

Product : IEEE 802.11b/g/n WIFI/ BT Combo slim module
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.038	37.450	40.487	-33.513	74.000
7311.000	11.795	35.520	47.314	-26.686	74.000
9748.000	12.635	37.080	49.715	-24.285	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	5.812	39.790	45.601	-28.399	74.000
7311.000	12.630	35.610	48.239	-25.761	74.000
9748.000	13.126	37.250	50.376	-23.624	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 : IEEE 802.11b/g/n WIFI/ BT Combo slim module
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)(2452 MHz)

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

Horizontal

Peak Detector:

4904.000	2.914	37.460	40.375	-33.625	74.000
7356.000	11.995	34.000	45.994	-28.006	74.000
9808.000	12.475	36.920	49.395	-24.605	74.000

Average Detector:

--

Vertical

Peak Detector:

4904.000	5.530	40.660	46.191	-27.809	74.000
7356.000	13.005	35.760	48.764	-25.236	74.000
9808.000	12.901	37.080	49.981	-24.019	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 : IEEE 802.11b/g/n WIFI/ BT Combo slim module
 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 dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
99.840	-7.471	48.758	41.287	-2.213	43.500
165.800	-11.079	48.878	37.799	-5.701	43.500
231.760	-8.338	49.757	41.419	-4.581	46.000
299.660	-3.585	45.719	42.134	-3.866	46.000
373.380	-1.163	40.607	39.444	-6.556	46.000
674.080	2.799	39.972	42.771	-3.229	46.000
Vertical					
97.900	-1.400	41.286	39.885	-3.615	43.500
231.760	-8.848	49.545	40.697	-5.303	46.000
297.720	-7.143	47.007	39.865	-6.135	46.000
499.480	-0.852	38.623	37.771	-8.229	46.000
674.080	-0.501	42.188	41.687	-4.313	46.000
800.180	2.801	33.086	35.887	-10.113	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.

Product : IEEE 802.11b/g/n WIFI/ BT Combo slim module
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)(2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
99.840	-7.471	47.652	40.181	-3.319	43.500
231.760	-8.338	48.139	39.801	-6.199	46.000
297.720	-3.633	45.271	41.639	-4.361	46.000
499.480	0.048	36.375	36.423	-9.577	46.000
699.300	2.875	34.824	37.699	-8.301	46.000
796.300	5.161	32.468	37.629	-8.371	46.000
Vertical					
99.840	-0.021	38.984	38.963	-4.537	43.500
165.800	-7.719	48.528	40.809	-2.691	43.500
231.760	-8.848	50.724	41.876	-4.124	46.000
299.660	-6.855	47.187	40.332	-5.668	46.000
499.480	-0.852	37.880	37.028	-8.972	46.000
697.360	1.311	42.417	43.728	-2.272	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.

Product : IEEE 802.11b/g/n WIFI/ BT Combo slim module
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)(2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
99.840	-7.471	47.205	39.734	-3.766	43.500
165.800	-11.079	49.709	38.630	-4.870	43.500
231.760	-8.338	50.424	42.086	-3.914	46.000
297.720	-3.633	43.939	40.307	-5.693	46.000
499.480	0.048	35.172	35.220	-10.780	46.000
693.480	3.568	32.330	35.898	-10.102	46.000
Vertical					
97.900	-1.400	40.670	39.269	-4.231	43.500
231.760	-8.848	50.738	41.890	-4.110	46.000
299.660	-6.855	47.266	40.411	-5.589	46.000
499.480	-0.852	37.610	36.758	-9.242	46.000
695.420	1.878	35.963	37.841	-8.159	46.000
807.940	3.586	33.063	36.648	-9.352	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.

Product : IEEE 802.11b/g/n WIFI/ BT Combo slim module
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)(2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
365.620	-1.329	37.974	36.645	-9.355	46.000
497.540	-0.273	40.917	40.644	-5.356	46.000
600.360	3.977	34.432	38.409	-7.591	46.000
703.180	2.649	37.134	39.782	-6.218	46.000
800.180	5.141	32.024	37.165	-8.835	46.000
897.180	5.182	27.224	32.406	-13.594	46.000
Vertical					
365.620	-2.179	28.584	26.405	-19.595	46.000
499.480	-0.852	36.047	35.195	-10.805	46.000
600.360	-2.833	28.798	25.965	-20.035	46.000
693.480	2.168	29.340	31.508	-14.492	46.000
800.180	2.801	28.723	31.524	-14.476	46.000
899.120	3.063	25.939	29.002	-16.998	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.

5. RF antenna conducted test

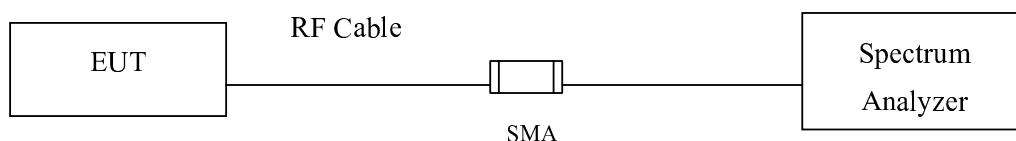
5.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2011
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2011
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2011

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 Mar. 2005 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

