

FCC Test Report

Product Name	FIELDBOOK
Model No	E1
FCC ID.	XGIFBE1

Applicant	LOGIC INSTRUMENT S.A.
Address	43 Avenue de l'Europe, BP60012, 95330 DOMONT cedex, France.

Date of Receipt	Jul. 04, 2013
Issue Date	Aug. 13, 2013
Report No.	137173R-RFUSP42V01
Report Version	V1.0



The test results relate only to the samples tested.

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This report must not be used to claim product endorsement by TAF any agency of the U.S. Government

Test Report Certification

Issue Date: Aug. 13, 2013

Report No.: 137173R-RFUSP42V01



Product Name	FIELDBOOK
Applicant	LOGIC INSTRUMENT S.A.
Address	43 Avenue de l'Europe, BP60012, 95330 DOMONT cedex, France.
Manufacturer	Ubiqconn Technology, Inc.
Model No.	E1
FCC ID.	XGIFBE1
EUT Rated Voltage	AC 100-240V, 50-60Hz
EUT Test Voltage	AC 120V/60Hz
Trade Name	TETRA RUGGED COMPUTERS
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2012 ANSI C63.4: 2003, ANSI C63.10: 2009
Test Result	Complied

The test results relate only to the samples tested.

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(Assistant Engineer / Nowal Kuo)

Approved By :

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(Manager / Vincent Lin)

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Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	FIELDBOOK
Trade Name	TETRA RUGGED COMPUTERS
Model No.	E1
FCC ID.	XGIFBE1
Frequency Range	802.11b/g/n-20MHz:2412-2462MHz 802.11a/n-20MHz:5745-5825MHz
Number of Channels	802.11b/g/n-20MHz: 11 802.11a/n-20MHz: 5
Data Speed	802.11b: 1-11Mbps, 802.11a/g: 6-54Mbps, 802.11n: up to 72.2Mbps
Channel separation	802.11b/g/n-20MHz: 5 MHz, 802.11a/n-20MHz: 20MHz
Type of Modulation	802.11b:DSSS, DBPSK, DQPSK, CCK 802.11a/g/n: OFDM, BPSK, QPSK, 16QAM, 64QAM
Antenna Type	PIFA Antenna
Antenna Gain	Refer to the table "Antenna List"
Channel Control	Auto
Power Adapter	MFR: ELEMENTECH, M/N: AU12412030 Input: AC 100-240V, 50/60Hz, 0.6A Output: DC 12V, 2A Cable Out: Non-Shielded, 1.6m

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	Ethertronics Inc.	5001510	PIFA Antenna	2.2dBi For 2.4GHz 2.9dBi For 5.725~5.825GHz

Note: The antenna of EUT is conform to FCC 15.203

802.11b/g/n-20MHz Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 01:	2412 MHz	Channel 02:	2417 MHz	Channel 03:	2422 MHz	Channel 04:	2427 MHz
Channel 05:	2432 MHz	Channel 06:	2437 MHz	Channel 07:	2442 MHz	Channel 08:	2447 MHz
Channel 09:	2452 MHz	Channel 10:	2457 MHz	Channel 11:	2462 MHz		

802.11a/n-20MHz Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 149:	5745 MHz	Channel 153:	5765 MHz	Channel 157:	5785 MHz	Channel 161:	5805 MHz
Channel 165:	5825 MHz						

Note:

1. This device is a FIELDBOOK, Contains functions and so on WLAN、Bluetooth, This report for WLAN.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report.
(802.11b is 1Mbps、802.11g is 6Mbps、802.11n(20M-BW) is 7.2Mbps).
4. These tests are conducted on a sample for the purpose of demonstrating compliance of 802.11a/b/g/n transmitter with Part 15 Subpart C Paragraph 15.247 of spread spectrum devices.
5. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

Test Mode:	Mode 1: Transmit - 802.11b 1Mbps
	Mode 2: Transmit - 802.11g 6Mbps
	Mode 3: Transmit - 802.11a 6Mbps
	Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band)
	Mode 5: Transmit - 802.11n-20BW_7.2Mbps(5G Band)

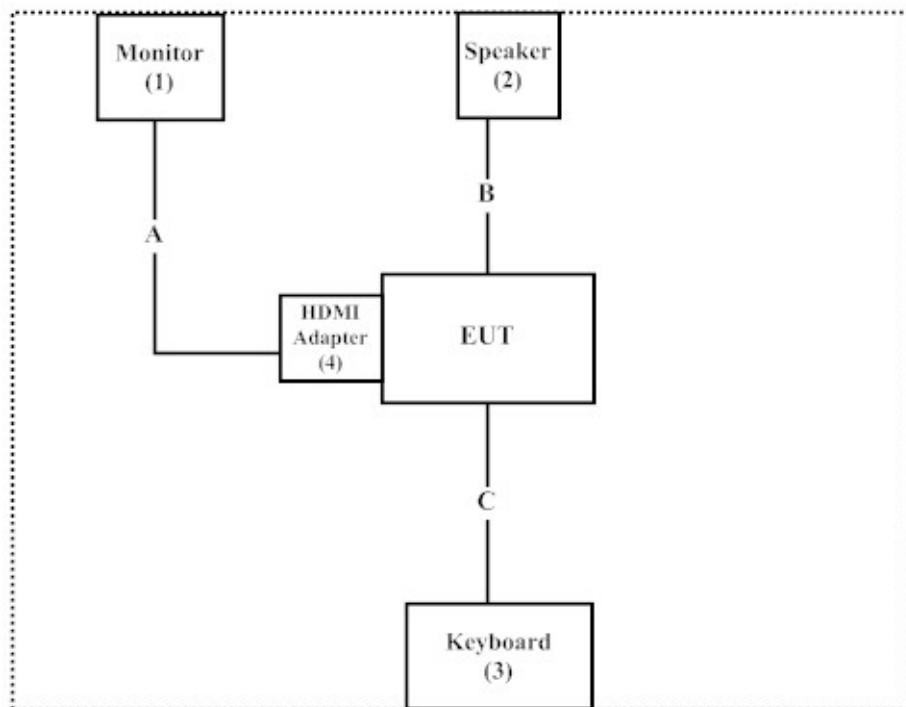
1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Monitor	DELL	ST232029	N/A	N/A
2	Speaker	PHILIPS	SBP1100	HS1A0825057486	N/A
3	Keyboard	Logitech	Y-UR83	SY853UK	N/A
4	HDMI Adapter	Avier	N/A	N/A	N/A

Signal Cable Type		Signal cable Description
A	HDMI Cable	Non-Shielded, 1.5m
B	Speaker Cable	Non-Shielded, 1.5m
C	Keyboard Cable	Non-Shielded, 1.2m

1.4. Configuration of Tested System



1.5. EUT Exercise Software

- (1) Setup the EUT as shown in Section 1.4
- (2) Execute program “Terminal Emulator v1.0.45” on the EUT.
- (3) Configure the test mode, the test channel, and the data rate.
- (4) Press “OK” to start the continuous Transmit.
- (5) Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site : <http://www.quietek.com/tw/ctg/cts/accreditations.htm>

The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : <http://www.quietek.com/>

Site Description: File on
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046
Registration Number: 92195

Site Description: Accredited by TAF
Accredited Number: 0914

Site Name: Quietek Corporation
Site Address: No.5-22, Ruishukeng Linkou Dist., New Taipei City
24451, Taiwan, R.O.C.
TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : service@quietek.com

FCC Accreditation Number: TW1014

2. Conducted Emission

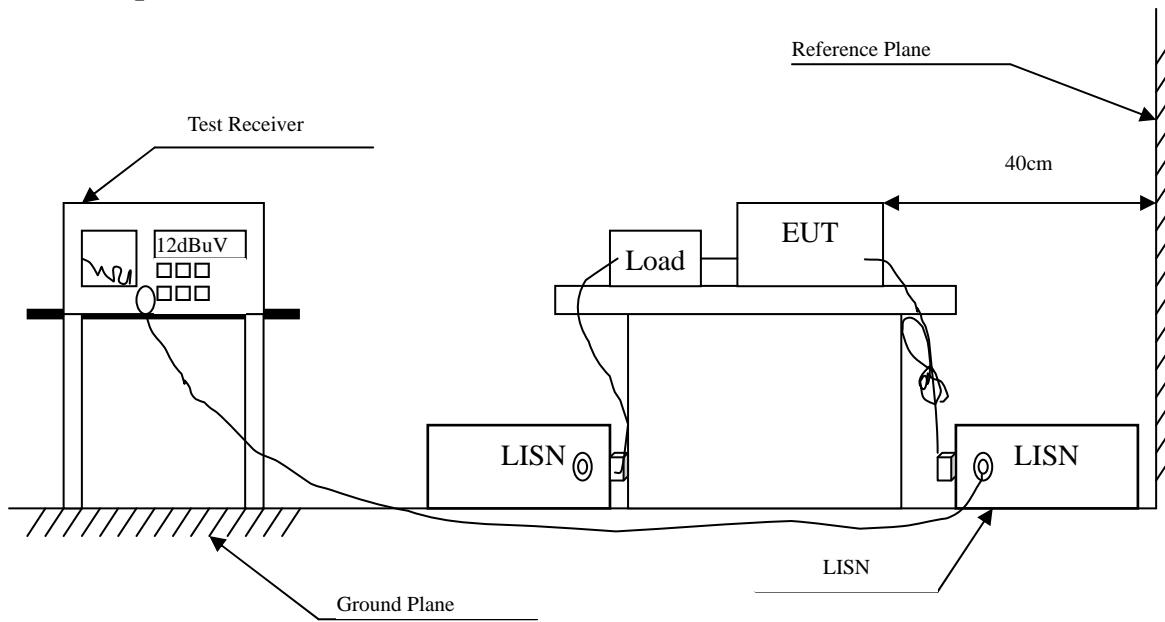
2.1. Test Equipment

The following test equipment are used during the conducted emission test:

	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.	Remark
X	Test Receiver	R & S	ESCS 30 / 825442/018	Sep., 2012	
X	Artificial Mains Network	R & S	ENV4200 / 848411/10	Feb., 2013	Peripherals
X	LISN	R & S	ESH3-Z5 / 825562/002	Feb., 2013	EUT
	DC LISN	Schwarzbeck	8226 / 176	Mar, 2013	EUT
X	Pulse Limiter	R & S	ESH3-Z2 / 357.8810.52	Feb., 2013	
	No.1 Shielded Room				

Note: All instruments are calibrated every one year.

2.2. Test Setup



2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBuV) Limit		
Frequency MHz	Limits	
	QP	AVG
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

2.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2009 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.5. Uncertainty

± 2.26 dB

2.6. Test Result of Conducted Emission

Product : FIELDBOOK
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 1					
Quasi-Peak					
0.177	9.698	30.900	40.598	-24.631	65.229
0.220	9.700	24.070	33.770	-30.230	64.000
0.396	9.708	34.590	44.298	-14.673	58.971
0.998	9.735	20.130	29.865	-26.135	56.000
1.455	9.766	19.590	29.356	-26.644	56.000
19.525	9.910	12.170	22.080	-37.920	60.000
Average					
0.177	9.698	27.510	37.208	-18.021	55.229
0.220	9.700	12.850	22.550	-31.450	54.000
0.396	9.708	26.770	36.478	-12.493	48.971
0.998	9.735	16.450	26.185	-19.815	46.000
1.455	9.766	15.440	25.206	-20.794	46.000
19.525	9.910	7.900	17.810	-32.190	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ “ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : FIELDBOOK
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz		dBuV	dBuV	dB	dBuV
Line 2					
Quasi-Peak					
0.173	9.677	29.750	39.427	-25.916	65.343
0.392	9.687	33.120	42.807	-16.279	59.086
0.798	9.716	23.410	33.126	-22.874	56.000
1.490	9.751	21.260	31.011	-24.989	56.000
2.361	9.790	23.310	33.100	-22.900	56.000
5.103	9.820	22.780	32.600	-27.400	60.000
Average					
0.173	9.677	14.510	24.187	-31.156	55.343
0.392	9.687	29.570	39.257	-9.829	49.086
0.798	9.716	19.360	29.076	-16.924	46.000
1.490	9.751	17.190	26.941	-19.059	46.000
2.361	9.790	18.220	28.010	-17.990	46.000
5.103	9.820	18.630	28.450	-21.550	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ “ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : FIELDBOOK
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : Mode 5: Transmit - 802.11n-20BW_7.2Mbps(5G Band) (5785MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz		dBuV	dBuV	dB	dBuV
Line 1					
Quasi-Peak					
0.193	9.698	39.840	49.538	-15.233	64.771
0.248	9.701	28.860	38.561	-24.639	63.200
0.338	9.705	27.440	37.145	-23.484	60.629
0.470	9.711	36.550	46.261	-10.596	56.857
0.795	9.726	22.100	31.826	-24.174	56.000
1.712	9.777	19.330	29.107	-26.893	56.000
Average					
0.193	9.698	28.400	38.098	-16.673	54.771
0.248	9.701	11.210	20.911	-32.289	53.200
0.338	9.705	16.950	26.655	-23.974	50.629
0.470	9.711	33.380	43.091	-3.766	46.857
0.795	9.726	15.800	25.526	-20.474	46.000
1.712	9.777	11.140	20.917	-25.083	46.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ “ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : FIELDBOOK
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Mode : Mode 5: Transmit - 802.11n-20BW_7.2Mbps(5G Band) (5785MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 2					
Quasi-Peak					
0.181	9.678	37.450	47.128	-17.986	65.114
0.228	9.680	31.680	41.360	-22.411	63.771
0.283	9.682	30.300	39.982	-22.218	62.200
0.466	9.691	33.280	42.971	-14.000	56.971
1.084	9.729	23.490	33.219	-22.781	56.000
4.423	9.820	23.480	33.300	-22.700	56.000
Average					
0.181	9.678	22.880	32.558	-22.556	55.114
0.228	9.680	16.960	26.640	-27.131	53.771
0.283	9.682	20.790	30.472	-21.728	52.200
0.466	9.691	29.240	38.931	-8.040	46.971
1.084	9.729	16.720	26.449	-19.551	46.000
4.423	9.820	18.330	28.150	-17.850	46.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

3. Peak Power Output

3.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Power Meter	Anritsu	ML2495A/6K00003357	May, 2013
X	Power Sensor	Anritsu	MA2411B/0738448	Jun, 2013
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2013
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2013
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2013

Note:

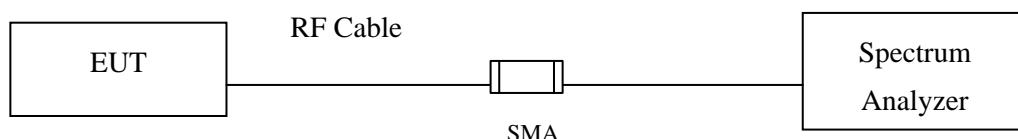
1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.

3.2. Test Setup

Average Power For different Data Rate (Mbps)



Peak Power Measurement



3.3. Limits

The maximum peak power shall be less 1 Watt.

3.4. Test Procedure

The EUT was tested according to DTS test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements. The maximum peak conducted output power using KDB 558074 section 9.1.3 PKPM1 Peak power meter method.

3.5. Uncertainty

± 1.27 dB

3.6. Test Result of Peak Power Output

Product : FIELDBOOK
 Test Item : Peak Power Output Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit - 802.11b 1Mbps

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)				Peak Power	Required Limit	Result
		1	2	5.5	11			
		Measurement Level (dBm)						
01	2412	17.15	-	-	-	19.53	<30dBm	Pass
06	2437	17.36	17.3	17.28	17.25	19.82	<30dBm	Pass
11	2462	17.12	-	-	-	19.65	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Product : FIELDBOOK
 Test Item : Peak Power Output Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit - 802.11g 6Mbps

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		6	9	12	18	24	36	48	54			
		Measurement Level (dBm)										
01	2412	16.43	-	-	-	-	-	-	-	25.8	<30dBm	Pass
06	2437	16.86	16.7	16.48	15.79	15.5	15.1	14.33	13.04	25.98	<30dBm	Pass
11	2462	16.2	-	-	-	-	-	-	-	25.6	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Product : FIELDBOOK
 Test Item : Peak Power Output Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - 802.11a 6Mbps

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		6	9	12	18	24	36	48	54			
		Measurement Level (dBm)										
149	5745	12.26	--	--	--	--	--	--	--	17.1	<30dBm	Pass
157	5785	12.27	12.19	12.17	12.16	12.12	12.09	12.05	11.98	17.23	<30dBm	Pass
165	5825	11.81	--	--	--	--	--	--	--	17.38	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Product : FIELDBOOK
 Test Item : Peak Power Output Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band)

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		7.2	14.4	21.7	28.9	43.3	57.8	65	72.2			
		Measurement Level (dBm)										
01	2412	16.28	-	-	-	-	-	-	-	25.7	<30dBm	Pass
06	2437	16.54	16.07	15.74	15.19	14.8	14.3	12.59	12.16	25.78	<30dBm	Pass
11	2462	16.79	-	-	-	-	-	-	-	25.84	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Product : FIELDBOOK
 Test Item : Peak Power Output Data
 Test Site : No.3 OATS
 Test Mode : Mode 5: Transmit - 802.11n-20BW_7.2Mbps(5G Band)

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		7.2	14.4	21.7	28.9	43.3	57.8	65	72.2			
		Measurement Level (dBm)										
149	5745	12.31	--	--	--	--	--	--	--	17.18	<30dBm	Pass
157	5785	12.05	11.98	11.94	11.86	11.76	11.69	11.57	11.49	17.24	<30dBm	Pass
165	5825	11.82	--	--	--	--	--	--	--	17.32	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

4. Radiated Emission

4.1. Test Equipment

The following test equipment are used during the radiated emission test:

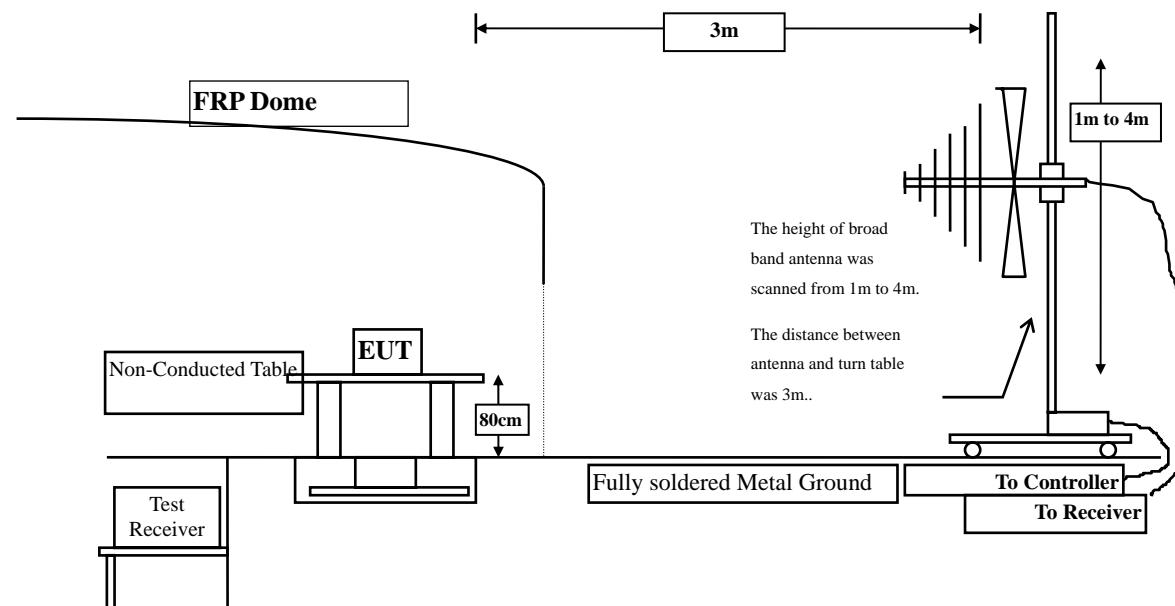
Test Site	Equipment		Manufacturer	Model No./Serial No.	Last Cal.
☒Site # 3	X	Loop Antenna	Teseq	HLA6120 / 26739	Jul., 2013
	X	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2012
	X	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2012
	X	Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2013
	X	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2013
	X	Pre-Amplifier	QTK	AP-180C / CHM_0906076	Sep., 2012
	X	Pre-Amplifier	MITEQ	AMF-4D-180400-45-6P/ 925975	Mar., 2013
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2013
	X	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2012
	X	Coaxial Cable	QuiTek	QTK-CABLE/ CAB5	Feb., 2013
	X	Controller	QuiTek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

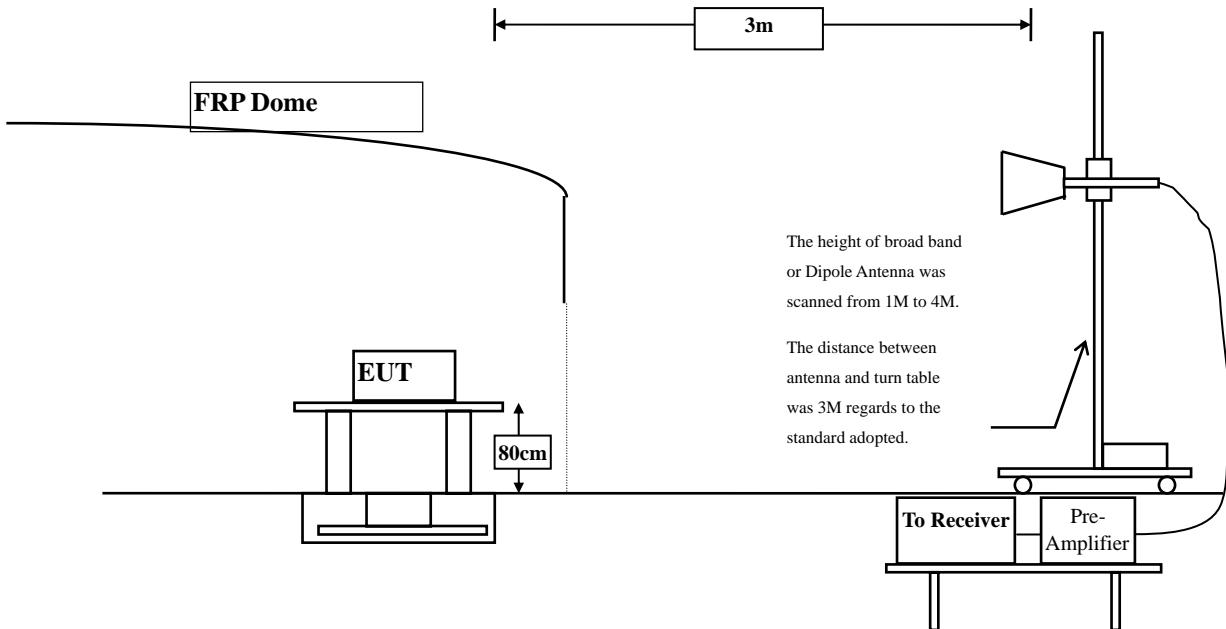
2. The test instruments marked with “X” are used to measure the final test results.

4.2. Test Setup

Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



4.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209(a) Limits		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remarks: E field strength (dBuV/m) = 20 log E field strength (uV/m)

4.4. Test Procedure

The EUT was setup according to ANSI C63.10, 2009 and tested according to DTS test procedure of ANSI C63.10: 2009 for compliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2009 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The worst radiated emission is measured in the Open Area Test Site on the Final Measurement.

The measurement frequency range form 9KHz - 10th Harmonic of fundamental was investigated.

4.5. Uncertainty

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

4.6. Test Result of Radiated Emission

Product : FIELDBOOK
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit - 802.11b 1Mbps (2412MHz)

Frequency MHz	Correct Factor	Reading Level dB	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4824.000	2.428	43.400	45.829	-28.171	74.000
7236.000	9.177	39.710	48.887	-25.113	74.000
9648.000	10.019	39.750	49.770	-24.230	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	2.836	44.070	46.907	-27.093	74.000
7236.000	9.676	39.390	49.066	-24.934	74.000
9648.000	10.556	39.430	49.987	-24.013	74.000
Average Detector:					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : FIELDBOOK
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit - 802.11b 1Mbps (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal**Peak Detector:**

4874.000	2.076	44.250	46.327	-27.673	74.000
7311.000	9.512	38.990	48.502	-25.498	74.000
9748.000	9.630	38.610	48.240	-25.760	74.000

Average**Detector:**

--

Vertical**Peak Detector:**

4874.000	2.532	42.300	44.832	-29.168	74.000
7311.000	10.089	39.060	49.149	-24.851	74.000
9748.000	10.266	39.460	49.727	-24.273	74.000

Average**Detector:**

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : FIELDBOOK
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit - 802.11b 1Mbps (2462 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

4924.000	2.191	43.160	45.351	-28.649	74.000
7386.000	10.373	38.190	48.564	-25.436	74.000
9848.000	9.964	39.070	49.034	-24.966	74.000

Average

Detector:

--

Vertical

Peak Detector:

4924.000	2.805	41.680	44.485	-29.515	74.000
7386.000	11.180	38.490	49.670	-24.330	74.000
9848.000	10.801	38.940	49.741	-24.259	74.000

Average

Detector:

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : FIELDBOOK
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit - 802.11g 6Mbps (2412MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

4824.000	2.428	42.030	44.459	-29.541	74.000
7236.000	9.177	39.330	48.507	-25.493	74.000
9648.000	10.019	39.100	49.120	-24.880	74.000

Average

Detector:

--

Vertical

Peak Detector:

4824.000	2.836	40.740	43.577	-30.423	74.000
7236.000	9.676	38.810	48.486	-25.514	74.000
9648.000	10.556	39.440	49.997	-24.003	74.000

Average

Detector:

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : FIELDBOOK
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit - 802.11g 6Mbps (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal**Peak Detector:**

4874.000	2.076	42.170	44.247	-29.753	74.000
7311.000	9.512	38.960	48.472	-25.528	74.000
9748.000	9.630	38.900	48.530	-25.470	74.000

Average**Detector:**

--

Vertical**Peak Detector:**

4874.000	2.532	41.690	44.222	-29.778	74.000
7311.000	10.089	38.080	48.169	-25.831	74.000
9748.000	10.266	38.920	49.187	-24.813	74.000

Average**Detector:**

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : FIELDBOOK
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit - 802.11g 6Mbps (2462 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

4924.000	2.191	41.970	44.161	-29.839	74.000
7386.000	10.373	38.960	49.334	-24.666	74.000
9848.000	9.964	39.160	49.124	-24.876	74.000

Average

Detector:

--

Vertical

Peak Detector:

4924.000	2.805	41.290	44.095	-29.905	74.000
7386.000	11.180	38.470	49.650	-24.350	74.000
9848.000	10.801	39.000	49.801	-24.199	74.000

Average

Detector:

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : FIELDBOOK
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5745 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

11490.000	14.326	38.370	52.695	-21.305	74.000
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Average

Detector:

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Vertical

Peak Detector:

11490.000	15.842	37.840	53.681	-20.319	74.000
-----------	--------	--------	--------	---------	--------

Average

Detector:

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Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : FIELDBOOK
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5785 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

11570.000	14.849	38.160	53.009	-20.991	74.000
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Average

Detector:

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Vertical

Peak Detector:

11570.000	16.215	37.570	53.784	-20.216	74.000
-----------	--------	--------	--------	---------	--------

Average

Detector:

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Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : FIELDBOOK
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5825 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

11650.000	13.179	38.390	51.569	-22.431	74.000
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Average

Detector:

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Vertical

Peak Detector:

11650.000	14.634	37.490	52.124	-21.876	74.000
-----------	--------	--------	--------	---------	--------

Average

Detector:

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Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : FIELDBOOK
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2412MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

4824.000	2.428	42.350	44.779	-29.221	74.000
7236.000	9.177	38.960	48.137	-25.863	74.000
9648.000	10.019	39.330	49.350	-24.650	74.000

Average

Detector:

--

Vertical

Peak Detector:

4824.000	2.836	41.740	44.577	-29.423	74.000
7236.000	9.676	39.340	49.016	-24.984	74.000
9648.000	10.556	39.470	50.027	-23.973	74.000

Average

Detector:

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : FIELDBOOK
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal**Peak Detector:**

4874.000	2.076	42.350	44.427	-29.573	74.000
7311.000	9.512	38.690	48.202	-25.798	74.000
9748.000	9.630	38.960	48.590	-25.410	74.000

Average**Detector:**

--

Vertical**Peak Detector:**

4874.000	2.532	41.410	43.942	-30.058	74.000
7311.000	10.089	38.860	48.949	-25.051	74.000
9748.000	10.266	38.760	49.027	-24.973	74.000

Average**Detector:**

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : FIELDBOOK
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2462 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal**Peak Detector:**

4924.000	2.191	41.510	43.701	-30.299	74.000
7386.000	10.373	38.990	49.364	-24.636	74.000
9848.000	9.964	39.090	49.054	-24.946	74.000

Average**Detector:**

--

Vertical**Peak Detector:**

4924.000	2.805	41.040	43.845	-30.155	74.000
7386.000	11.180	38.220	49.400	-24.600	74.000
9848.000	10.801	40.240	51.041	-22.959	74.000

Average**Detector:**

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : FIELDBOOK
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 5: Transmit - 802.11n-20BW_7.2Mbps(5G Band) (5745MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

11490.000	14.326	38.710	53.035	-20.965	74.000
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Average

Detector:

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Vertical

Peak Detector:

11490.000	15.842	37.600	53.441	-20.559	74.000
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Average

Detector:

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Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : FIELDBOOK
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 5: Transmit - 802.11n-20BW_7.2Mbps(5G Band) (5785 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal**Peak Detector:**

11570.000	14.849	38.480	53.329	-20.671	74.000
-----------	--------	--------	--------	---------	--------

Average**Detector:**

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Vertical**Peak Detector:**

11570.000	16.215	37.460	53.674	-20.326	74.000
-----------	--------	--------	--------	---------	--------

Average**Detector:**

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : FIELDBOOK
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 5: Transmit - 802.11n-20BW_7.2Mbps(5G Band) (5825 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

11650.000	13.179	37.900	51.079	-22.921	74.000
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Average

Detector:

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Vertical

Peak Detector:

11650.000	14.634	38.400	53.034	-20.966	74.000
-----------	--------	--------	--------	---------	--------

Average

Detector:

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Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : FIELDBOOK
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit - 802.11b 1Mbps (2437 MHz)

Frequency MHz	Correct Factor	Reading dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
119.240	-7.291	38.282	30.992	-12.508	43.500
359.800	-0.226	38.279	38.053	-7.947	46.000
538.280	3.316	36.480	39.796	-6.204	46.000
769.140	5.118	28.836	33.954	-12.046	46.000
844.800	6.442	28.745	35.187	-10.813	46.000
922.400	6.670	35.999	42.669	-3.331	46.000
Vertical					
152.220	-5.306	36.384	31.078	-12.422	43.500
307.420	-4.030	38.985	34.955	-11.045	46.000
385.020	-0.441	34.535	34.094	-11.906	46.000
460.680	-1.930	29.166	27.236	-18.764	46.000
538.280	1.996	31.329	33.325	-12.675	46.000
922.400	3.200	27.772	30.972	-15.028	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : FIELDBOOK
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit - 802.11g 6Mbps (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
152.220	-7.926	40.988	33.062	-10.438	43.500
385.020	1.209	36.812	38.021	-7.979	46.000
538.280	3.316	37.688	41.004	-4.996	46.000
769.140	5.118	30.155	35.273	-10.727	46.000
844.800	6.442	28.948	35.390	-10.610	46.000
922.400	6.670	35.230	41.900	-4.100	46.000
Vertical					
152.220	-5.306	35.963	30.657	-12.843	43.500
307.420	-4.030	39.239	35.209	-10.791	46.000
385.020	-0.441	34.963	34.522	-11.478	46.000
538.280	1.996	33.587	35.583	-10.417	46.000
815.700	2.931	23.818	26.749	-19.251	46.000
922.400	3.200	29.878	33.078	-12.922	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : FIELDBOOK
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5785MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
307.420	-4.120	38.062	33.942	-12.058	46.000
385.020	1.209	34.858	36.067	-9.933	46.000
460.680	4.030	27.326	31.356	-14.644	46.000
538.280	3.316	33.517	36.833	-9.167	46.000
844.800	6.442	24.033	30.475	-15.525	46.000
922.400	6.670	27.849	34.519	-11.481	46.000
Vertical					
152.220	-5.306	35.332	30.026	-13.474	43.500
307.420	-4.030	38.053	34.023	-11.977	46.000
385.020	-0.441	33.914	33.473	-12.527	46.000
460.680	-1.930	28.674	26.744	-19.256	46.000
538.280	1.996	32.797	34.793	-11.207	46.000
922.400	3.200	29.334	32.534	-13.466	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : FIELDBOOK
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
260.860	-5.460	39.427	33.967	-12.033	46.000
385.020	1.209	36.361	37.570	-8.430	46.000
538.280	3.316	37.193	40.509	-5.491	46.000
769.140	5.118	30.663	35.781	-10.219	46.000
844.800	6.442	28.254	34.696	-11.304	46.000
922.400	6.670	35.855	42.525	-3.475	46.000
Vertical					
152.220	-5.306	35.305	29.999	-13.501	43.500
307.420	-4.030	38.487	34.457	-11.543	46.000
385.020	-0.441	34.901	34.460	-11.540	46.000
538.280	1.996	33.573	35.569	-10.431	46.000
691.540	2.092	24.780	26.872	-19.128	46.000
922.400	3.200	28.506	31.706	-14.294	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : FIELDBOOK
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 5: Transmit - 802.11n-20BW_7.2Mbps(5G Band) (5785 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
385.020	1.209	36.576	37.785	-8.215	46.000
460.680	4.030	27.933	31.963	-14.037	46.000
538.280	3.316	36.239	39.555	-6.445	46.000
769.140	5.118	27.890	33.008	-12.992	46.000
844.800	6.442	29.616	36.058	-9.942	46.000
922.400	6.670	36.131	42.801	-3.199	46.000
Vertical					
152.220	-5.306	36.895	31.589	-11.911	43.500
274.440	-6.067	39.932	33.865	-12.135	46.000
385.020	-0.441	36.977	36.536	-9.464	46.000
538.280	1.996	36.239	38.235	-7.765	46.000
844.800	2.462	29.616	32.078	-13.922	46.000
922.400	3.200	37.231	40.431	-5.569	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

5. RF antenna conducted test

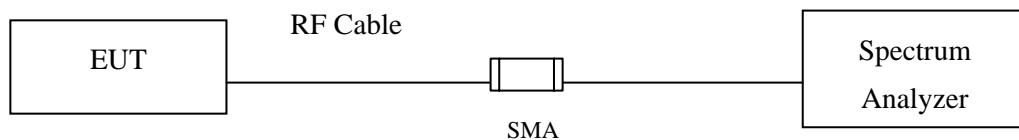
5.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2013
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2013
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2013

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.

5.2. Test Setup

RF antenna Conducted Measurement:



5.3. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

5.4. Test Procedure

The EUT was tested according to DTS test procedure of ANSI C63.10: 2009 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100 kHz, Set VBW > RBW, scan up through 10th harmonic.

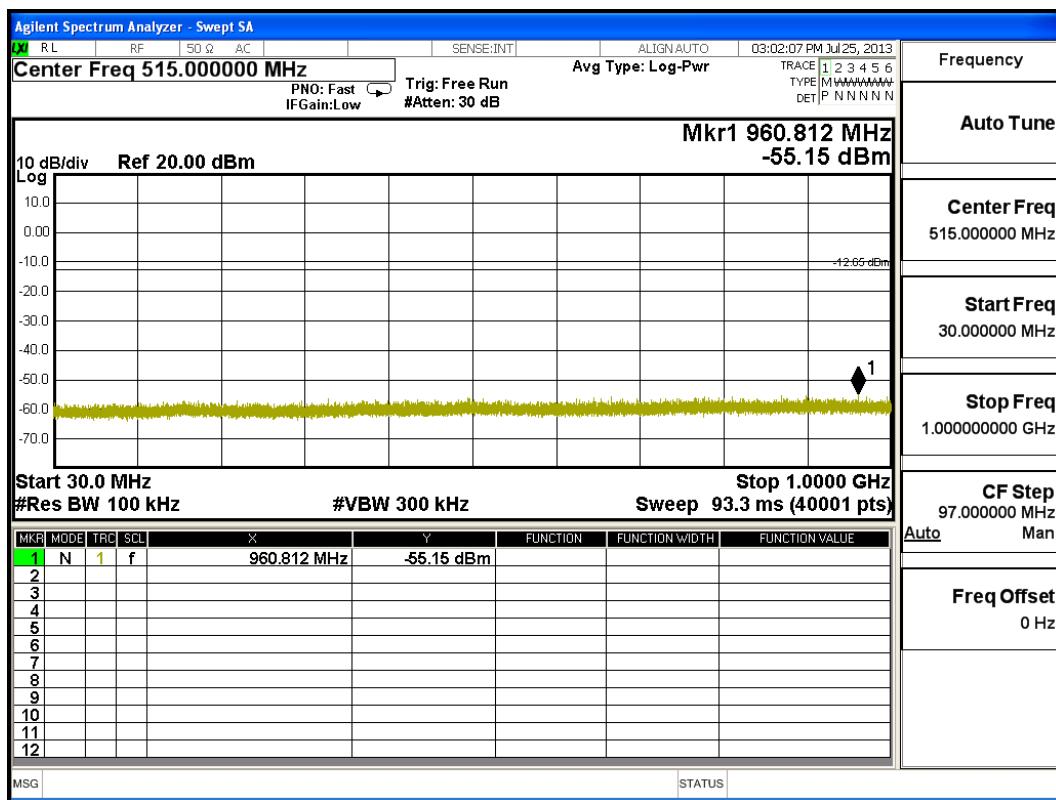
5.5. Uncertainty

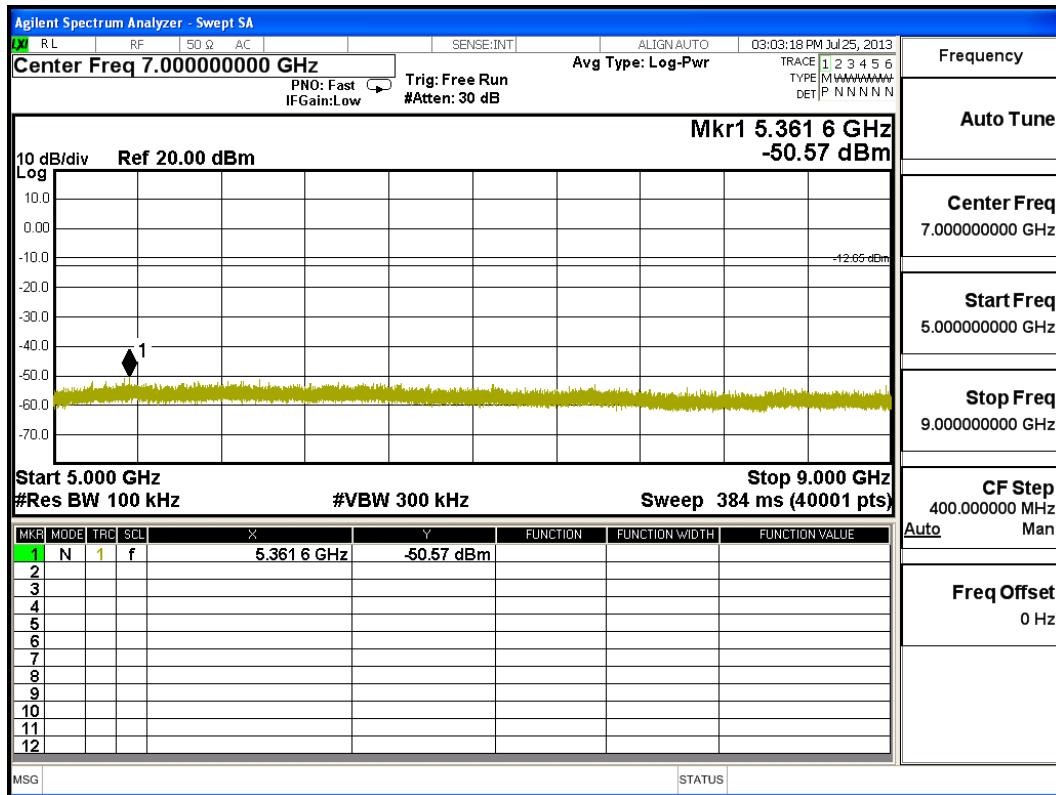
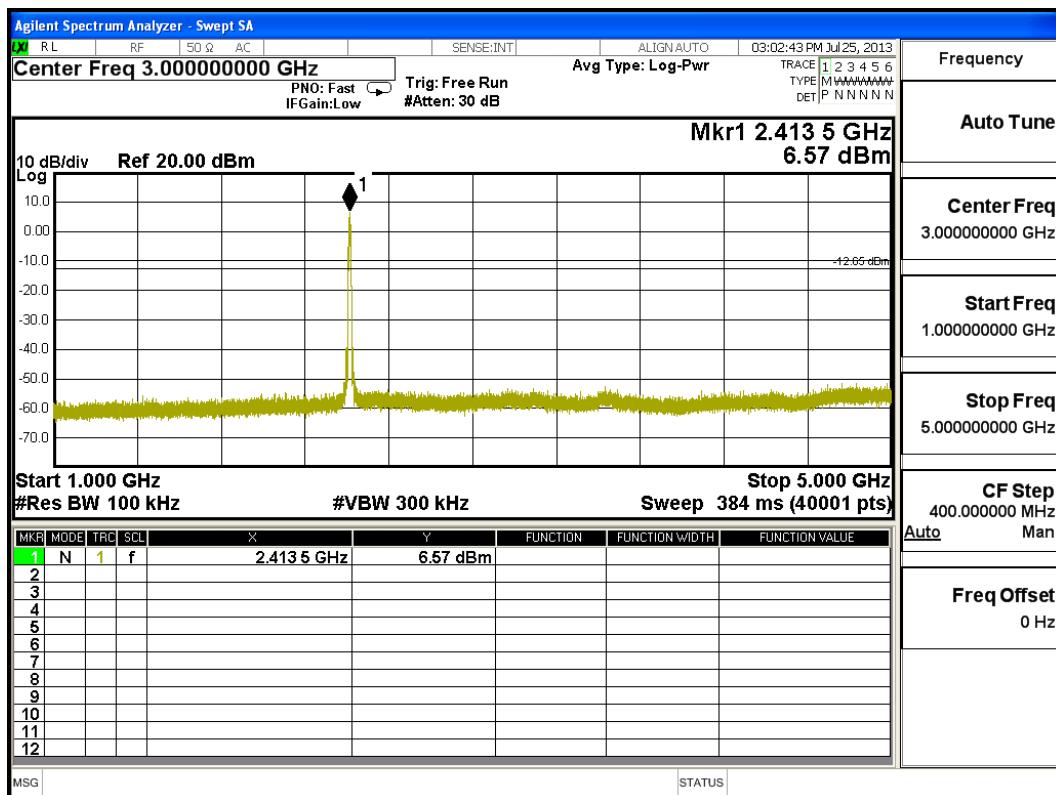
The measurement uncertainty
Conducted is defined as $\pm 1.27\text{dB}$

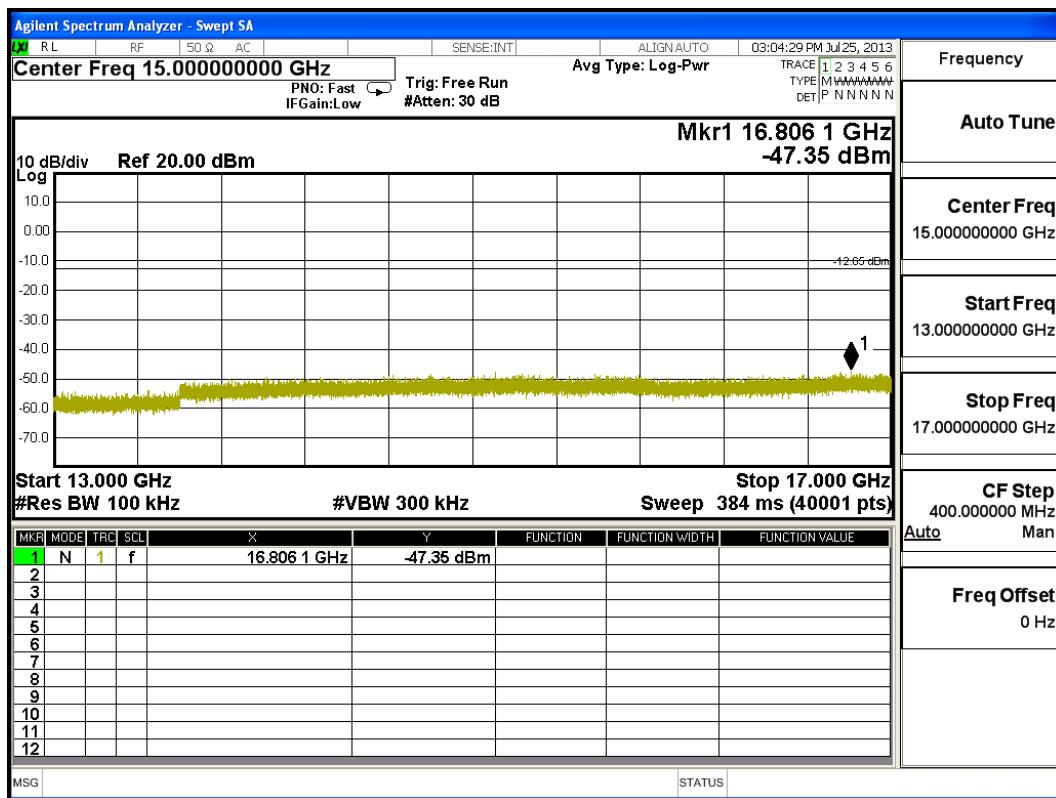
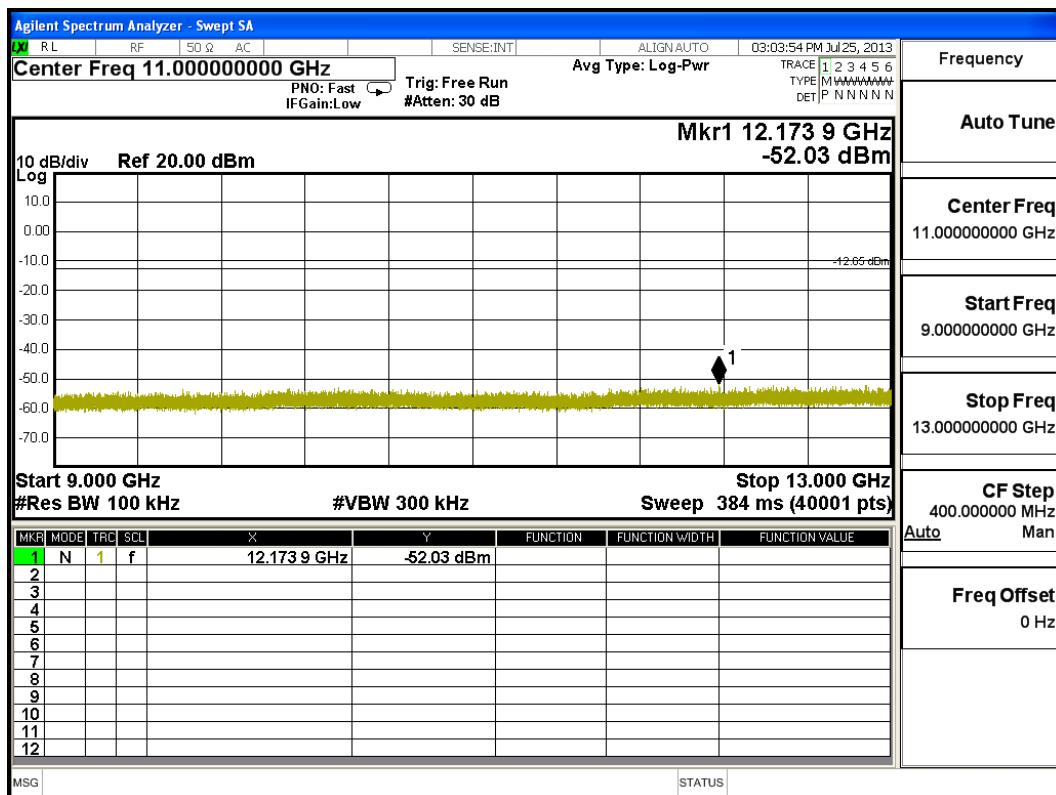
5.6. Test Result of RF antenna conducted test

