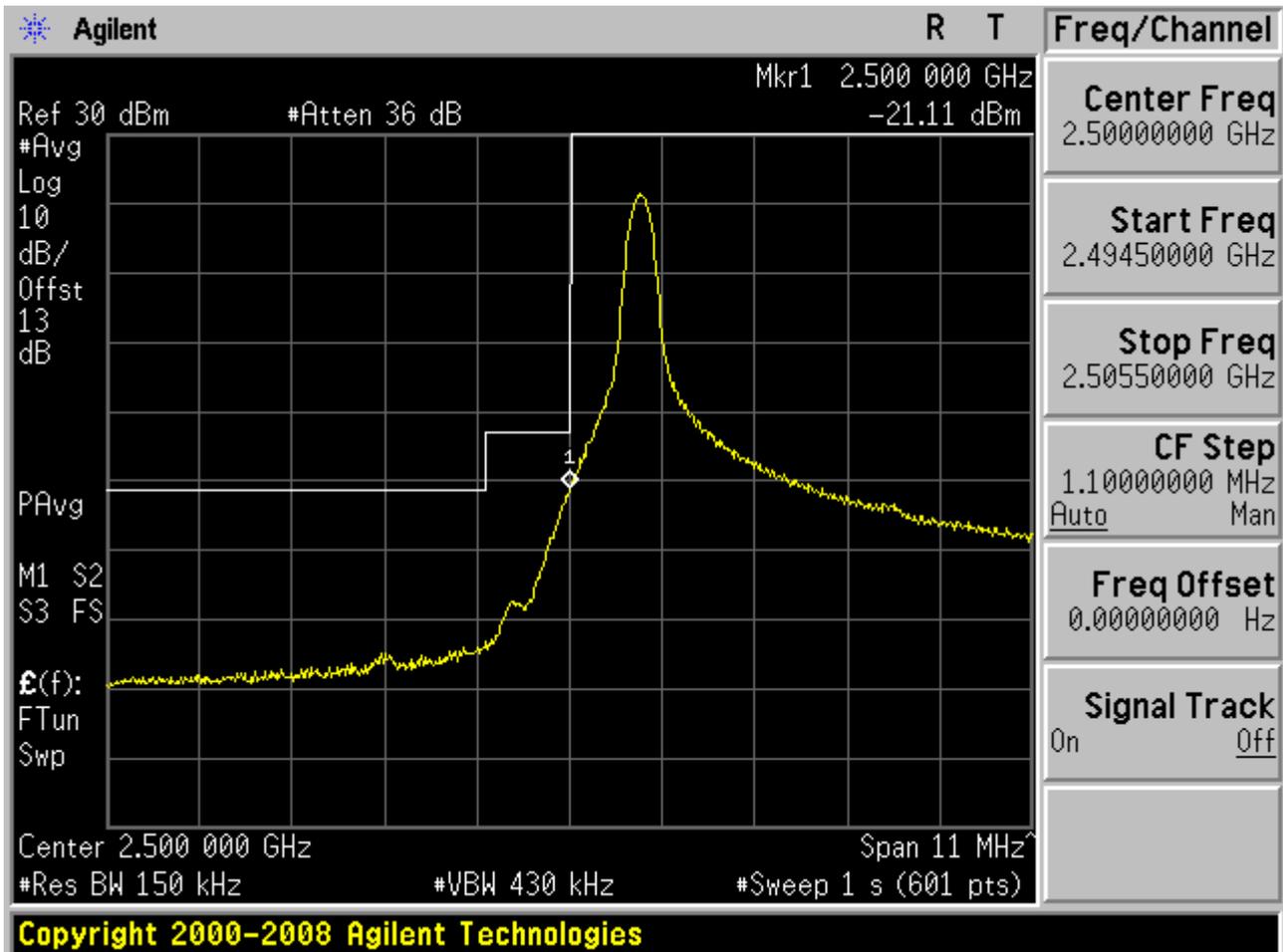




1.2.3 Channel Bandwidth = 15 MHz

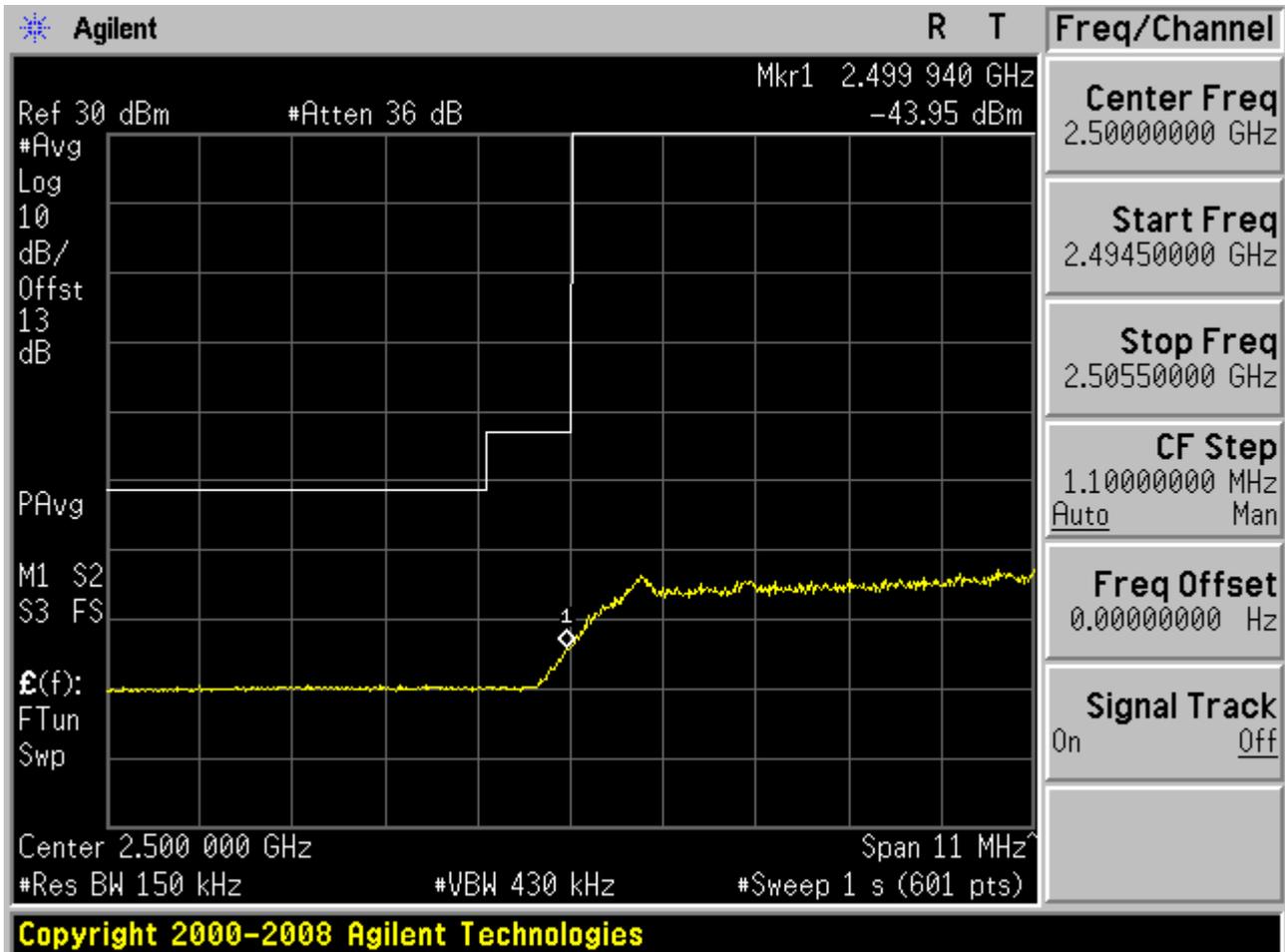
1.2.3.1 Channel= B

1.2.3.1.1 16QAM/1RB #0



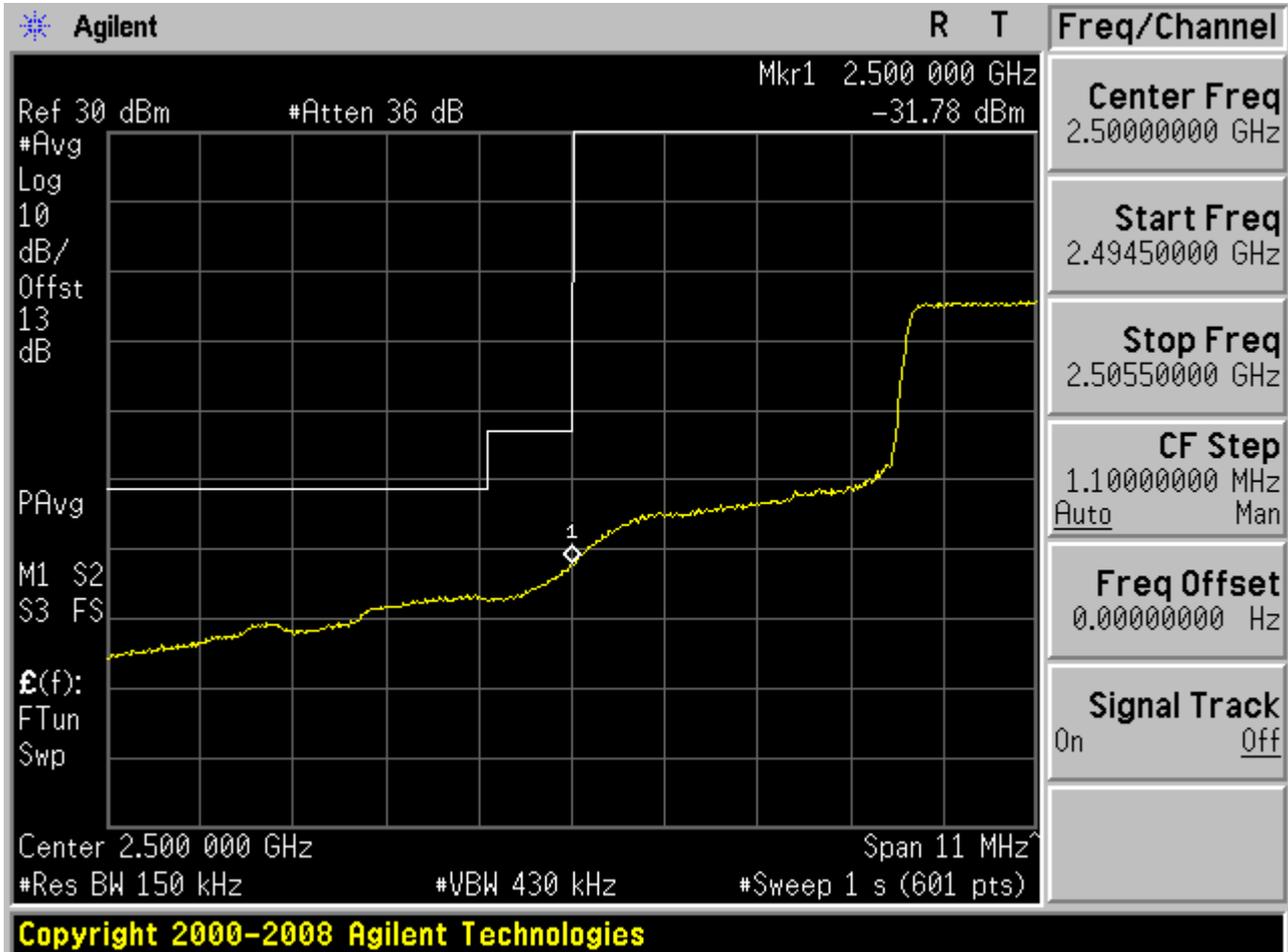


1.2.3.1.2 16QAM/1RB #max



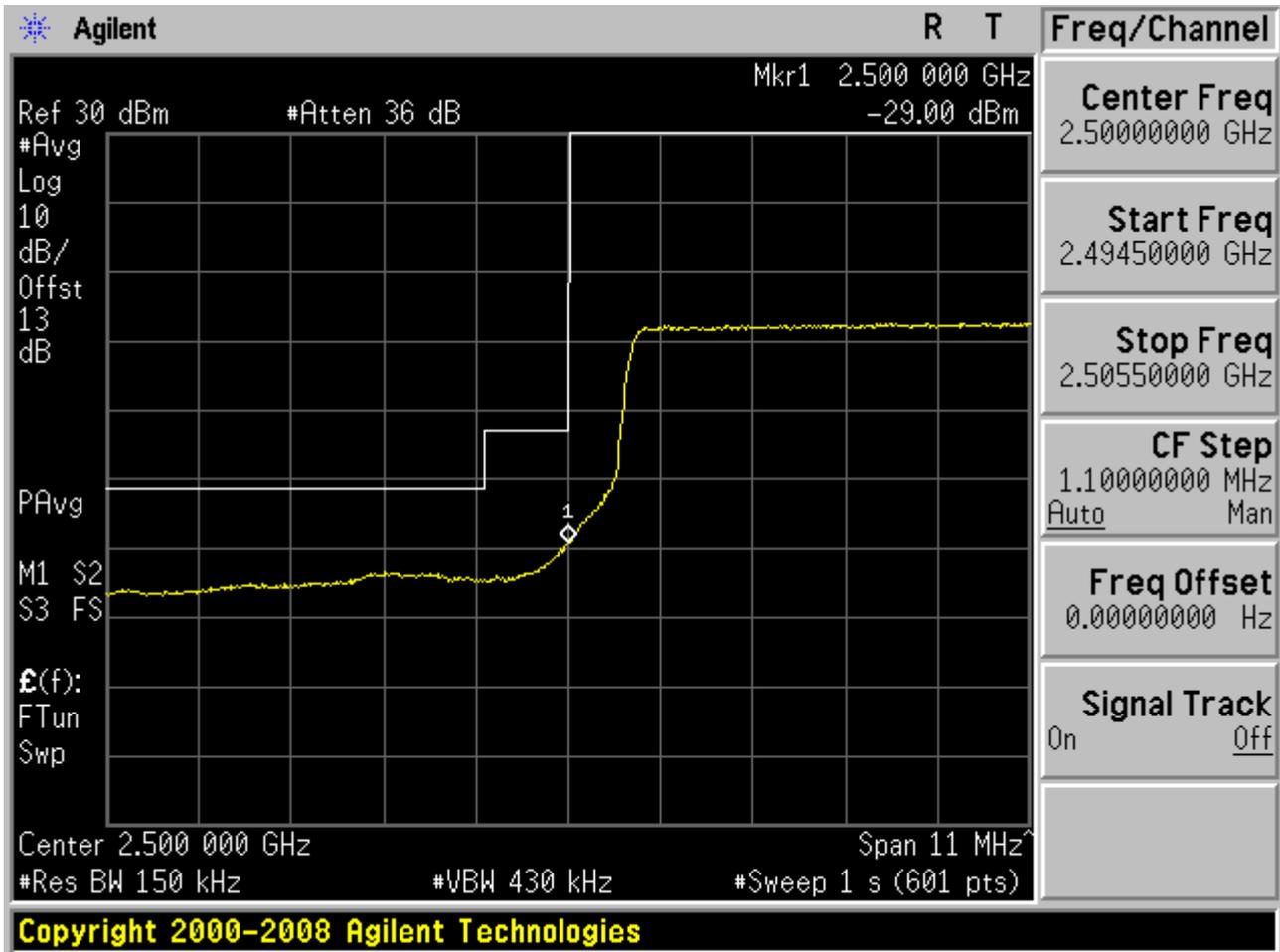


1.2.3.1.3 16QAM /Partial RBs /RB #18





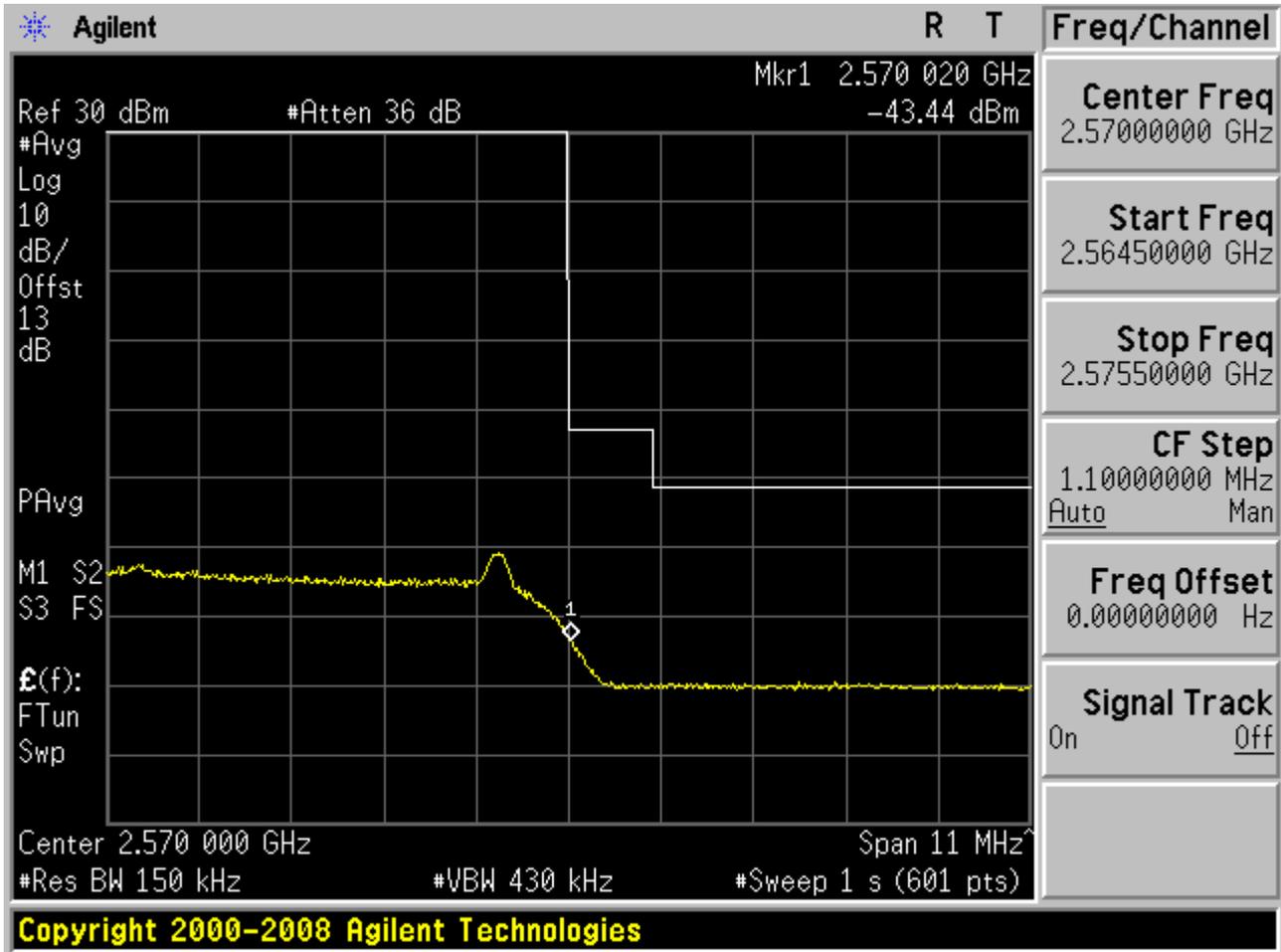
1.2.3.1.4 16QAM /full RBs





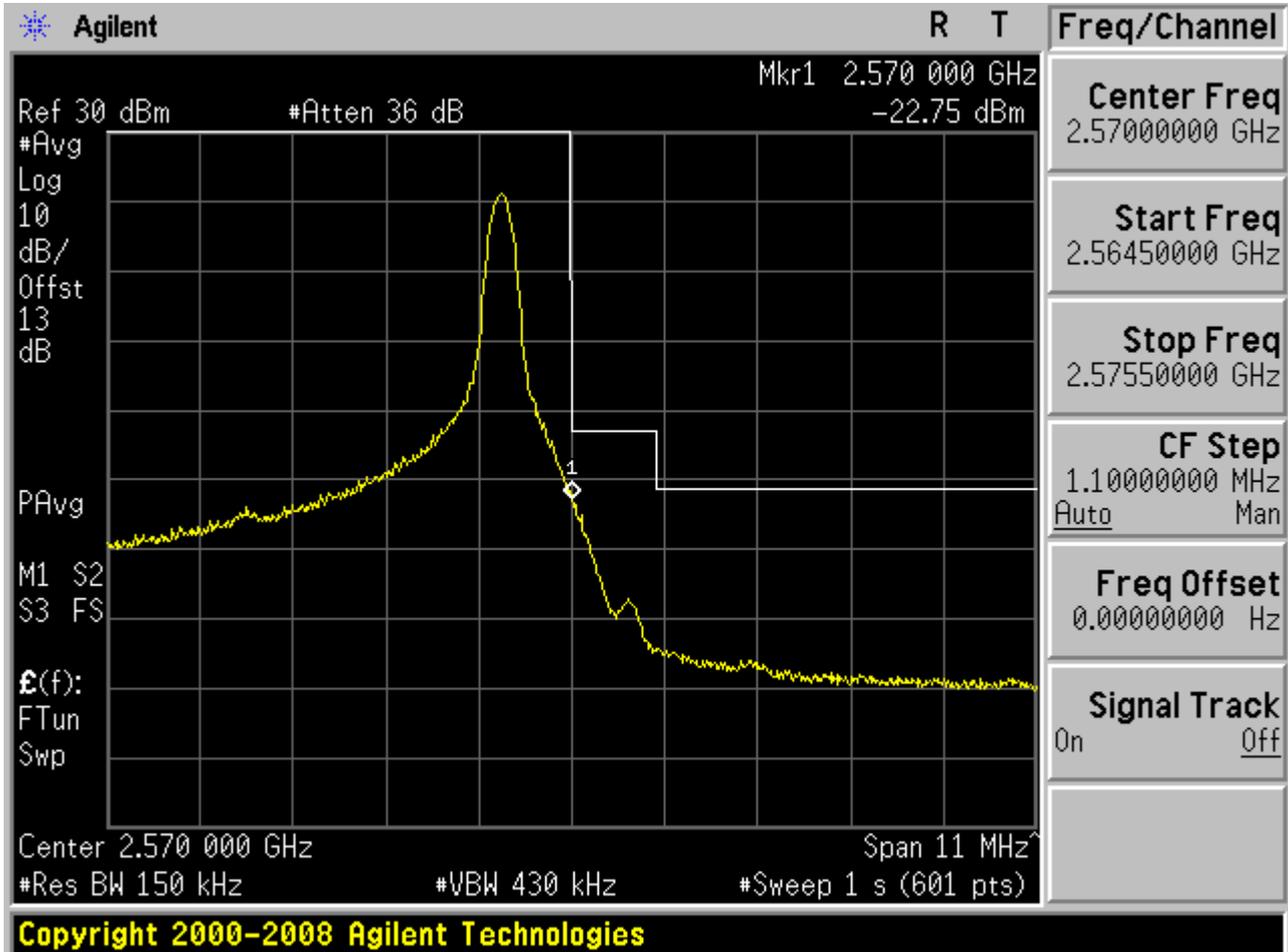
1.2.3.2 Channel= T

1.2.3.2.1 16QAM/1RB #0





1.2.3.2.2 16QAM/1RB #max



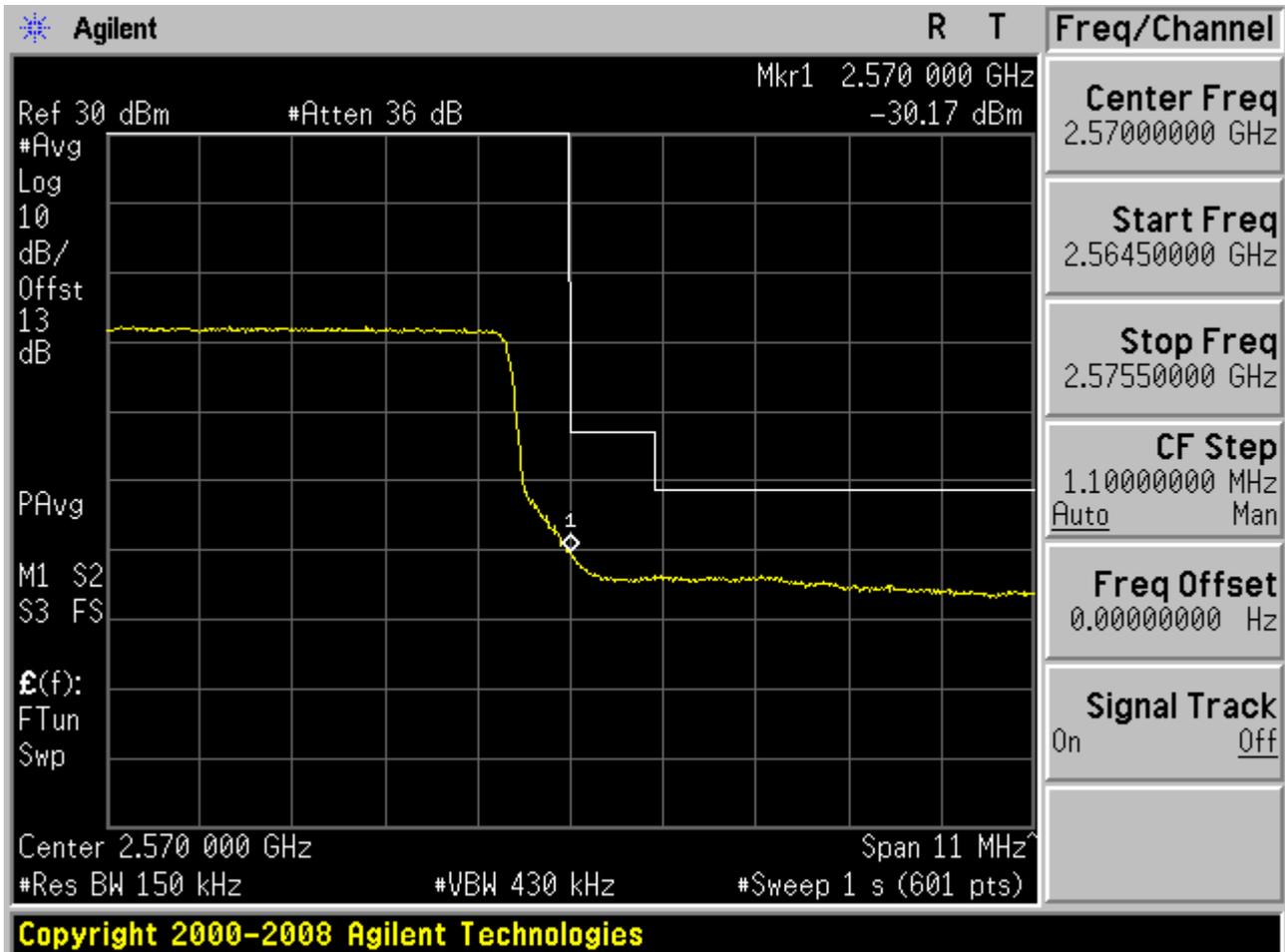


1.2.3.2.3 16QAM /Partial RBs /RB #18





1.2.3.2.4 16QAM /full RBs

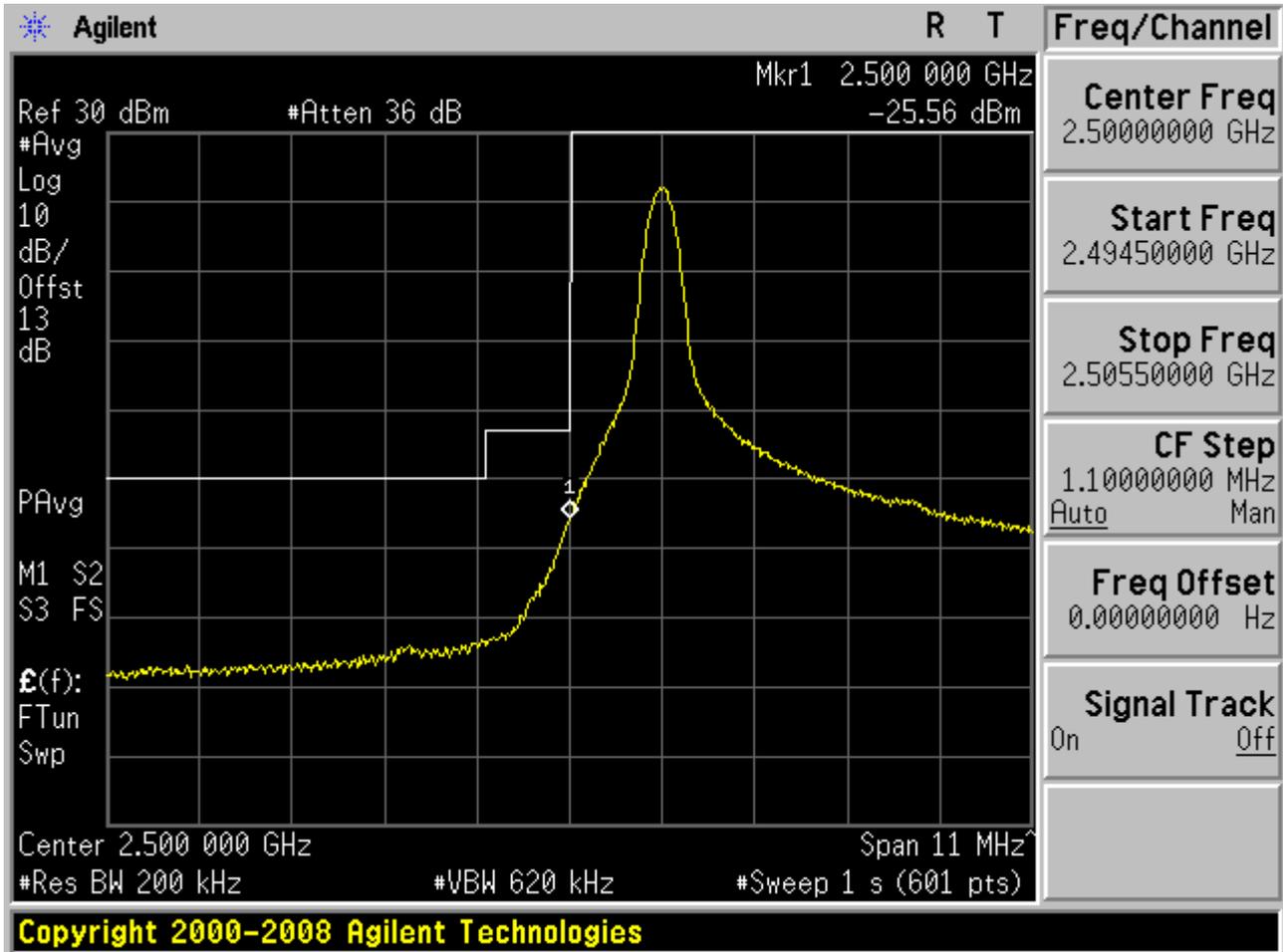




1.2.4 Channel Bandwidth = Highest (20 MHz)

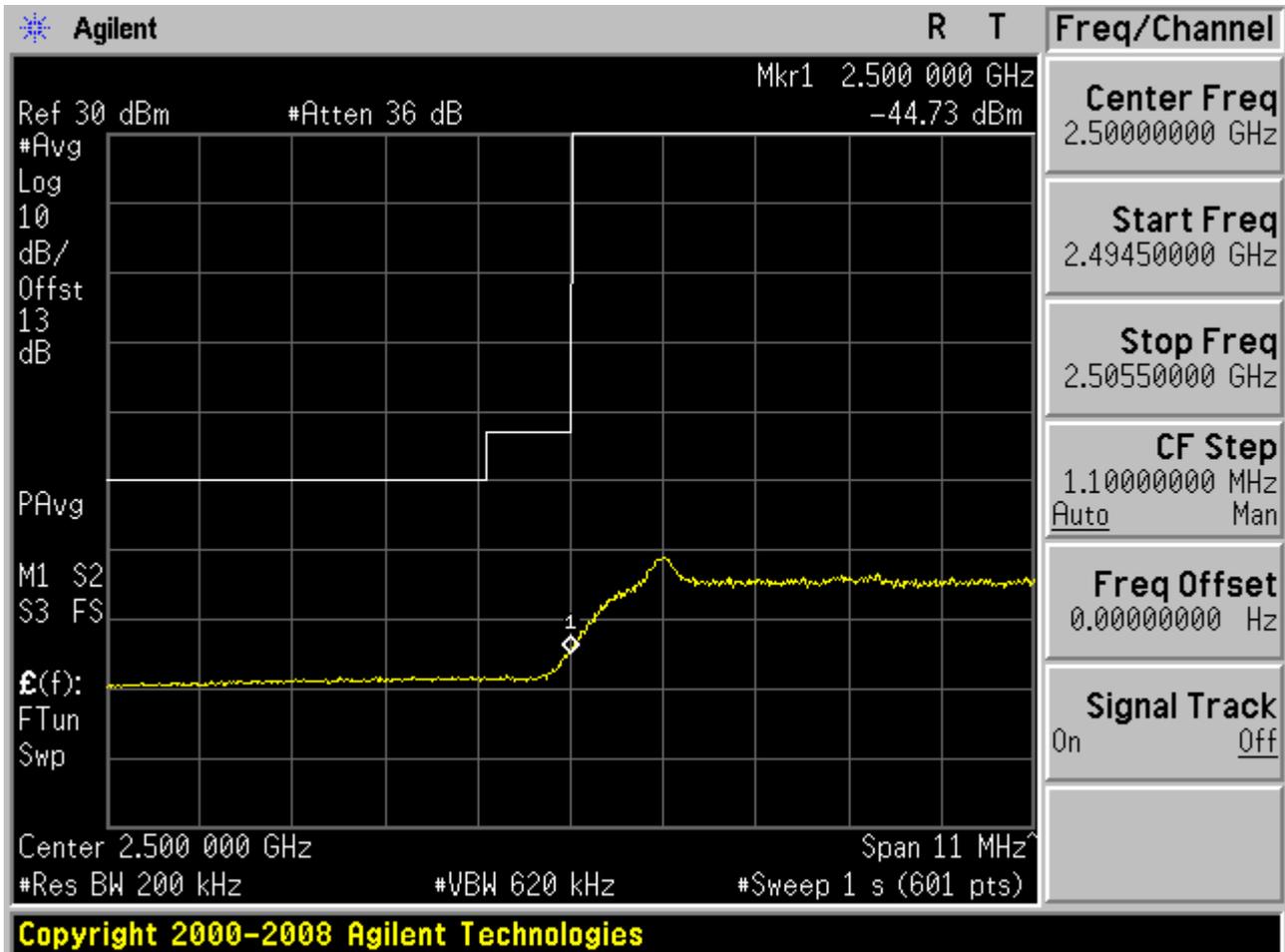
1.2.4.1 Channel= B

1.2.4.1.1 16QAM/1RB #0





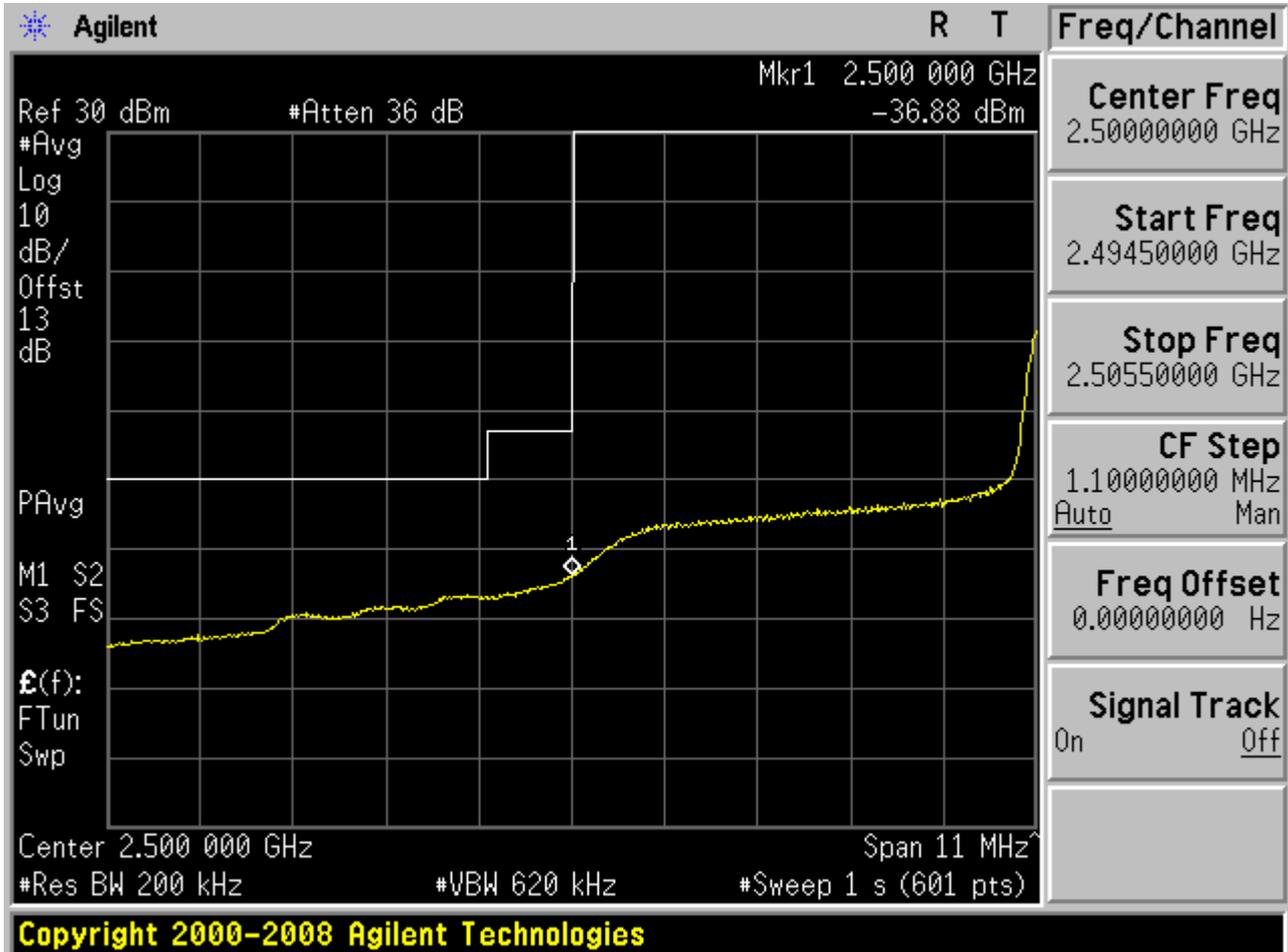
1.2.4.1.2 16QAM/1RB #max



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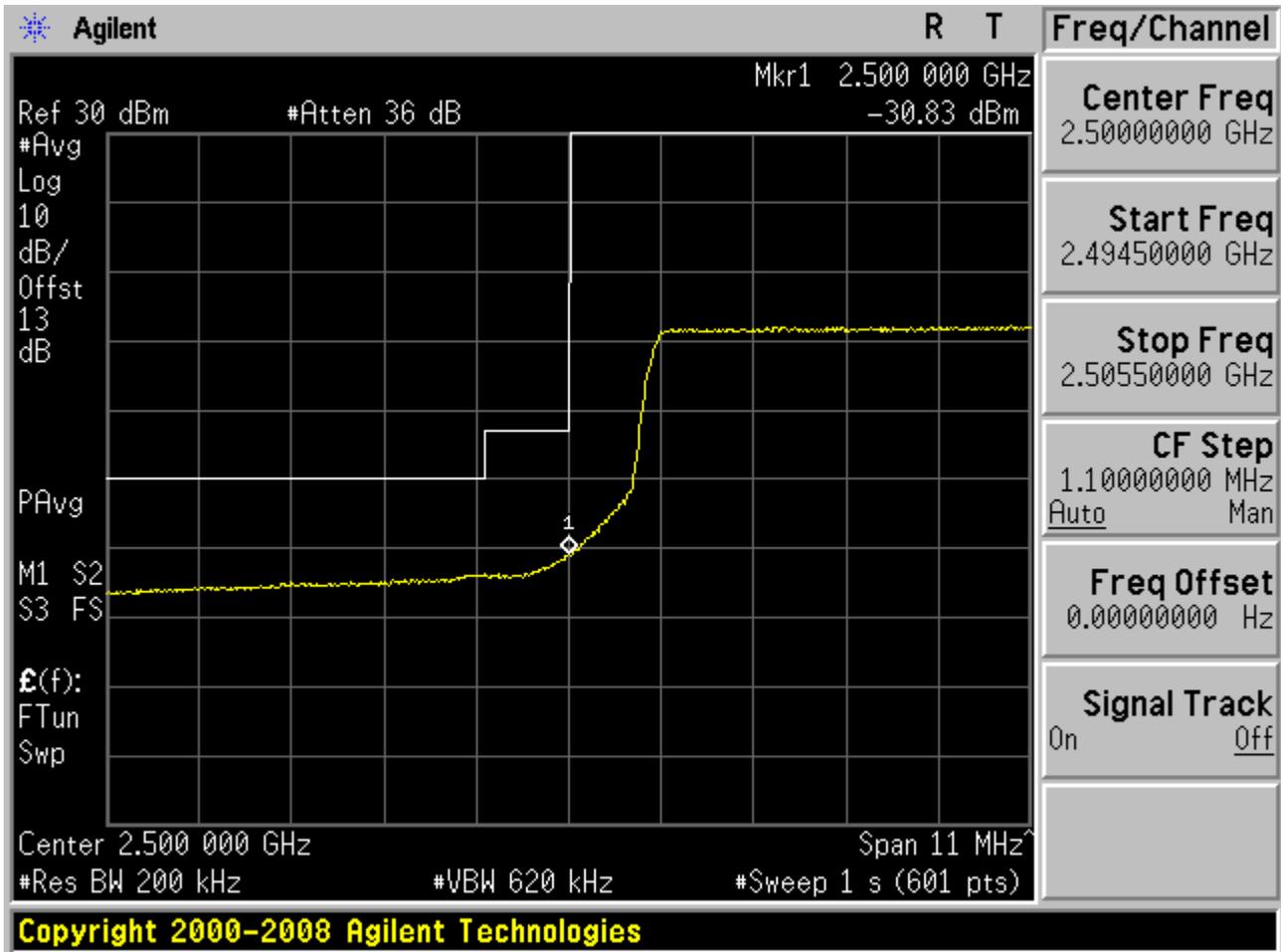