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

5.5. Uncertainty

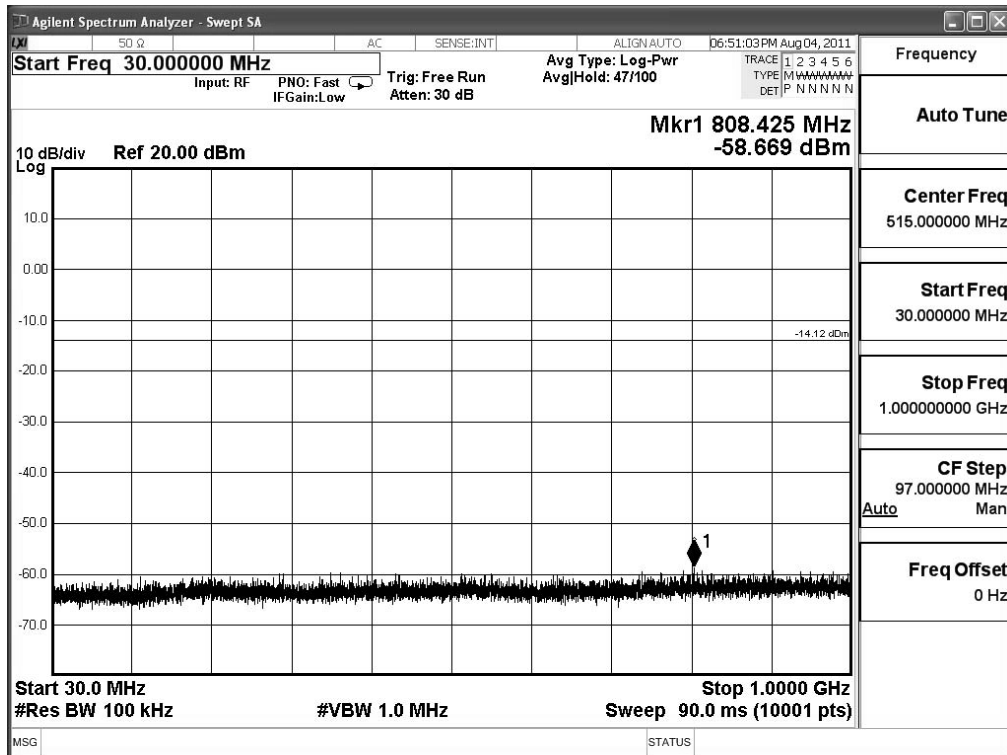
The measurement uncertainty

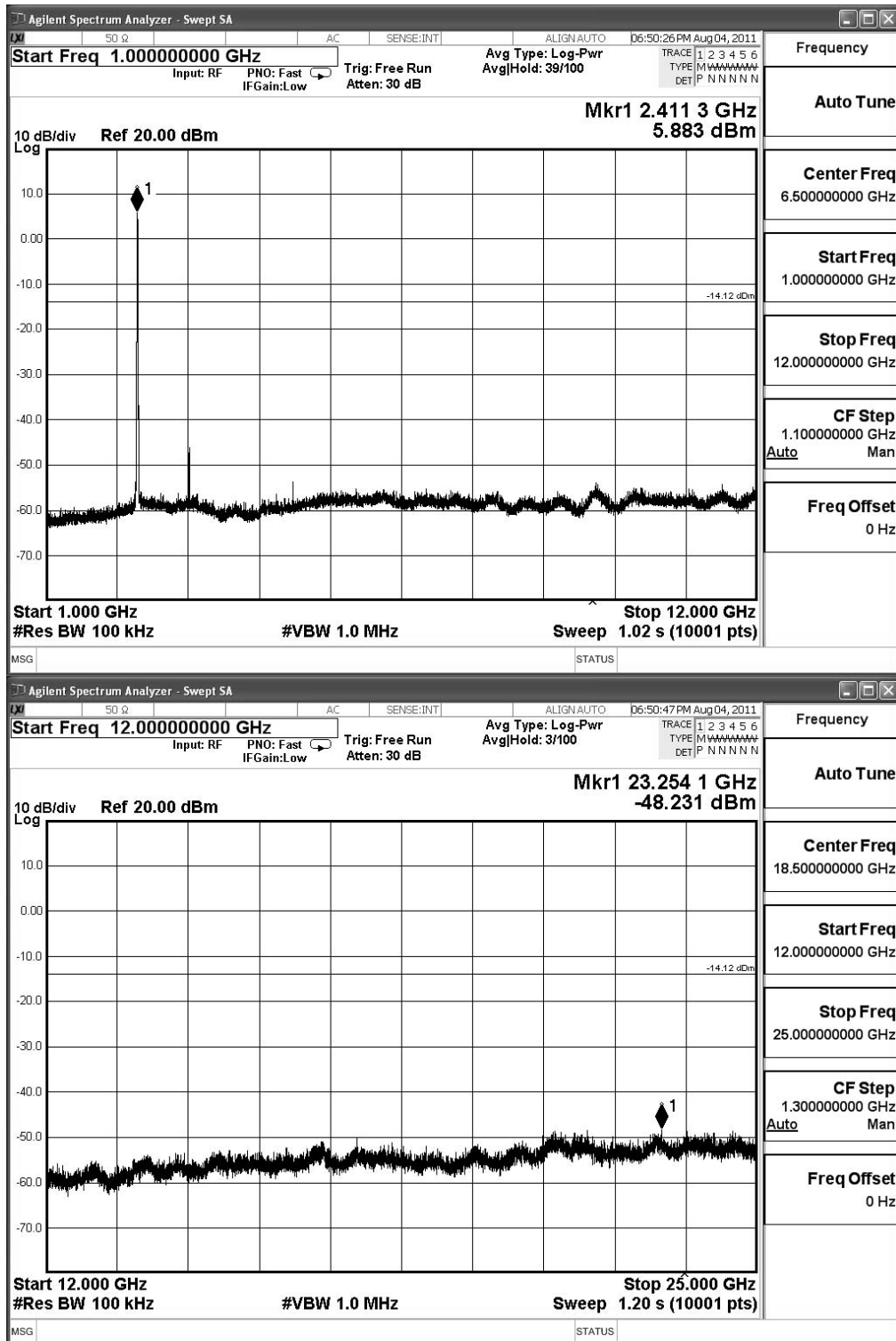
Conducted is defined as $\pm 1.27\text{dB}$

5.6. Test Result of RF antenna conducted test

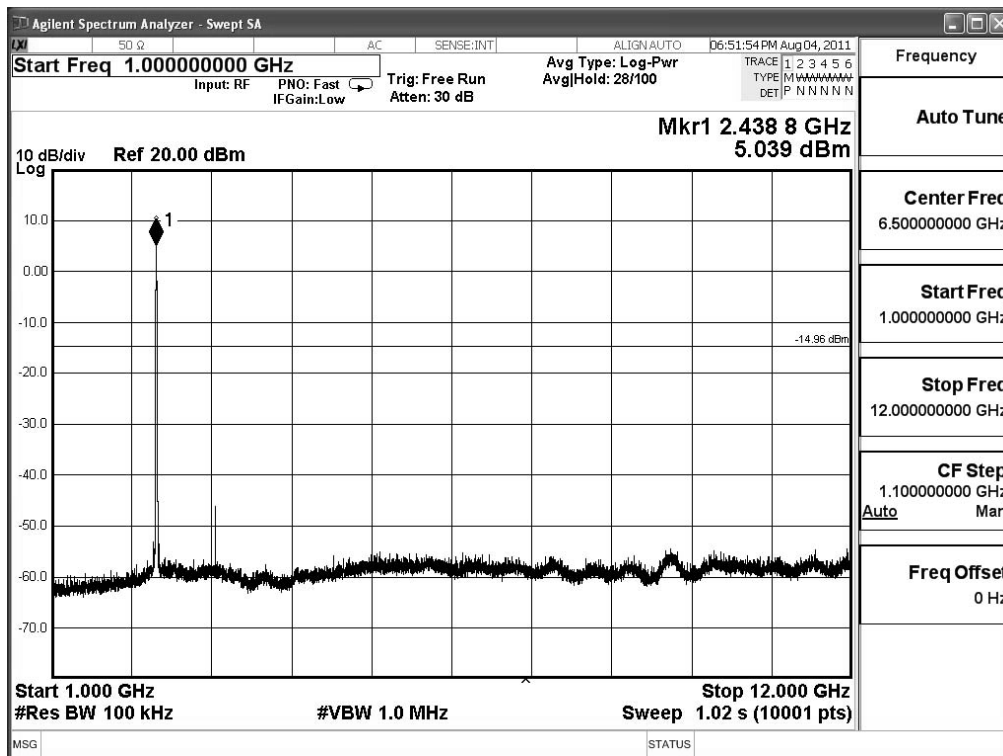
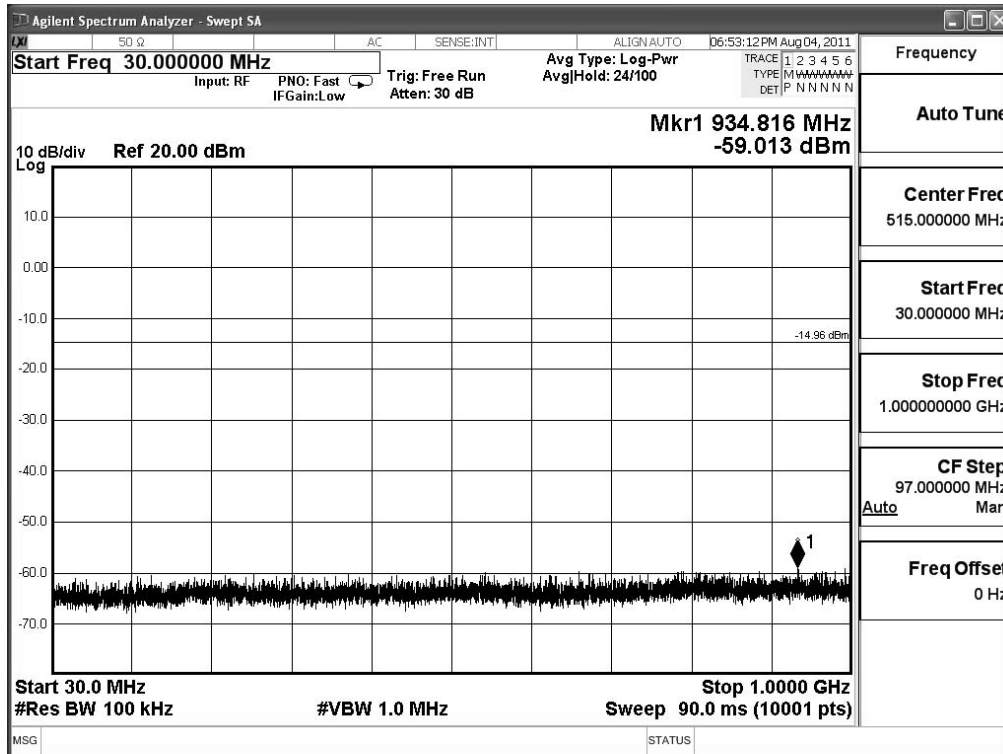
Product : IEEE 802.11b/g/n WIFI/ BT Combo slim module
 Test Item : RF antenna conducted test
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Channel 01 (2412MHz)