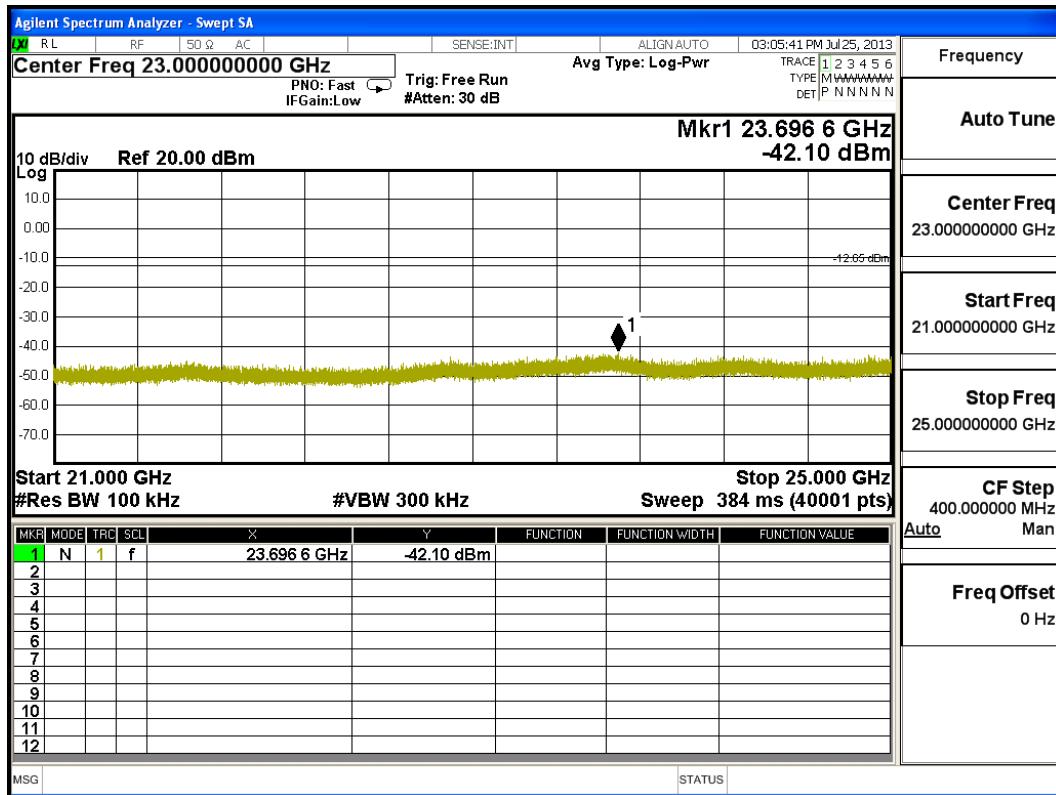
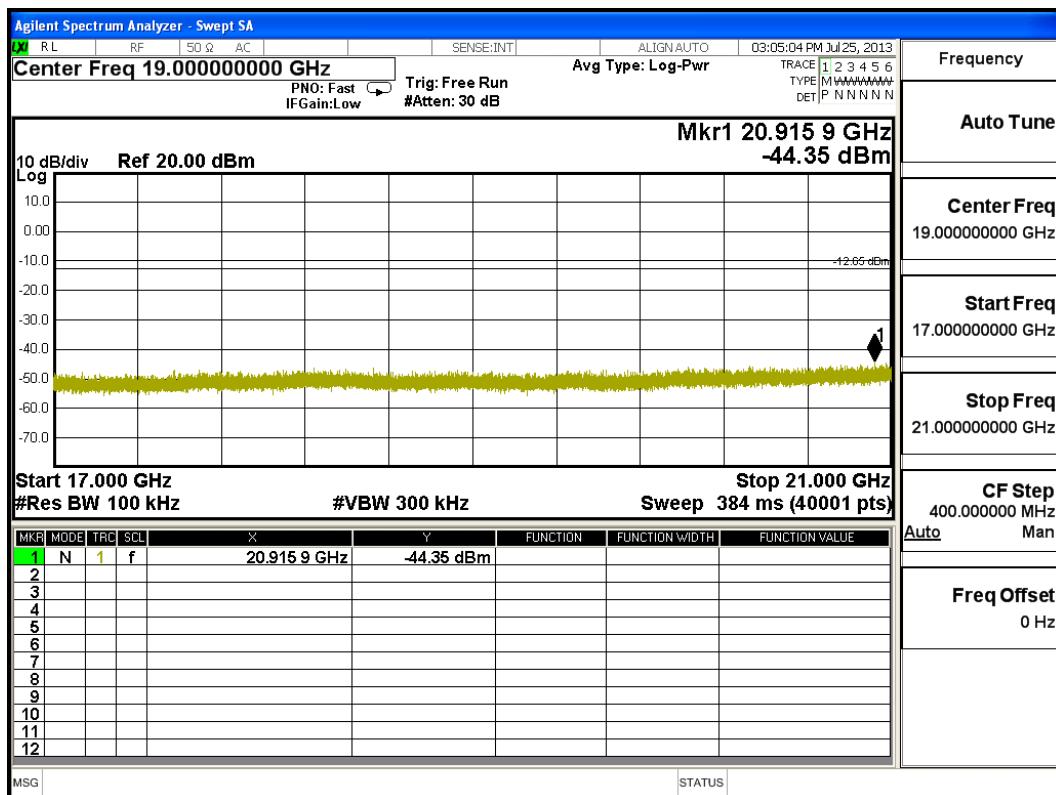
Product : FIELDBOOK
 Test Item : RF antenna conducted test
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit - 802.11b 1Mbps

Channel 01 (2412MHz) 30MHz-25GHz

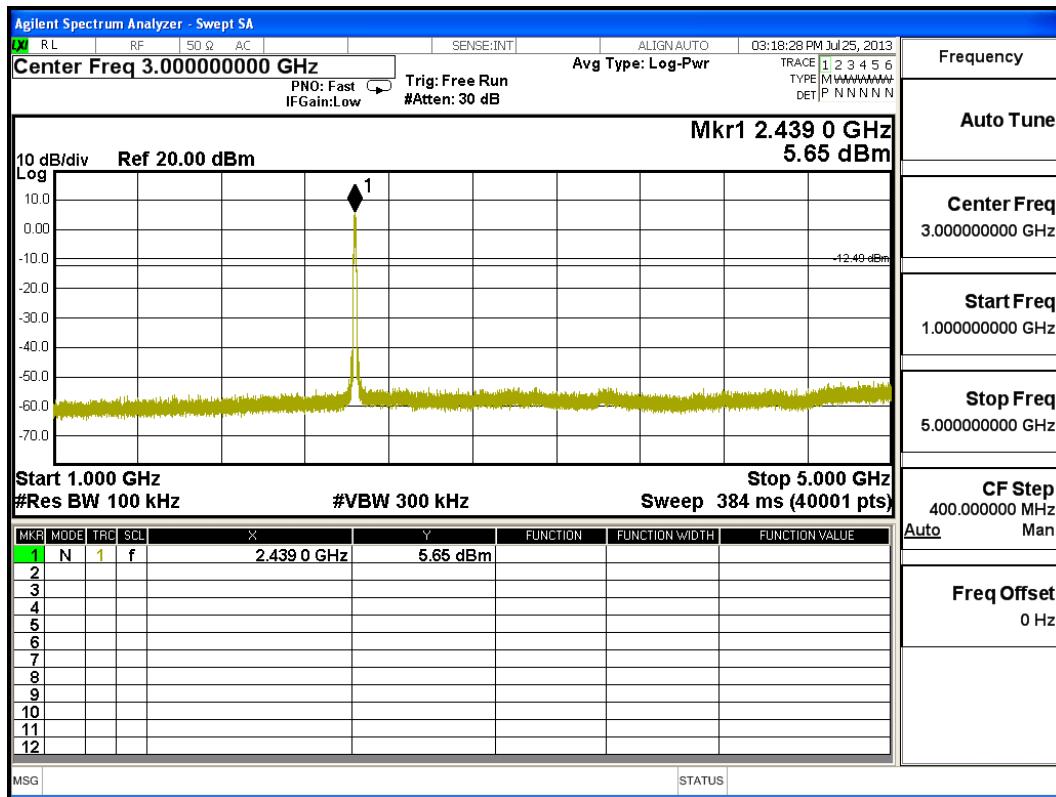
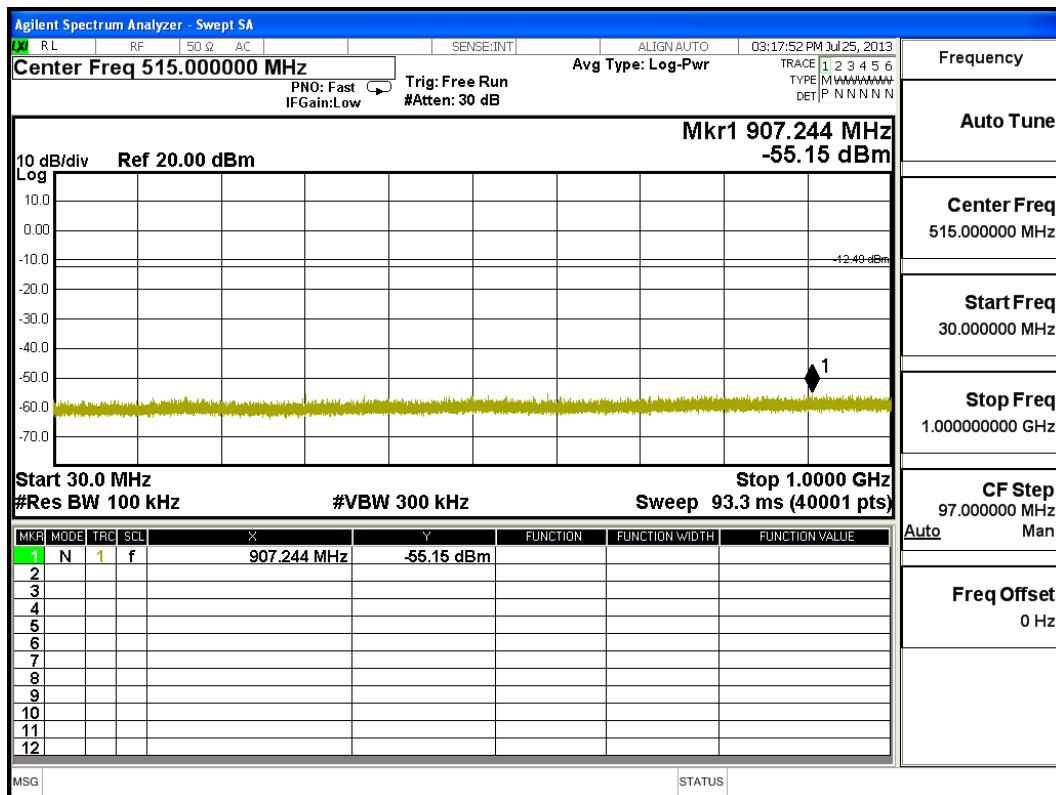


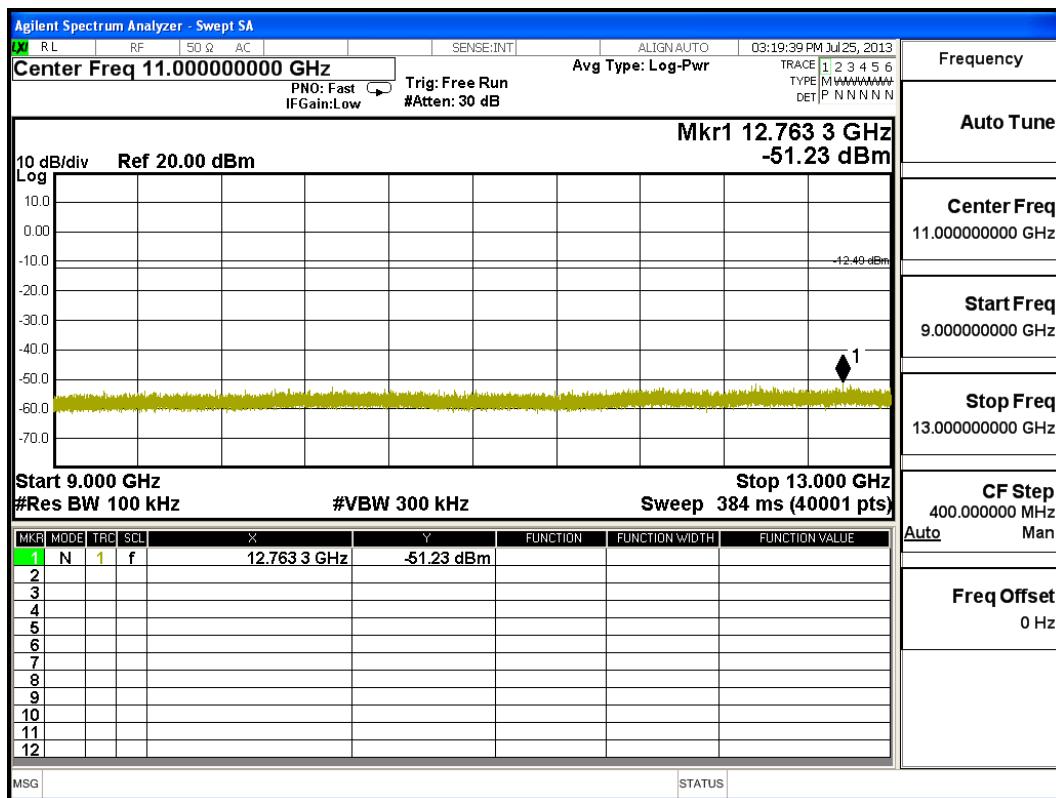
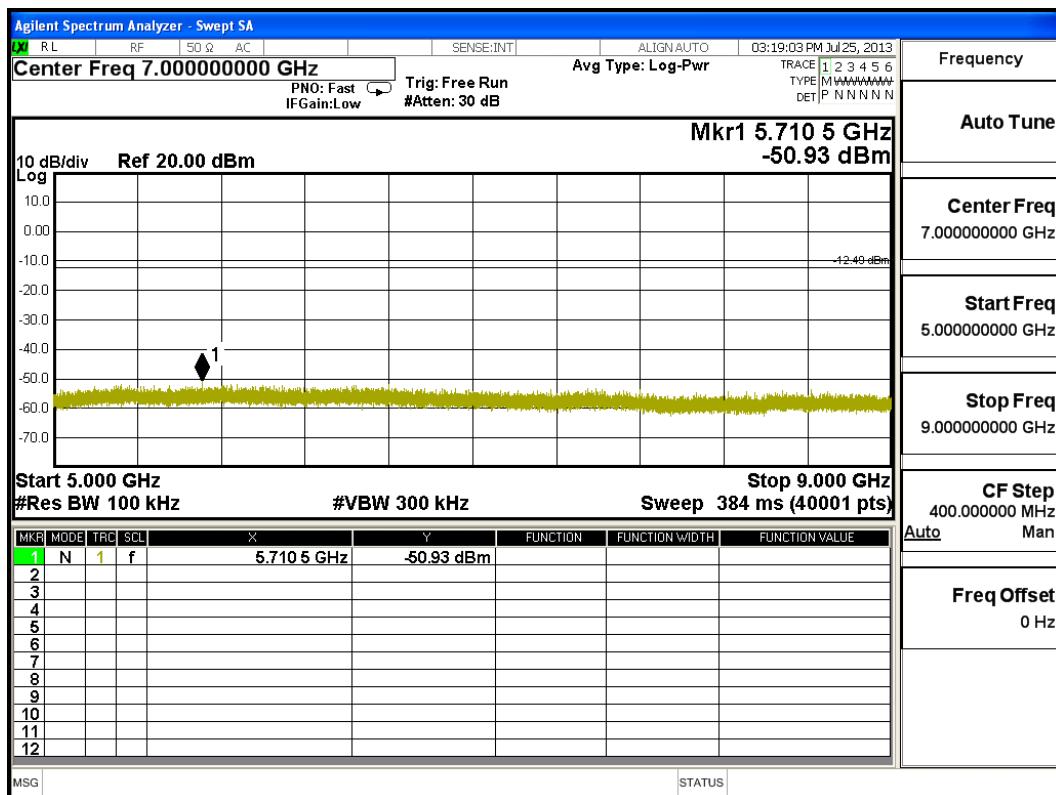


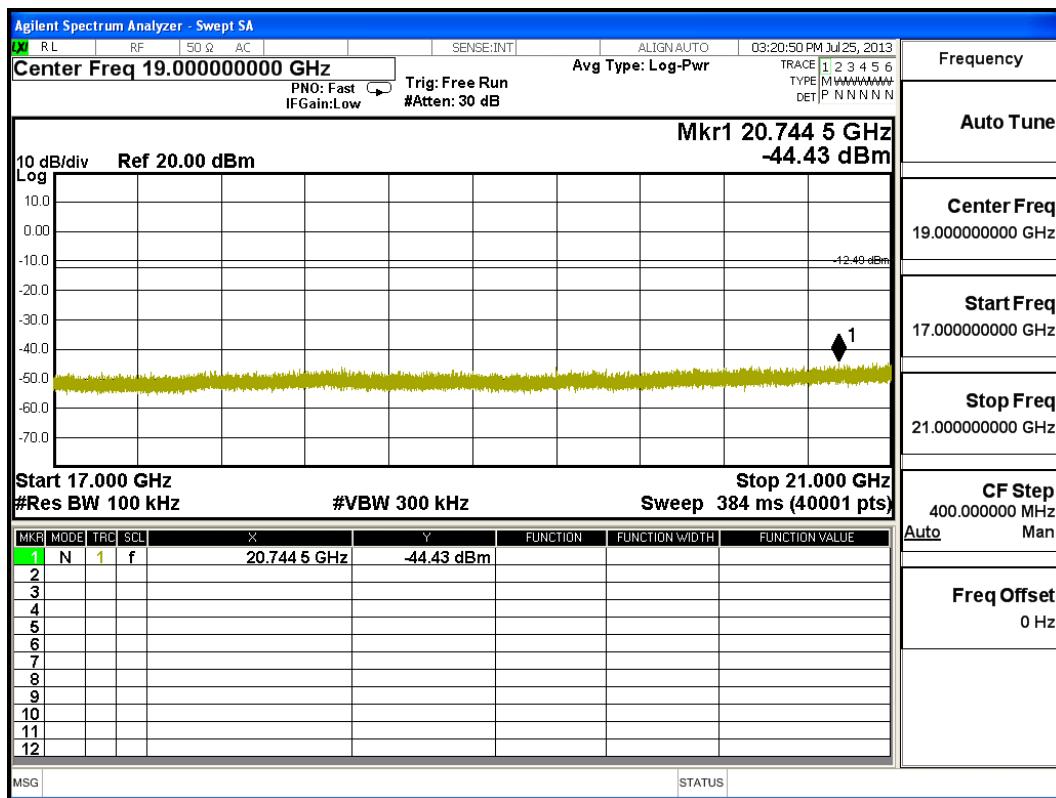
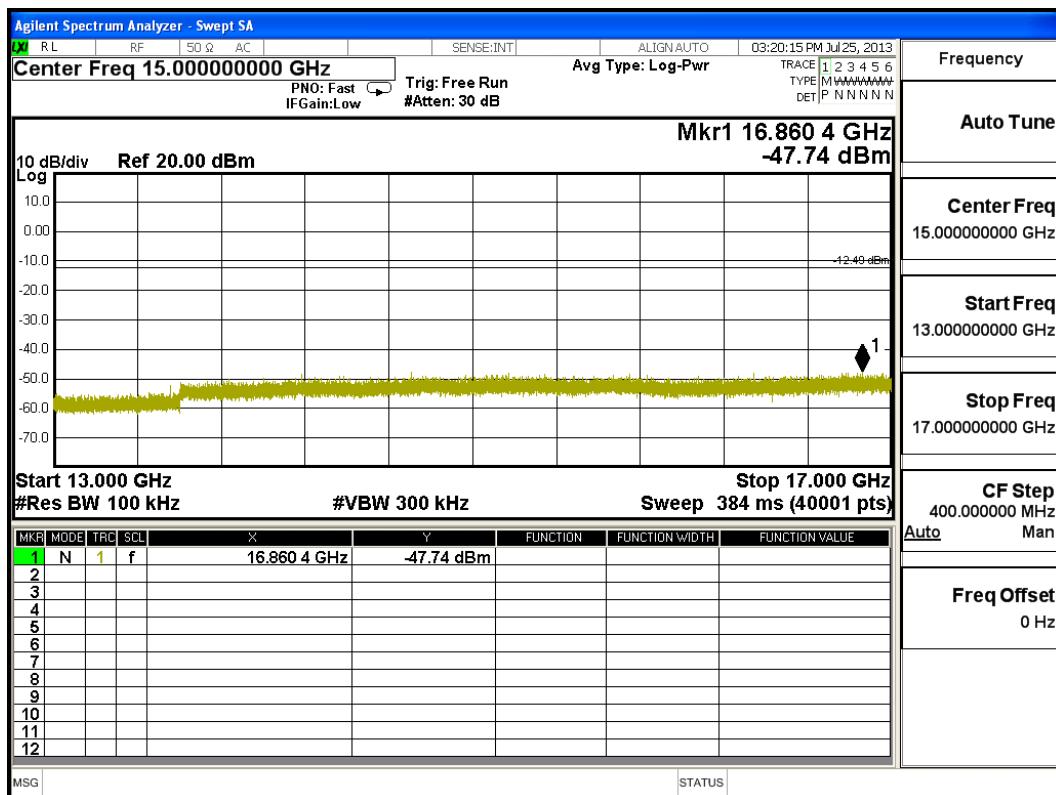


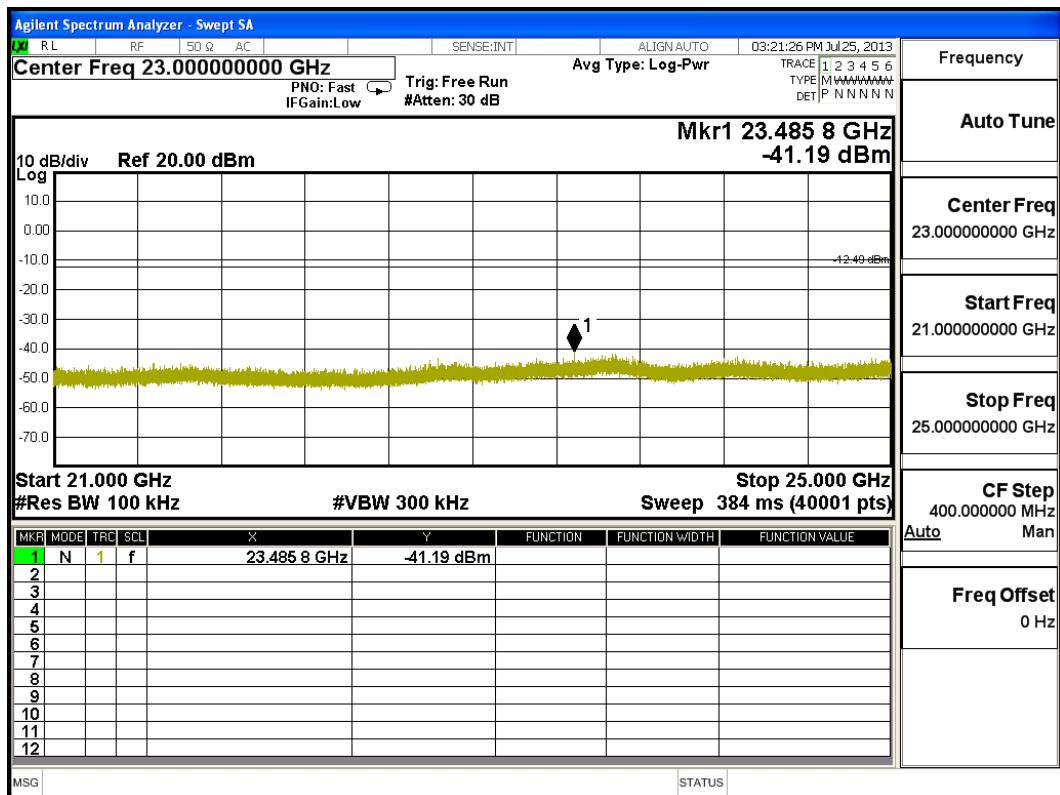


Channel 06 (2437MHz) 30MHz -25GHz

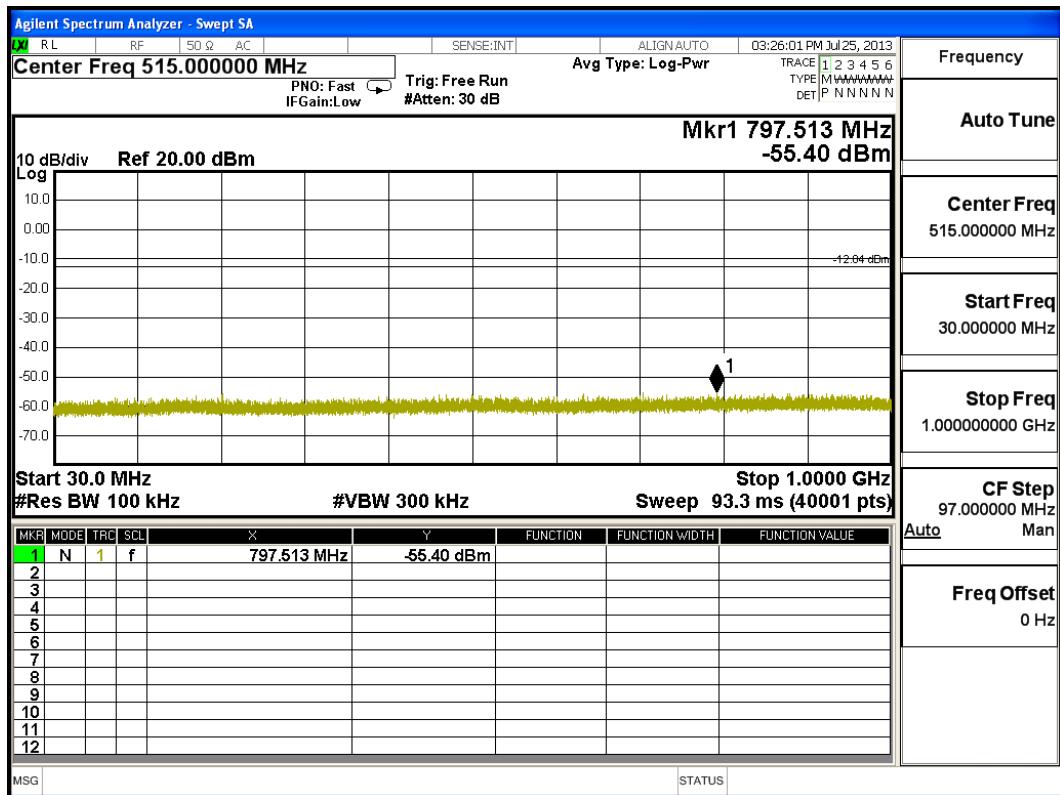


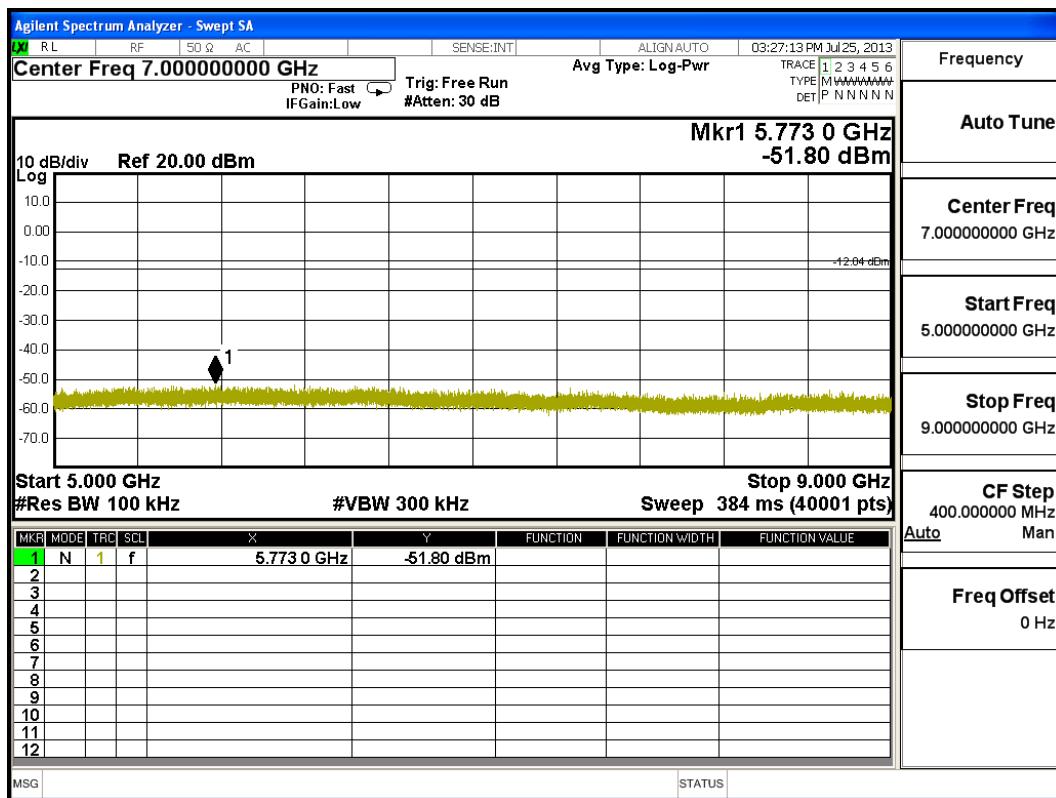
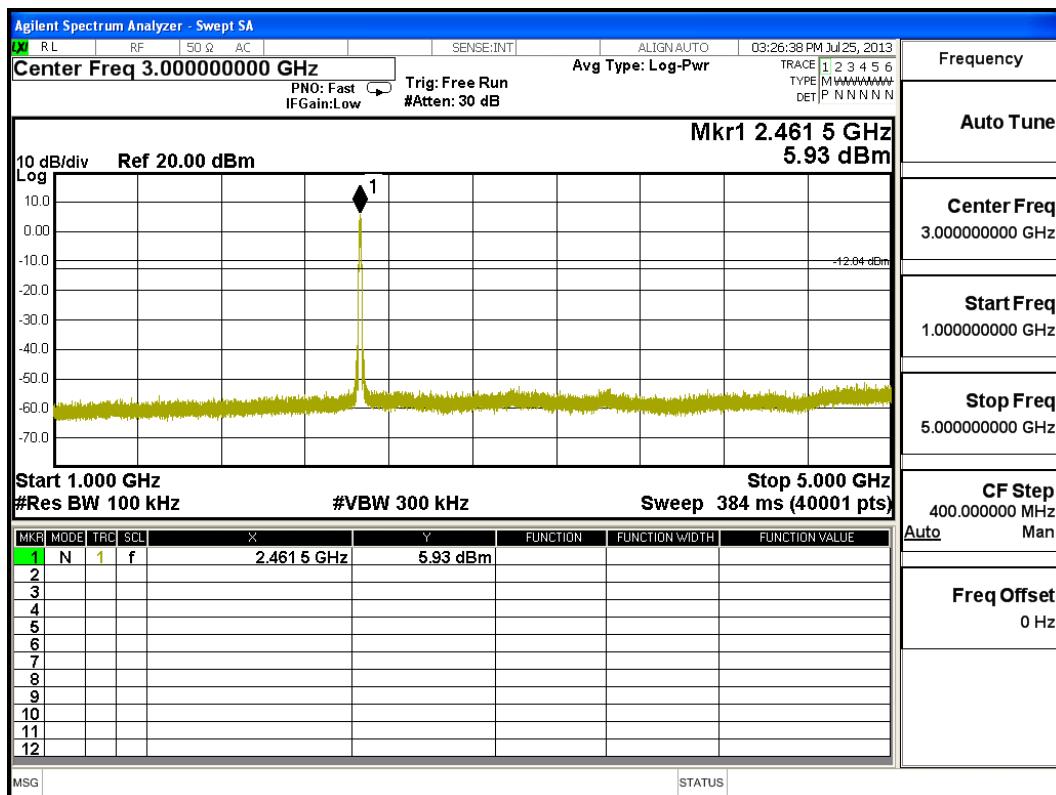


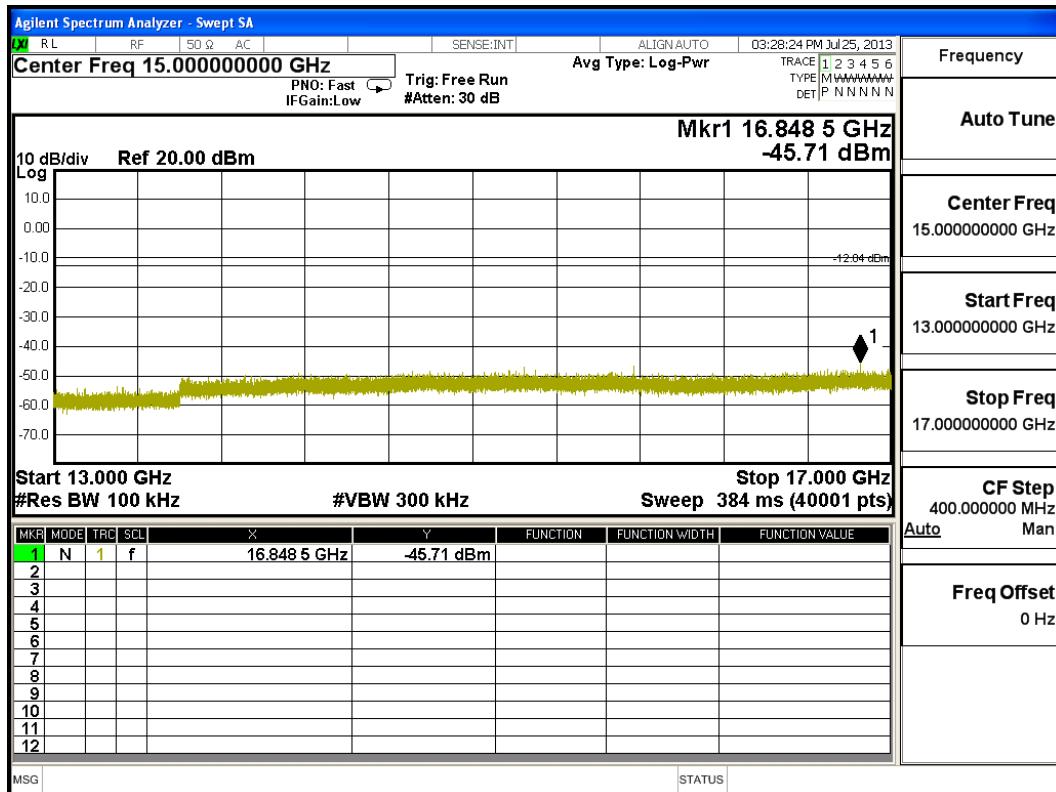
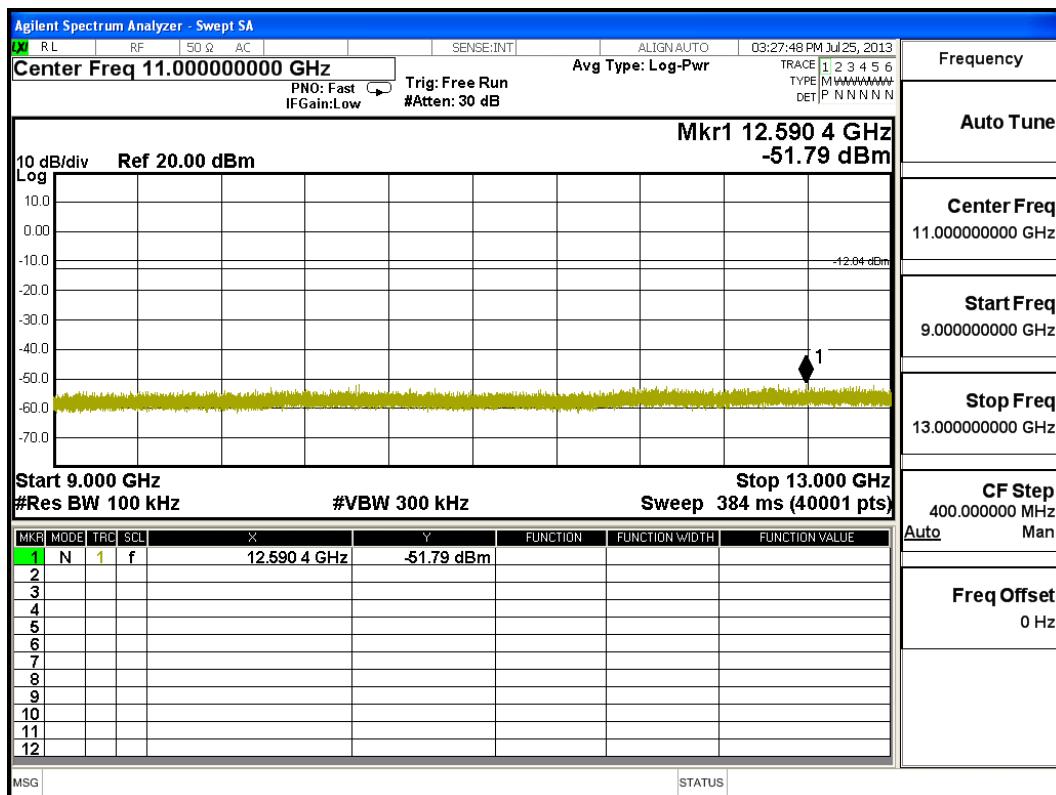


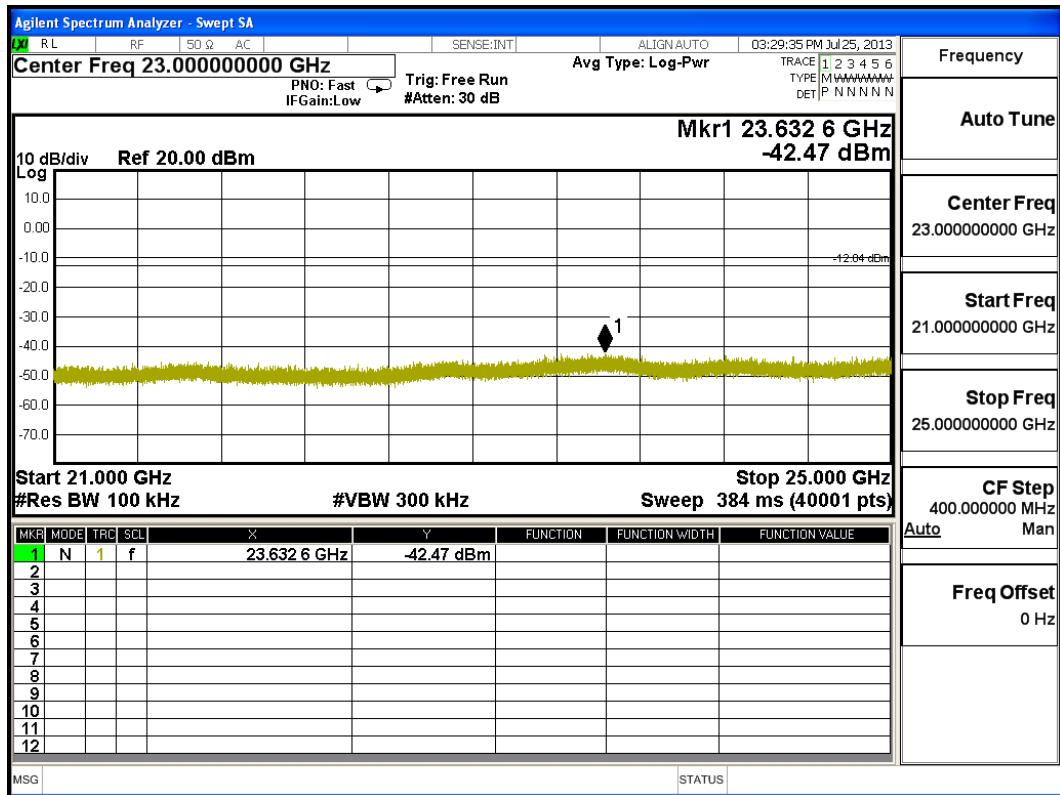
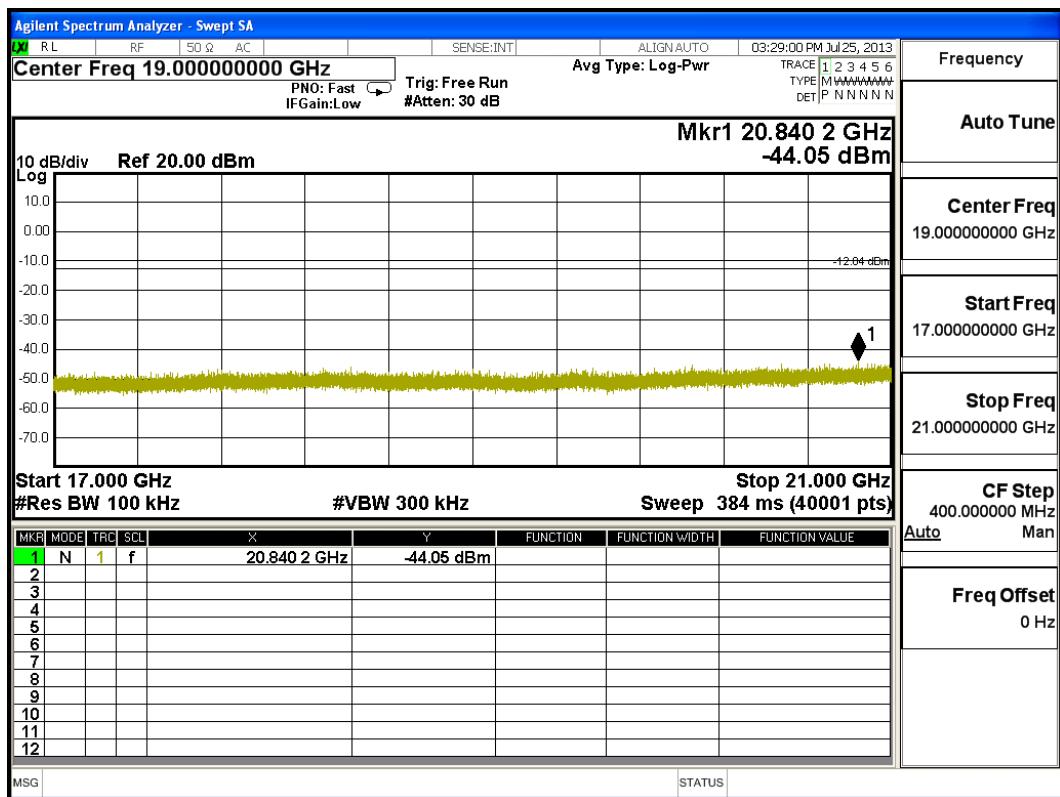