1.2.4.1.3 16QAM /Partial RBs /RB #25





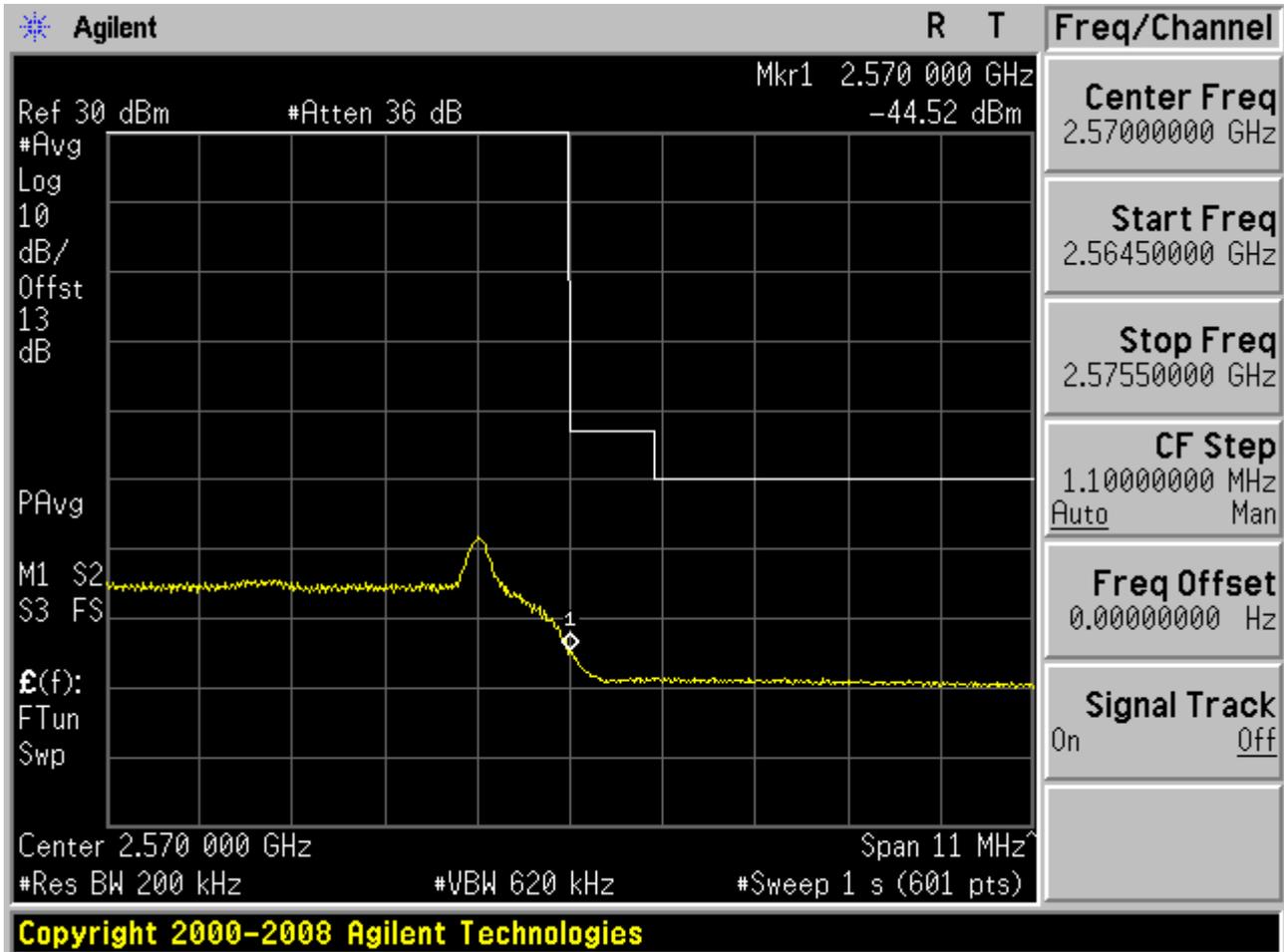
1.2.4.1.4 16QAM /full RBs





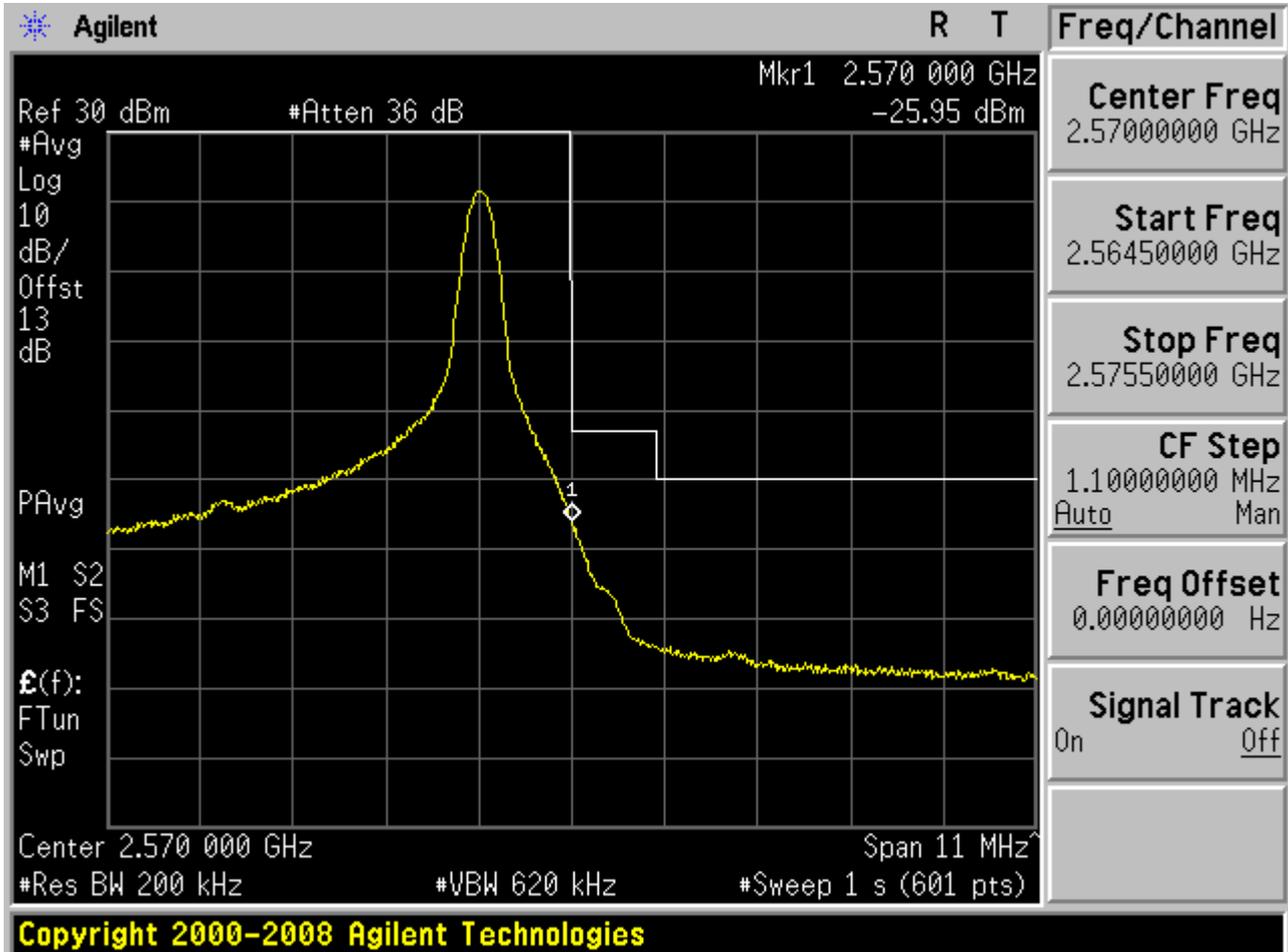
1.2.4.2 Channel= T

1.2.4.2.1 16QAM/1RB #0





1.2.4.2.2 16QAM/1RB #max



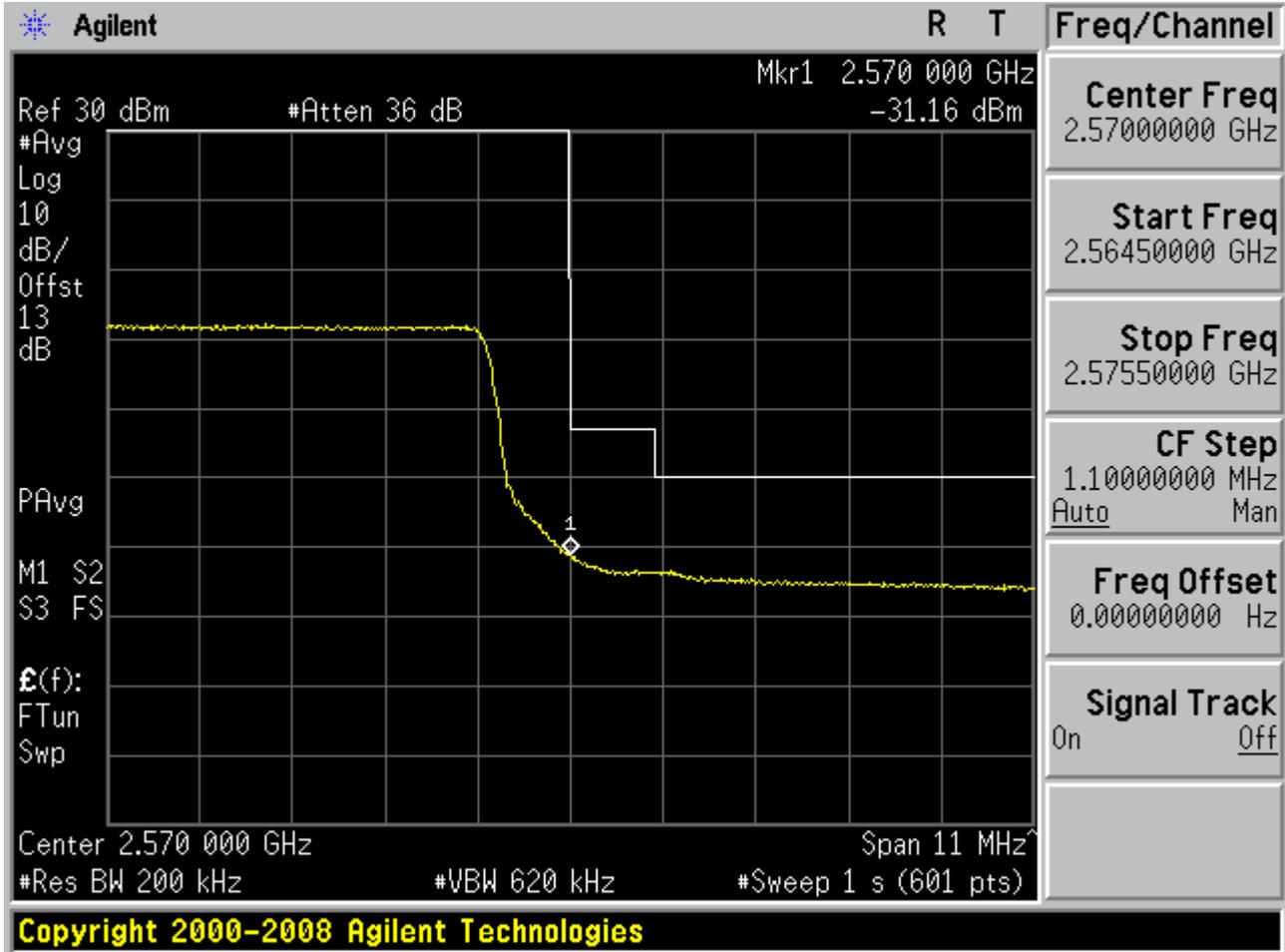


1.2.4.2.3 16QAM /Partial RBs /RB #25





1.2.4.2.4 16QAM /full RBs



END



Appendix D

Spurious Emission at Antenna Terminal

According to FCC Part 2.1051 & FCC Part 27C & 27M



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1 For Band 7

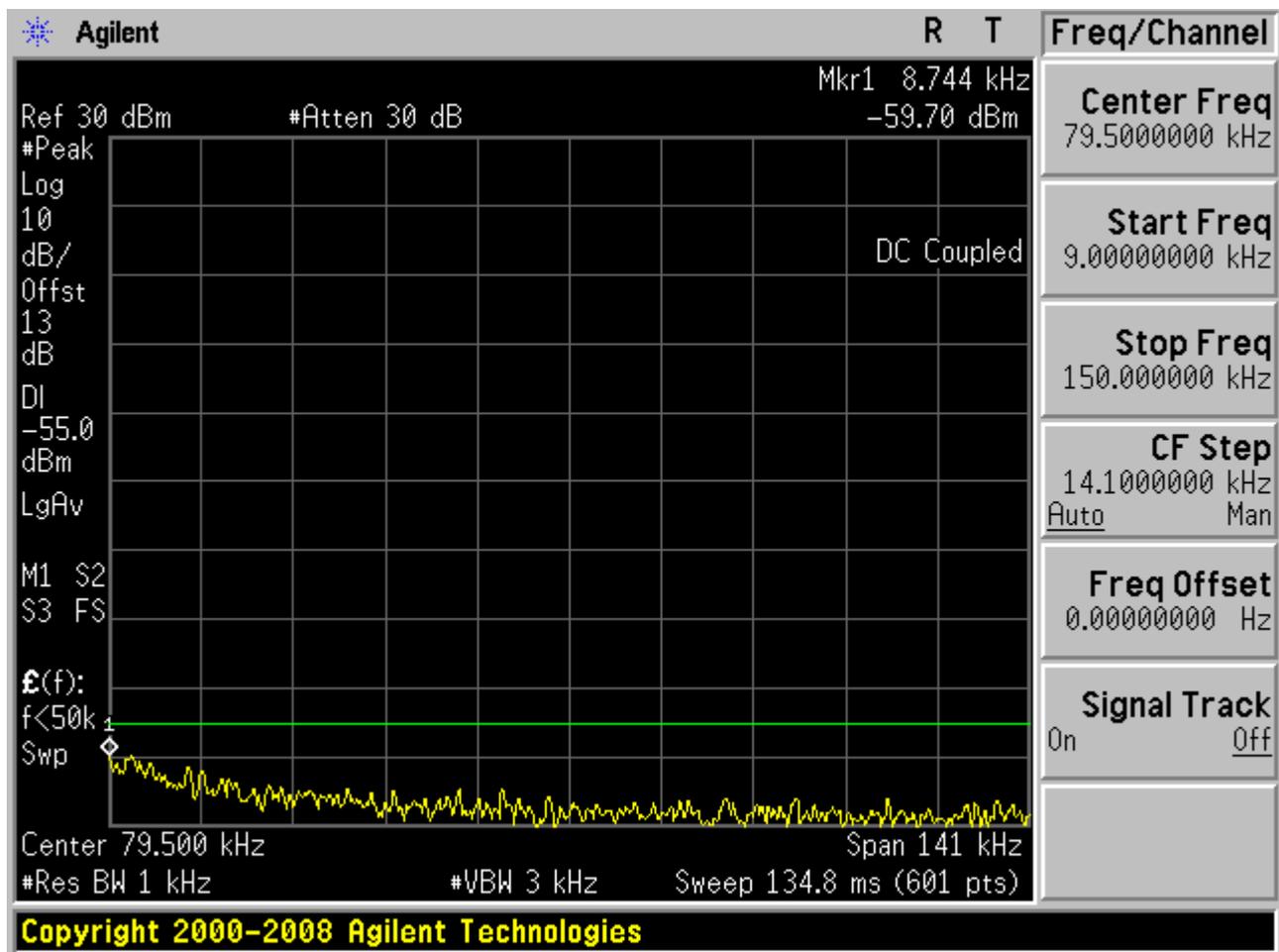
NOTE1: All relevant operation modes have been tested, and the 1RB case data is included in this report.

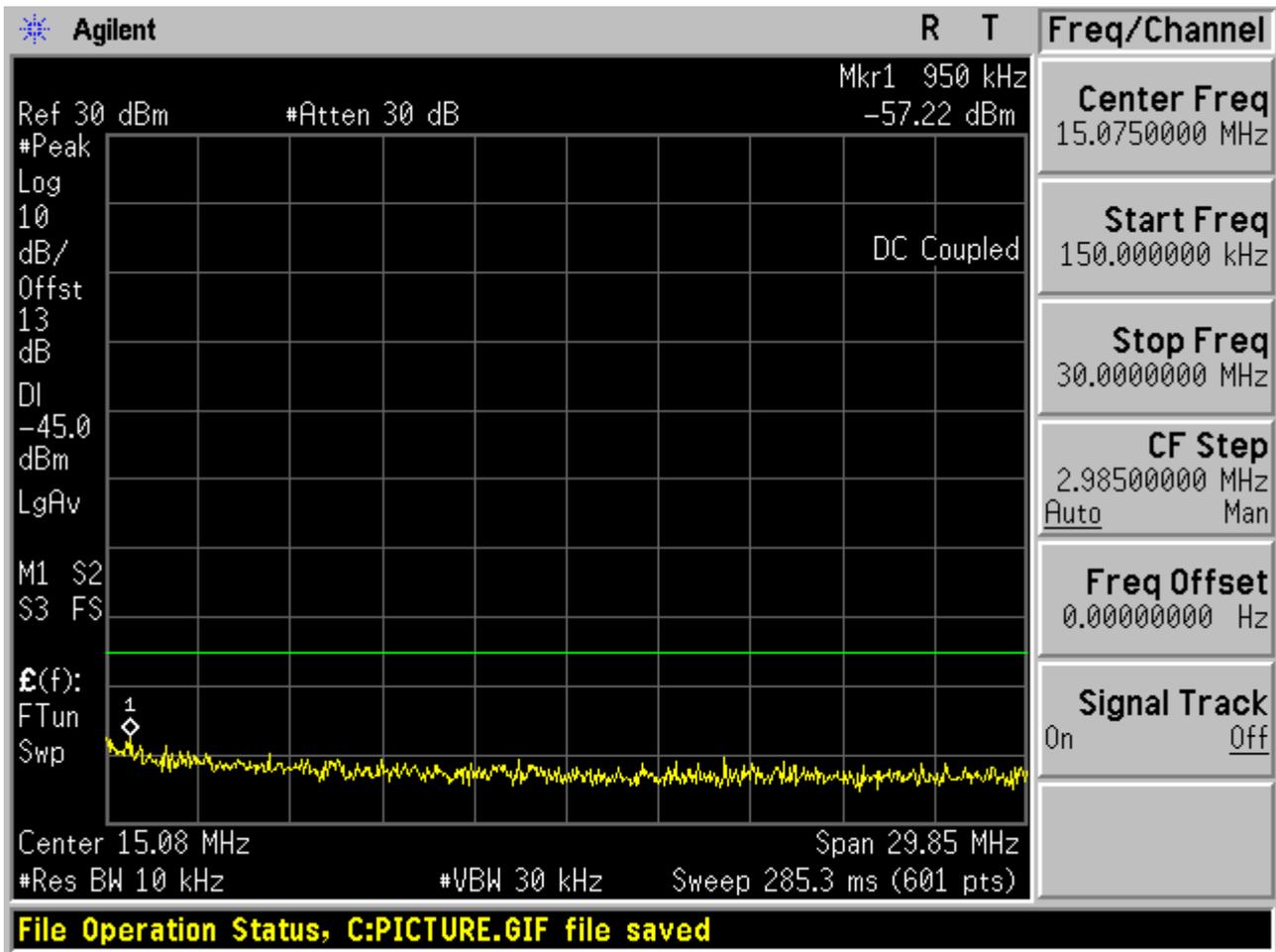
1.1 Test Mode=TM1

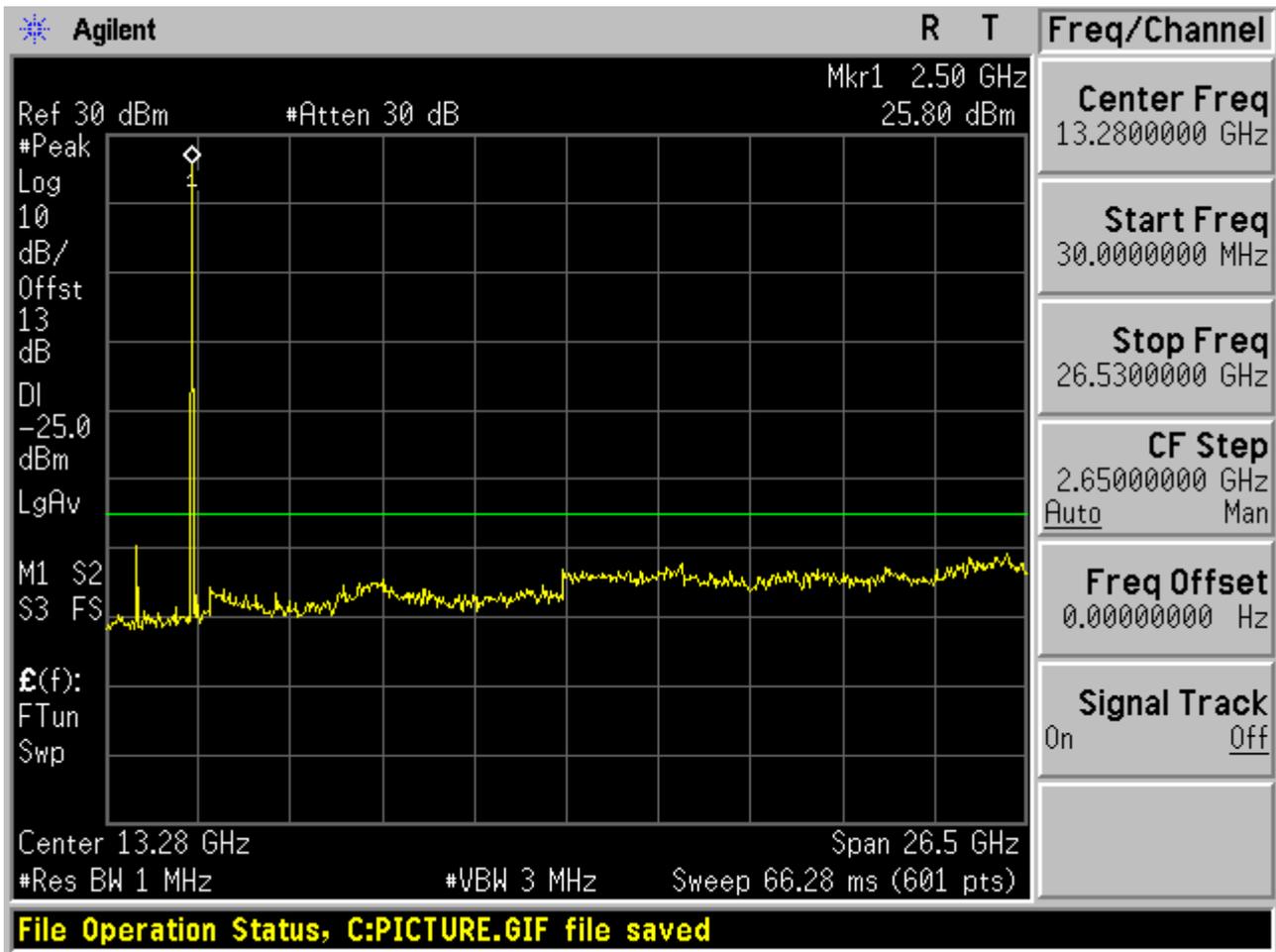
1.1.1 Channel Bandwidth = Lowest (5 MHz)