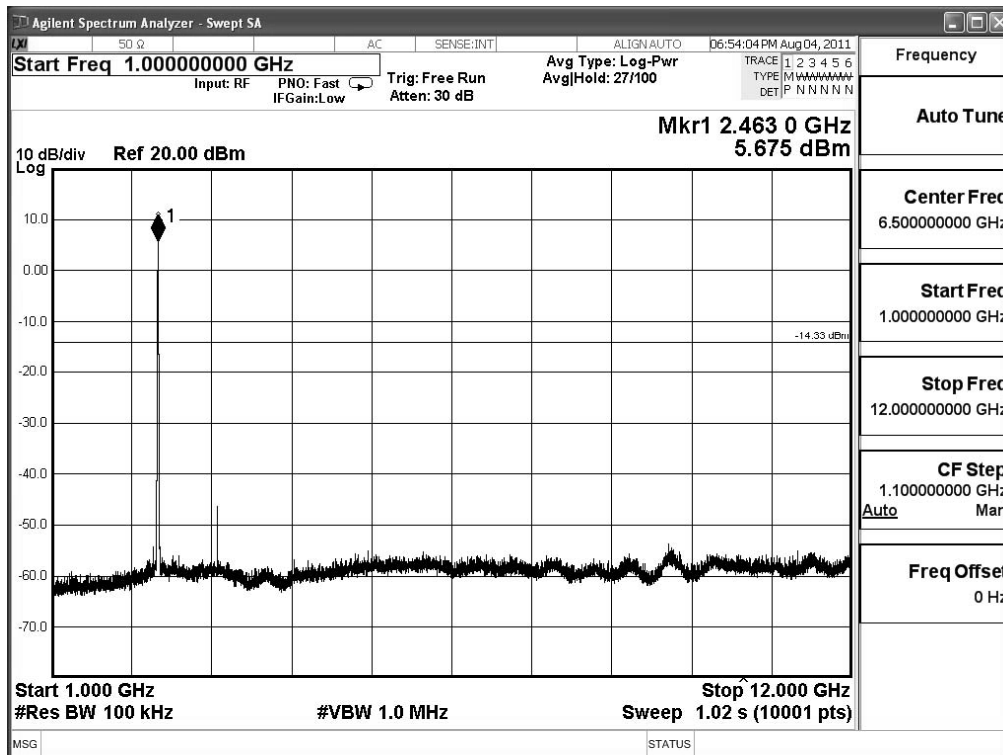
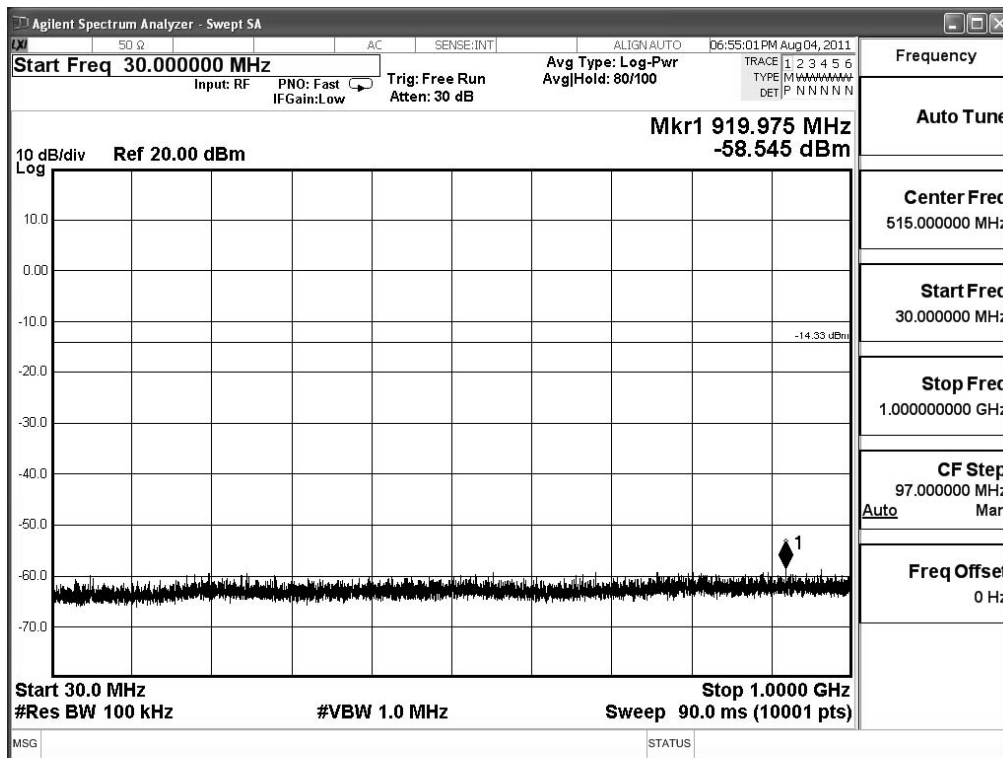