Channel 11 (2462MHz) 30MHz -25GHz



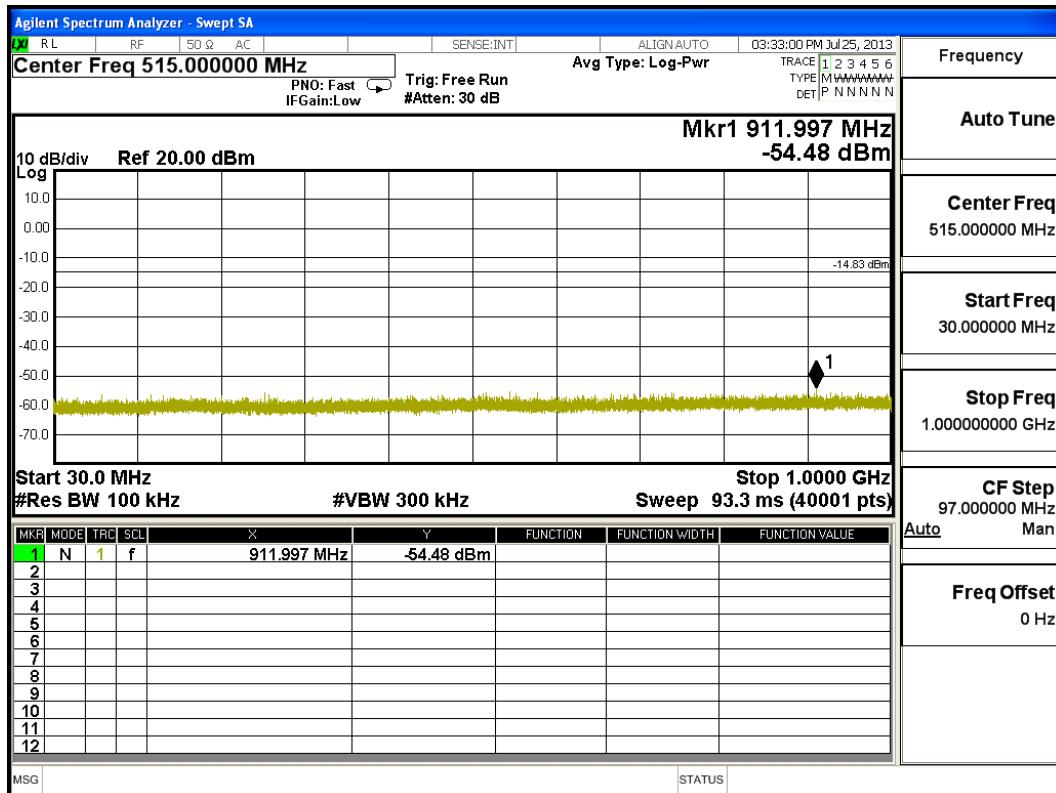


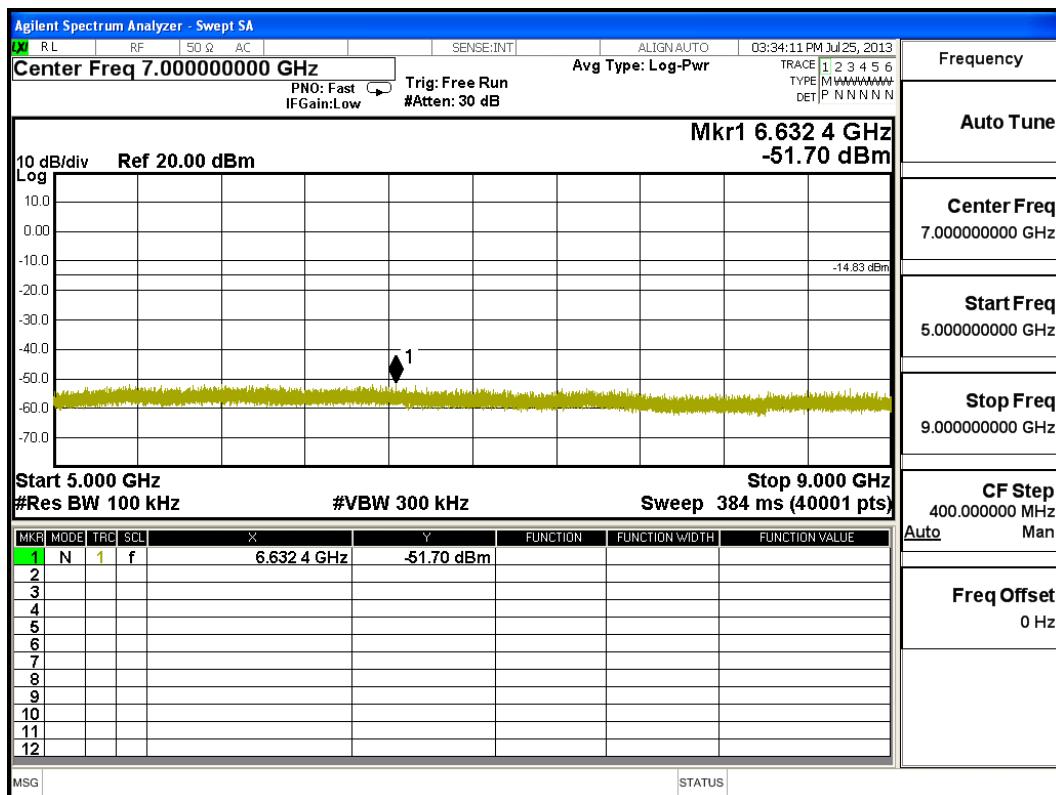
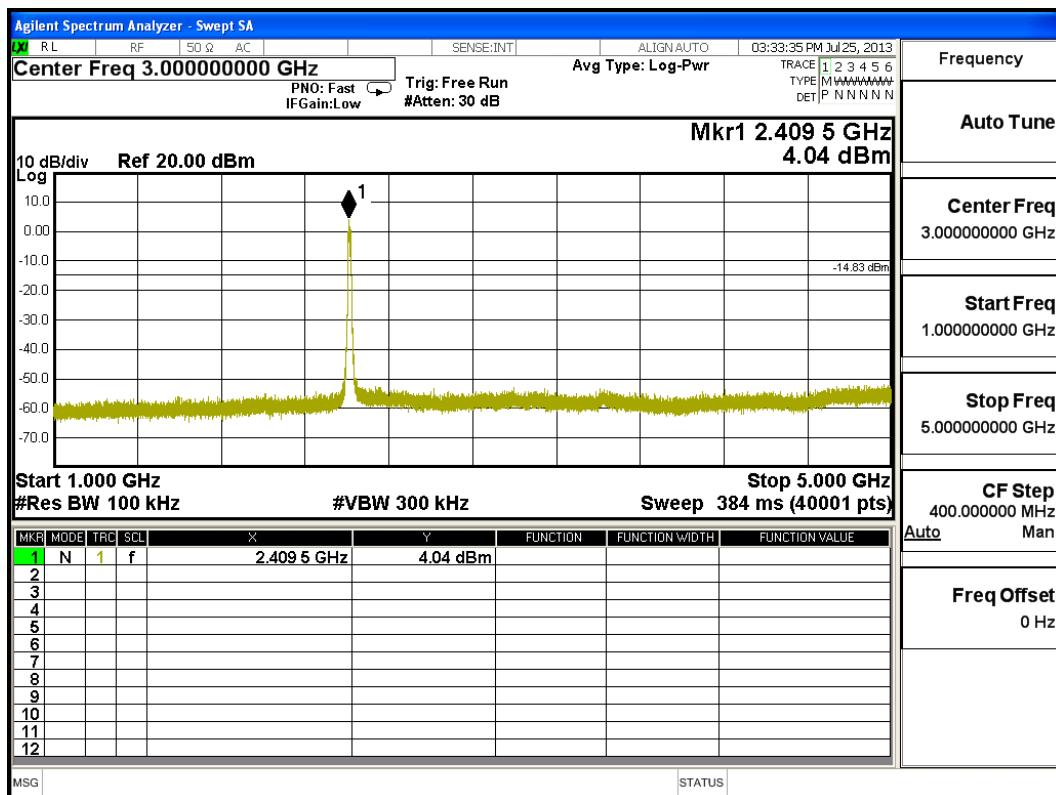


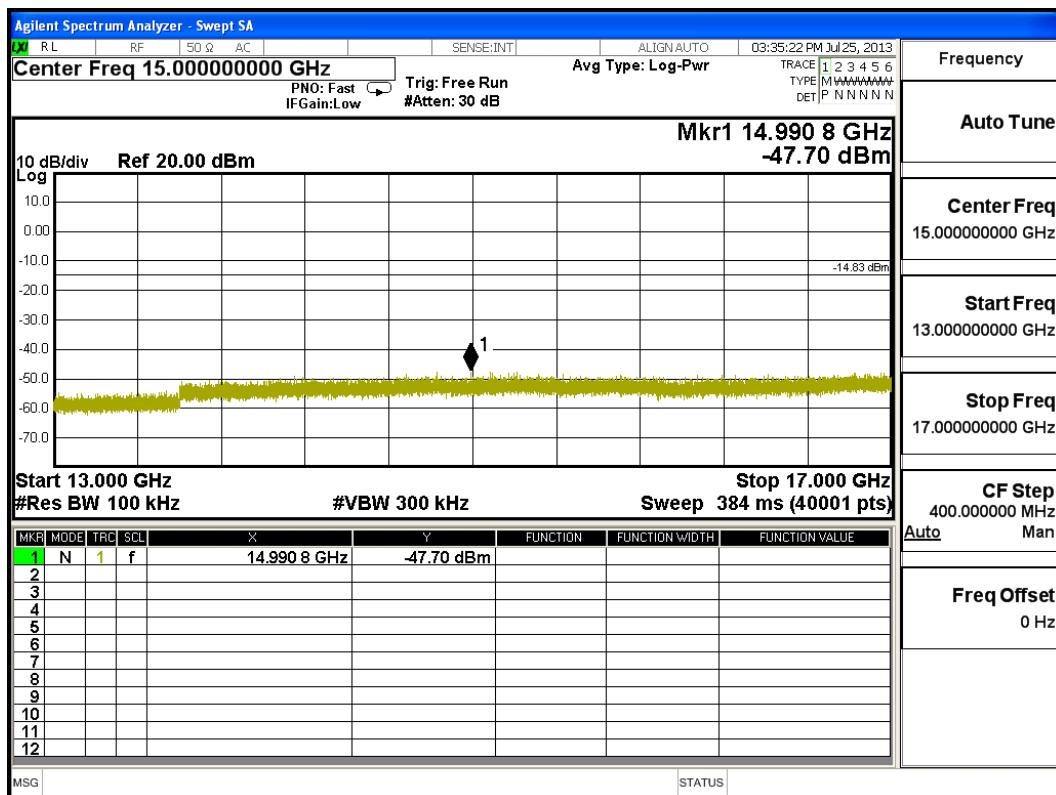
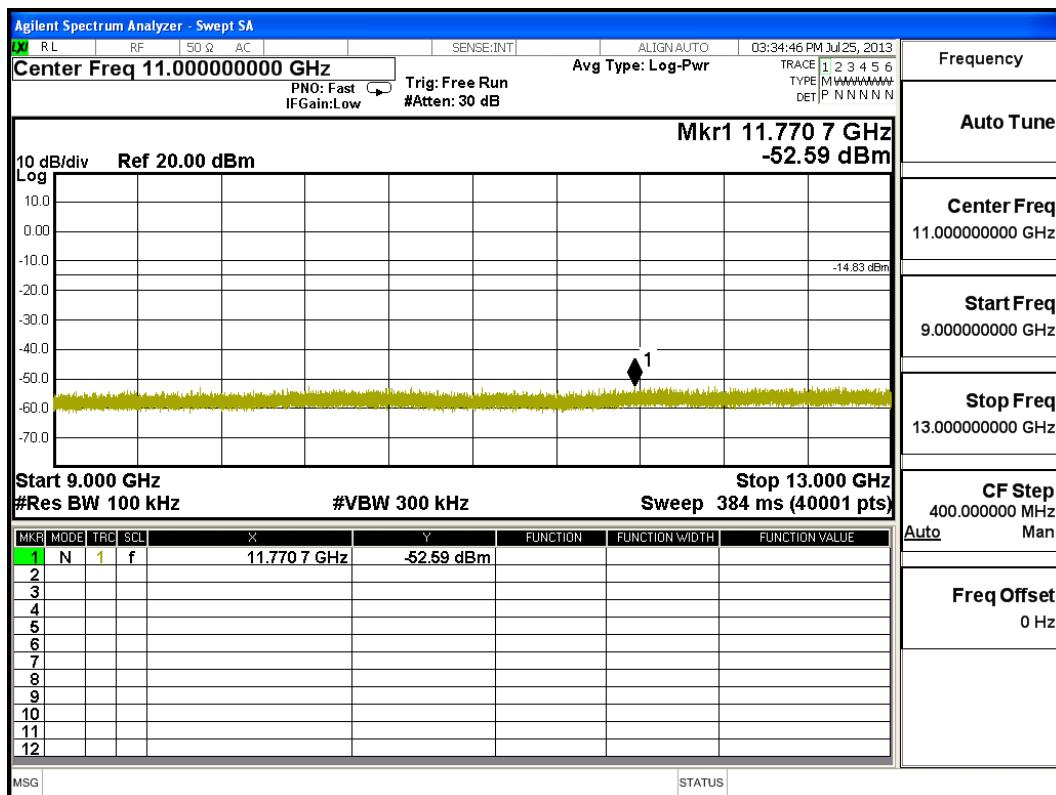


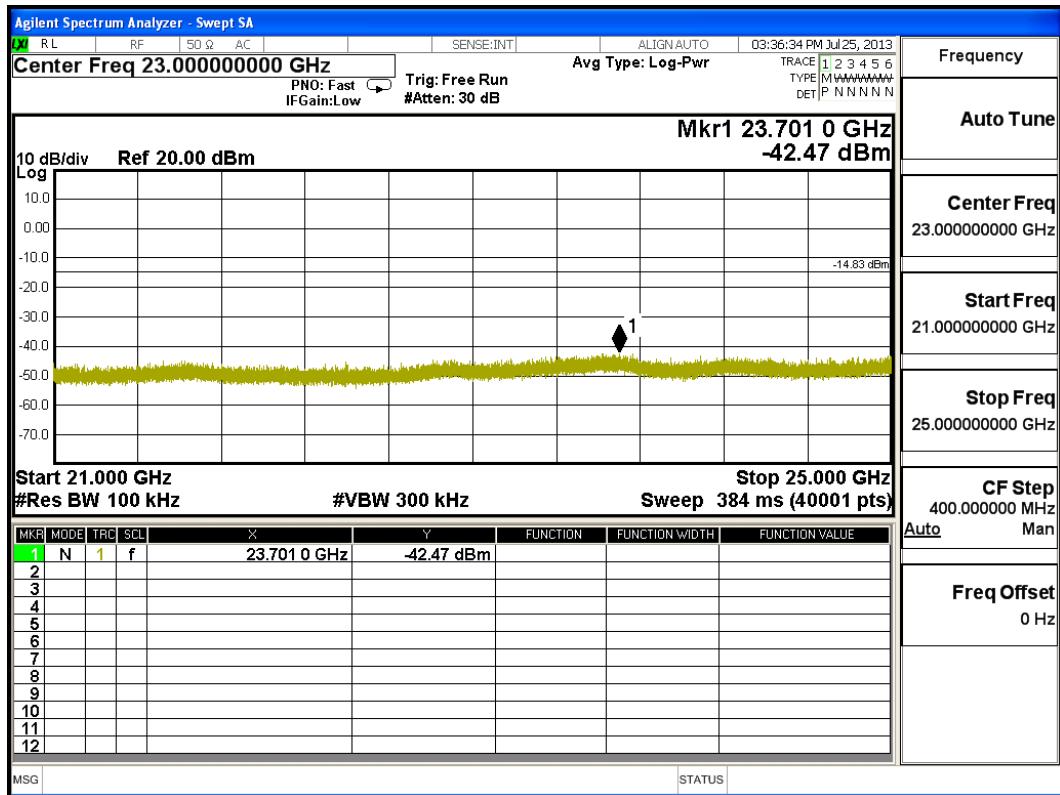
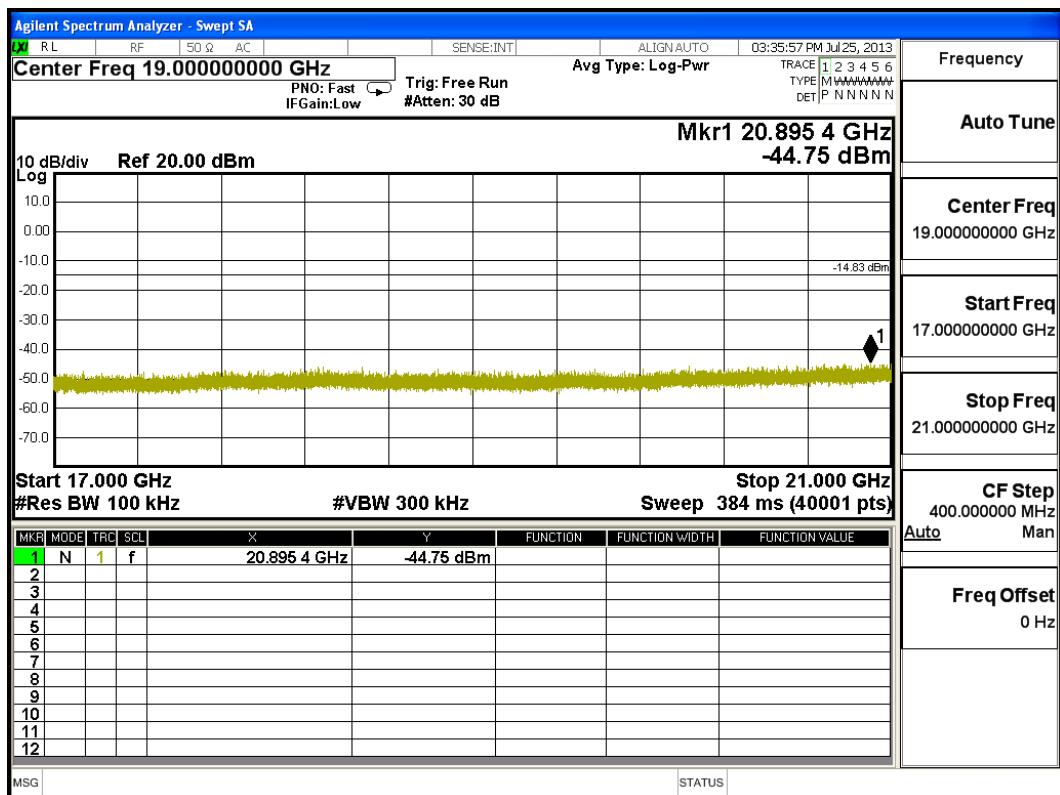
Product : FIELDBOOK
 Test Item : RF Antenna Conducted Spurious
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit - 802.11g 6Mbps

Channel 01 (2412MHz) 30MHz -25GH

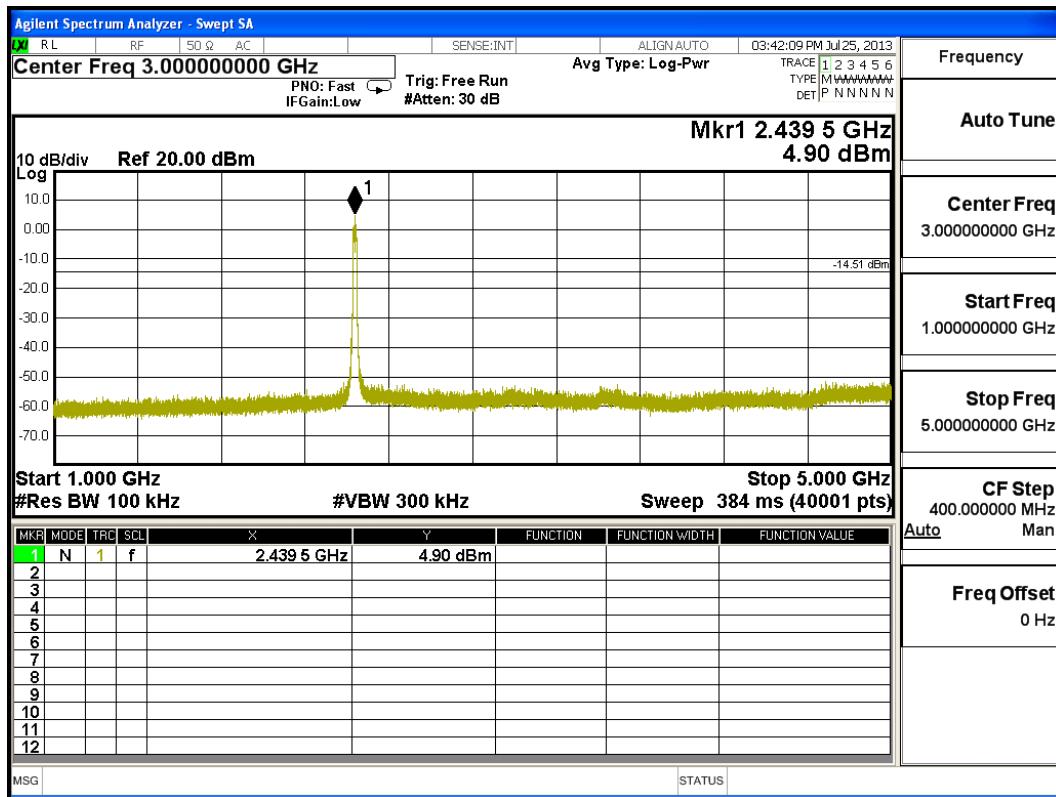
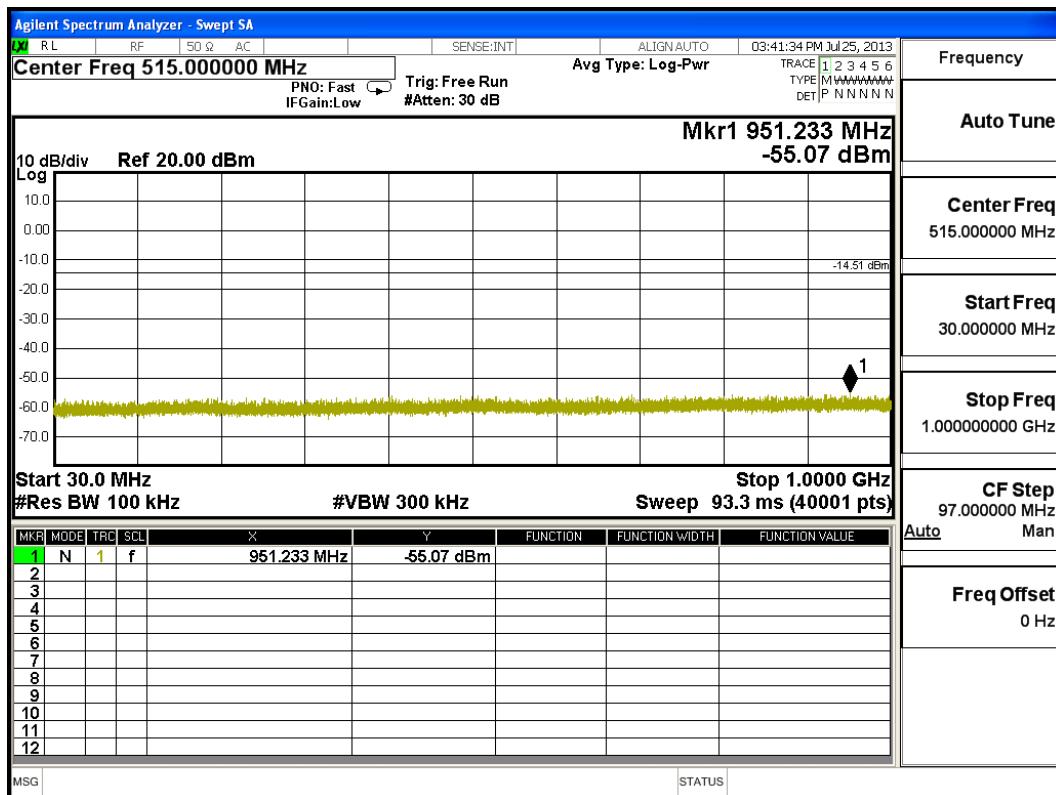


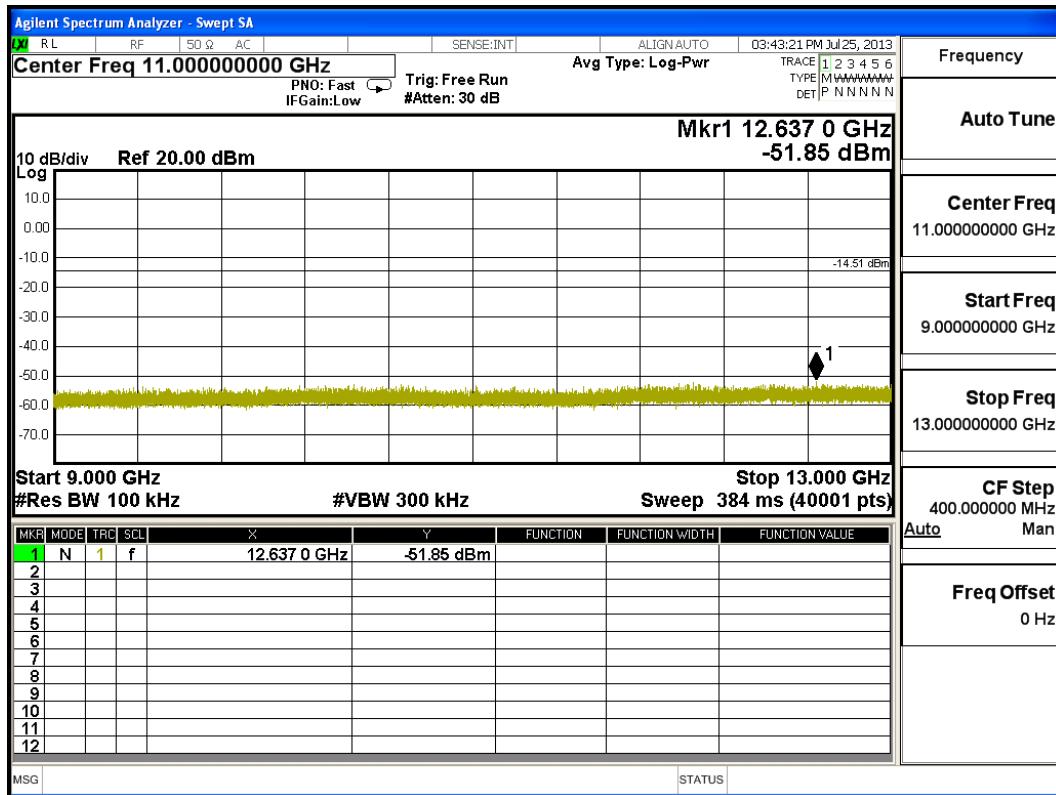
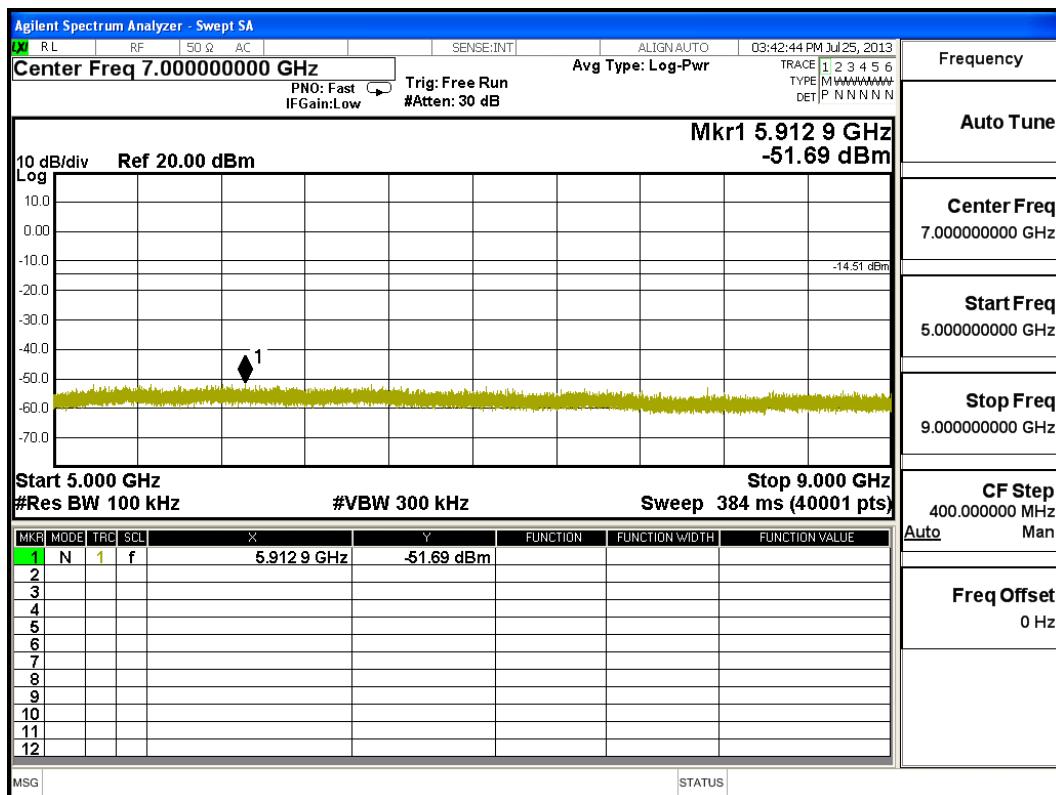


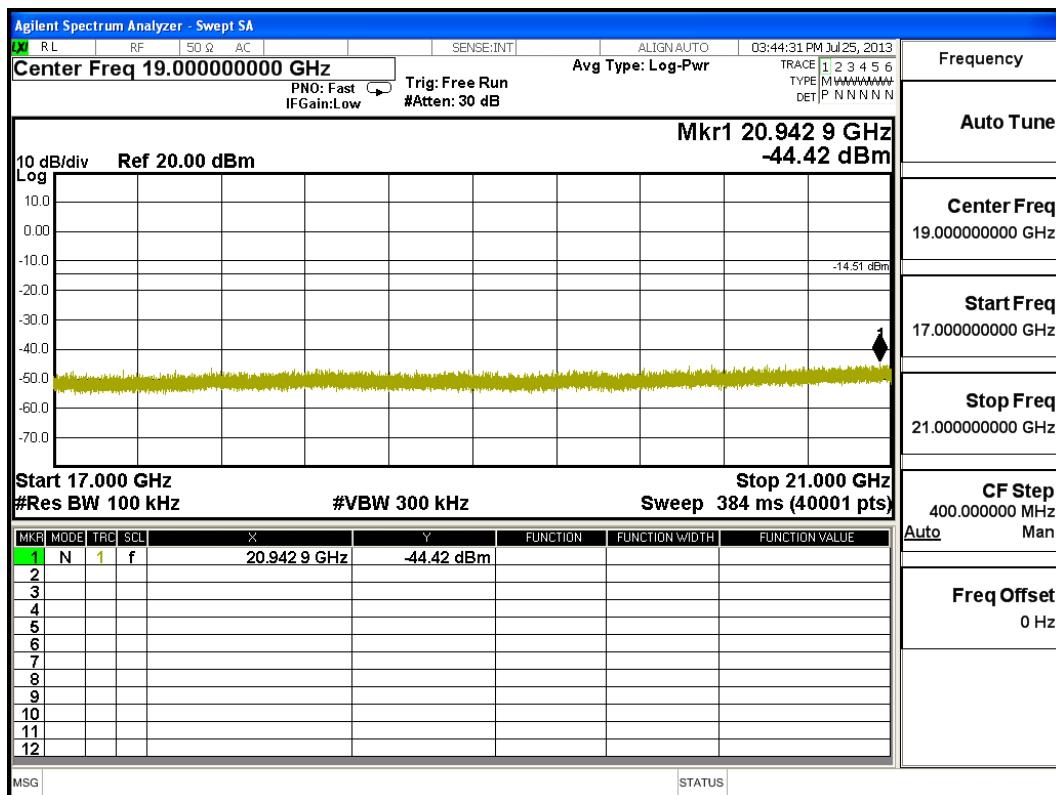
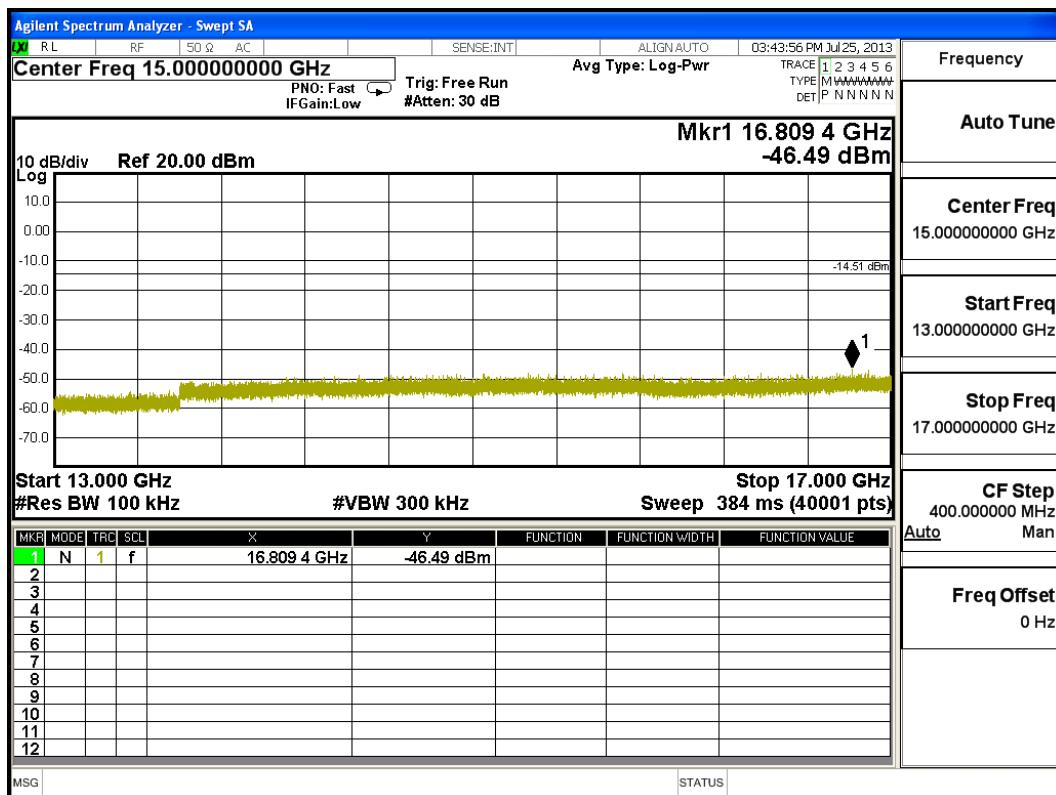


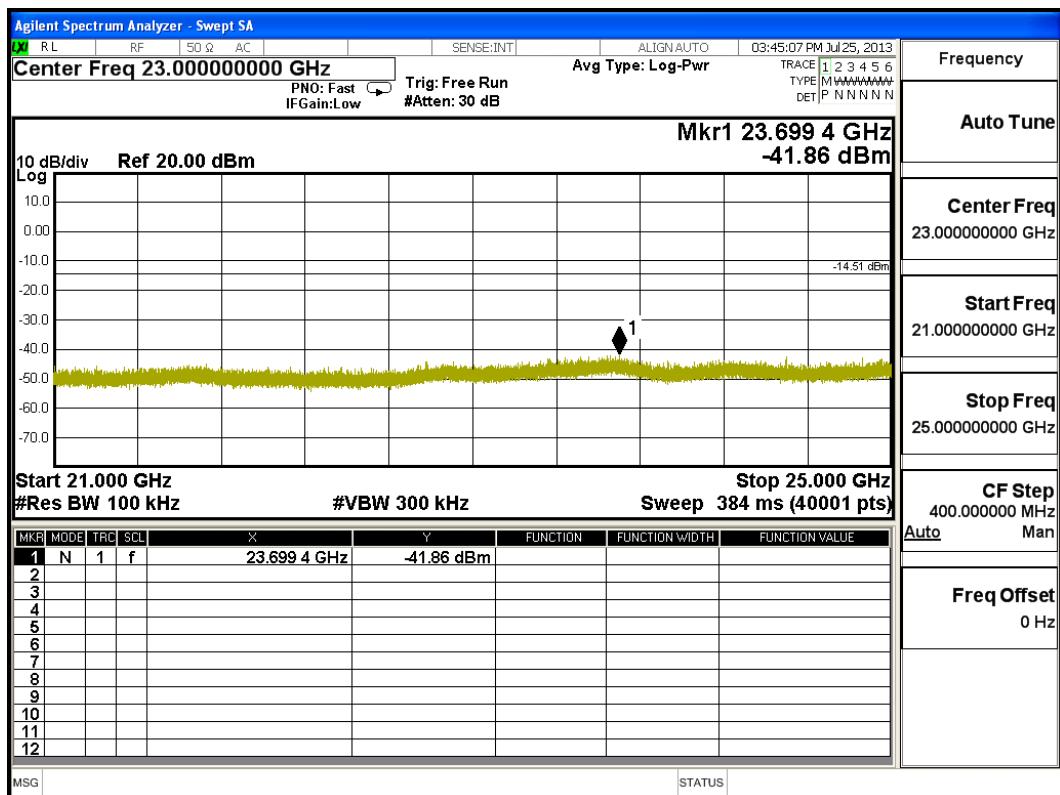


Channel 06 (2437MHz) 30MHz -25GHz

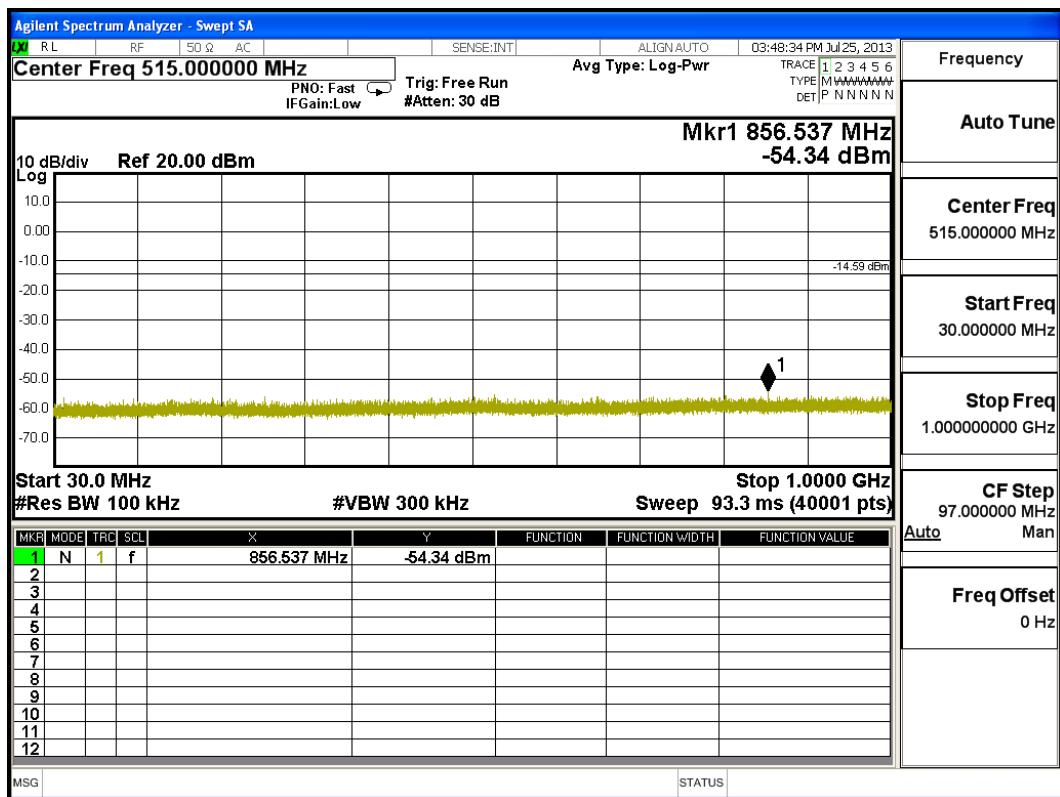


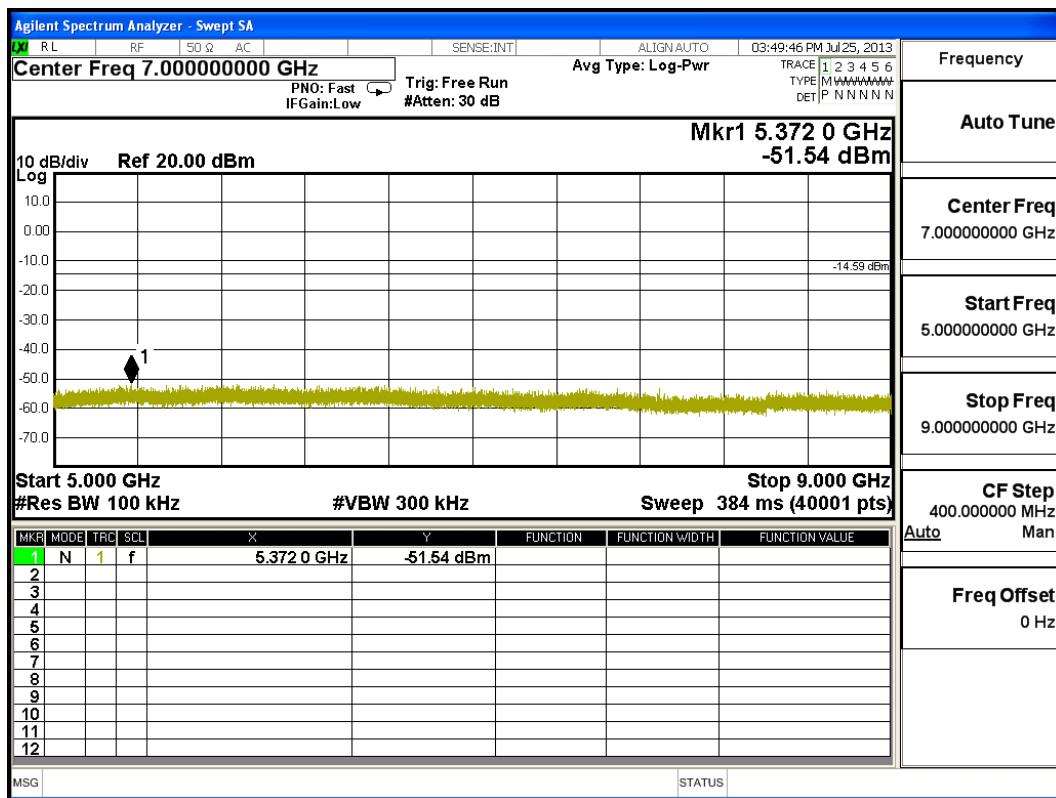
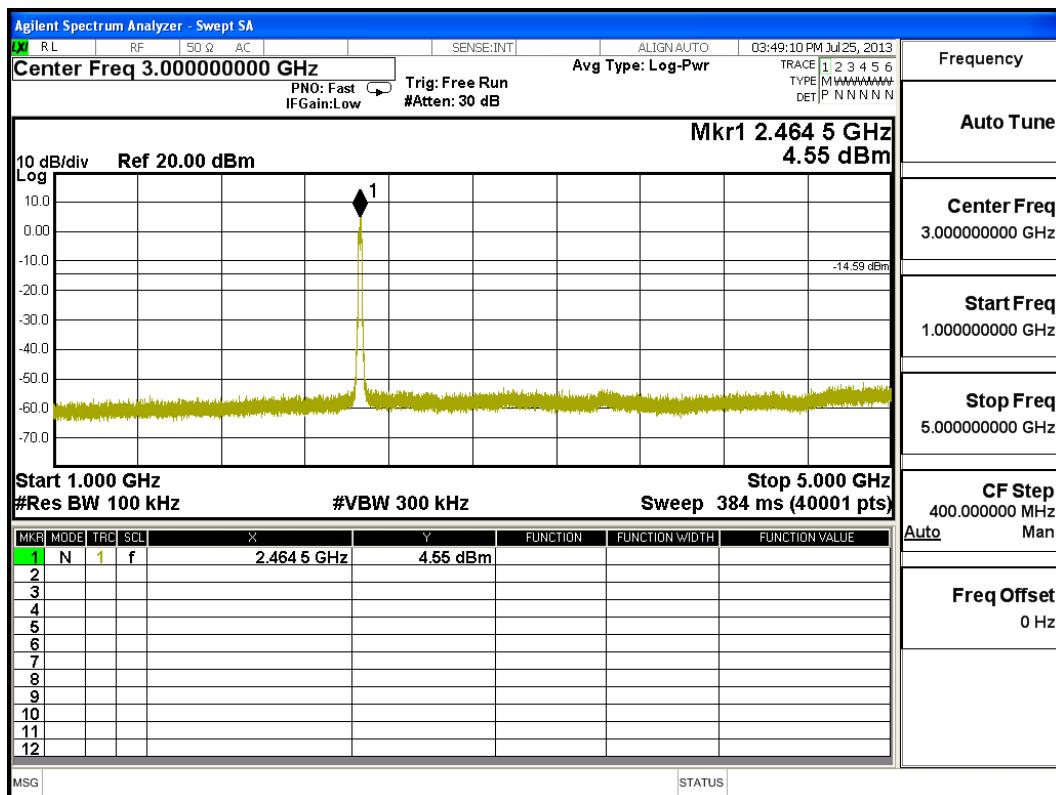


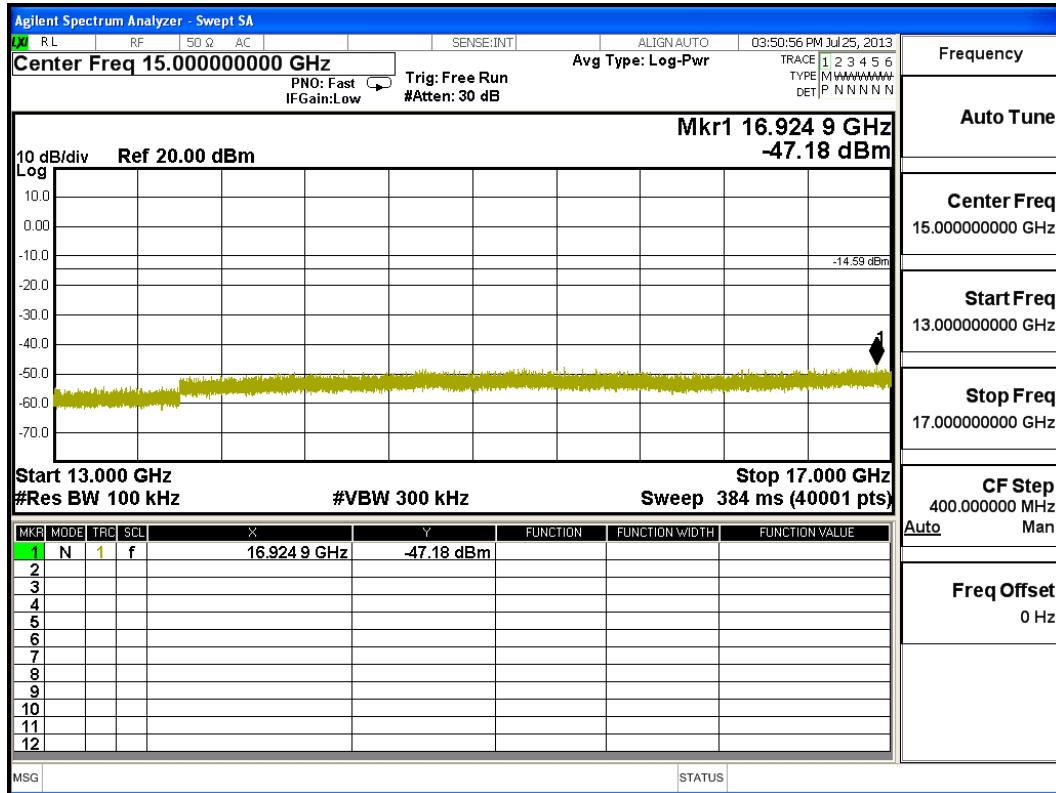
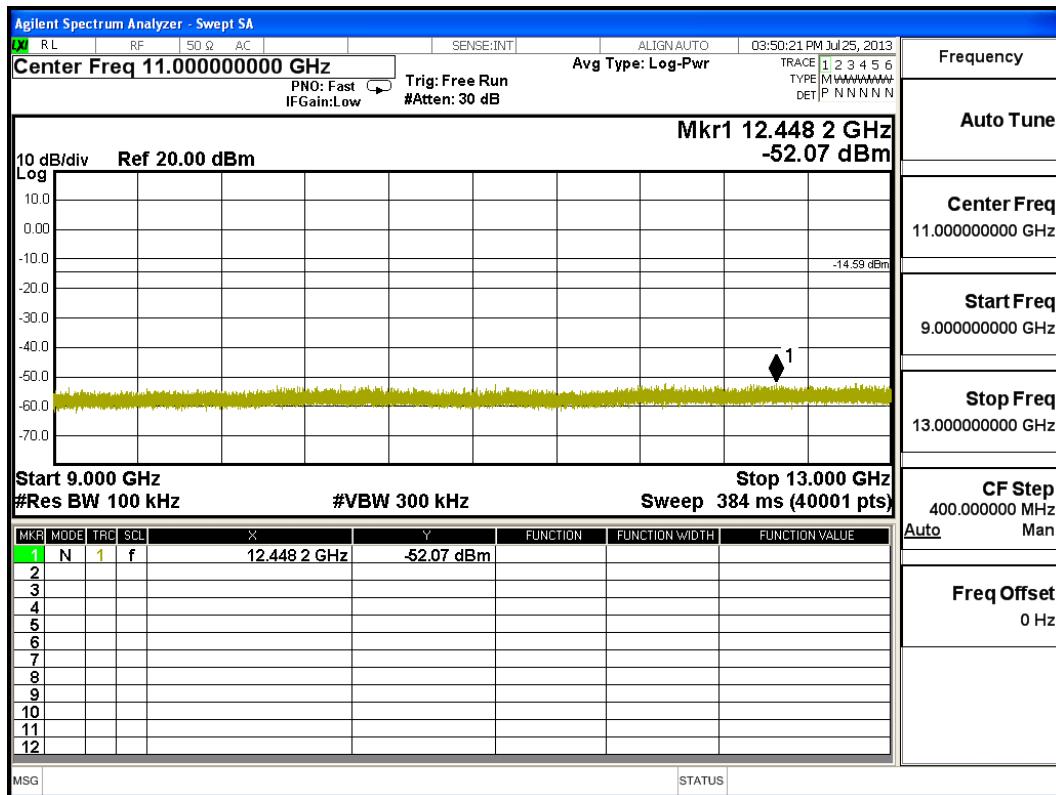