1.1.1.1 Channel = L

1.1.1.1.1 QPSK/1RBs /RB #0



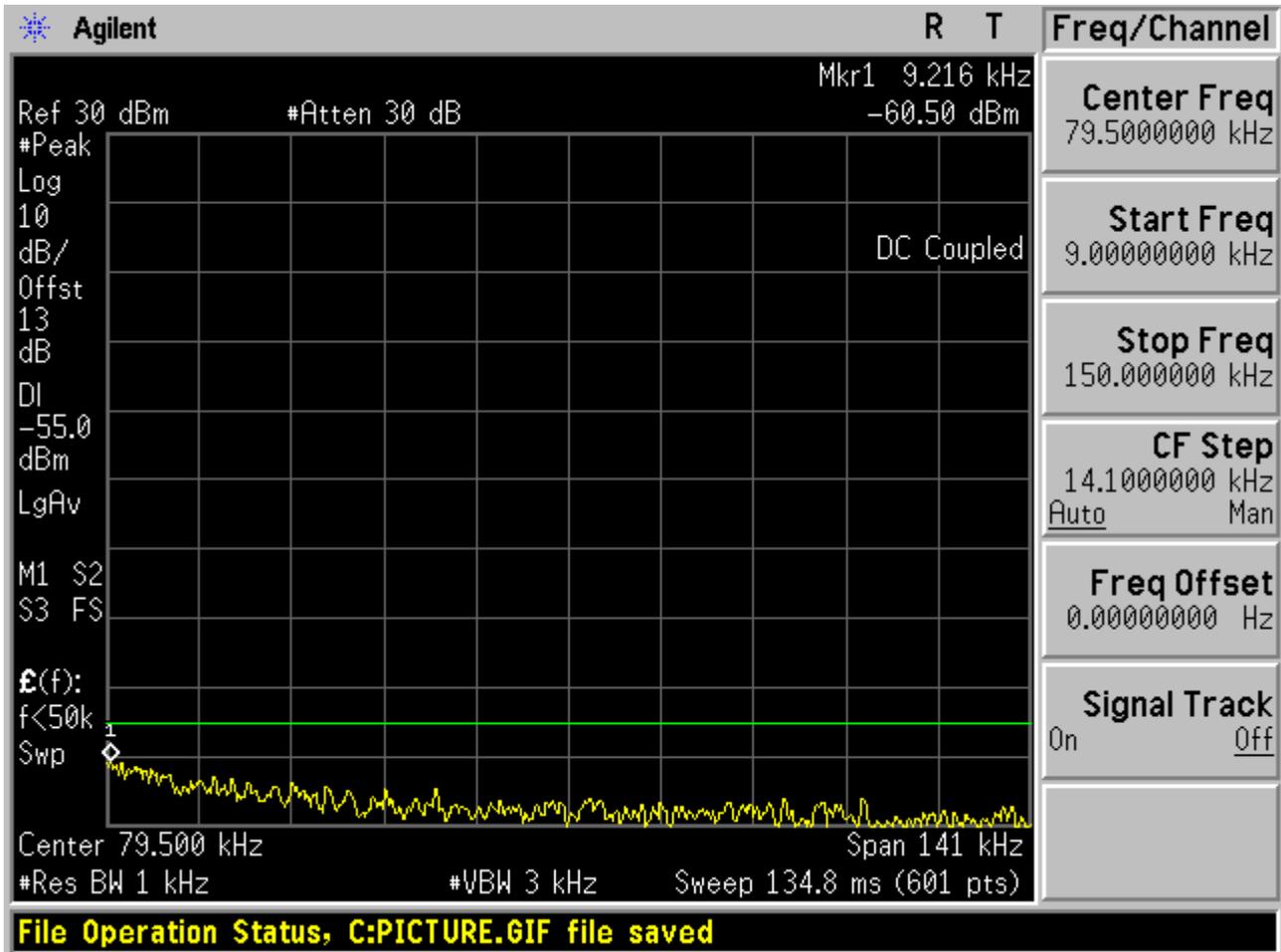


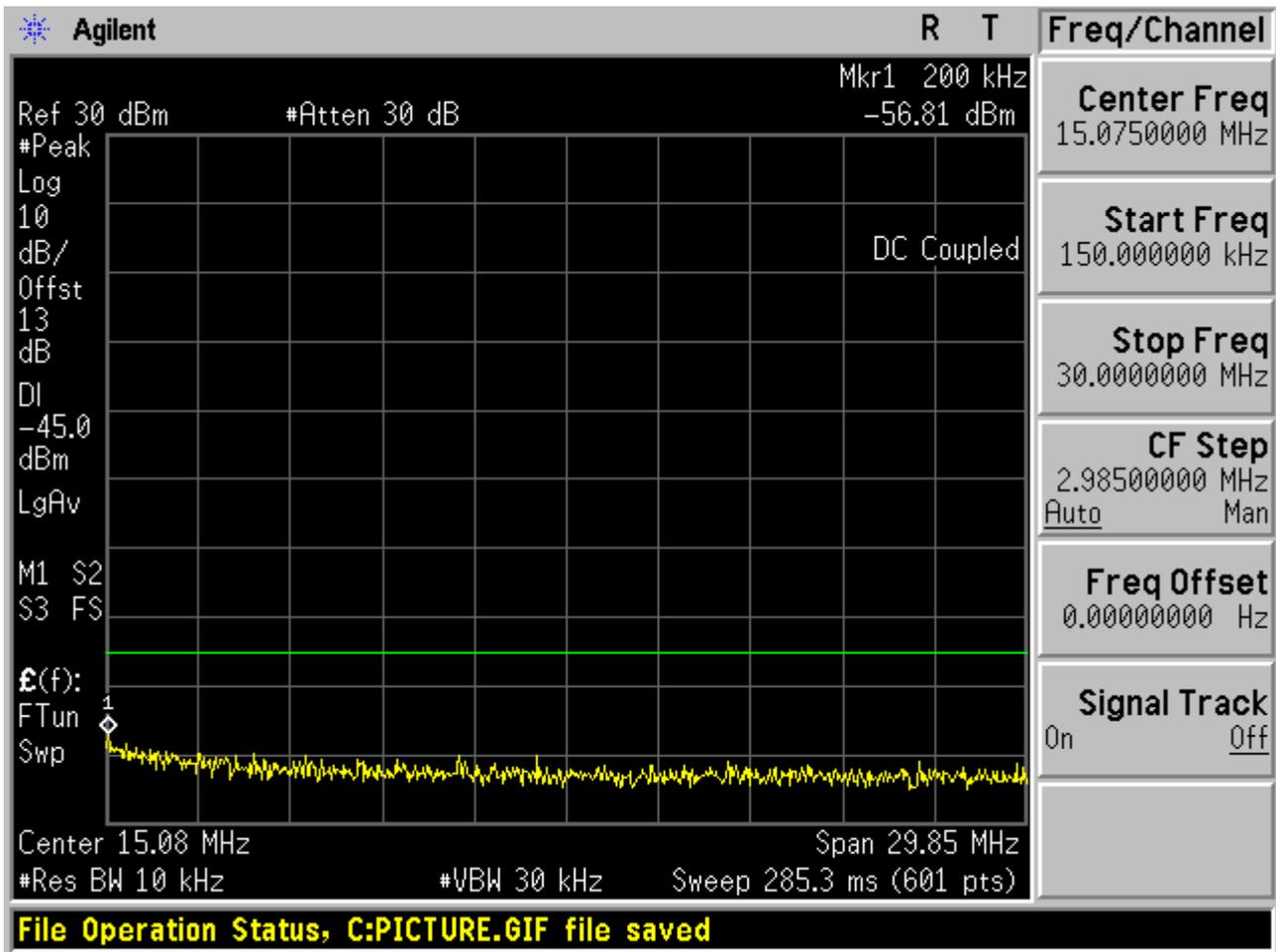


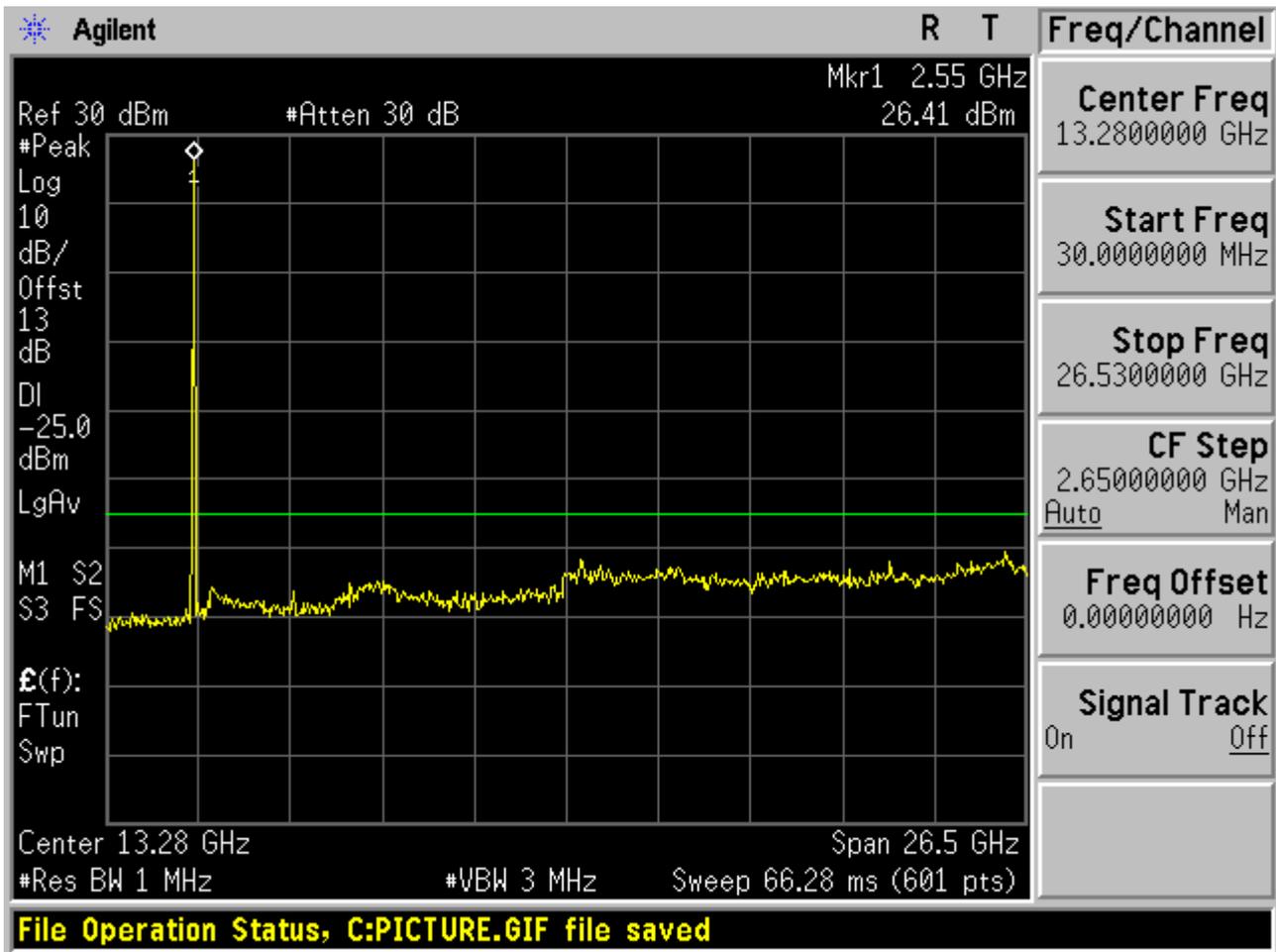


1.1.1.2 Channel = M

1.1.1.2.1 QPSK/1RBs /RB #0



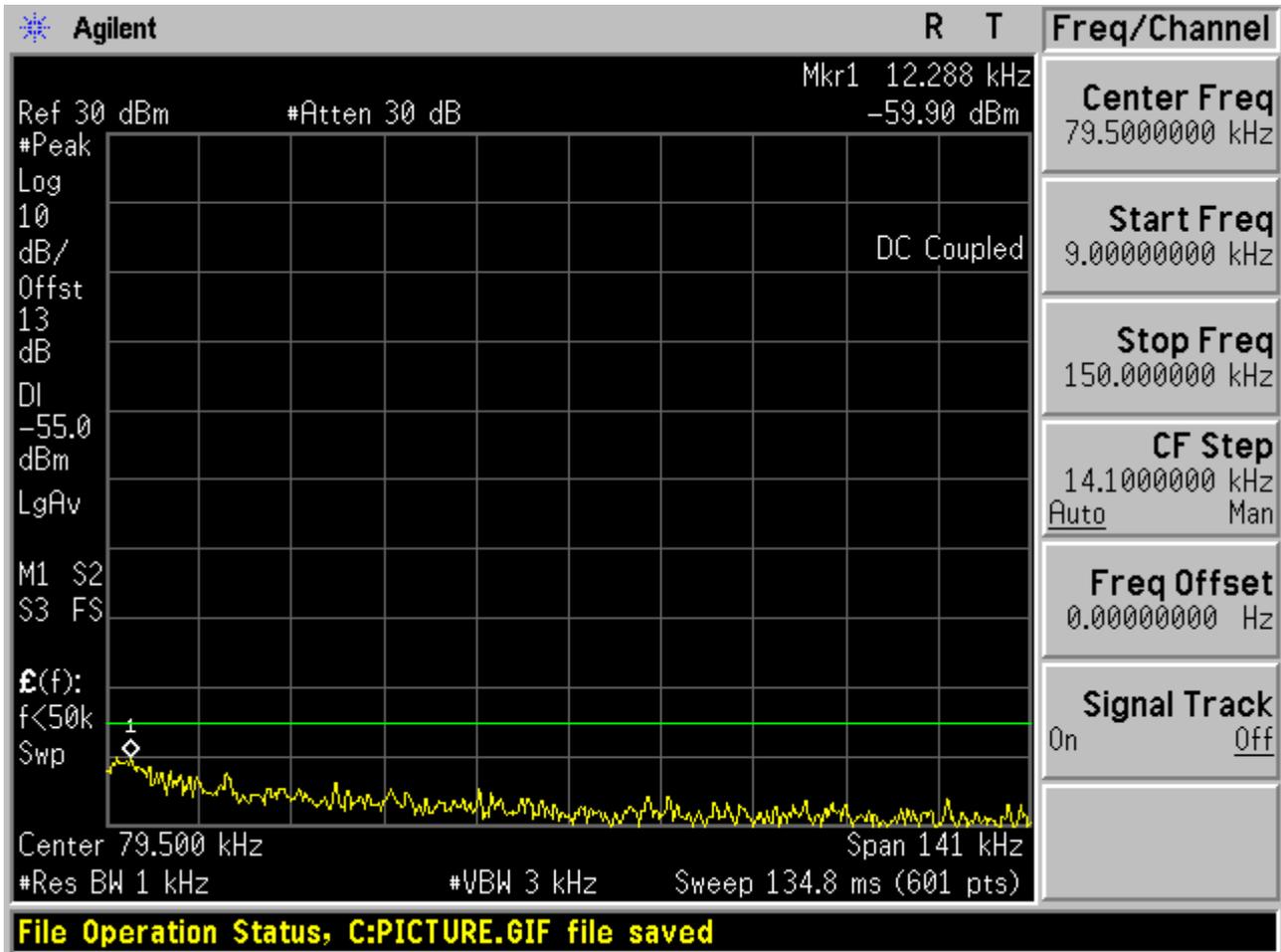


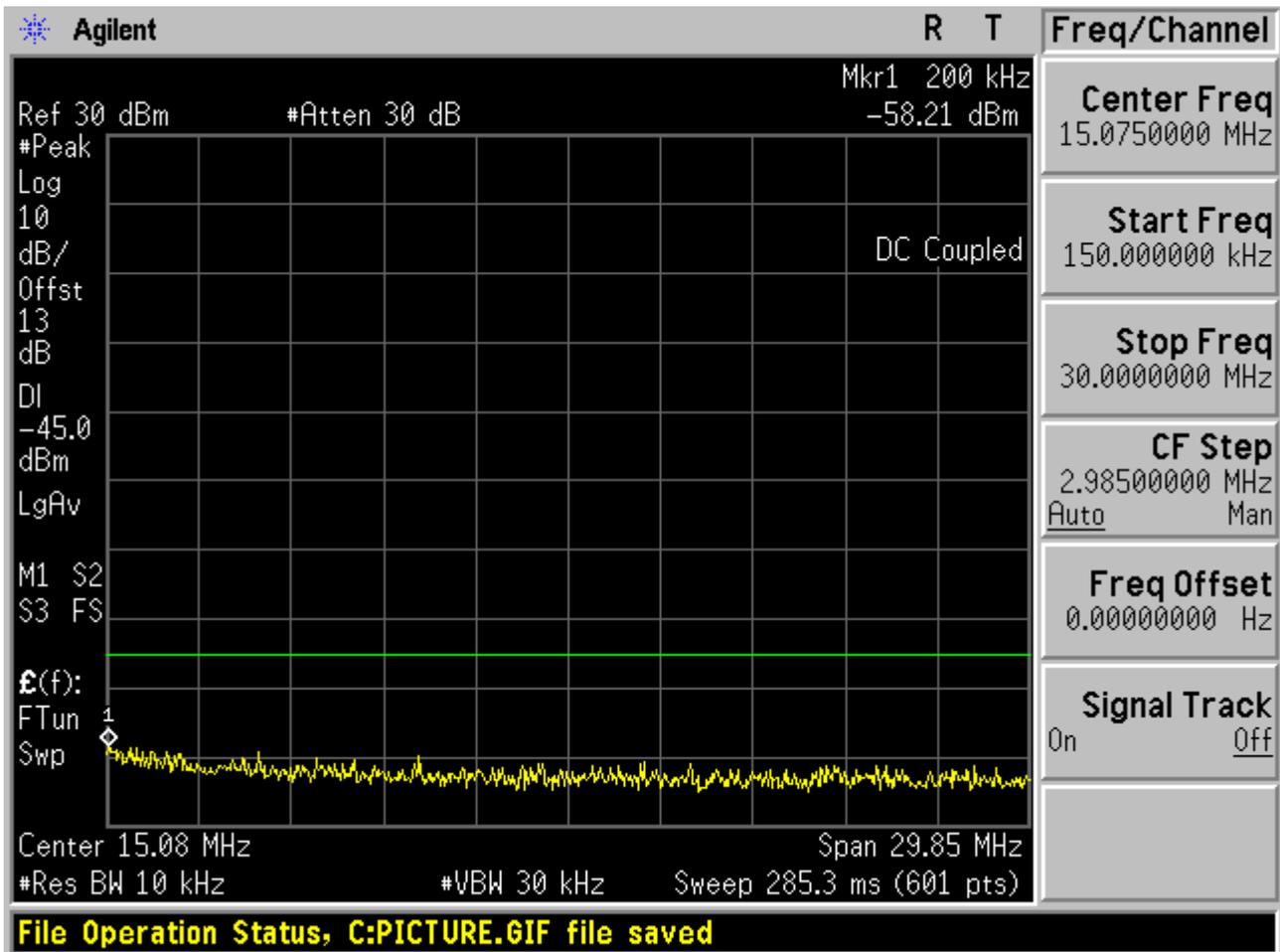


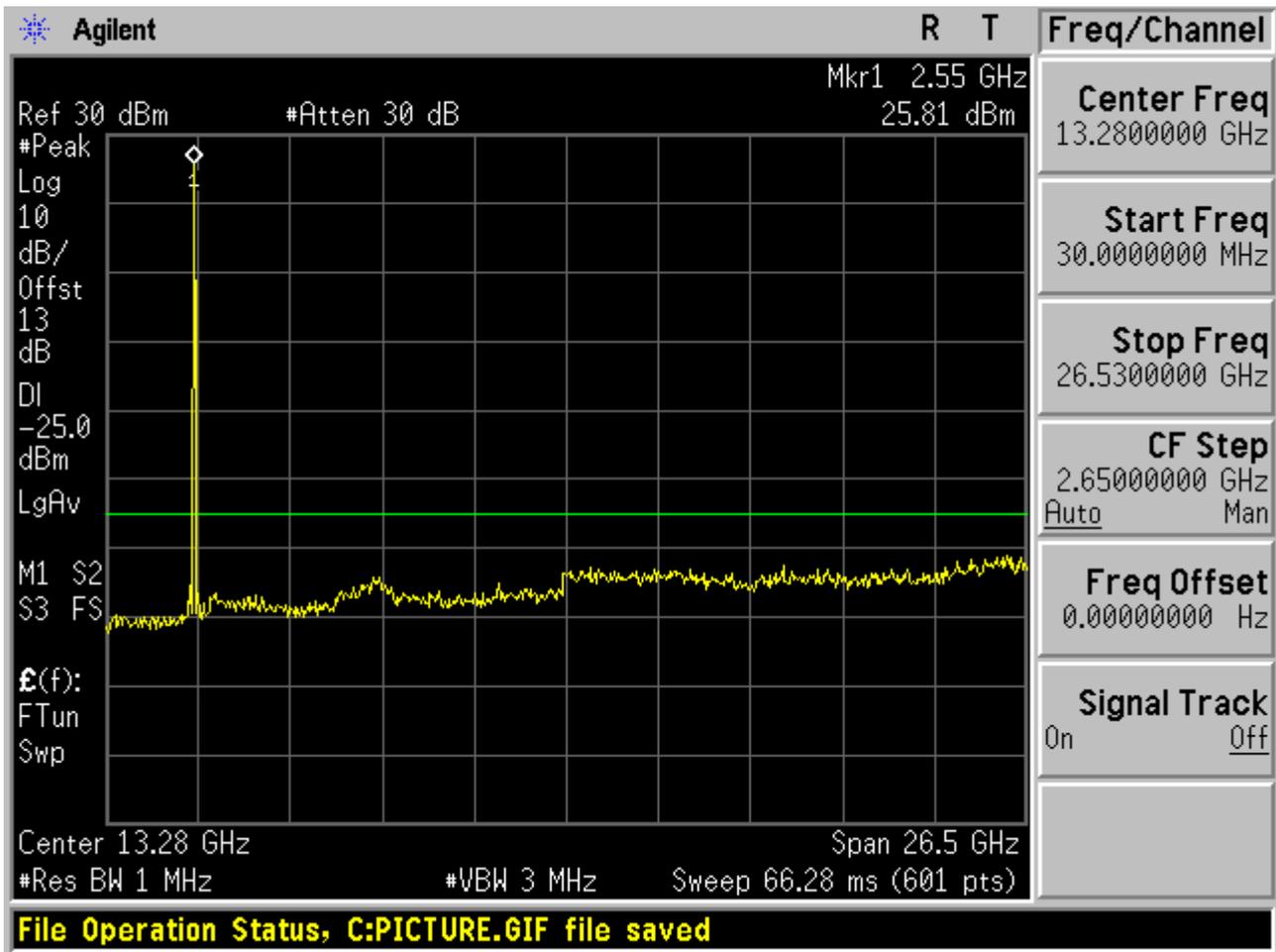


1.1.1.3 Channel = H

1.1.1.3.1 QPSK/1RBs /RB #0





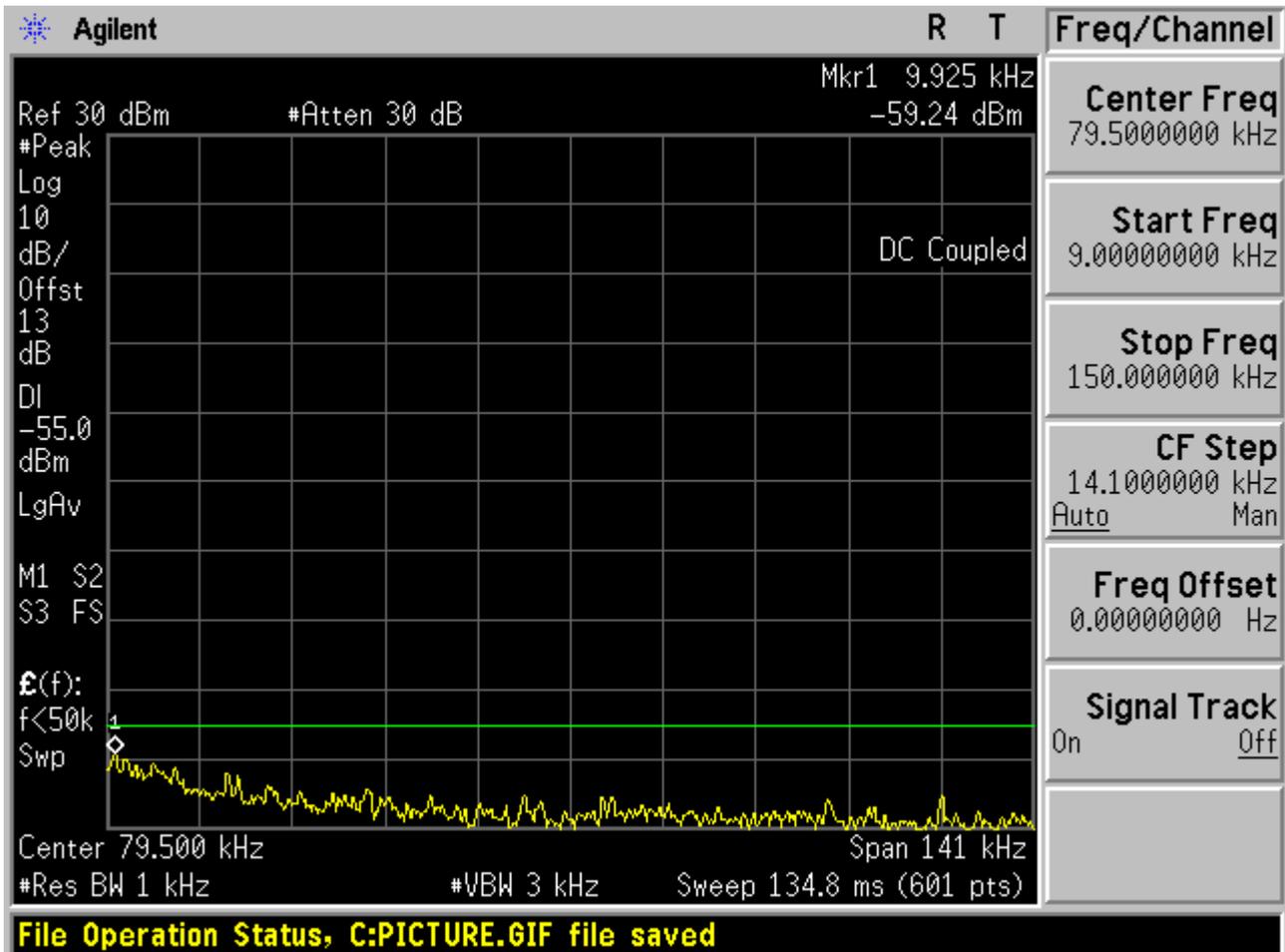


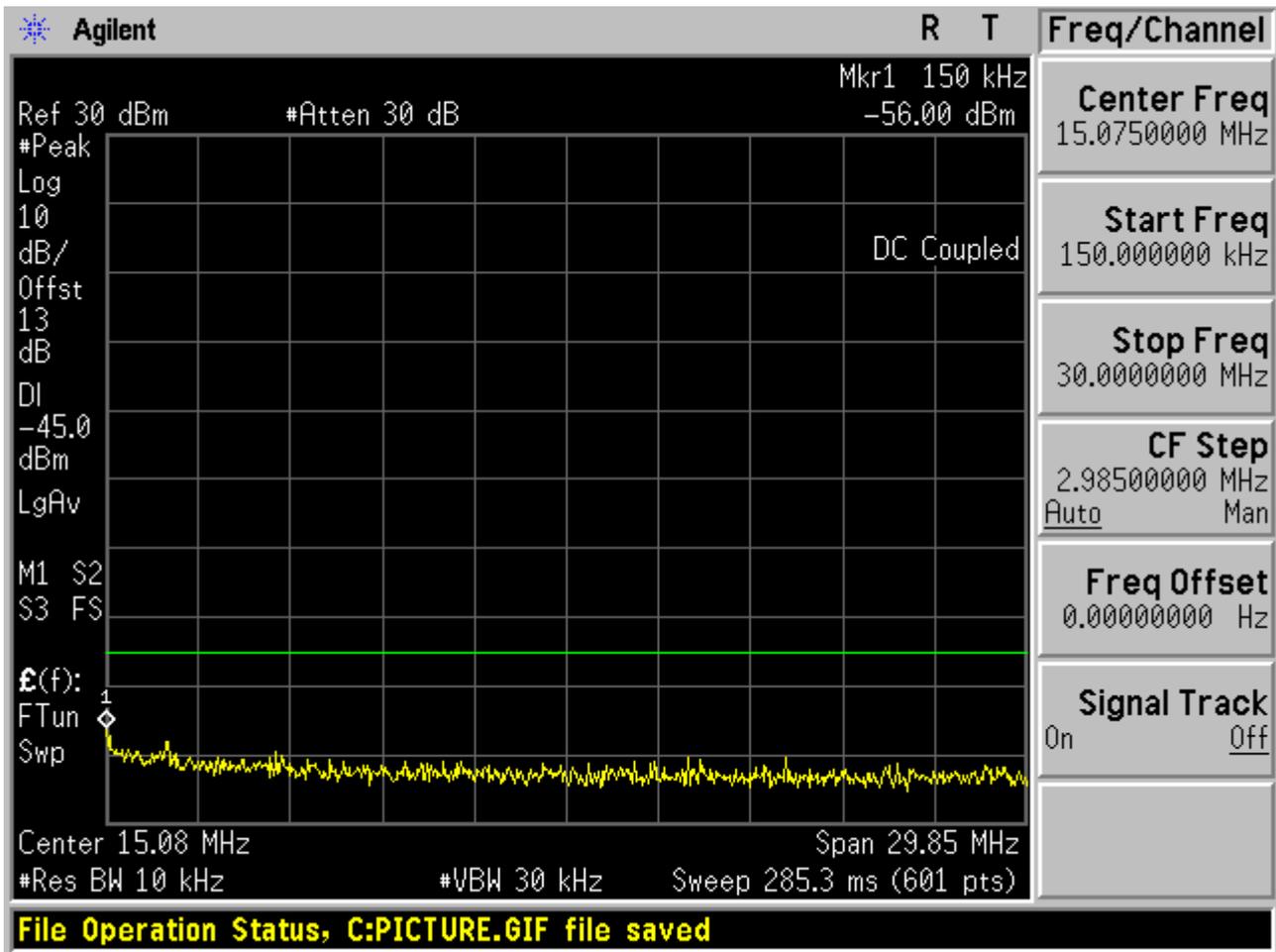


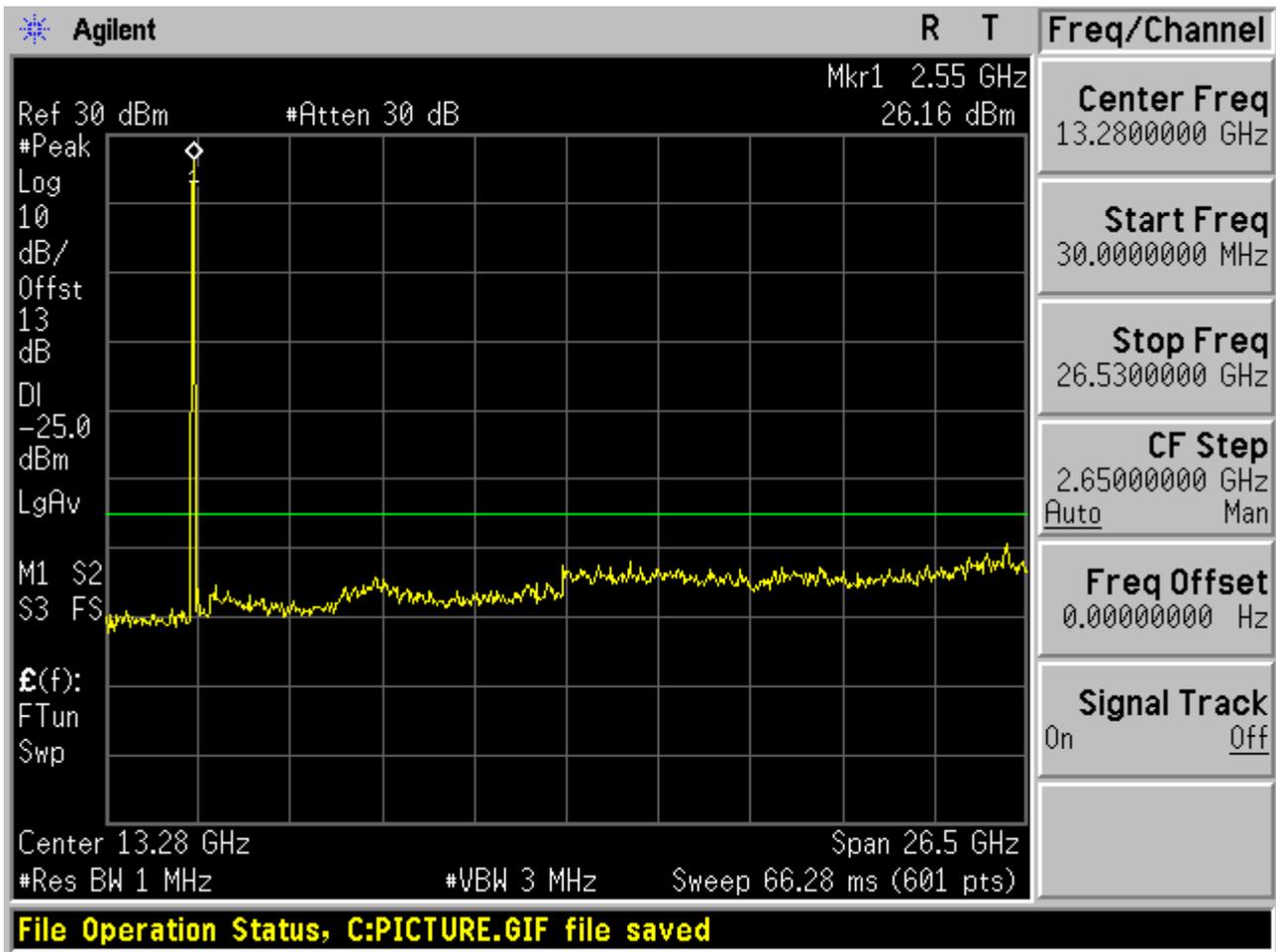
1.1.2 Channel Bandwidth = 10 MHz

1.1.2.1 Channel = L

1.1.2.1.1 QPSK/1RBs /RB #0



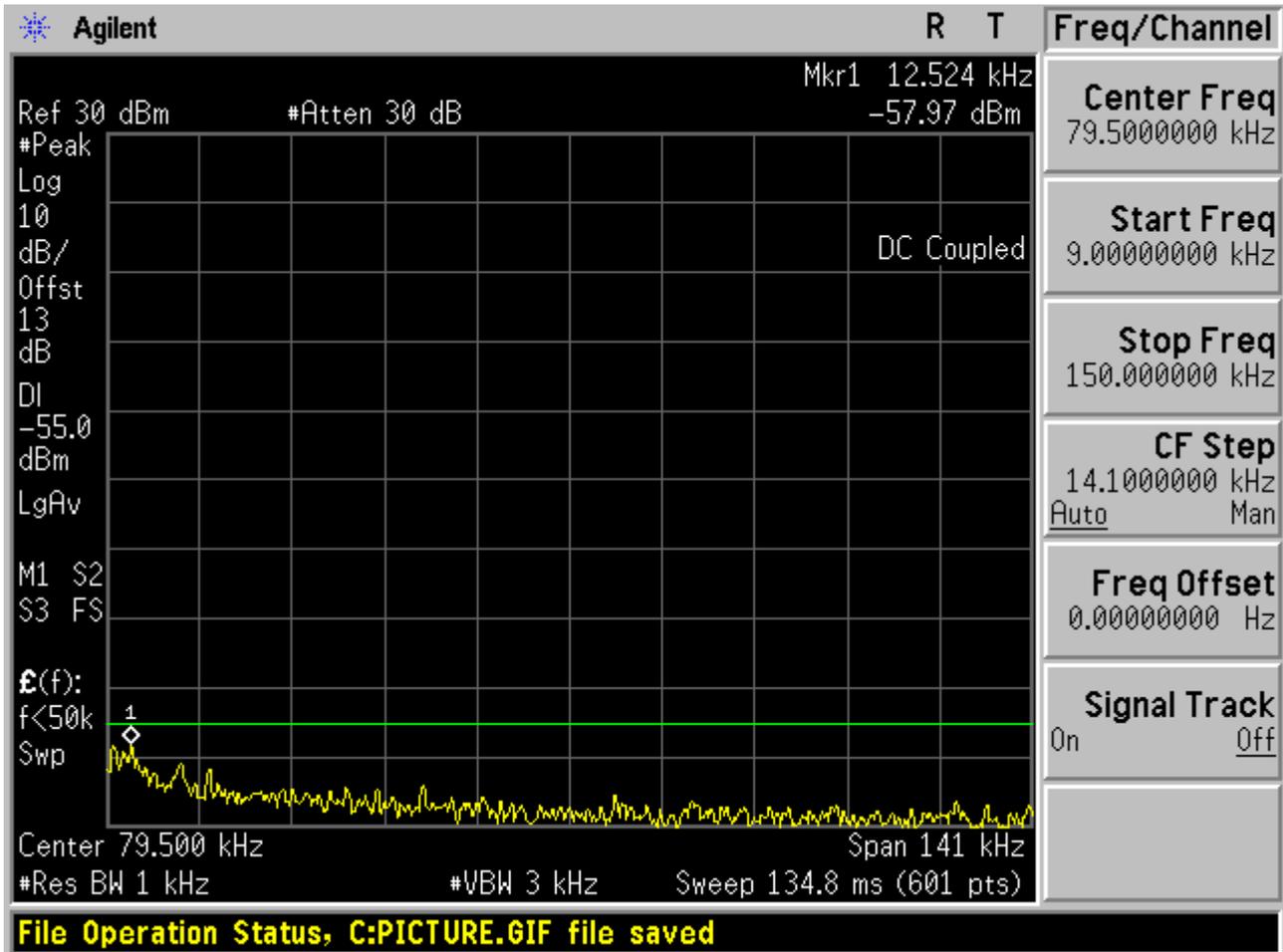


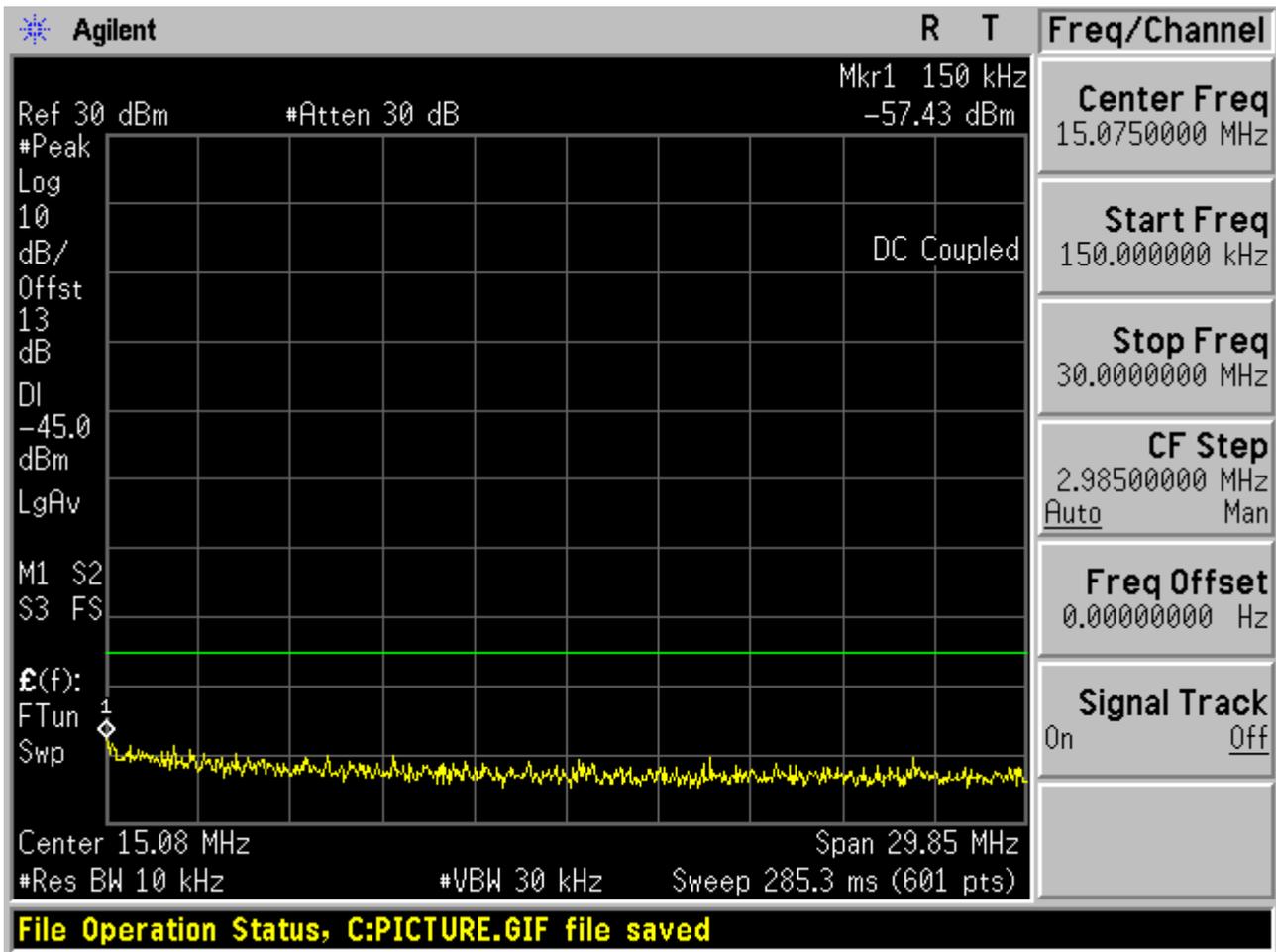


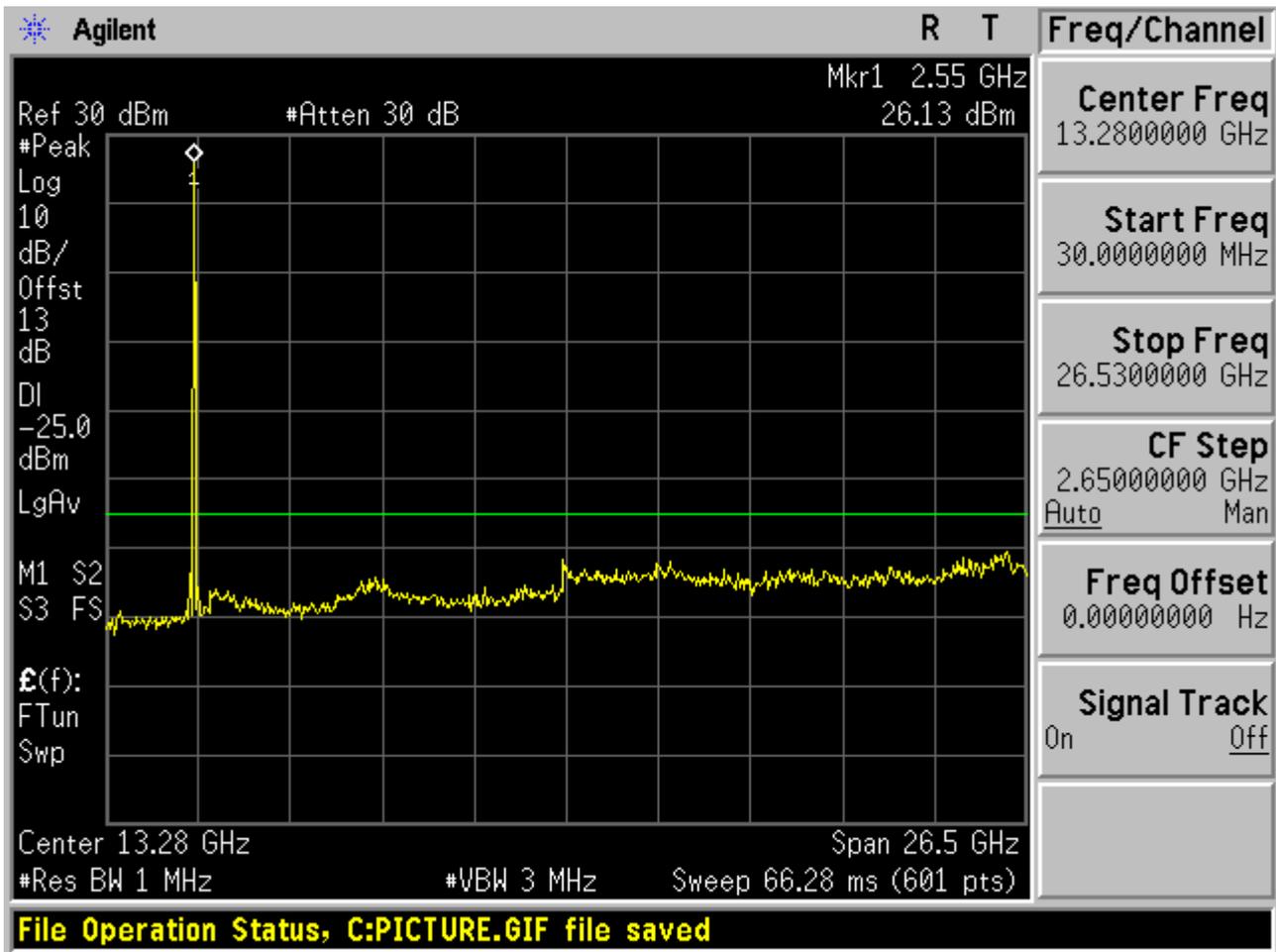


1.1.2.2 Channel = M

1.1.2.2.1 QPSK/1RBs /RB #0



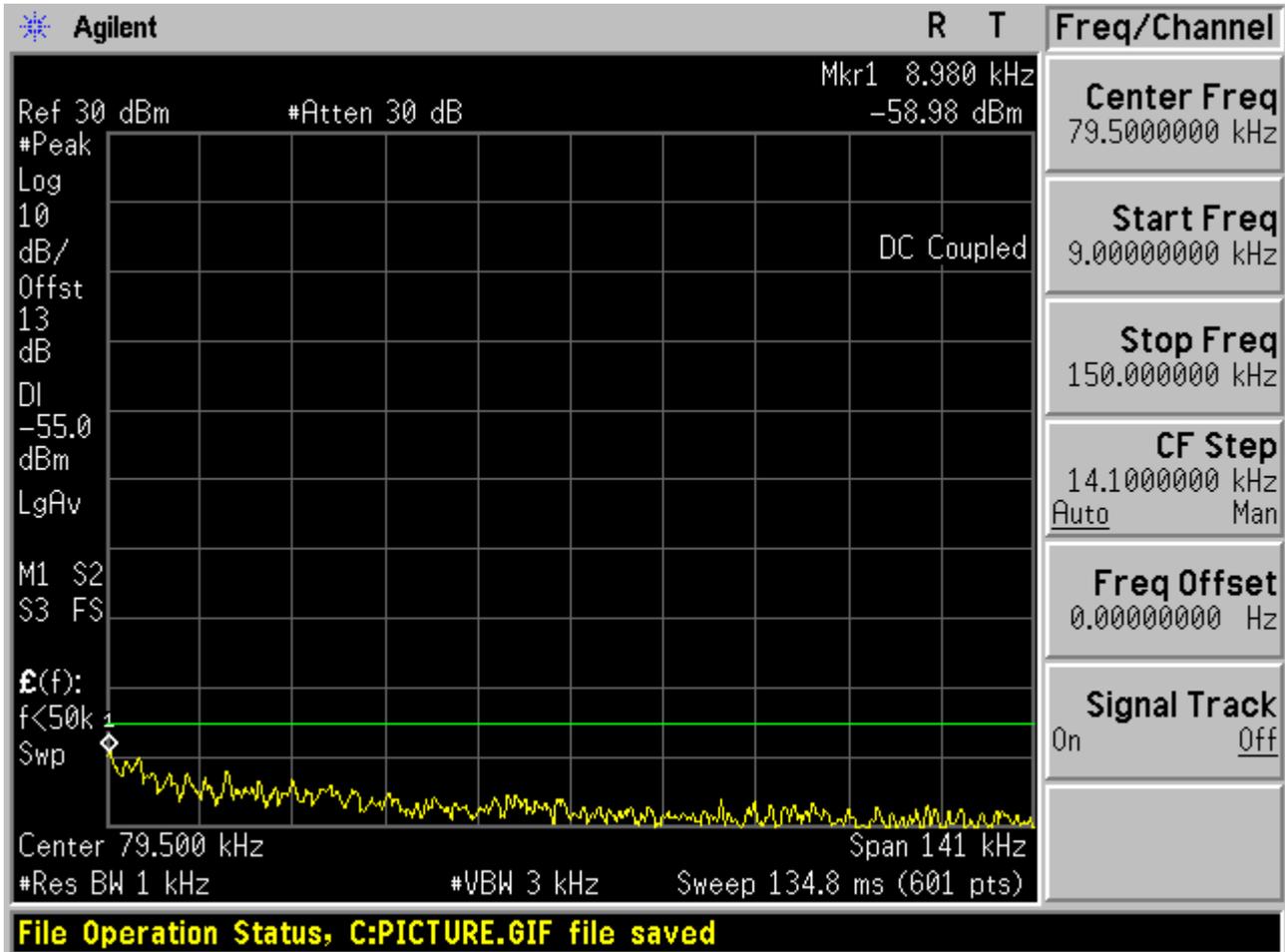