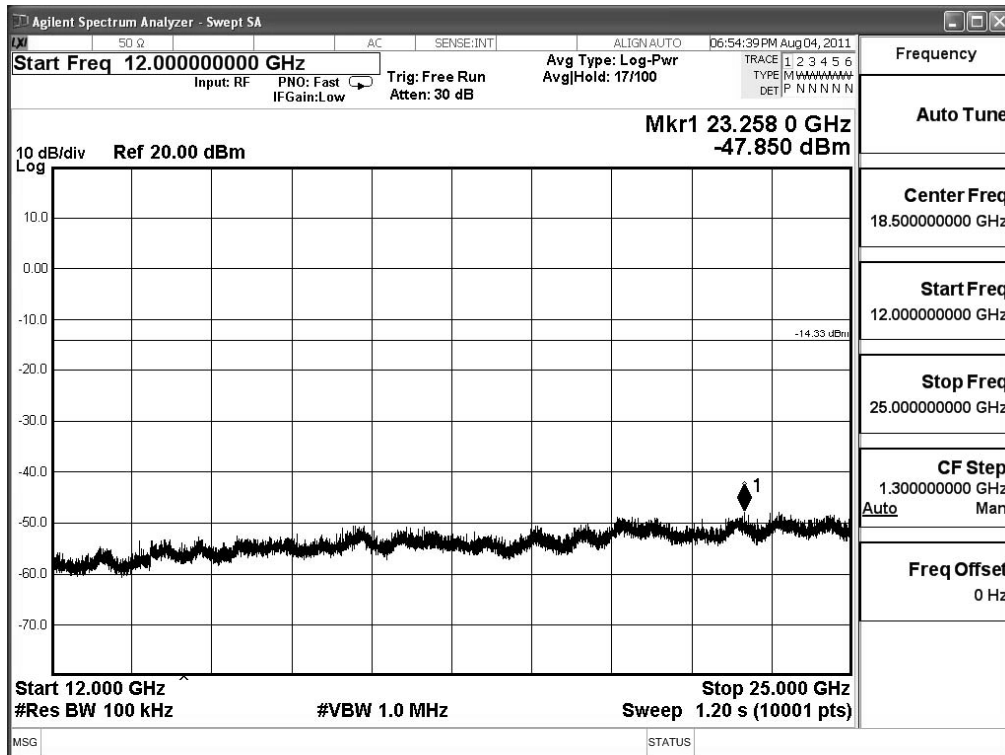
Channel 06 (2437MHz)





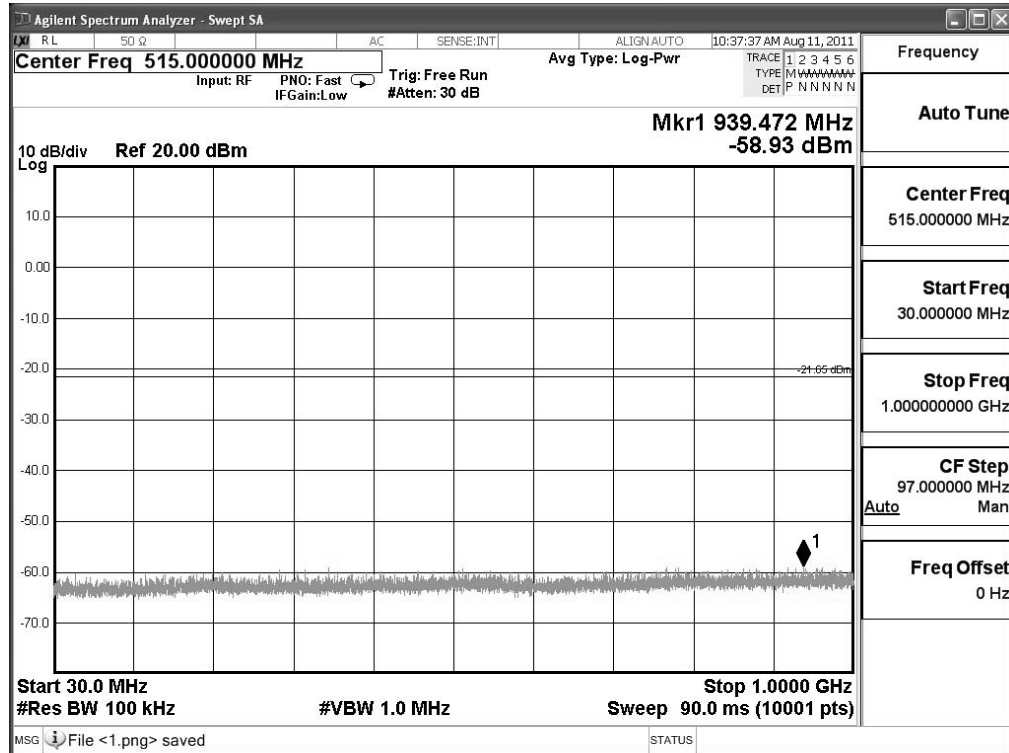
Channel 11 (2462MHz)

