HCT CO.,LTD

HCT CO., LTD.

CERTIFICATE OF COMPLIANCE
FCC Certification

Applicant Name:
Franklin Wireless Corp

Address:
6205 Lusk Blvd, San Diego CA 92121

Date of Issue:
October 4, 2012
Location:
HCT CO., LTD., 105-1, Jangam-ri, Majang-Myeon, Icheon-si, Kyunggi-Do, Korea
Test Report No.: HCTR1208FR25-4
HCT FRN: 0005866421

FCC ID:	**RB2-U772**
APPLICANT:	**Franklin Wireless Corp**

FCC Model(s):	U772	
EUT Type:	Cellular/PCS CDMA & LTE USB Dongle with WLAN	
FCC Classification:	PCS Licensed Transmitter (PCB)	
FCC Rule Part(s):	§2 , §24	
Tx Frequency:	1852.5 MHz – 1912.5 MHz (LTE – Band25)	
Max. RF Output Power:	Band 25, 5 MHz :	When connected to the USB port of the computer : 0.673W EIRP (QPSK) (28.28 dBm) 0.787 W EIRP (16-QAM) (28.96 dBm) When connected to the AC-USB adaptor : 0.664W EIRP (QPSK) (28.22 dBm) 0.708 W EIRP (16-QAM) (28.50 dBm)
Emission Designator(s):	Band 25, 5 MHz :	4M49G7D (QPSK) / 4M48W7D (16-QAM)

The measurements shown in this report were made in accordance with the procedures specified in §2.947. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.

HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998,21 U.S. C.853(a)

Hyo Sun Kwak

Report prepared by
: Hyo Sun Kwak
Test engineer of RF Team

Approved by
: Chang Seok Choi
Manager of RF Team

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCTR1208FR25	August 16, 2012	First Approval Report
HCTR1208FR25-1	September 13, 2012	Revise the bandwidth on page 18, 19 Revise frequency range on page 8
HCTR1208FR25-2	September 18, 2012	Add EIRP and RSE test results for the case that the EUT is connected to AC-USB adaptor.
HCTR1208FR25-3	September 21, 2012	Revise EIRP test results for the case that the EUT is connected to AC-USB adaptor.
HCTR1208FR25-4	October 4, 2012	Revise antenna specification.

Table of Contents

MEASUREMENT REPORT

1. GENERAL INFORMATION

Applicant Name:	Franklin Wireless Corp	
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Emission Designator(s):	Band 25, 5 MHz :	4M49G7D (QPSK) / 4M48W7D (16-QAM)
Date(s) of Tests:	July 23, 2012 ~ September 21, 2012	
Antenna Specification	Manufacturer: KWANG HYUN AIRTECH Antenna type: Monopole Antenna Peak Gain: 0.5 dBi	

2. INTRODUCTION

2.1. EUT DESCRIPTION

The U772 Cellular/PCS CDMA & LTE USB Dongle with WLAN consists of LTE25.

2.2. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

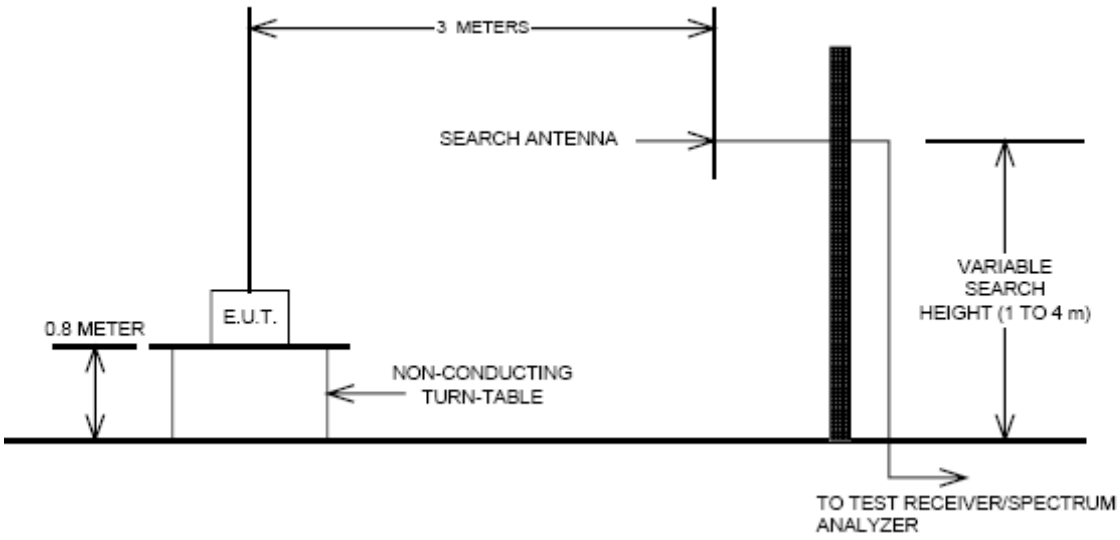
2.3. TEST FACILITY

The SAC(Semi-Anechoic Chamber) and conducted measurement facility used to collect the radiated data are located at the 105-1, Jangam-ri, Majang-Myeon, Icheon-si, Kyunggi-Do, 467-811, Korea. The site is constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. Detailed description of test facility was submitted to the Commission and accepted dated March 02, 2011 (Registration Number: 90661)

3. DESCRIPTION OF TESTS

3.1 EFFECTIVE RADIATED POWER/EQUIVALENT ISOTROPIC RADIATED POWER

Test Set-up



Test Procedure

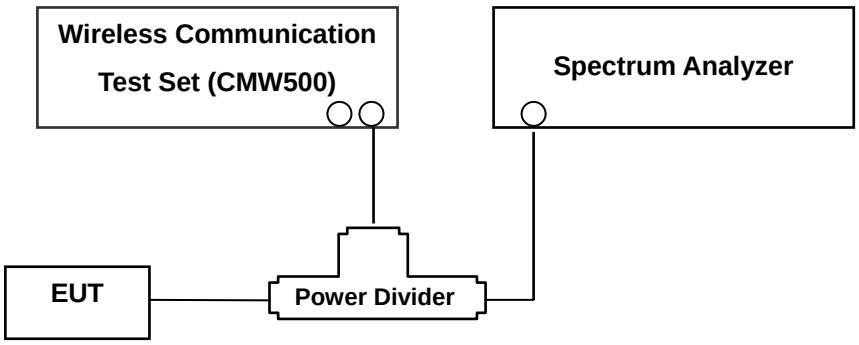
Radiated emission measurements were performed at an Fully-anechoic chamber.

The equipment under test is placed on a non-conductive table 3-meters from the receive antenna. A turntable was rotated 360° and the receiving antenna scanned from 1-4m in order to capture the maximum emission. A half wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the previously recorded signal was duplicated.

The maximum EIRP was calculated by adding the forward power to the calibrated source plus its appropriate gain value. These steps were carried out with the receiving antenna in both vertical and horizontal polarization. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic antenna are taken into consideration

3.2 OCCUPIED BANDWIDTH.

Test set-up



(Configuration of conducted Emission measurement)

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

Test Procedure

The EUT makes a call to the communication simulator. The power was measured with R&S Spectrum Analyzer. All measurements were done at 3 channels(low, middle and high operational range.)
The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth

3.3 FREQUENCY RANGE (1850 MHz ~ 1910 MHz)

Subpart E—Broadband PCS

§ 24.229

(a) The following frequency blocks are available for assignment on an MTA basis:

Block A: 1850–1865 MHz paired with 1930–1945 MHz;

Block B: 1870–1885 MHz paired with 1950–1965 MHz.

(b) The following frequency blocks are available for assignment on a BTA basis:

Block C: 1895–1910 MHz paired with 1975–1990 MHz;

Block D: 1865–1870 MHz paired with 1945–1950 MHz;

Block E: 1885–1890 MHz paired with 1965–1970 MHz;

Block F: 1890–1895 MHz paired with 1970–1975 MHz;

3.4 PEAK-AVERAGE RATIO.

A peak to average ratio measurement is performed at the conducted port of the EUT. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a giver bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

3.5 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL.

Test Procedure

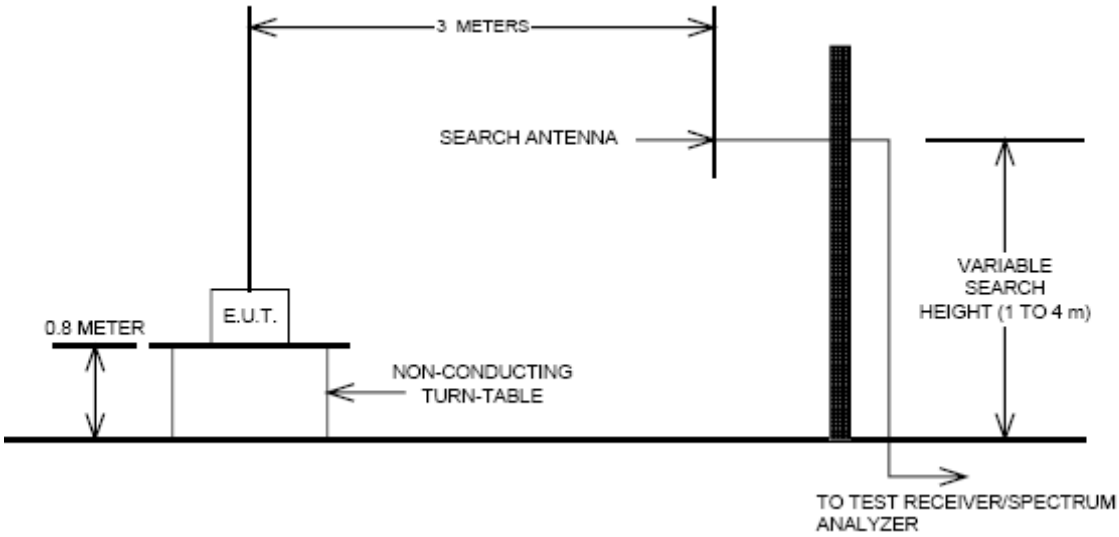
The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer.

The EUT was setup to maximum output power at its lowest channel. The Resolution BW of the analyzer is set to 1 % of the emission bandwidth to show compliance with the – 13 dBm limit, in the 1 MHz bands immediately outside and adjacent to the edge of the frequency block. The 1 MHz RBW was used to scan from 30 MHz to 26.5 GHz. A display line was placed at – 13 dBm to show compliance. The high, lowest and a middle channel were tested for out of band measurements.

- Band Edge Requirement : In the 1MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions. Limit, -13dBm.

3.6 RADIATED SPURIOUS AND HARMONIC EMISSIONS

Test Set-up



The measurement facilities used for this test have been documented in previous filings with the commission pursuant to section § 2.948. The Fully-anechoic chamber meets requirements in ANSI C63.4 –2003. A mast capable of lifting the receiving antenna from a height of one to four meters is used together with a rotatable platform mounted at three from the antenna mast.

1) The unit mounted on a turntable 1.5 m × 1.0 m × 0.80 m is 0.8 meter above test site ground level.
2) During the emission test, the turntable is rotated and the EUT is manipulated to find the configuration resulting in maximum emission under normal condition of installation and operation.
3) The antenna height and polarization are also varied from 1 to 4 meters until the maximum signal is found.
4) The spectrum shall be scanned up to the 10th harmonic of the fundamental frequency.

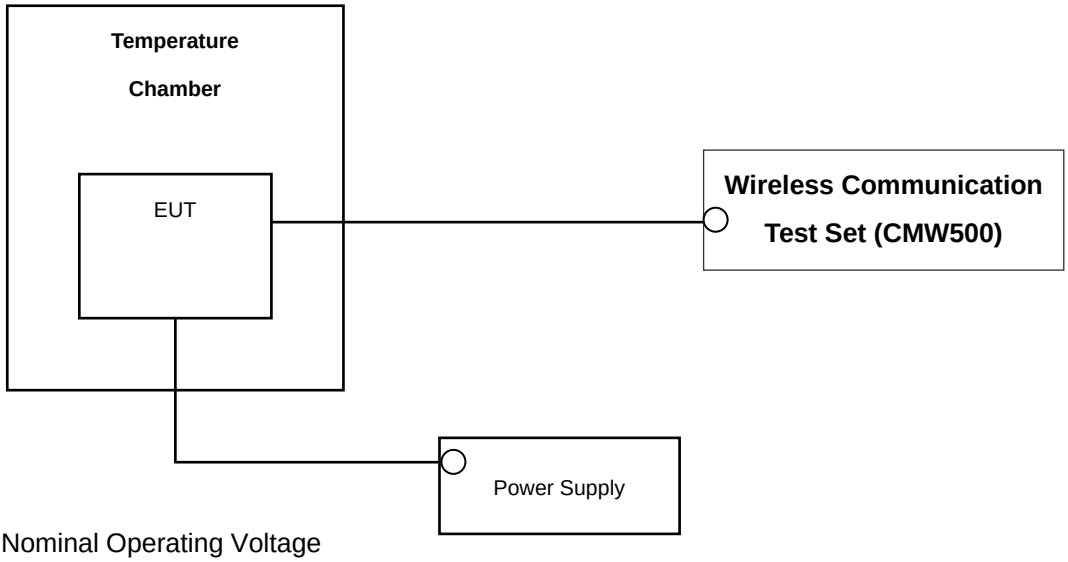
Test Procedure

The equipment under test is placed on a non-conductive table 3-meters from the receive antenna. A turntable was rotated 360° and the receiving antenna scanned from 1-4m in order to capture the maximum emission. A half wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the previously recorded signal was duplicated.

The maximum EIRP was calculated by adding the forward power to the calibrated source plus its appropriate gain value. These steps were carried out with the receiving antenna in both vertical and horizontal polarization. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic antenna are taken into consideration.

3.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

Test Set-up



* Nominal Operating Voltage

Test Procedure

The frequency stability of the transmitter is measured by:
a.) **Temperature:** The temperature is varied from - 30 °C to + 50 °C using an environmental chamber.

b.) **Primary Supply Voltage:** The primary supply voltage is varied from battery end point to 115 % of the voltage normally at the input to the device or at the power supply terminals if cables are not normally supplied.

Specification — the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ± 0.000 25 %(± 2.5 ppm) of the center frequency.

Time Period and Procedure:

The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
1. The equipment is turned on in a “standby” condition for one minute before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.

2. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

4. LIST OF TEST EQUIPMENT

Manufacture	Model/ Equipment	Serial Number	Calibration Interval	Calibration Due
Agilent	E9327A/ Power Sensor	MY4442009	Annual	05/02/2013
R&S	CMW500/ Base Station	1201.0002K50_116858	Annual	01/17/2013
MITEQ	AMF-6D-001180-35-20P/AMP	1081666	Annual	09/11/2013
Wainwright	WHK1.2/15G-10EF/H.P.F	2	Annual	05/02/2013
Wainwright	WHK3.3/18G-10EF/H.P.F	1	Annual	05/02/2013
Hewlett Packard	11667B / Power Splitter	10126	Annual	11/04/2012
Digital	EP-3010/ Power Supply	3110117	Annual	11/07/2012
Schwarzbeck	UHAP/ Dipole Antenna	557	Biennial	03/11/2013
Schwarzbeck	UHAP/ Dipole Antenna	558	Biennial	03/11/2013
Korea Engineering	KR-1005L / Chamber	KRAB05063-3CH	Annual	11/07/2012
Schwarzbeck	BBHA 9120D/ Horn Antenna	296	Biennial	02/20/2014
Agilent	E4440A/Spectrum Analyzer	US45303008	Annual	05/02/2013
WEINSCHEL	ATTENUATOR	BR0592	Annual	11/07/2012
REOHDE&SCHWARZ	FSV40/Spectrum Analyzer	1307.9002K40-100931-NK	Annual	06/11/2013
Agilent	8960 (E5515C)/ Base Station	GB44400269	Annual	02/10/2013

5. SUMMARY OF TEST RESULTS

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result
2.1049, 24.238(a)	Occupied Bandwidth	N/A	CONDUCTED	PASS
2.1051, 24.238(a)	Band Edge / Spurious and Harmonic Emissions at Antenna Terminal.	< 43 + 10log$_{10}$ (P[Watts]) at Band Edge and for all out-of-band emissions		PASS
2.1046	Conducted Output Power	N/A		PASS
24.232(d)	Peak- to- Average Ratio	< 13 dB		
2.1055, 24.235	Frequency stability / variation of ambient temperature	< 2.5 ppm		PASS
24.232(c)	Equivalent Isotropic Radiated Power	< 2 Watts max. EIRP	RADIATED	PASS
2.1053, 24.238(a)	Radiated Spurious and Harmonic Emissions	< 43 + 10log$_{10}$ (P[Watts]) for all out-of band emissions		PASS

6. SAMPLE CALCULATION

A. EIRP Sample Calculation

Mode	Ch./ Freq.		Measured Level(dBm)	Substitude LEVEL(dBm)	Ant. Gain (dBi)	C.L	Pol.	EIRP	
	channel	Freq.(MHz)						W	dBm
LTE	26065	1852.5	-16.48	17.23	10.40	2.83	H	0.301	24.79

EIRP = SubstitudeLEVEL(dBm) + Ant. Gain – CL(Cable Loss)

1) The EUT mounted on a wooden tripod is 0.8 meter above test site ground level.
2) During the test , the turn table is rotated and the antenna height is also varied from 1 to 4 meters until the maximum signal is found.
3) Record the field strength meter's level.
4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
5) Increase the signal generator output till the field strength meter's level is equal to the item (3).
6) The signal generator output level with Ant. Gain and cable loss are the rating of effective radiated power (**EIRP**).