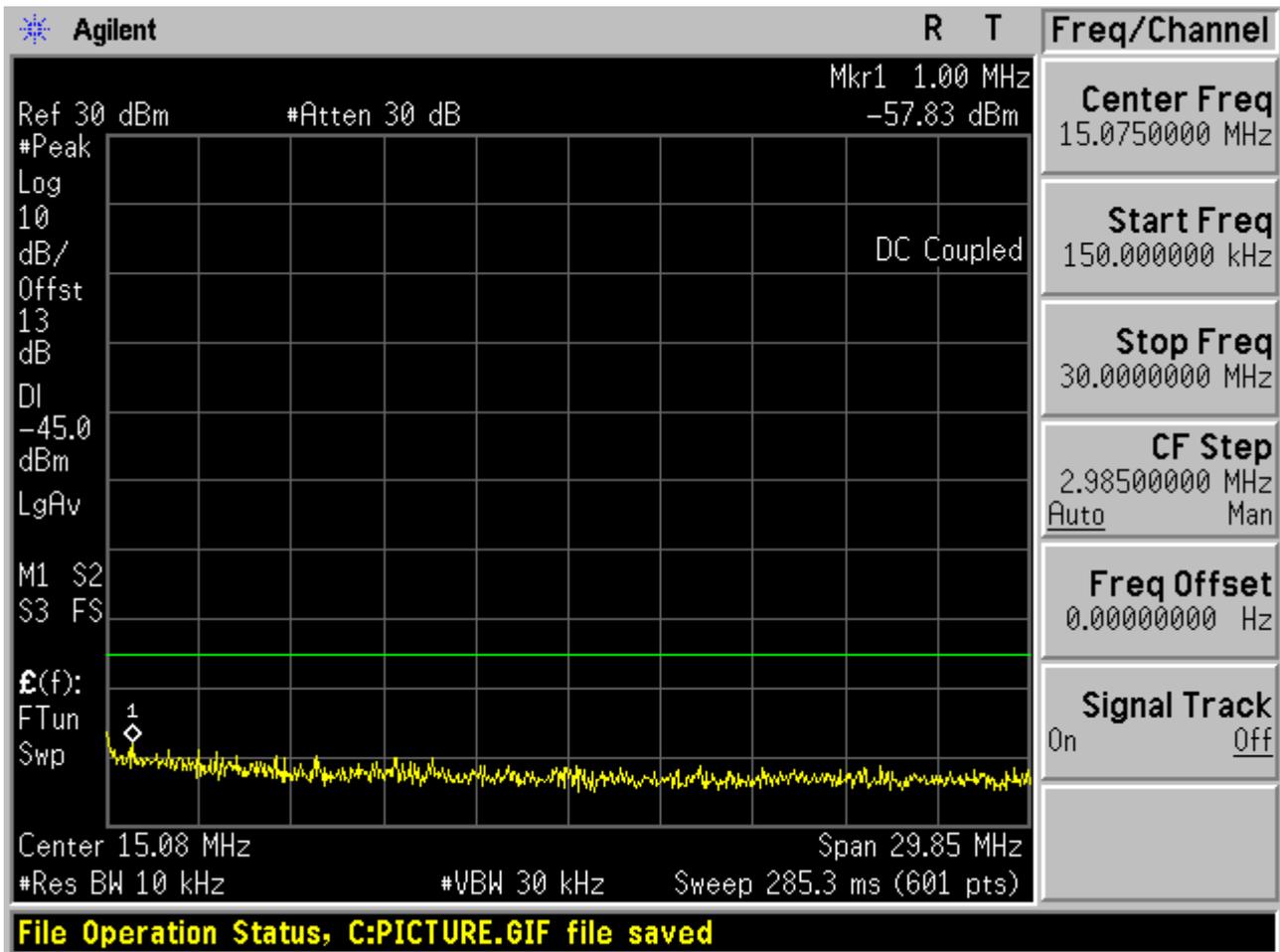


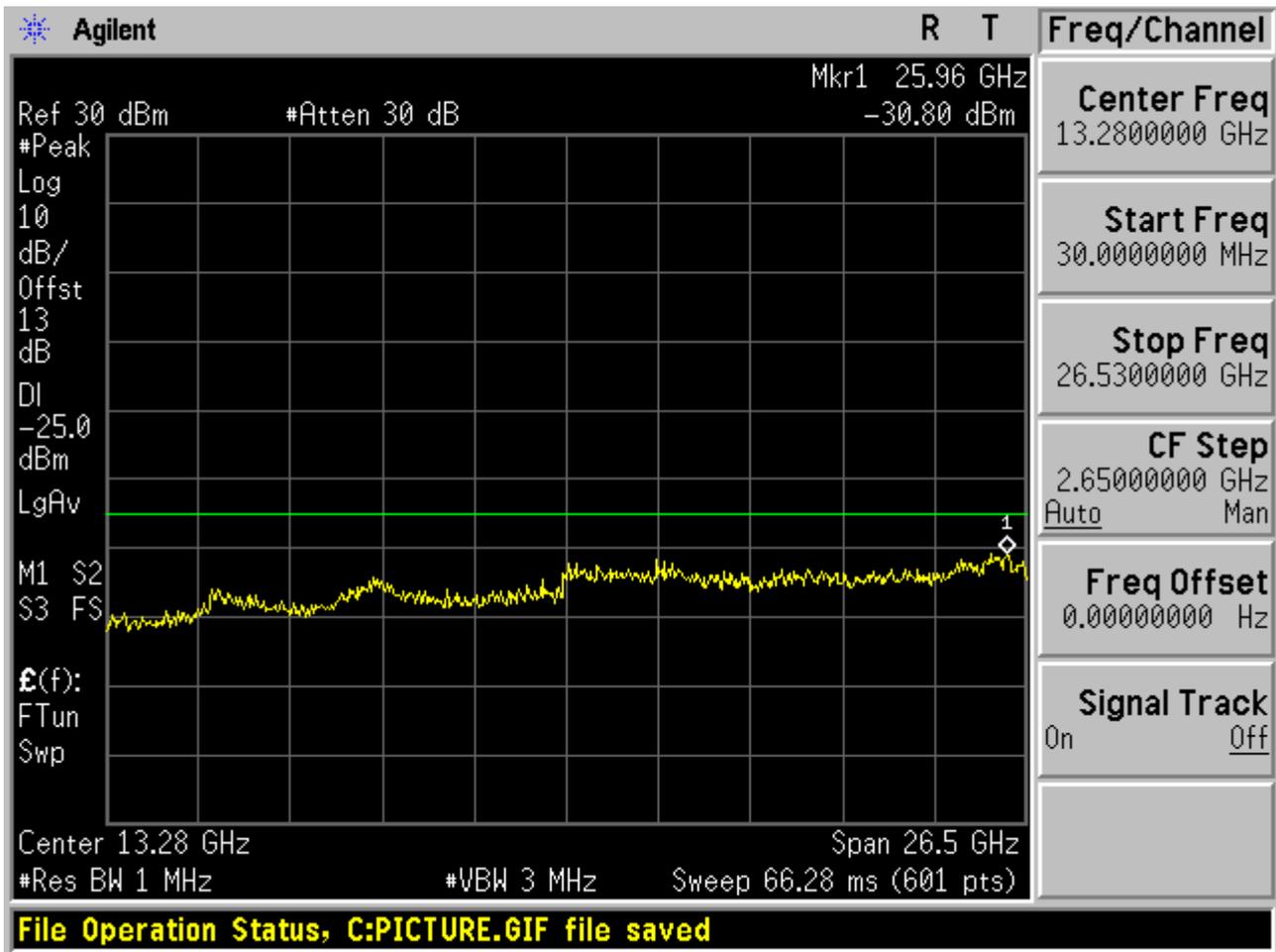


1.1.2.3 Channel = H

1.1.2.3.1 QPSK/1RBs /RB #0





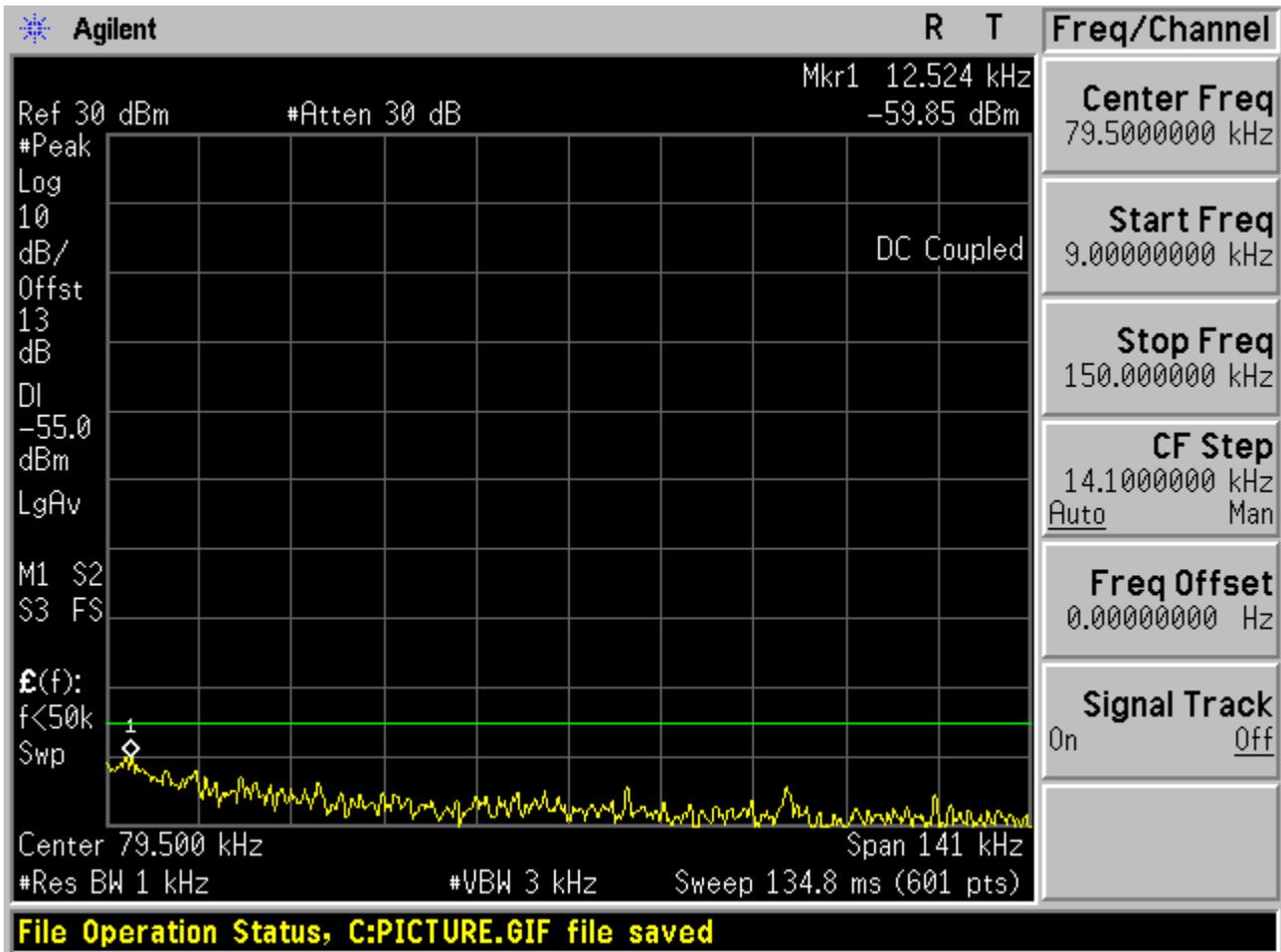


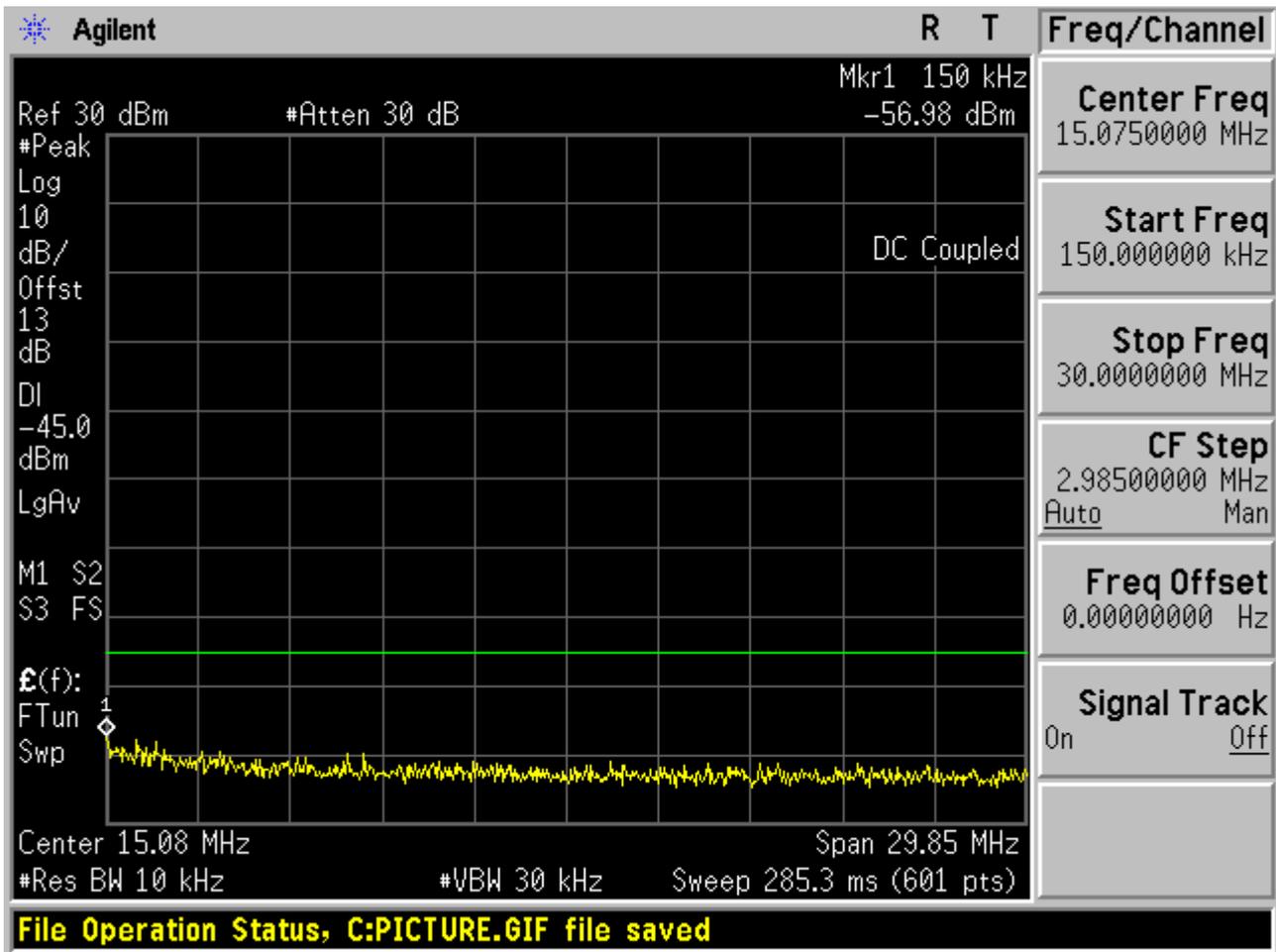


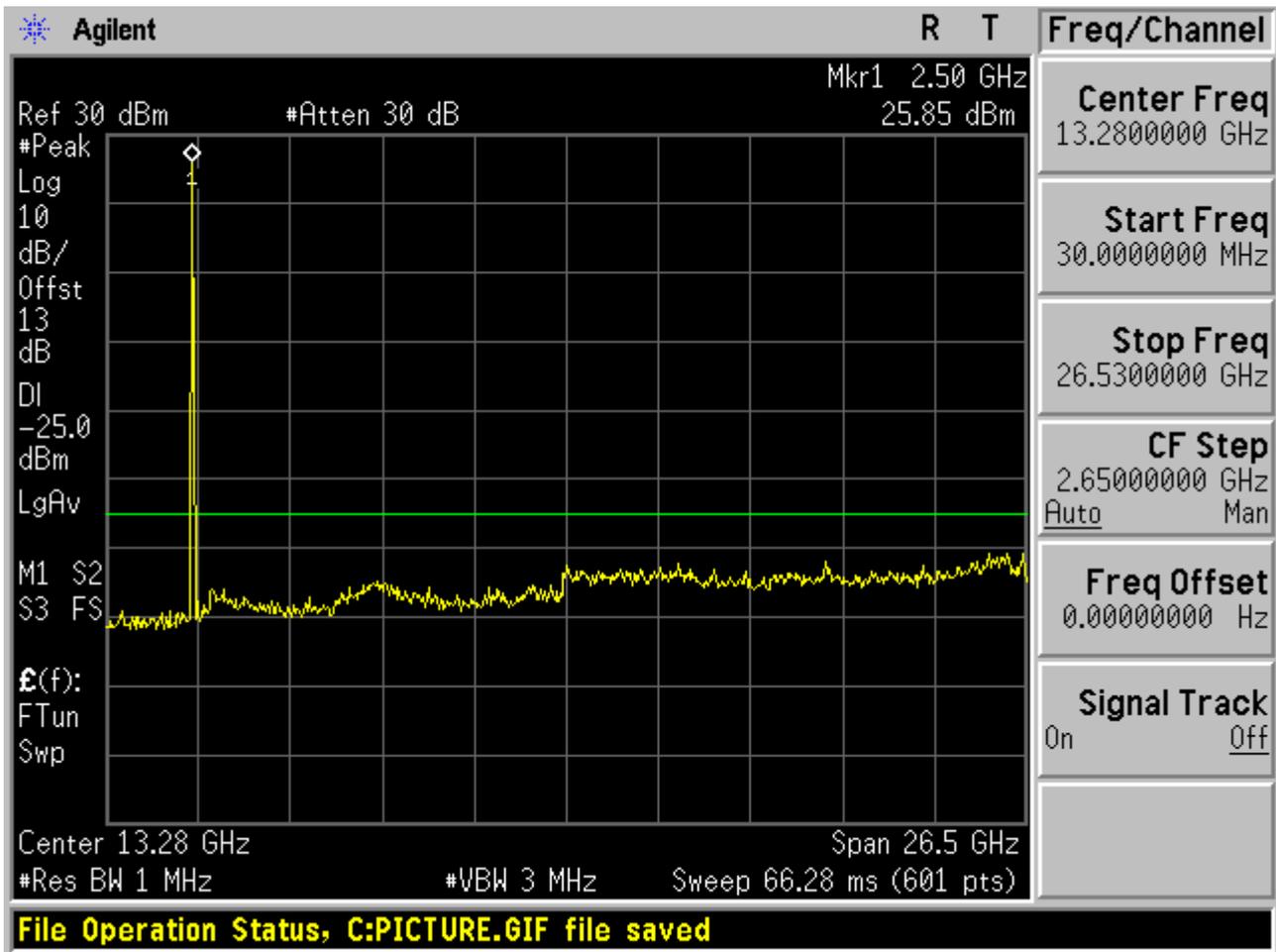
1.1.3 Channel Bandwidth = 15 MHz

1.1.3.1 Channel = L

1.1.3.1.1 QPSK/1RBs /RB #0



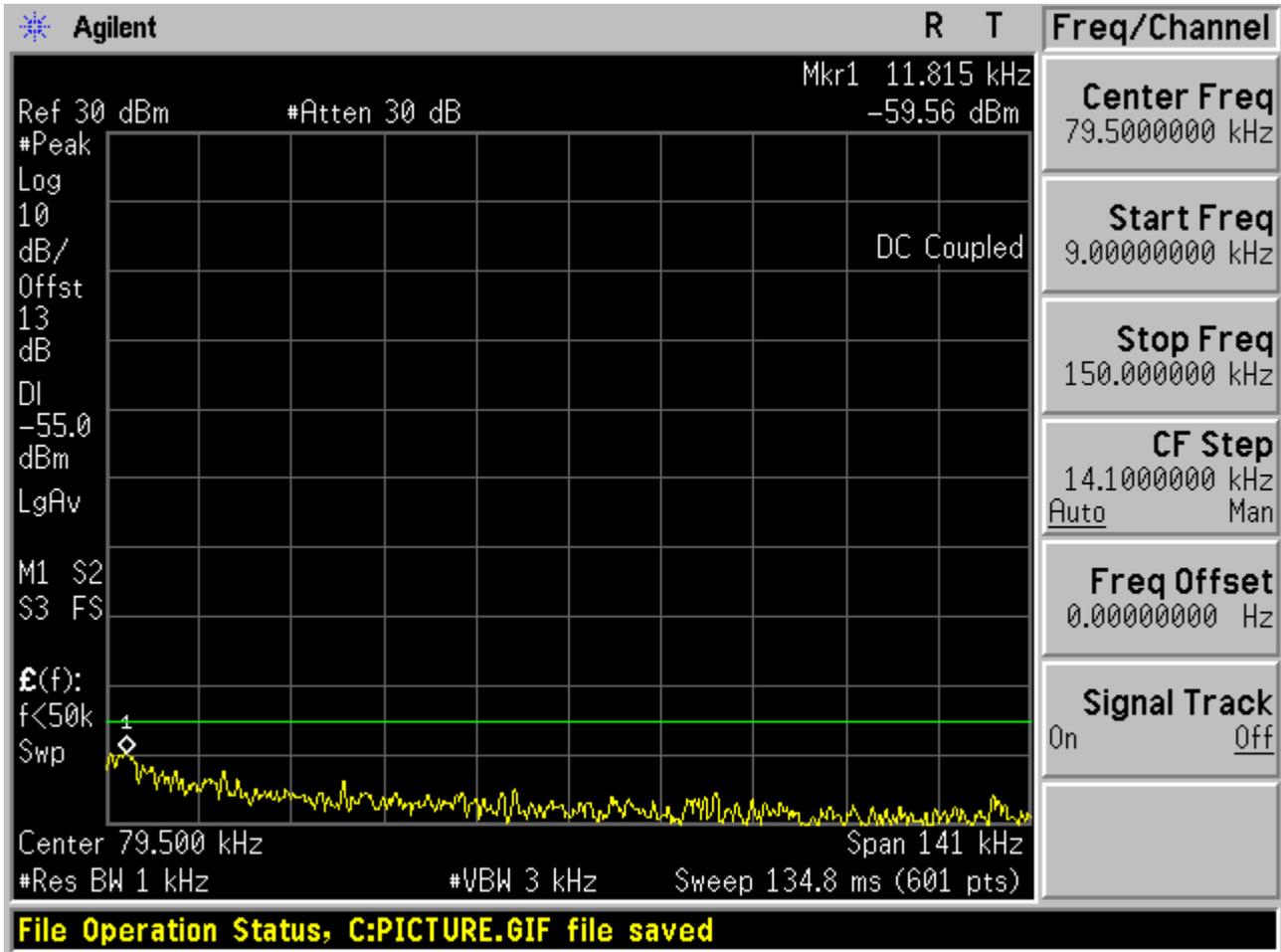


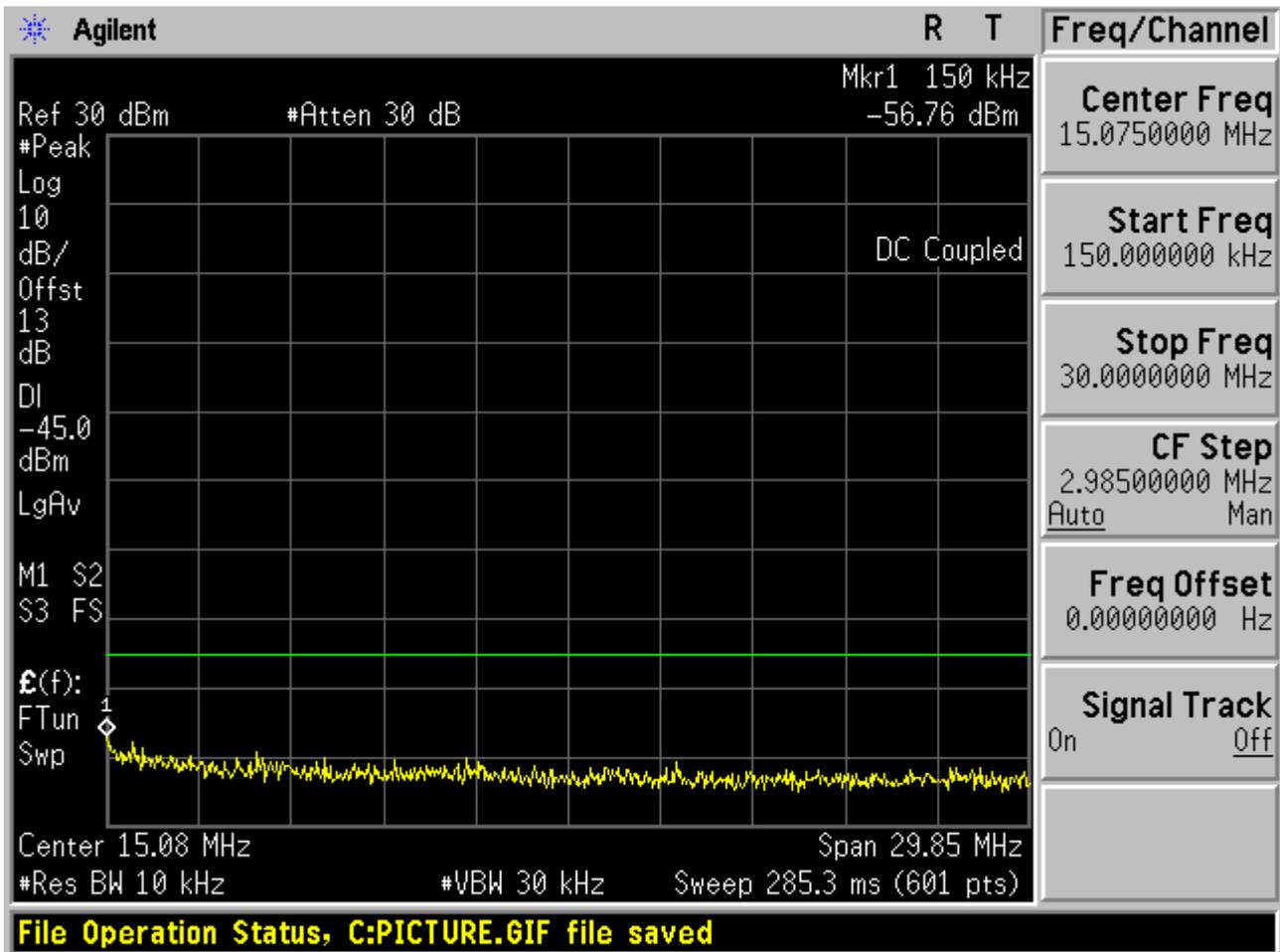


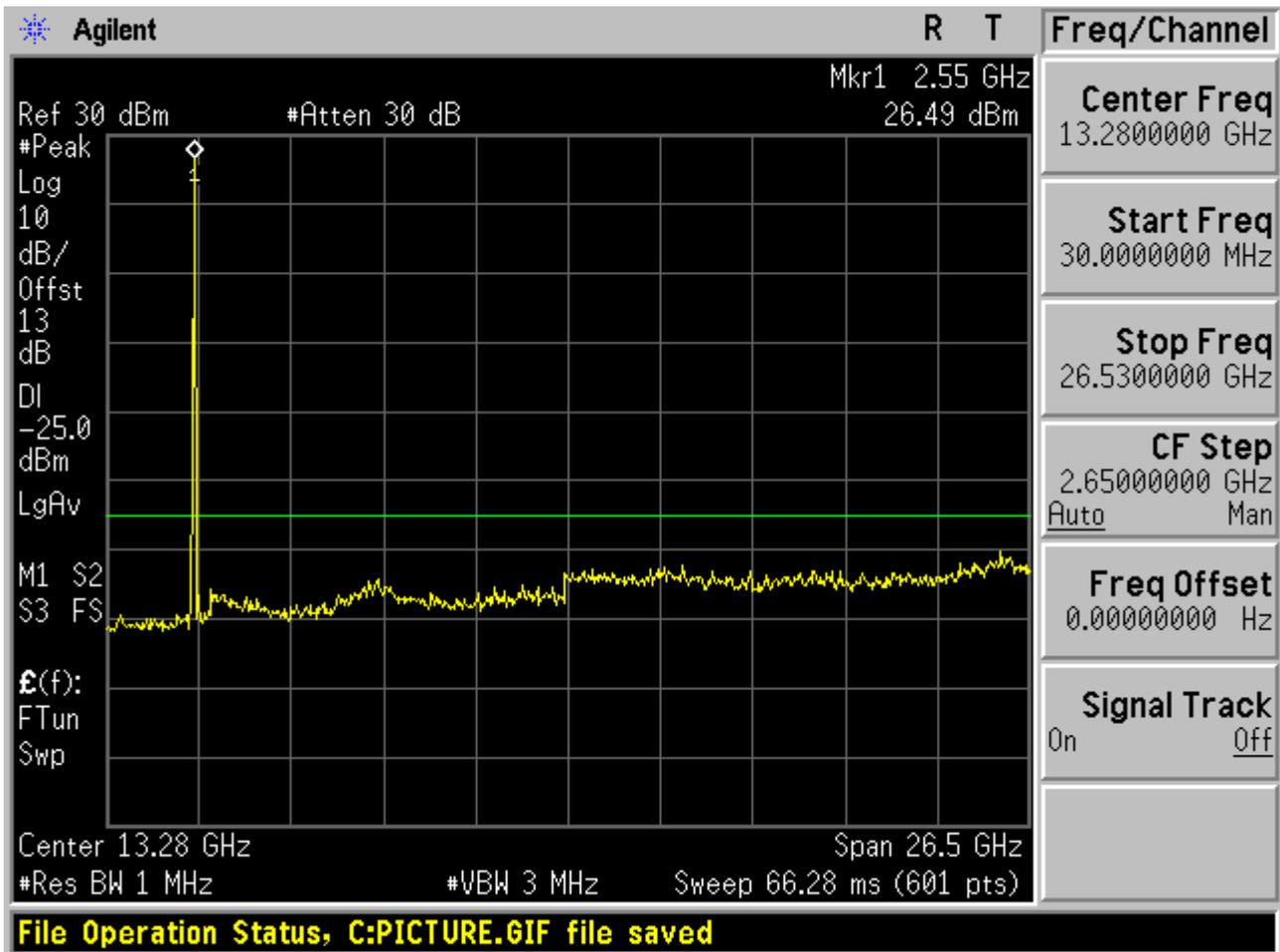


1.1.3.2 Channel = M

1.1.3.2.1 QPSK/1RBs /RB #0



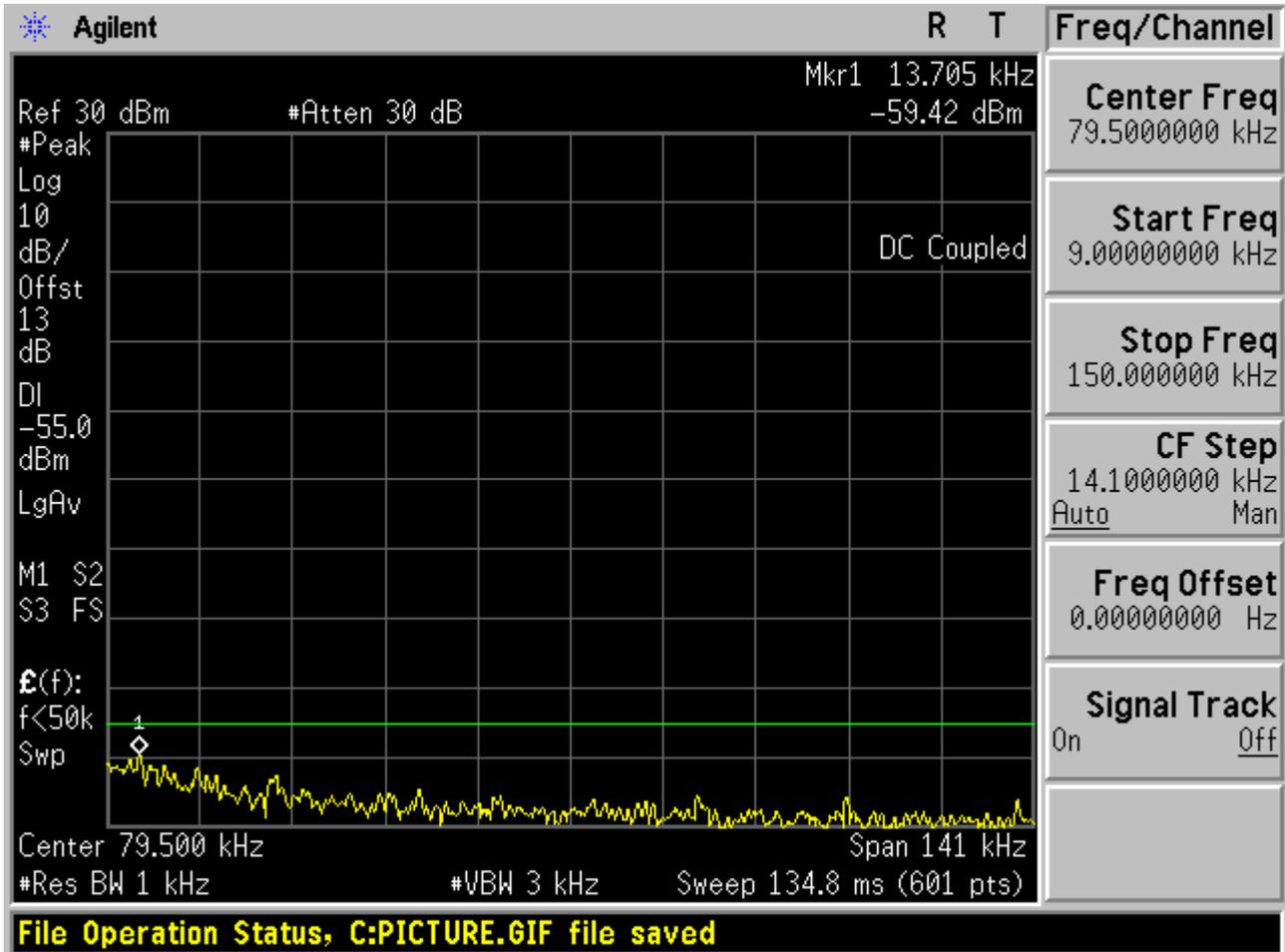


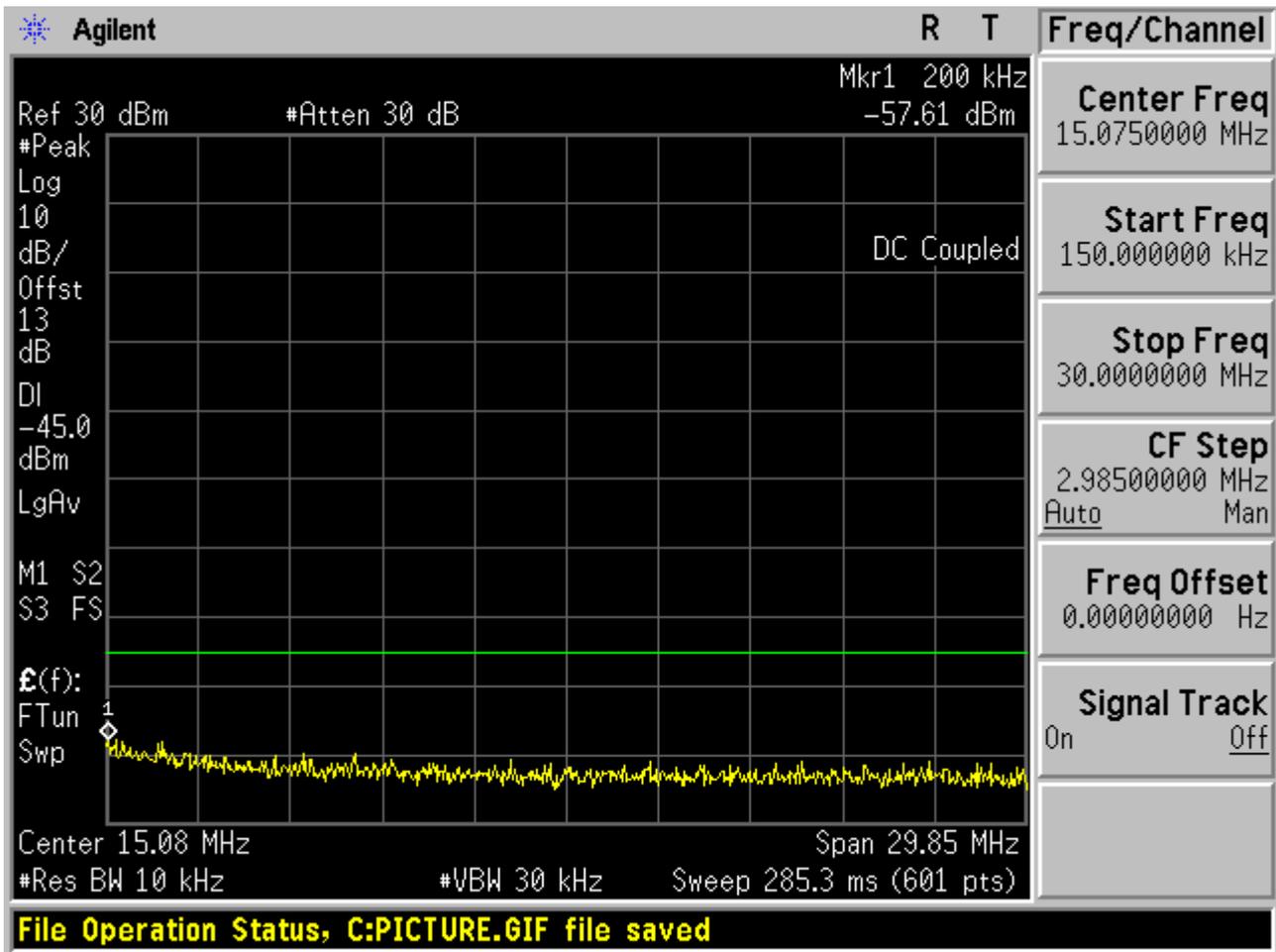


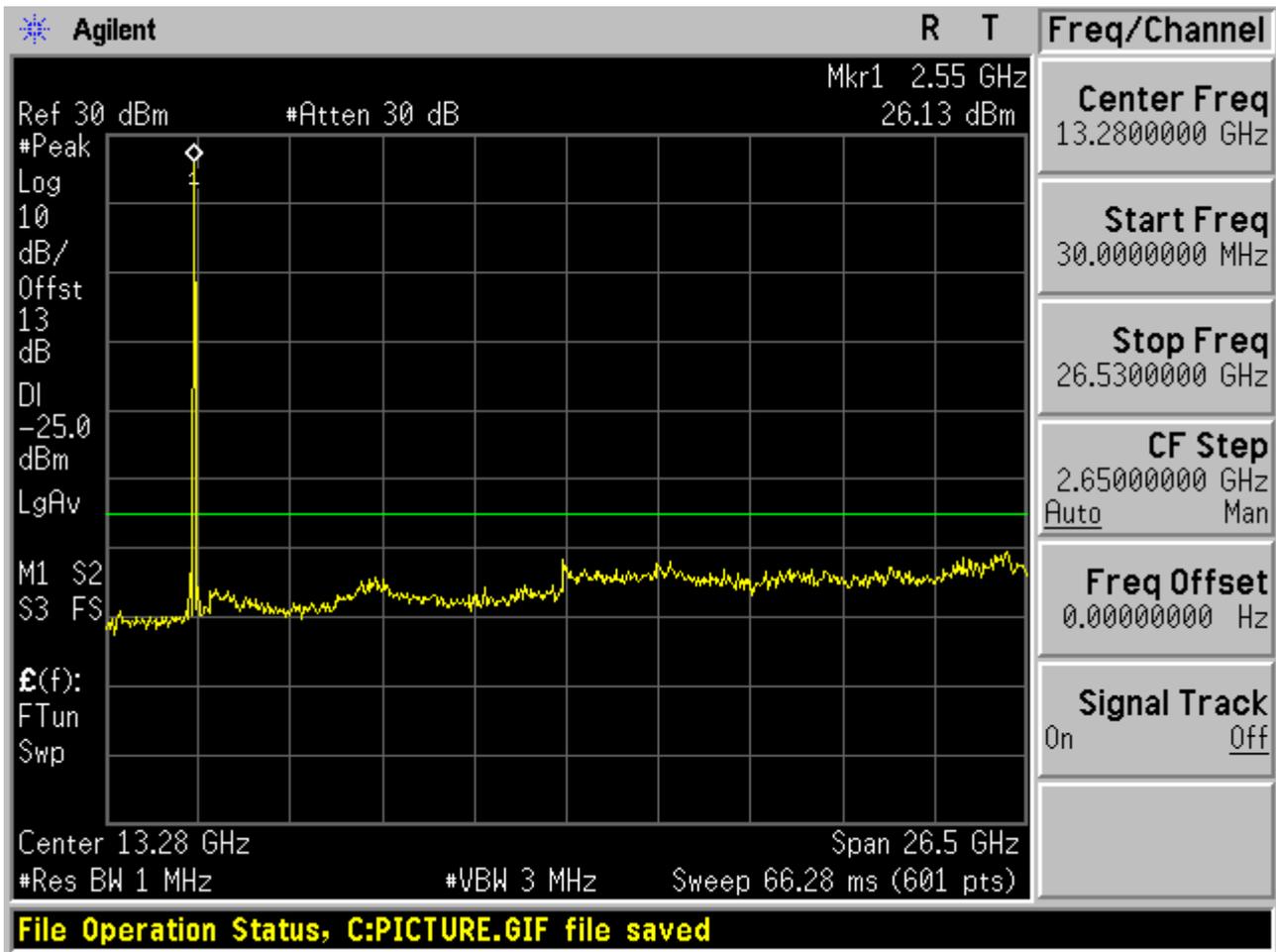


1.1.3.3 Channel = H

1.1.3.3.1 QPSK/1RBs /RB #0





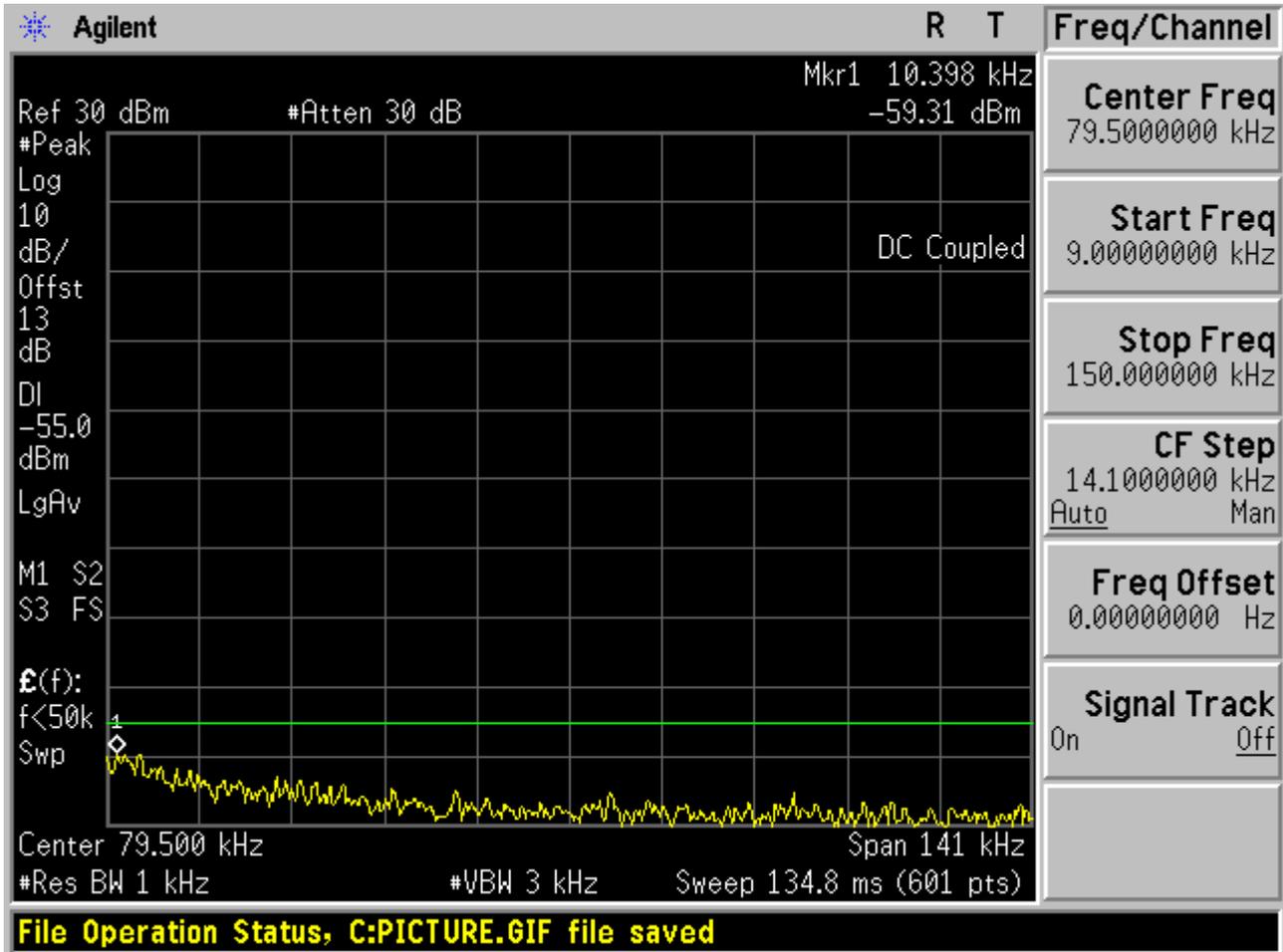


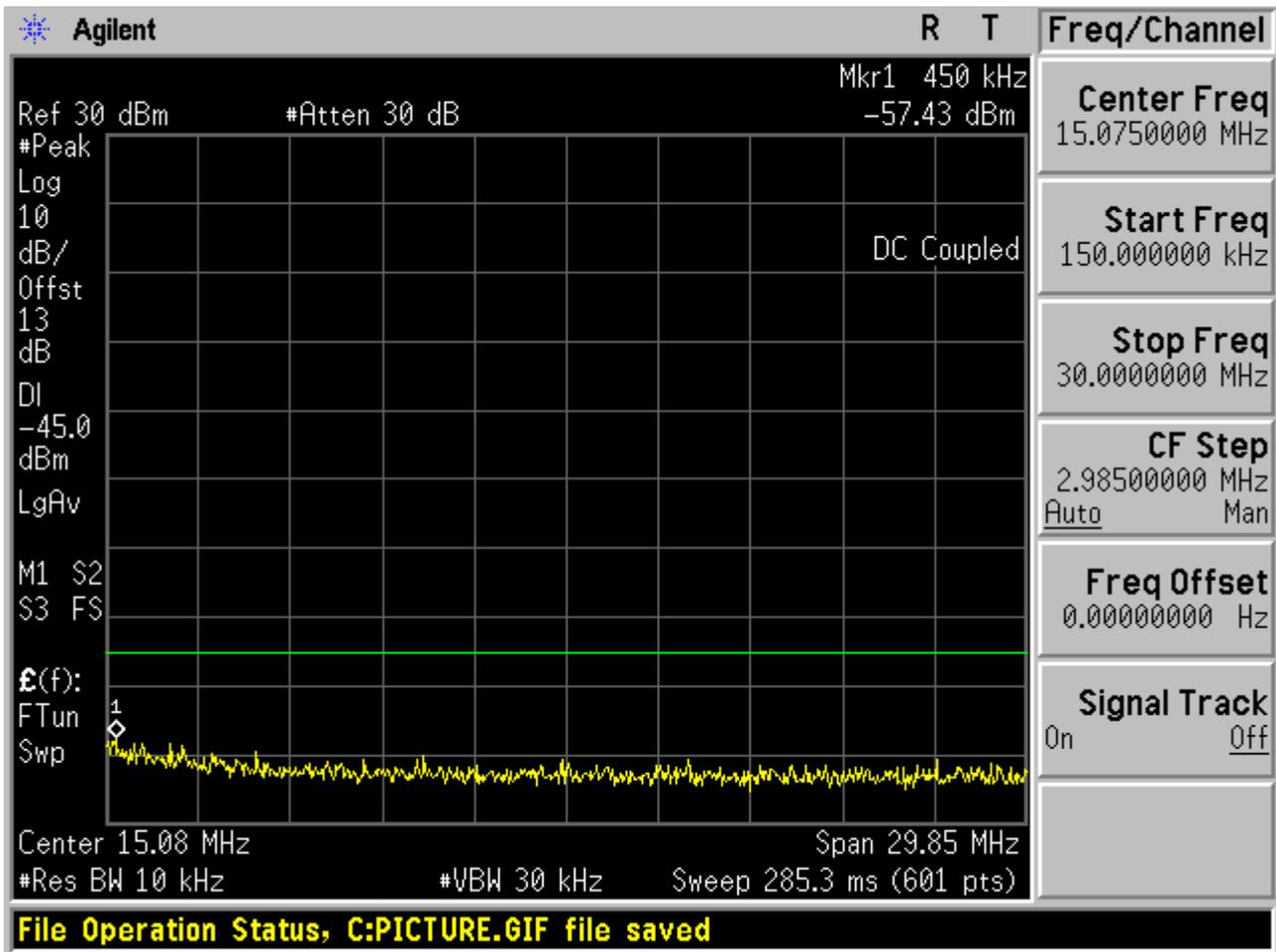


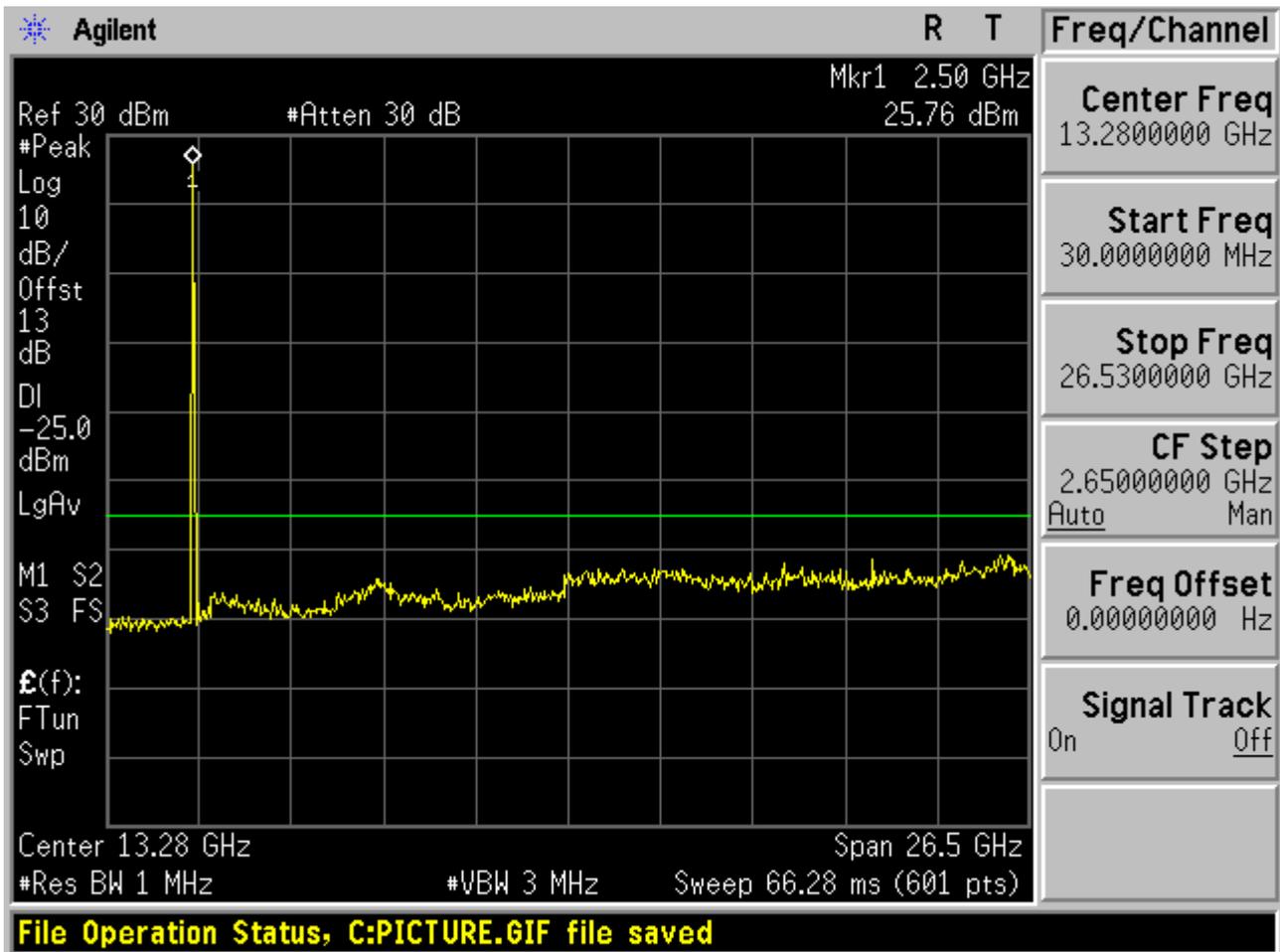
1.1.4 Channel Bandwidth = Highest (20 MHz)