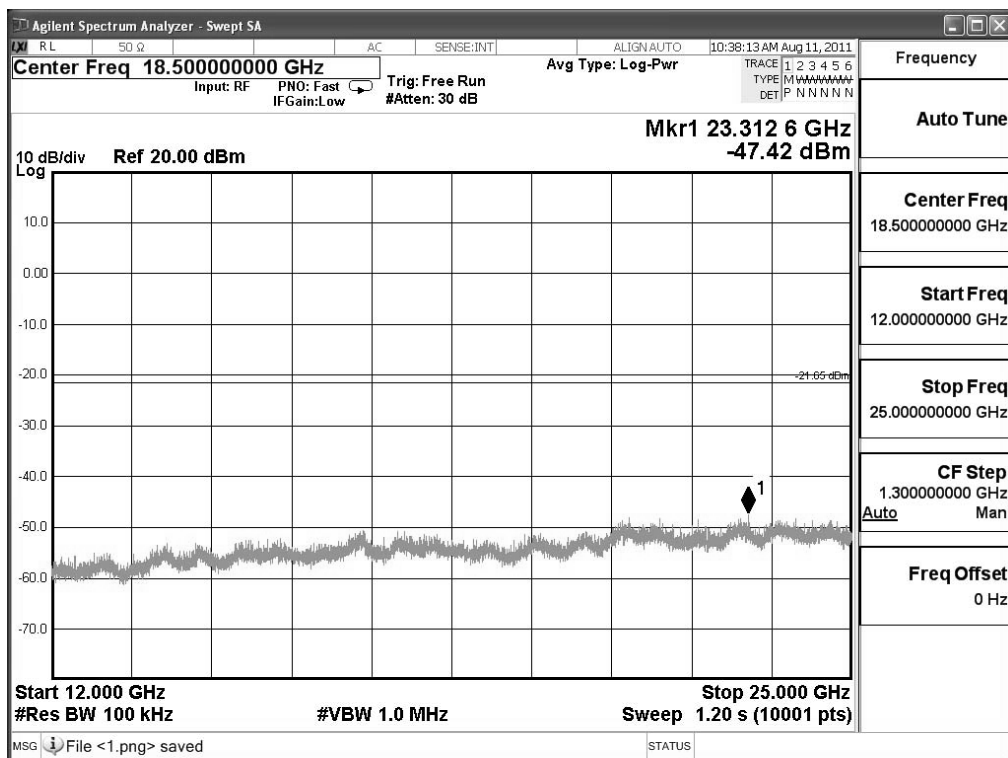
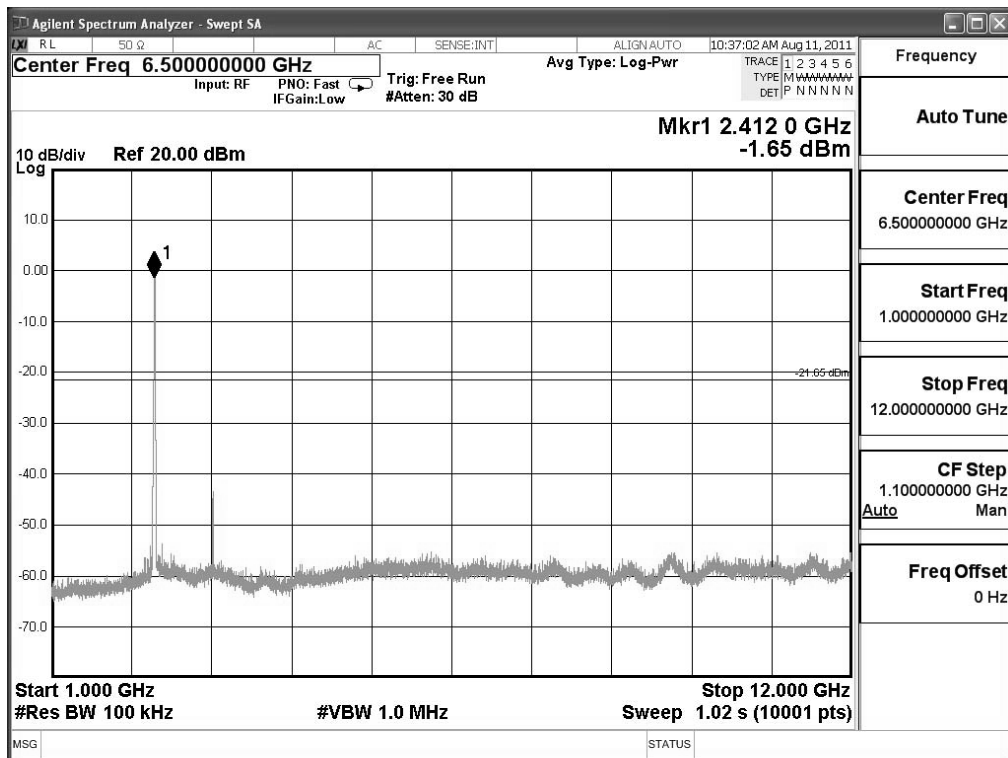




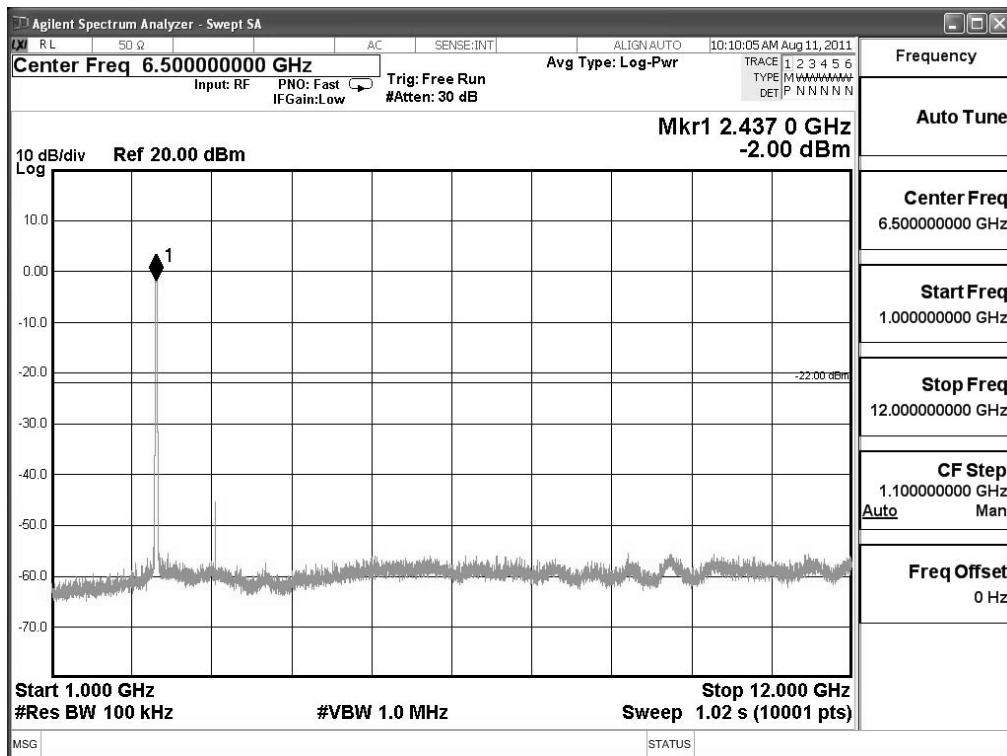
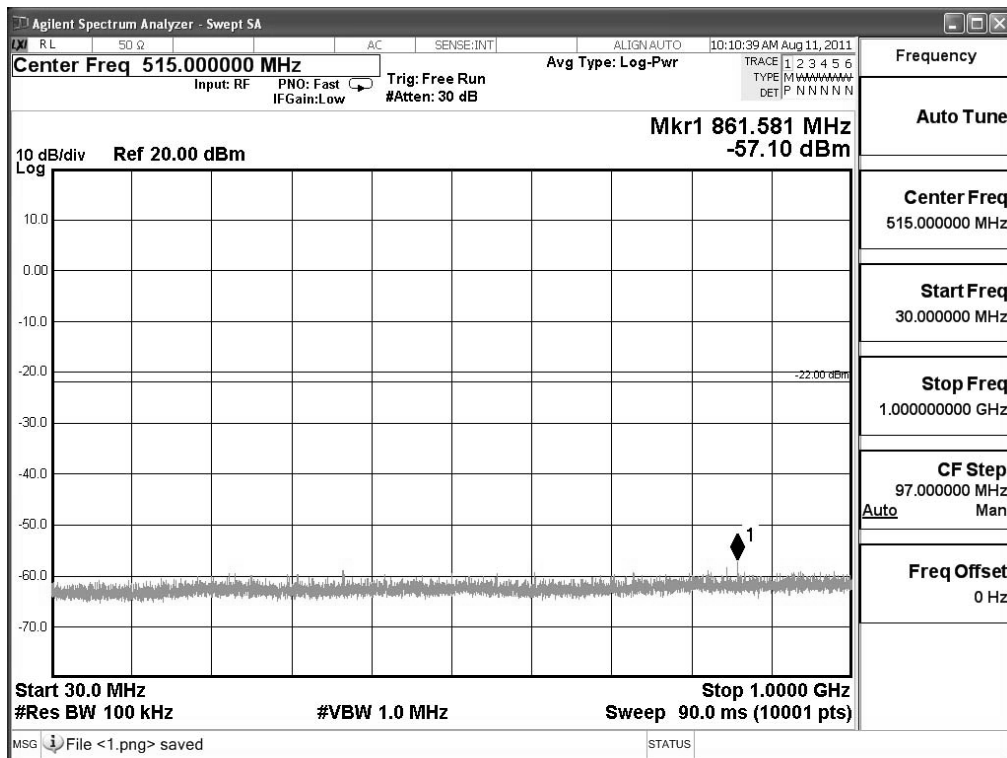
Product : IEEE 802.11b/g/n WIFI/ BT Combo slim module
 Test Item : RF Antenna Conducted Spurious
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)