B. Emission Designator

QPSK Modulation

Emission Designator = 8M95G7D

LTE BW = 8.95 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Amplitude/Angle Modulated

16QAM Modulation

Emission Designator = 8M94W7D

LTE BW = 8.94 MHz

D = Amplitude/Angle Modulated

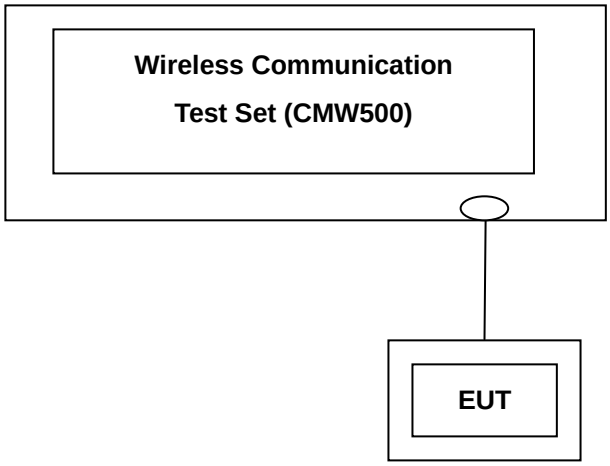
7 = Quantized/Digital Info

W = Combination (Audio/Data)

7. TEST DATA

7.1 CONDUCTED OUTPUT POWER

A base station simulator was used to establish communication with the EUT. The base station simulator parameters were set to produce the maximum power from the EUT. This device was tested under all configurations and the highest power is reported. Conducted Output Powers of EUT are reported below.



Test Result

Band	Frequency(Mhz)	Channel	Resource Block Size	Resource Block Offset	Average Power [dBm]	
					QPSK	16-QAM
LTE	1852.5	26065	1	0	22.27	21.19
			1	24	22.36	21.26
			12	6	21.48	20.45
			25	0	21.39	20.37

LTE Conducted Average Output Powers (5 MHz Band 25 LTE)

Band	Frequency(Mhz)	Channel	Resource Block Size	Resource Block Offset	Average Power [dBm]	
					QPSK	16-QAM
LTE	1882.5	26365	1	0	22.71	21.50
			1	24	22.85	21.57
			12	6	21.64	20.62

			25	0	21.55	20.55

LTE Conducted Average Output Powers (5 MHz Band 25 LTE)

Band	Frequency(Mhz)	Channel	Resource Block Size	Resource Block Offset	Average Power [dBm]	
					QPSK	16-QAM
LTE	1912.5	26665	1	0	22.23	21.00
			1	24	22.23	21.02
			12	6	21.04	19.99
			25	0	20.87	19.98

LTE Conducted Average Output Powers (5 MHz Band 25 LTE)

Note : Detecting mode is average.

7.2 PEAK-TO-AVERAGE RATIO

Band	Channel	Frequency(MHz)	Bandwidth	Modulation	P A R
LTE BAND 25	26065	1852.5	5 MHz	QPSK	5.03
	26065	1852.5		16-QAM	5.97
	26365	1882.5		QPSK	5.21
	26365	1882.5		16-QAM	6.46
	26665	1912.5		QPSK	3.98
	26665	1912.5		16-QAM	4.88

- Plots of the EUT's Peak- to- Average Ratio are shown Page 24 ~ 26.

7.3 OCCUPIED BANDWIDTH

- Plots of the EUT's Occupied Bandwidth are shown Page 23.

7.4 CONDUCTED SPURIOUS EMISSIONS

- Plots of the EUT's Conducted Spurious Emissions are shown Page 39 ~ 41.

7.4.1 BAND EDGE

- Plots of the EUT's Band Edge are shown Page 27 ~ 38.

7.5 EQUIVALENT ISOTROPIC RADIATED POWER OUTPUT

When connected to the USB port of the computer

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBi)	C.L	Pol	ERP	
								W	dBm
1852.5	5 MHz	QPSK	-12.42	19.52	10.23	1.78	V	0.627	27.97
		16-QAM	-12.30	19.64	10.23	1.78	V	0.644	28.09
1882.5		QPSK	-12.11	20.02	10.25	1.77	H	0.708	28.50
		16-QAM	-11.43	20.70	10.25	1.77	H	0.828	29.18
1912.5		QPSK	-14.52	17.68	10.29	1.75	H	0.419	26.22
		16-QAM	-14.78	17.42	10.29	1.75	H	0.394	25.96

Equivalent Isotropic Radiated Power Output Data (Band 25_5 MHz)

NOTES:

Effective Radiated Power Output Measurements by Substitution Method
according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a non-conductive styrofoam resin table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For 1 MHz BW signals, a peak detector is used, with RBW = VBW = 1 MHz. For 10 MHz BW signals, a peak detector is used, with RBW = VBW = 10 MHz. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminals of the Horn antenna is measured. The difference between the gain of the horn and an isotropic antenna is taken into consideration and the EIRP is recorded.

Also, we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna. The worst case of the EUT is y plane in LTE mode. Also worst case of detecting Antenna is vertical polarization in LTE mode.

When connected to the AC-USB adaptor

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBi)	C.L	Pol	ERP	
								W	dBm
1852.5	5 MHz	QPSK	-12.17	19.77	10.23	1.78	V	0.664	28.22
		16-QAM	-11.89	20.05	10.23	1.78	V	0.708	28.50
1882.5		QPSK	-13.28	18.85	10.25	1.77	V	0.541	27.33
		16-QAM	-12.89	19.24	10.25	1.77	V	0.592	27.72
1912.5		QPSK	-15.04	17.16	10.29	1.75	V	0.372	25.70
		16-QAM	-15.00	17.20	10.29	1.75	V	0.375	25.74

Equivalent Isotropic Radiated Power Output Data (Band 25_5 MHz)

NOTES:

Effective Radiated Power Output Measurements by Substitution Method
according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a non-conductive styrofoam resin table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For 1 MHz BW signals, a peak detector is used, with RBW = VBW = 1 MHz. For 10 MHz BW signals, a peak detector is used, with RBW = VBW = 10 MHz. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminals of the Horn antenna is measured. The difference between the gain of the horn and an isotropic antenna is taken into consideration and the EIRP is recorded.

Also, we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna. The worst case of the EUT is y plane in LTE mode. Also worst case of detecting Antenna is vertical polarization in LTE mode.

7.6 RADIATED SPURIOUS EMISSIONS

7.6.1 RADIATED SPURIOUS EMISSIONS (Band 25)

When connected to the USB port of the computer

- ▣ MEASURED OUTPUT POWER: 29.18 dBm = 0.828 W
- ▣ MODULATION SIGNAL: 5 MHz 16-QAM
- ▣ DISTANCE: 3 meters
- ▣ LIMIT: - (43 + 10 lo_{g10} (W)) = - 42.18 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBd)	Substitude Level (dBm)	C.L	Pol	ERP (dBm)	dBc
26065 (1852.5)	3705.0	-37.94	12.50	-42.91	2.55	V	-32.96	-60.93
	5557.5	-53.52	13.04	-52.59	3.17	H	-42.72	-70.69
	7410.0	-35.40	11.10	-24.30	3.54	V	-16.74	-45.24
26365 (1882.5)	3765.0	-38.55	12.54	-43.23	2.60	V	-33.29	-62.25
	5647.5	-48.84	13.05	-47.30	3.21	V	-37.46	-66.42
	7530.0	-35.57	10.99	-25.06	3.72	V	-17.79	-46.75
26665 (1912.5)	3825.0	-35.41	12.59	-39.85	2.59	H	-29.85	-55.72
	5737.5	-39.26	13.07	-37.23	3.35	H	-27.51	-53.38
	7650.0	-38.89	11.06	-28.91	3.23	H	-21.08	-46.95

NOTES:
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:
2. The magnitude of spurious emissions attenuated more than 20dB below the limit above 5th Harmonic for all channel.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. Worst case is 1 resource block.

When connected to the AC-USB adaptor

▣ MEASURED OUTPUT POWER: 28.50 dBm = 0.708 W

▣ MODULATION SIGNAL: 5 MHz 16-QAM

▣ DISTANCE: 3 meters

▣ LIMIT: - (43 + 10 lo_{g10} (W)) = - 41.50 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBd)	Substitude Level (dBm)	C.L	Pol	ERP (dBm)	dBc
26065 (1852.5)	3705.0	-44.39	12.50	-49.36	2.55	H	-39.41	-64.87
	5557.5	-41.16	13.04	-40.23	3.17	V	-30.36	-55.82
	7410.0	-35.44	11.10	-24.34	3.54	V	-16.78	-45.28
26365 (1882.5)	3765.0	-40.20	12.54	-44.88	2.60	H	-34.94	-60.40
	5647.5	-41.71	13.05	-40.17	3.21	V	-30.33	-55.79
	7530.0	-39.10	10.99	-28.59	3.72	H	-21.32	-46.78
26665 (1912.5)	3825.0	-38.65	12.59	-43.09	2.59	H	-33.09	-58.55
	5737.5	-38.64	13.07	-36.61	3.35	V	-26.89	-52.35
	7650.0	-38.67	11.06	-28.69	3.23	H	-20.86	-46.32

NOTES: 1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

2. The magnitude of spurious emissions attenuated more than 20dB below the limit above 5th Harmonic for all channel.

3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

4. Worst case is 1 resource block.

7.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

7.7.1 FREQUENCY STABILITY (LTE Band 25)

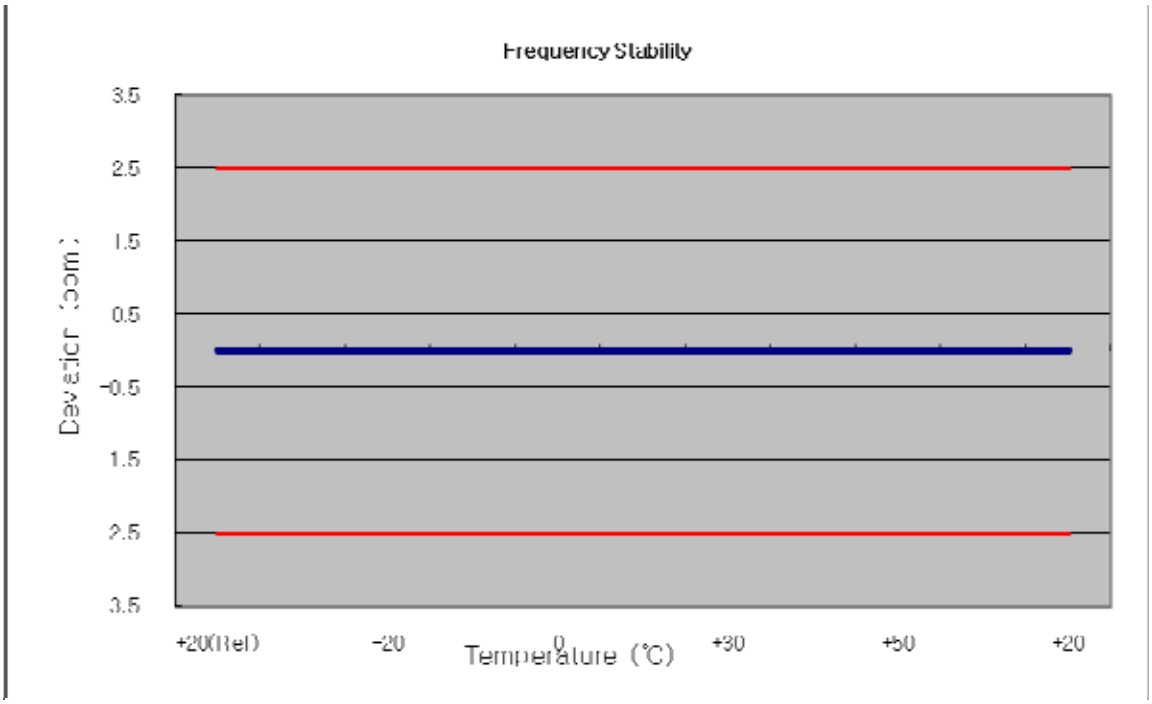
▣ OPERATING FREQUENCY: 1882,500,000 Hz

▣ CHANNEL: 26365

▣ REFERENCE VOLTAGE: 5 VDC

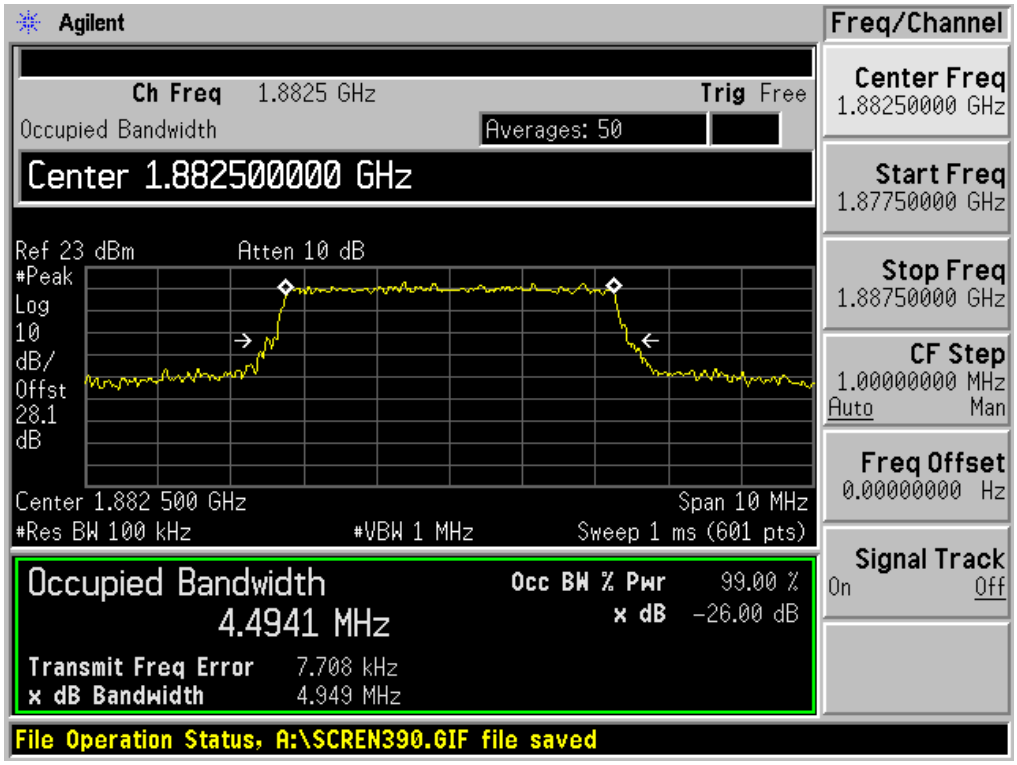
▣ DEVIATION LIMIT: ± 0.000 25 % or 2.5 ppm