1.1.4.1 Channel = L

1.1.4.1.1 QPSK/1RBs /RB #0



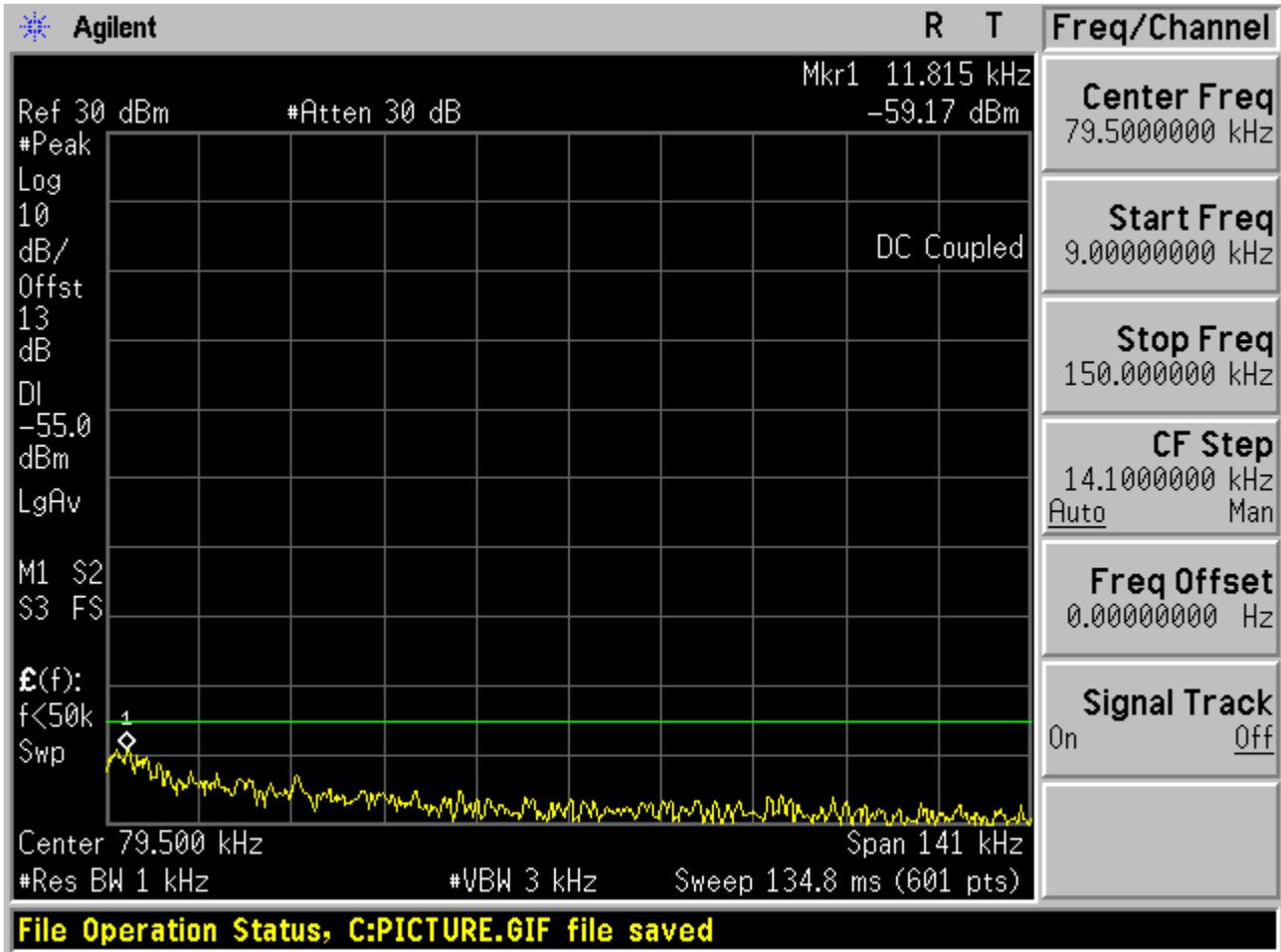


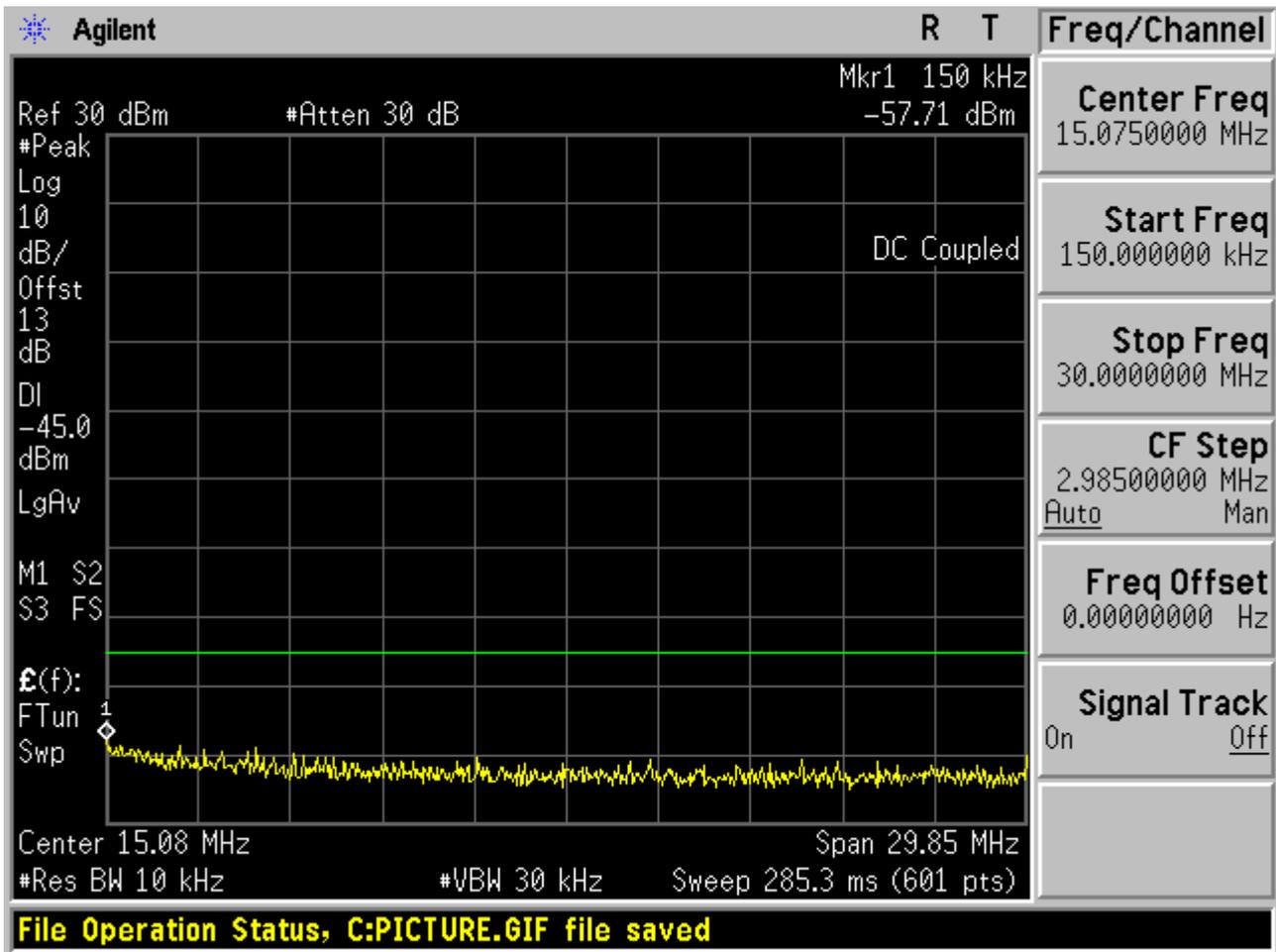


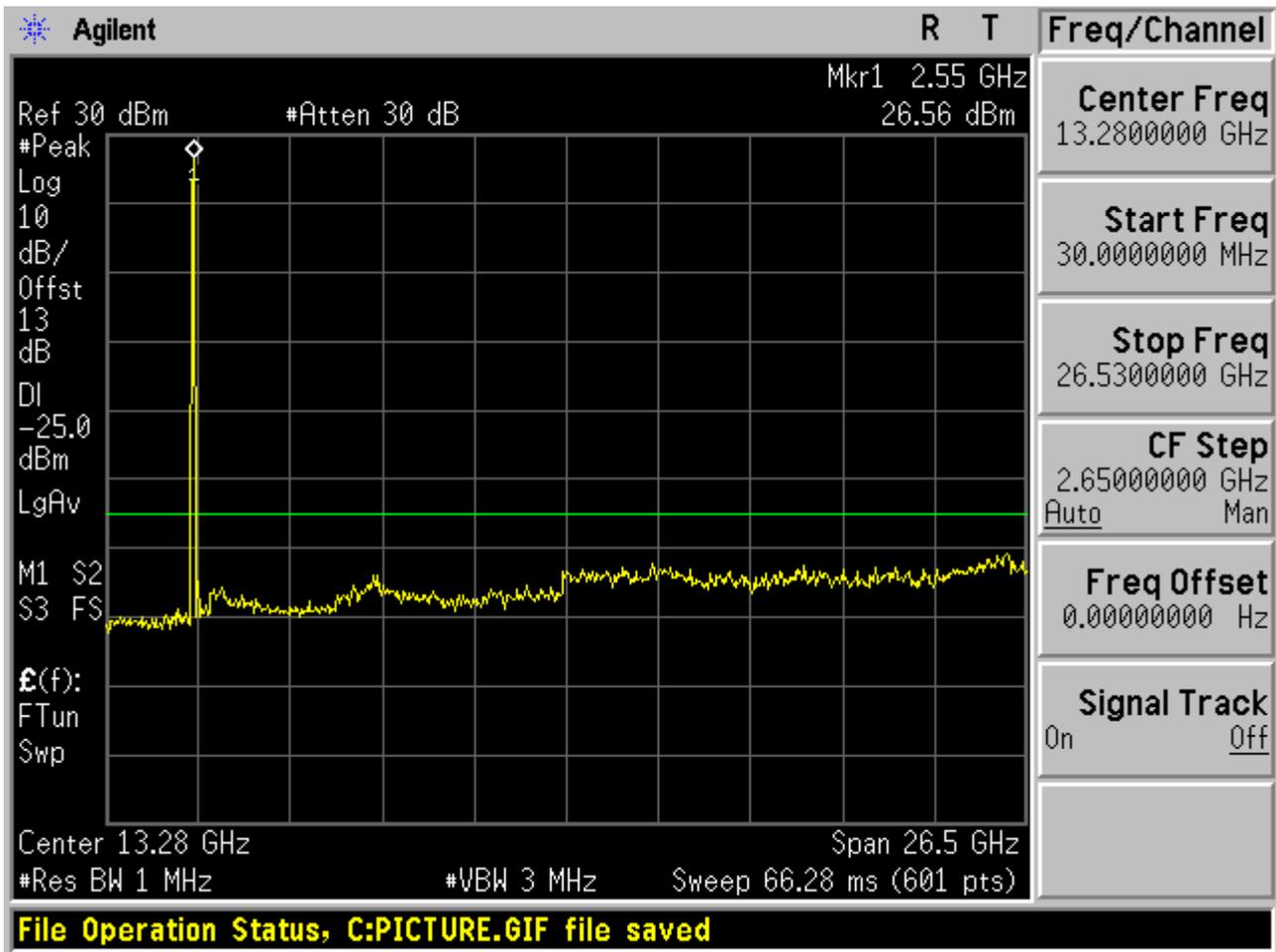


1.1.4.2 Channel = M

1.1.4.2.1 QPSK/1RBs /RB #0



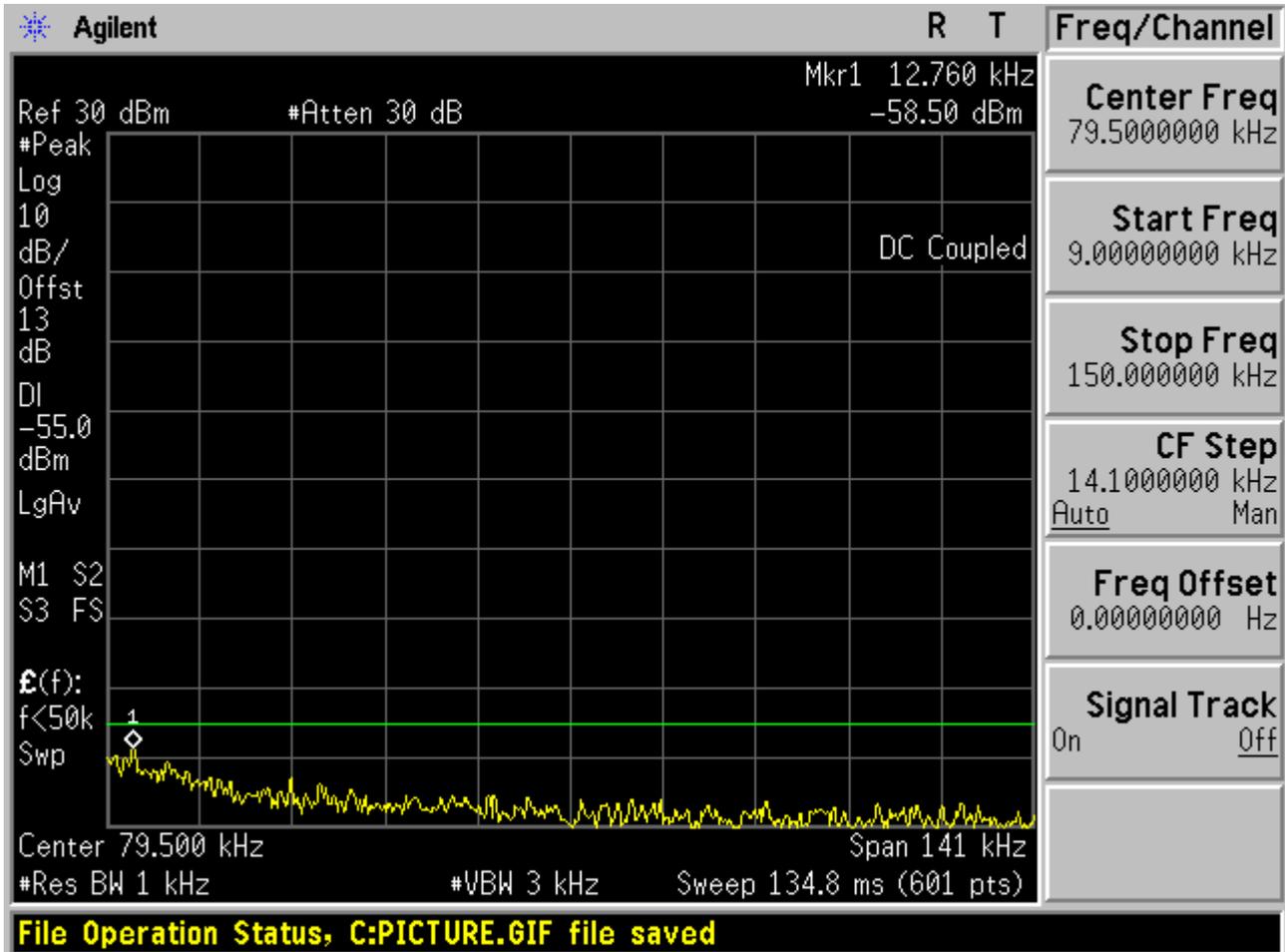


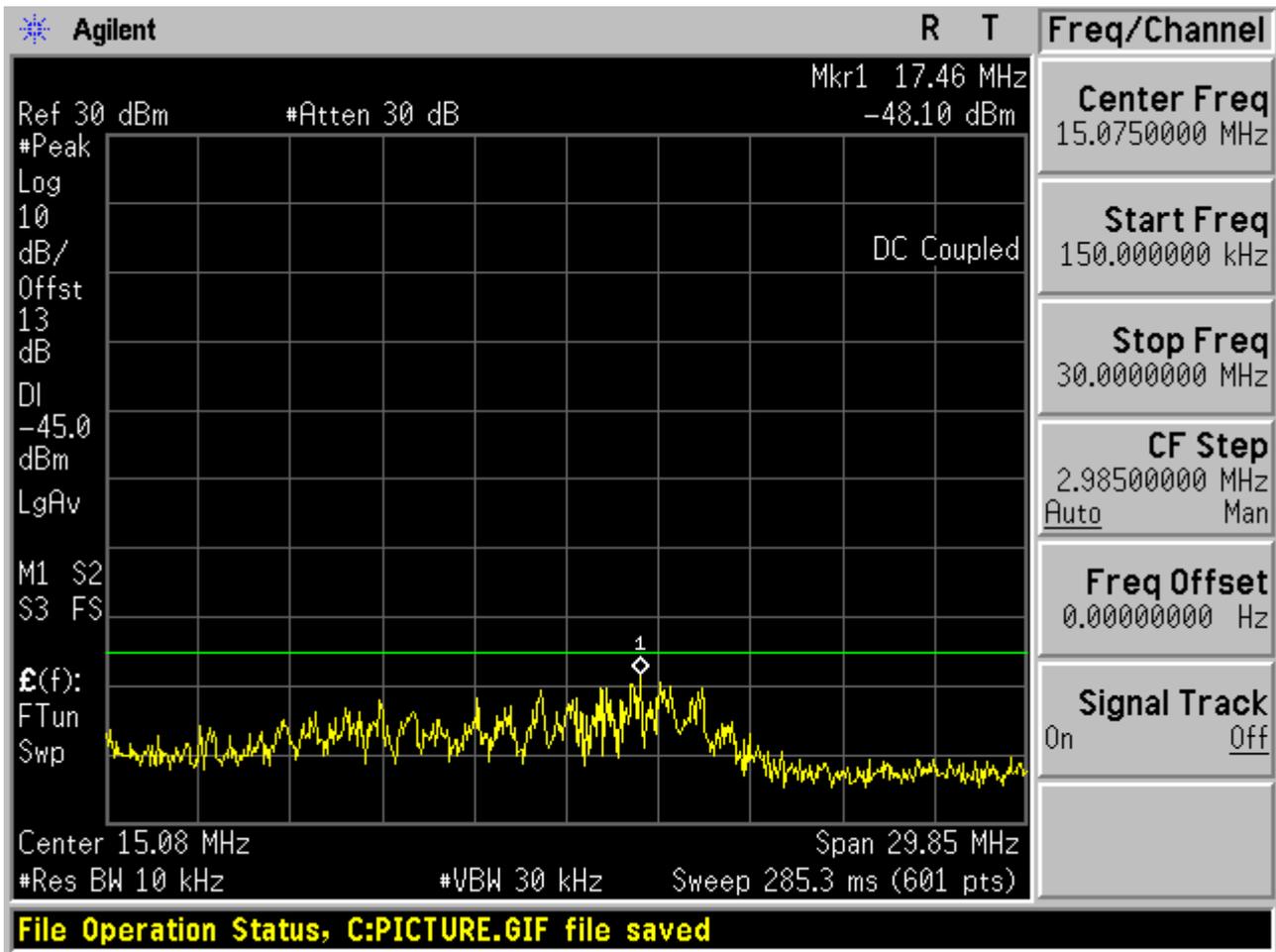


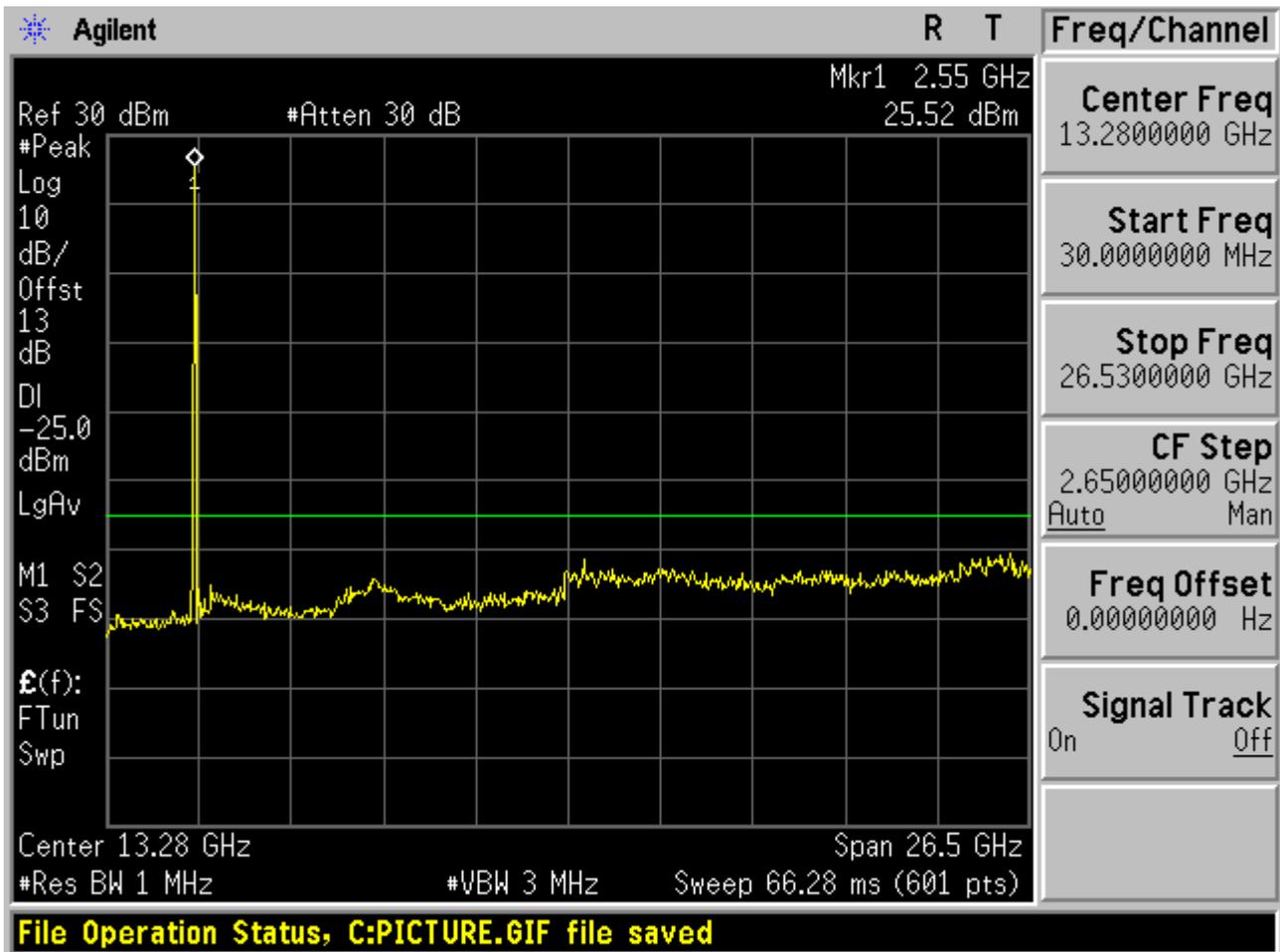


1.1.4.3 Channel = H

1.1.4.3.1 QPSK/1RBs /RB #0







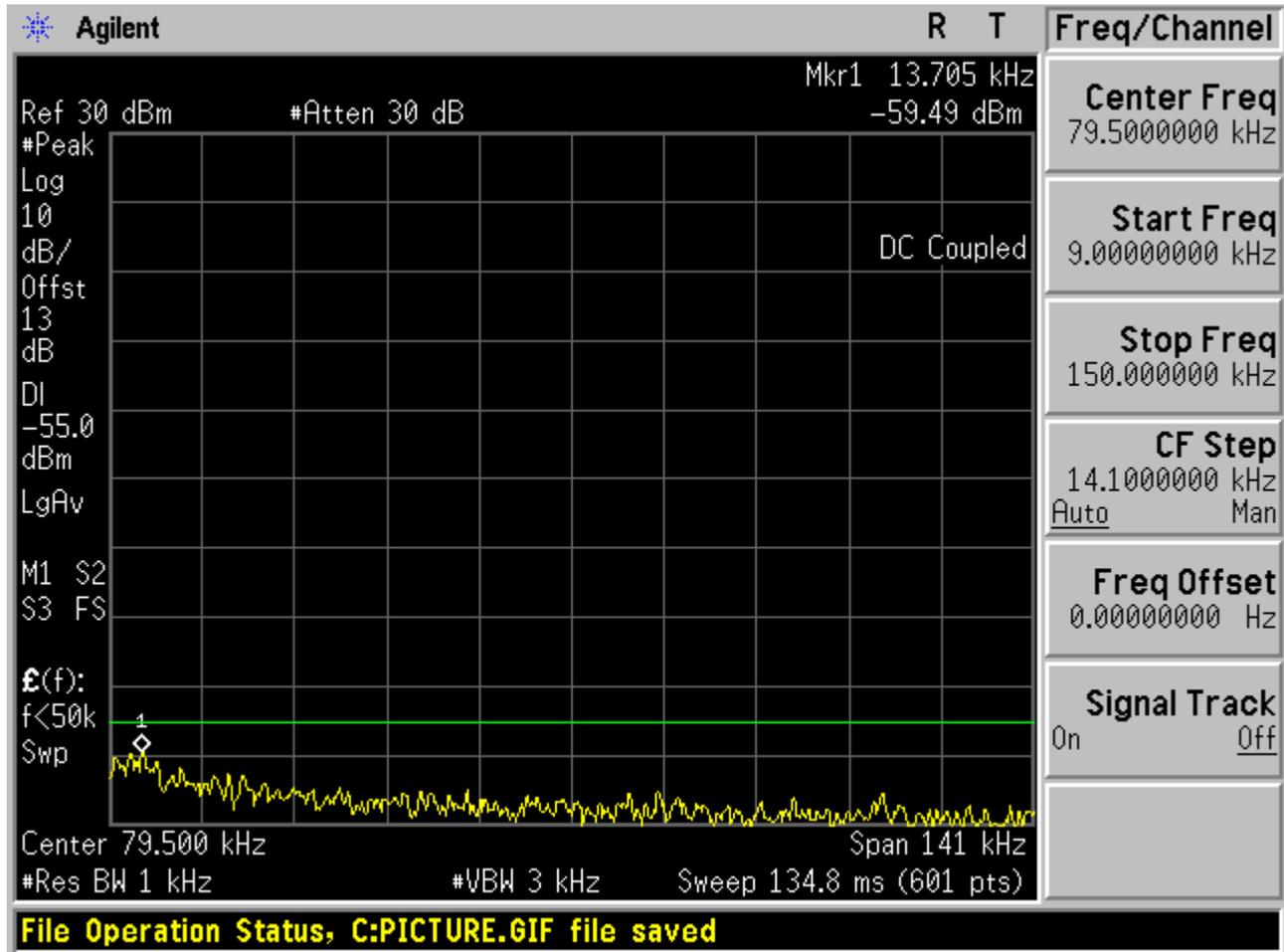


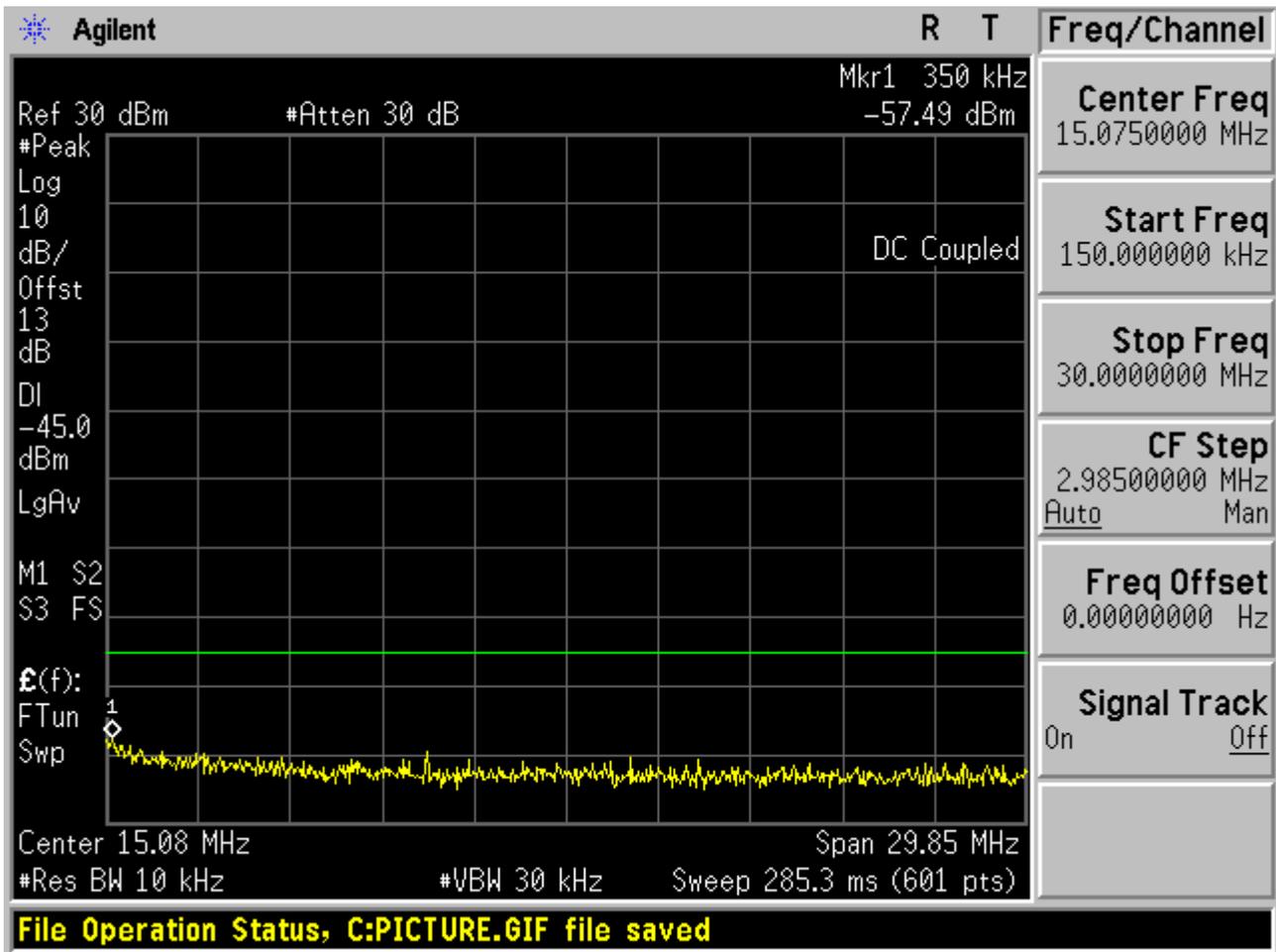
1.2 Test Mode=TM2

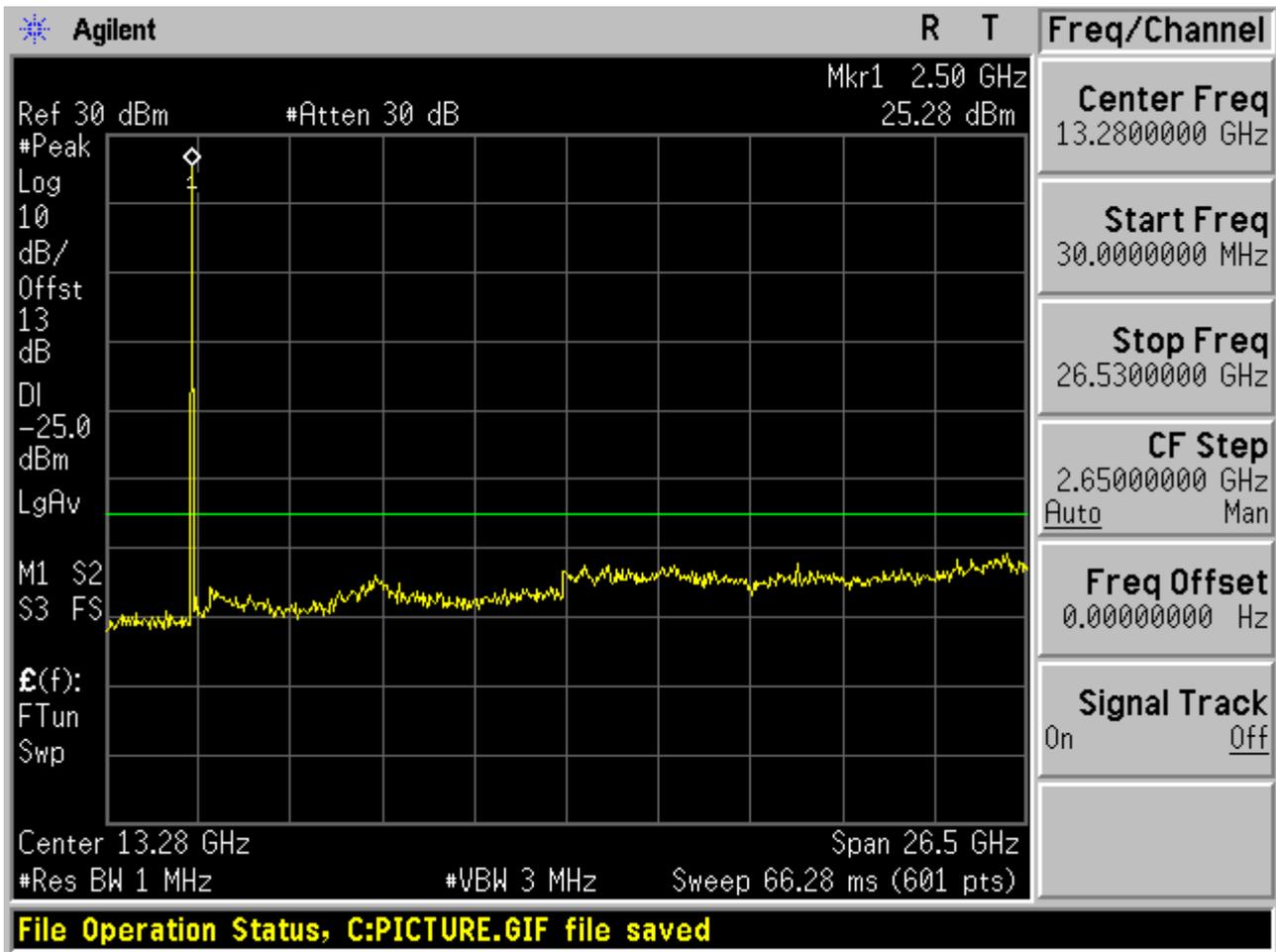
1.2.1 Channel Bandwidth = Lowest (5 MHz)