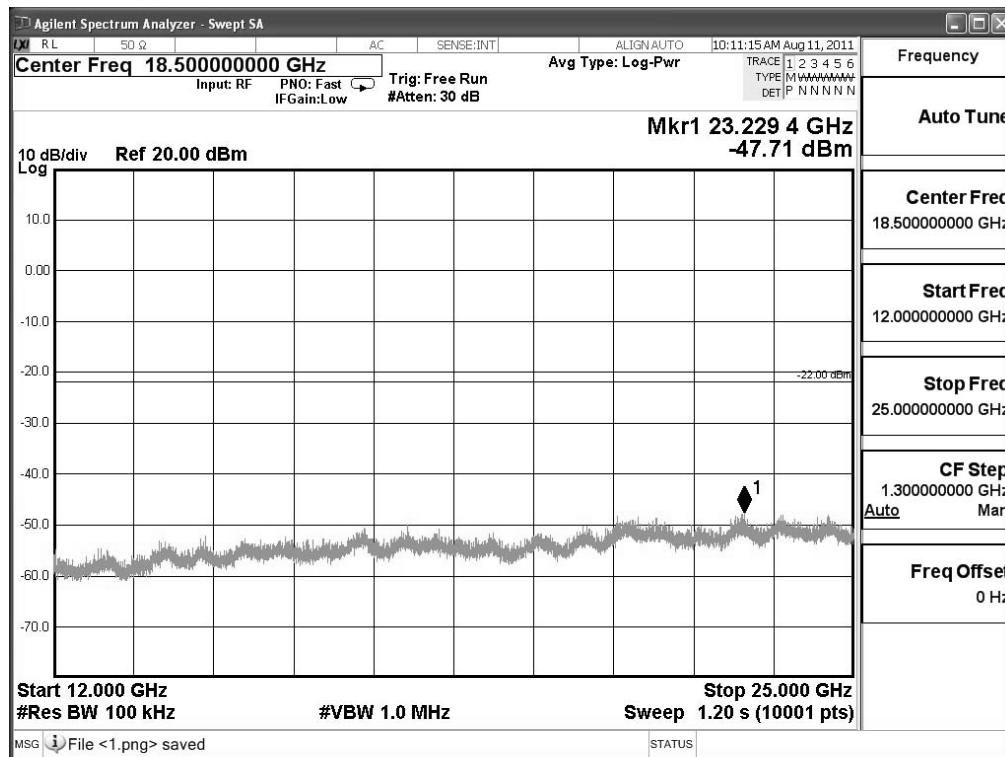
Channel 01 (2412MHz)



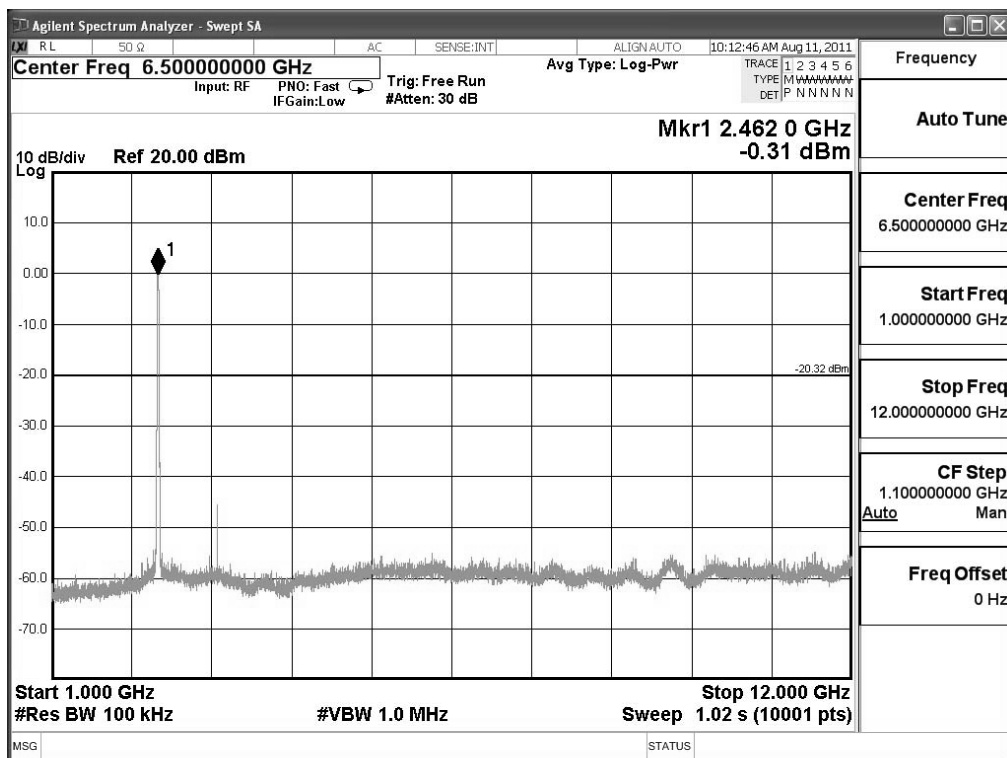
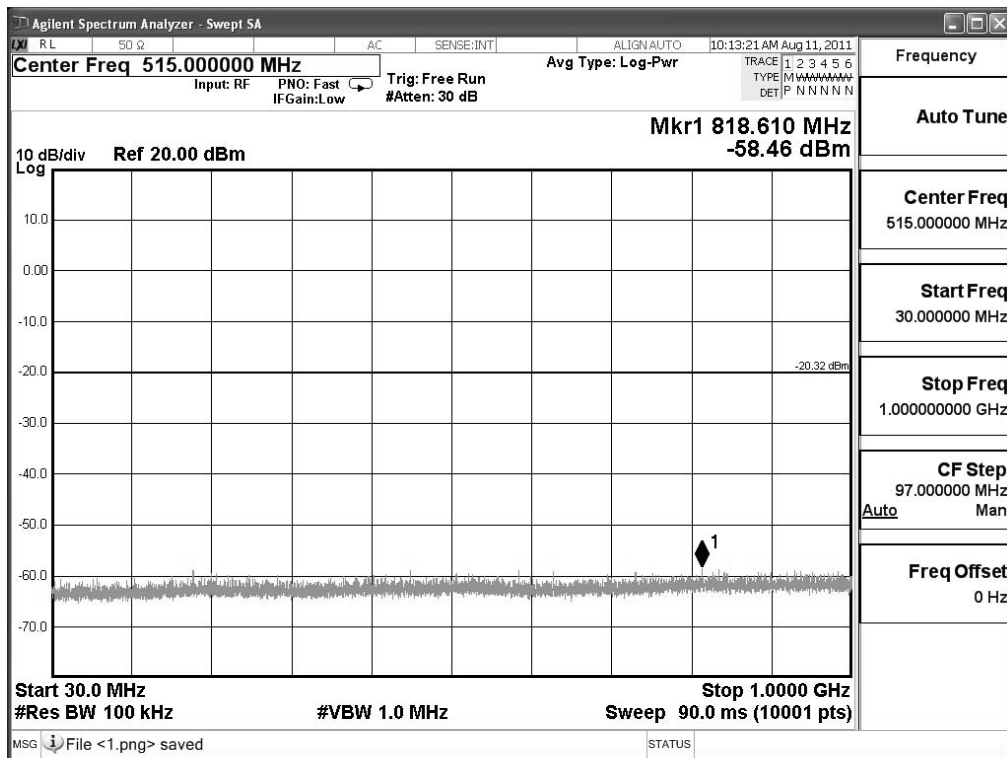