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	5 .00	+20(Ref)	1882 499 997	0	0.000 000	0.000
100%		-30	1882 500 000	-0.17	0.000 000	0.000
100%		-20	1882 499 990	-9.64	-0.000 001	-0.005
100%		-10	1882 500 000	-0.31	0.000 000	0.000
100%		0	1882 500 001	1.39	0.000 000	0.001
100%		+10	1882 499 991	-9.16	0.000 000	-0.005
100%		+30	1882 500 004	3.93	0.000 000	0.002
100%		+40	1882 499 992	-7.98	0.000 000	-0.004
100%		+50	1882 500 006	6.12	0.000 000	0.003
115%	5.75	+20	1882 499 996	-3.56	0.000 000	-0.002

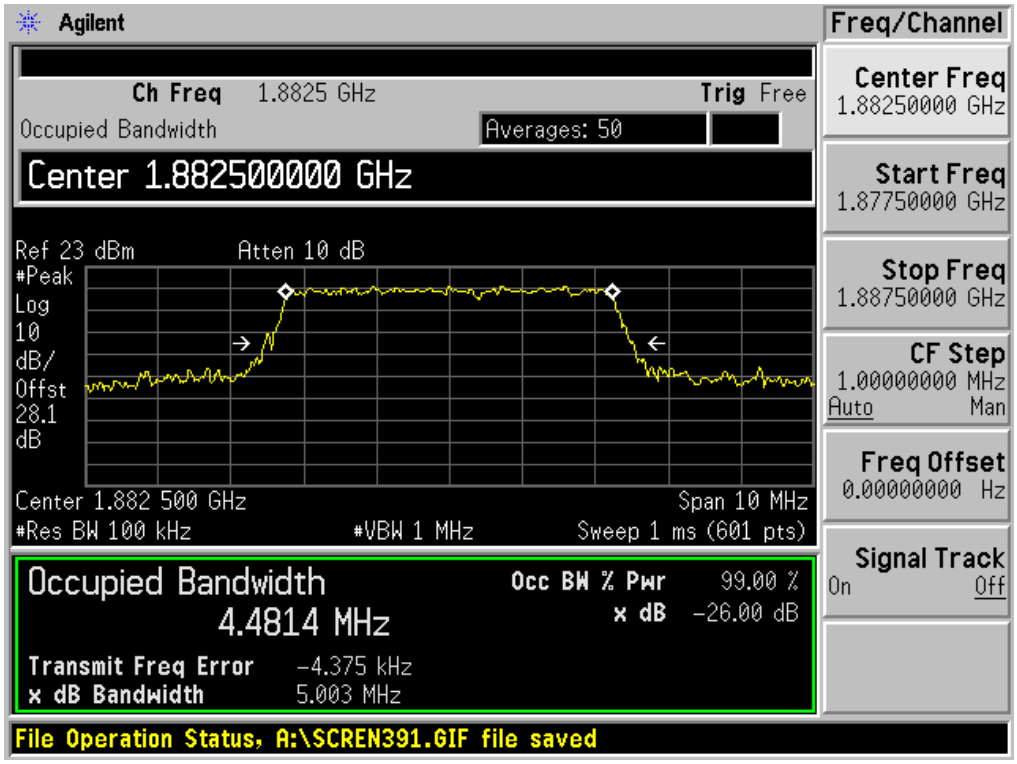


8. TEST PLOTS

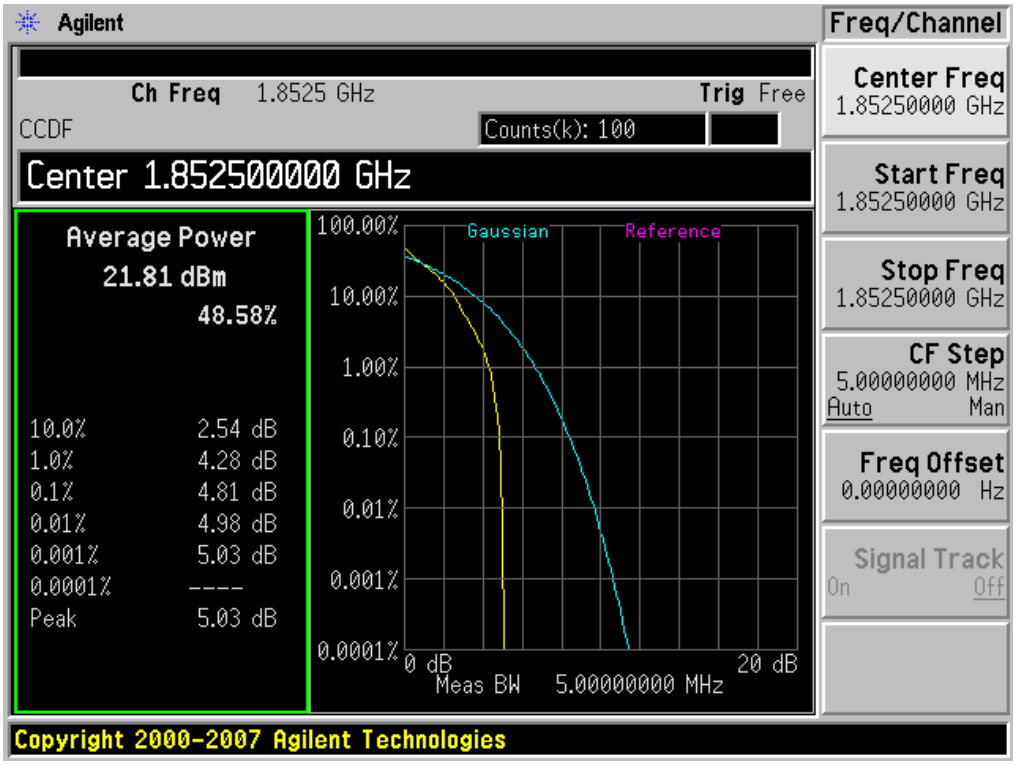
Occupied Bandwidth Plot (5 MHz QPSK - RB Size 25)



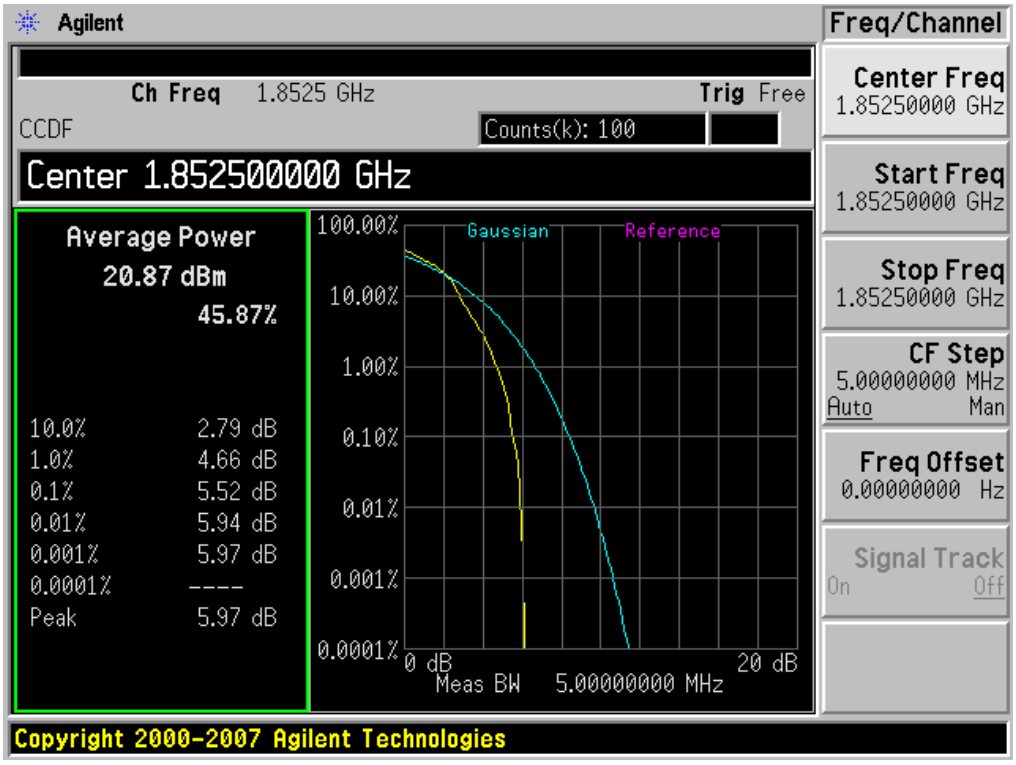
Occupied Bandwidth Plot (5 MHz 16-QAM - RB Size 25)



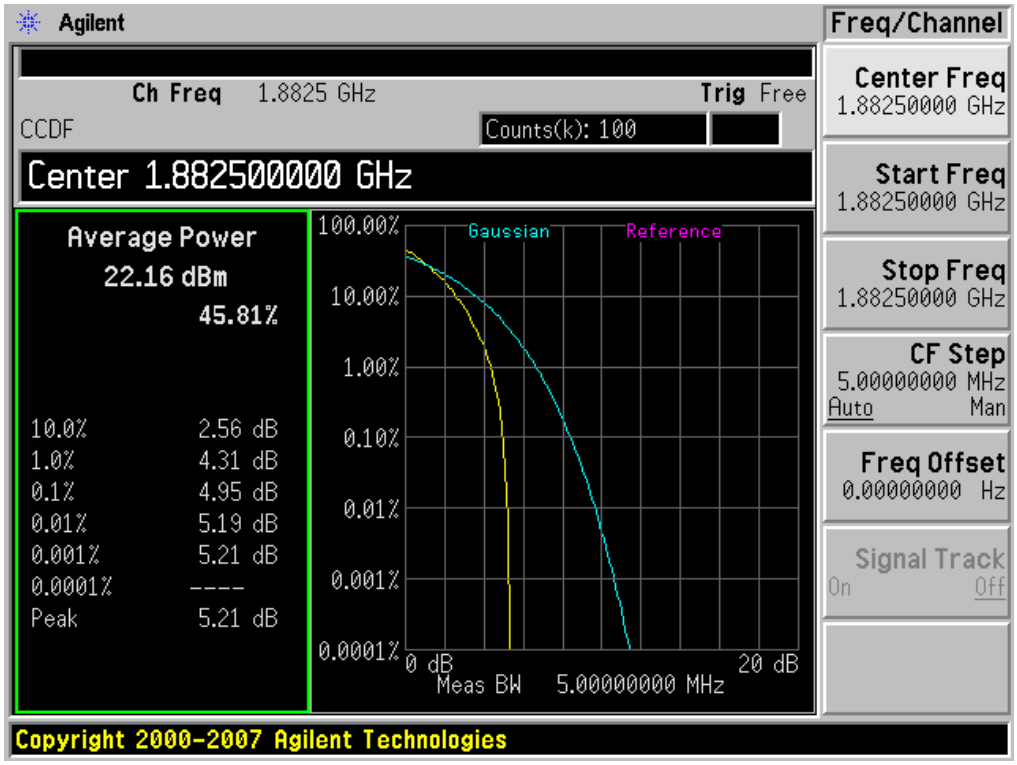
PAR Plot (1852.5: 5 MHz QPSK - RB Size 1, Offset 24)



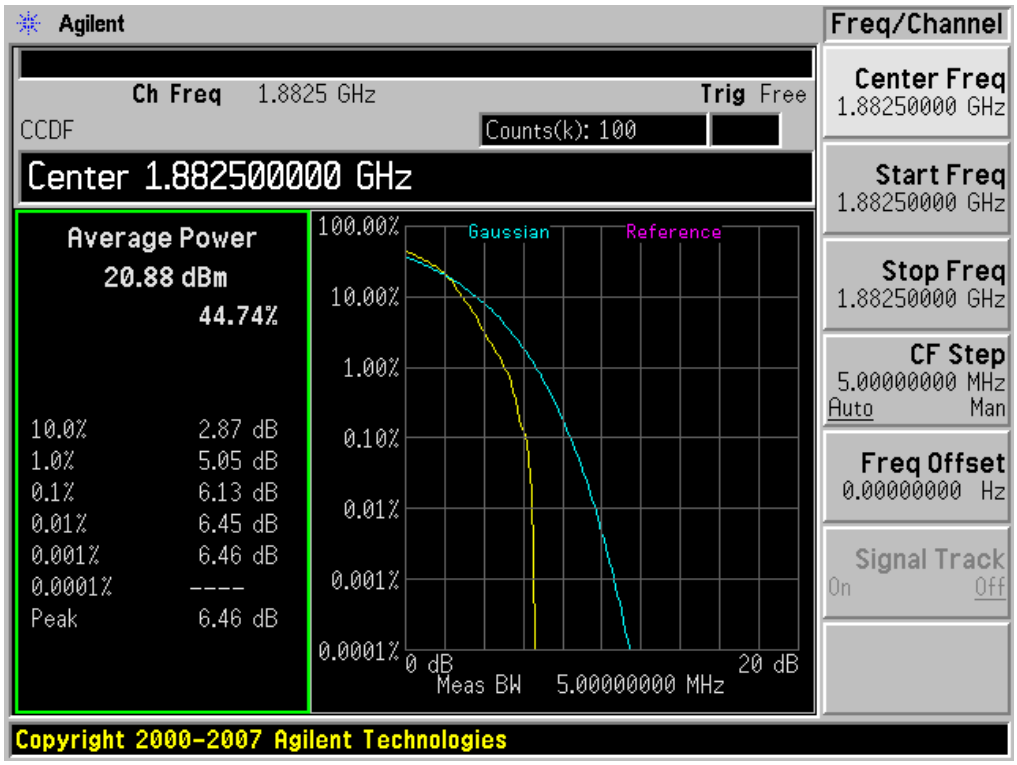
PAR Plot (1852.5: 5 MHz 16-QAM - RB Size 1, Offset 24)



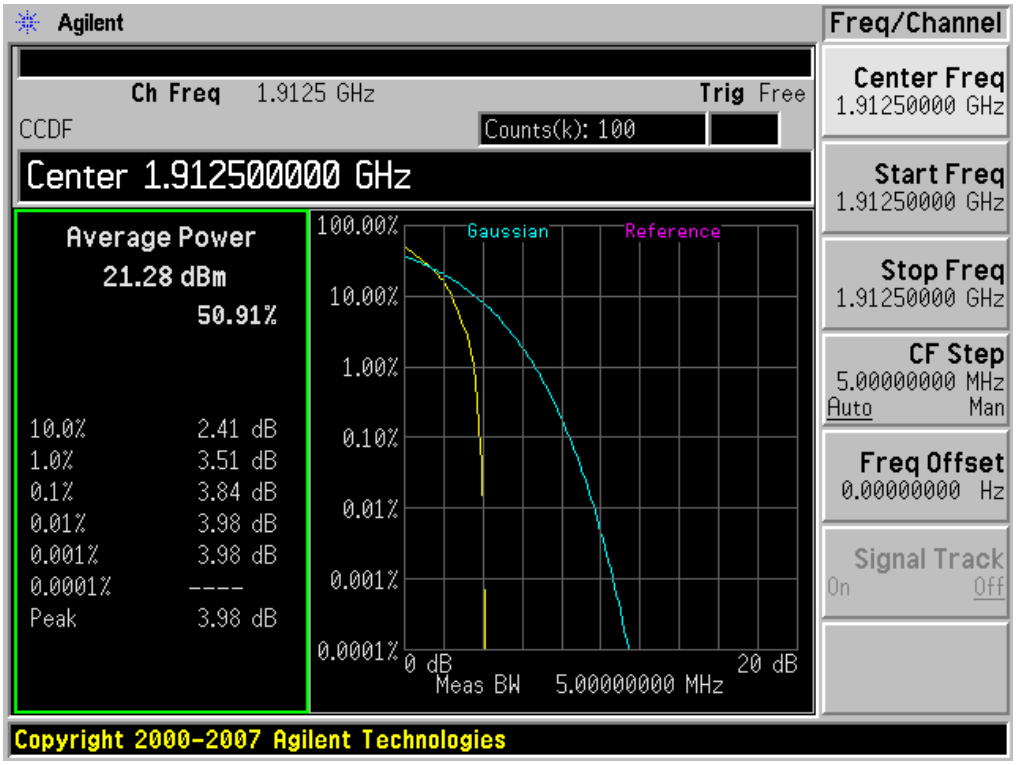
PAR Plot (1882.5: 5 MHz QPSK - RB Size 1, Offset 24)