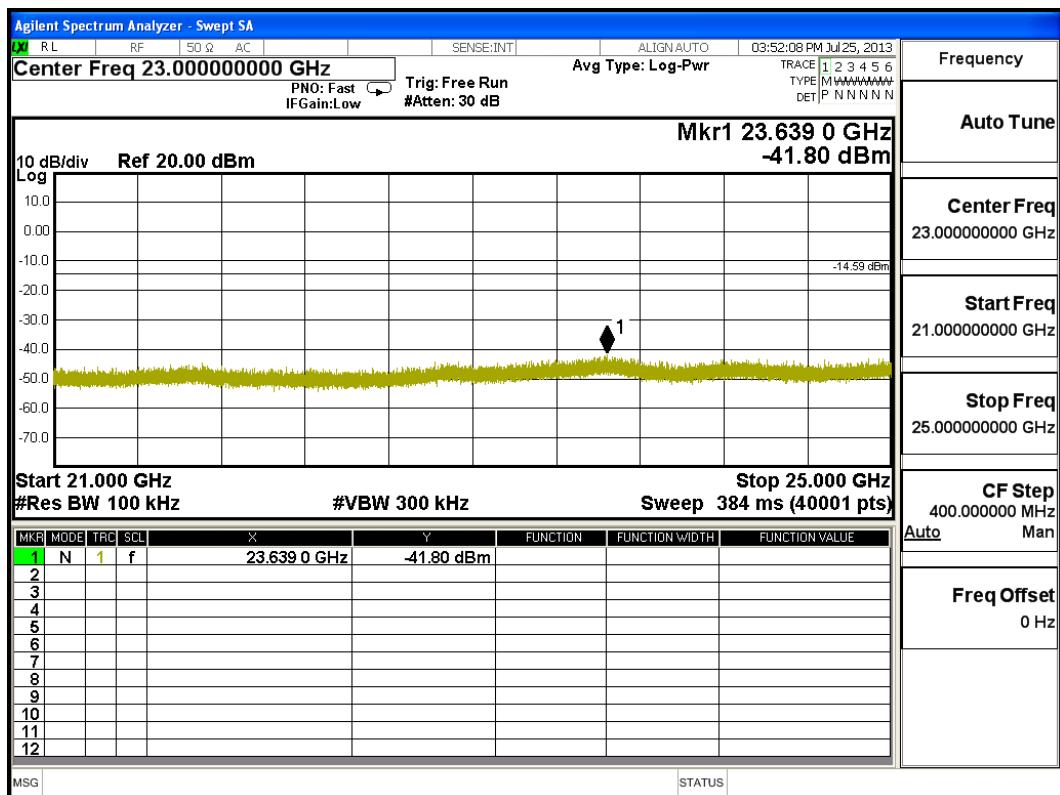
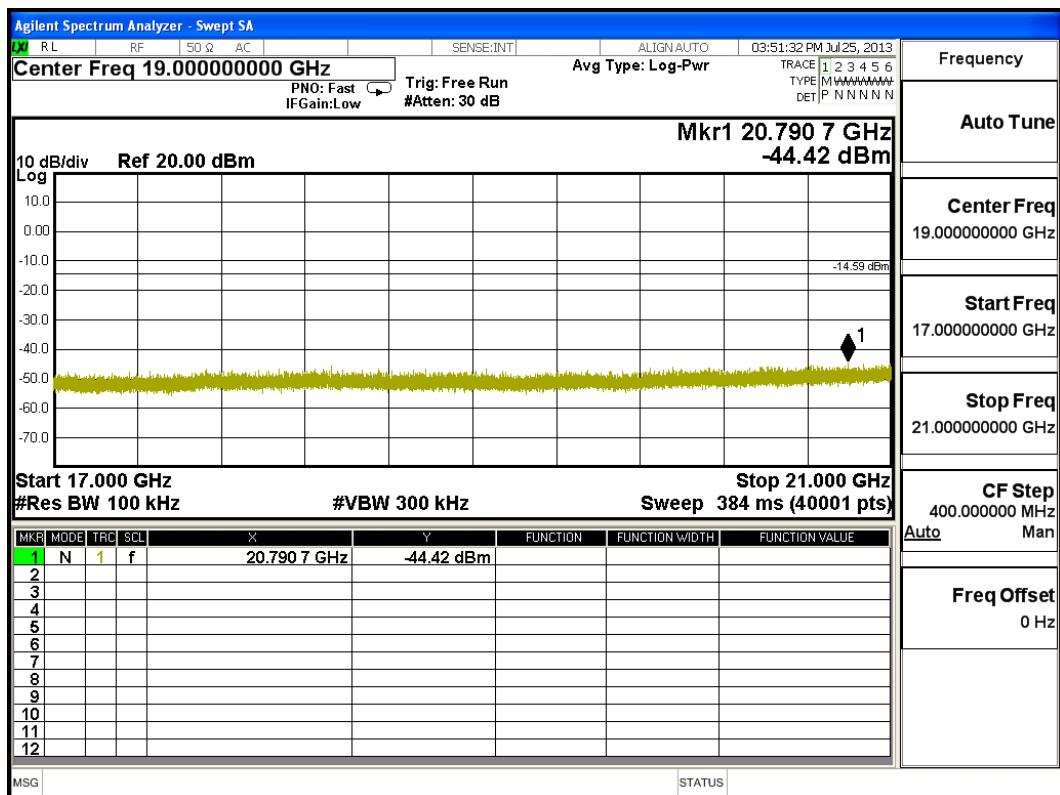


Channel 11 (2462MHz) 30MHz -25GHz

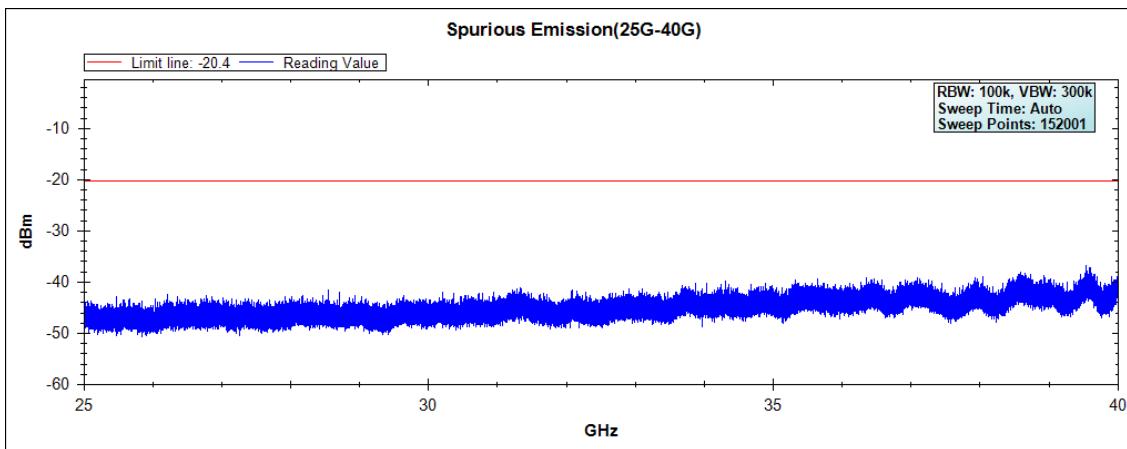
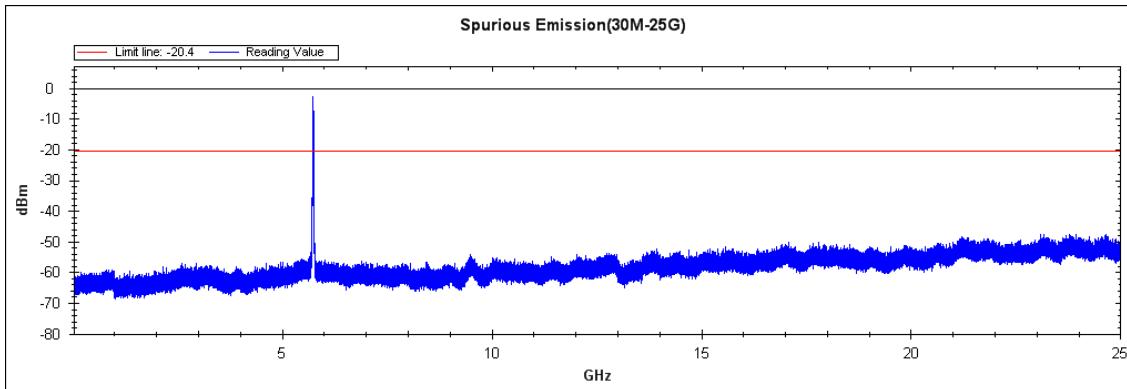


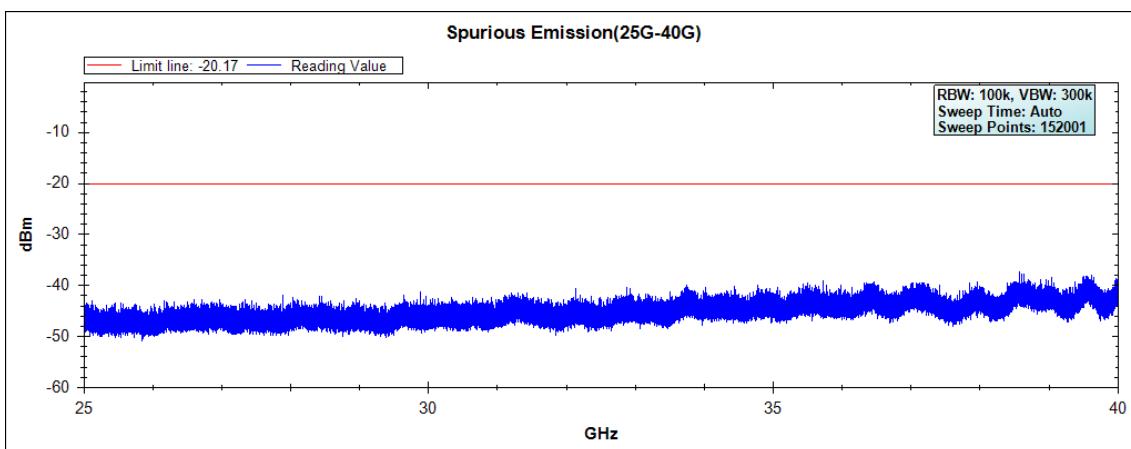
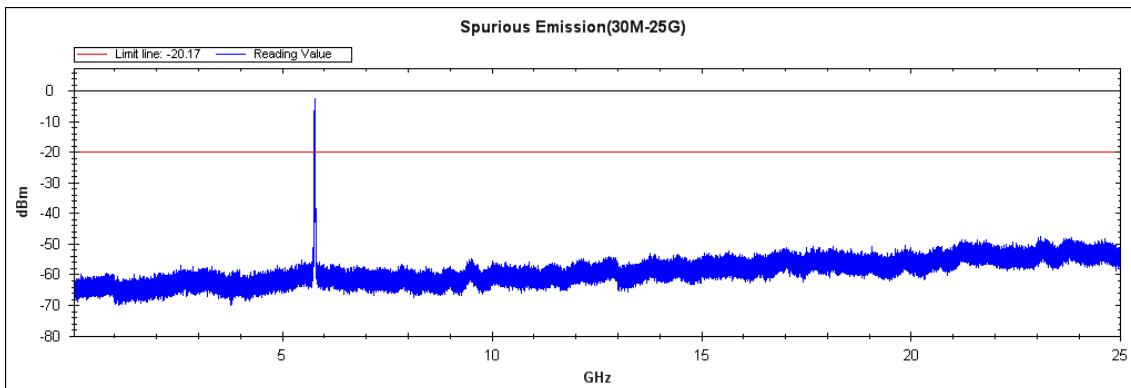


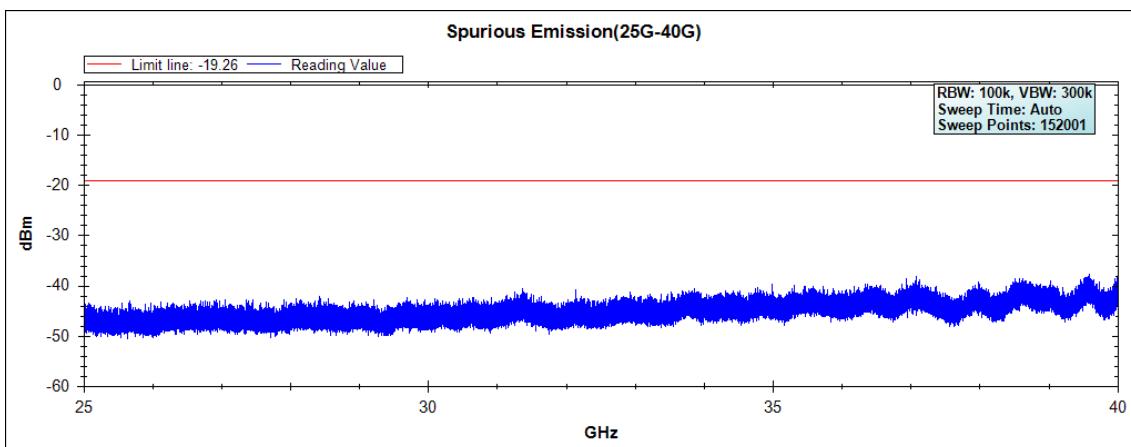
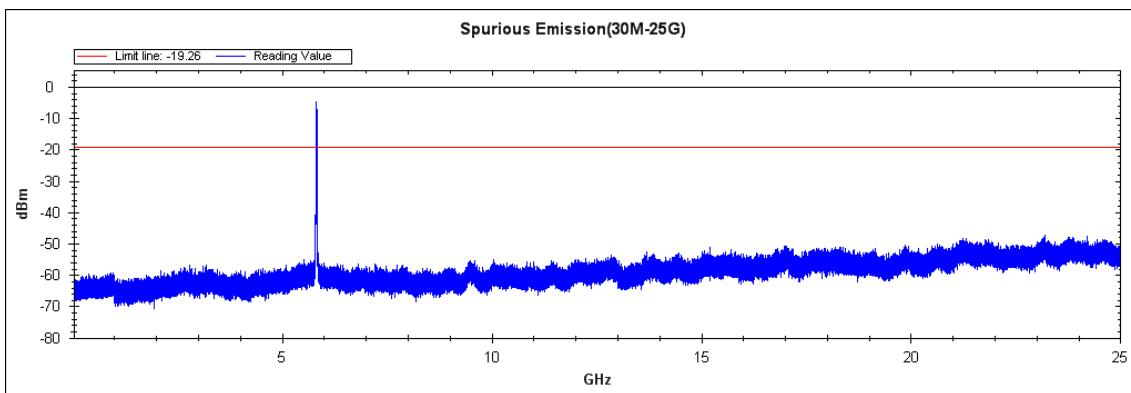




Product : FIELDBOOK
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11a 6Mbps

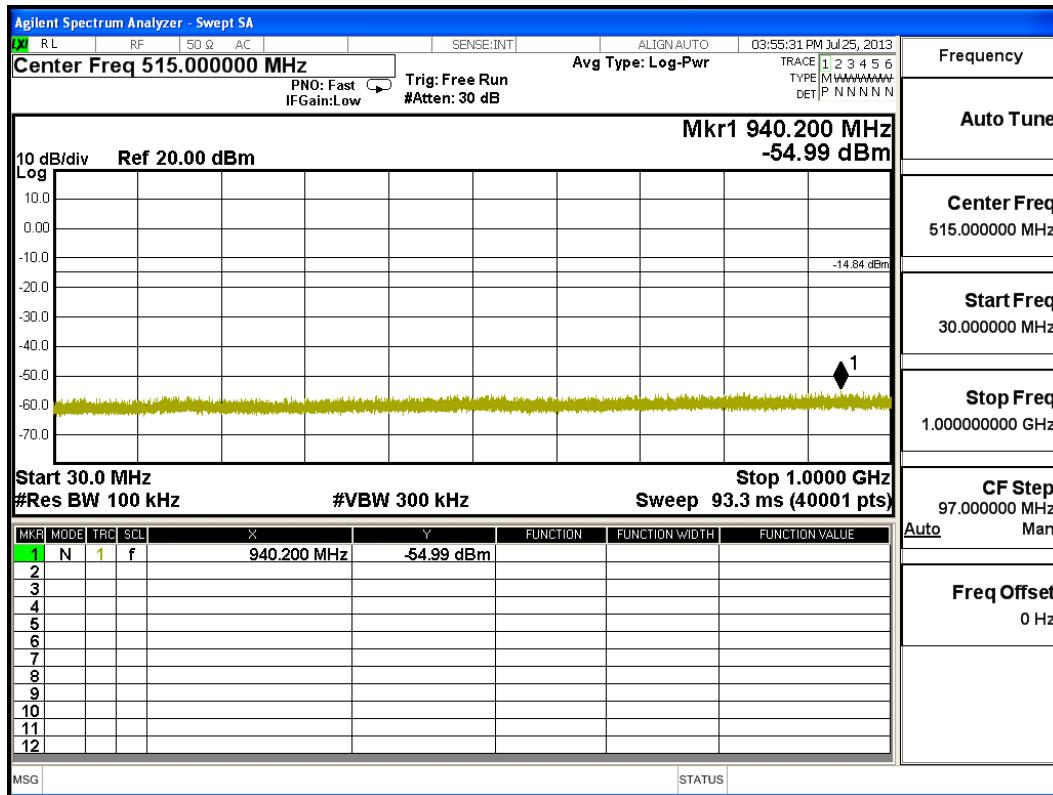
Channel 149 (5745MHz) 30MHz -40GHz

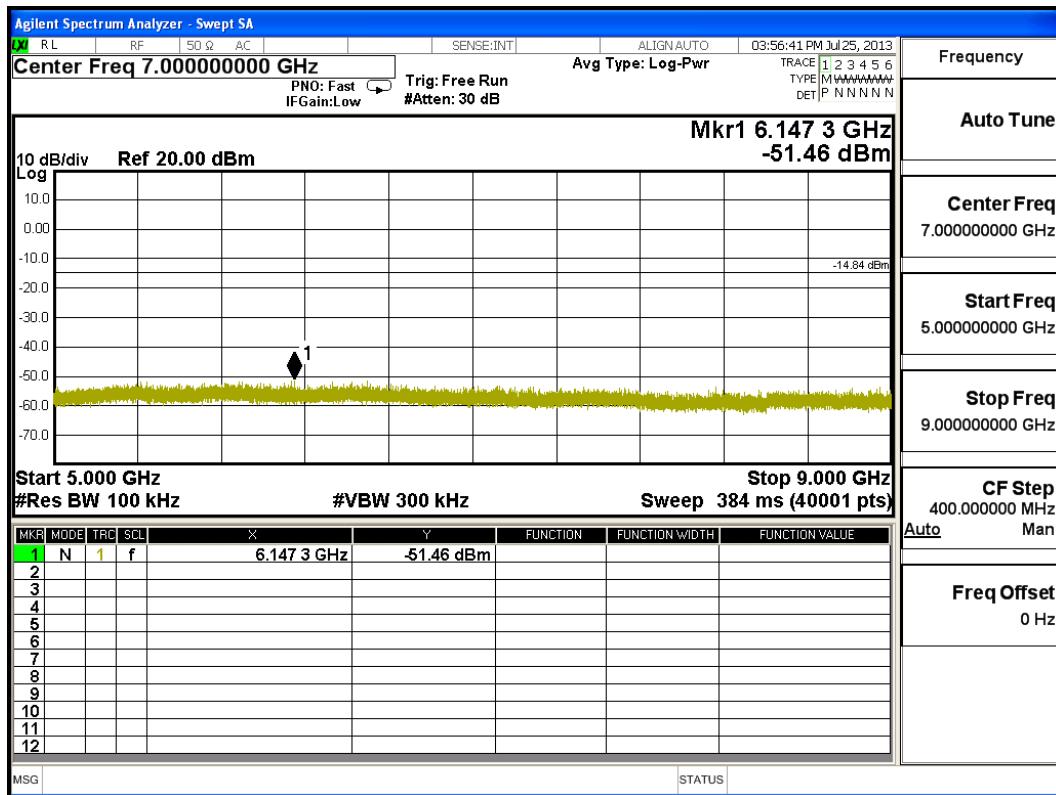
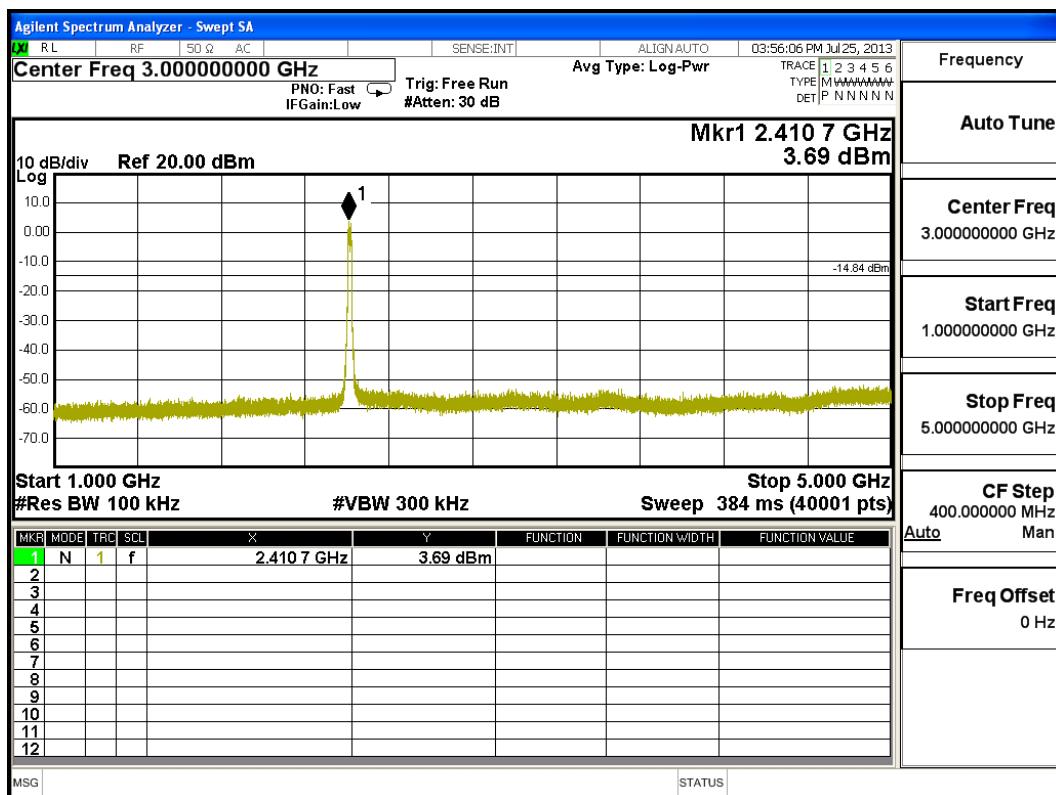
Channel 157 (5785MHz) 30MHz -40GHz

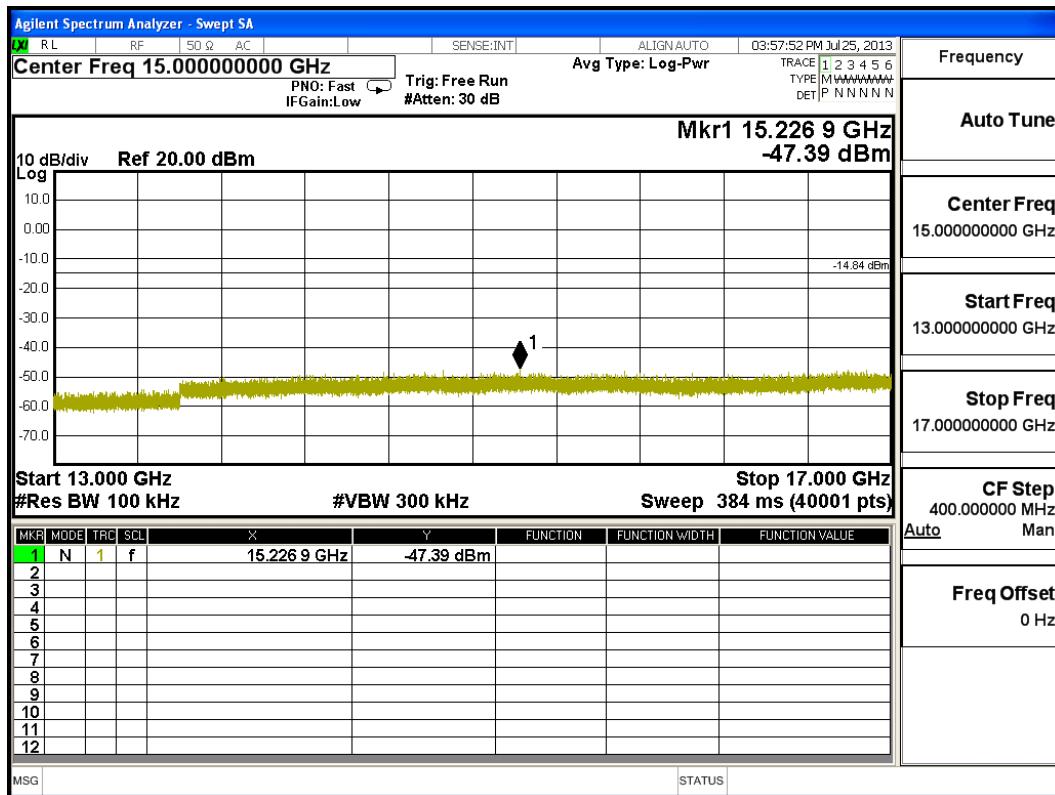
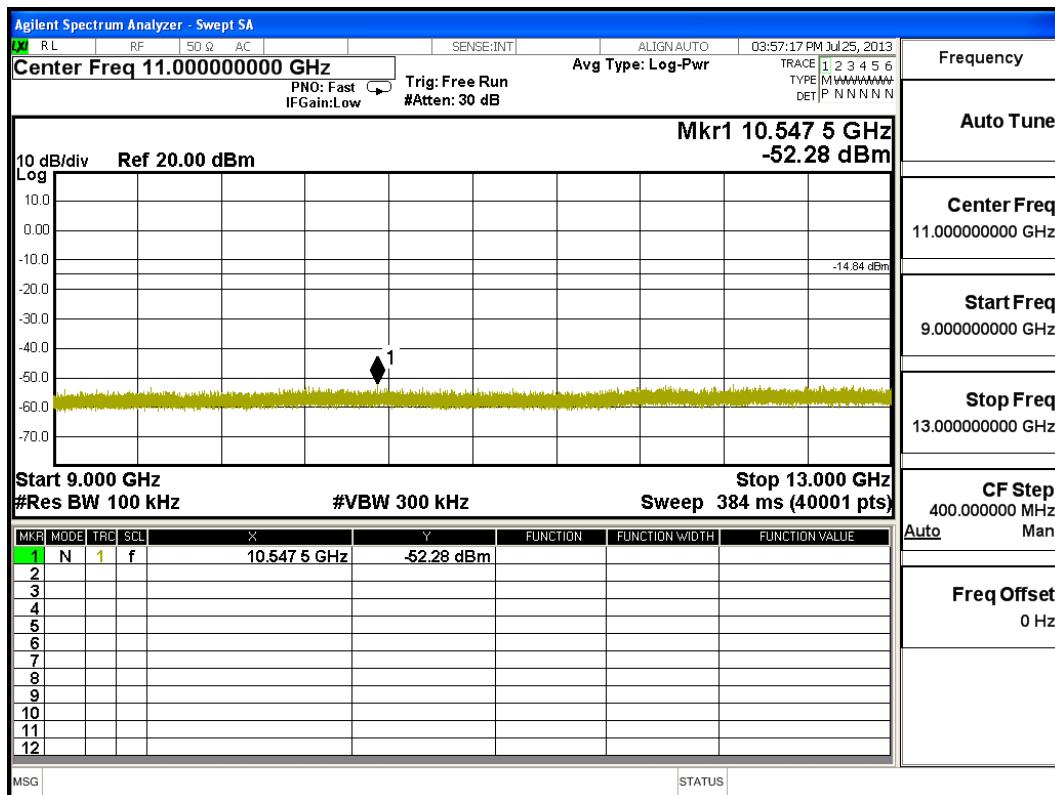
Channel 165 (5825MHz) 30MHz -40GHz

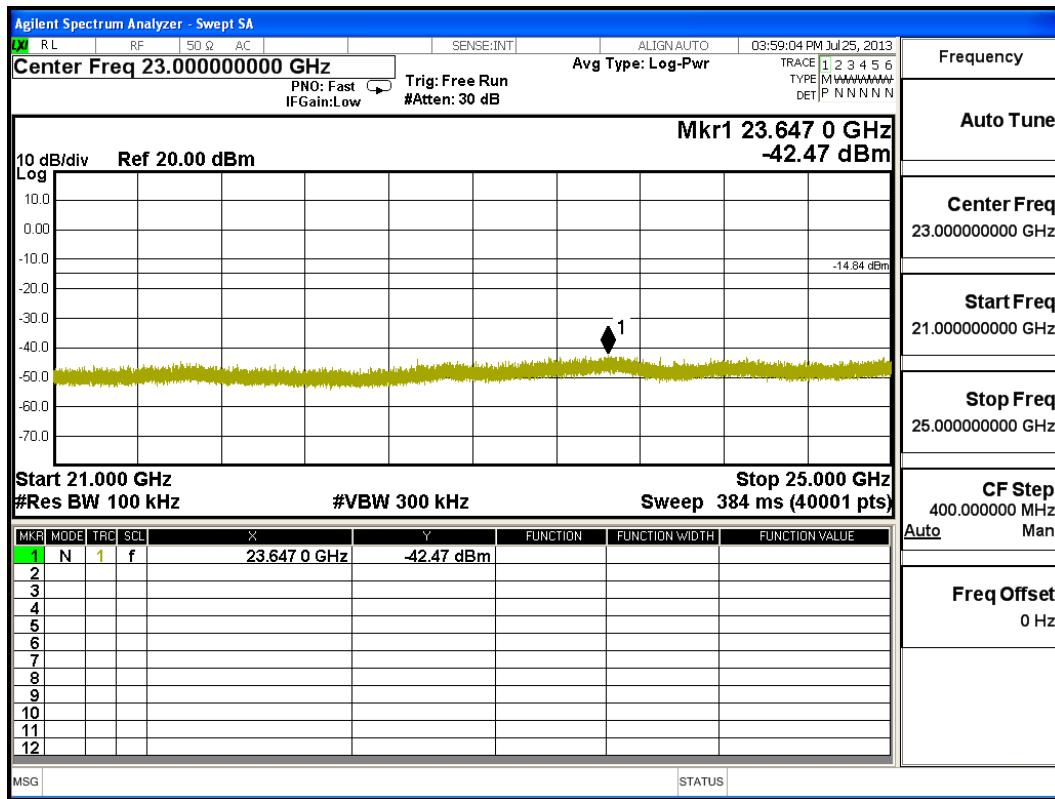
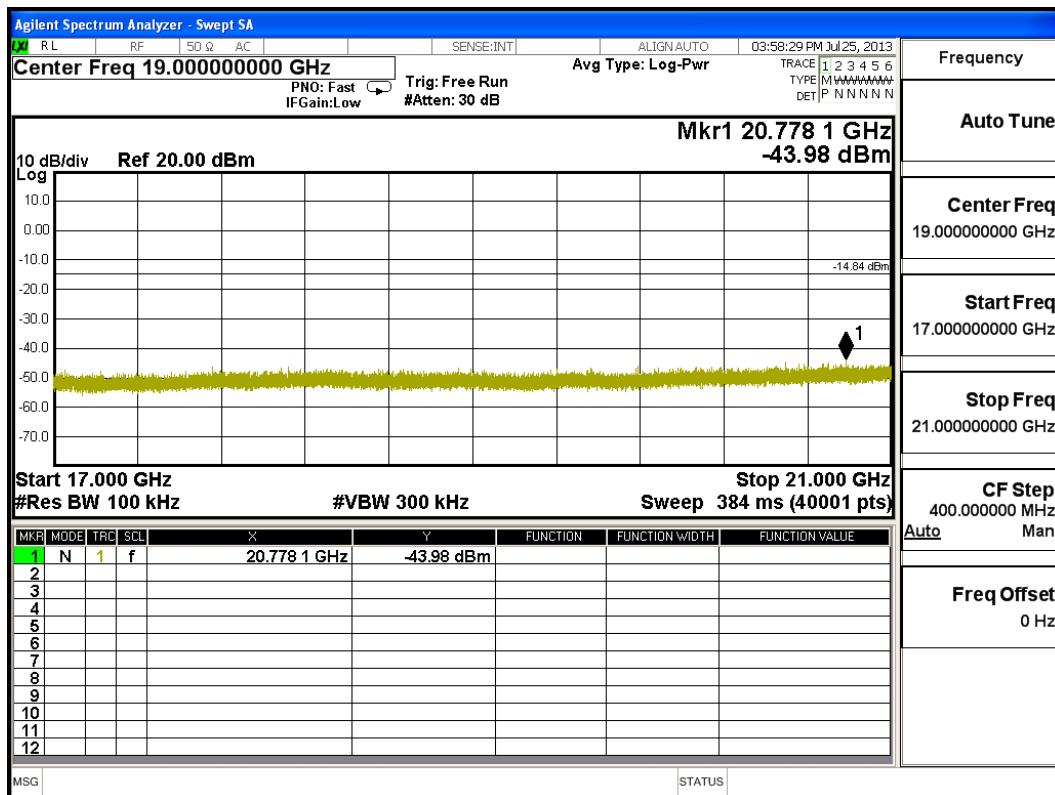
Product : FIELDBOOK
 Test Item : RF Antenna Conducted Spurious
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band)

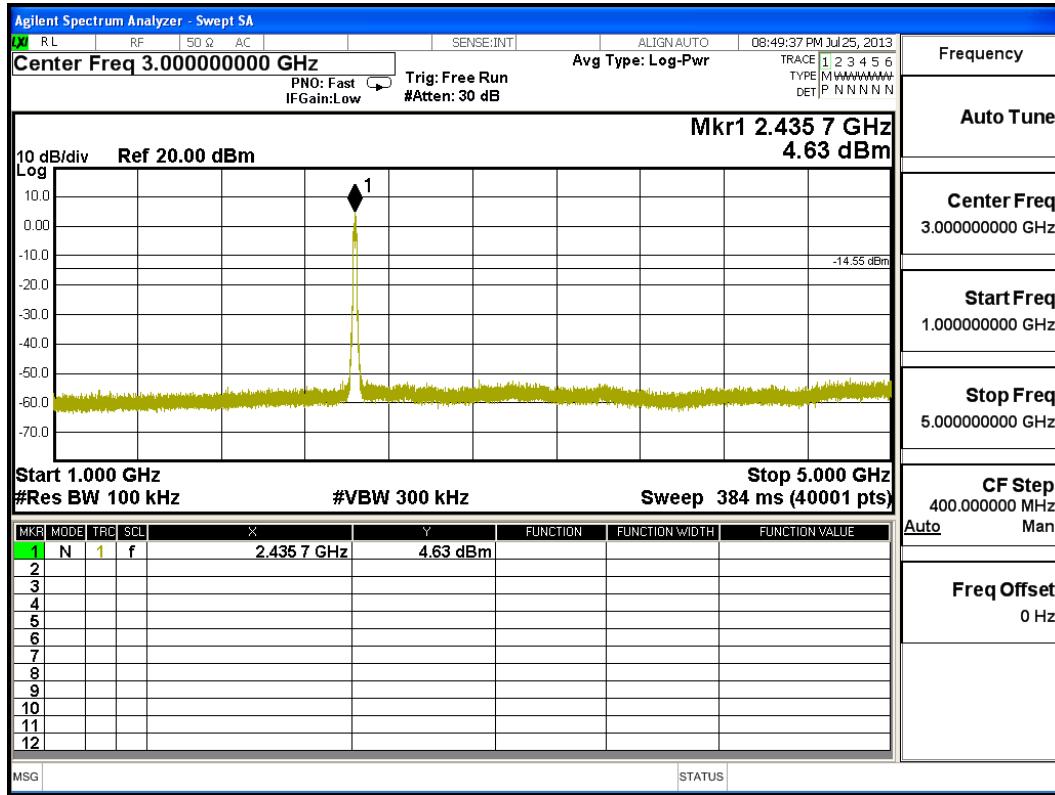
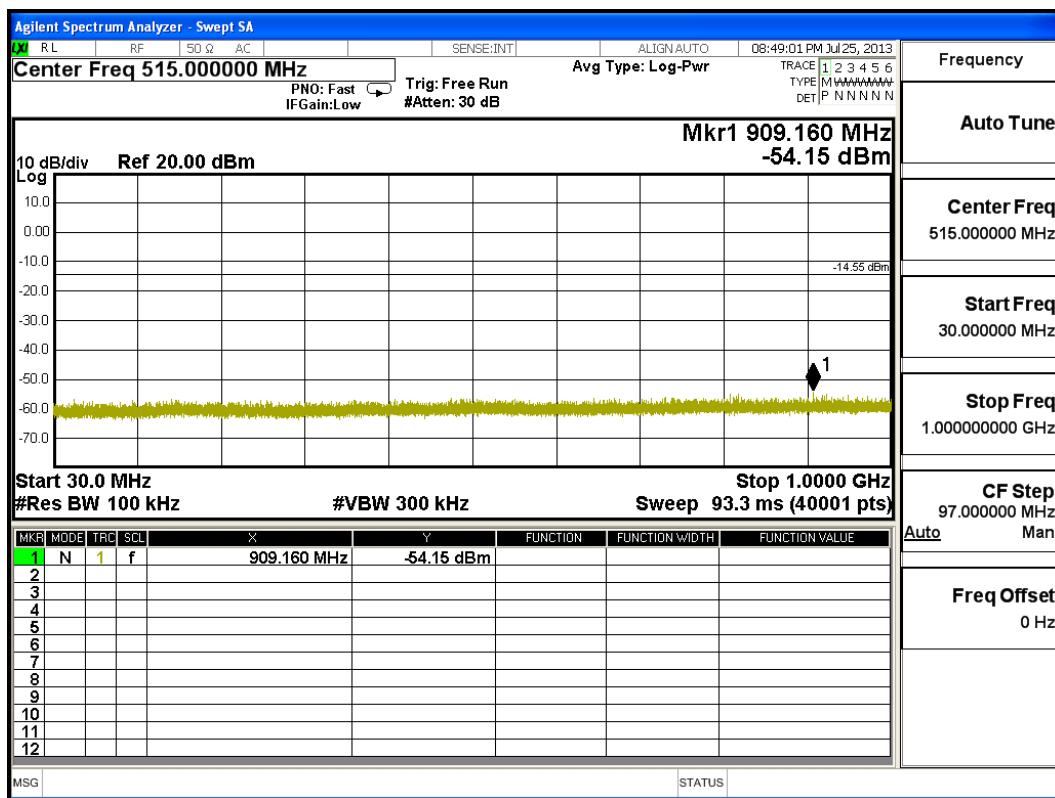
Channel 01 (2412MHz) 30MHz -25GHz

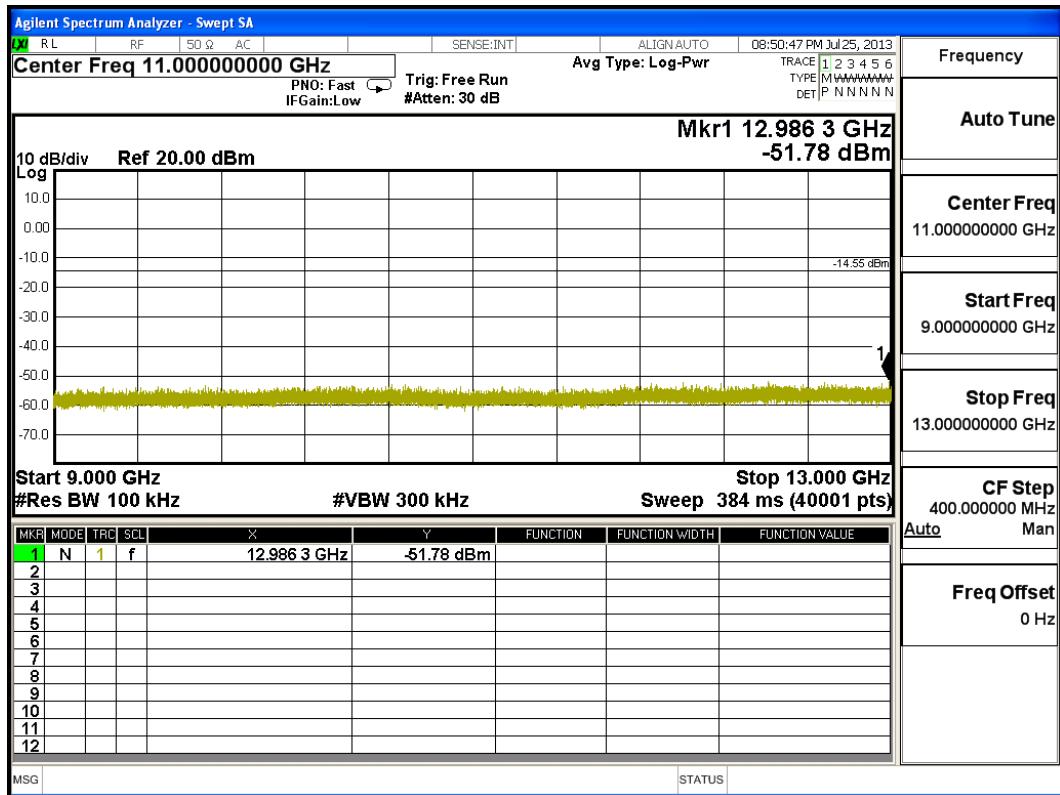
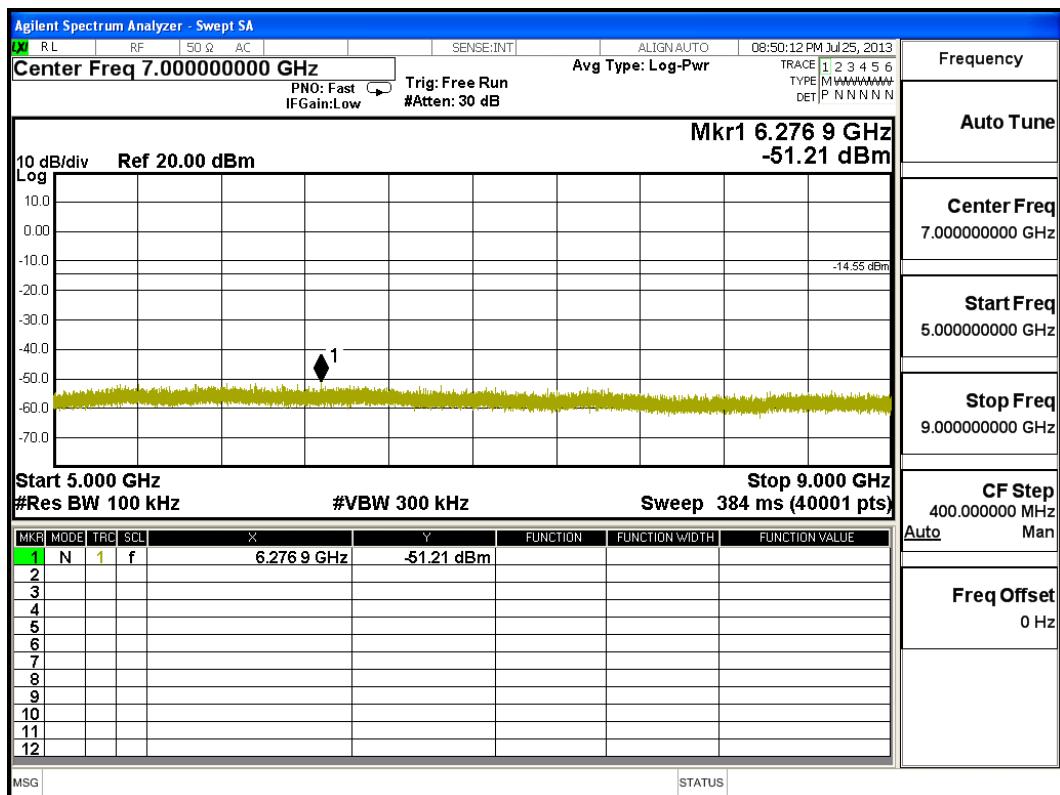