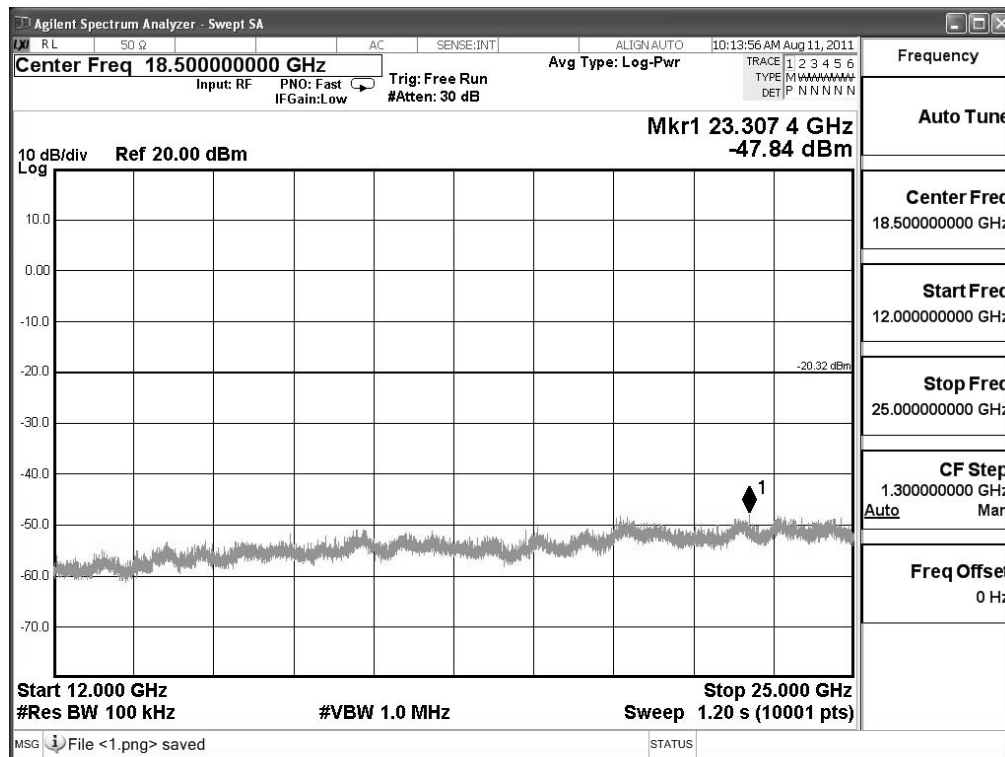
Channel 06 (2437MHz)





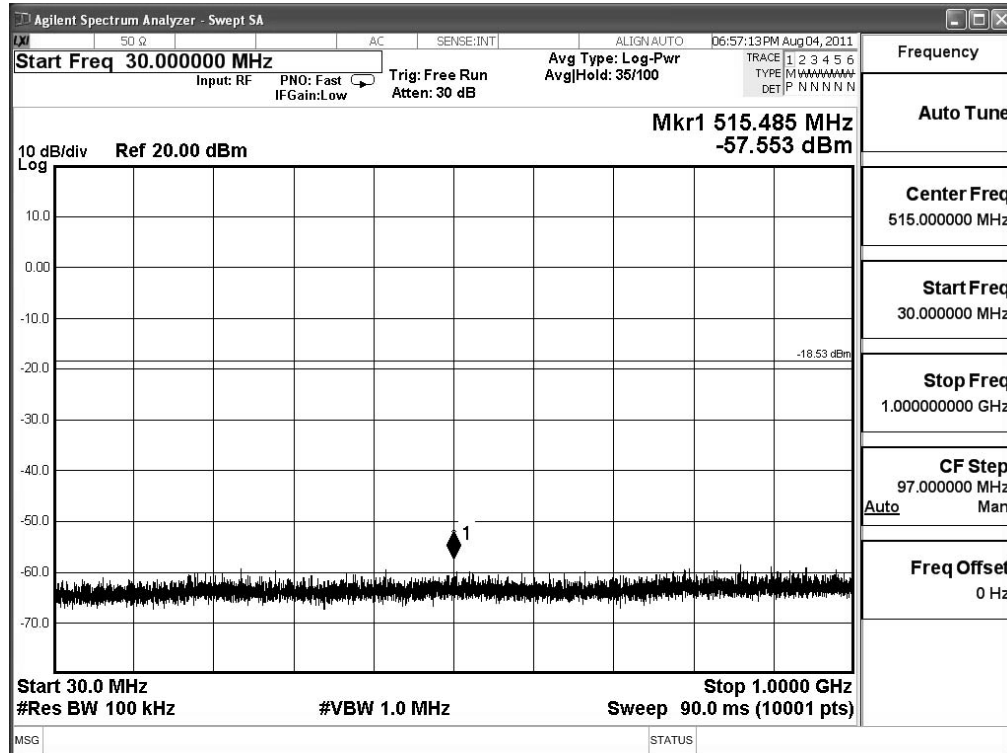
Channel 11 (2462MHz)