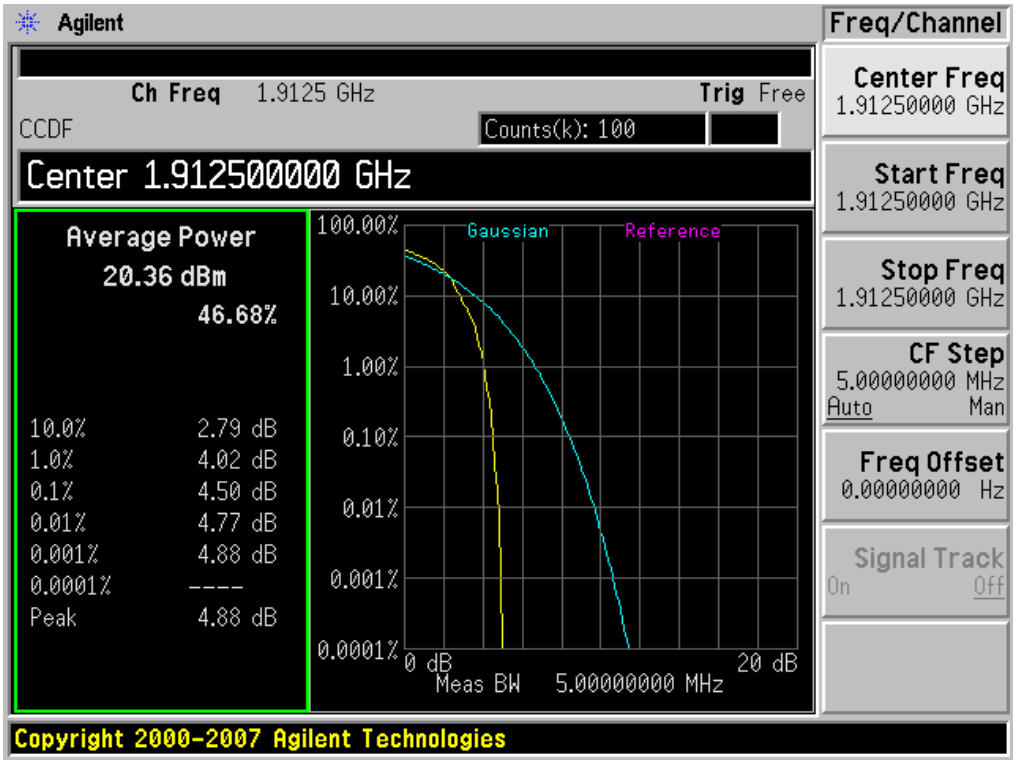
PAR Plot (1882.5: 5 MHz 16-QAM - RB Size 1, Offset 24)



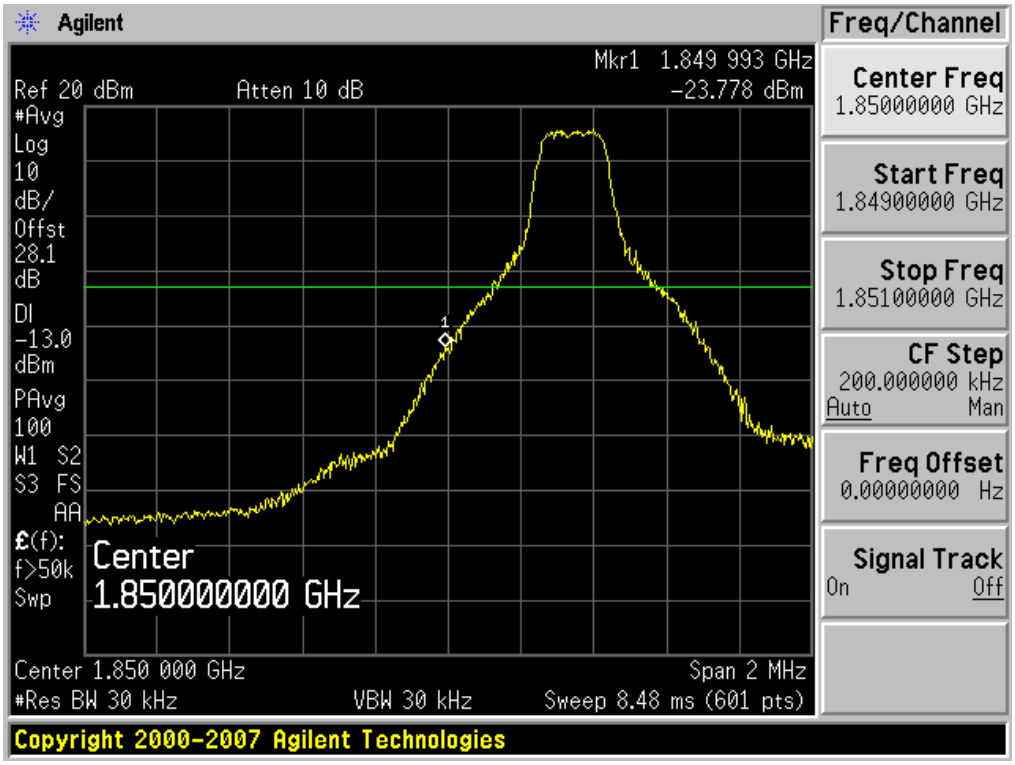
PAR Plot (1912.5: 5 MHz QPSK - RB Size 1, Offset 24)



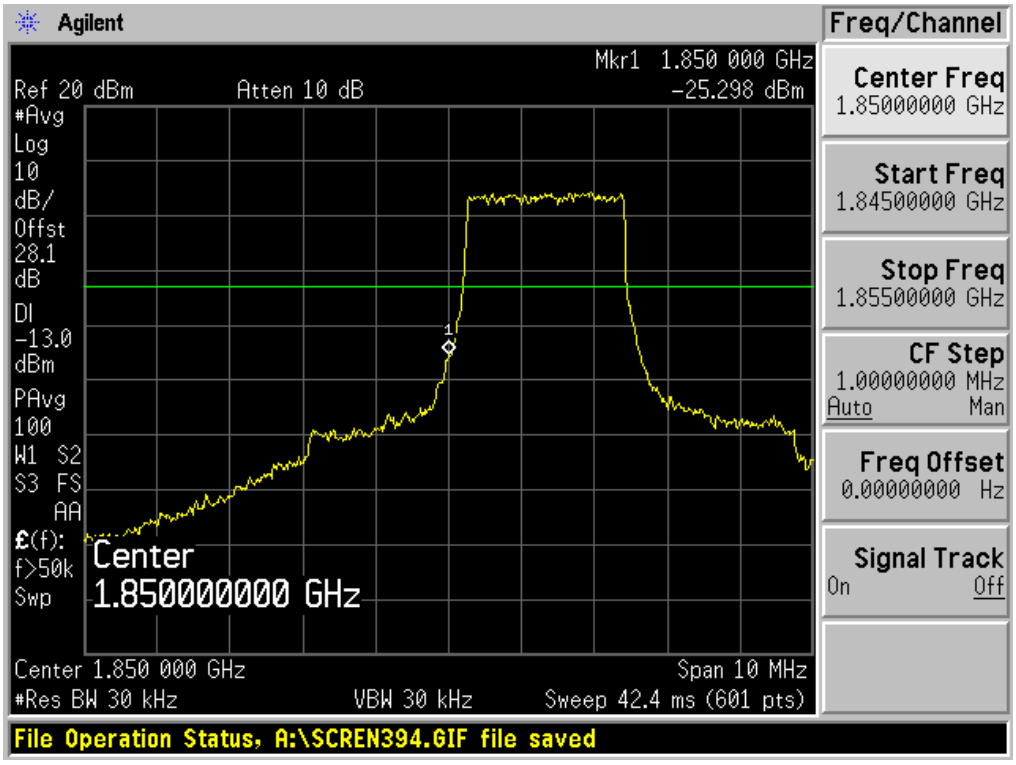
PAR Plot (1912.5: 5 MHz 16-QAM - RB Size 1, Offset 24)



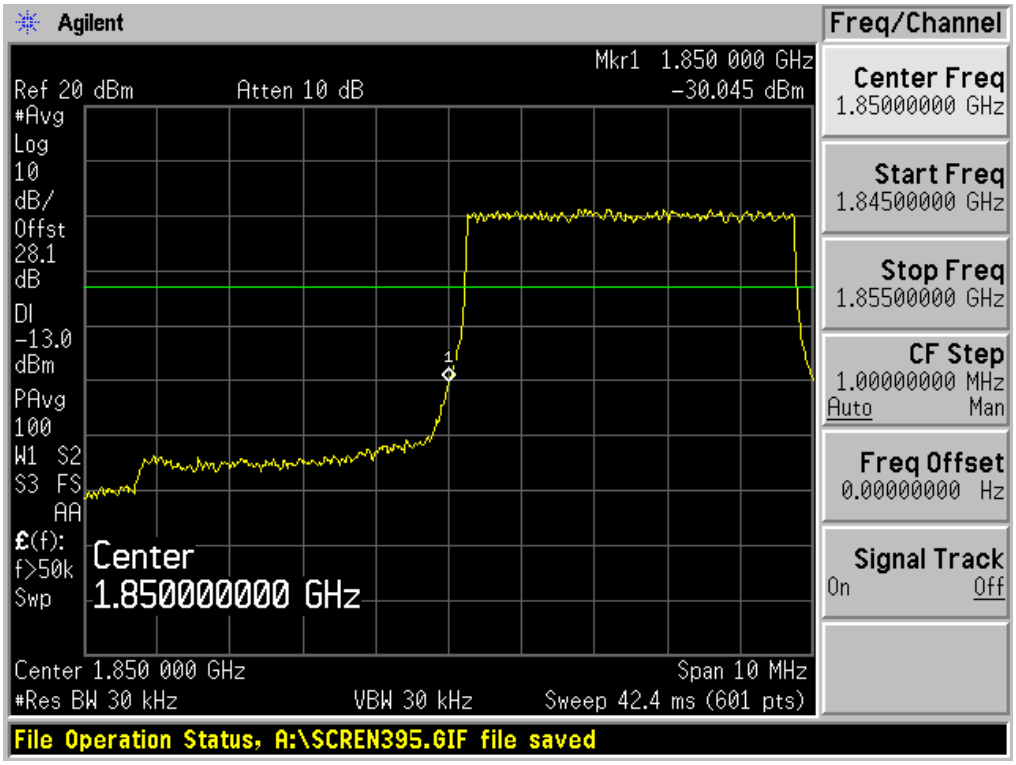
Lower Band Edge Plot (5 MHz QPSK - RB Size 1, Offset 0)



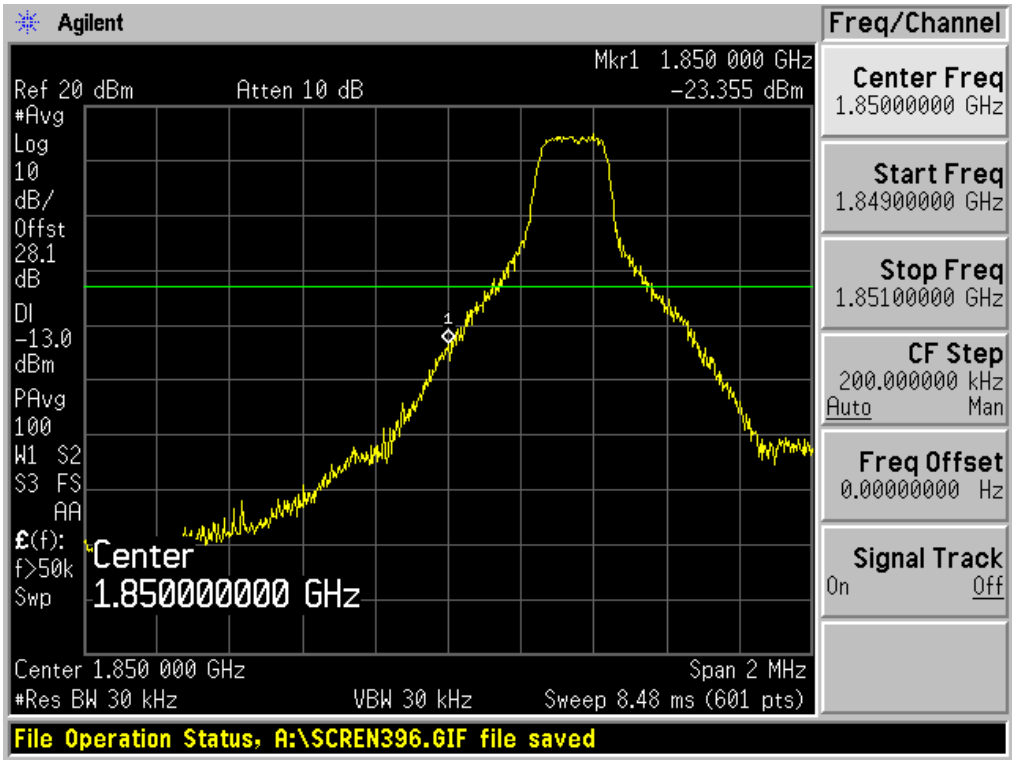
Lower Band Edge Plot (5 MHz QPSK - RB Size 12, Offset 6)



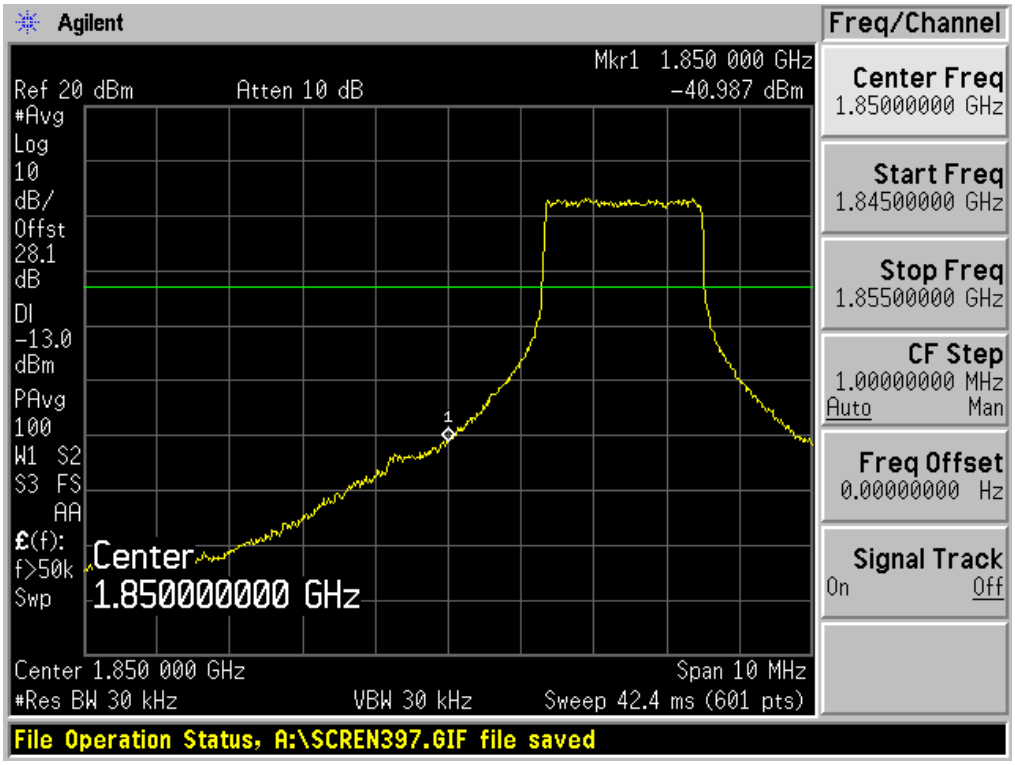
Lower Band Edge Plot (5 MHz QPSK - RB Size 25, Offset 0)