1.2.1.1 Channel = L

1.2.1.1.1 16QAM/1RBs /RB #0



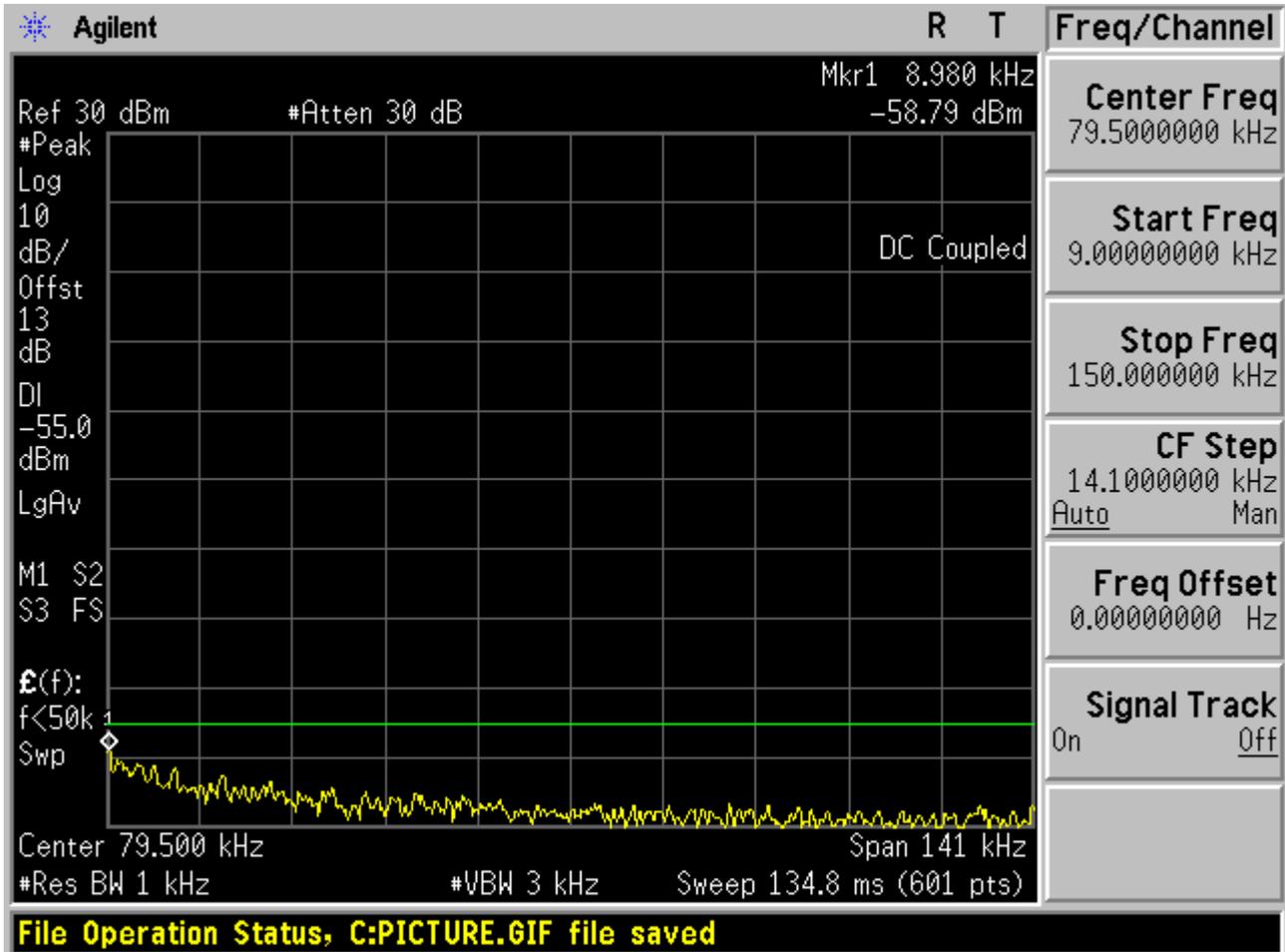


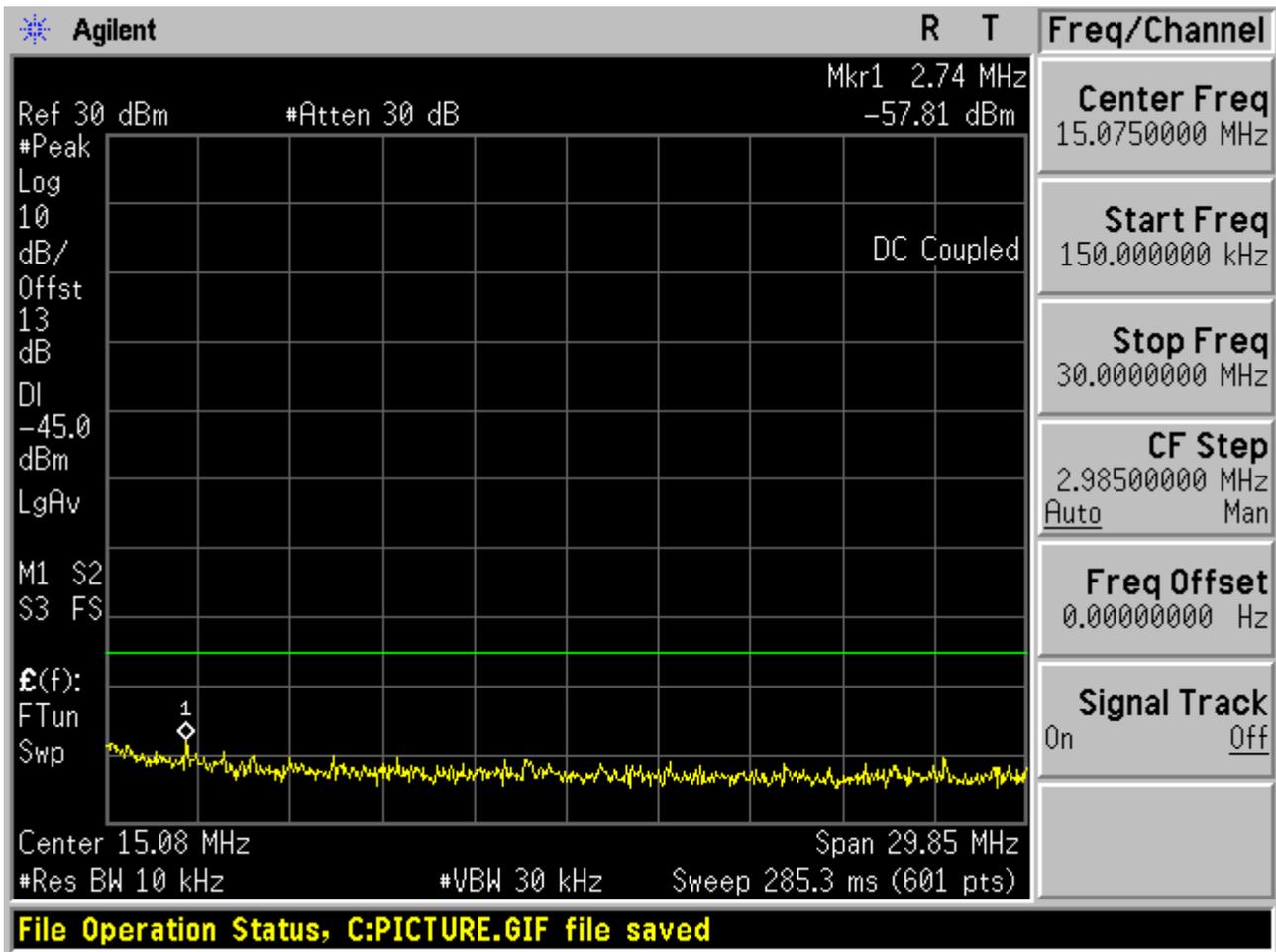


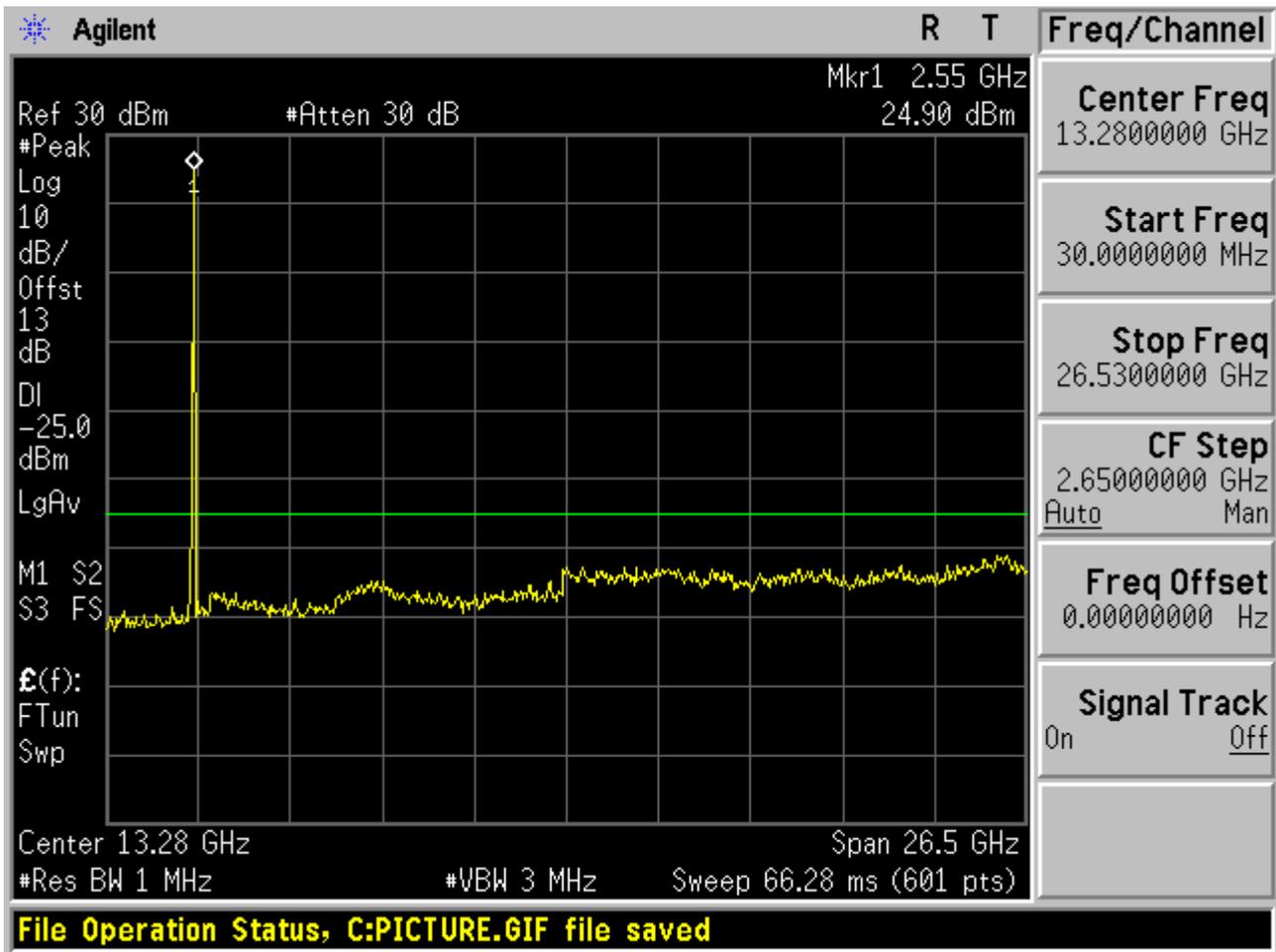


1.2.1.2 Channel = M

1.2.1.2.1 16QAM /1RBs /RB #0



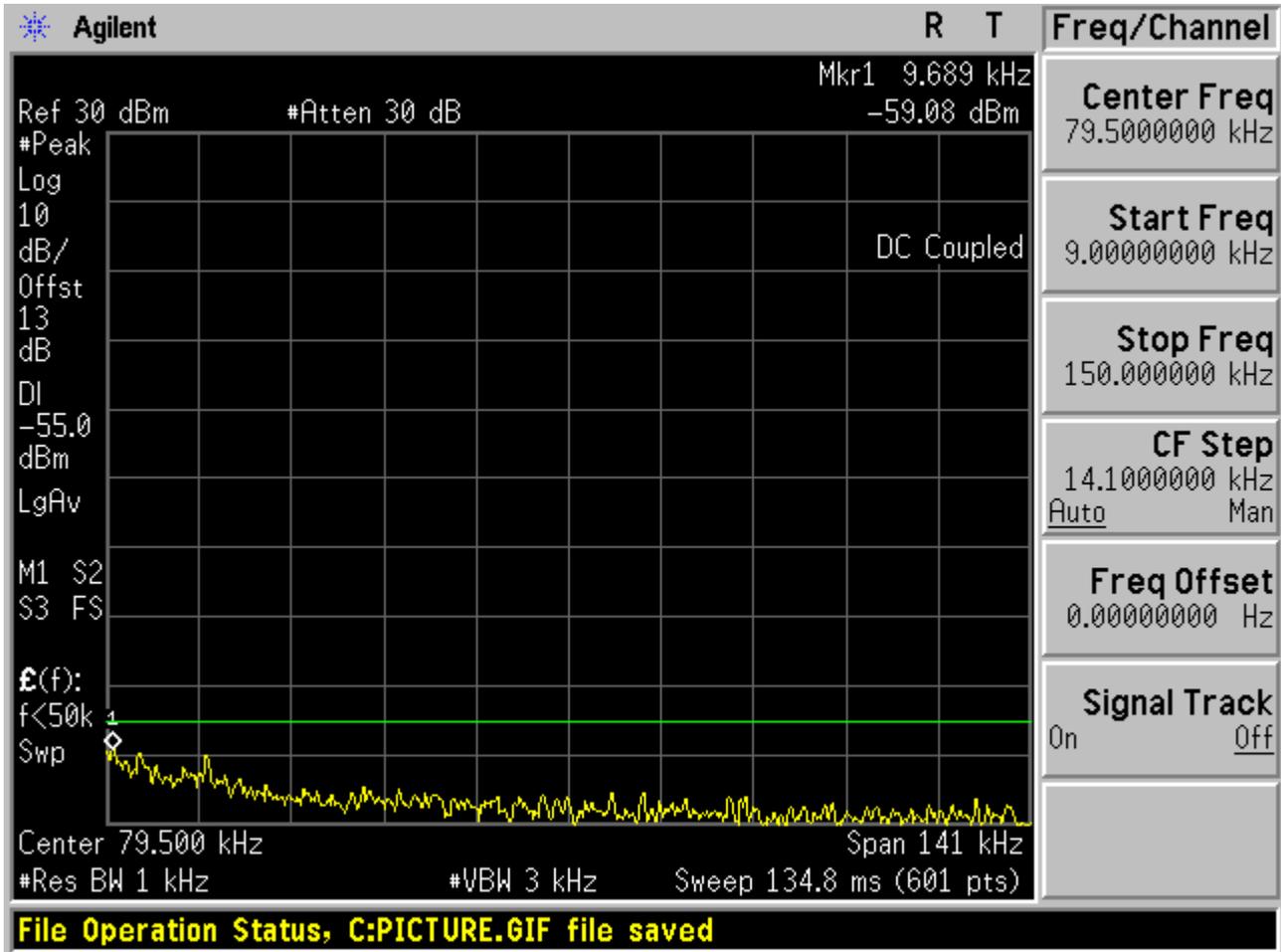


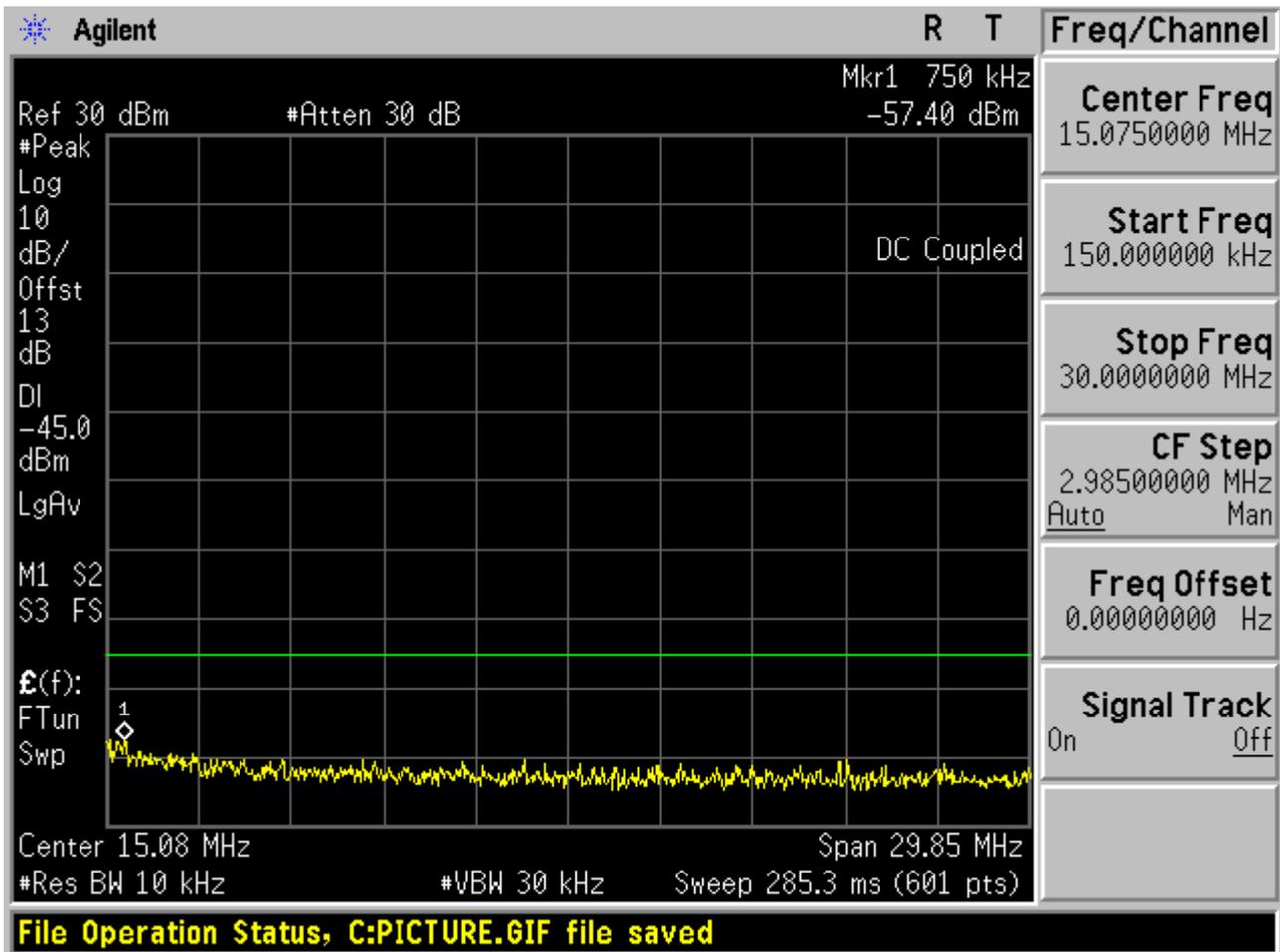


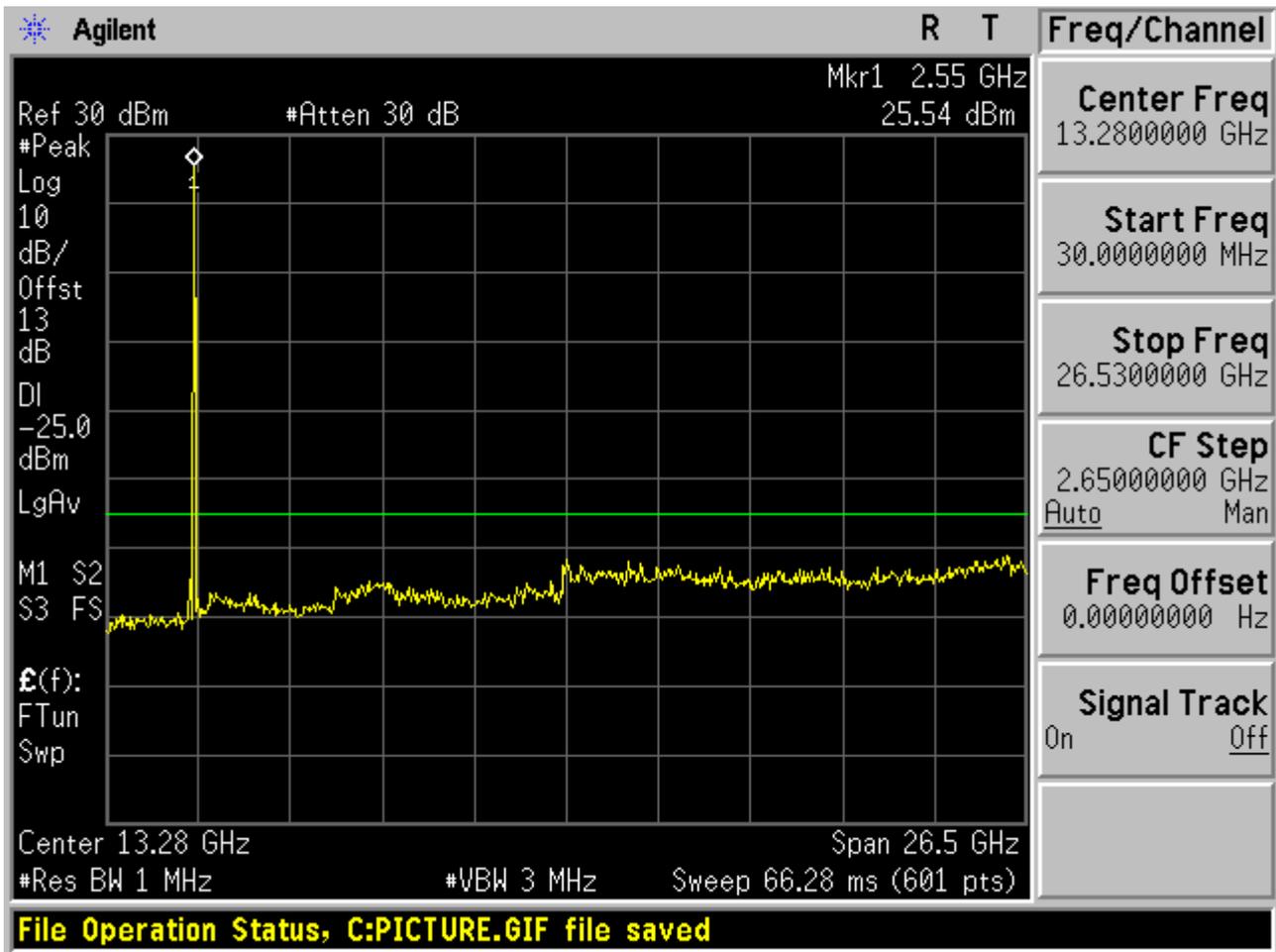


1.2.1.3 Channel = H

1.2.1.3.1 16QAM /1RBs /RB #0





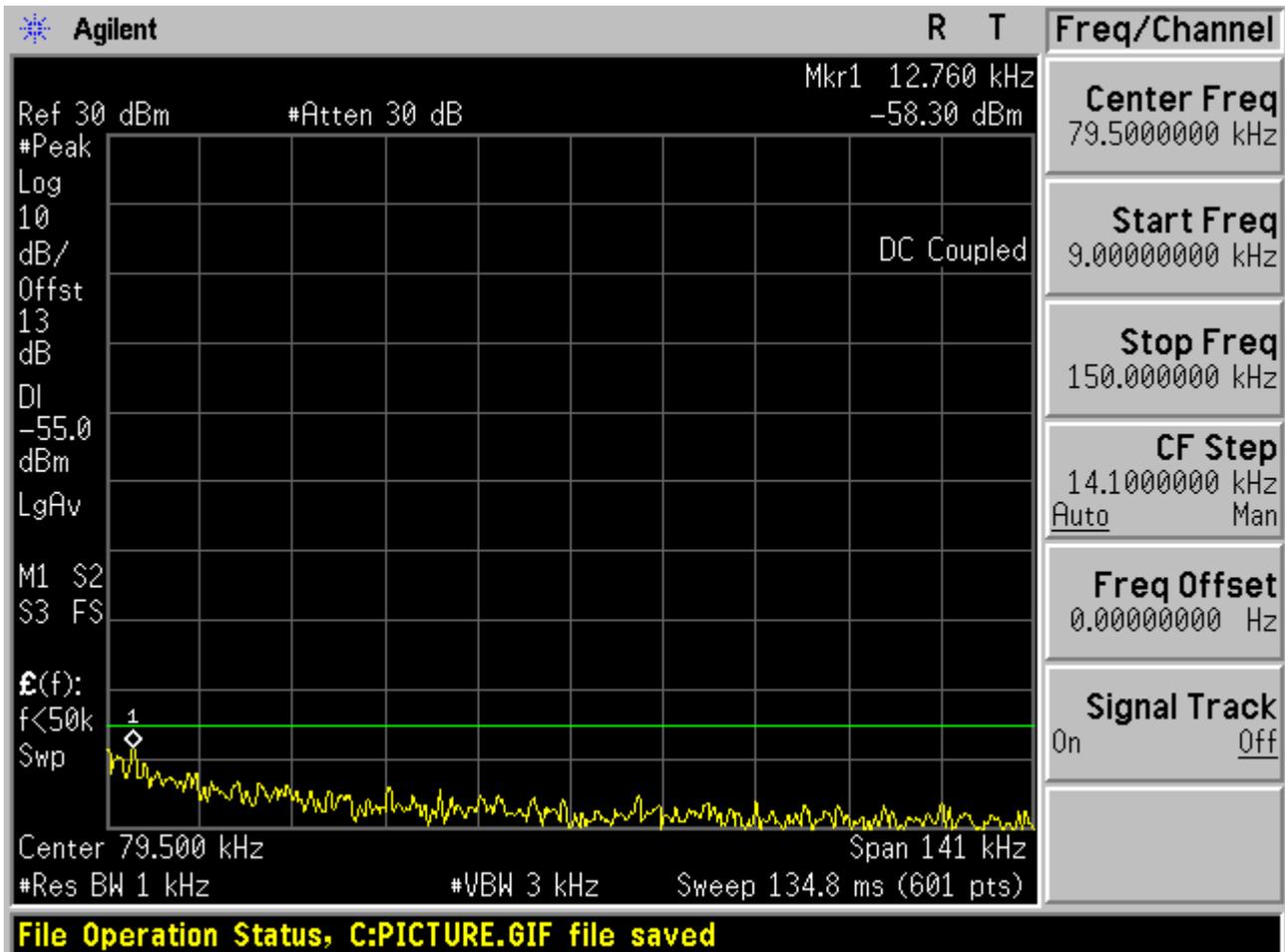


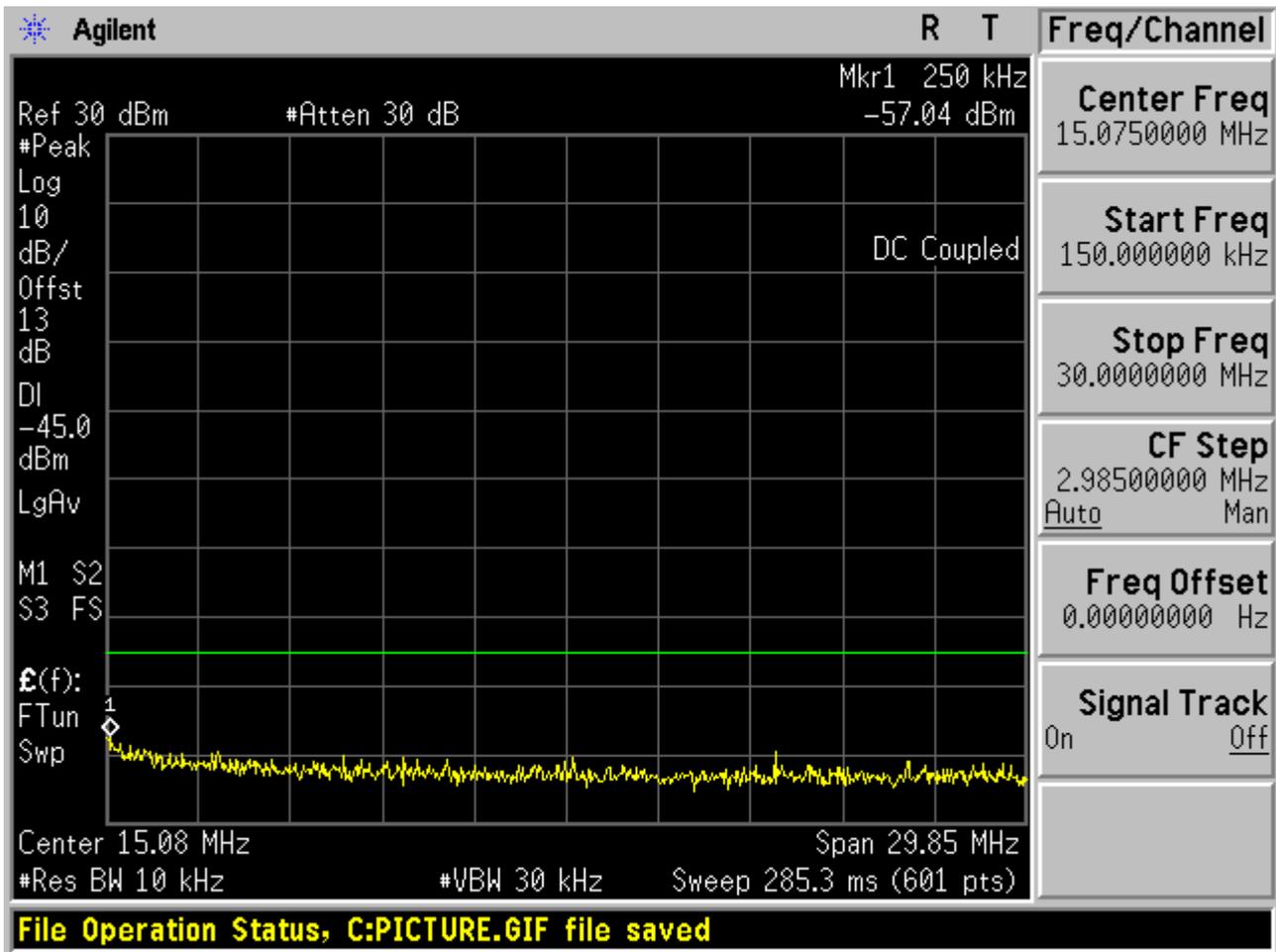


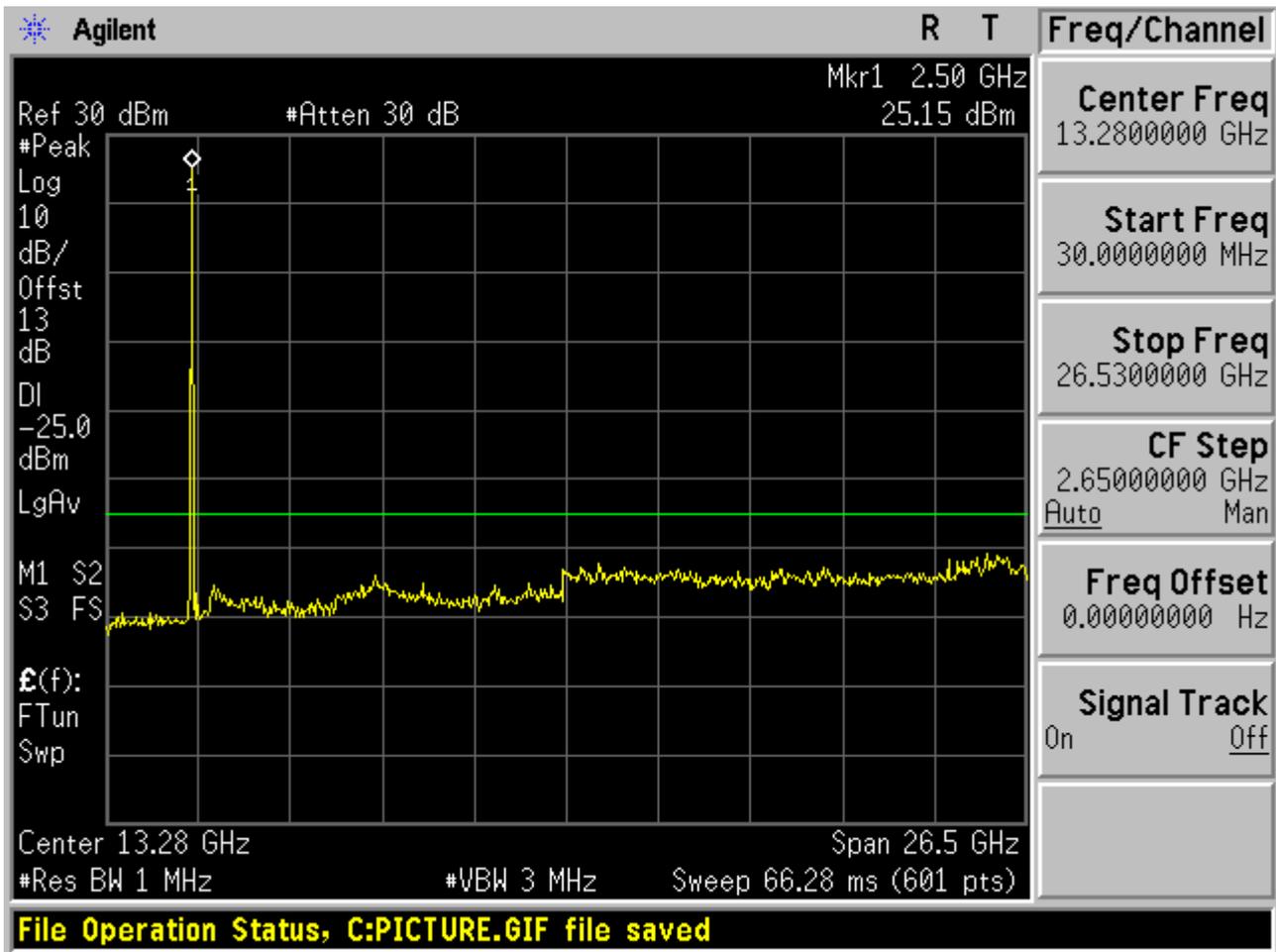
1.2.2 Channel Bandwidth = 10 MHz

1.2.2.1 Channel = L

1.2.2.1.1 16QAM /1RBs /RB #0



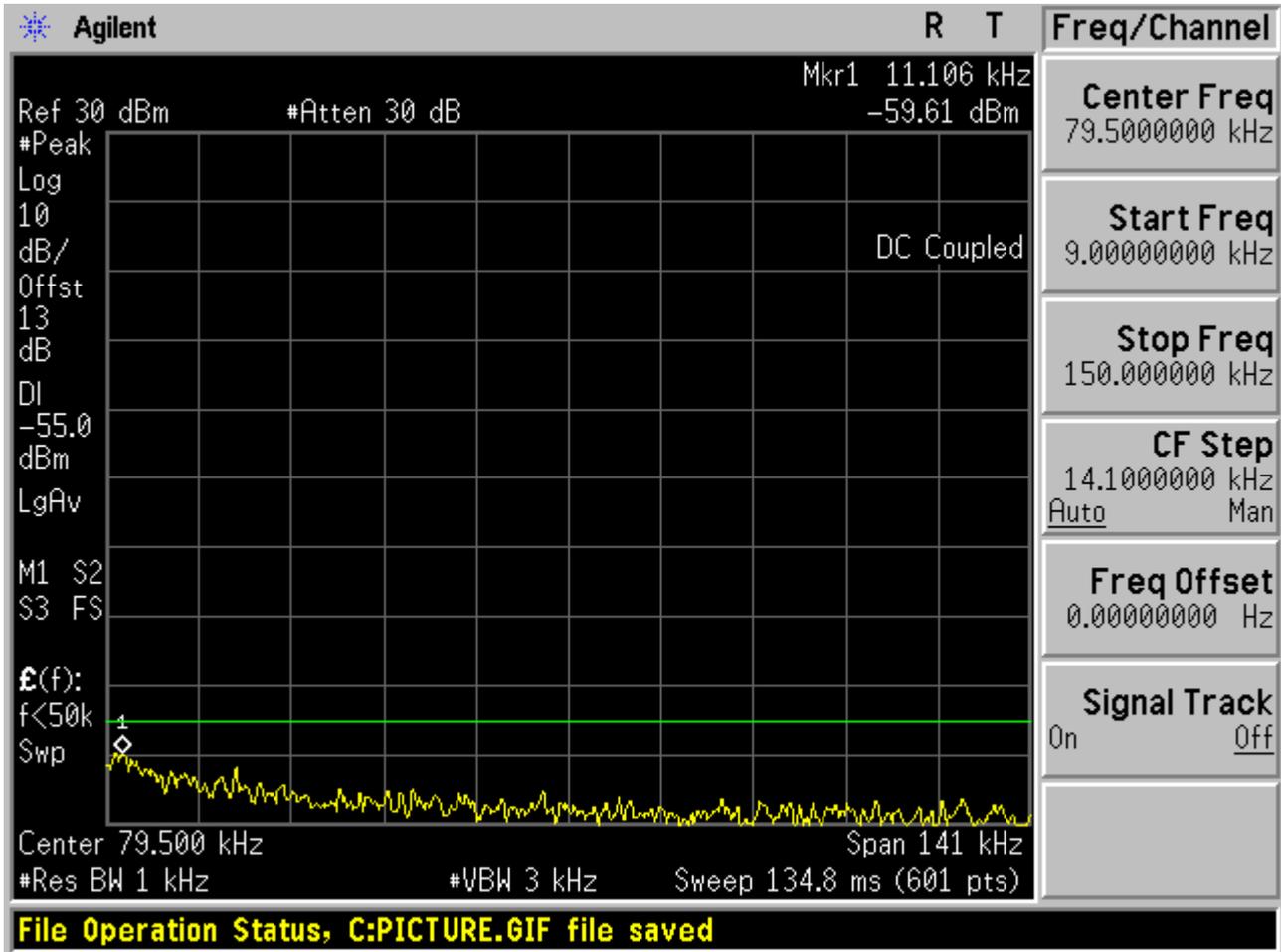


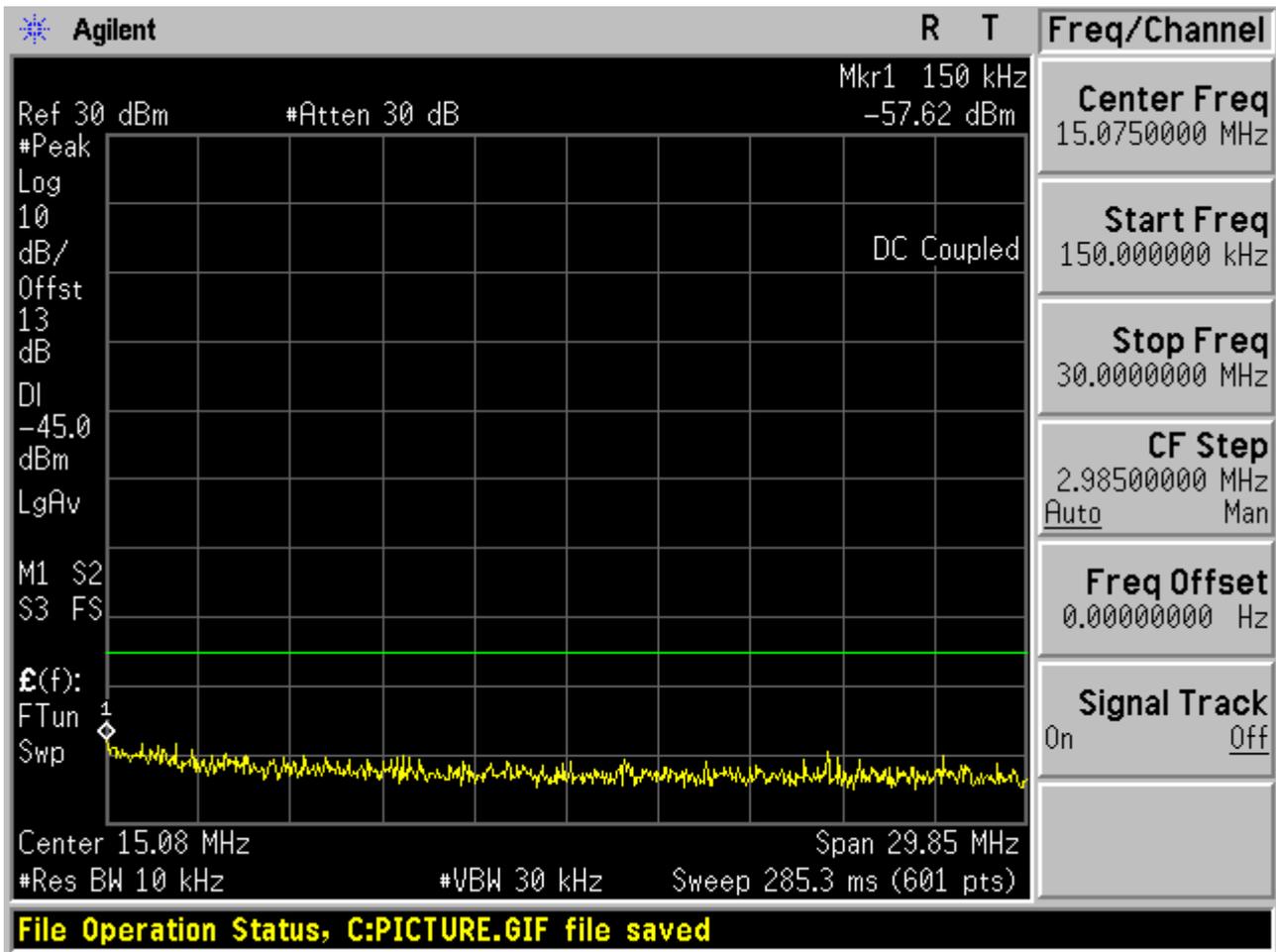


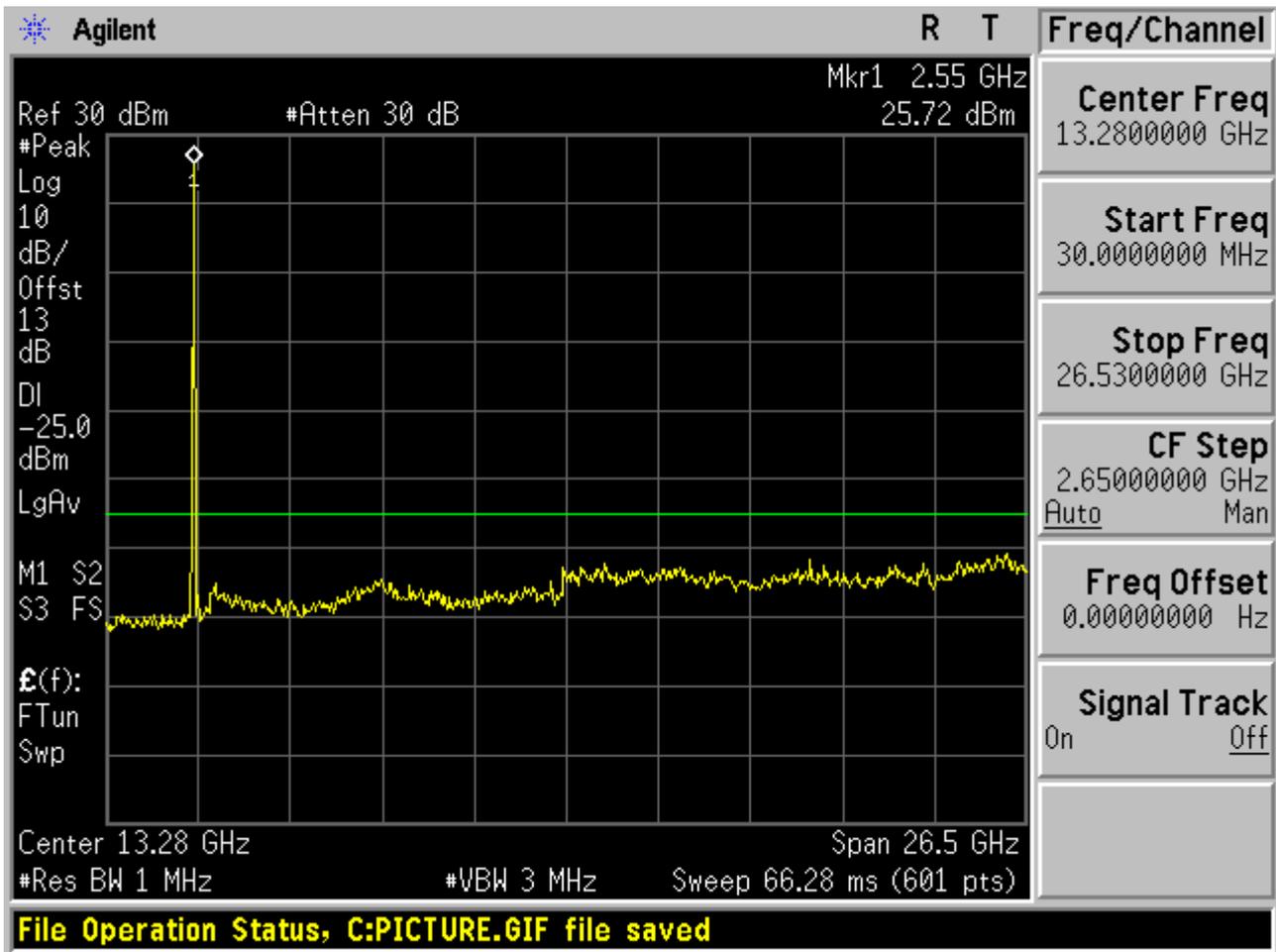


1.2.2.2 Channel = M

1.2.2.2.1 16QAM /1RBs /RB #0



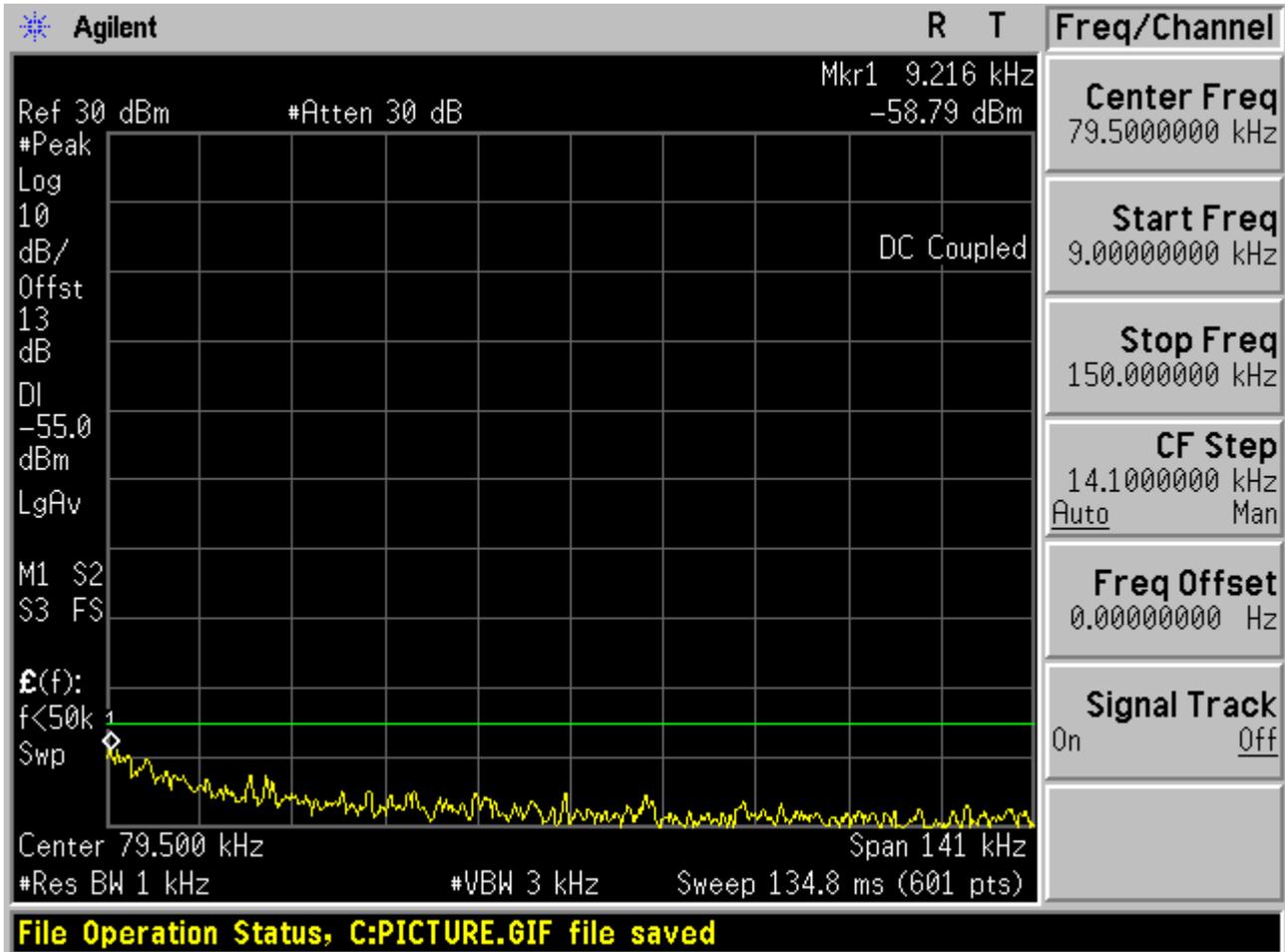