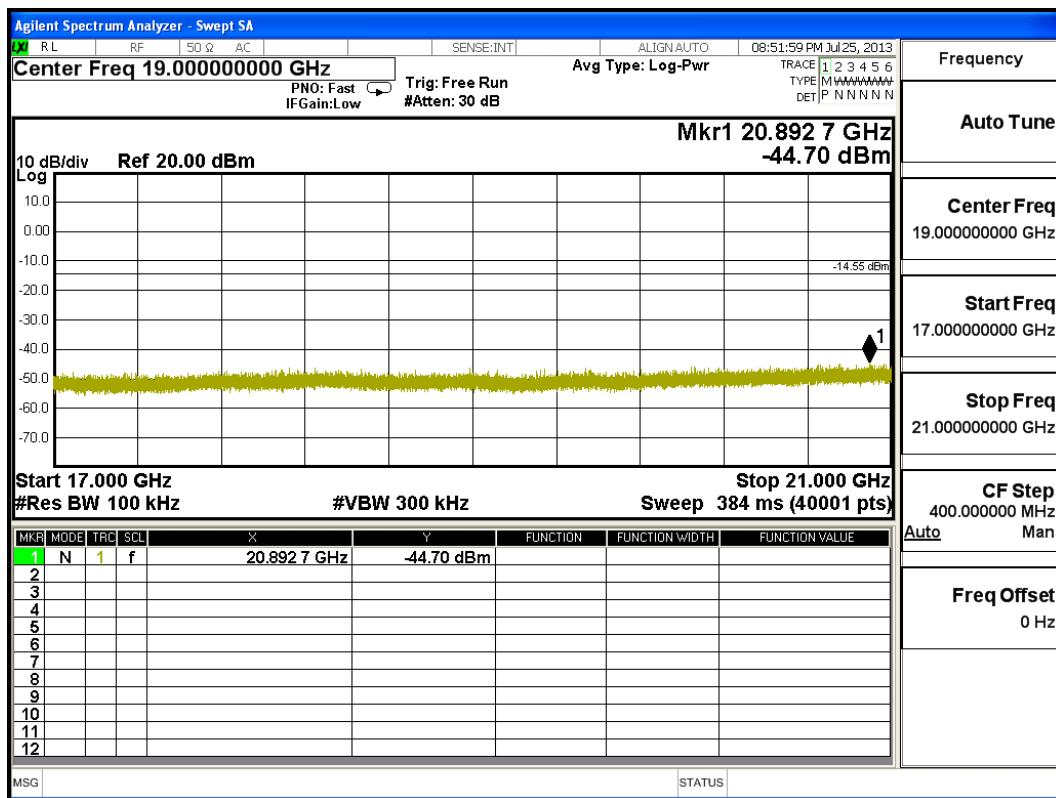
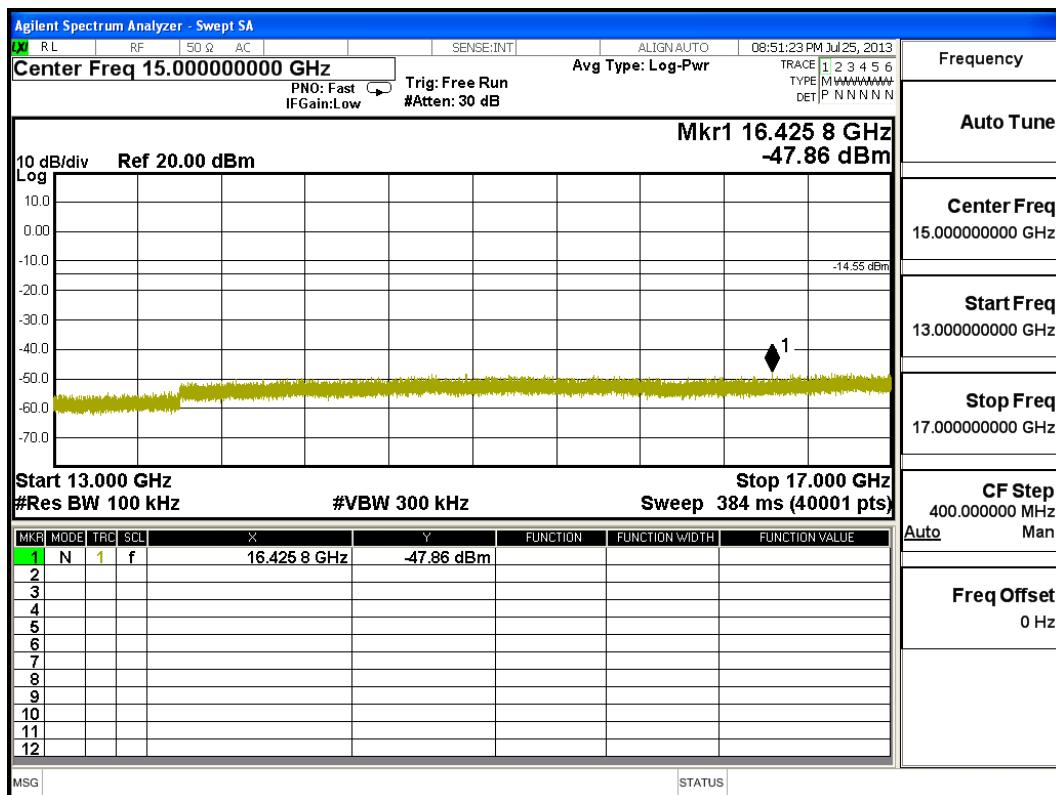


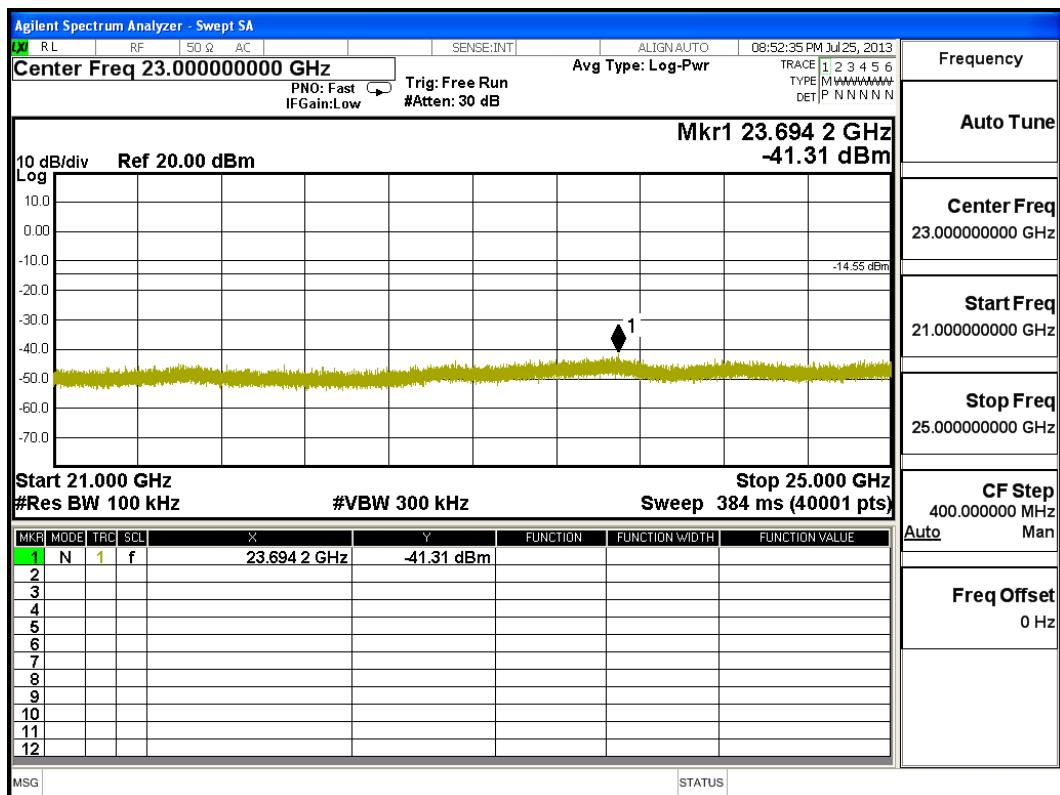




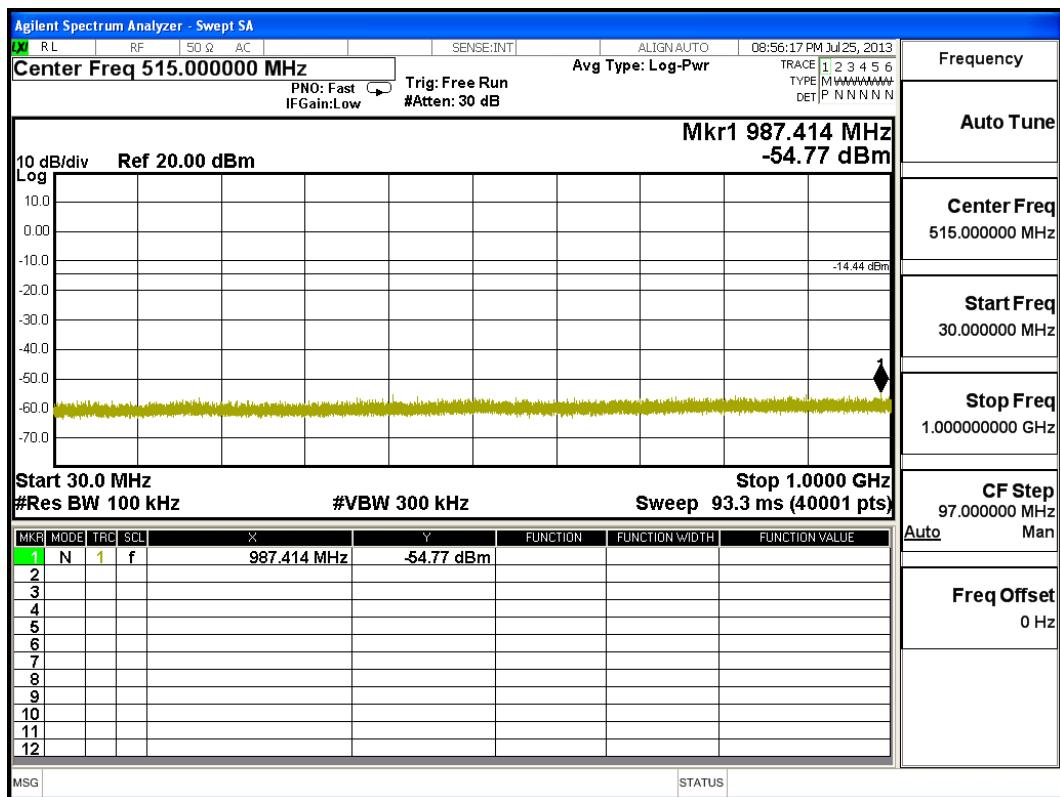
Channel 06 (2437MHz) 30MHz -25GHz


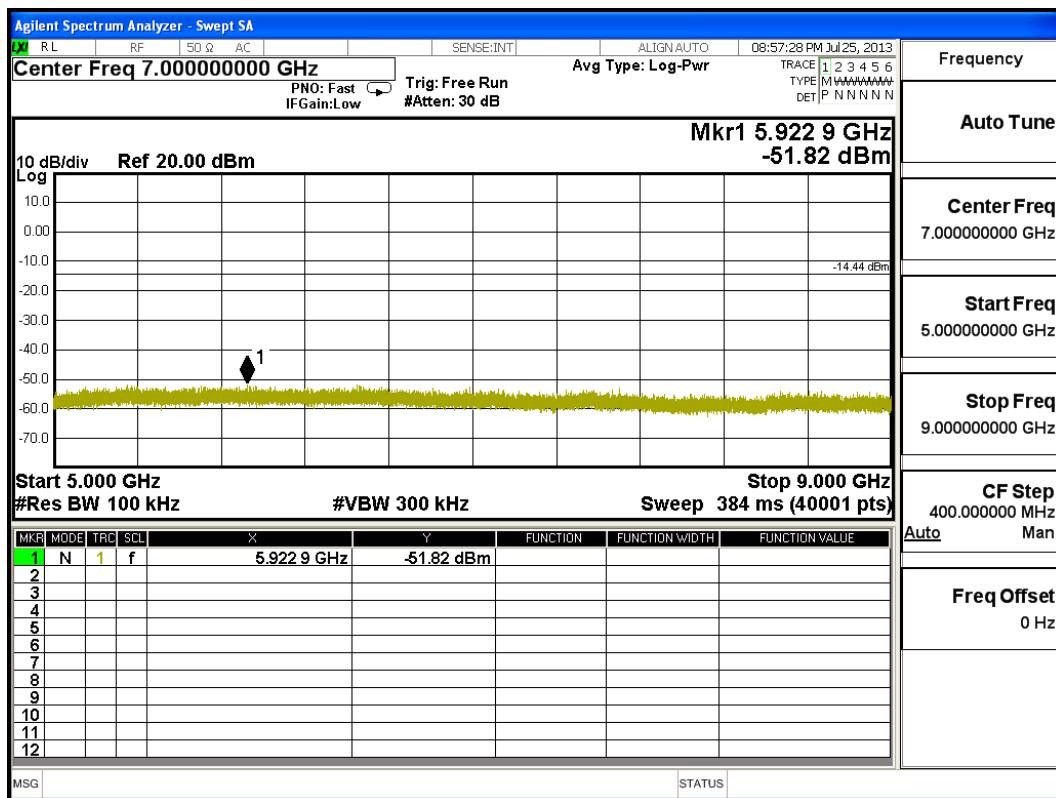
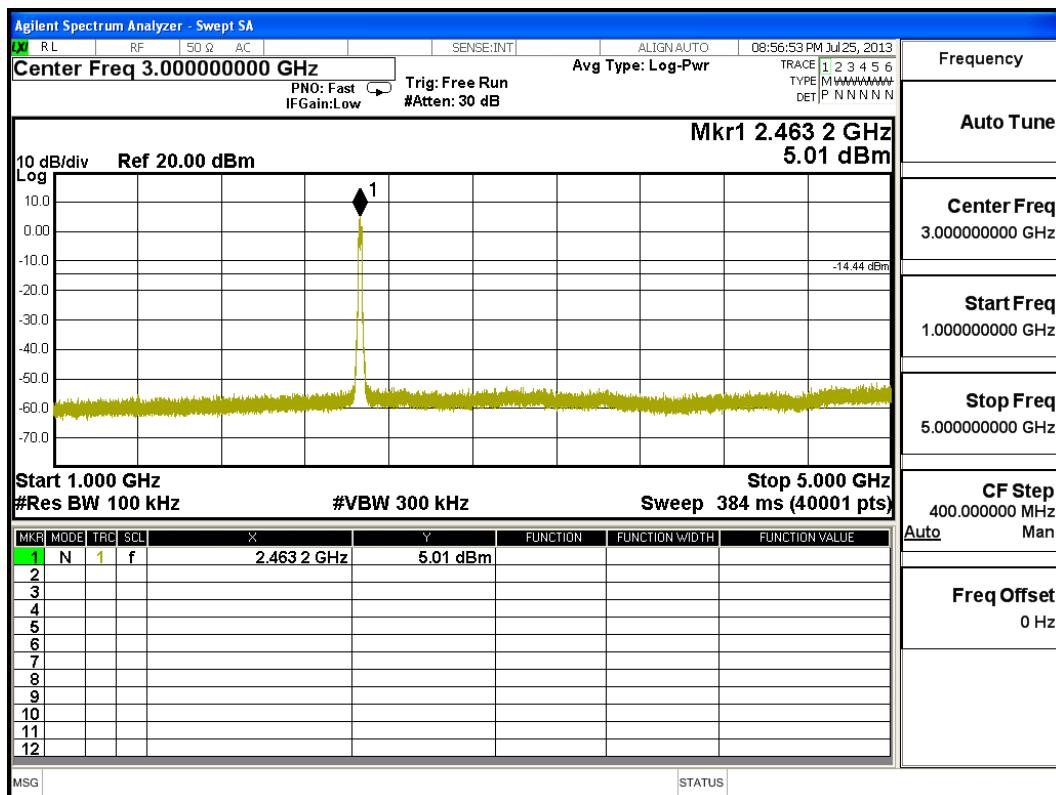


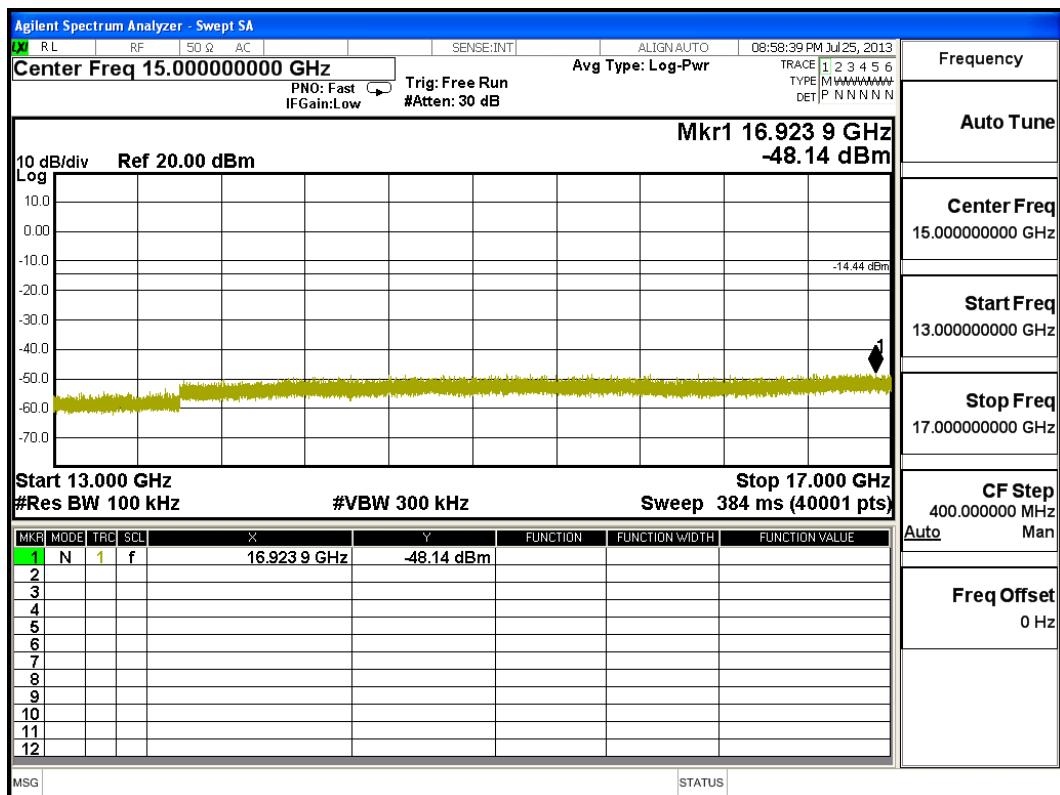
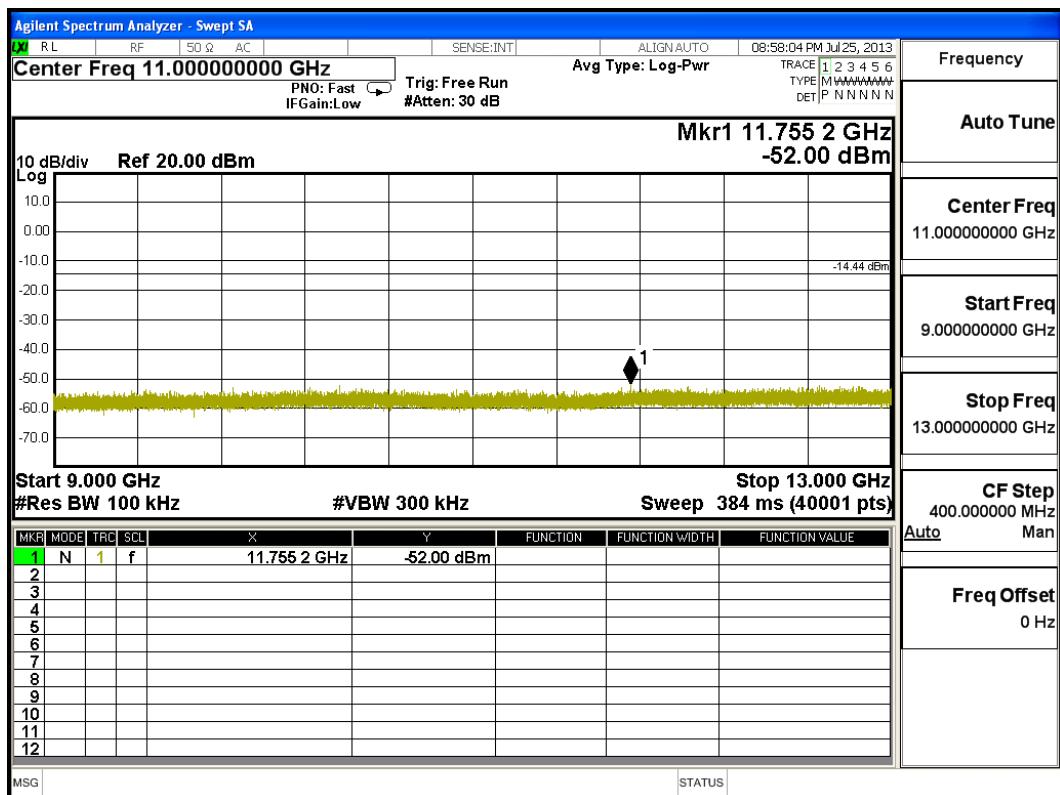


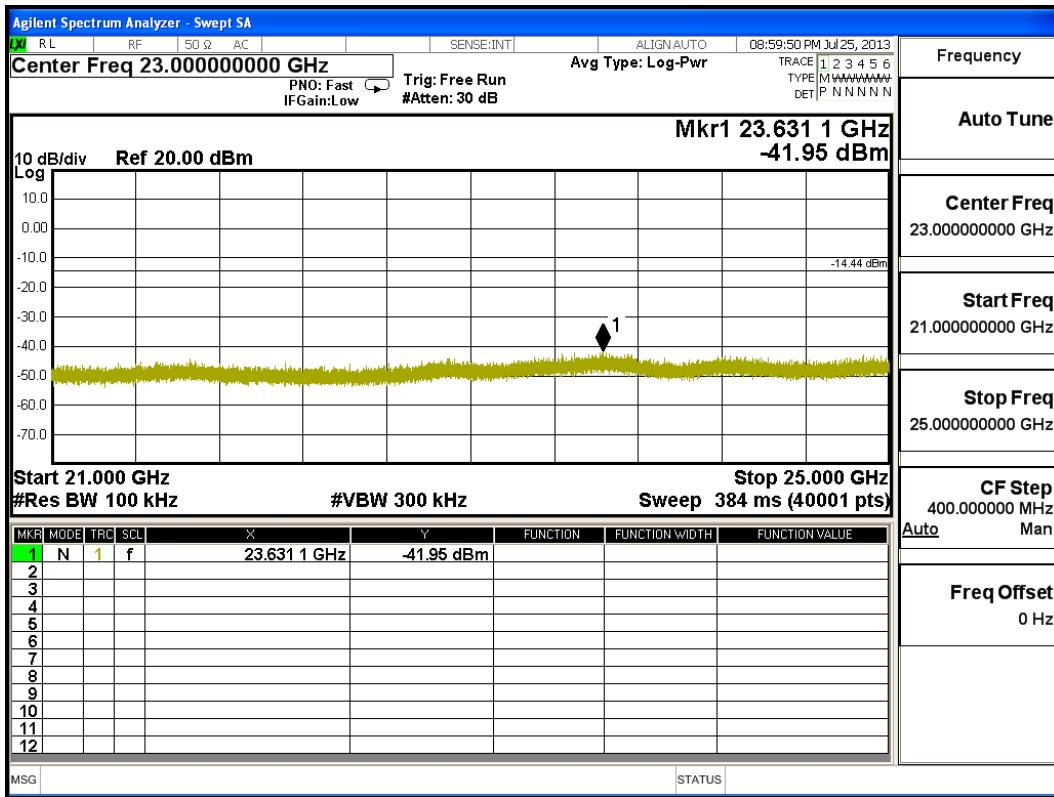
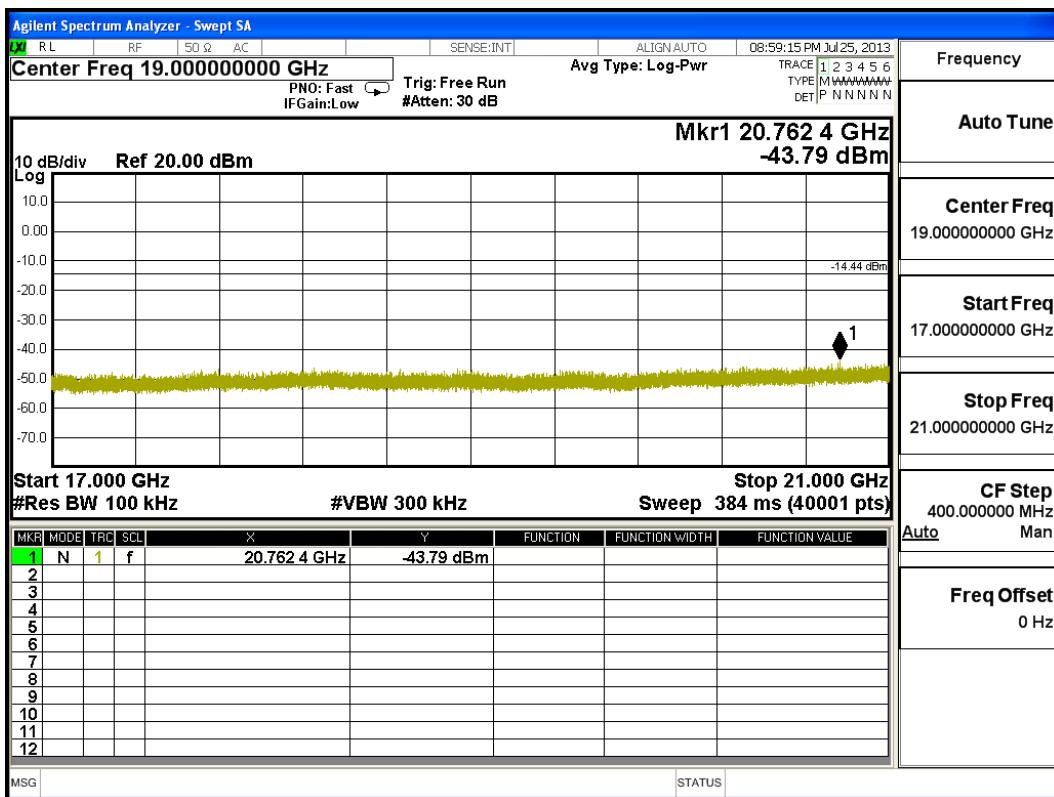


Channel 11 (2462MHz) 30MHz -25GHz

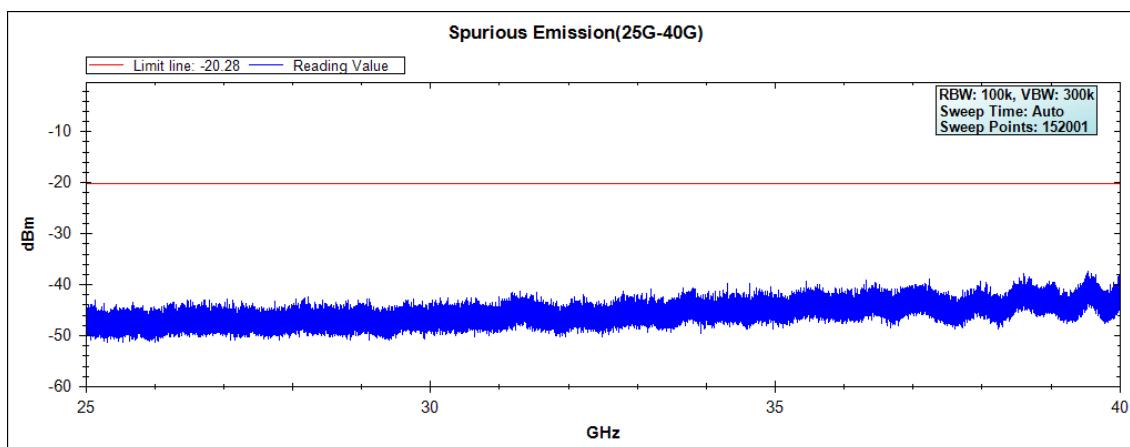
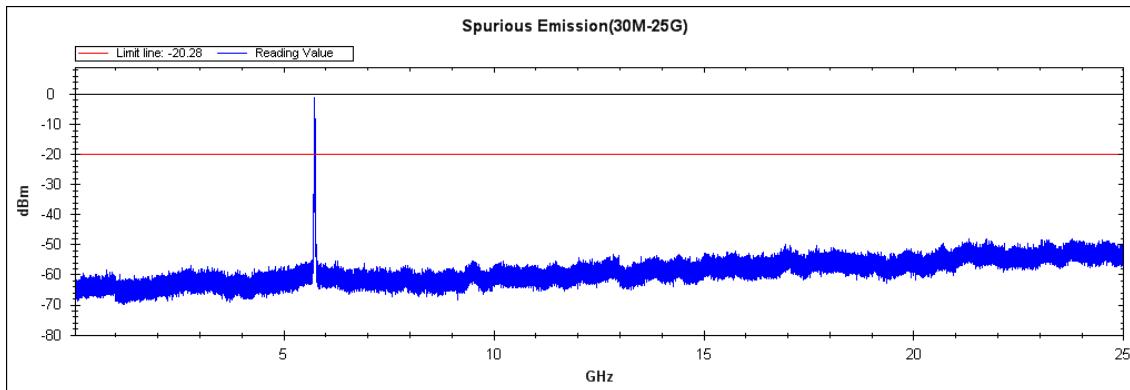


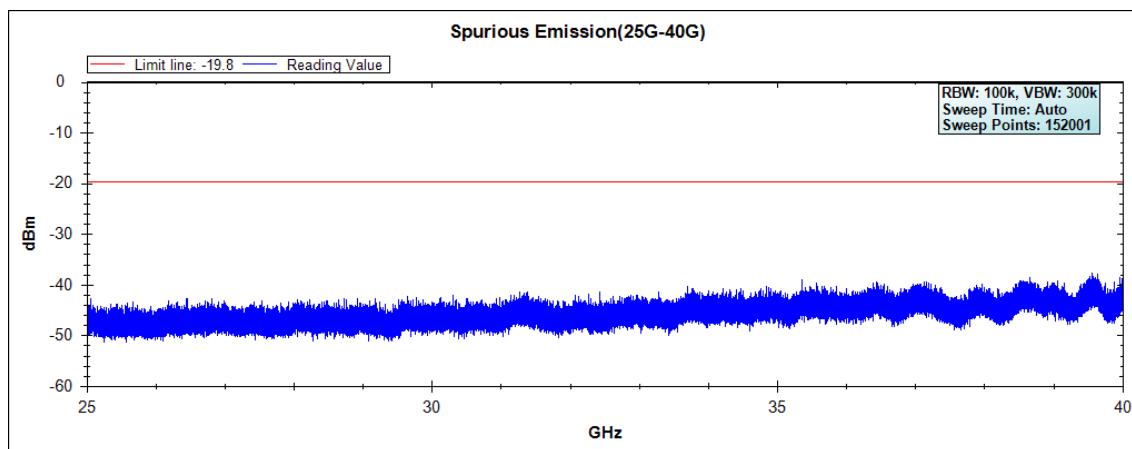
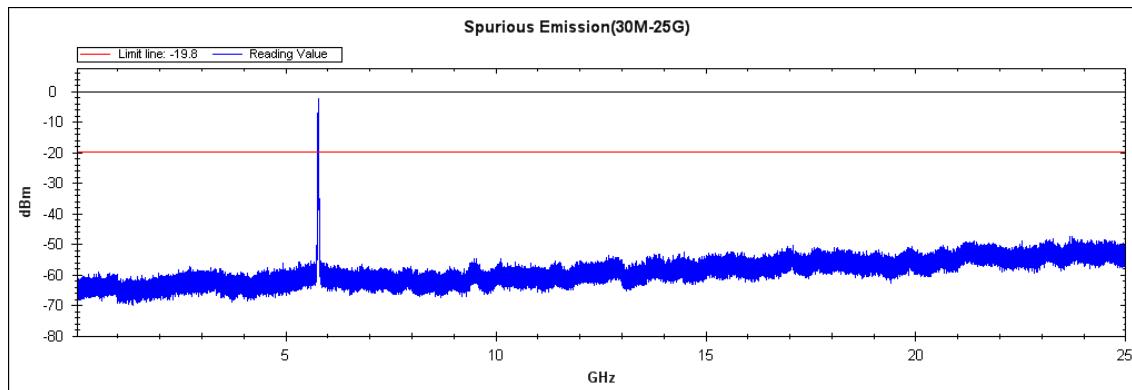


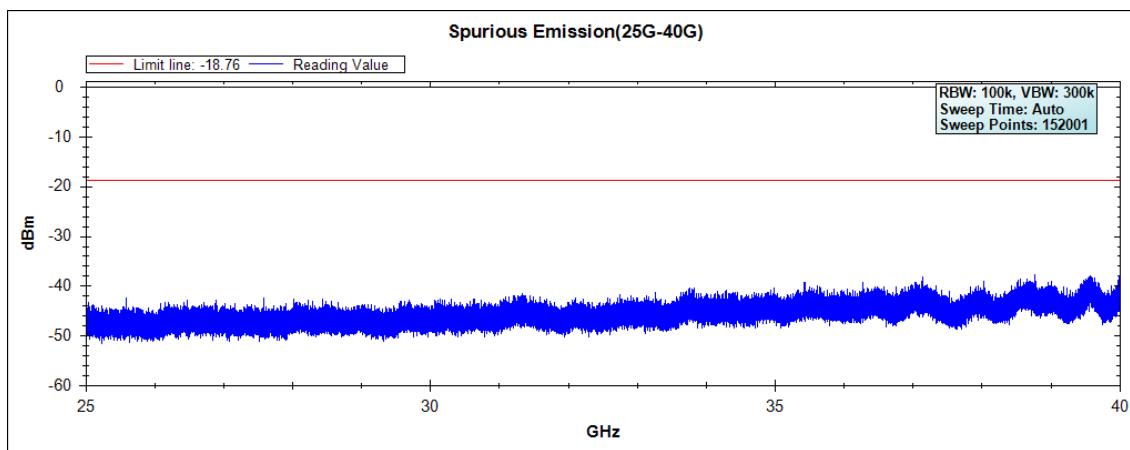
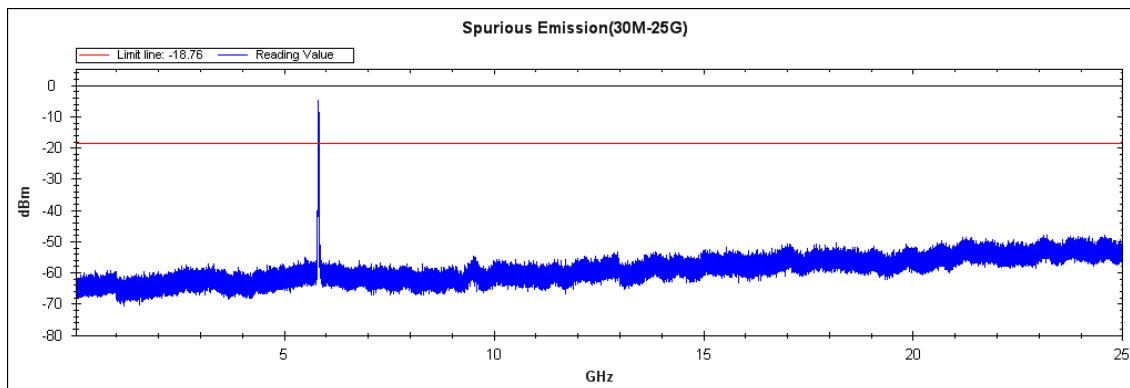




Product : FIELDBOOK
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 5: Transmit - 802.11n-20BW_7.2Mbps(5G Band)

Channel 149 (5745MHz) 30MHz -40GHz

Channel 157 (5785MHz) 30MHz -40GHz

Channel 165 (5825MHz) 30MHz -40GHz

6. Band Edge

6.1. Test Equipment

RF Radiated Measurement:

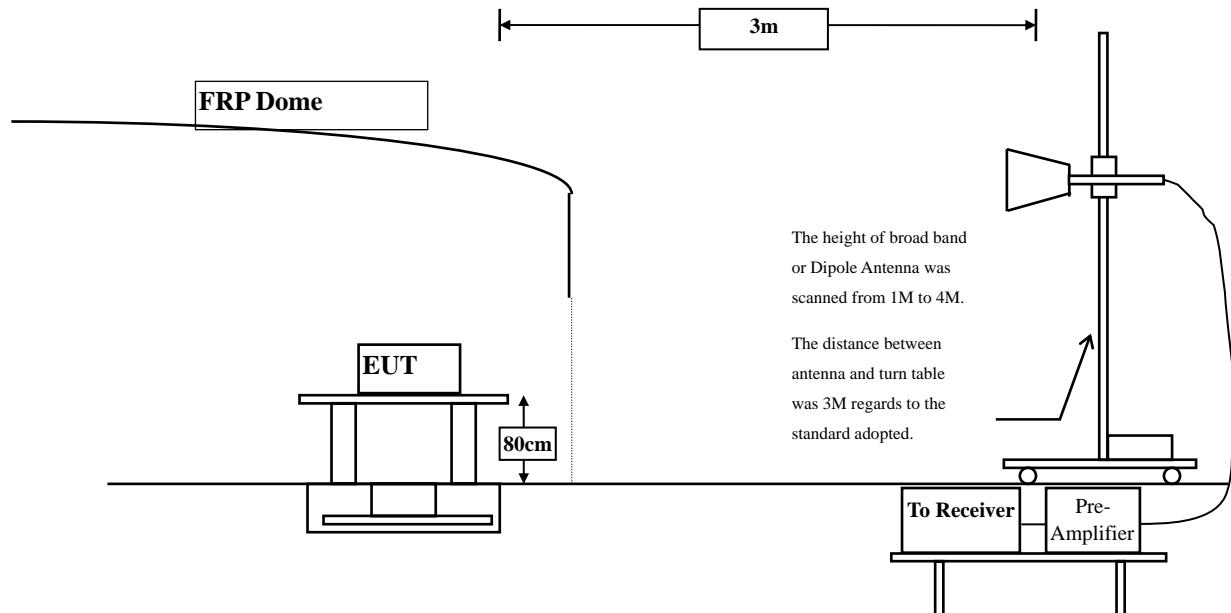
The following test equipments are used during the band edge tests:

Test Site	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
<input checked="" type="checkbox"/> Site # 3	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2012
	X Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2012
	Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2013
	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2013
	X Pre-Amplifier	QTK	AP-180C / CHM_0906076	Sep., 2012
	Pre-Amplifier	MITEQ	AMF-4D-180400-45-6P/925975	Mar., 2013
	X Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2013
	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2012
	X Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2013
	X Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	X Coaxial Switch	Anritsu	MP59B/6200265729	N/A

- Note:
1. All instruments are calibrated every one year.
 2. The test instruments marked by “X” are used to measure the final test results.

6.2. Test Setup

RF Radiated Measurement:



6.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

6.4. Test Procedure

The EUT was setup according to ANSI C63.10, 2009 and tested according to DTS test procedure of ANSI C63.10: 2009 for compliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2009 on radiated measurement.

6.5. Uncertainty

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

6.6. Test Result of Band Edge

Product : FIELDBOOK
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit - 802.11b 1Mbps

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
01 (Peak)	2386.200	33.735	26.230	59.966	74.00	54.00	Pass
01 (Peak)	2390.000	33.739	22.682	56.421	74.00	54.00	Pass
01 (Peak)	2413.000	33.775	77.386	111.160	--	--	Pass
01 (Average)	2386.200	33.735	15.171	48.907	74.00	54.00	Pass
01 (Average)	2390.000	33.739	12.438	46.177	74.00	54.00	Pass
01 (Average)	2412.800	33.775	73.489	107.263	--	--	Pass

Figure Channel 01:

Horizontal (Peak)

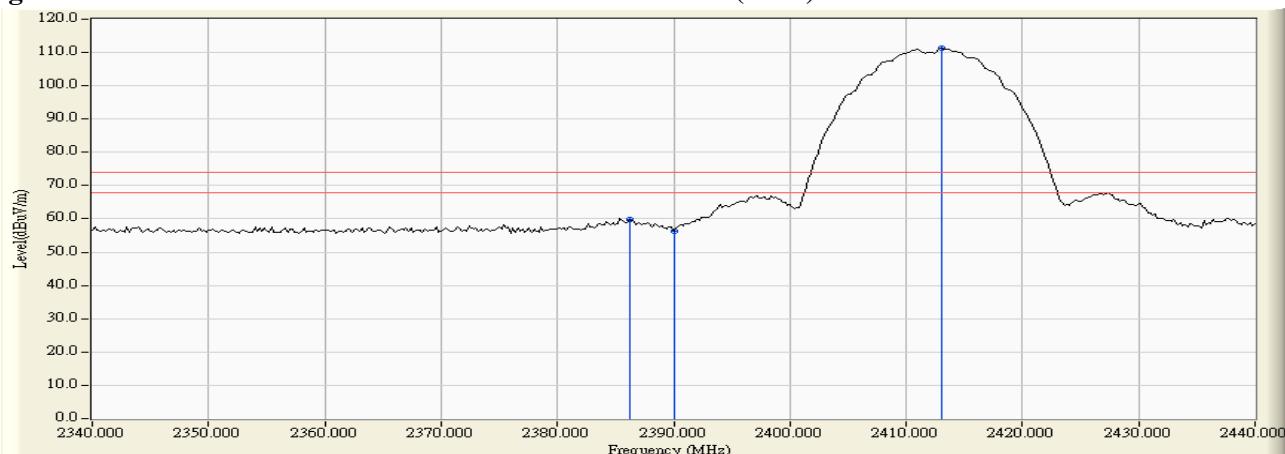
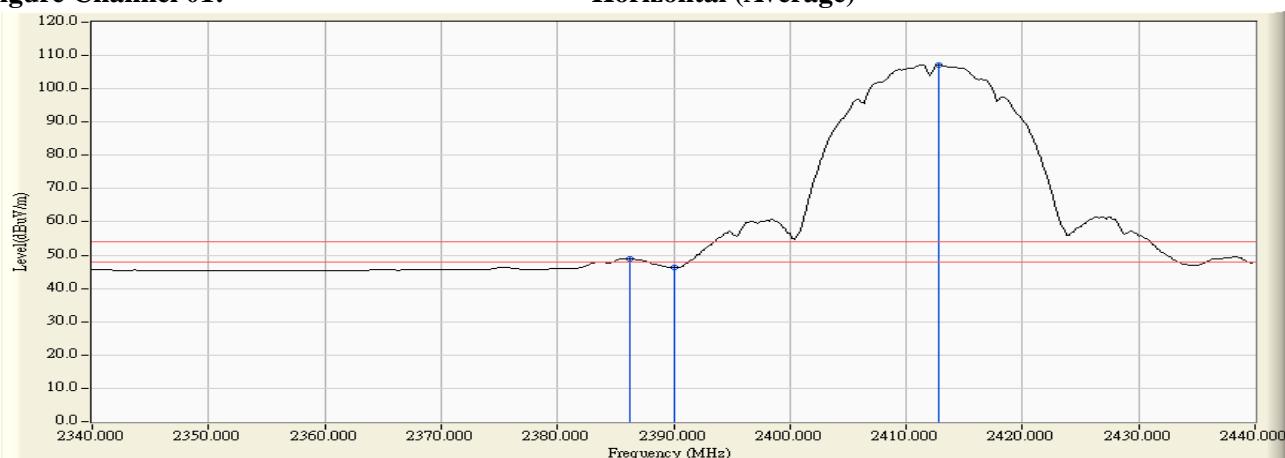


Figure Channel 01:

Horizontal (Average)



- Note:1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
 4. “ * ”, means this data is the worst emission level.
 5. Measurement Level = Reading Level + Correct Factor.
 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : FIELDBOOK
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit - 802.11b 1Mbps

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
01 (Peak)	2385.800	32.296	23.102	55.398	74.00	54.00	Pass
01 (Peak)	2390.000	32.267	22.274	54.541	74.00	54.00	Pass
01 (Peak)	2413.200	32.254	65.038	97.292	--	--	Pass
01 (Average)	2385.800	32.296	11.723	44.019	74.00	54.00	Pass
01 (Average)	2390.000	32.267	11.508	43.775	74.00	54.00	Pass
01 (Average)	2411.200	32.245	61.221	93.466	--	--	Pass

Figure Channel 01:

Vertical (Peak)

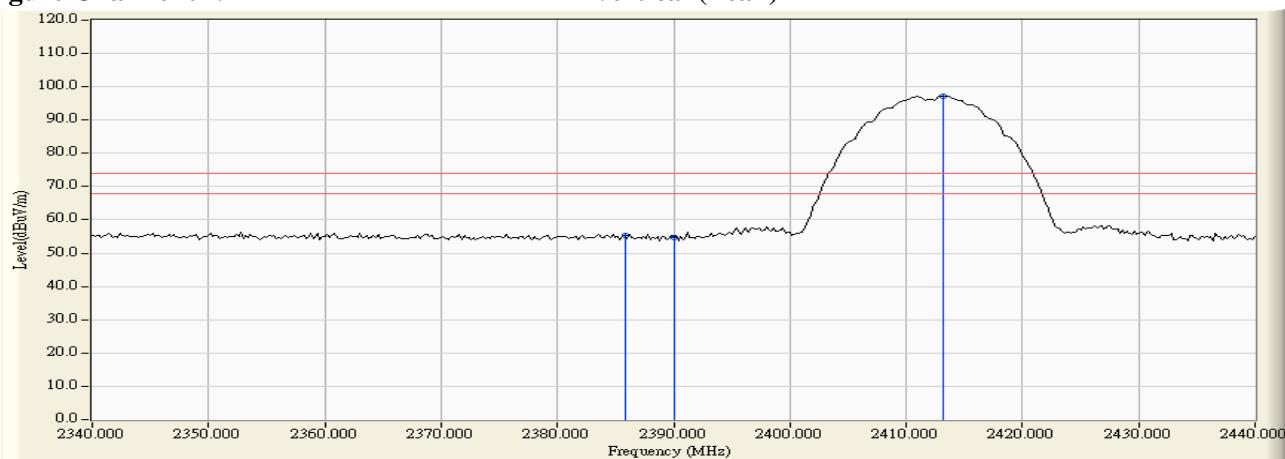
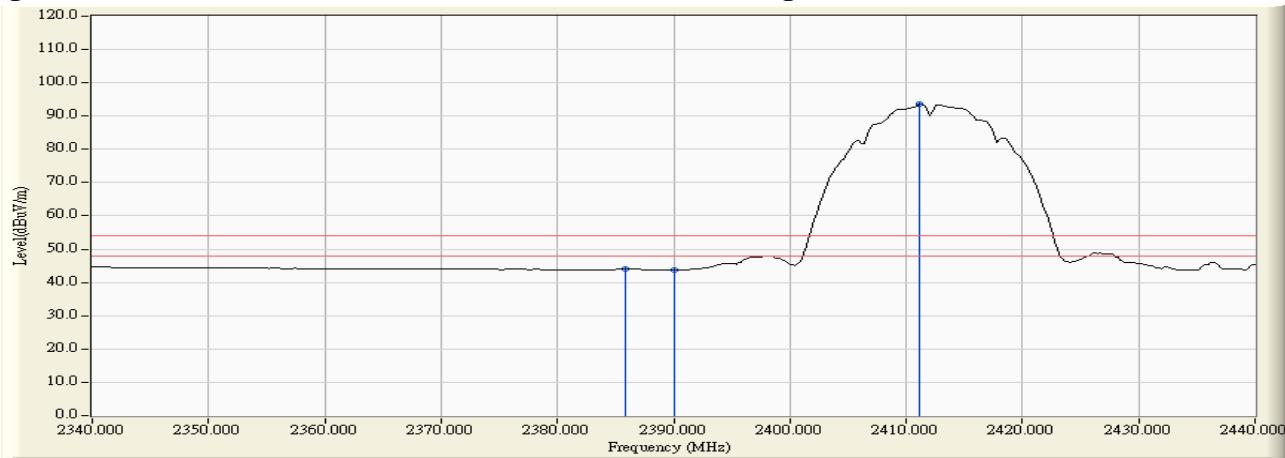