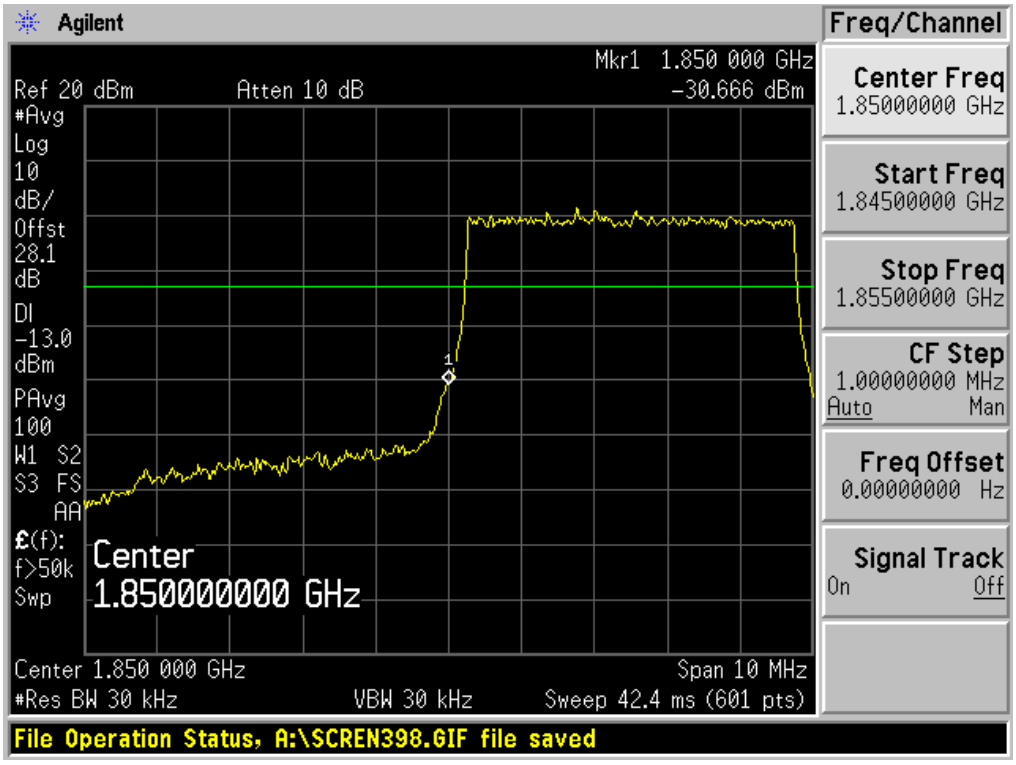
Lower Band Edge Plot (5 MHz 16-QAM - RB Size 1, Offset 0)



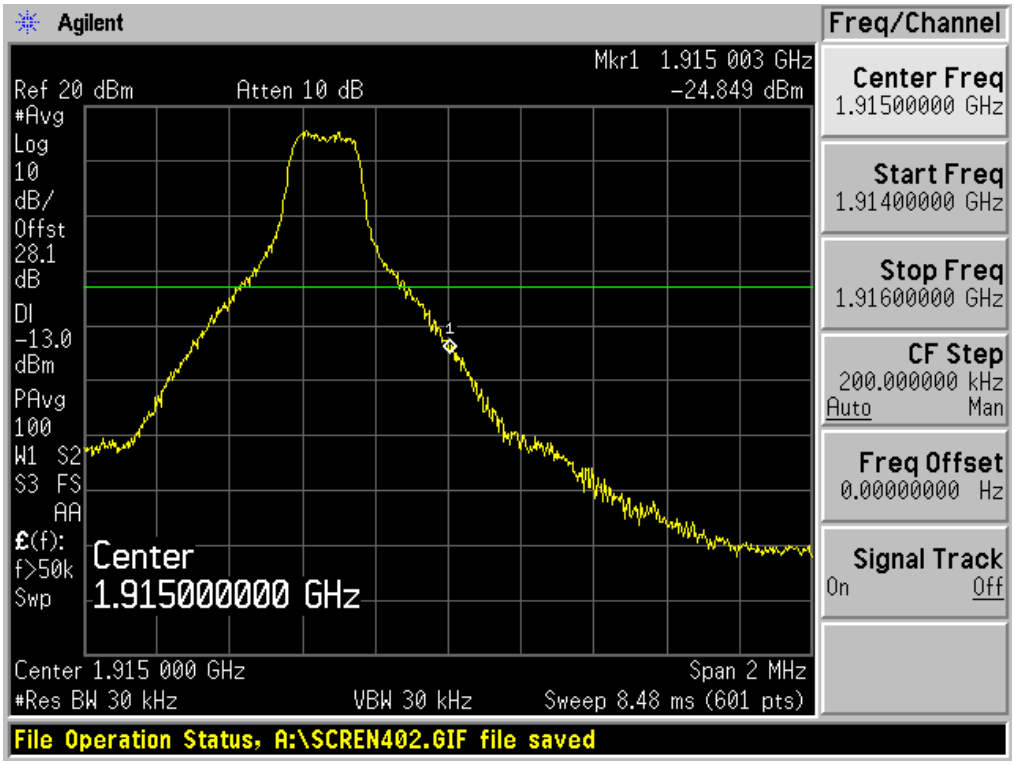
Lower Band Edge Plot (5 MHz 16-QAM - RB Size 12, Offset 6)



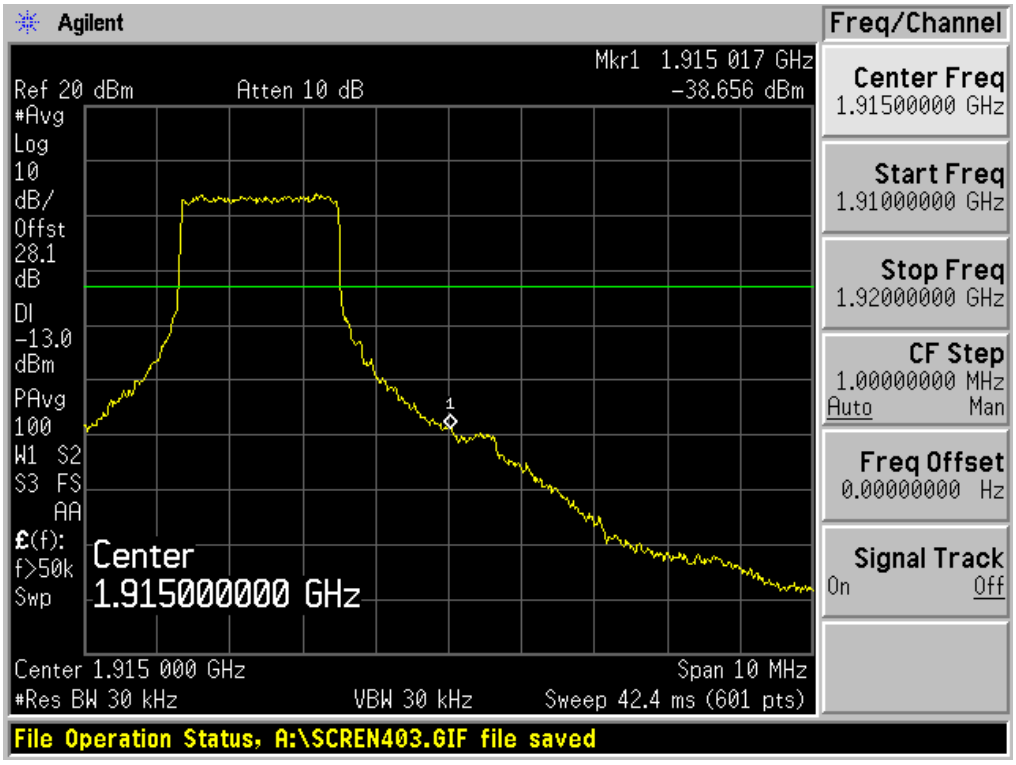
Lower Band Edge Plot (5 MHz 16-QAM - RB Size 25, Offset 0)



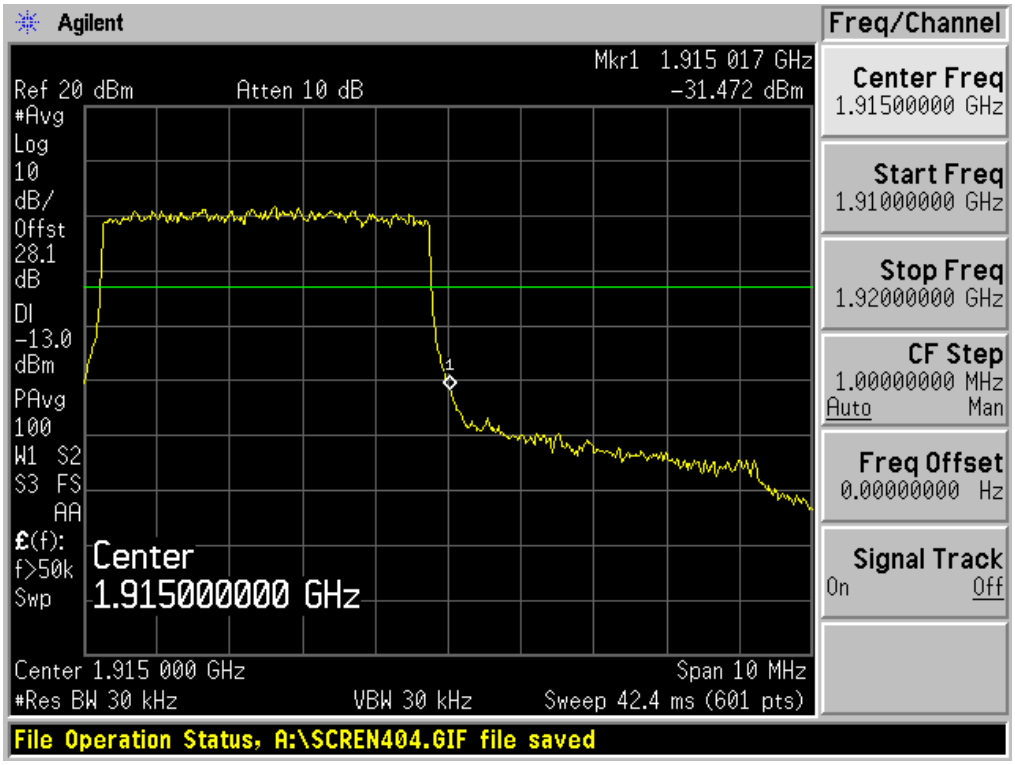
Upper Band Edge Plot (5 MHz QPSK - RB Size 1, Offset 24)



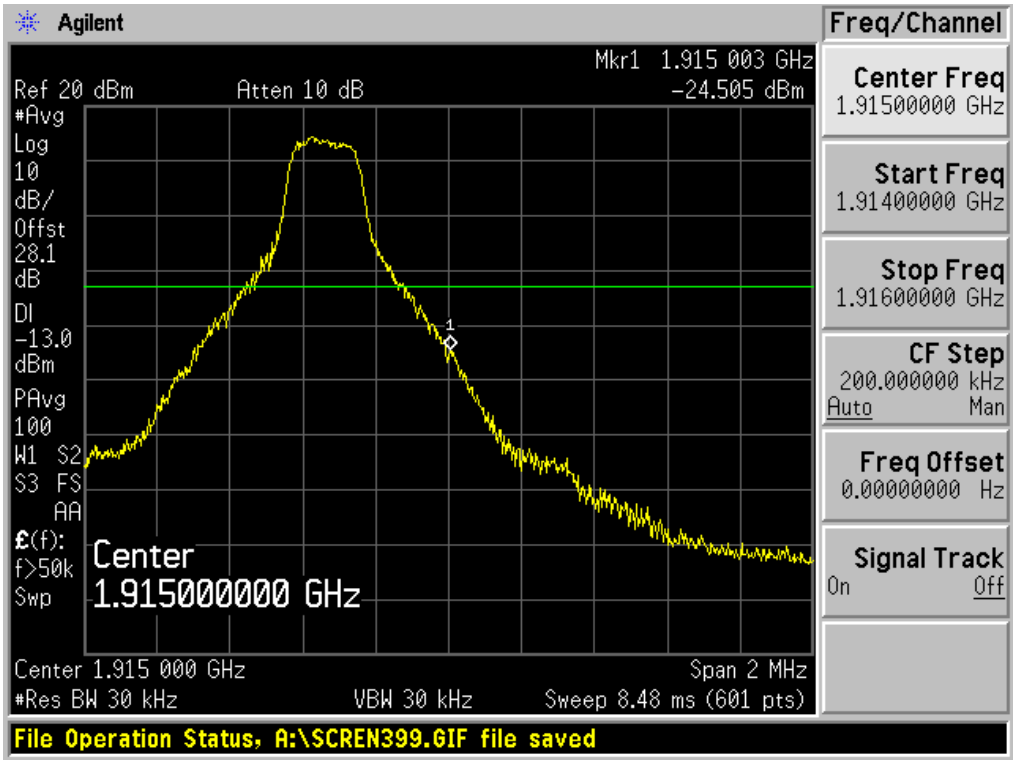
Upper Band Edge Plot (5 MHz QPSK - RB Size 12, Offset 6)



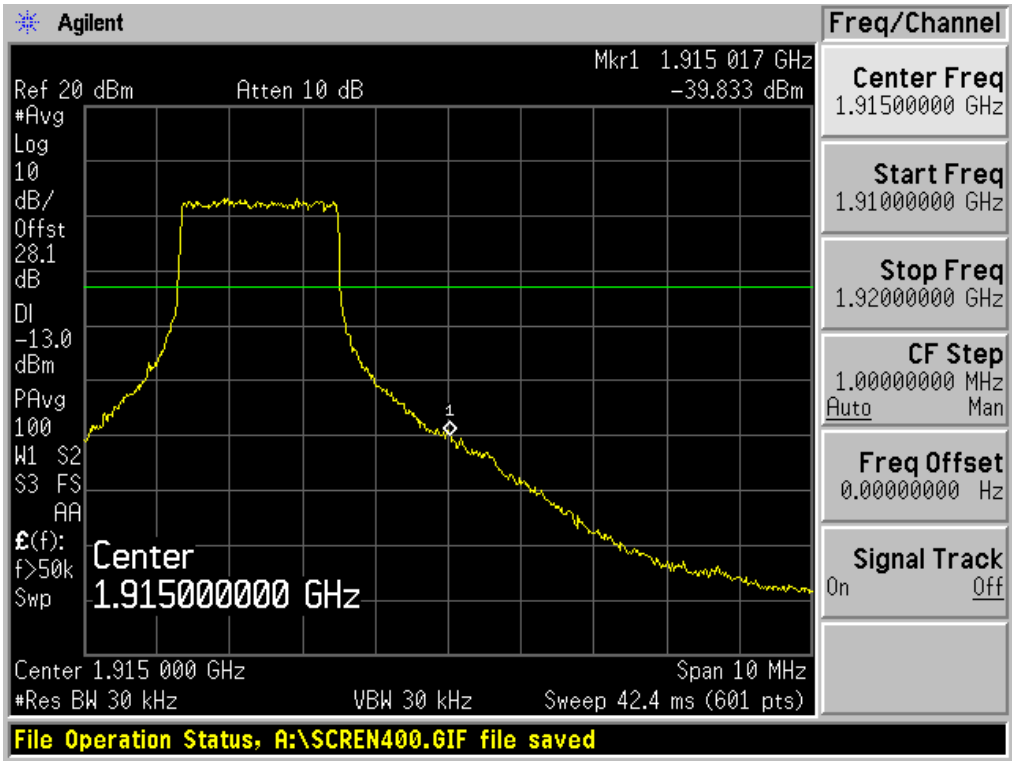
Upper Band Edge Plot (5 MHz QPSK - RB Size 25, Offset 0)