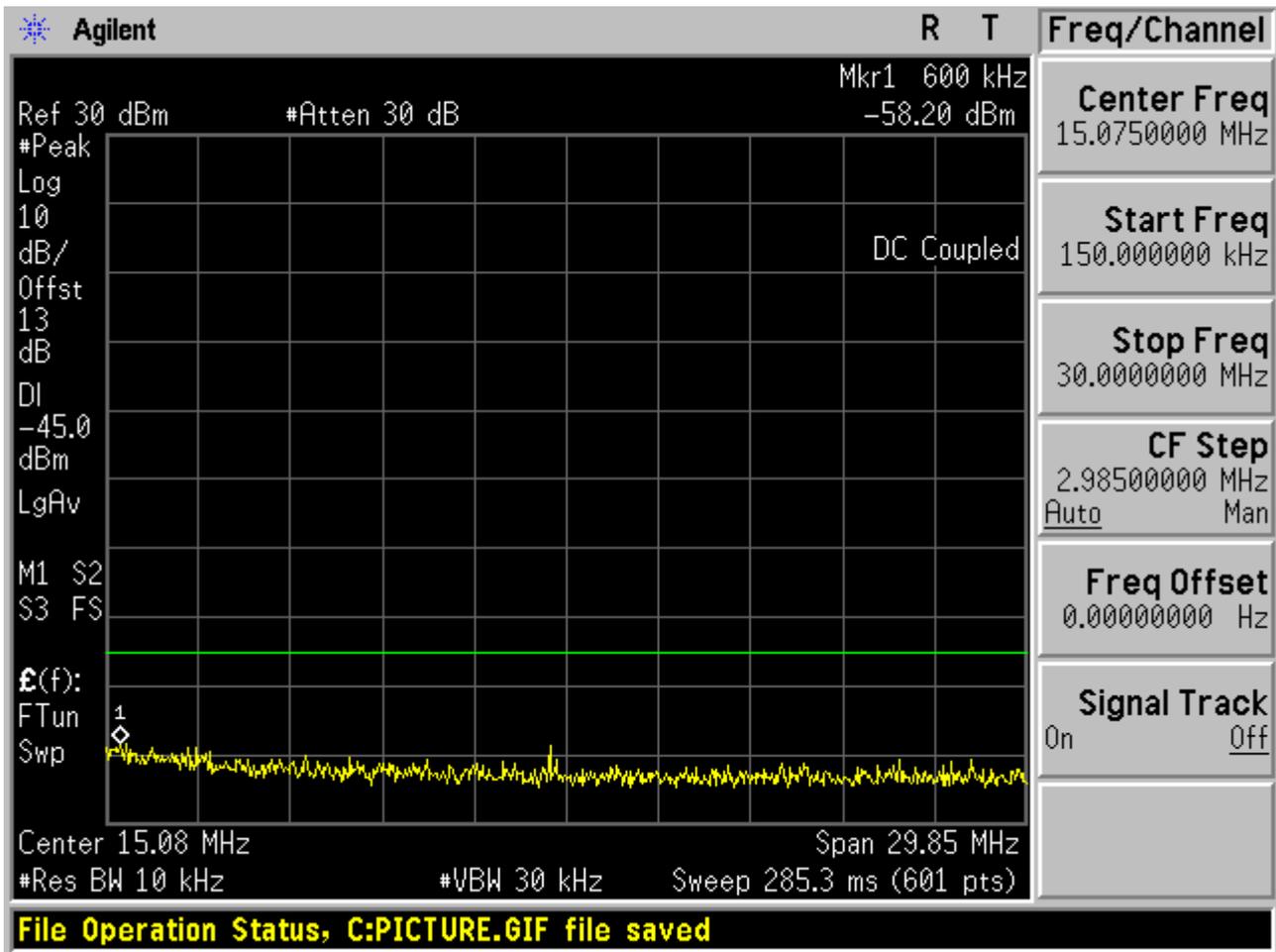


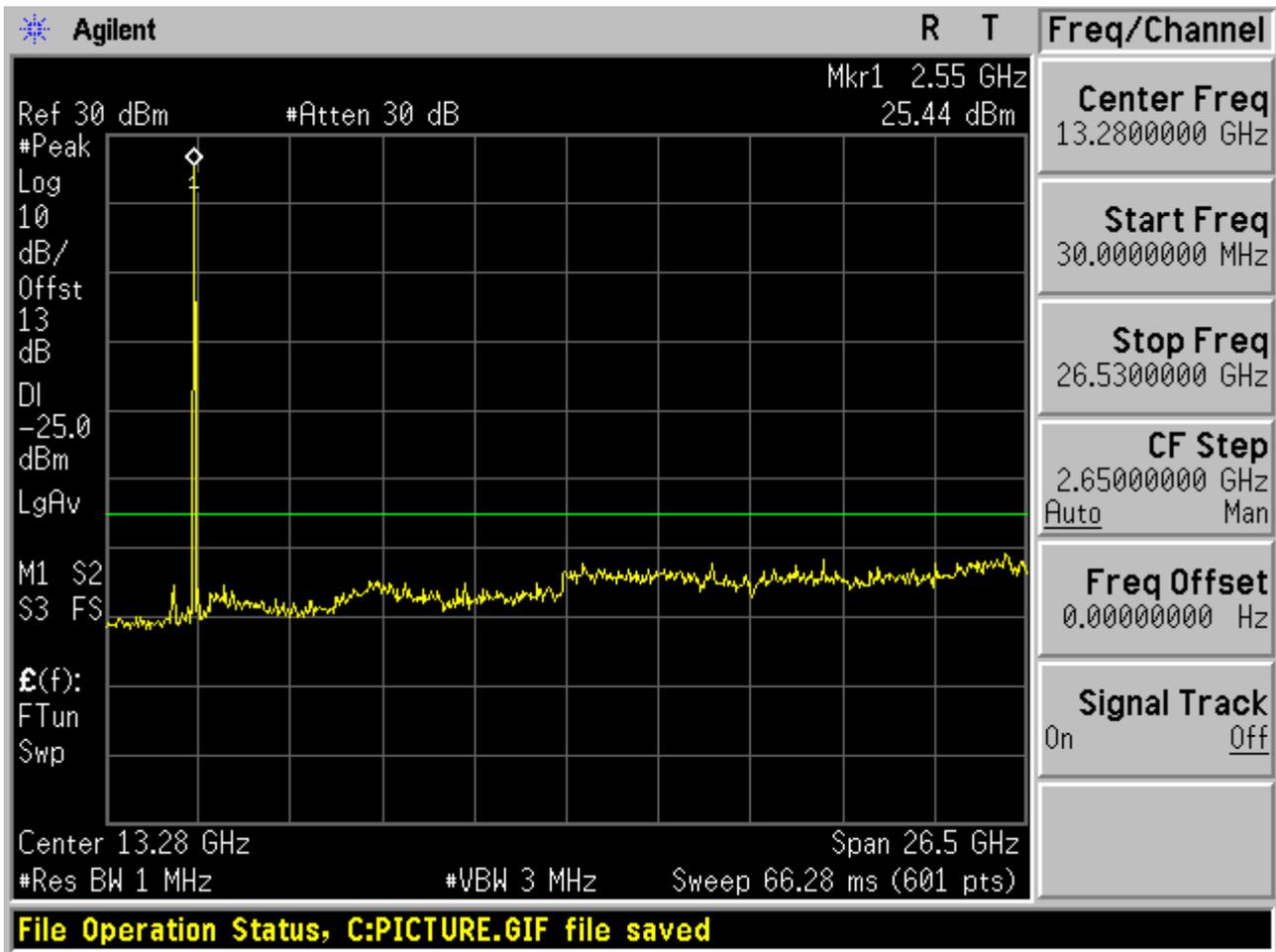


1.2.2.3 Channel = H

1.2.2.3.1 16QAM /1RBs /RB #0





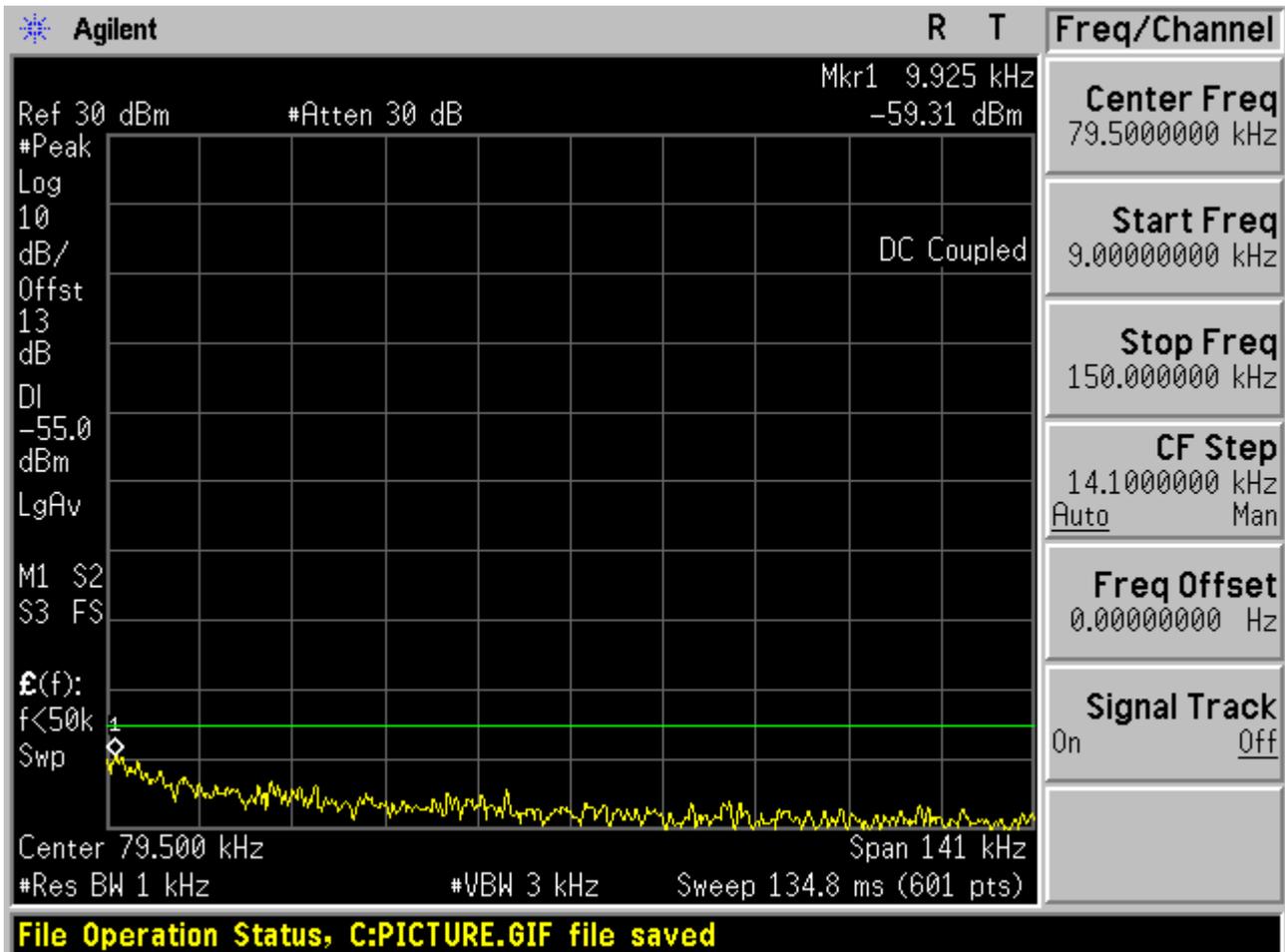


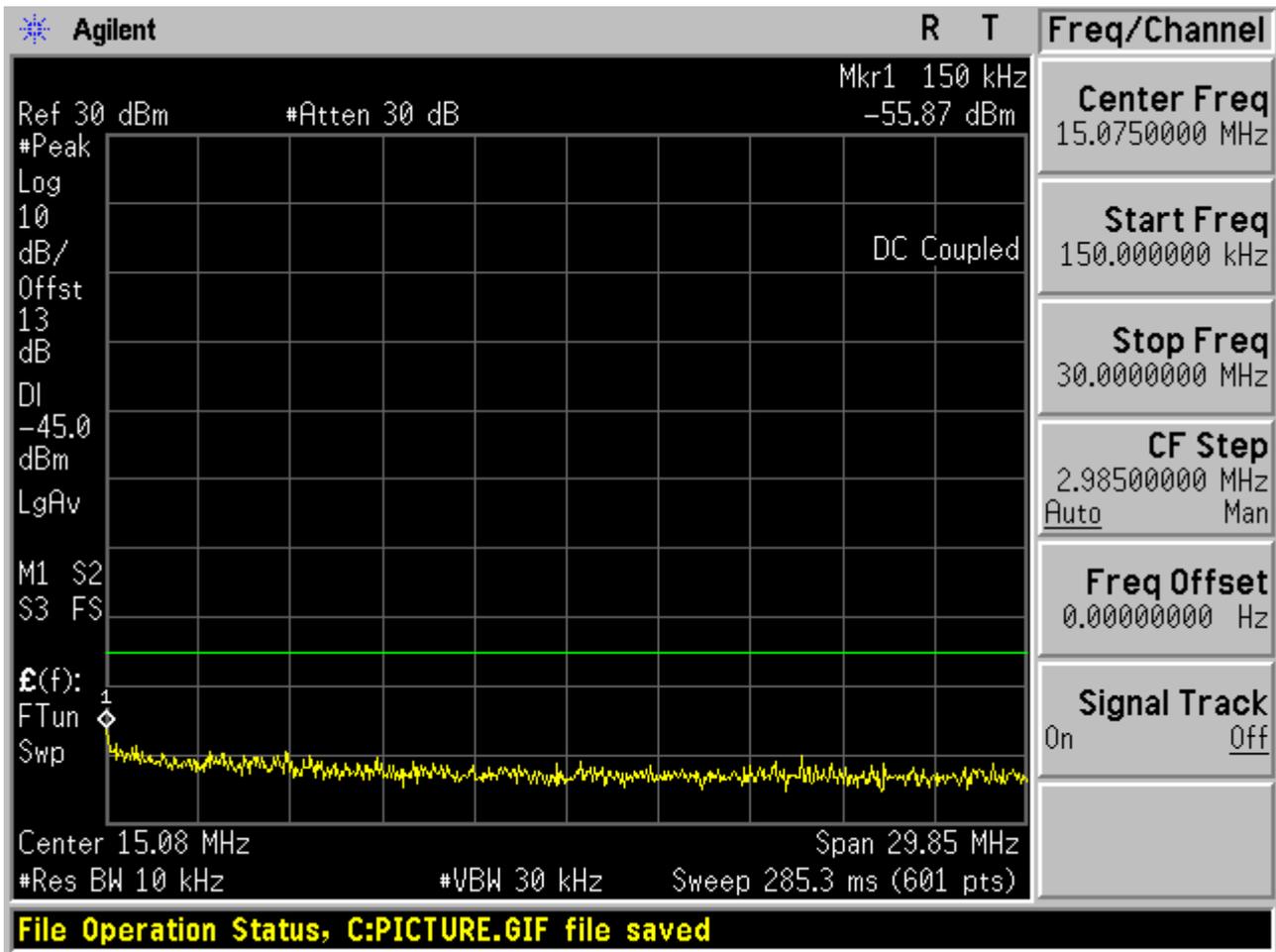


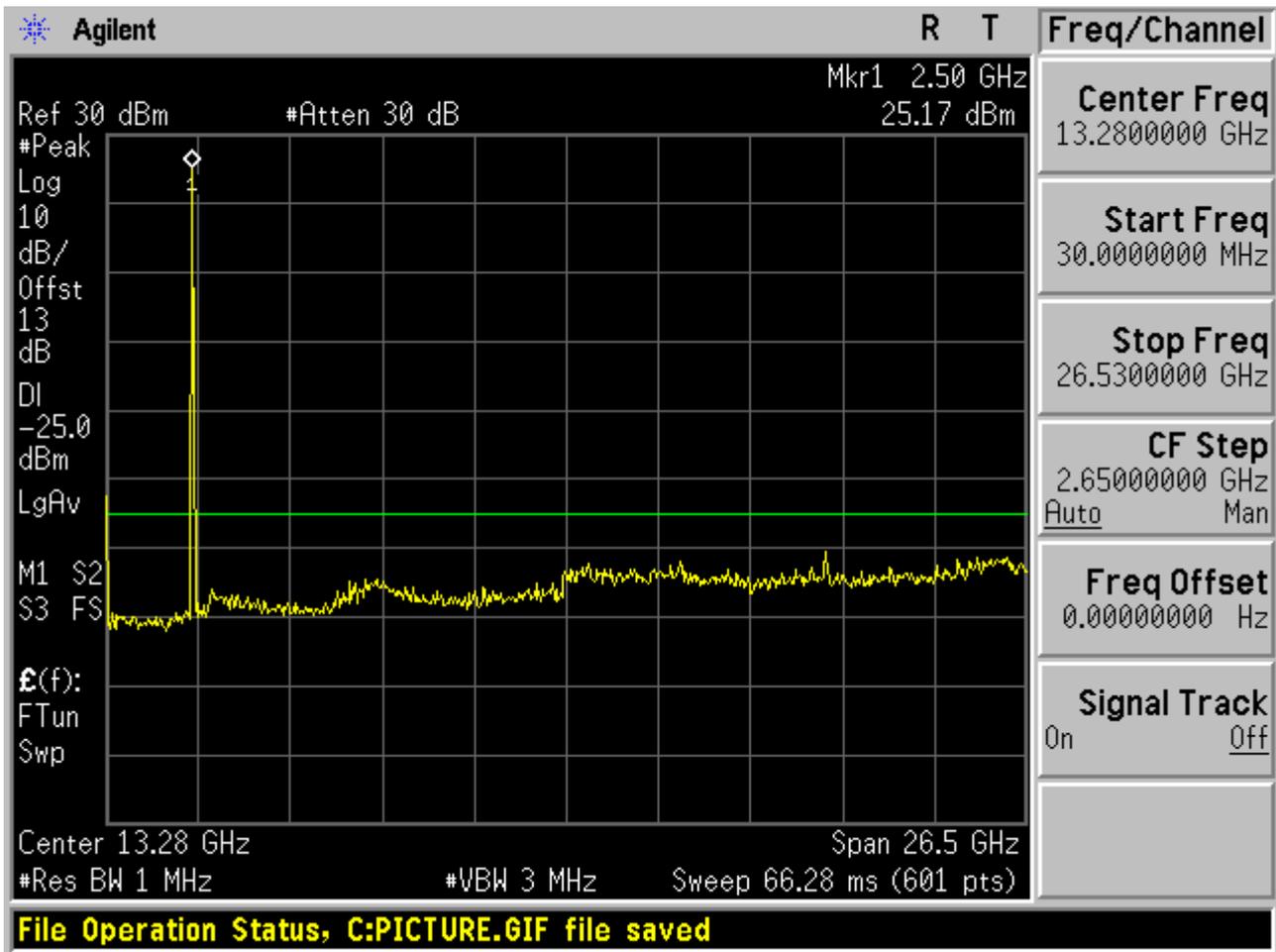
1.2.3 Channel Bandwidth = 15 MHz

1.2.3.1 Channel = L

1.2.3.1.1 16QAM /1RBs /RB #0



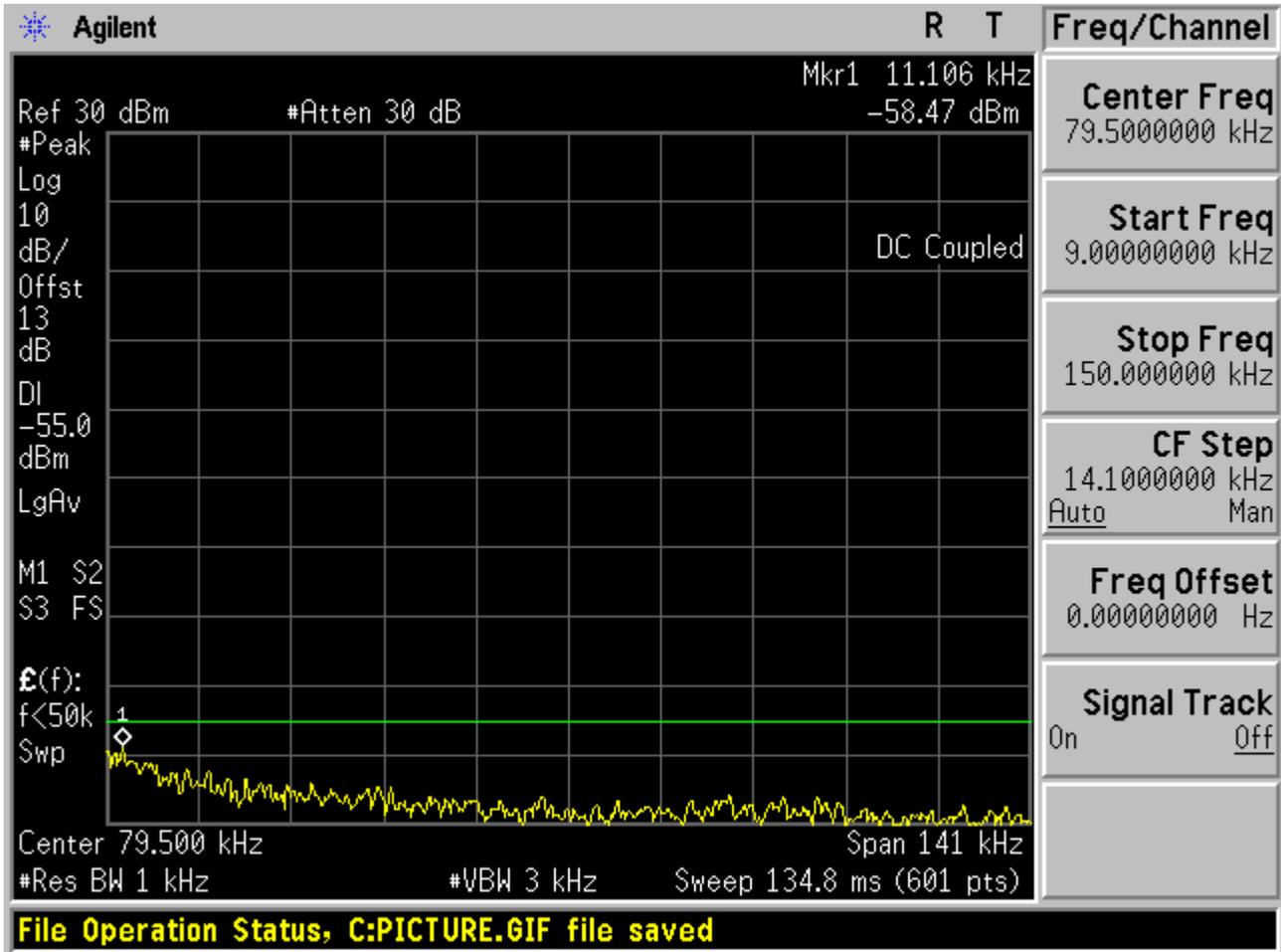


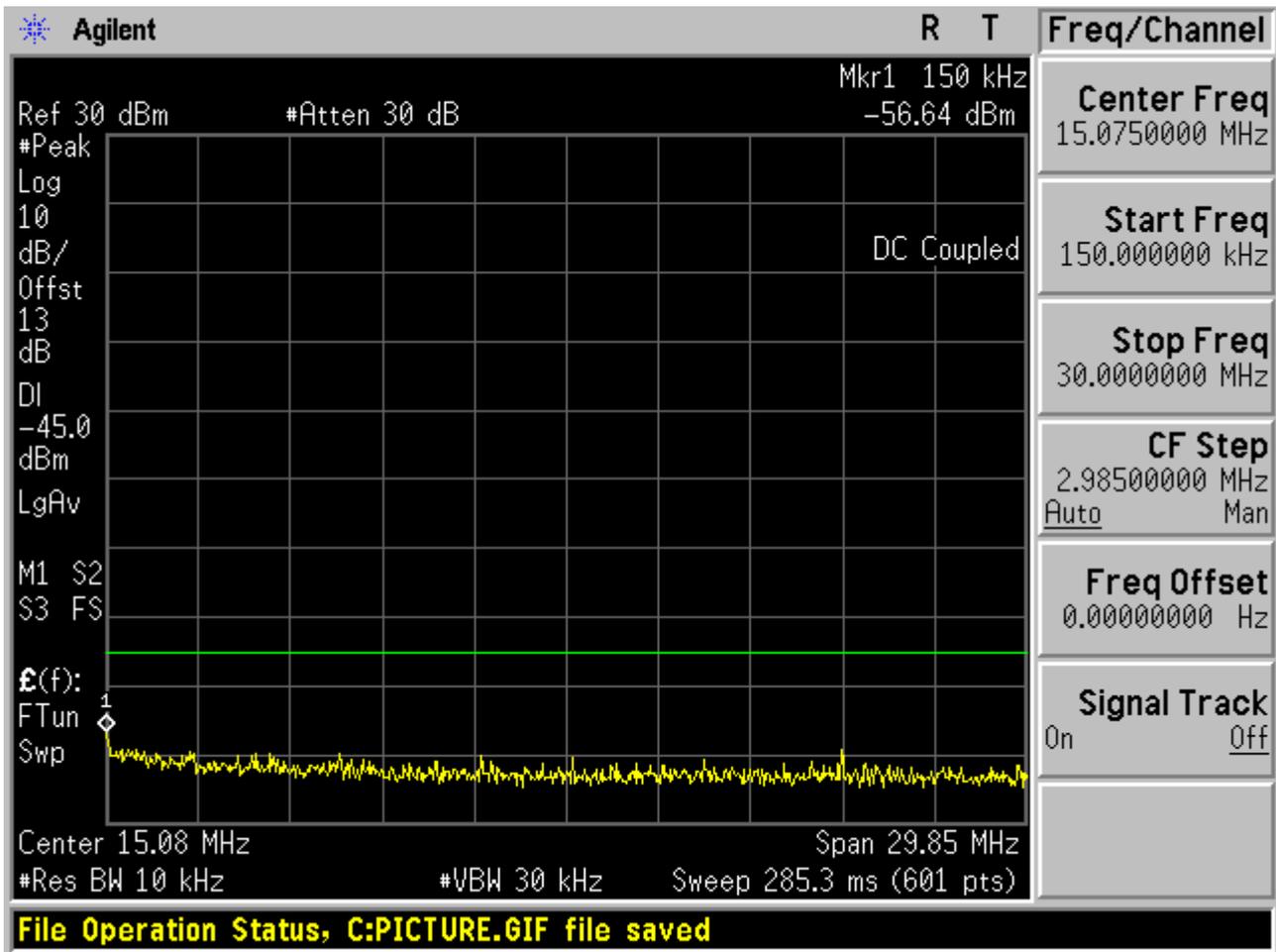


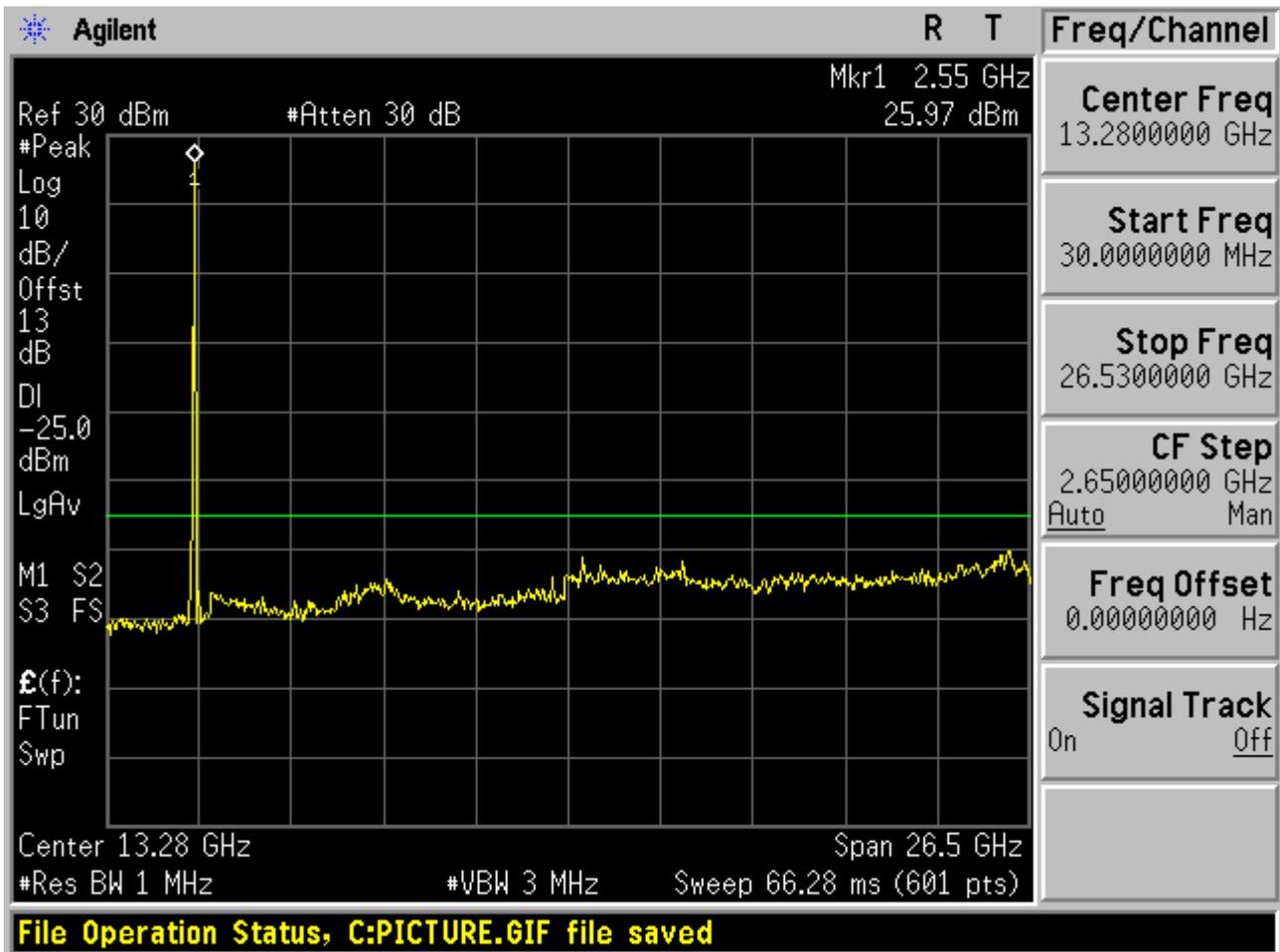


1.2.3.2 Channel = M

1.2.3.2.1 16QAM /1RBs /RB #0



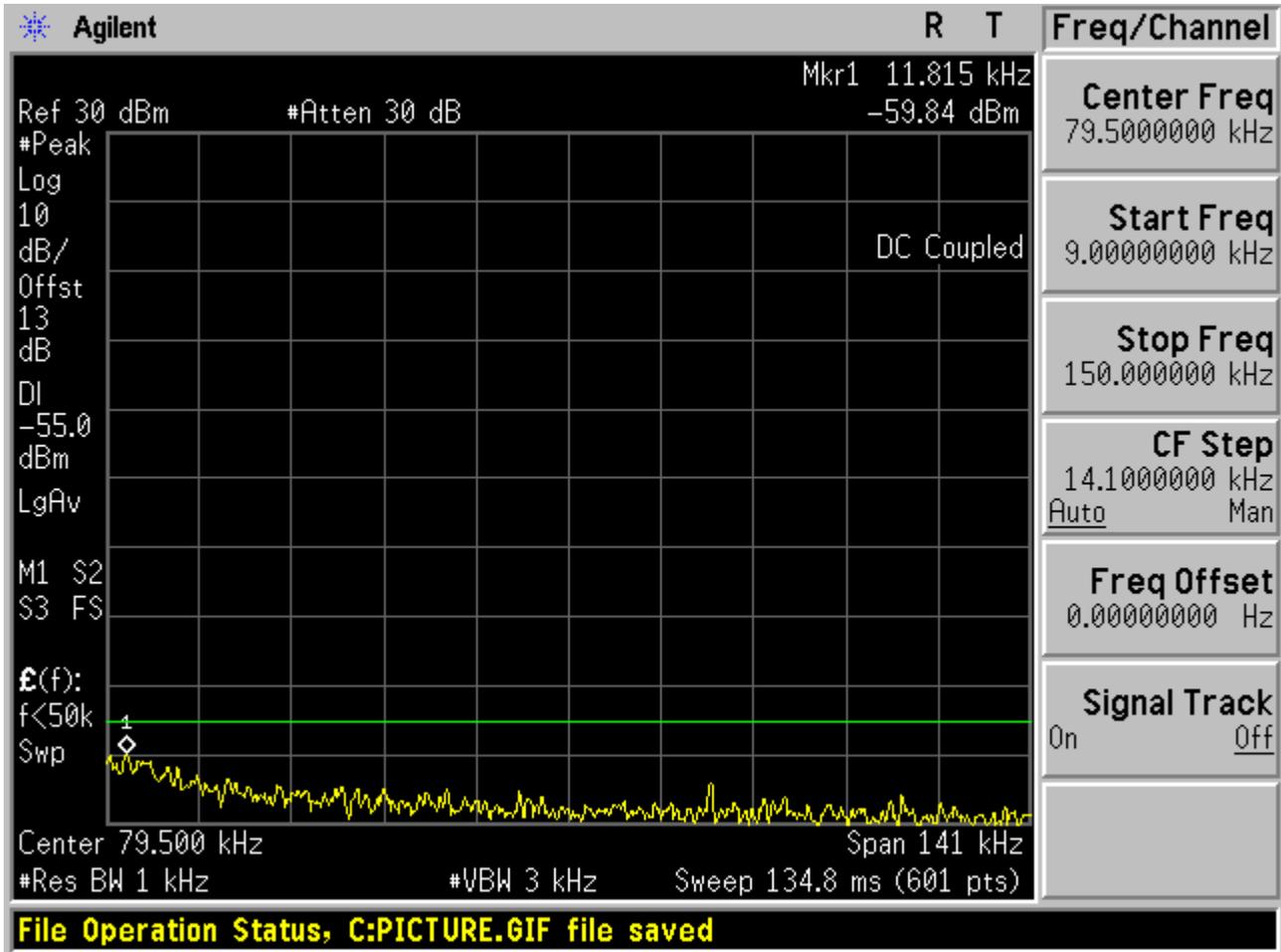


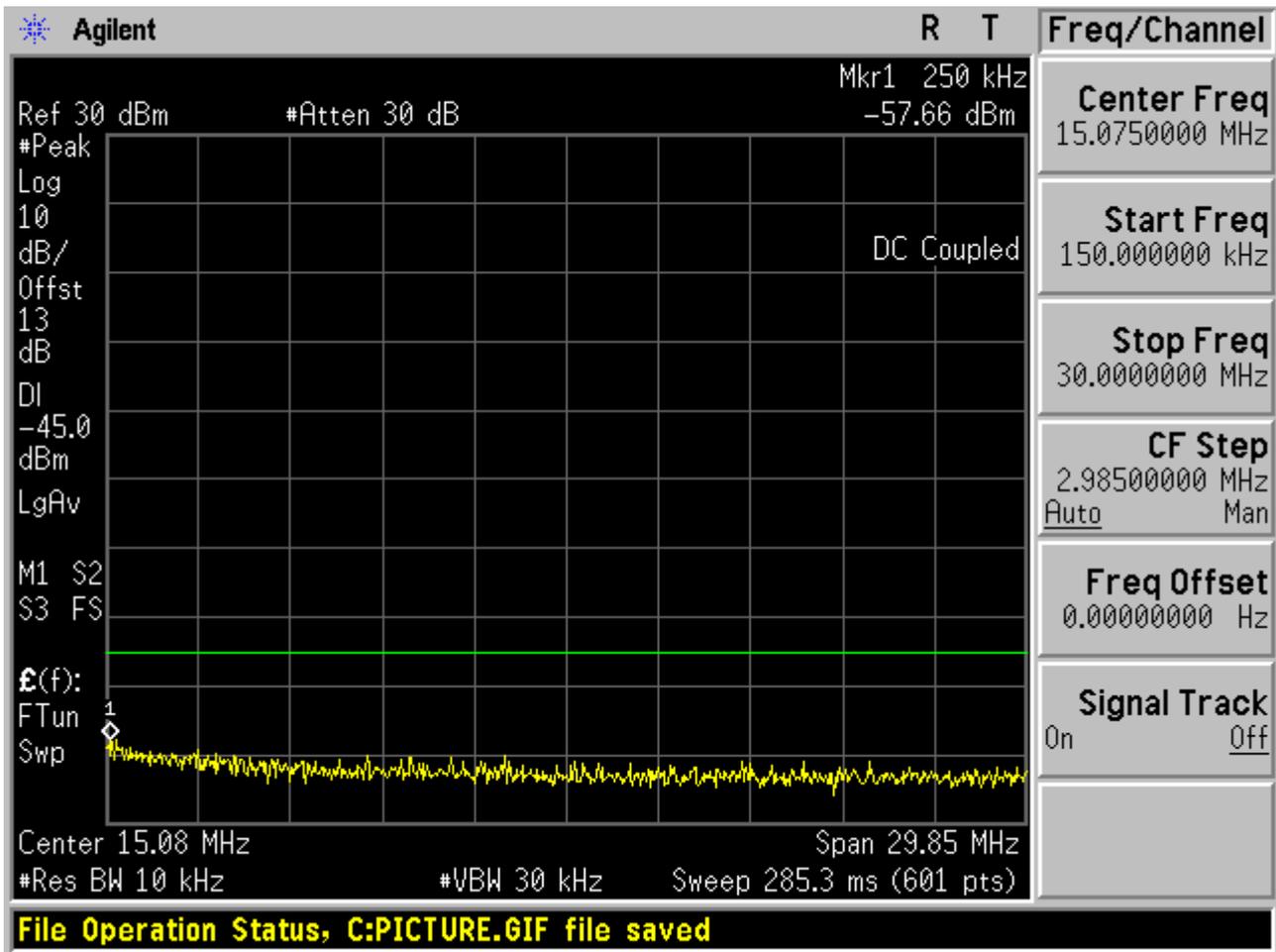


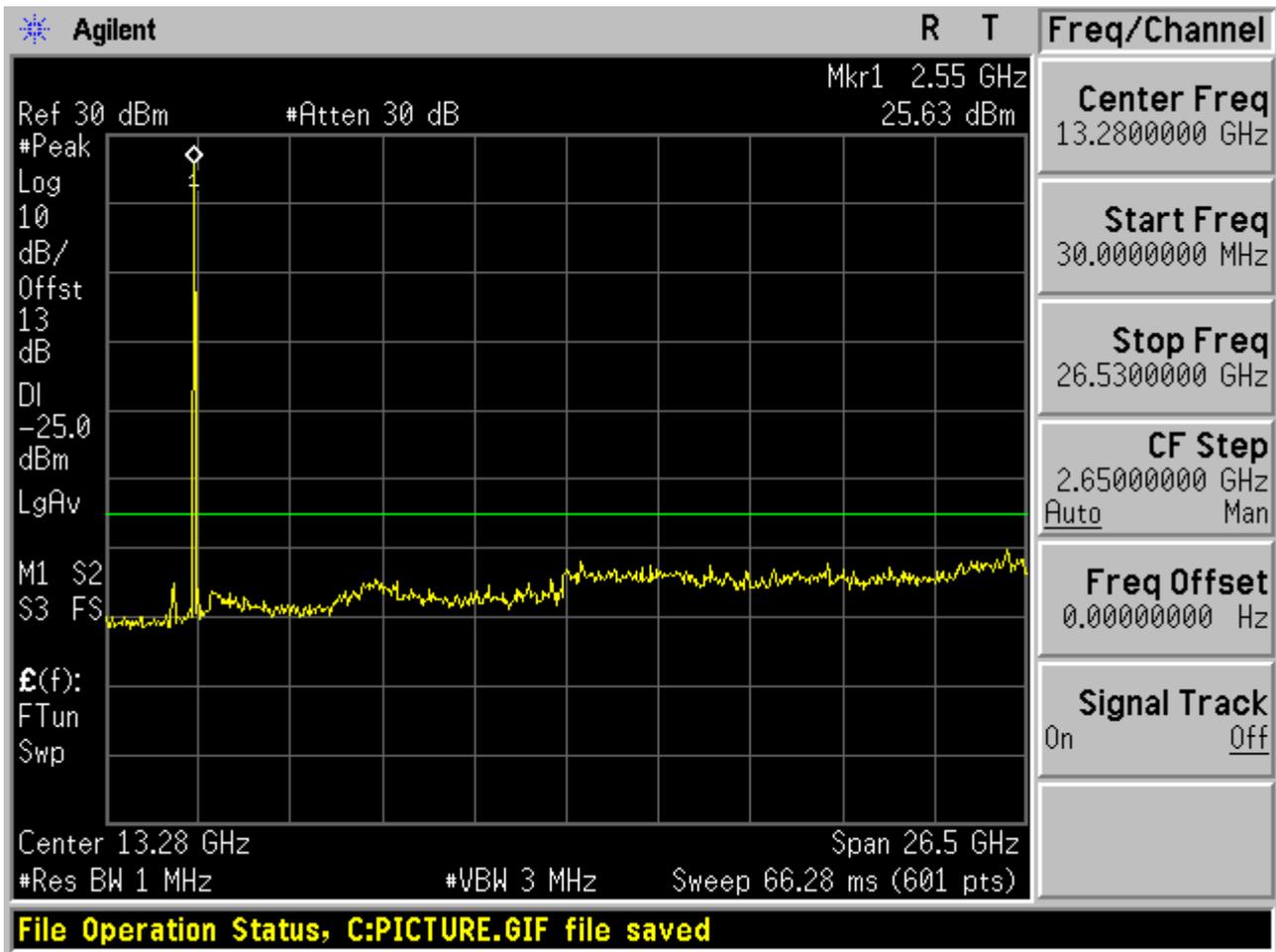


1.2.3.3 Channel = H

1.2.3.3.1 16QAM /1RBs /RB #0





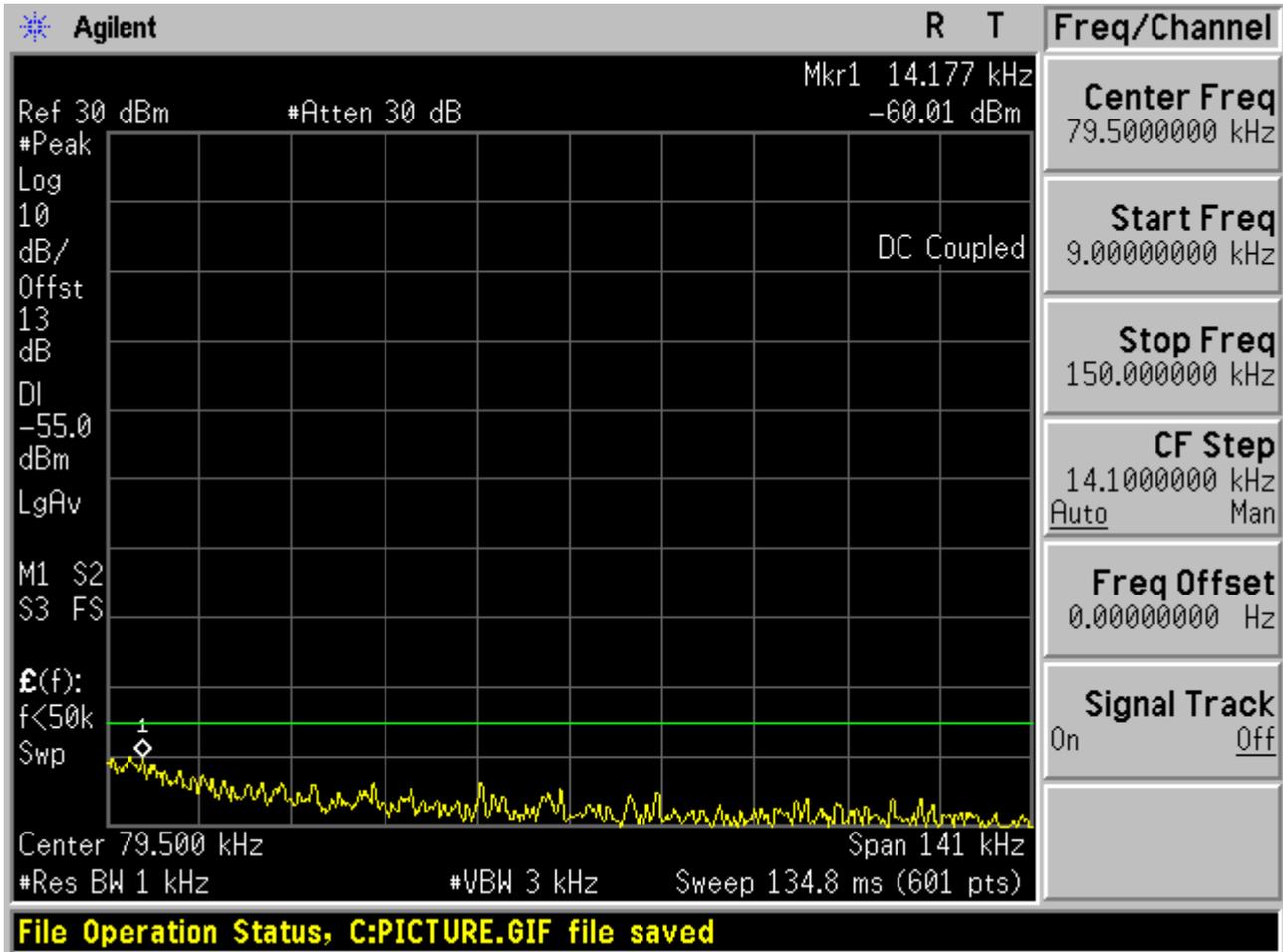


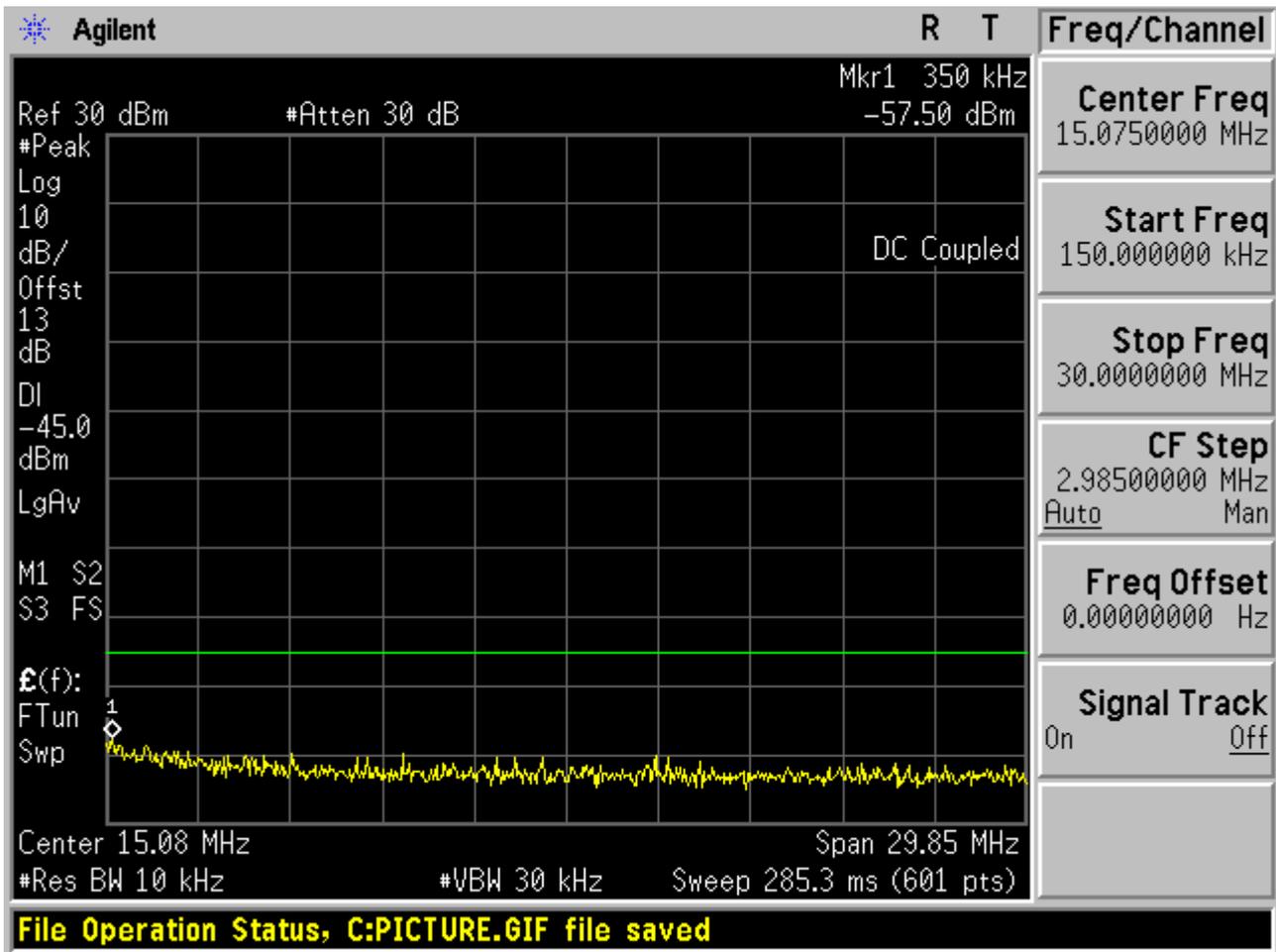


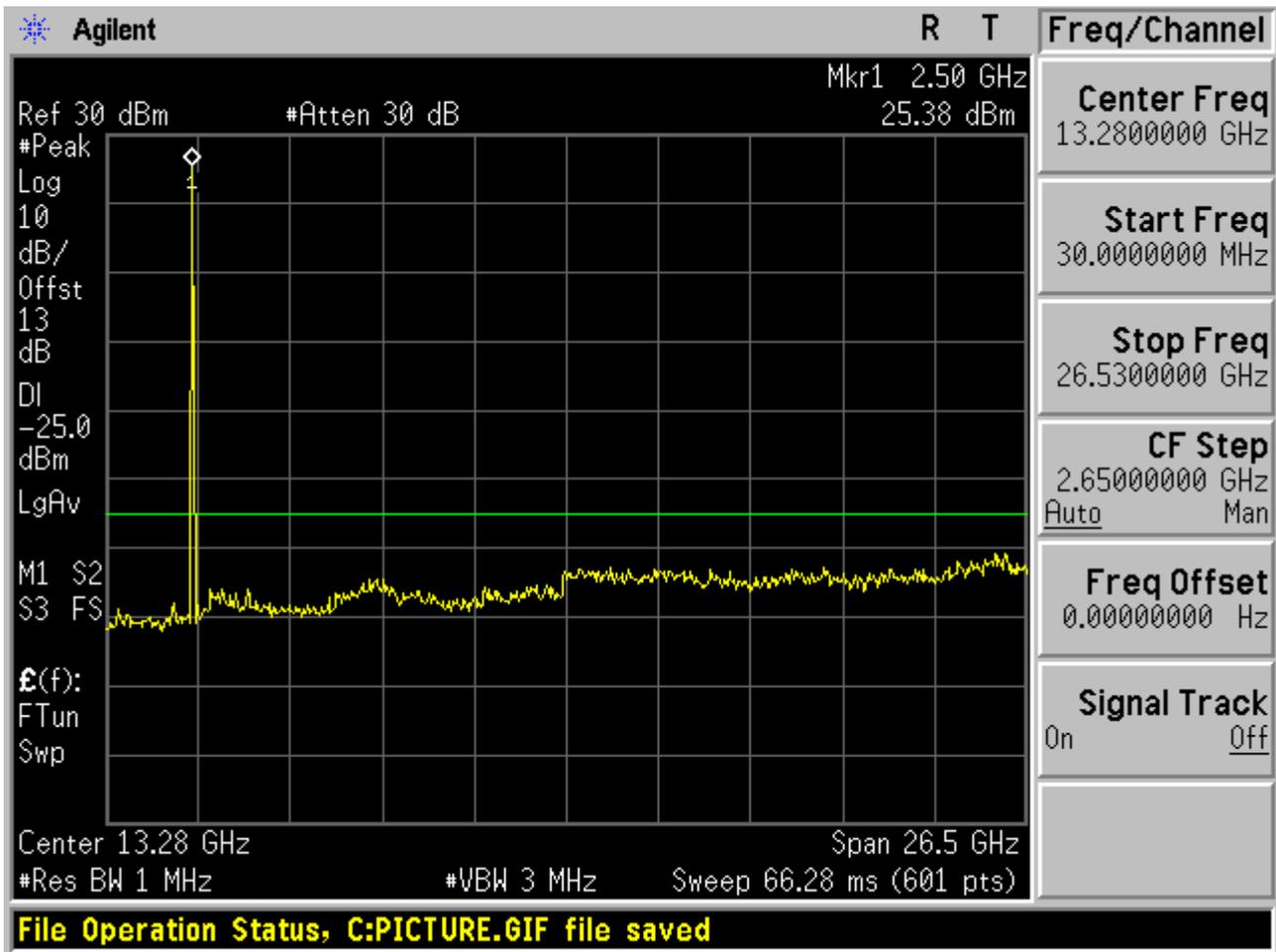
1.2.4 Channel Bandwidth = Highest (20 MHz)