Figure Channel 01:

Vertical (Average)

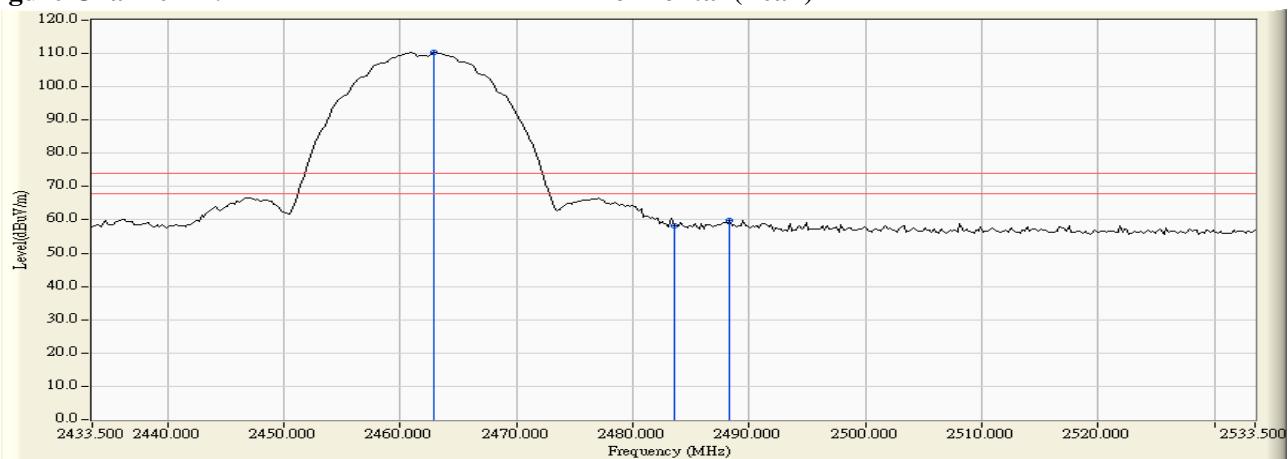
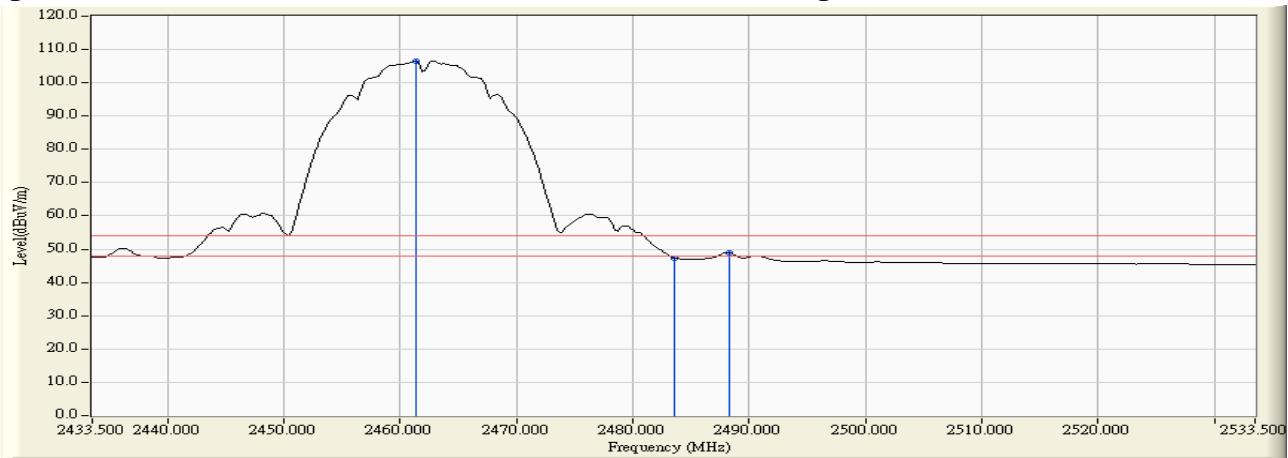


- Note:1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
 4. “ * ”, means this data is the worst emission level.
 5. Measurement Level = Reading Level + Correct Factor.
 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : FIELDBOOK
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit - 802.11b 1Mbps

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11 (Peak)	2462.900	33.895	76.414	110.309	--	--	Pass
11 (Peak)	2483.500	33.951	24.341	58.291	74.00	54.00	Pass
11 (Peak)	2488.300	33.962	25.989	59.951	74.00	54.00	Pass
11 (Average)	2461.300	33.890	72.717	106.608	--	--	Pass
11 (Average)	2483.500	33.951	13.476	47.426	74.00	54.00	Pass
11 (Average)	2488.300	33.962	14.840	48.802	74.00	54.00	Pass

Figure Channel 11:
Horizontal (Peak)

Figure Channel 11:
Horizontal (Average)

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : FIELDBOOK
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit - 802.11b 1Mbps

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11 (Peak)	2462.900	32.485	65.713	98.198	--	--	Pass
11 (Peak)	2483.500	32.586	24.838	57.423	74.00	54.00	Pass
11 (Average)	2461.300	32.477	62.113	94.590	--	--	Pass
11 (Average)	2483.500	32.586	11.516	44.101	74.00	54.00	Pass

Figure Channel 11:

Vertical (Peak)

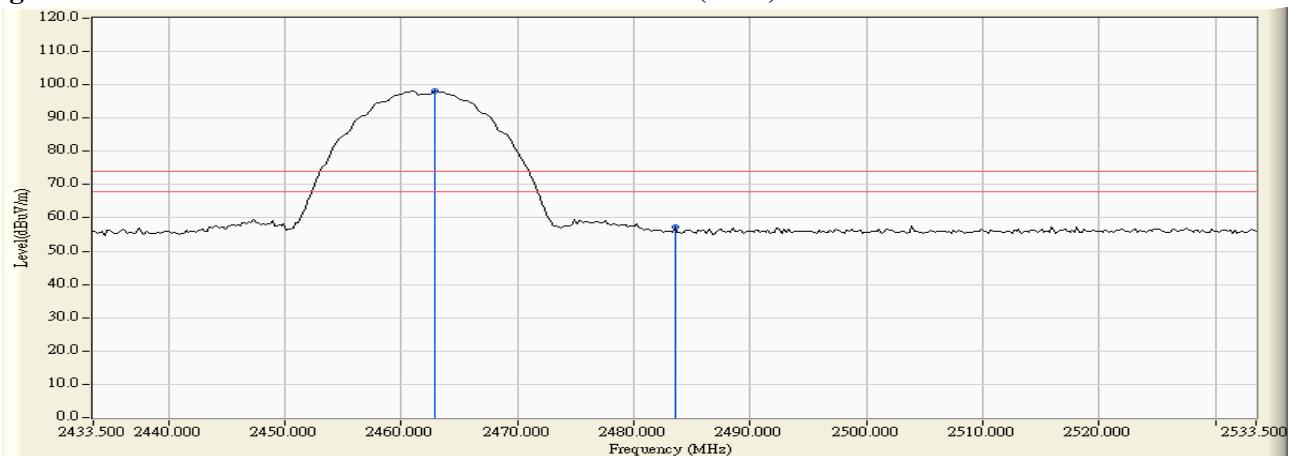
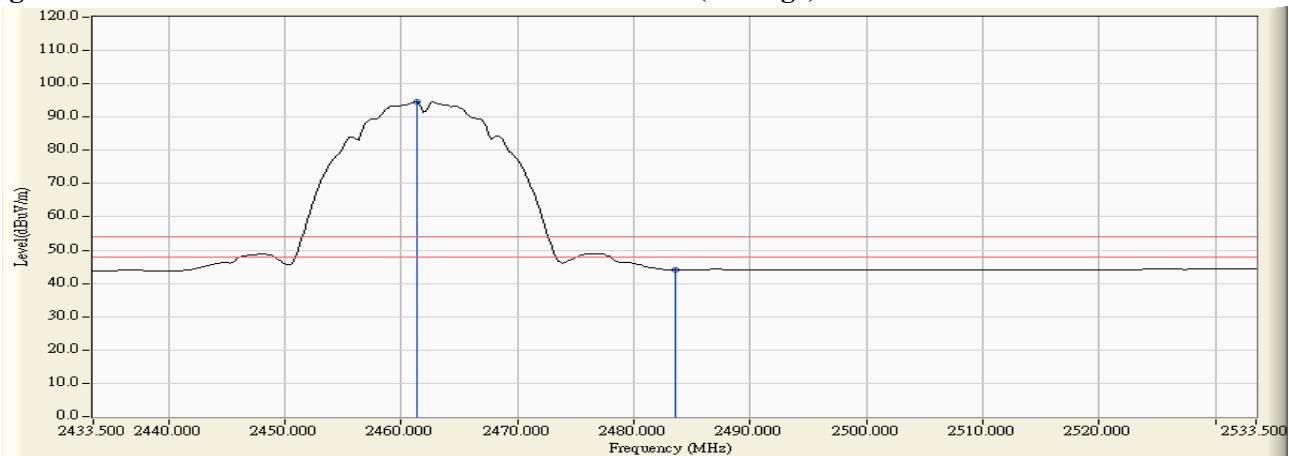


Figure Channel 11:

Vertical (Average)



- Note:
1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
 4. “ * ”, means this data is the worst emission level.
 5. Measurement Level = Reading Level + Correct Factor.
 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : FIELDBOOK
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit - 802.11g 6Mbps

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
01 (Peak)	2387.400	33.737	37.410	71.147	74.00	54.00	Pass
01 (Peak)	2390.000	33.739	36.695	70.434	74.00	54.00	Pass
01 (Peak)	2409.200	33.766	79.681	113.447	--	--	Pass
01(Average)	2387.400	33.737	15.028	48.765	74.00	54.00	Pass
01(Average)	2390.000	33.739	16.729	50.468	74.00	54.00	Pass
01(Average)	2414.600	33.778	68.599	102.377	--	--	Pass

Figure Channel 01:

Horizontal (Peak)

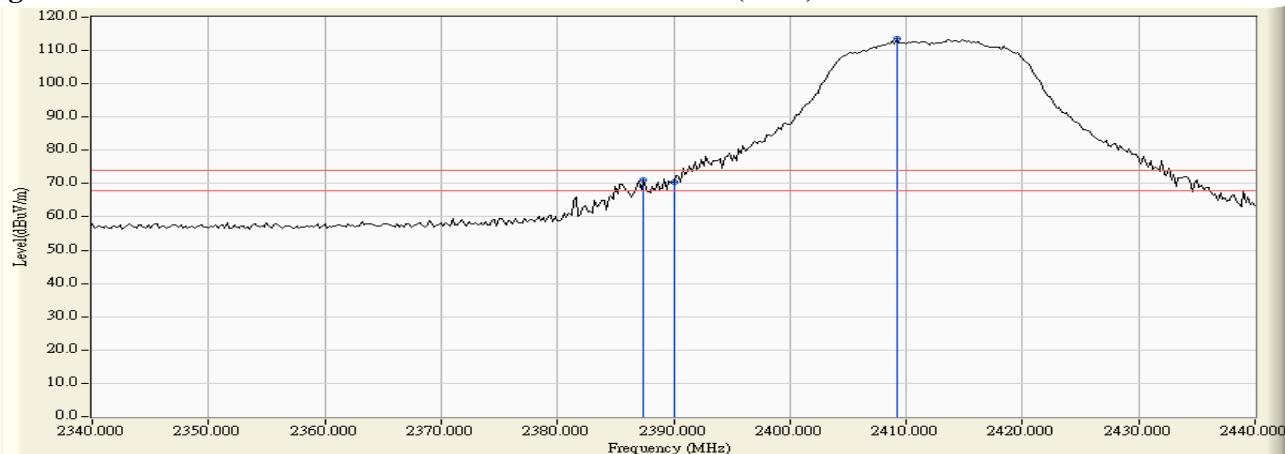
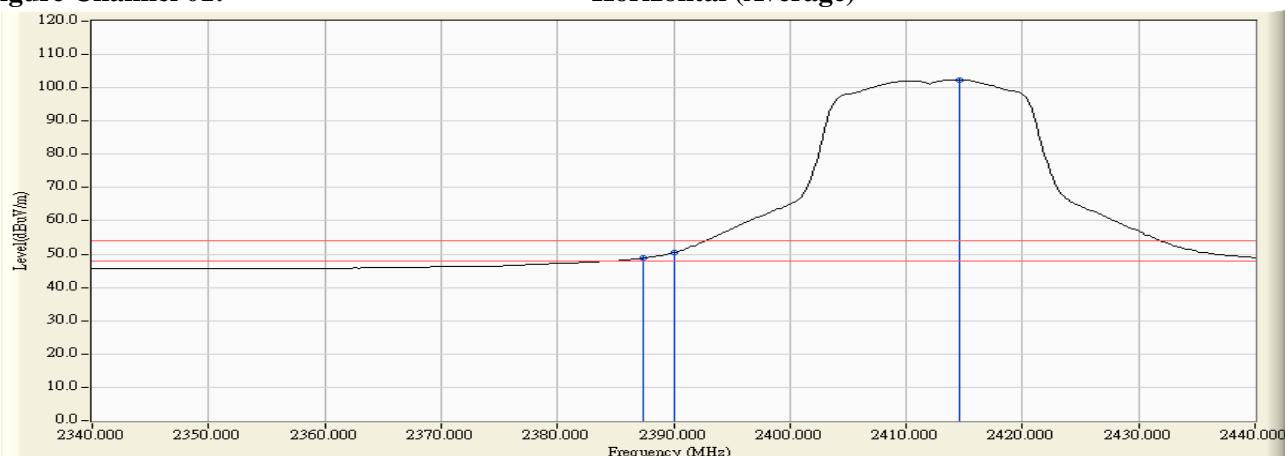


Figure Channel 01:

Horizontal (Average)



- Note:1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
 4. “ * ”, means this data is the worst emission level.
 5. Measurement Level = Reading Level + Correct Factor.
 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : FIELDBOOK
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit - 802.11g 6Mbps

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
01 (Peak)	2389.200	32.273	29.605	61.877	74.00	54.00	Pass
01 (Peak)	2390.000	32.267	28.167	60.434	74.00	54.00	Pass
01 (Peak)	2414.200	32.259	69.454	101.713	--	--	Pass
01 (Average)	2389.200	32.273	12.227	44.499	74.00	54.00	Pass
01 (Average)	2390.000	32.267	12.433	44.700	74.00	54.00	Pass
01 (Average)	2413.800	32.257	58.226	90.483	--	--	Pass

Figure Channel 01:

Vertical (Peak)

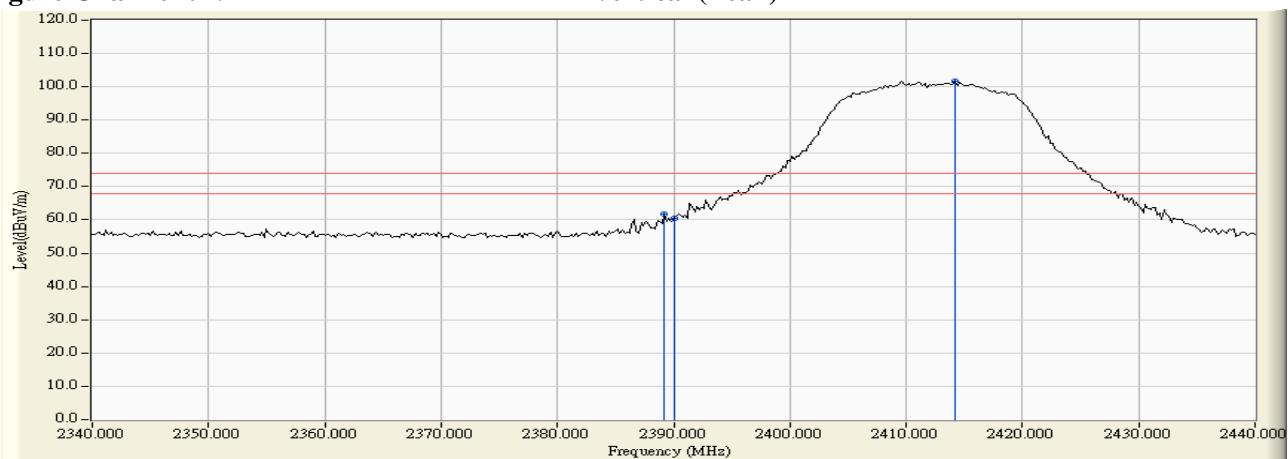
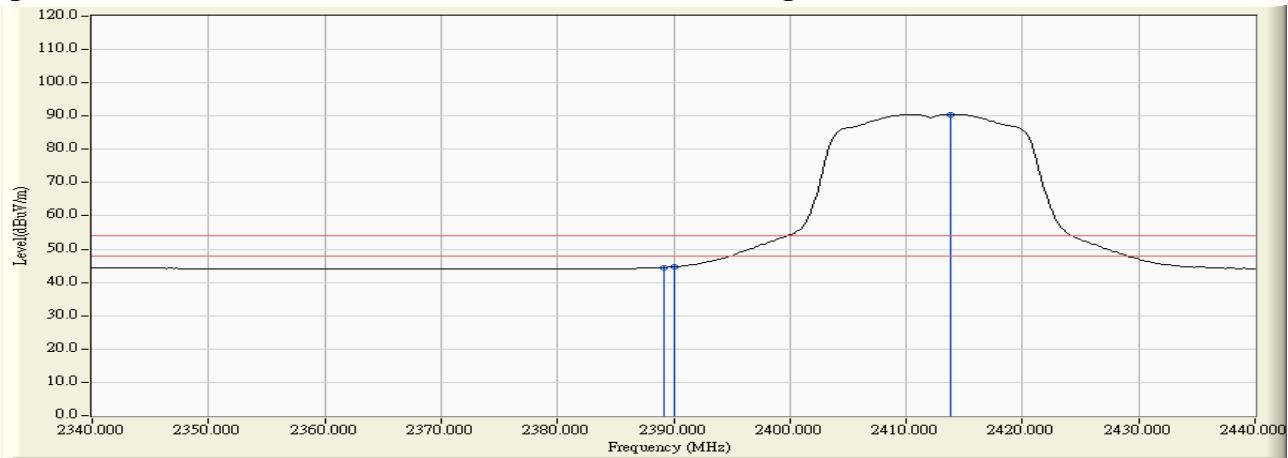


Figure Channel 01:

Vertical (Average)

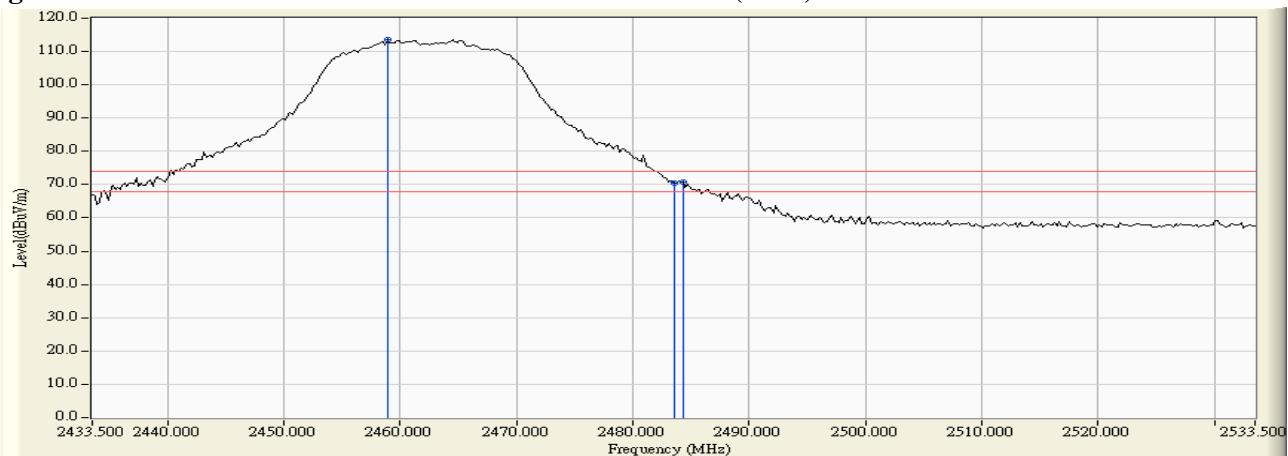
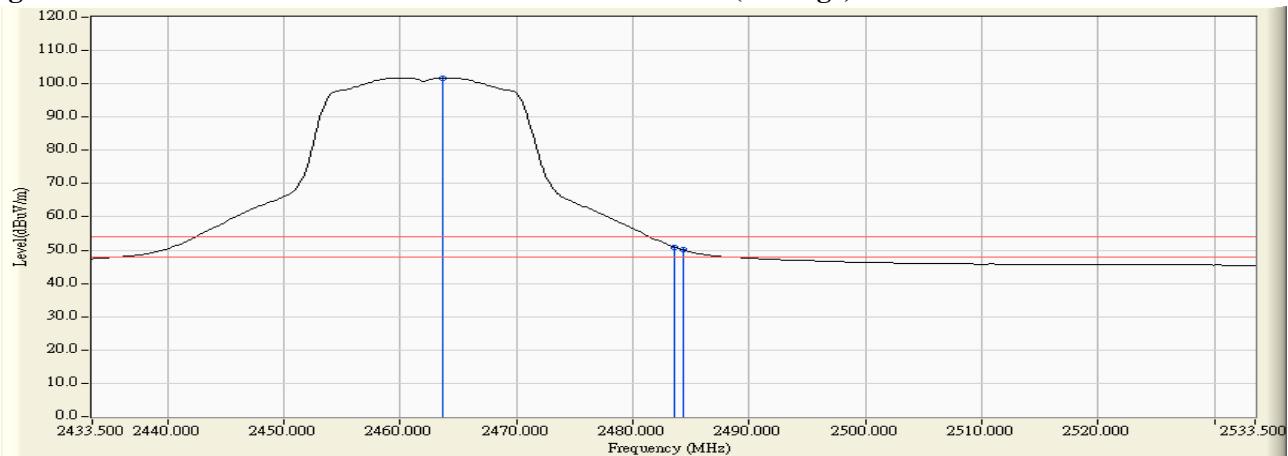


- Note:1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
 4. “ * ”, means this data is the worst emission level.
 5. Measurement Level = Reading Level + Correct Factor.
 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : FIELDBOOK
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit - 802.11g 6Mbps

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11 (Peak)	2458.900	33.885	79.691	113.576	--	--	Pass
11 (Peak)	2483.500	33.951	36.592	70.542	74.00	54.00	Pass
11 (Peak)	2484.300	33.951	36.975	70.927	74.00	54.00	Pass
11 (Average)	2463.700	33.897	67.869	101.766	--	--	Pass
11 (Average)	2483.500	33.951	16.980	50.930	74.00	54.00	Pass
11 (Average)	2484.300	33.951	16.108	50.060	74.00	54.00	Pass

Figure Channel 11:**Horizontal (Peak)****Figure Channel 11:****Horizontal (Average)**

- Note:
1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
 4. “ * ”, means this data is the worst emission level.
 5. Measurement Level = Reading Level + Correct Factor.
 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : FIELDBOOK
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit - 802.11g 6Mbps

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11 (Peak)	2460.700	32.475	67.786	100.260	--	--	Pass
11 (Peak)	2483.500	32.586	26.488	59.073	74.00	54.00	Pass
11 (Average)	2459.900	32.470	57.151	89.621	--	--	Pass
11 (Average)	2483.500	32.586	12.225	44.810	74.00	54.00	Pass

Figure Channel 11:

Vertical (Peak)

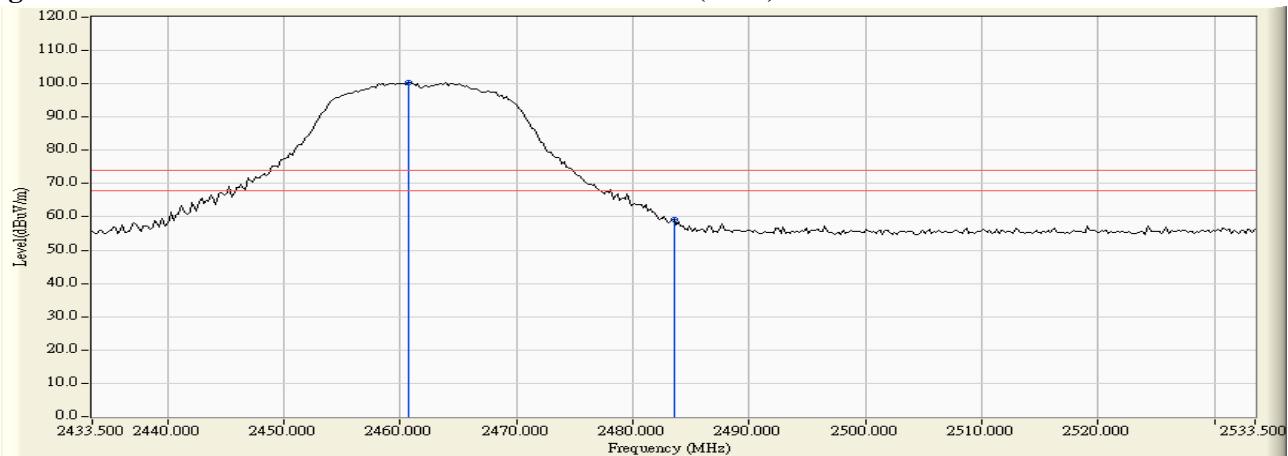
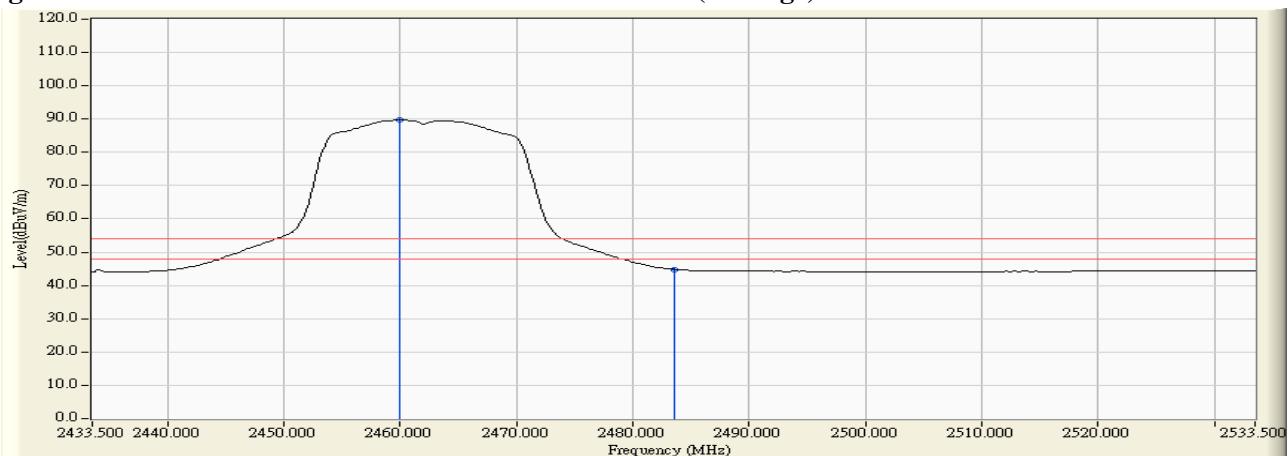


Figure Channel 11:

Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : FIELDBOOK
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
01 (Peak)	2388.800	33.738	39.861	73.599	74.00	54.00	Pass
01 (Peak)	2390.000	33.739	39.856	73.595	74.00	54.00	Pass
01 (Peak)	2412.000	33.771	79.809	113.581	--	--	Pass
01 (Average)	2388.800	33.738	17.485	51.223	74.00	54.00	Pass
01 (Average)	2390.000	33.739	18.820	52.559	74.00	54.00	Pass
01 (Average)	2414.400	33.778	68.254	102.032	--	--	Pass

Figure Channel 01:

Horizontal (Peak)

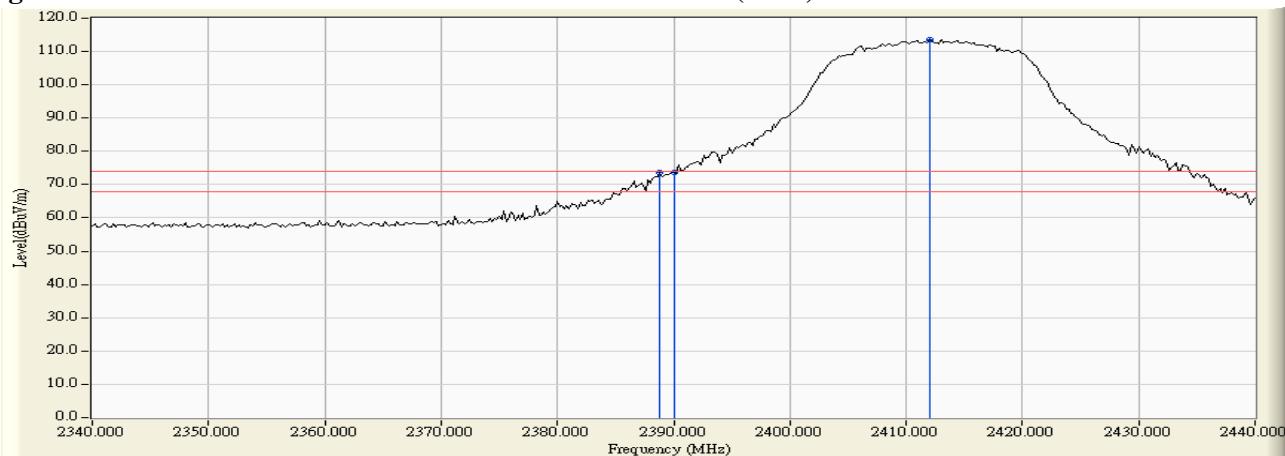
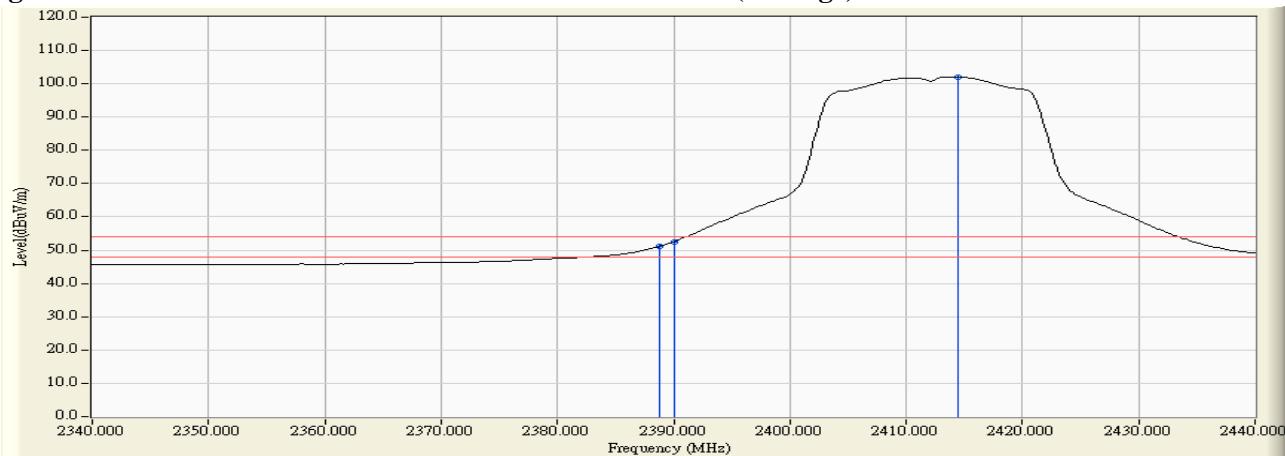


Figure Channel 01:

Horizontal (Average)



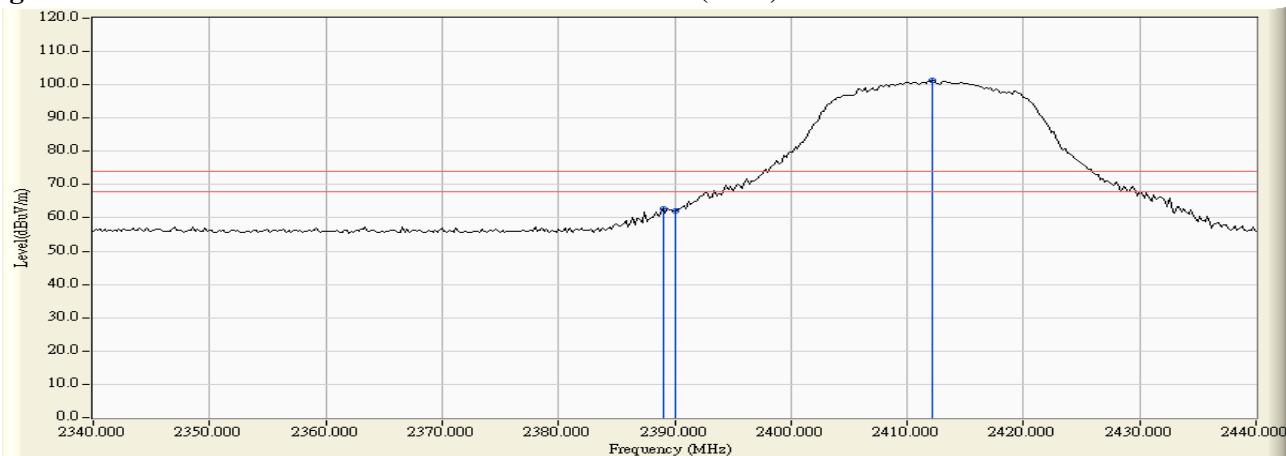
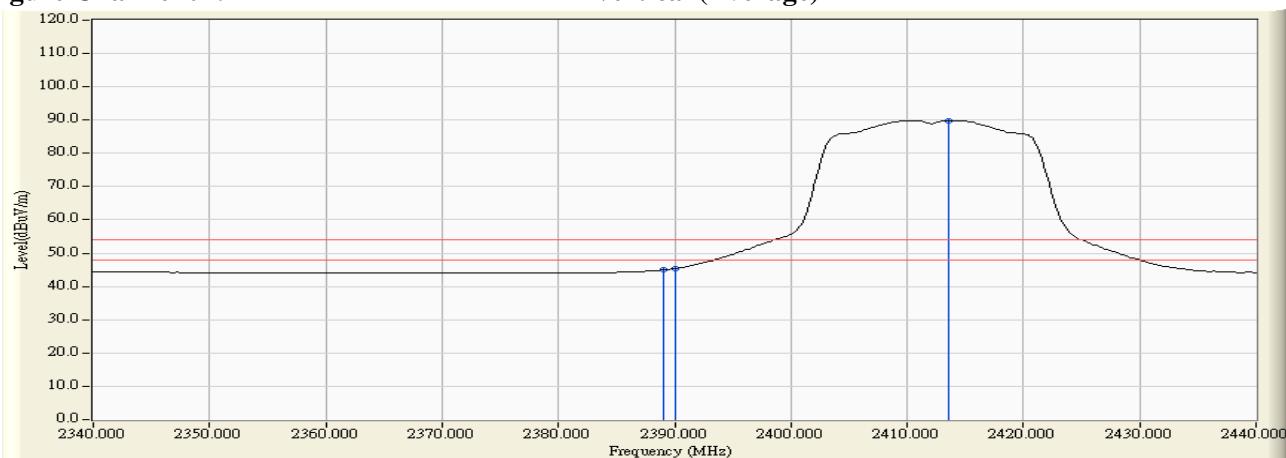
Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : FIELDBOOK
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band)

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
01 (Peak)	2389.000	32.273	30.608	62.882	74.00	54.00	Pass
01 (Peak)	2390.000	32.267	29.768	62.035	74.00	54.00	Pass
01 (Peak)	2412.200	32.250	69.161	101.411	--	--	Pass
01 (Average)	2389.000	32.273	12.687	44.961	74.00	54.00	Pass
01 (Average)	2390.000	32.267	13.110	45.377	74.00	54.00	Pass
01 (Average)	2413.600	32.256	57.519	89.775	--	--	Pass

Figure Channel 01:**Vertical (Peak)****Figure Channel 01:****Vertical (Average)**

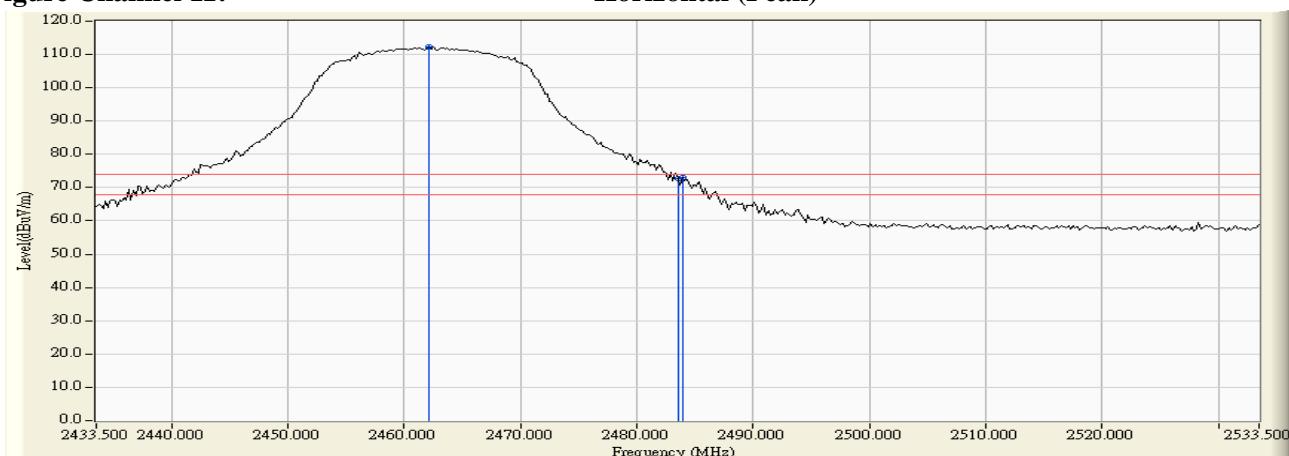
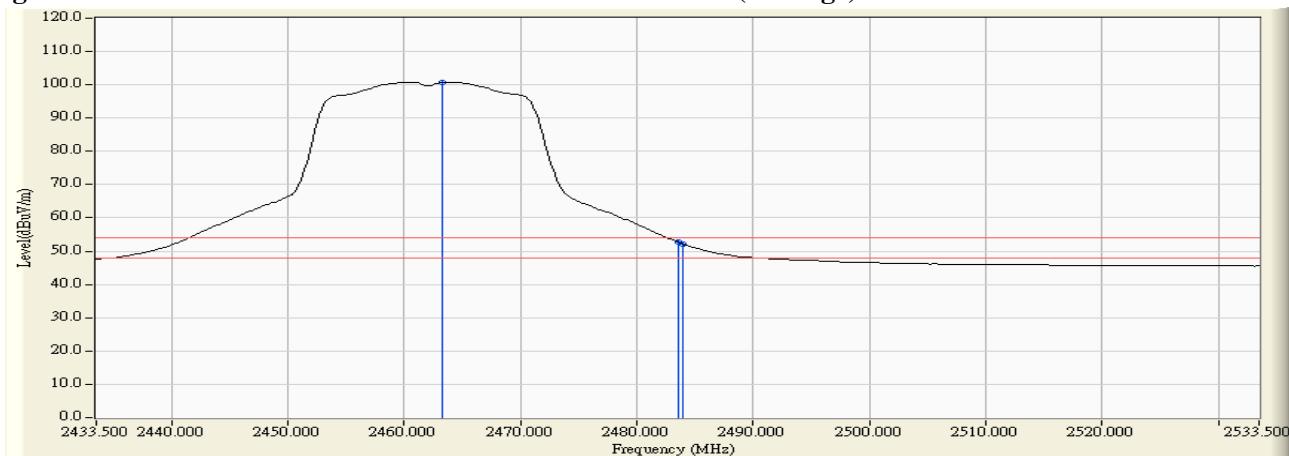
Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : FIELDBOOK
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11 (Peak)	2462.100	33.892	78.413	112.306	--	--	Pass
11 (Peak)	2483.500	33.951	38.861	72.811	74.00	54.00	Pass
11 (Peak)	2483.900	33.951	39.052	73.003	74.00	54.00	Pass
11 (Average)	2463.300	33.895	66.802	100.698	--	--	Pass
11 (Average)	2483.500	33.951	18.779	52.729	74.00	54.00	Pass
11 (Average)	2483.900	33.951	18.255	52.206	74.00	54.00	Pass

Figure Channel 11:
Horizontal (Peak)

Figure Channel 11:
Horizontal (Average)


Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : FIELDBOOK
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band)

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11 (Peak)	2461.700	32.479	66.354	98.833	--	--	--
11 (Peak)	2483.500	32.586	25.267	57.852	74.00	54.00	Pass
11 (Average)	2460.700	32.475	55.275	87.749	--	--	--
11 (Average)	2483.500	32.586	12.346	44.931	74.00	54.00	Pass

Figure Channel 11:

Vertical (Peak)

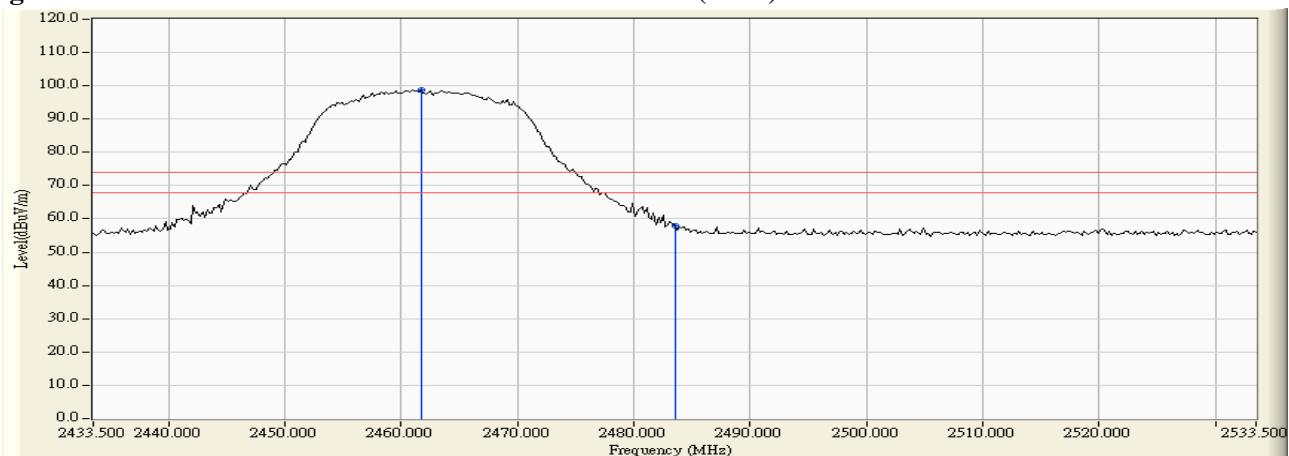
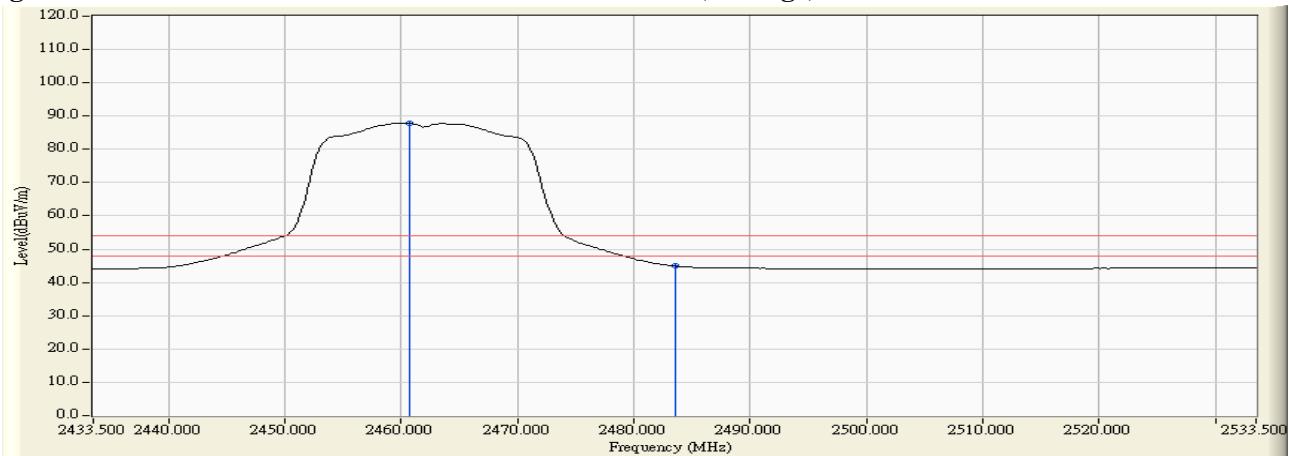


Figure Channel 11:

Vertical (Average)