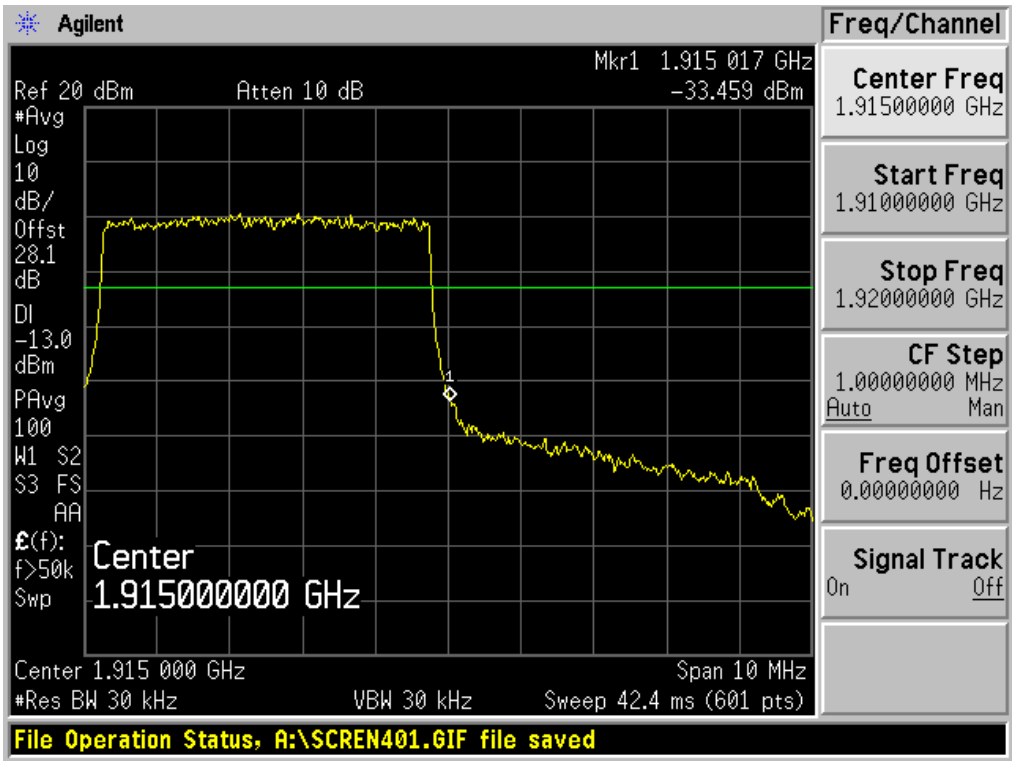
Upper Band Edge Plot (5 MHz 16-QAM - RB Size 1, Offset 24)



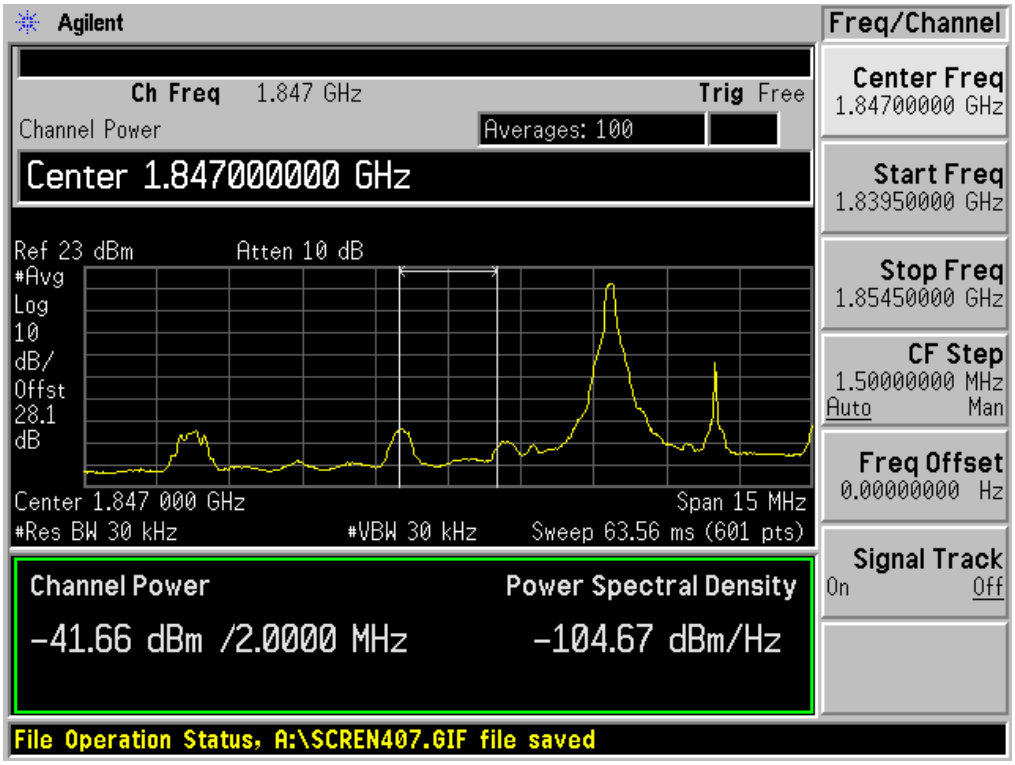
Upper Band Edge Plot (5 MHz 16-QAM - RB Size 12, Offset 6)



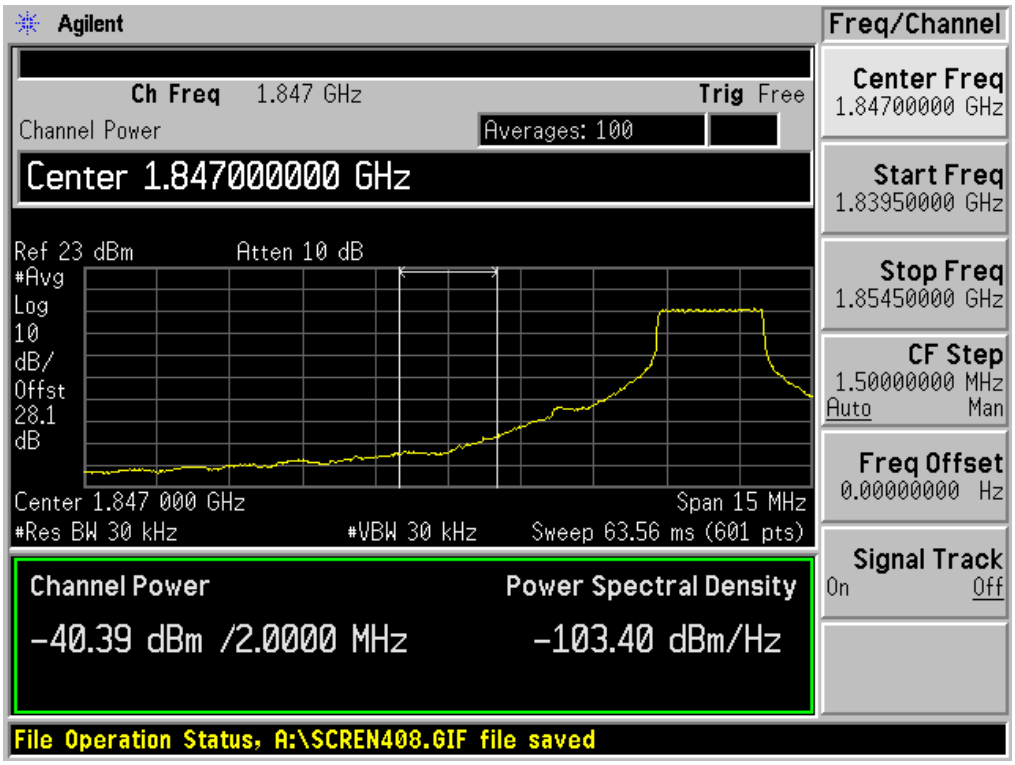
Upper Band Edge Plot (5 MHz 16-QAM - RB Size 25, Offset 0)



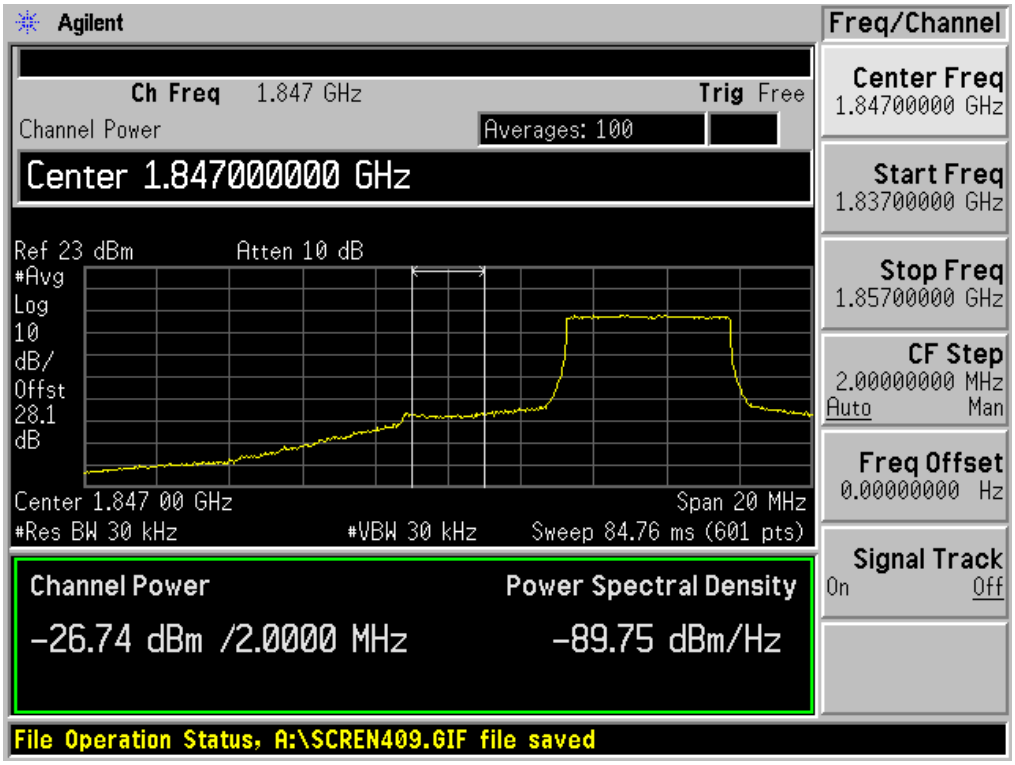
Lower Extended Band Edge Plot (5 MHz QPSK - RB Size 1, Offset 0)



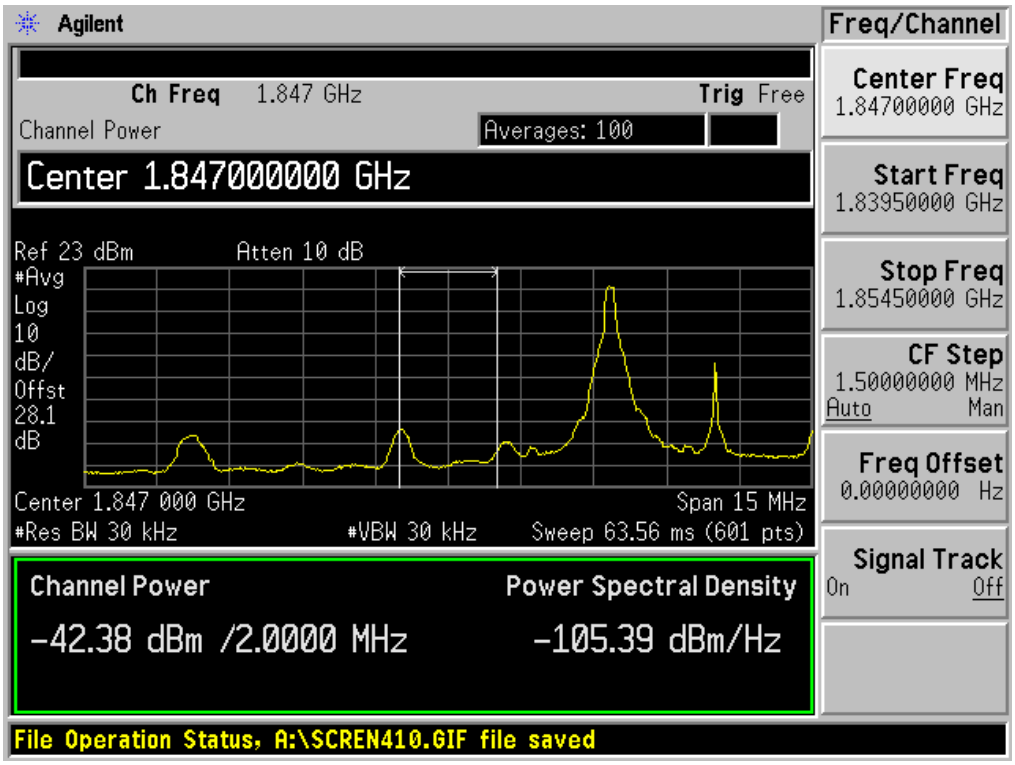
Lower Extended Band Edge Plot (5 MHz QPSK - RB Size 12, Offset 6)



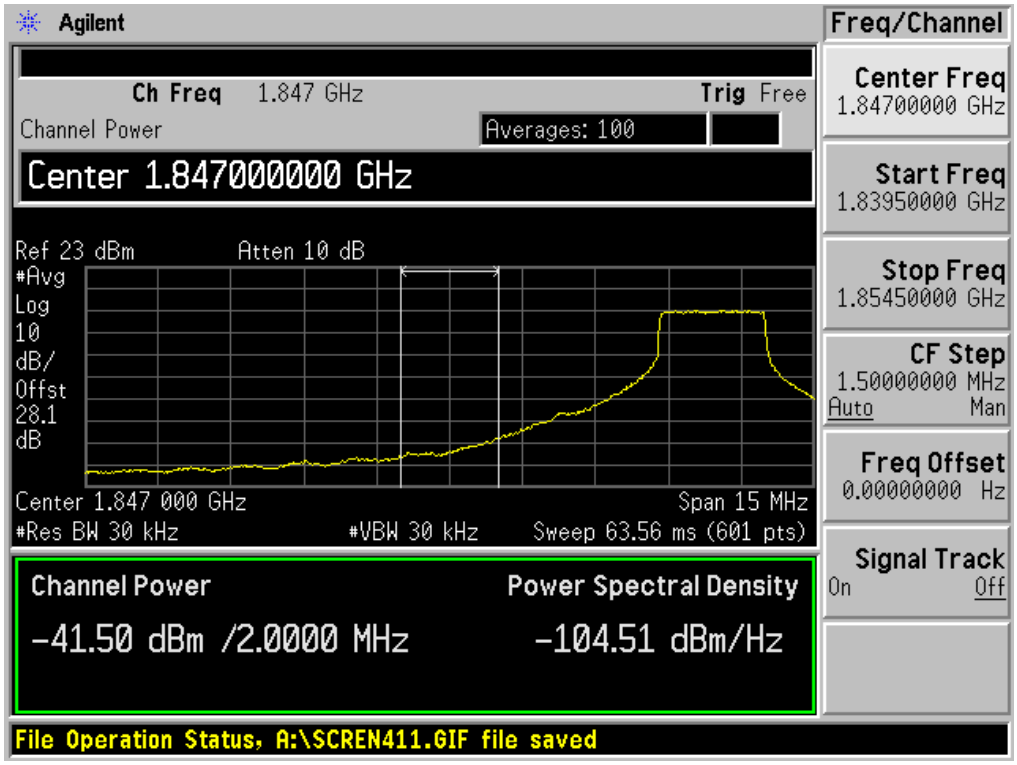
Lower Extended Band Edge Plot (5 MHz QPSK - RB Size 25, Offset 0)