1.2.4.1 Channel = L

1.2.4.1.1 16QAM /1RBs /RB #0



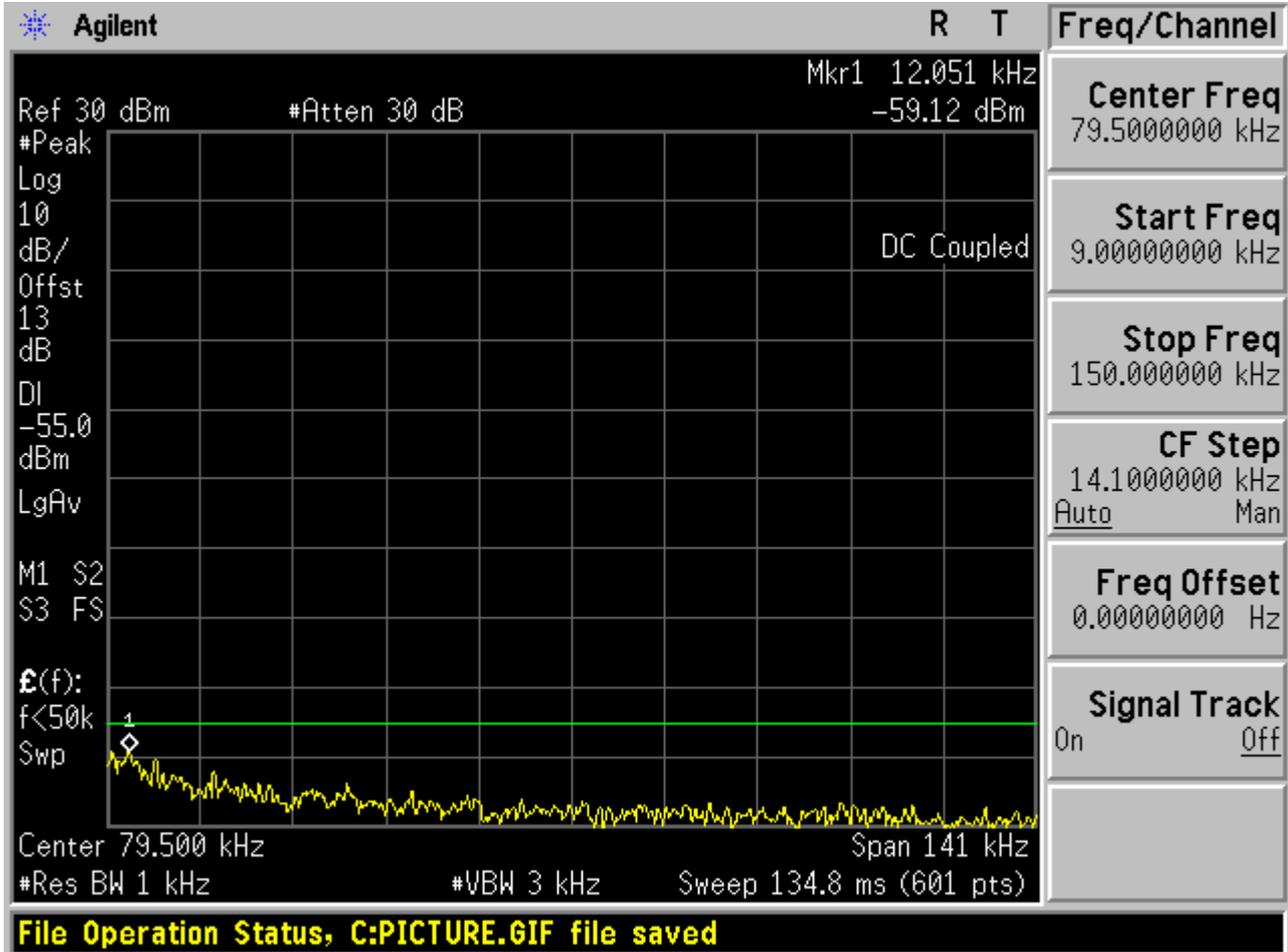


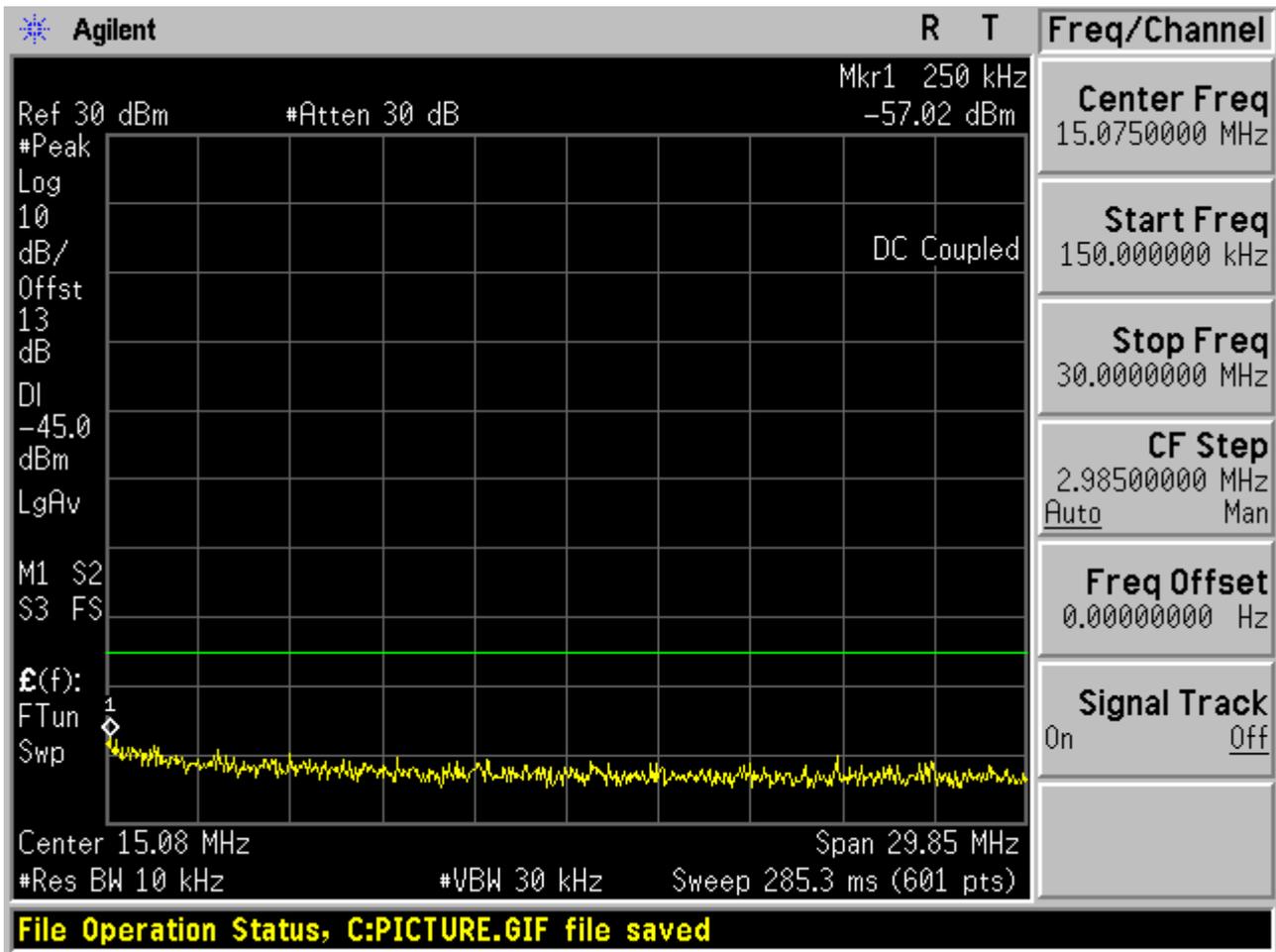


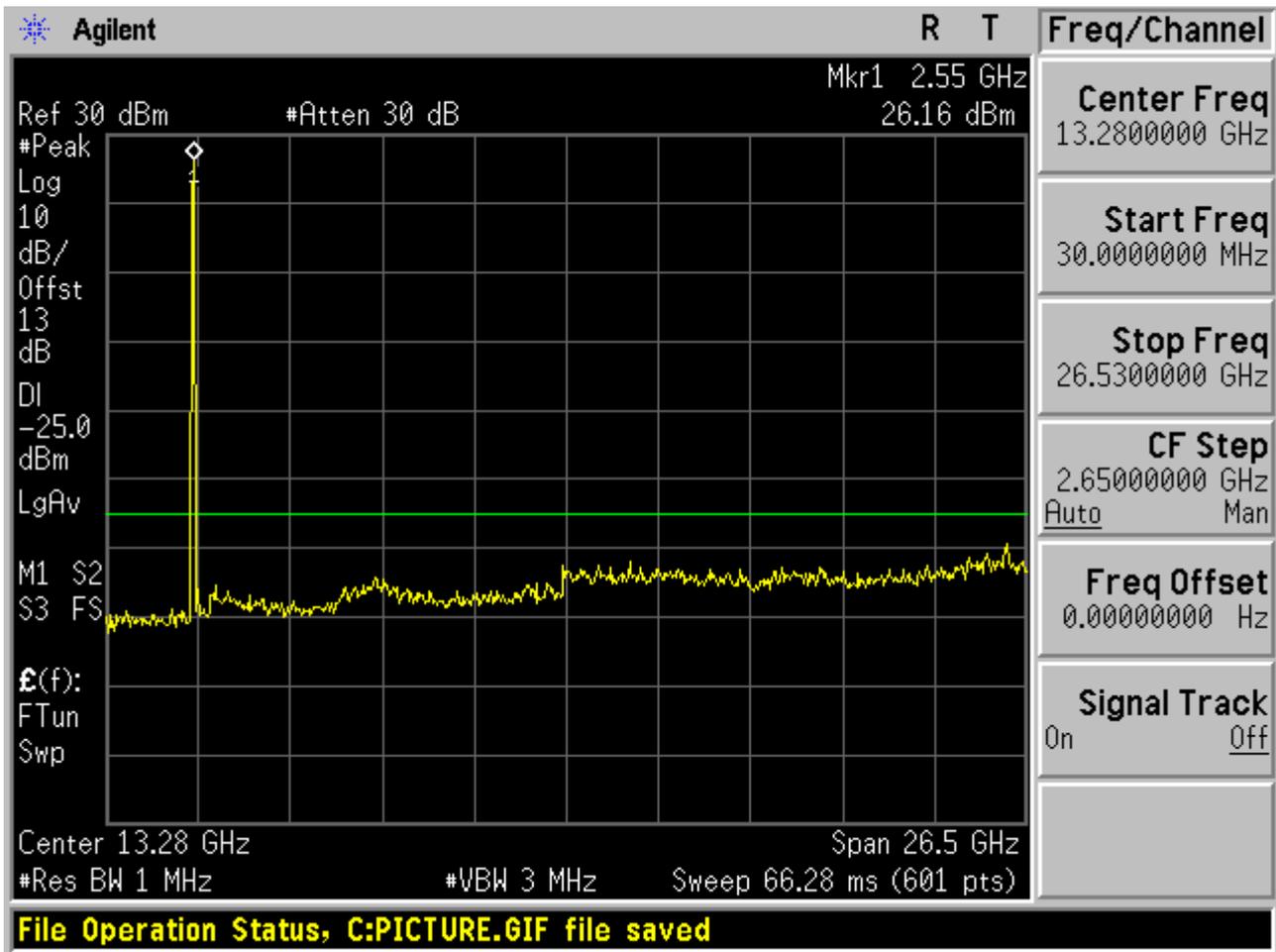


1.2.4.2 Channel = M

1.2.4.2.1 16QAM /1RBs /RB #0



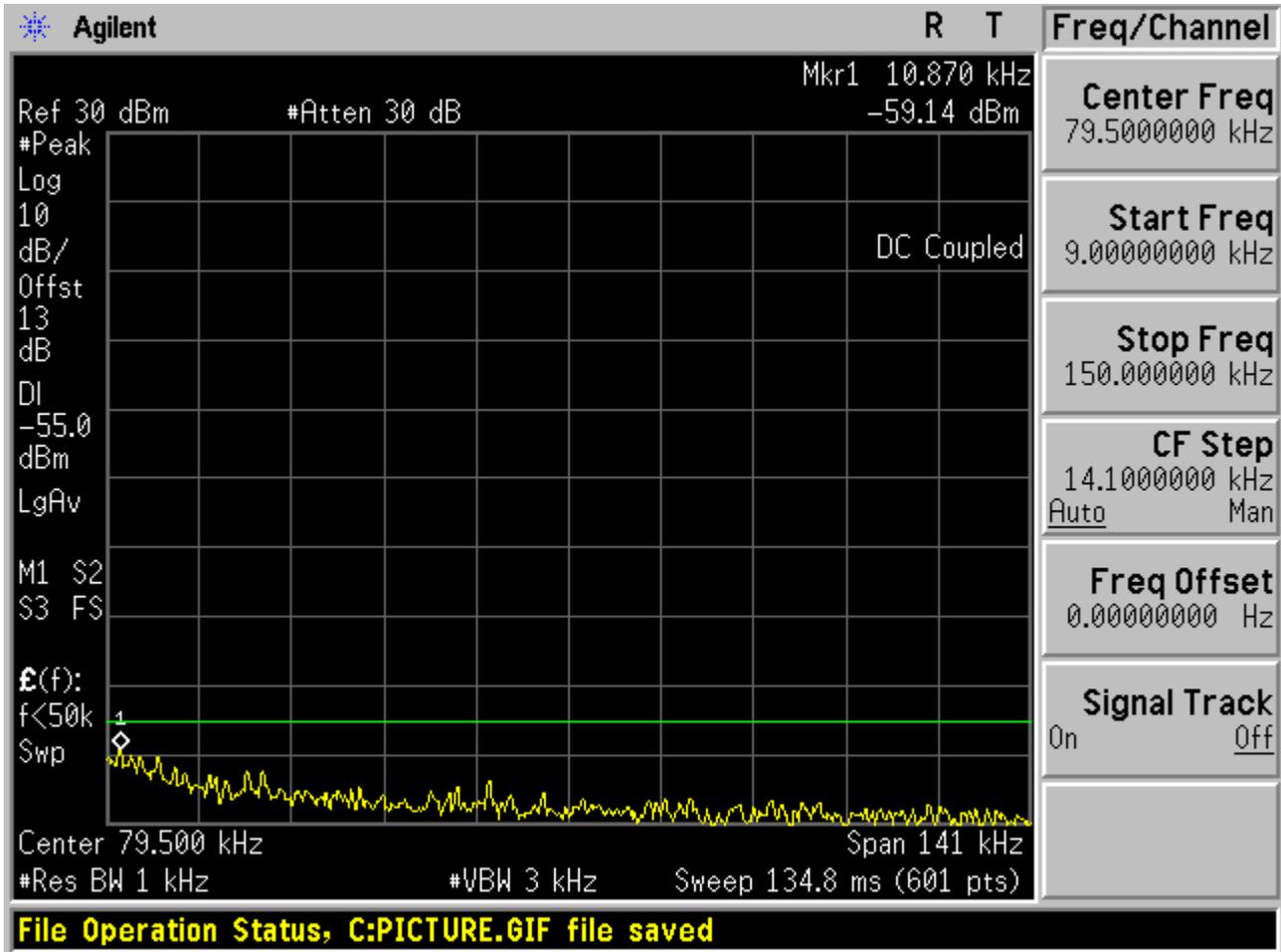


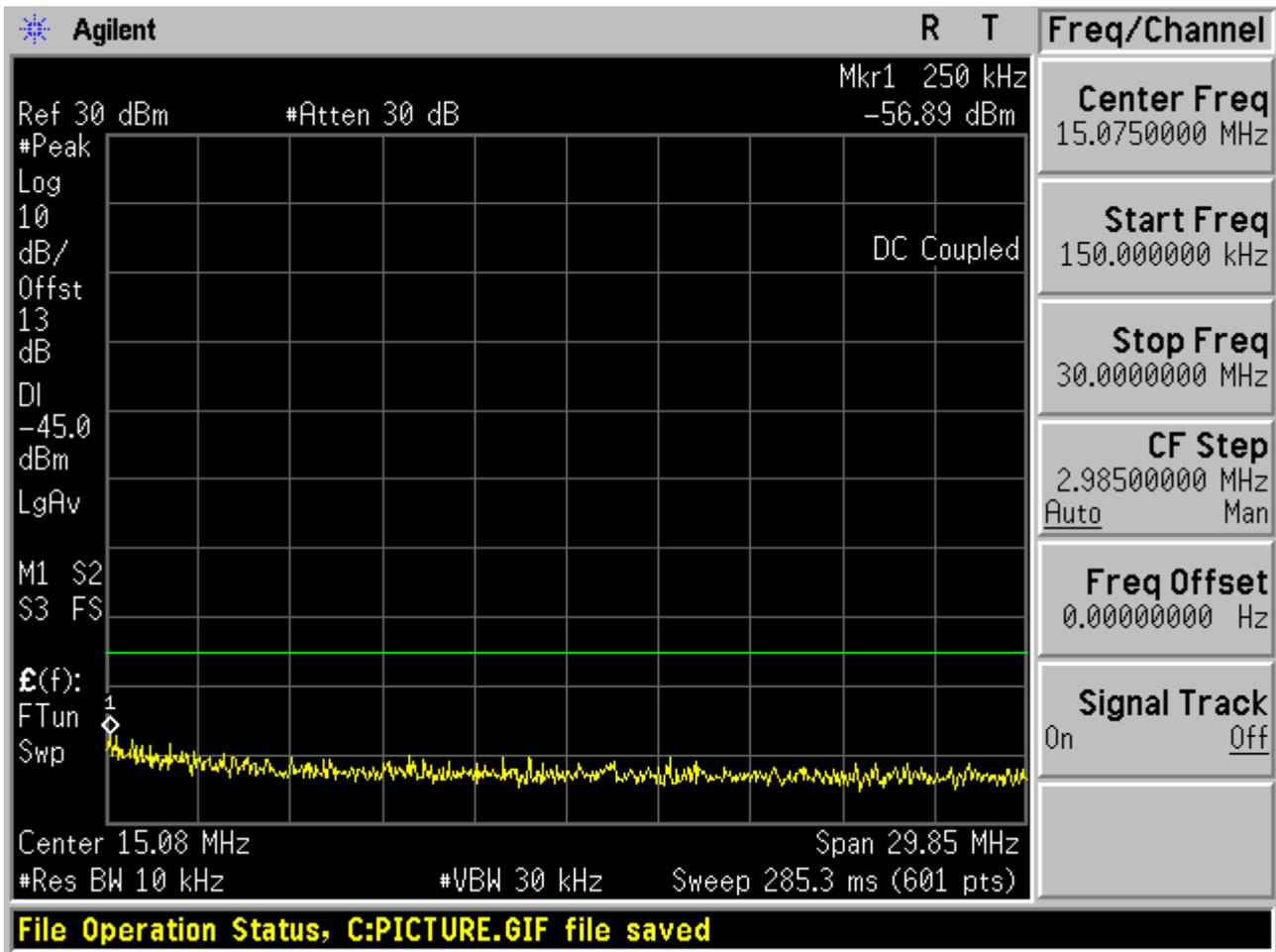


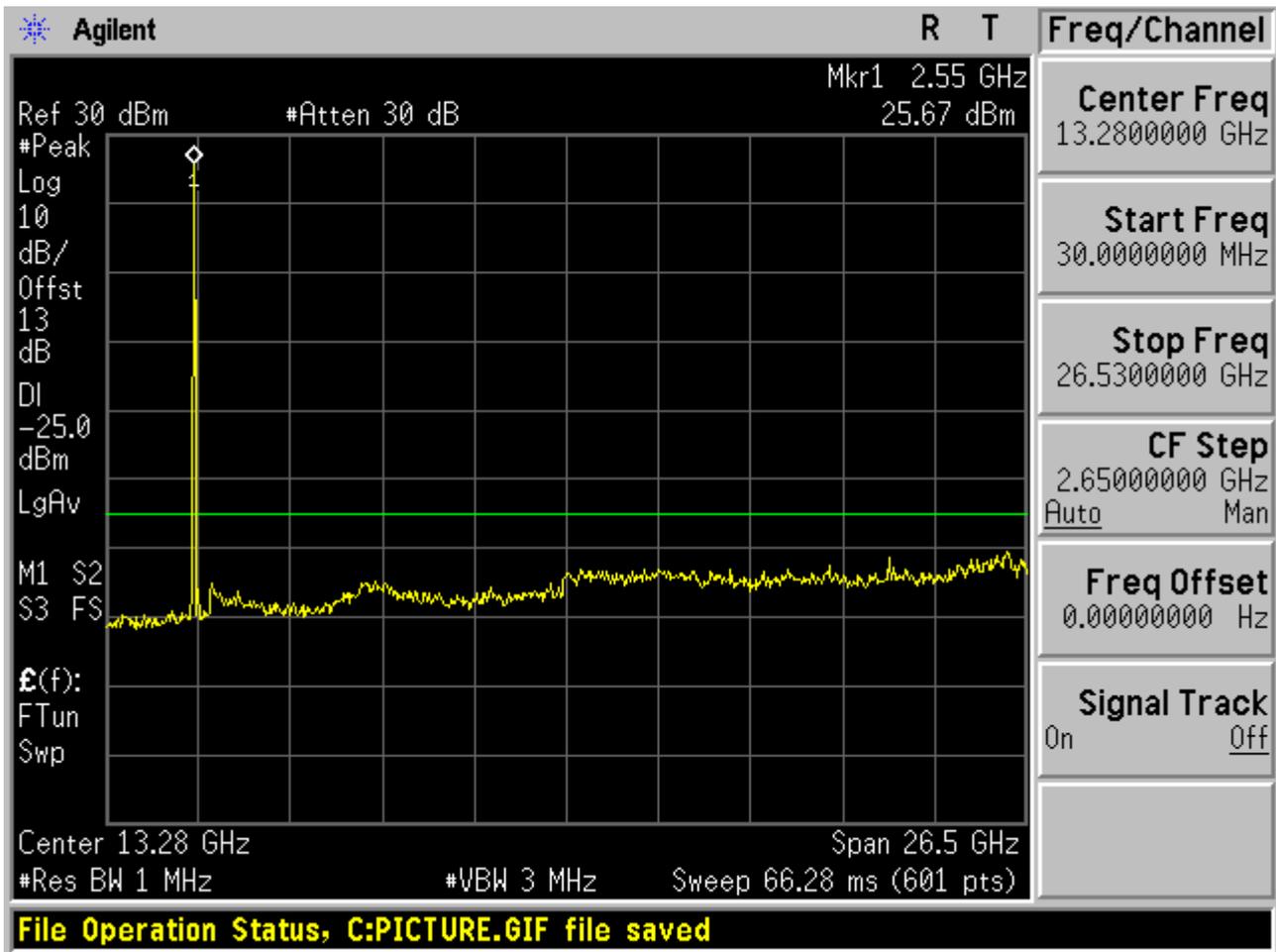


1.2.4.3 Channel = H

1.2.4.3.1 16QAM /1RBs /RB #0







END



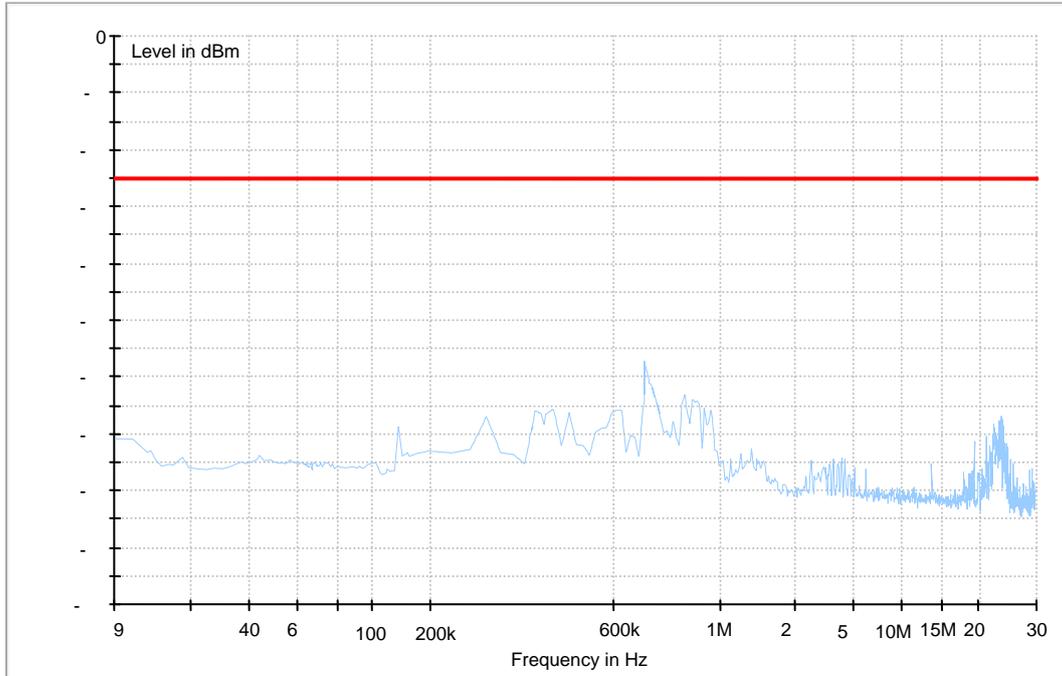
Appendix E

Radiated spurious emission



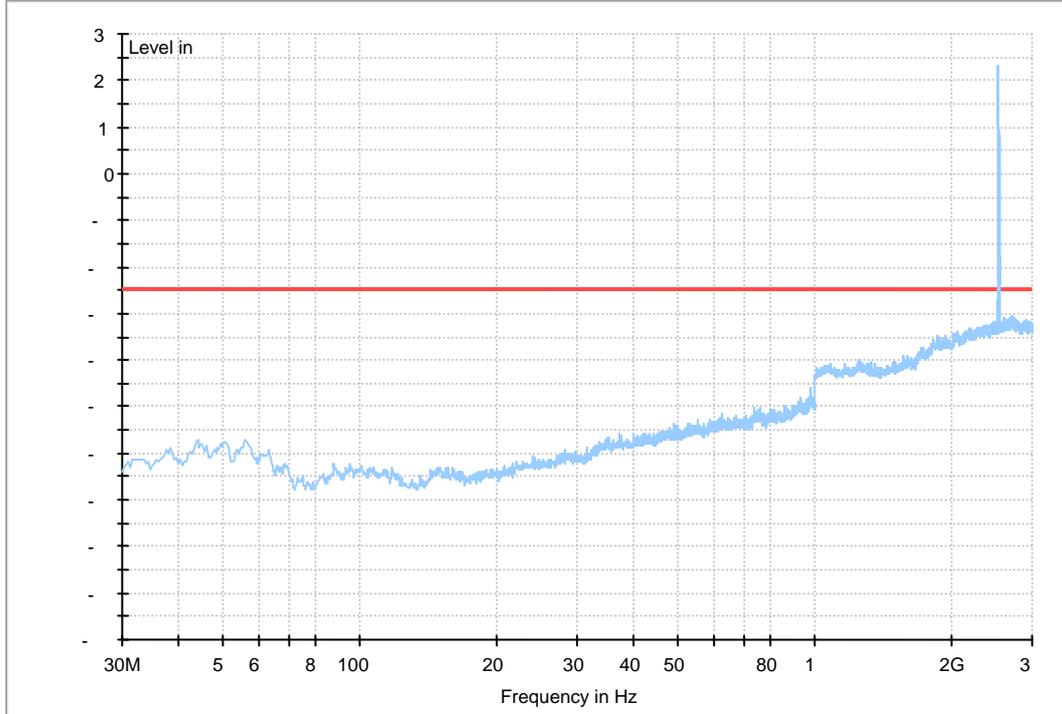
LTE Band 7 (BW=5MHz)

Traffic Mode (9kHz-30MHz)



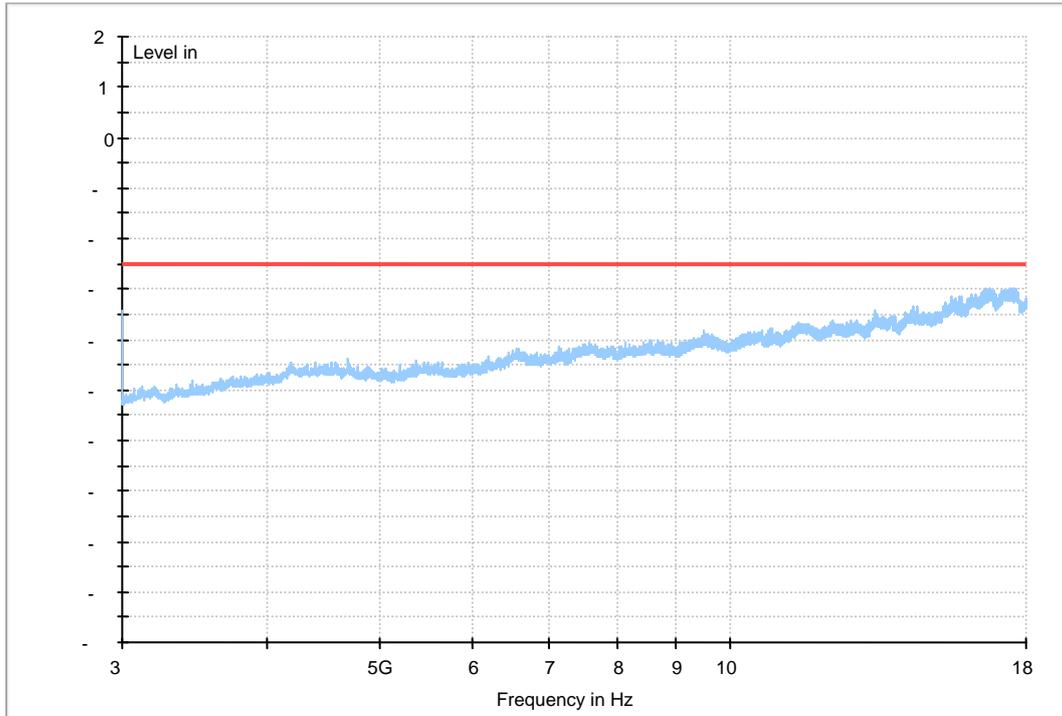


Traffic Mode (30MHz-3GHz)



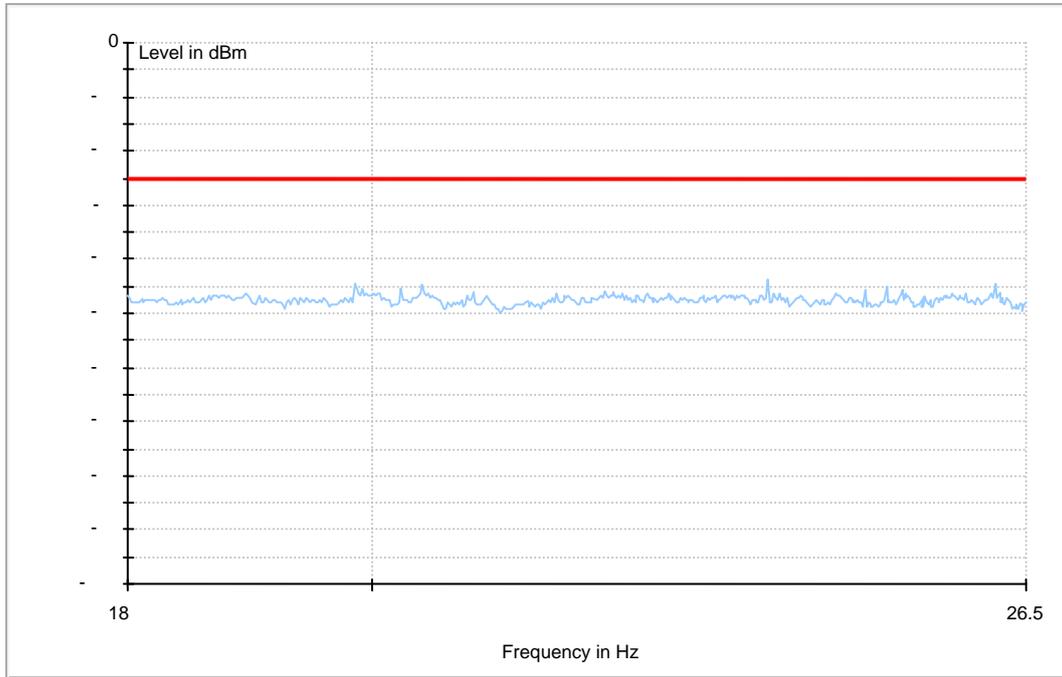


Traffic Mode (3GHz-18GHz)





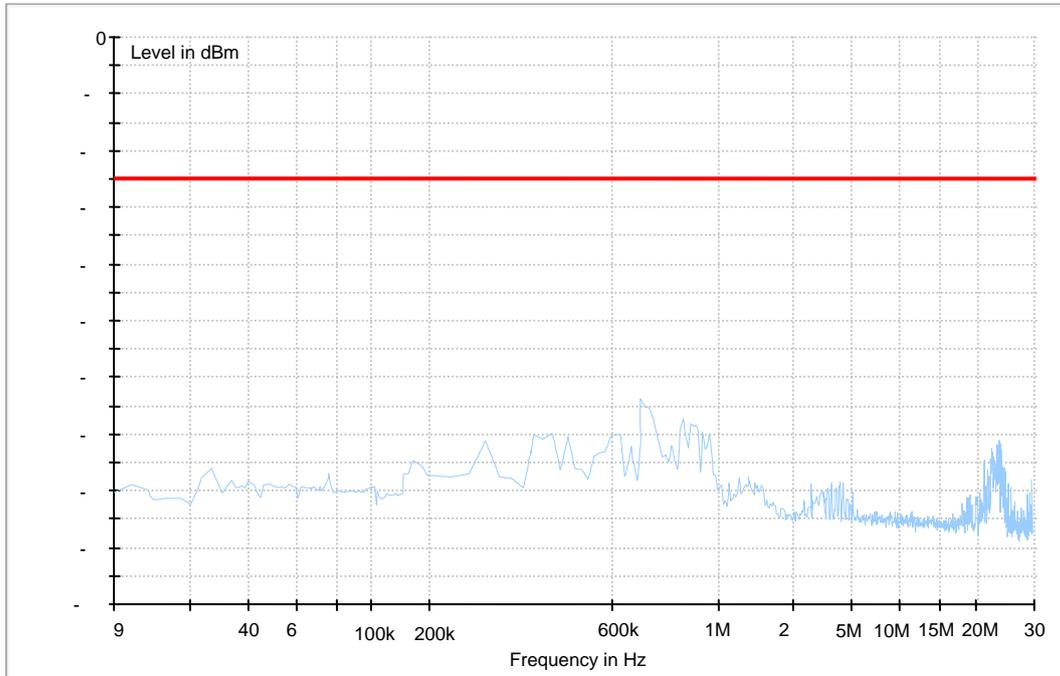
Traffic Mode (18GHz-26.5GHz)





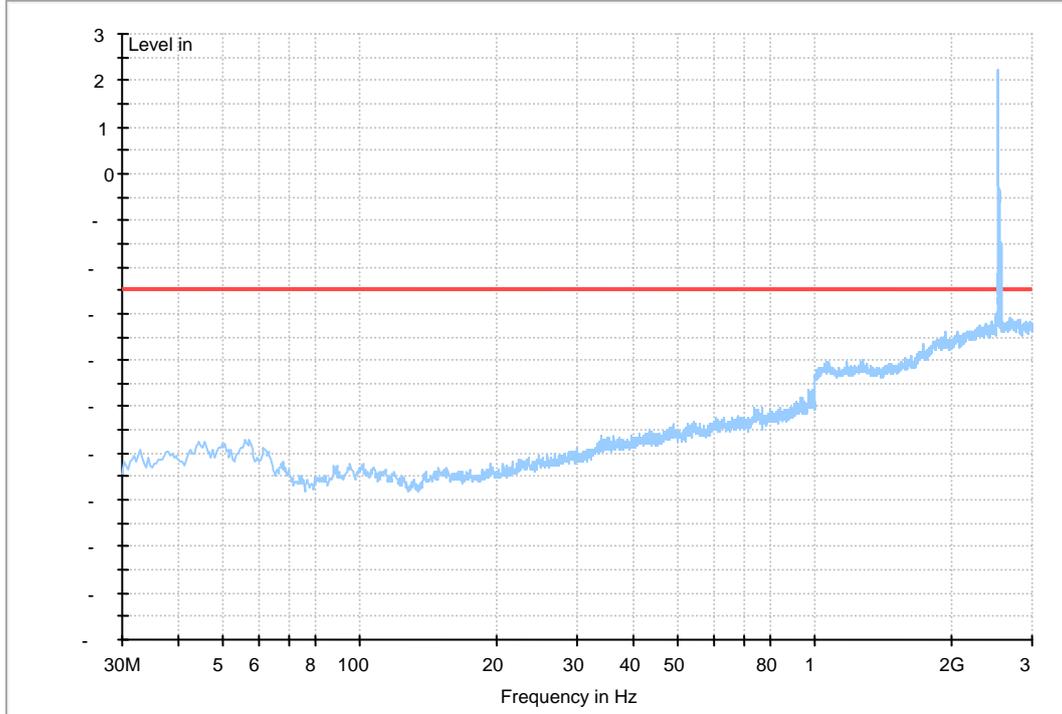
LTE Band 7 (BW=20MHz)

Traffic Mode (9kHz-30MHz)



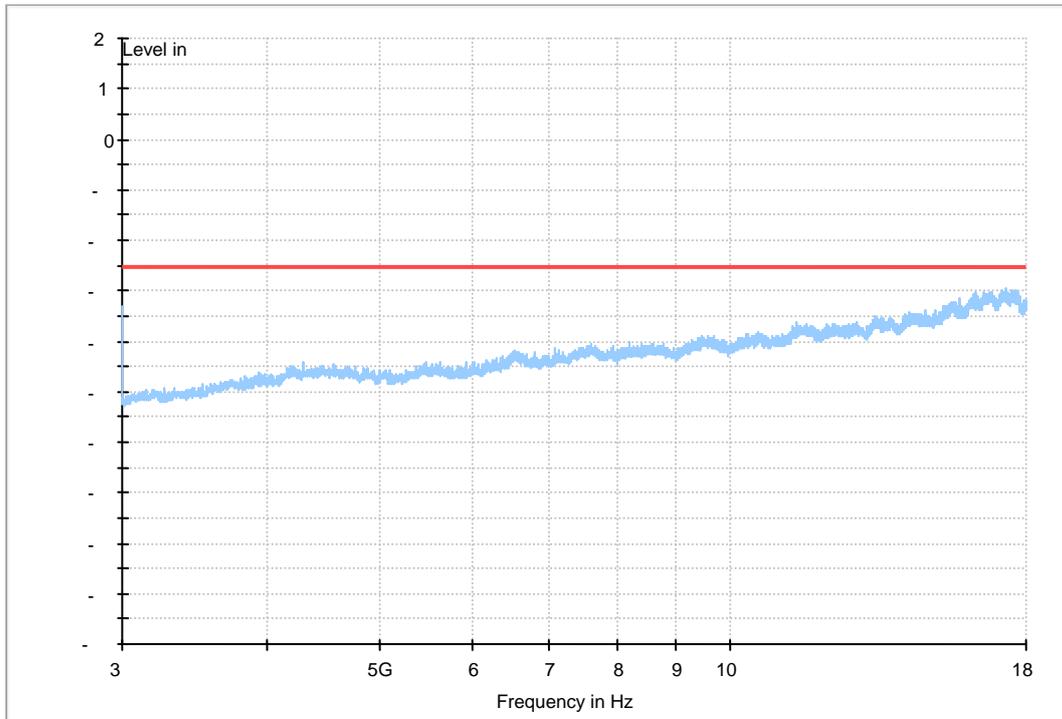


Traffic Mode (30MHz-3GHz)



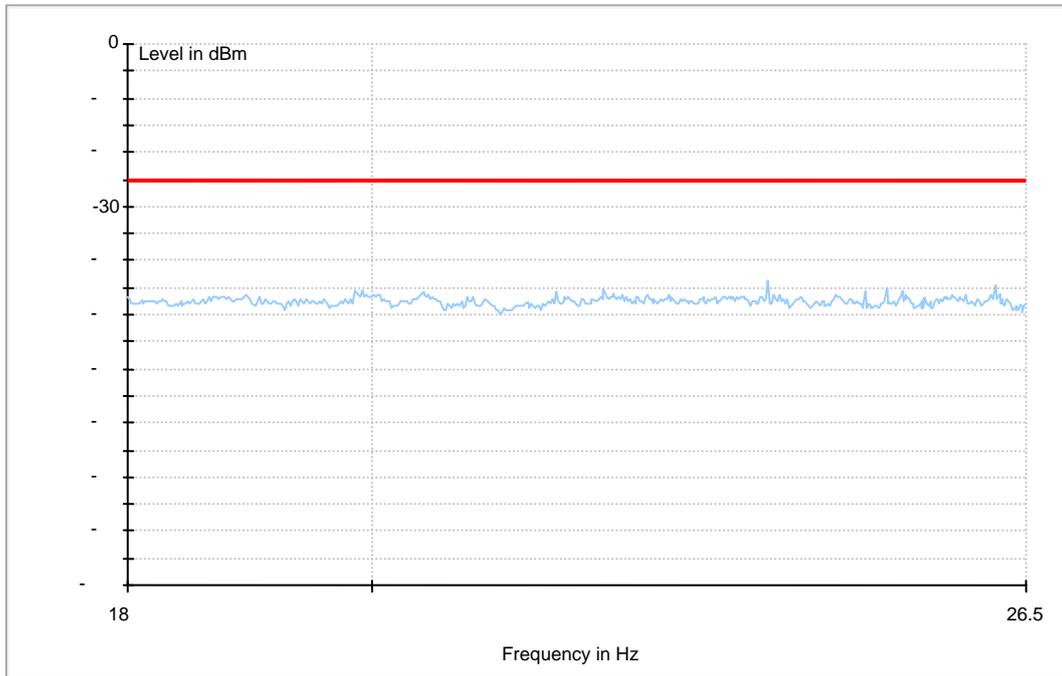


Traffic Mode (3GHz-18GHz)





Traffic Mode (18GHz-26.5GHz)



END



FCC&IC Test Report of E5776s-501
FCC ID: QISE5776S-501
IC : 6369A-E5776S

Appendix F

Frequency Stability

According to FCC Part 2.1051 & FCC Part 27C & 27M



Frequency Error vs. Temperature:

NOTE: All relevant operation modes have been tested, and the worst case data is included in this report.

Table 1 Measurement Results (LTE) BAND 7

Test Mode	RF Ch.	Volt.	Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Freq. vs. 20 °C [ppm]	Limit [ppm]	Verdict
TM1(5M)	M	VN	-30 °C	-7	-0.00326	---	±2.5	Pass
			-20 °C	19	0.007006	---	±2.5	Pass
			-10 °C	14	0.005033	---	±2.5	Pass
			0 °C	-6	-0.00286	---	±2.5	Pass
			10 °C	21	0.007795	---	±2.5	Pass
			20 °C	-5	-0.00247	---	±2.5	Pass
			30 °C	27	0.010161	---	±2.5	Pass
			40 °C	15	0.005428	---	±2.5	Pass
TM1(10M)	M	VN	50 °C	-21	-0.00878	---	±2.5	Pass
			-30 °C	-19	-0.00799	---	±2.5	Pass
			-20 °C	-13	-0.00562	---	±2.5	Pass
			-10 °C	11	0.00385	---	±2.5	Pass
			0 °C	-6	-0.00286	---	±2.5	Pass
			10 °C	-14	-0.00602	---	±2.5	Pass
			20 °C	27	0.010161	---	±2.5	Pass
			30 °C	23	0.008584	---	±2.5	Pass
TM1(15M)	M	VN	40 °C	11	0.00385	---	±2.5	Pass
			50 °C	18	0.006611	---	±2.5	Pass
			-30 °C	-15	-0.00641	---	±2.5	Pass
			-20 °C	-8	-0.00365	---	±2.5	Pass
			-10 °C	-12	-0.00523	---	±2.5	Pass
			0 °C	-16	-0.00681	---	±2.5	Pass
			10 °C	16	0.005822	---	±2.5	Pass
			20 °C	20	0.0074	---	±2.5	Pass
TM1(20M)	M	VN	30 °C	-7	-0.00326	---	±2.5	Pass
			40 °C	12	0.004244	---	±2.5	Pass
			50 °C	-11	-0.00483	---	±2.5	Pass
			-30 °C	16	0.005822	---	±2.5	Pass
			-20 °C	22	0.008189	---	±2.5	Pass
			-10 °C	10	0.003455	---	±2.5	Pass
			0 °C	25	0.009372	---	±2.5	Pass
			10 °C	-15	-0.00641	---	±2.5	Pass
TM1(20M)	M	VN	20 °C	13	0.004639	---	±2.5	Pass
			30 °C	-19	-0.00799	---	±2.5	Pass
			40 °C	-11	-0.00483	---	±2.5	Pass
			50 °C	13	0.004639	---	±2.5	Pass



Frequency Error vs. Voltage:

Table 2 Measurement Results (LTE) BAND 7

Test Mode	RF Ch.	Temp.	Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Freq. vs. 20 °C [ppm]	Limit [ppm]	Verdict
TM1(5M)	M	20 °C	VL	21	0.009461	---	±2.5	Pass
			VN	15	0.007095	---	±2.5	Pass
			VH	6	0.003544	---	±2.5	Pass
TM1(10M)	M	20 °C	VL	-22	-0.00751	---	±2.5	Pass
			VN	-25	-0.00869	---	±2.5	Pass
			VH	-9	-0.00238	---	±2.5	Pass
TM1(15M)	M	20 °C	VL	20	0.009067	---	±2.5	Pass
			VN	11	0.005517	---	±2.5	Pass
			VH	13	0.006306	---	±2.5	Pass
TM1(20M)	M	20 °C	VL	-24	-0.00829	---	±2.5	Pass
			VN	23	0.01025	---	±2.5	Pass
			VH	9	0.004728	---	±2.5	Pass

END



Appendix G

Photos of Spurious Emissions



Photos of Test Setup



1 Radiated Spurious Emissions



Radiated Spurious Emission (below 3GHz)



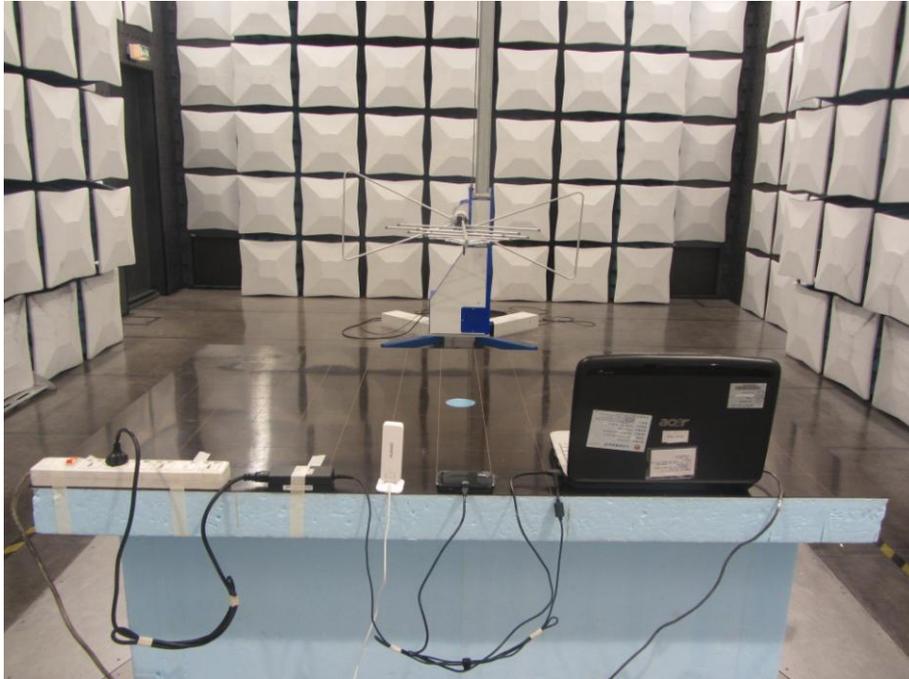
Radiated Spurious Emission (3GHz to18GHz)



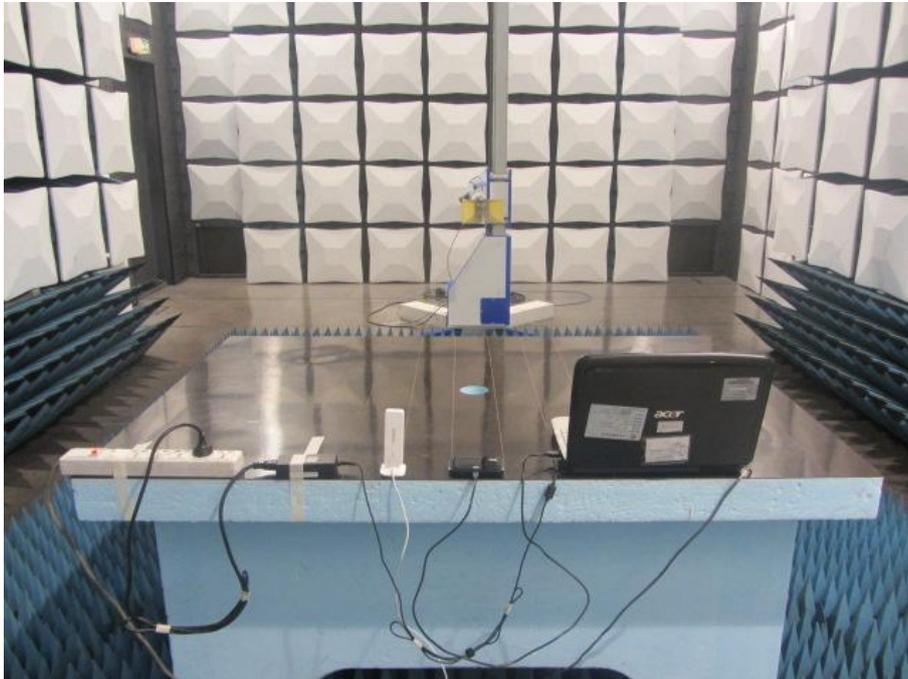
Radiated Spurious Emission (18GHz to 26.5GHz)



2 Receiver Spurious Emissions



Receiver Spurious Emissions (30MHz-1GHz)



Receiver Spurious Emissions (above 1GHz)

END