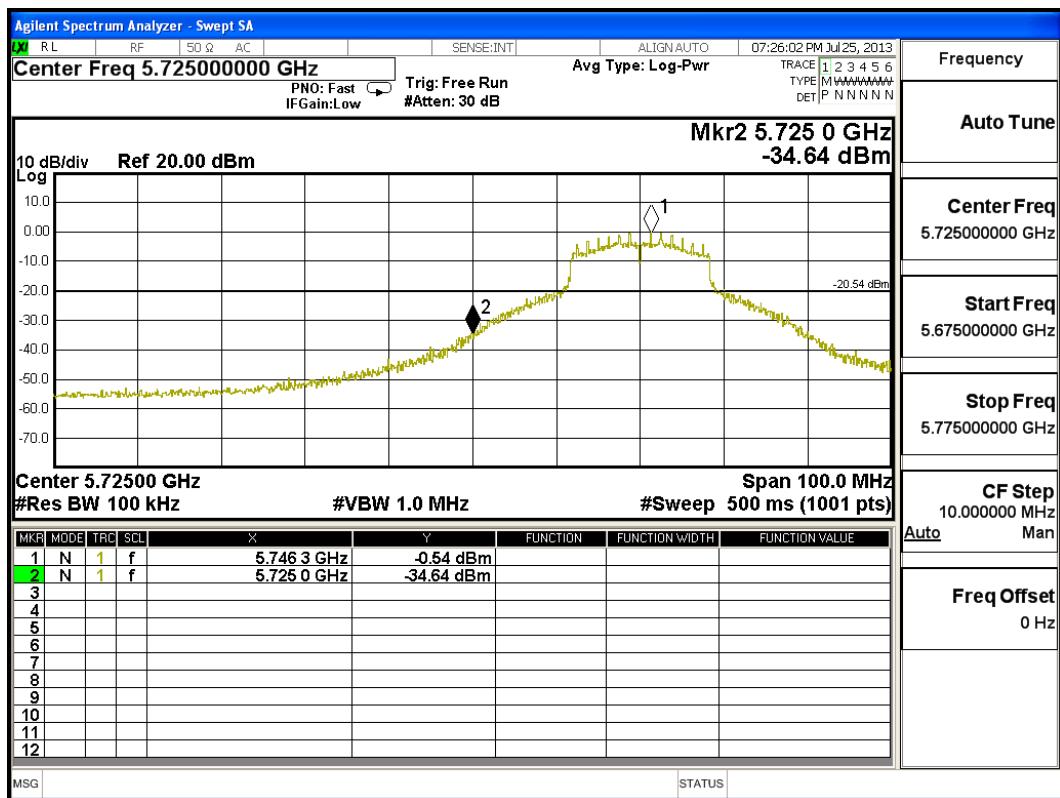


Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

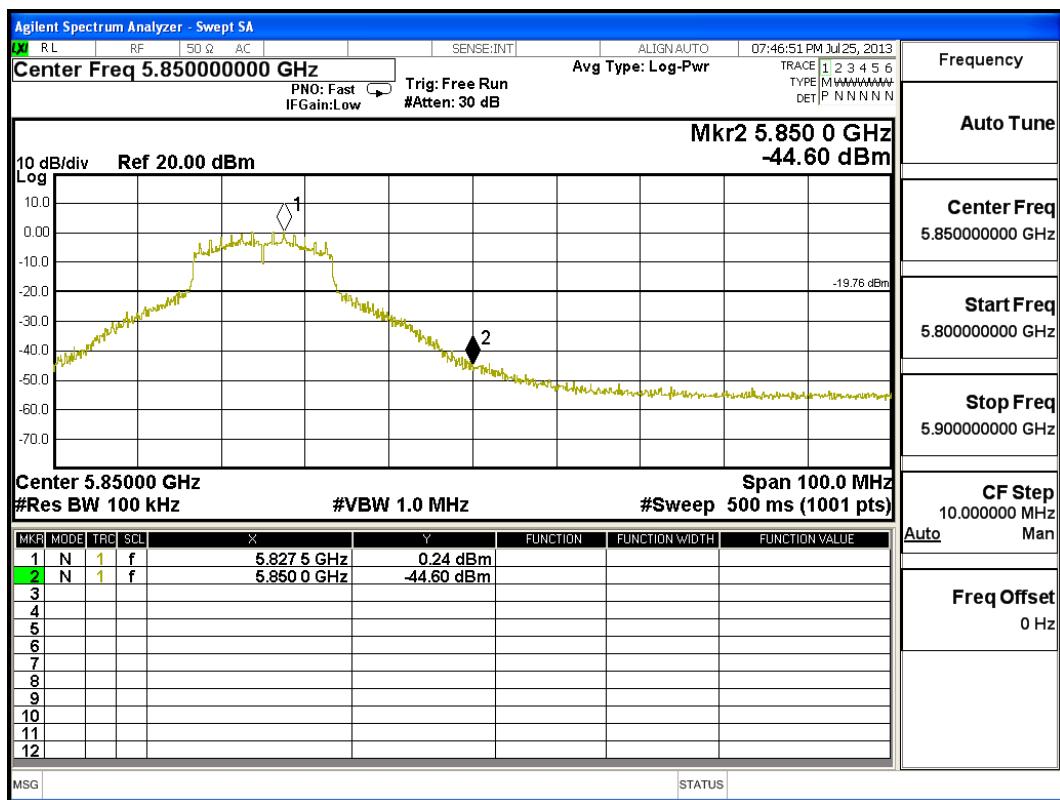
Product : FIELDBOOK
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - 802.11a 6Mbps

Test Frequency (MHz)	Measurement Level Δ (dB)	Limit Δ (dB)	Result
5745	34.10	>20	PASS



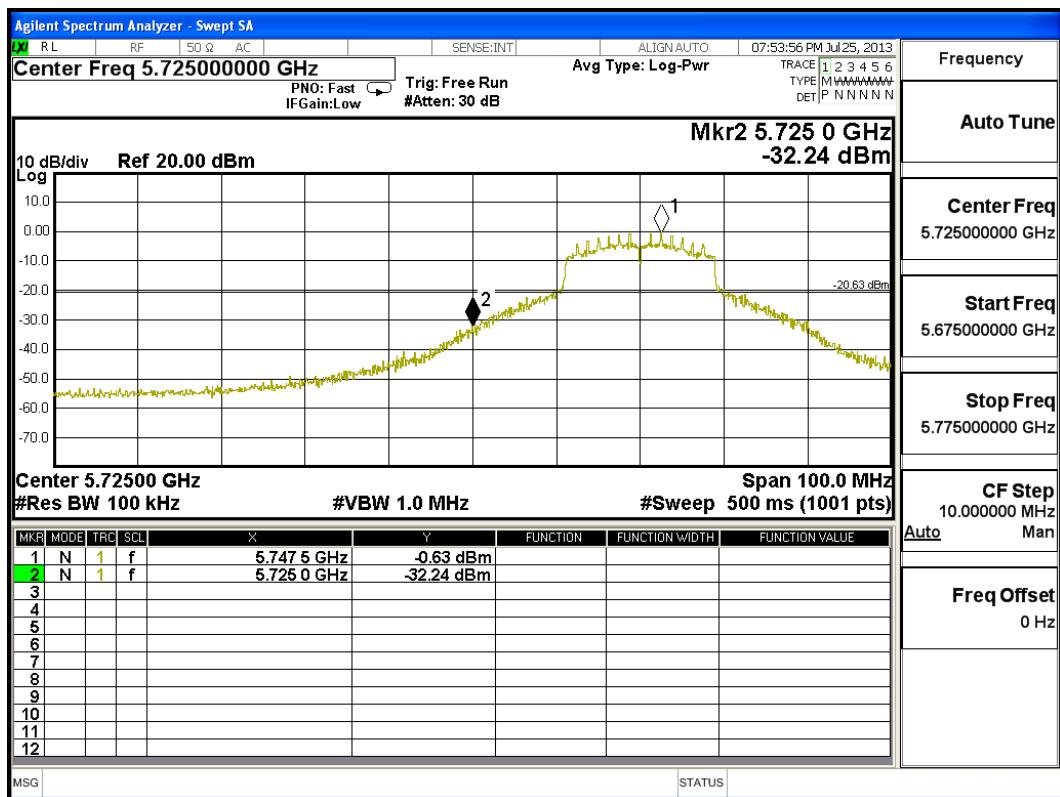
Product : FIELDBOOK
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - 802.11a 6Mbps

Test Frequency (MHz)	Measurement Level Δ (dB)	Limit Δ (dB)	Result
5825	44.84	>20	PASS



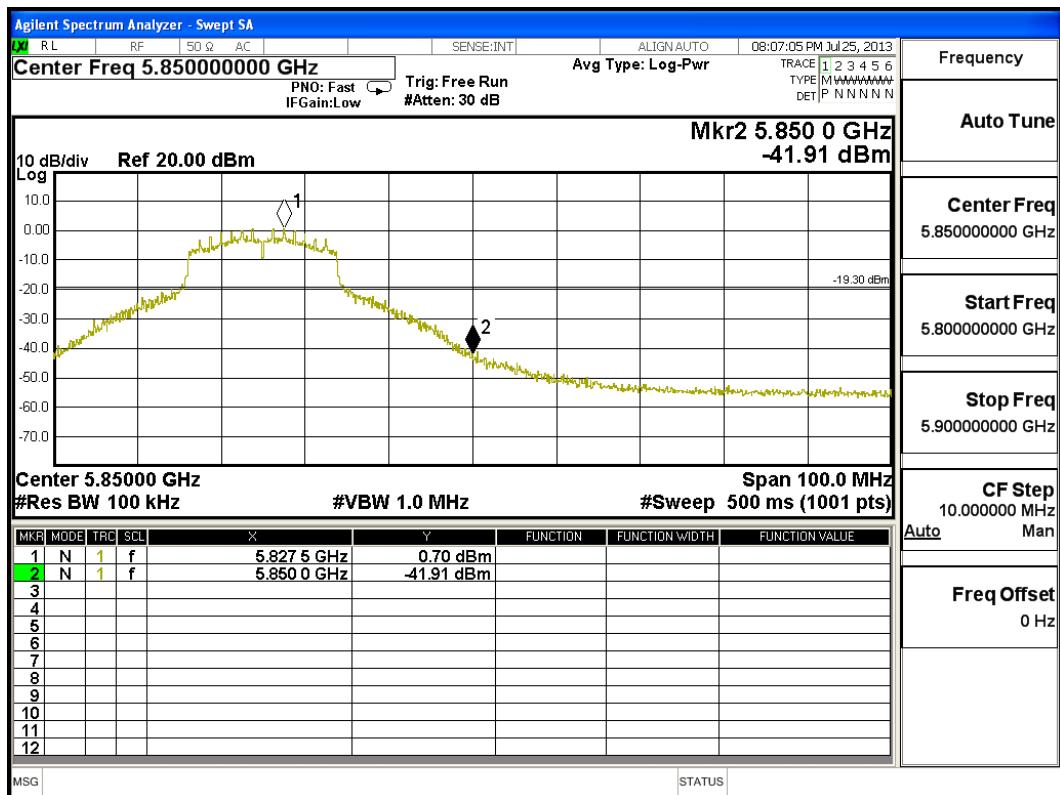
Product : FIELDBOOK
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 5: Transmit - 802.11n-20BW_7.2Mbps(5G Band)

Test Frequency (MHz)	Measurement Level Δ (dB)	Limit Δ (dB)	Result
5745	31.61	>20	PASS



Product : FIELDBOOK
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 5: Transmit - 802.11n-20BW_7.2Mbps(5G Band)

Test Frequency (MHz)	Measurement Level Δ (dB)	Limit Δ (dB)	Result
5825	42.61	>20	PASS



7. Occupied Bandwidth

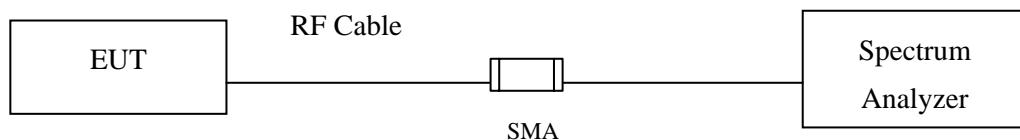
7.1. Test Equipment

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2013
Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2013
X Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2013

Note:

1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.

7.2. Test Setup



7.3. Limits

The minimum bandwidth shall be at least 500 kHz.

7.4. Test Procedure

The EUT was setup according to ANSI C63.10, 2009; tested according to DTS test procedure of ANSI C63.10: 2009 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 1-5% of the emission bandwidth, $VBW \geq 3 * RBW$

7.5. Uncertainty

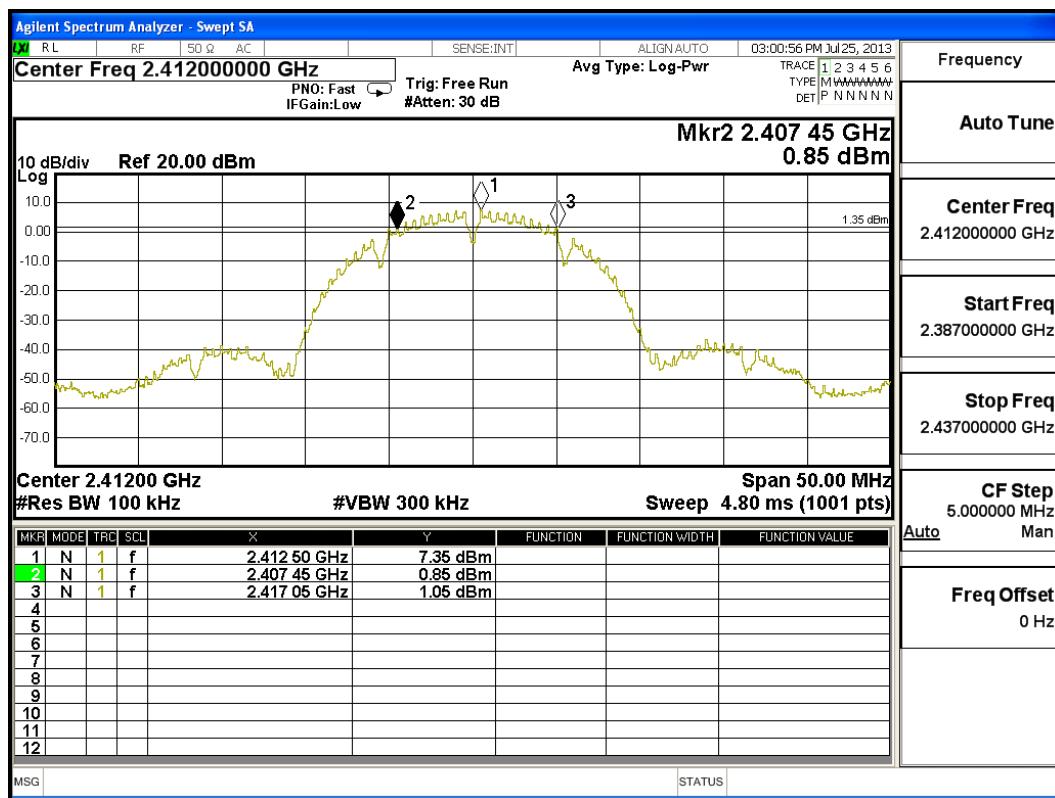
$\pm 150\text{Hz}$

7.6. Test Result of Occupied Bandwidth

Product : FIELDBOOK
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit - 802.11b 1Mbps (2412MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1	2412.00	9600	>500	Pass

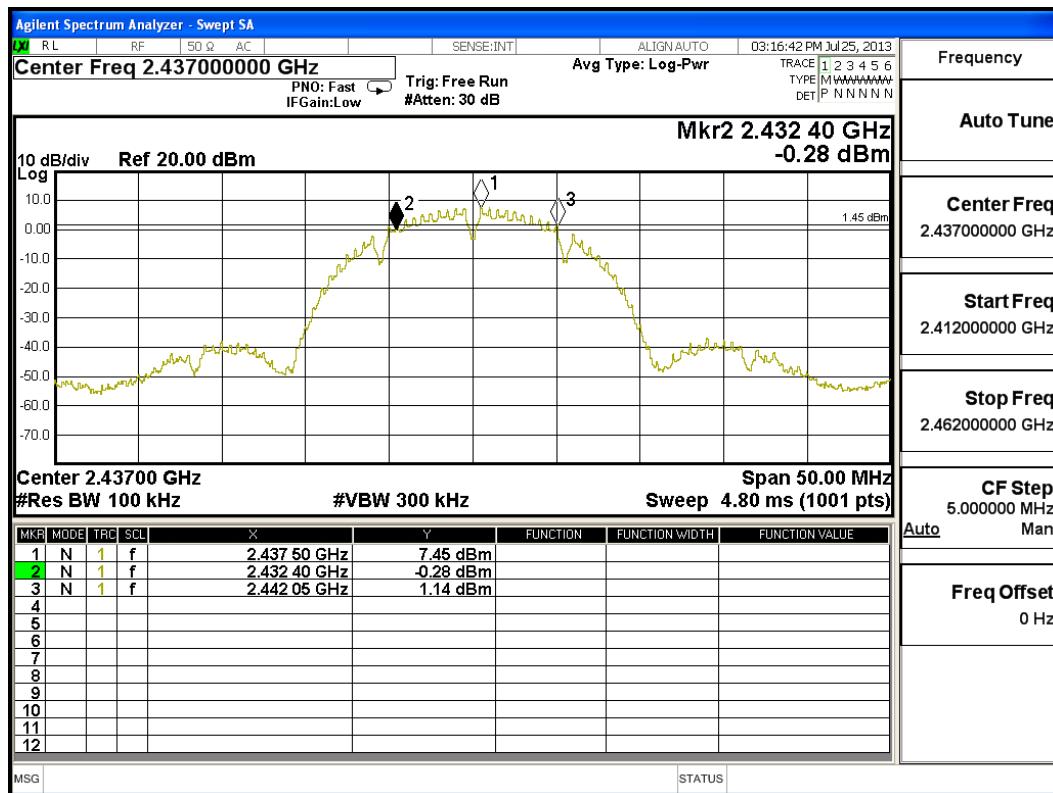
Figure Channel 1:



Product : FIELDBOOK
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit - 802.11b 1Mbps (2437MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
6	2437.00	9650	>500	Pass

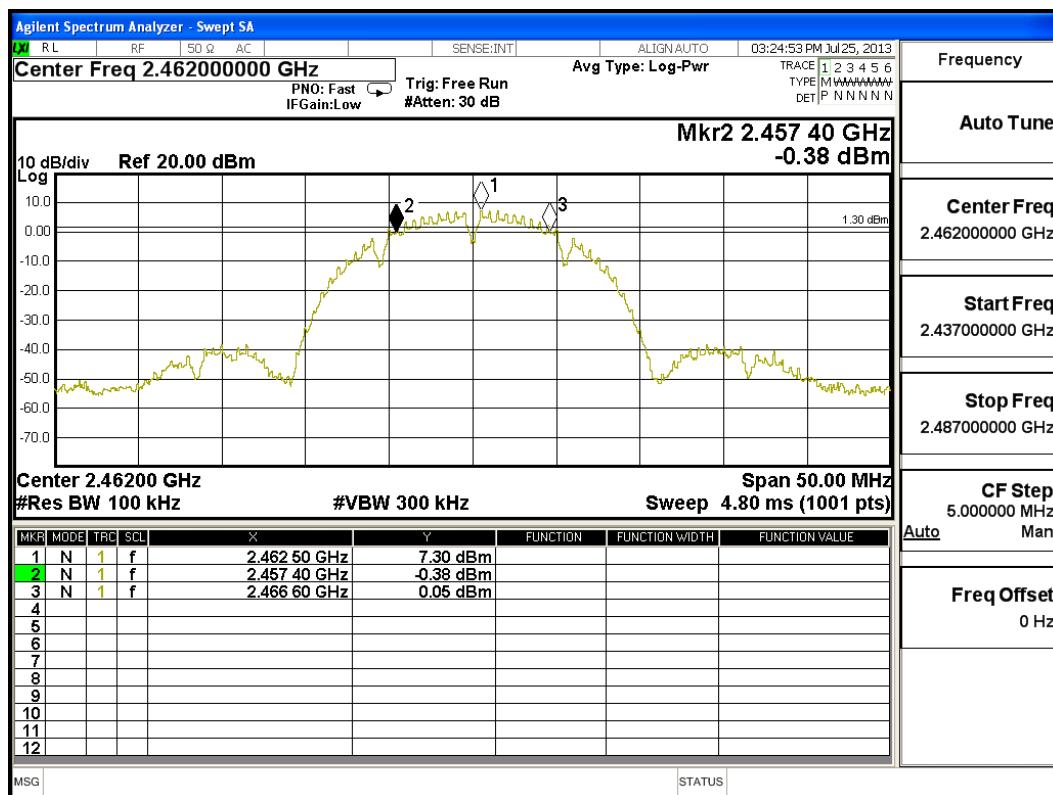
Figure Channel 6:



Product : FIELDBOOK
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit - 802.11b 1Mbps (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
11	2462.00	9200	>500	Pass

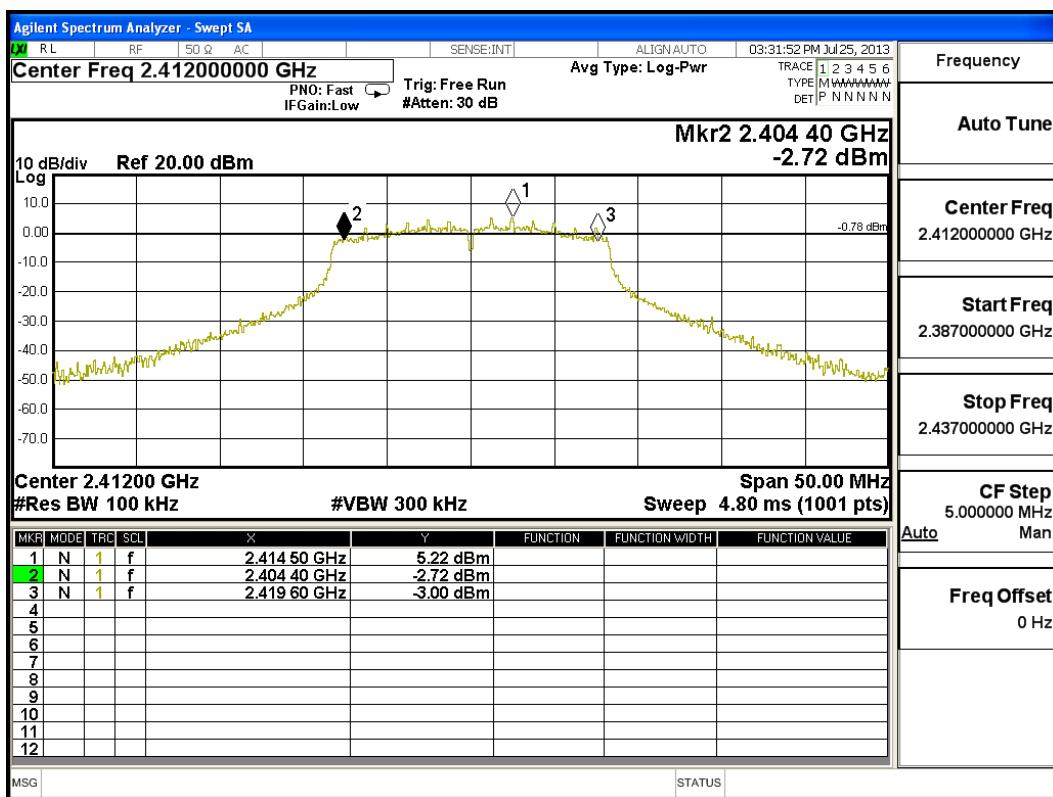
Figure Channel 11:



Product : FIELDBOOK
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit - 802.11g 6Mbps (2412MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1	2412.00	15200	>500	Pass

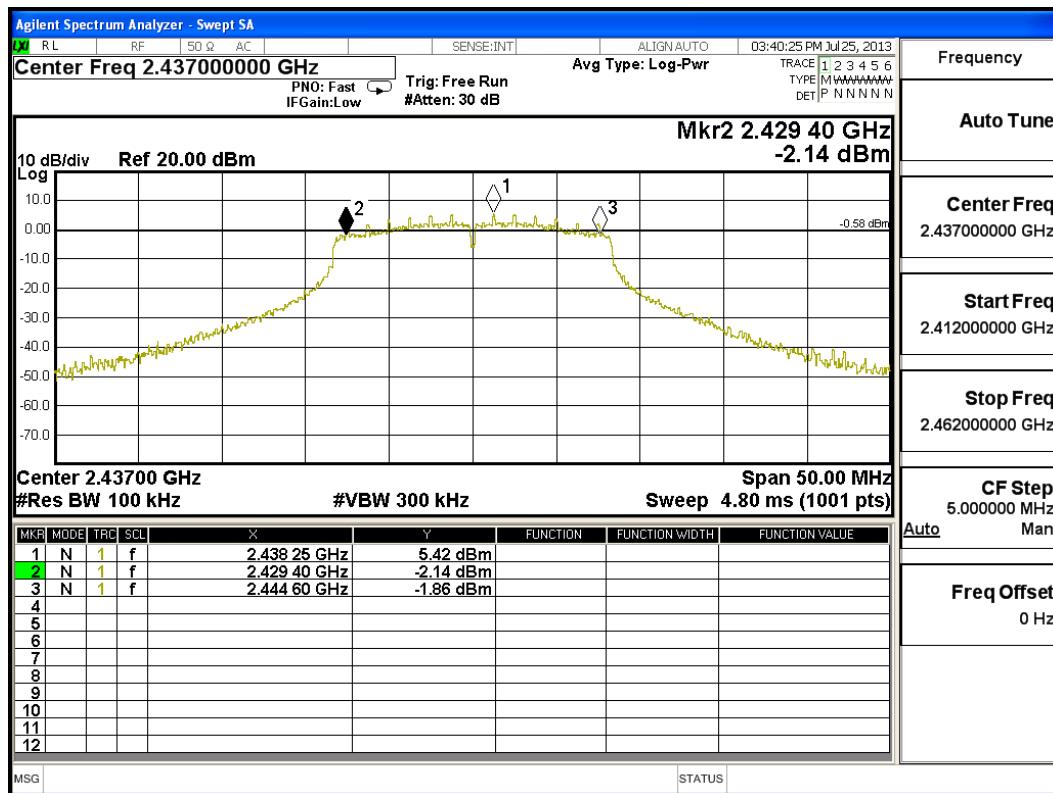
Figure Channel 1:



Product : FIELDBOOK
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit - 802.11g 6Mbps (2437MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
6	2437.00	15200	>500	Pass

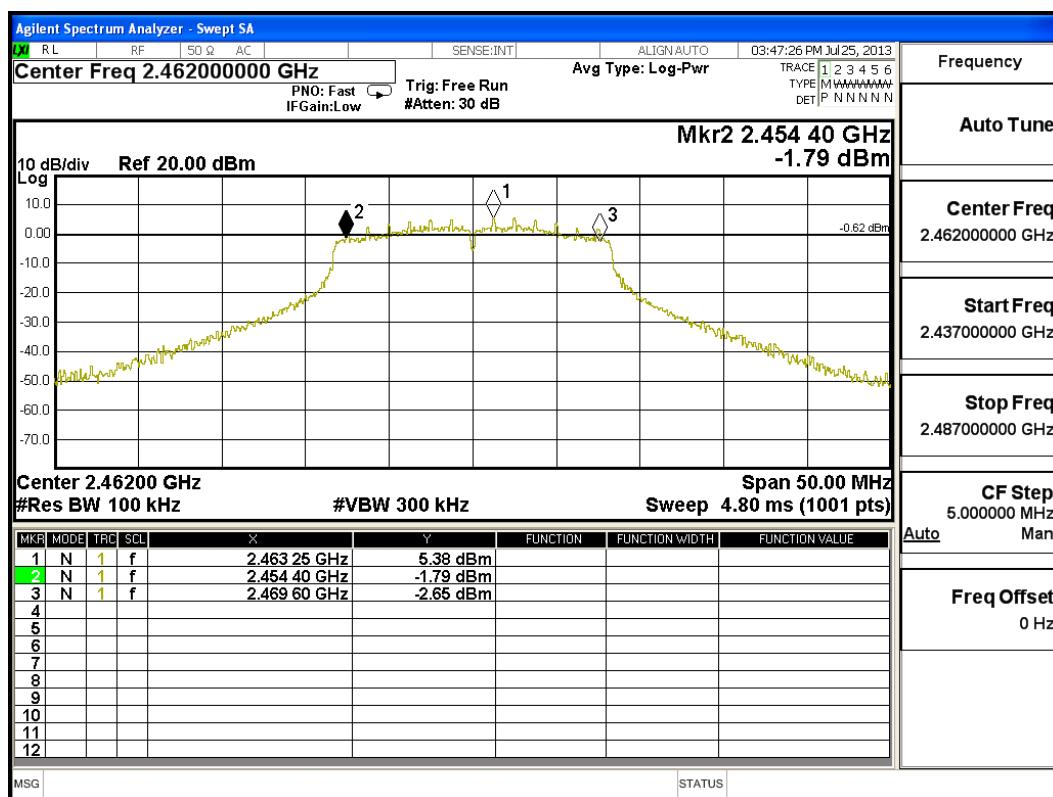
Figure Channel 6:



Product : FIELDBOOK
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit - 802.11g 6Mbps (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
11	2462.00	15200	>500	Pass

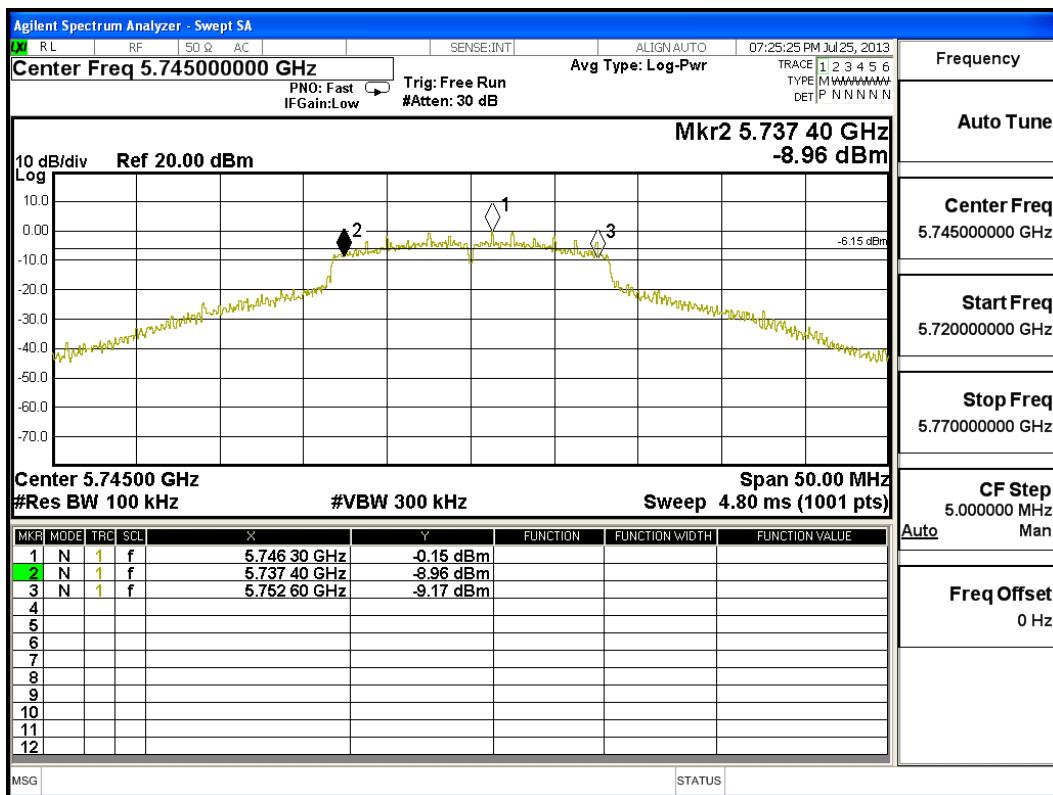
Figure Channel 11:



Product : FIELDBOOK
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5745MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
149	5745.00	15200	>500	Pass

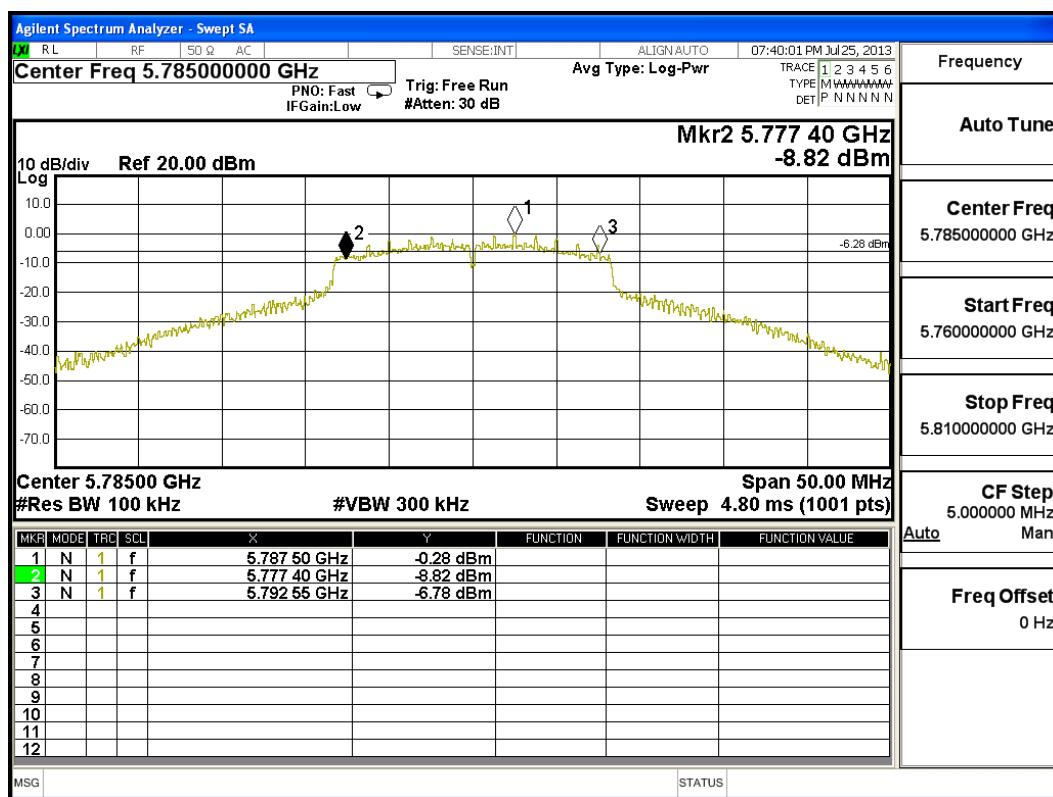
Figure Channel 149:



Product : FIELDBOOK
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5785MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
157	5785.00	15100	>500	Pass

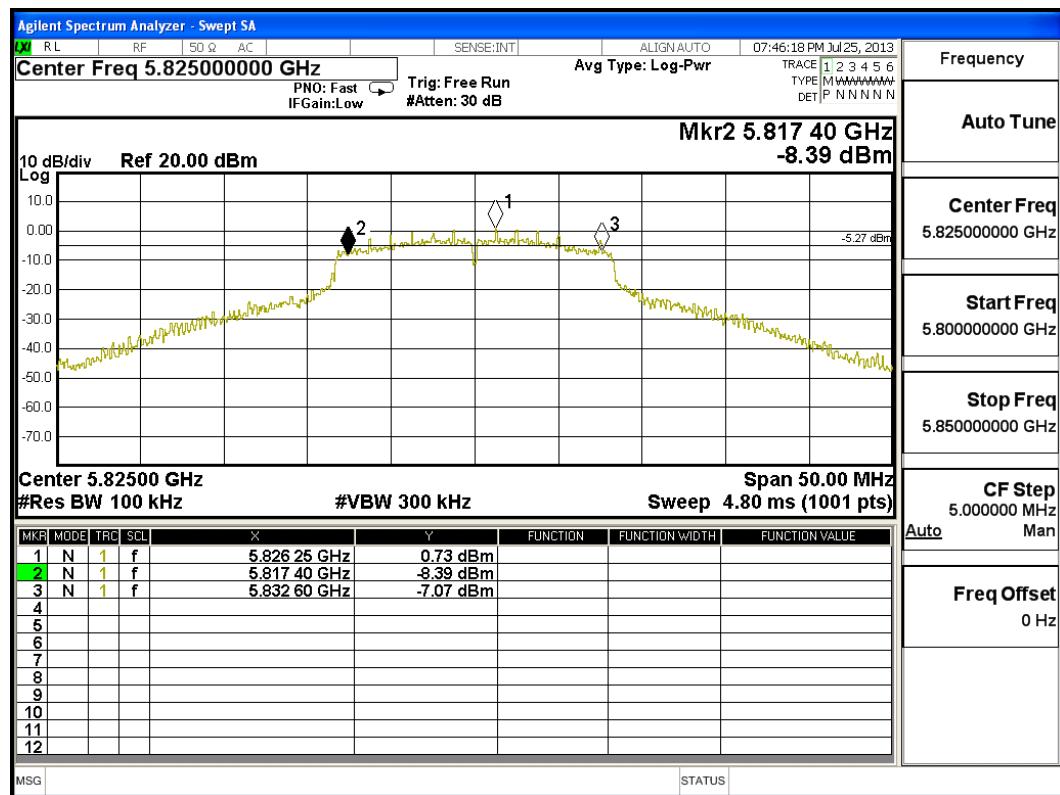
Figure Channel 157:



Product : FIELDBOOK
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5825MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
165	5825.00	15200	>500	Pass

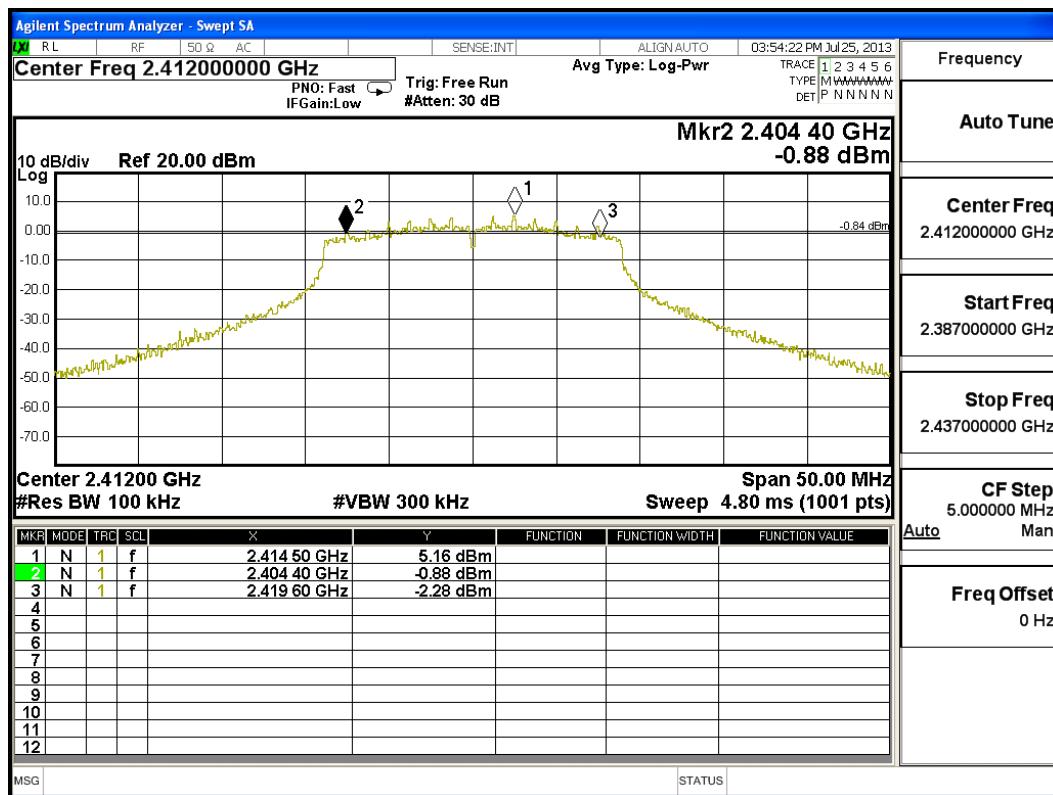
Figure Channel 165:



Product : FIELDBOOK
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2412MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1	2412.00	15200	>500	Pass

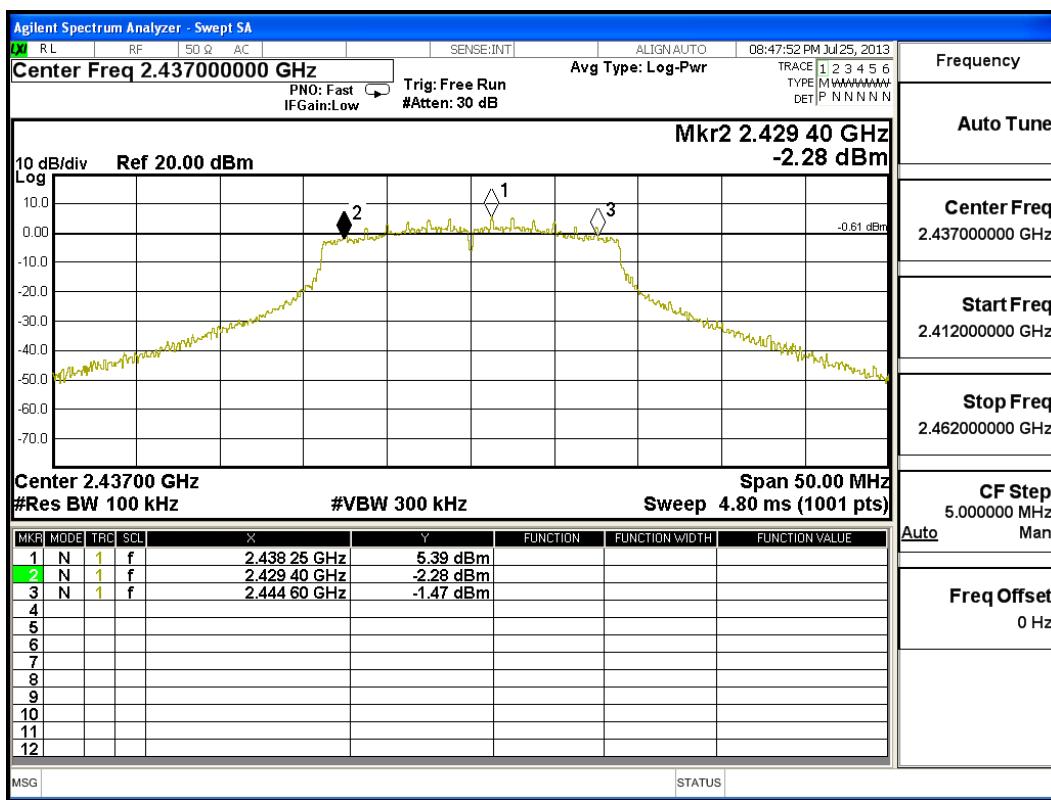
Figure Channel 1:



Product : FIELDBOOK
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2437MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
6	2437.00	15200	>500	Pass

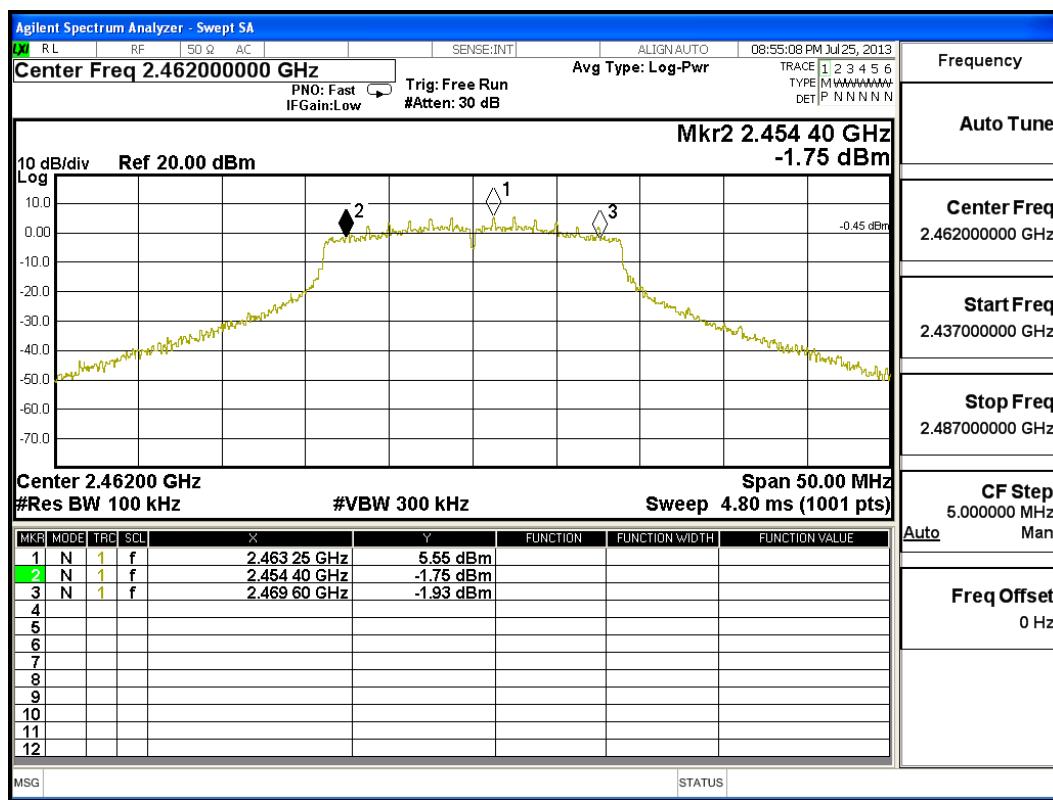
Figure Channel 6:



Product : FIELDBOOK
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
11	2462.00	15200	>500	Pass