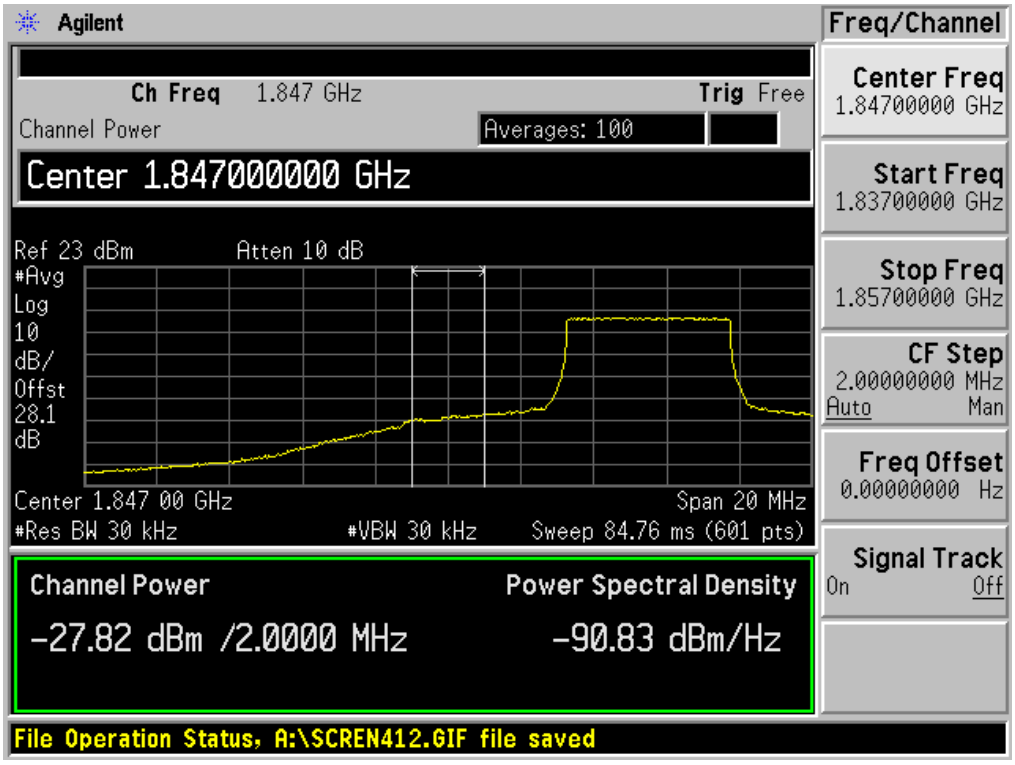
Lower Extended Band Edge Plot (5 MHz 16-QAM - RB Size 1, Offset 0)



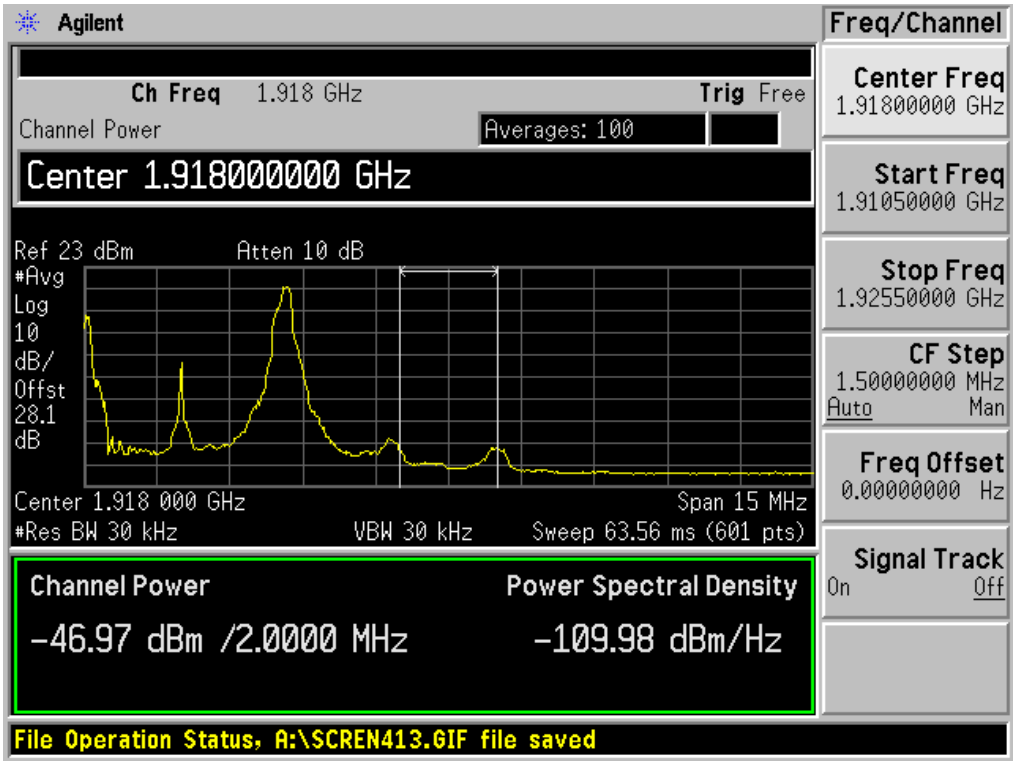
Lower Extended Band Edge Plot (5 MHz 16-QAM - RB Size 12, Offset 6)



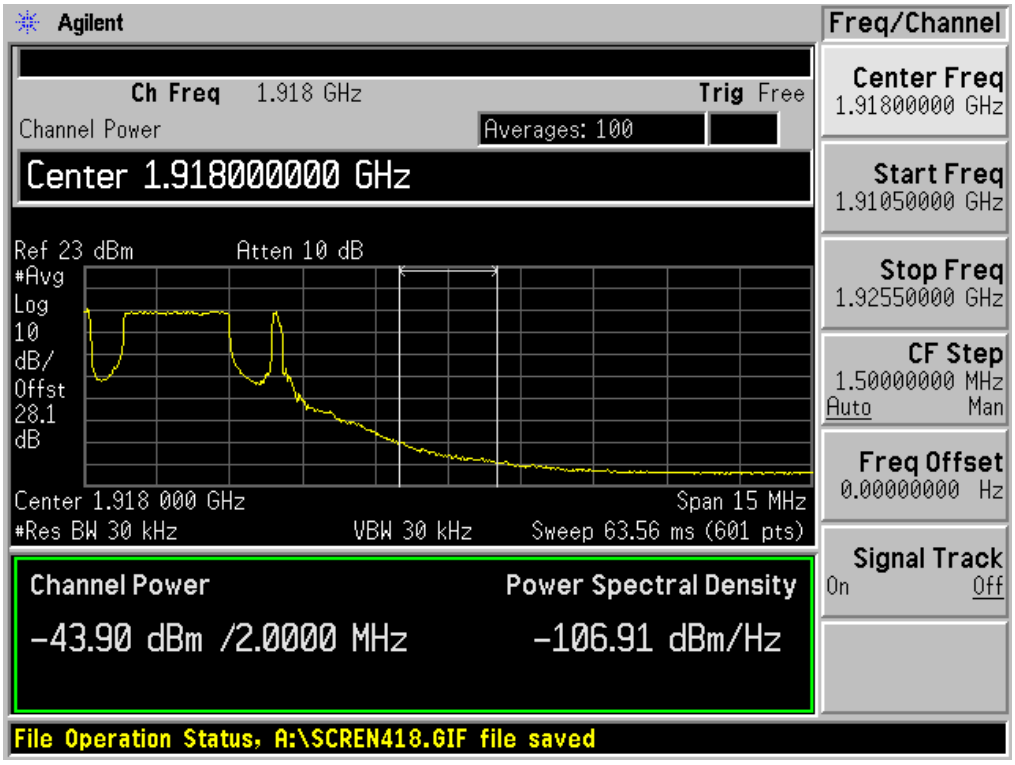
Lower Extended Band Edge Plot (5 MHz 16-QAM - RB Size 25, Offset 0)



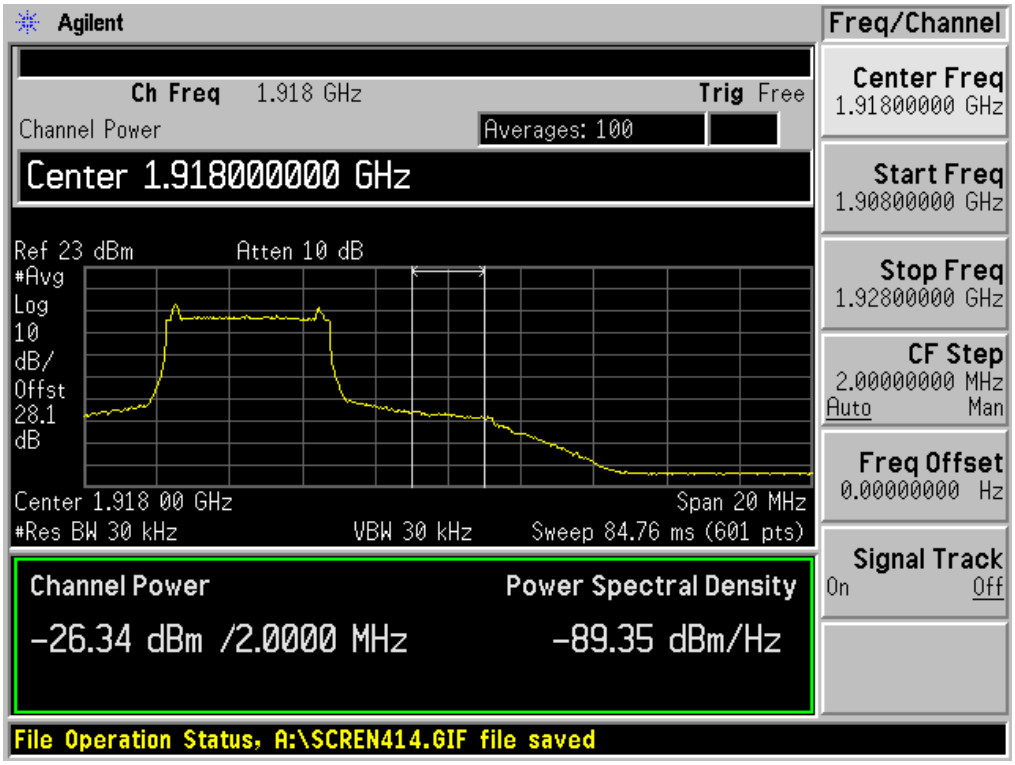
Upper Extended Band Edge Plot (5 MHz QPSK - RB Size 1, Offset 24)



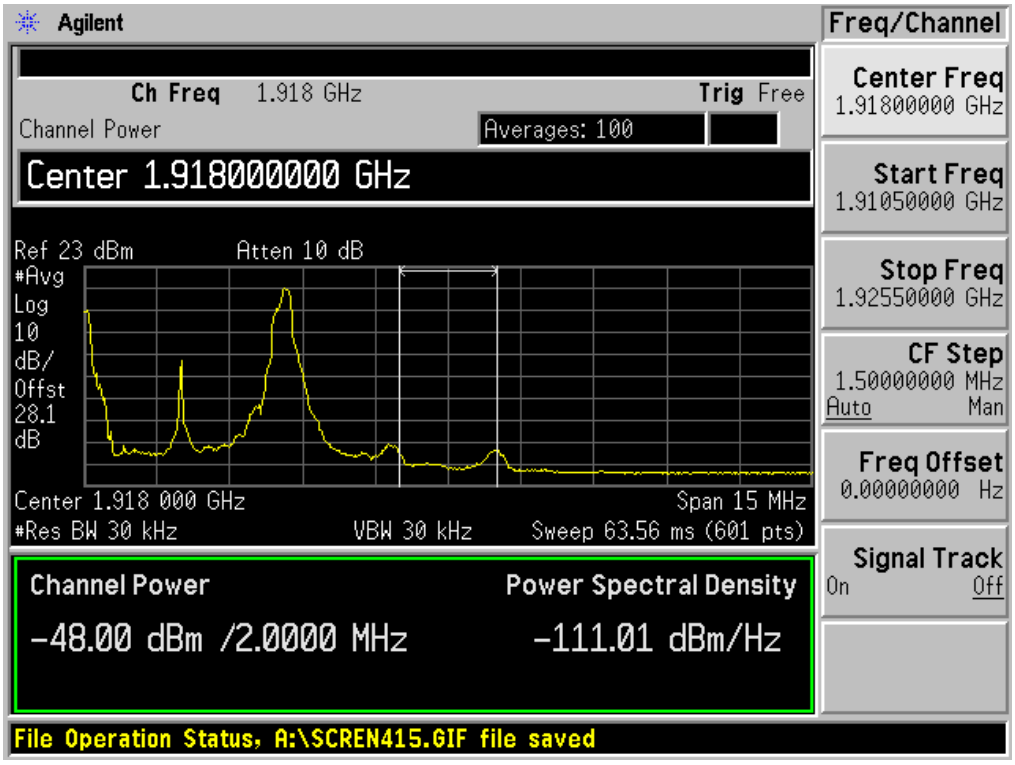
Upper Extended Band Edge Plot (5 MHz QPSK - RB Size 12, Offset 6)



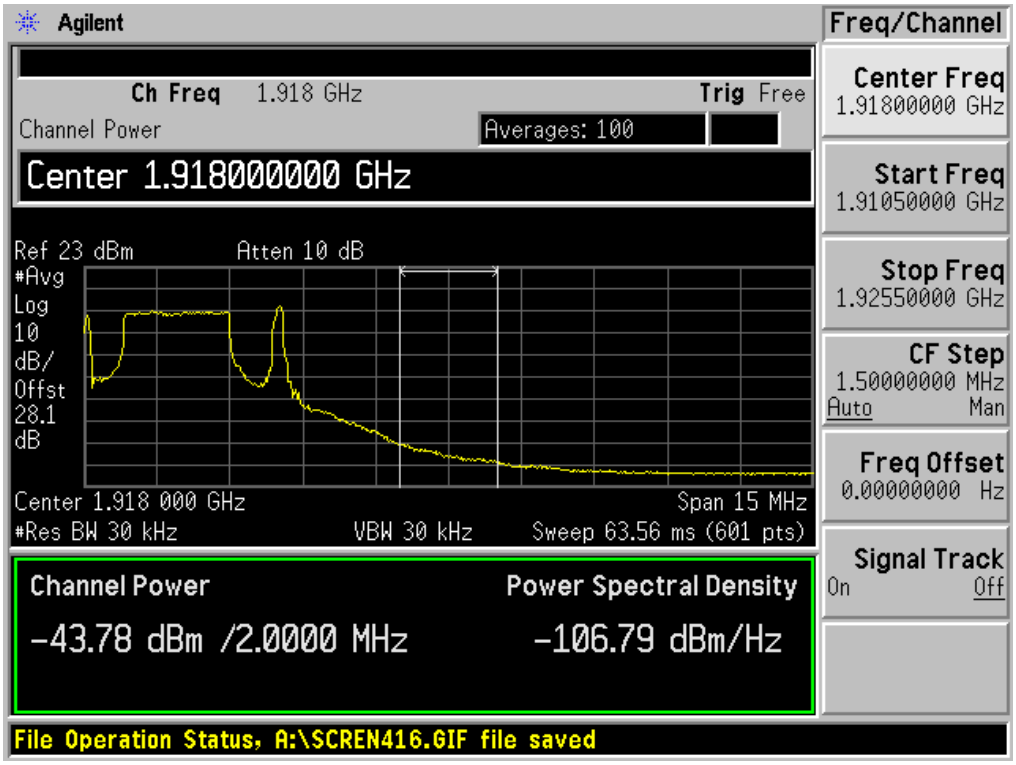
Upper Extended Band Edge Plot (5 MHz QPSK - RB Size 25, Offset 0)