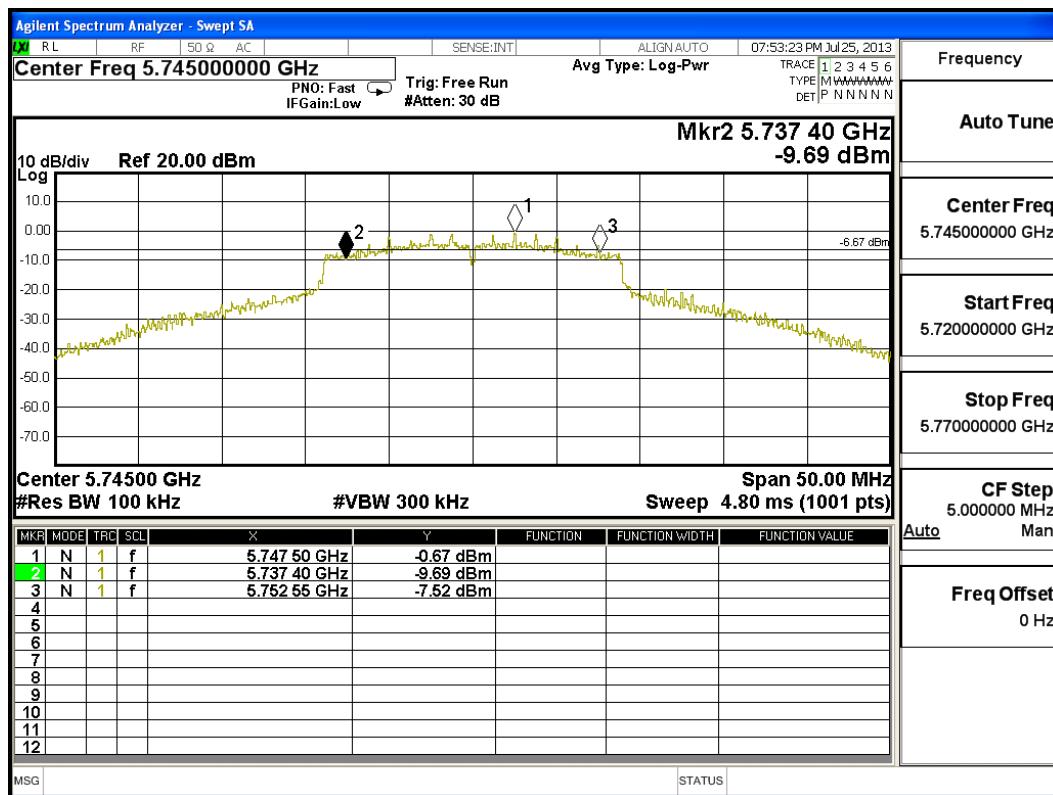
Figure Channel 11:



Product : FIELDBOOK
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 5: Transmit - 802.11n-20BW_7.2Mbps(5G Band) (5745MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
149	5745.00	15100	>500	Pass

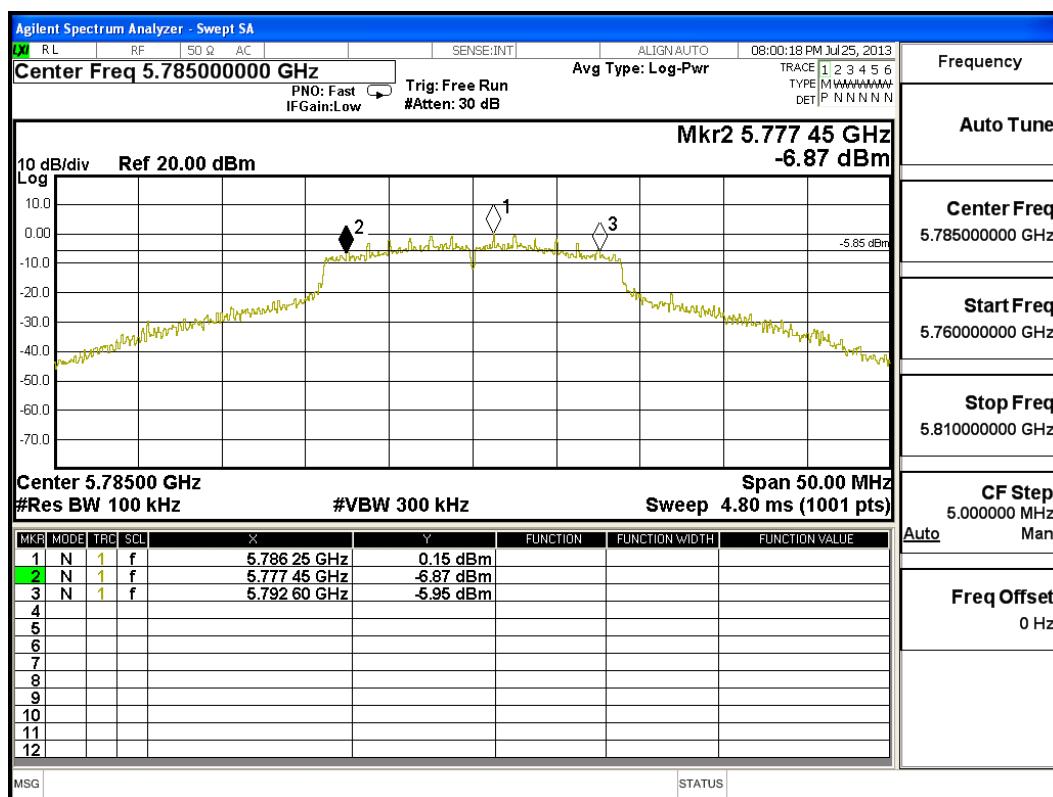
Figure Channel 149:



Product : FIELDBOOK
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 5: Transmit - 802.11n-20BW_7.2Mbps(5G Band) (5785MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
157	5785.00	15100	>500	Pass

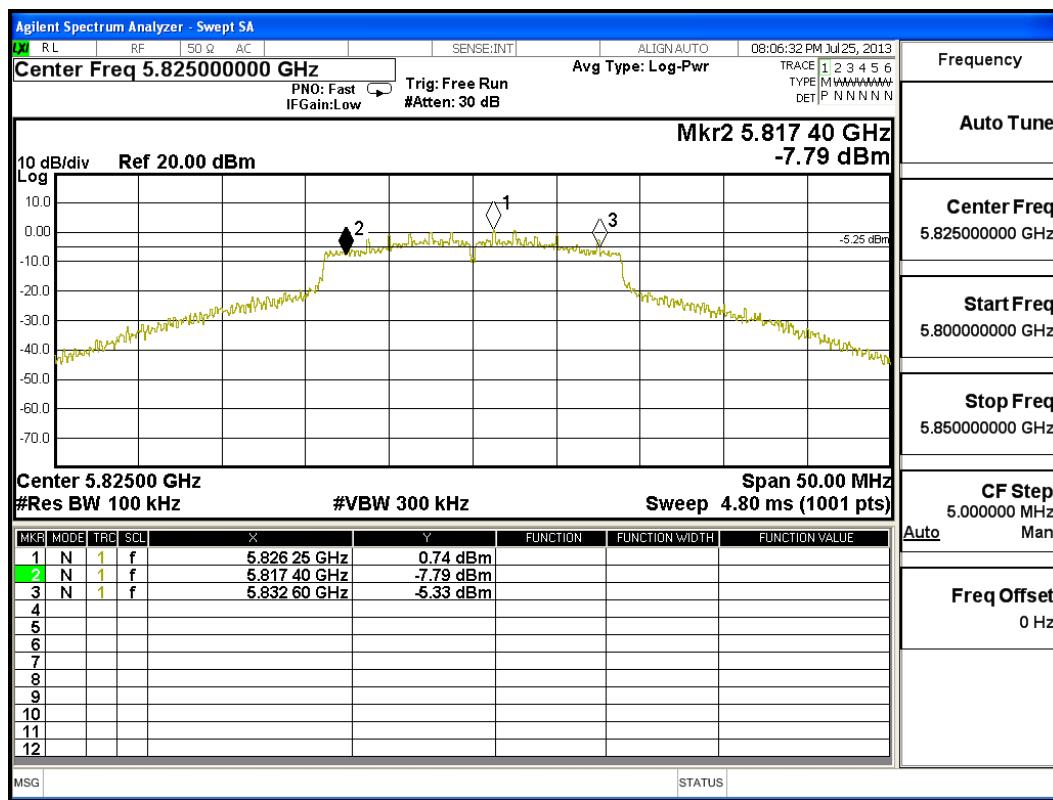
Figure Channel 157:



Product : FIELDBOOK
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 5: Transmit - 802.11n-20BW_7.2Mbps(5G Band) (5825MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
165	5825.00	15200	>500	Pass

Figure Channel 165:



8. Power Density

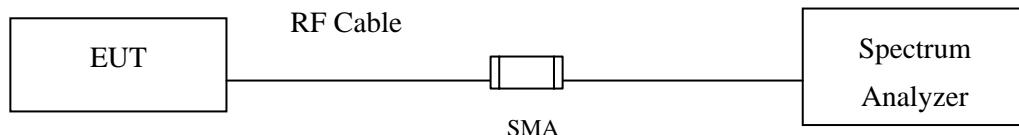
8.1. Test Equipment

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2013
Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2013
X Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2013

Note:

1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.

8.2. Test Setup



8.3. Limits

The transmitted power density averaged over any 1 second interval shall not be greater +8dBm in any 3kHz bandwidth.

8.4. Test Procedure

The EUT was setup according to ANSI C63.10, 2009; tested according to DTS test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

The maximum power spectral density using KDB 558074 section 10.2 PKPSD (peak PSD) method.

8.5. Uncertainty

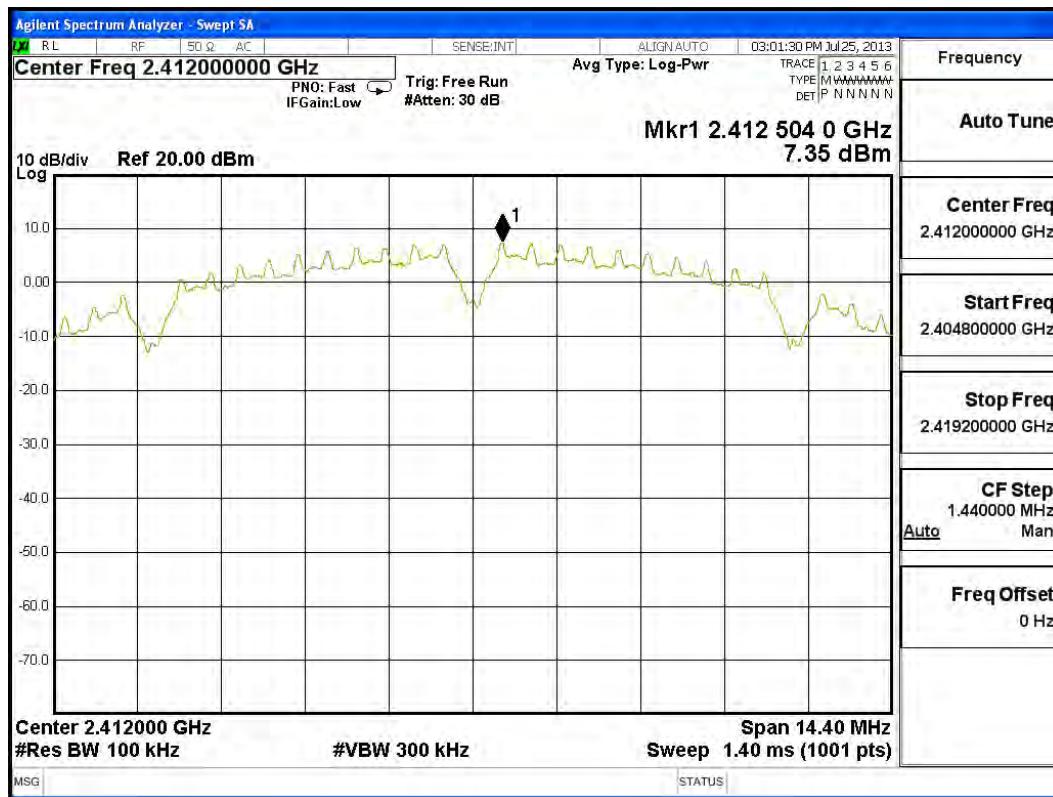
± 1.27 dB

8.6. Test Result of Power Density

Product : FIELDBOOK
 Test Item : Power Density Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit - 802.11b 1Mbps (2412MHz)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit	Result
1	2412.00	7.350	< 8dBm	Pass

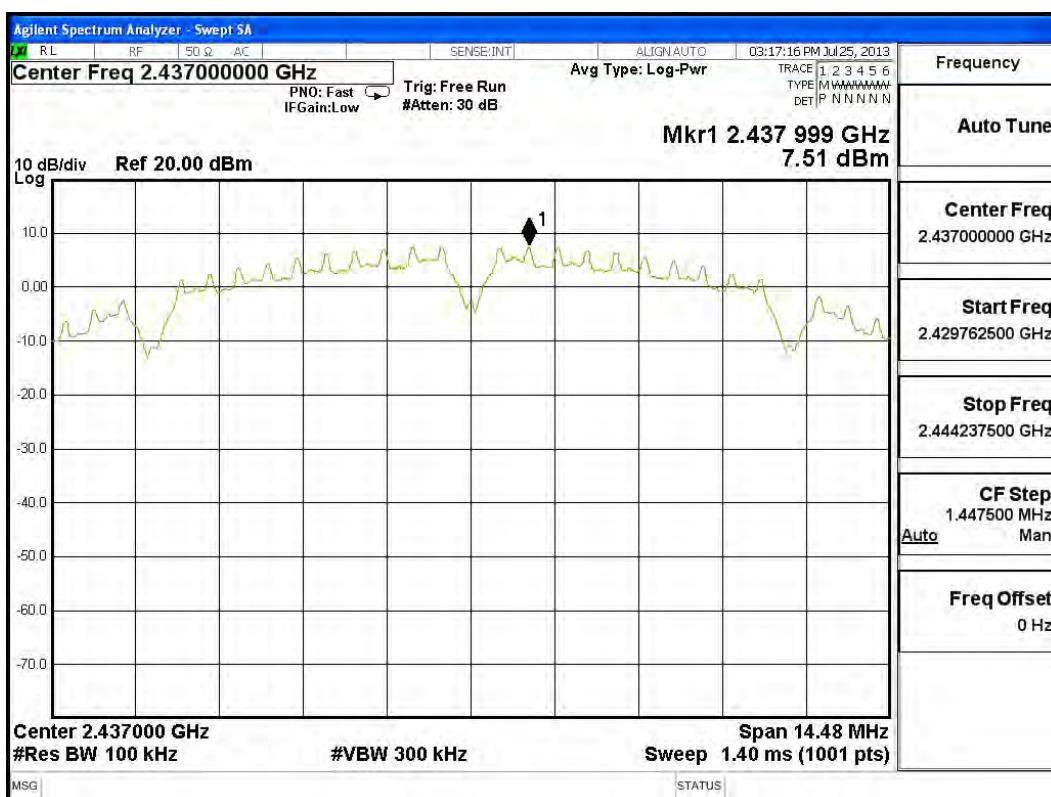
Figure Channel 1:



Product : FIELDBOOK
 Test Item : Power Density Data
 Test Site : No.3OATS
 Test Mode : Mode 1: Transmit - 802.11b 1Mbps (2437MHz)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit	Result
6	2437.000	7.510	< 8dBm	Pass

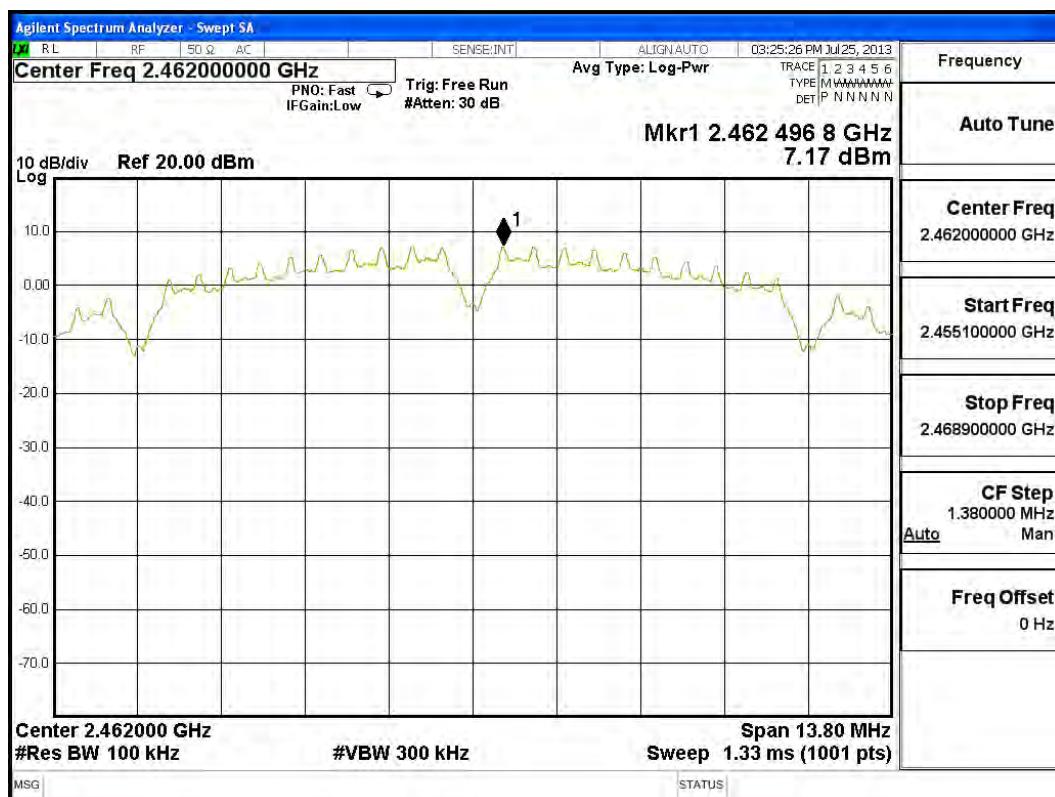
Figure Channel 6:



Product : FIELDBOOK
 Test Item : Power Density Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit - 802.11b 1Mbps (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit	Result
11	2462.00	7.170	< 8dBm	Pass

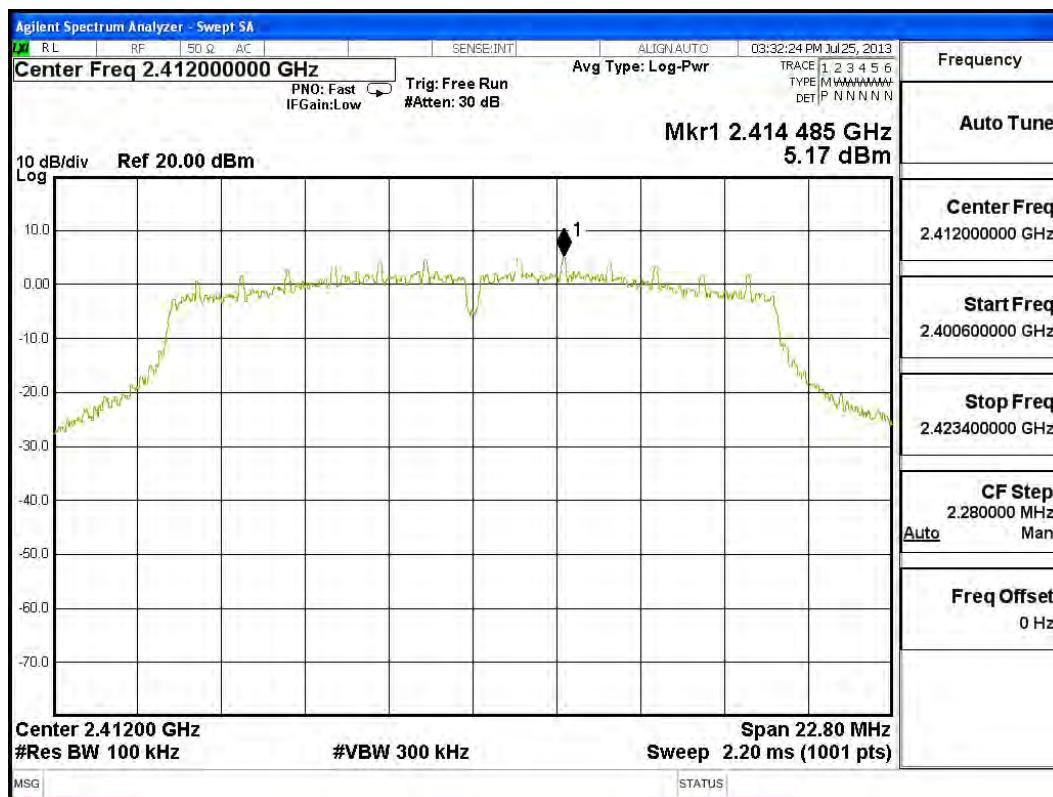
Figure Channel 11:



Product : FIELDBOOK
 Test Item : Power Density Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit - 802.11g 6Mbps (2412MHz)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit	Result
1	2412.00	5.170	< 8dBm	Pass

Figure Channel 1:



Product : FIELDBOOK
 Test Item : Power Density Data
 Test Site : No.3OATS
 Test Mode : Mode 2: Transmit - 802.11g 6Mbps (2437MHz)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit	Result
6	2437.000	5.490	< 8dBm	Pass

Figure Channel 6:



Product : FIELDBOOK
 Test Item : Power Density Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit - 802.11g 6Mbps (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit	Result
11	2462.00	5.420	< 8dBm	Pass

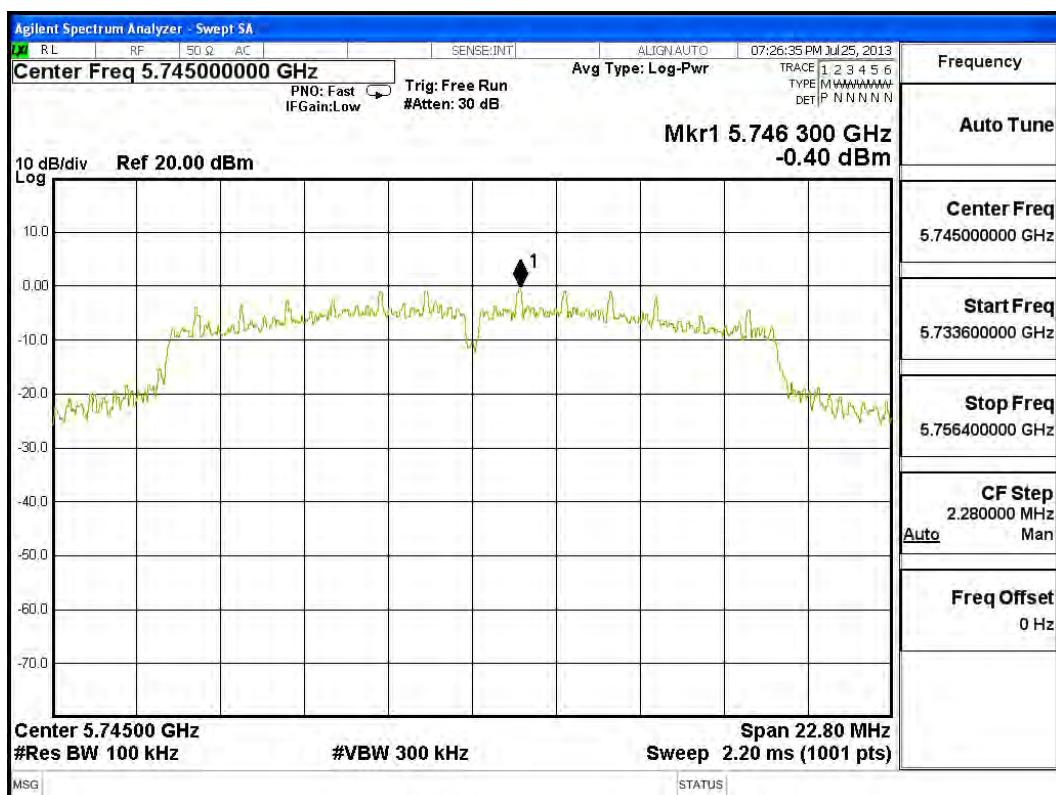
Figure Channel 11:



Product : FIELDBOOK
 Test Item : Power Density Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5745MHz)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit	Result
149	5745.000	-0.4	< 8dBm	Pass

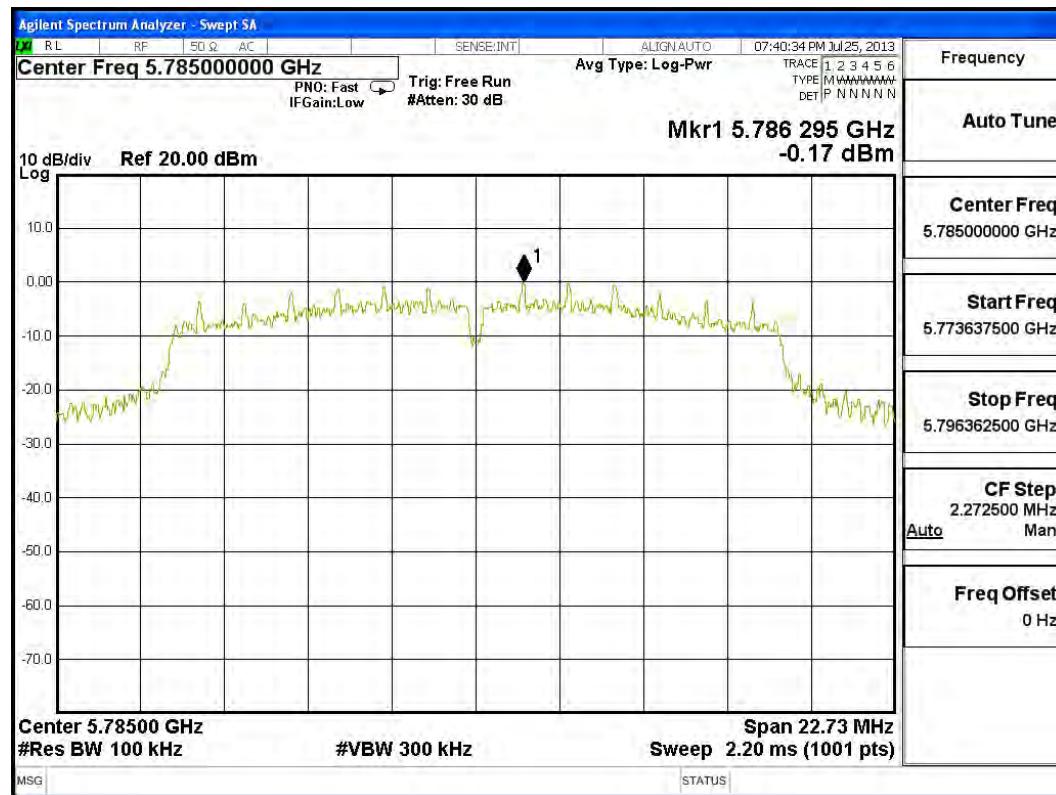
Figure Channel 149:



Product : FIELDBOOK
 Test Item : Power Density Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5785MHz)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit	Result
157	5785.000	-0.17	< 8dBm	Pass

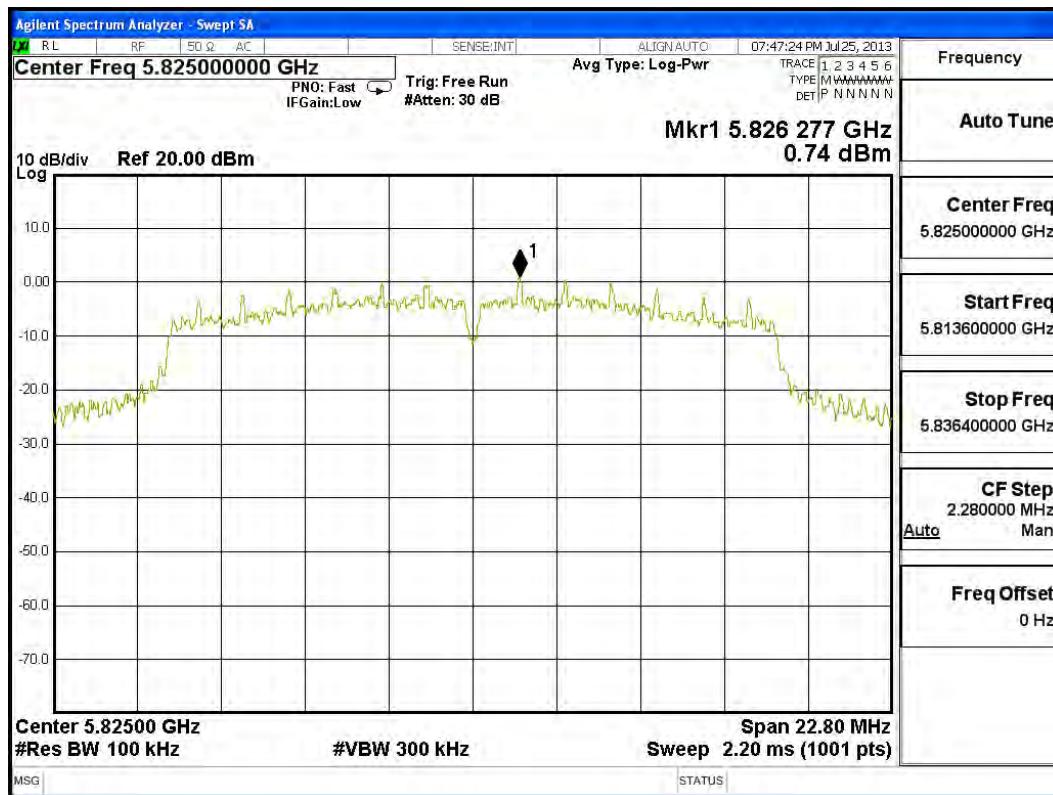
Figure Channel 157:



Product : FIELDBOOK
 Test Item : Power Density Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit - 802.11a 6Mbps (5825MHz)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit	Result
165	5825.000	0.74	< 8dBm	Pass

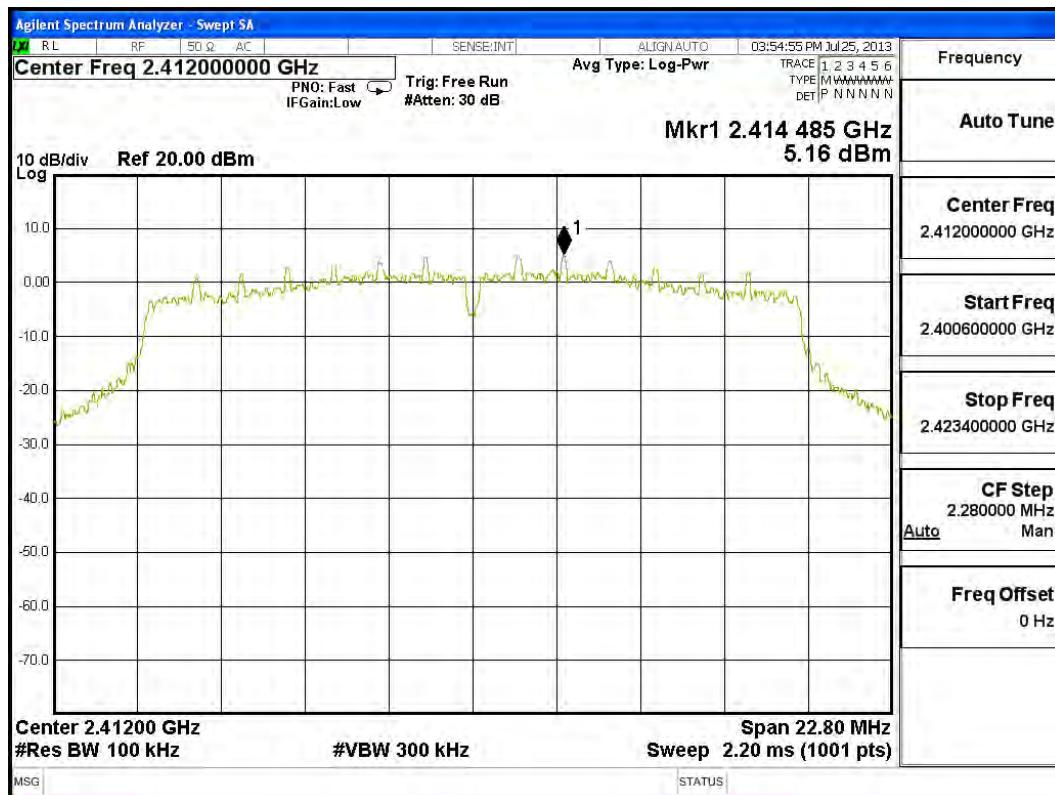
Figure Channel 165:



Product : FIELDBOOK
 Test Item : Power Density Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2412MHz)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit	Result
1	2412.00	5.160	< 8dBm	Pass

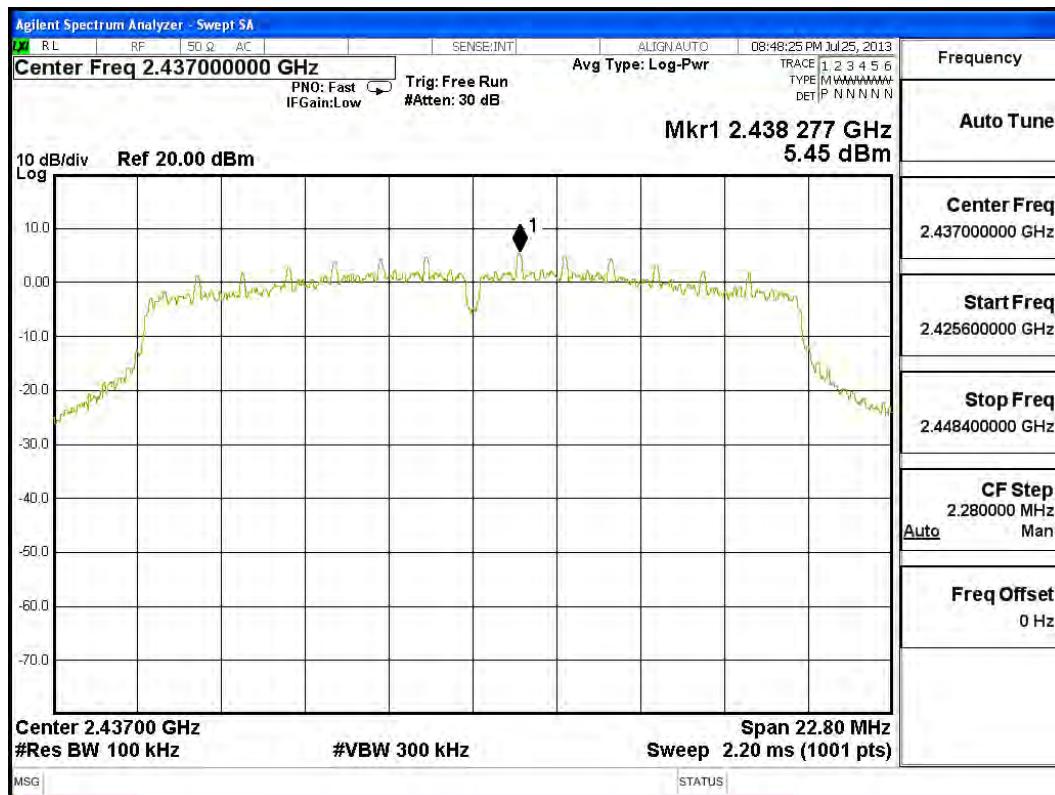
Figure Channel 1:



Product : FIELDBOOK
 Test Item : Power Density Data
 Test Site : No.3OATS
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2437MHz)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit	Result
3	2437.00	5.450	< 8dBm	Pass

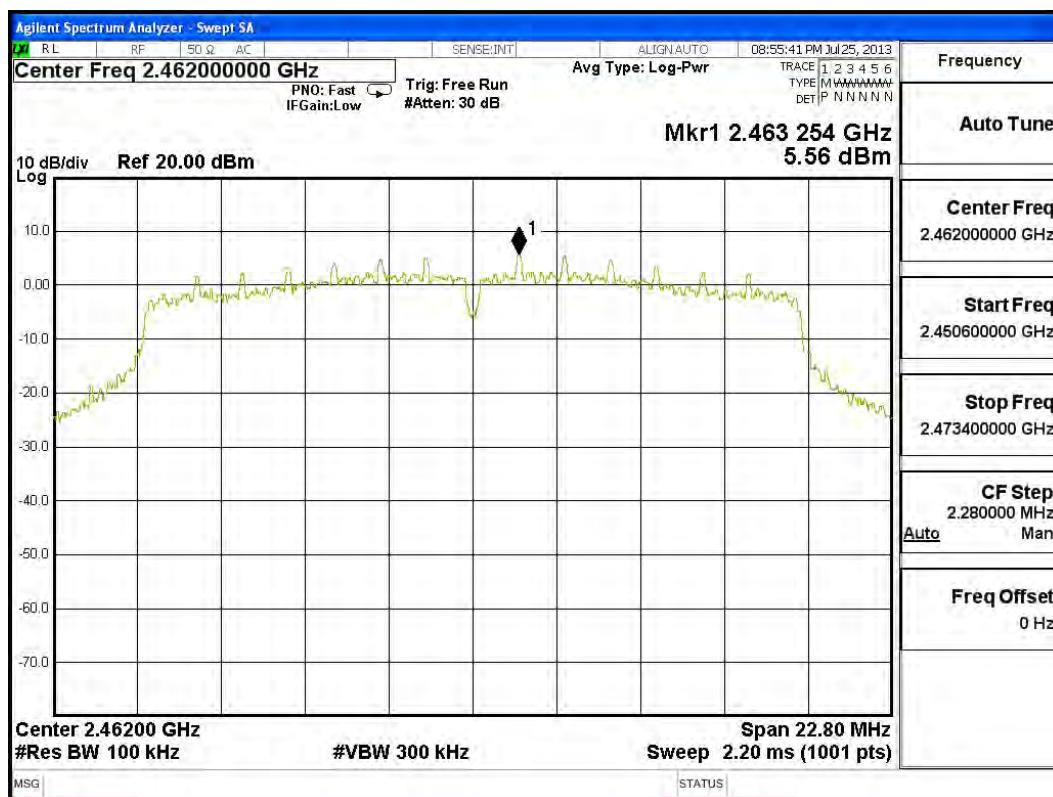
Figure Channel 6:



Product : FIELDBOOK
 Test Item : Power Density Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit - 802.11n-20BW_7.2Mbps(2.4G Band) (2462MHz)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit	Result
11	2462.00	5.560	< 8dBm	Pass

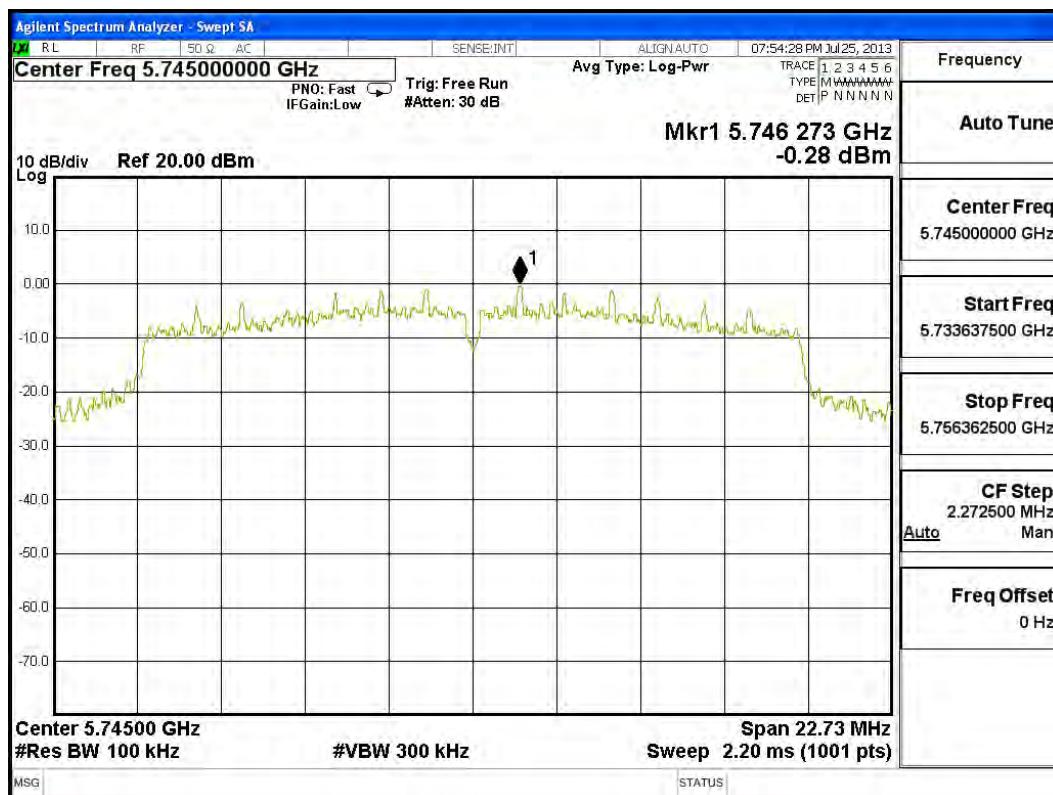
Figure Channel 11:



Product : FIELDBOOK
 Test Item : Power Density Data
 Test Site : No.3 OATS
 Test Mode : Mode 5: Transmit - 802.11n-20BW_7.2Mbps(5G Band) (5745MHz)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit	Result
149	5745.00	-0.28	< 8dBm	Pass

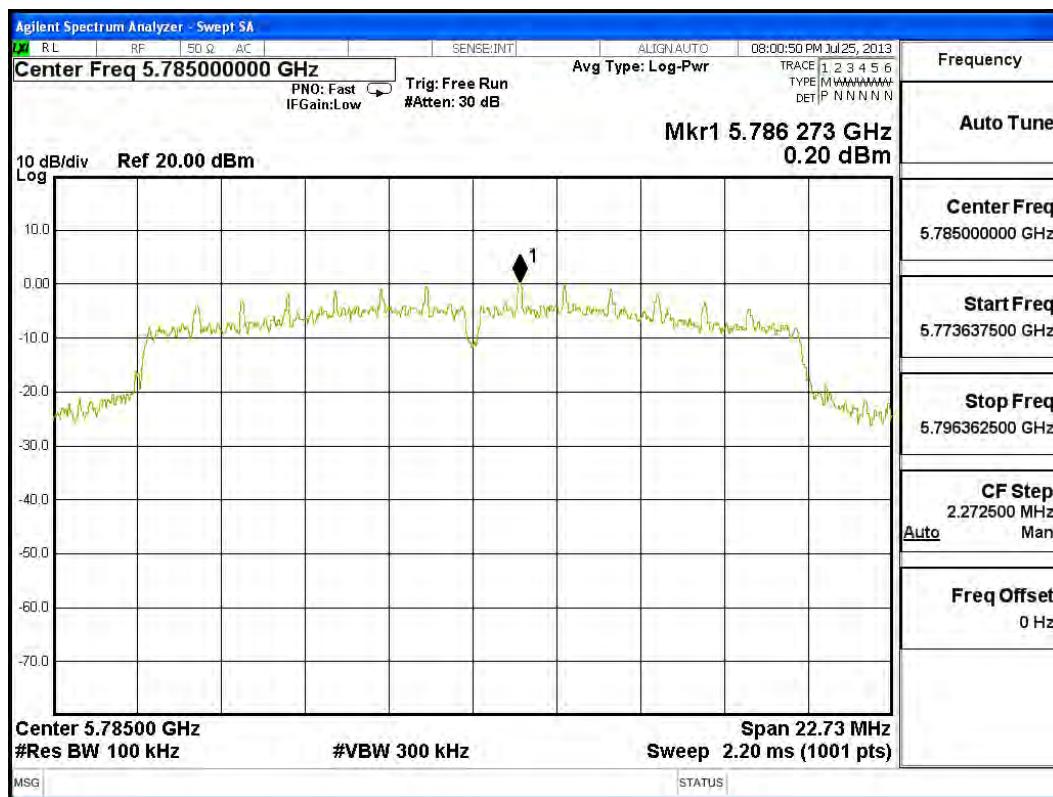
Figure Channel 149:



Product : FIELDBOOK
 Test Item : Power Density Data
 Test Site : No.3OATS
 Test Mode : Mode 5: Transmit - 802.11n-20BW_7.2Mbps(5G Band) (5785MHz)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit	Result
149	5745.00	0.2	< 8dBm	Pass

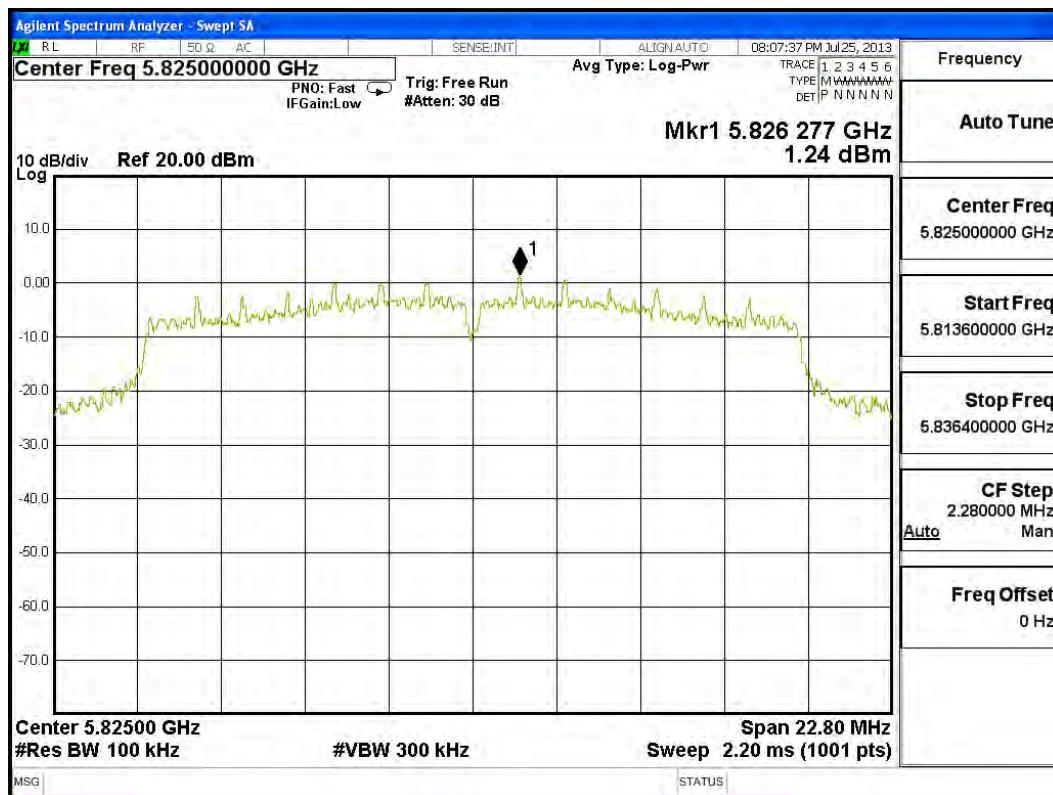
Figure Channel 157:



Product : FIELDBOOK
 Test Item : Power Density Data
 Test Site : No.3 OATS
 Test Mode : Mode 5: Transmit - 802.11n-20BW_7.2Mbps(5G Band) (5825MHz)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit	Result
165	5825.00	1.240	< 8dBm	Pass

Figure Channel 165:



9. EMI Reduction Method During Compliance Testing

No modification was made during testing.