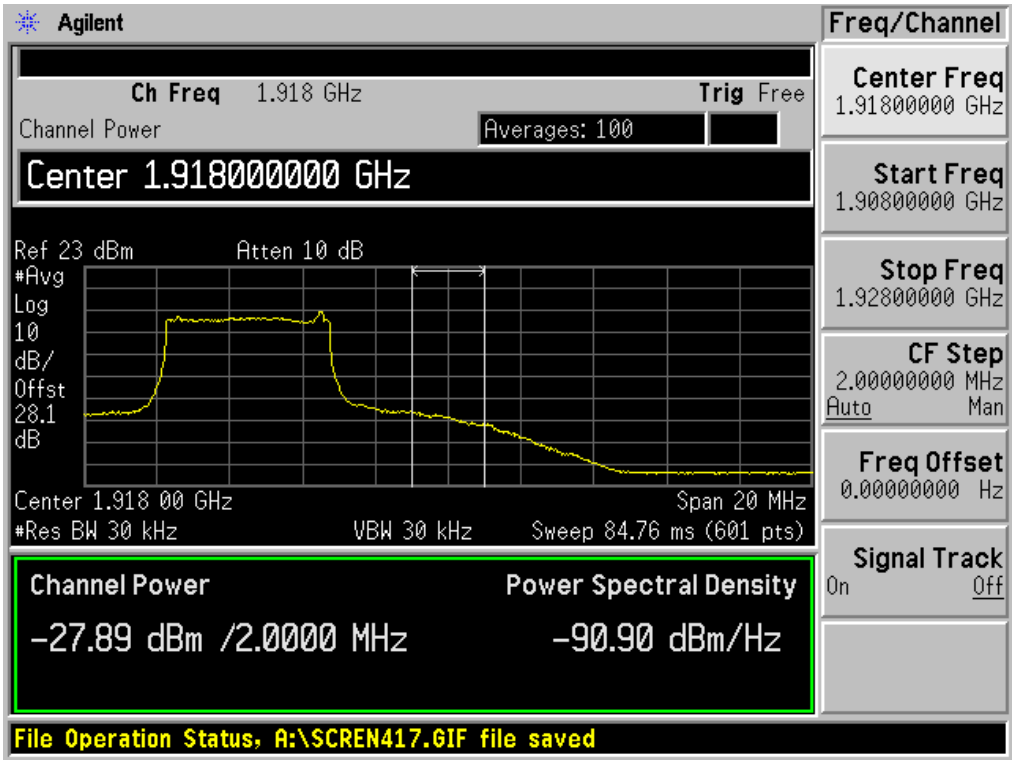
Upper Extended Band Edge Plot (5 MHz 16-QAM - RB Size 1, Offset 24)



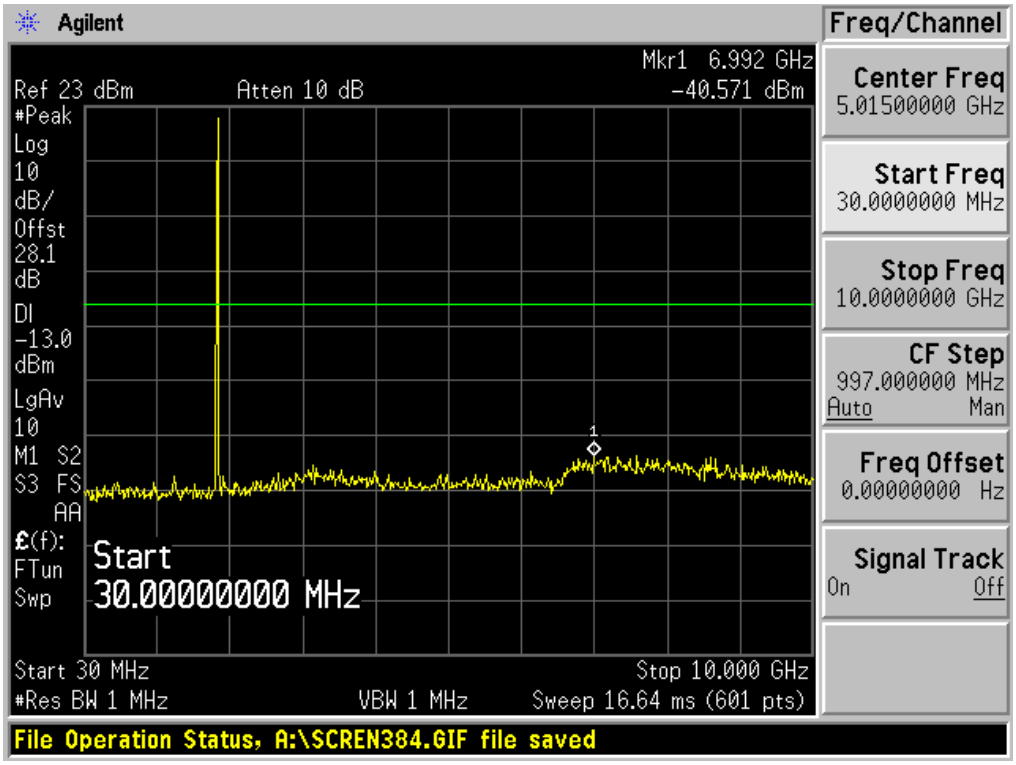
Upper Extended Band Edge Plot (5 MHz 16-QAM - RB Size 12, Offset 6)



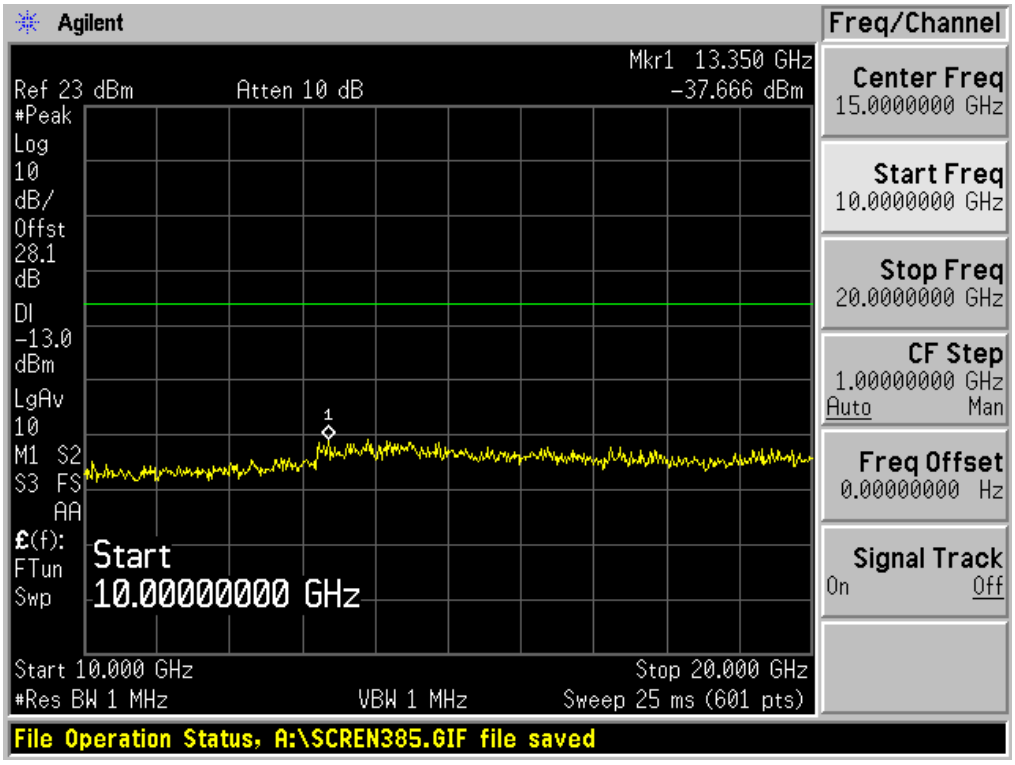
Upper Extended Band Edge Plot (5 MHz 16-QAM - RB Size 25, Offset 0)



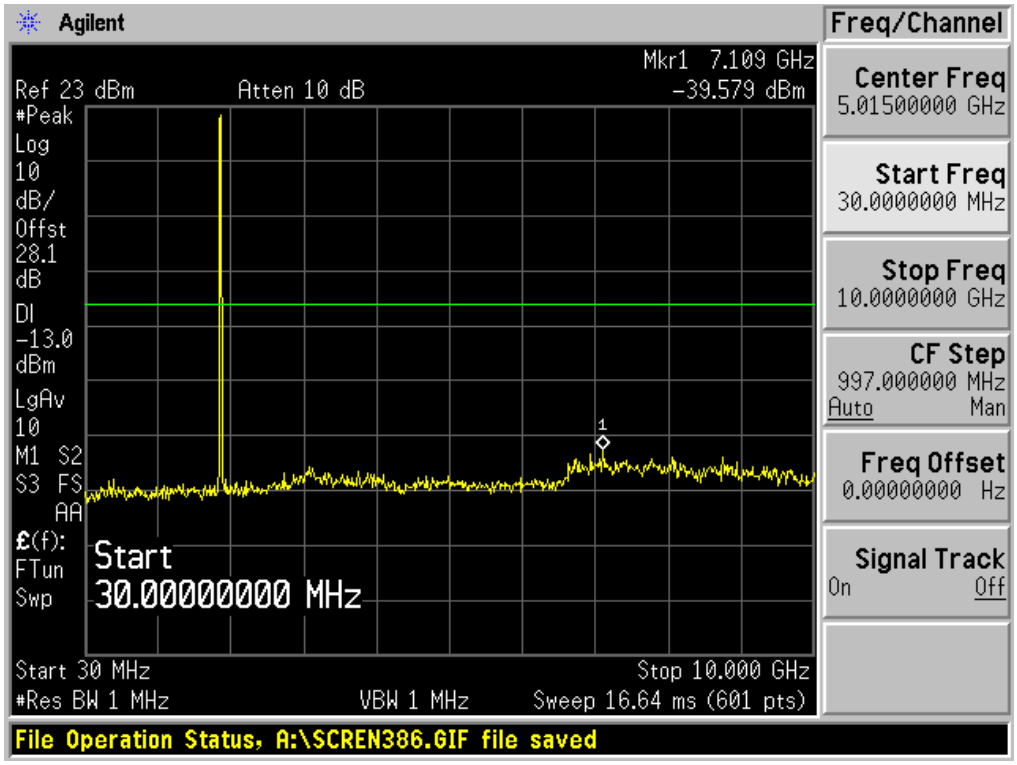
Conducted Spurious Plot (5 MHz QPSK - RB Size 25, RB Offset 0 - Low Channel)-1



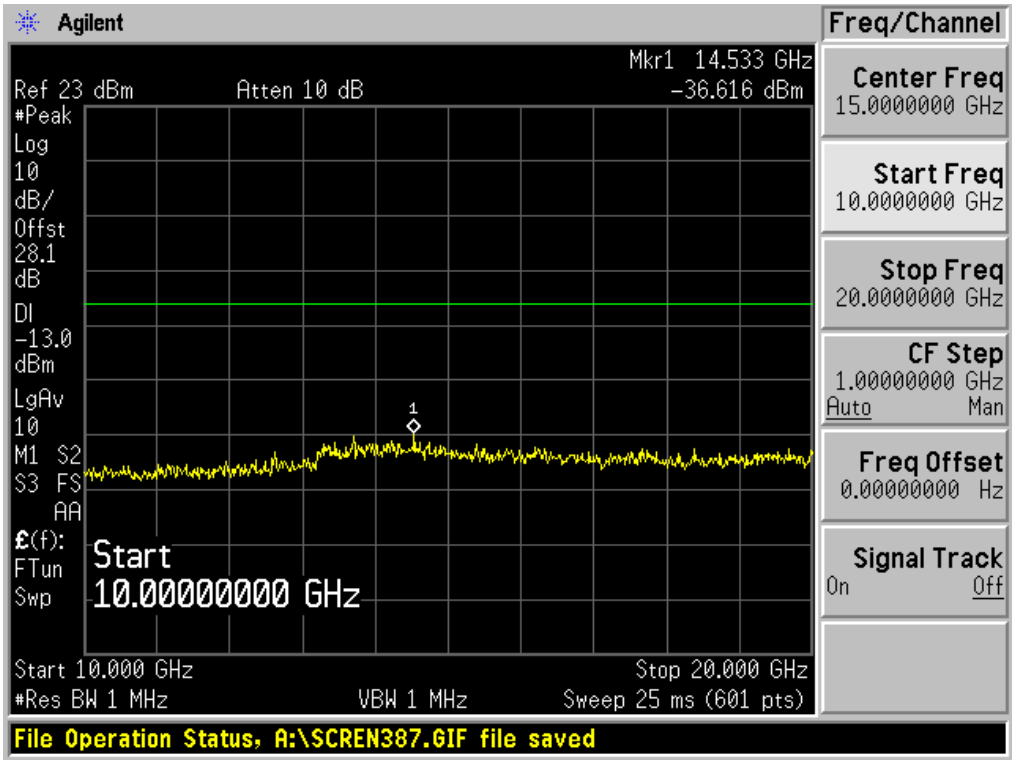
Conducted Spurious Plot (5 MHz QPSK - RB Size 25, RB Offset 0 - Low Channel)-2



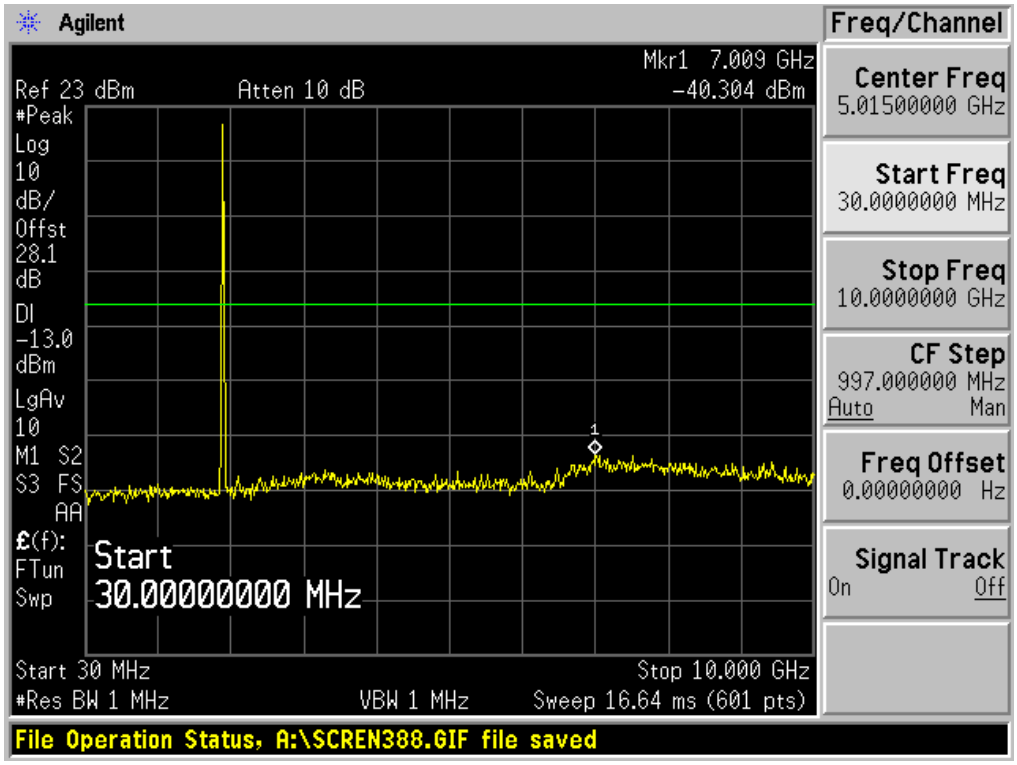
Conducted Spurious Plot (5 MHz QPSK - RB Size 25, RB Offset 0 - Mid Channel)-1



Conducted Spurious Plot (5 MHz QPSK - RB Size 25, RB Offset 0 - Mid Channel)-2



Conducted Spurious Plot (5 MHz QPSK - RB Size 25, RB Offset 0 - High Channel)-1



Conducted Spurious Plot (5 MHz QPSK - RB Size 25, RB Offset 0 - High Channel)-2