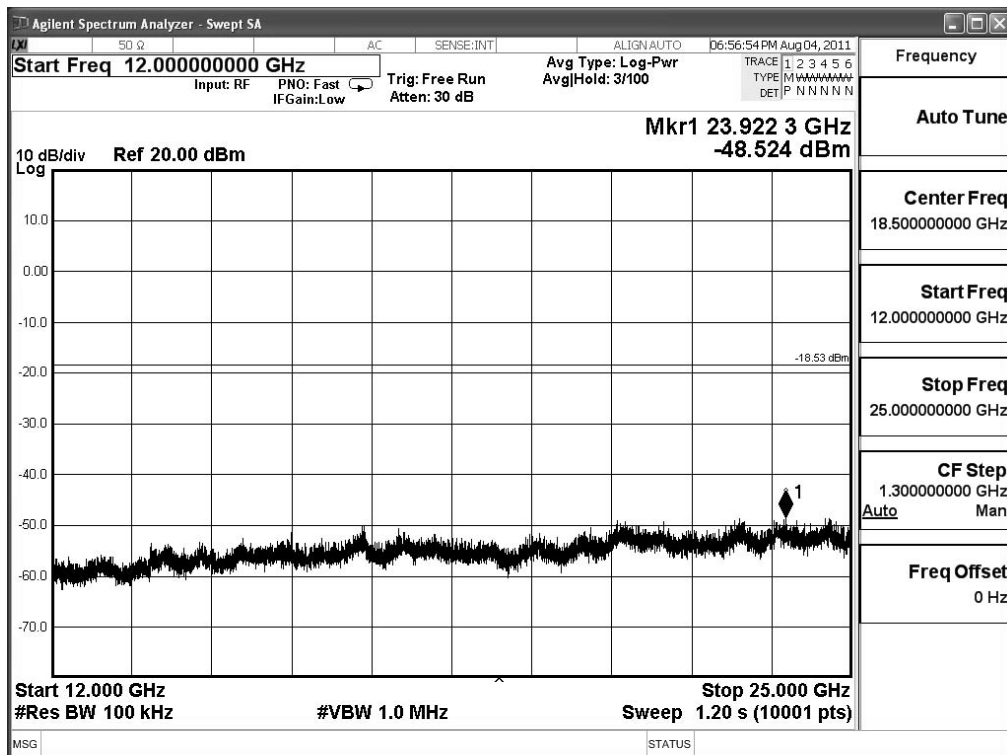
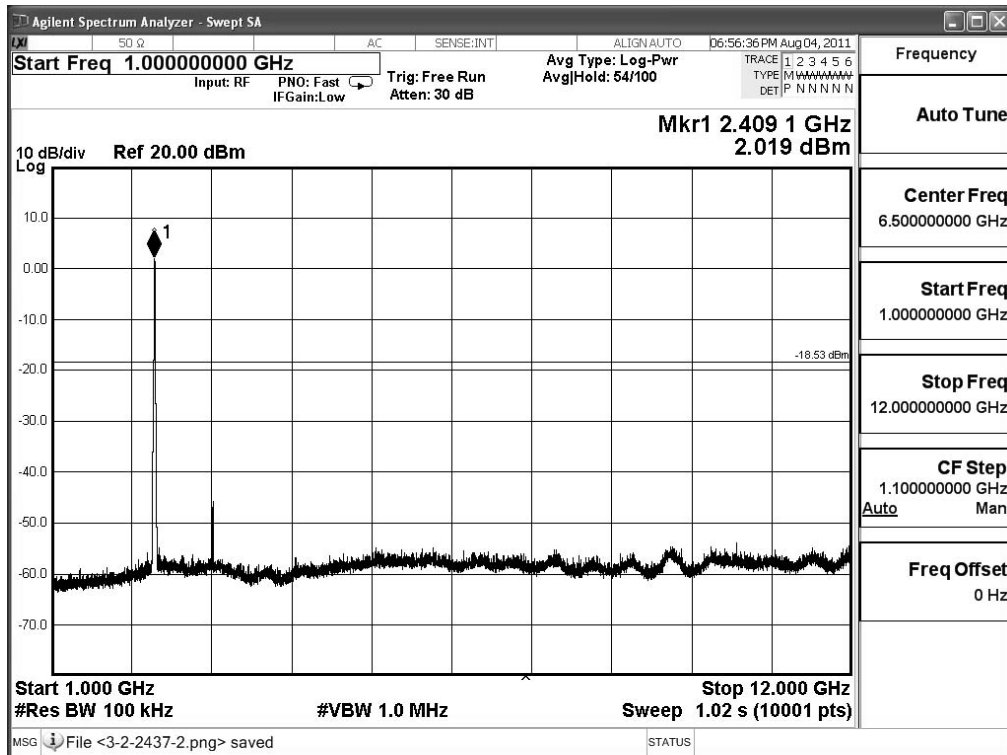




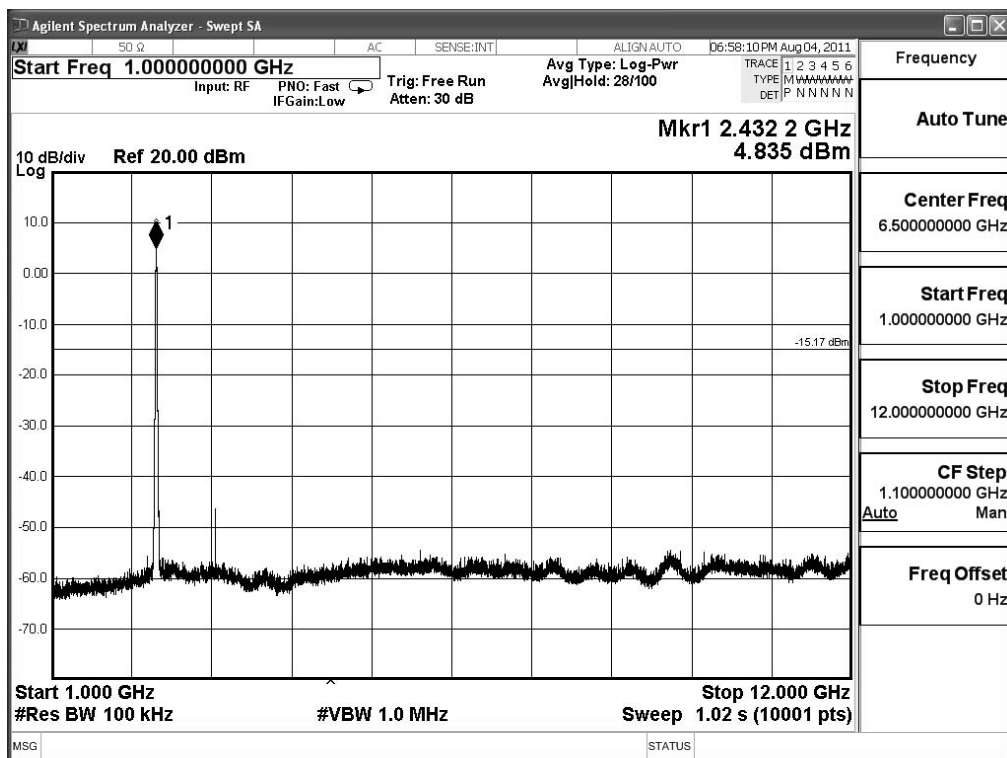
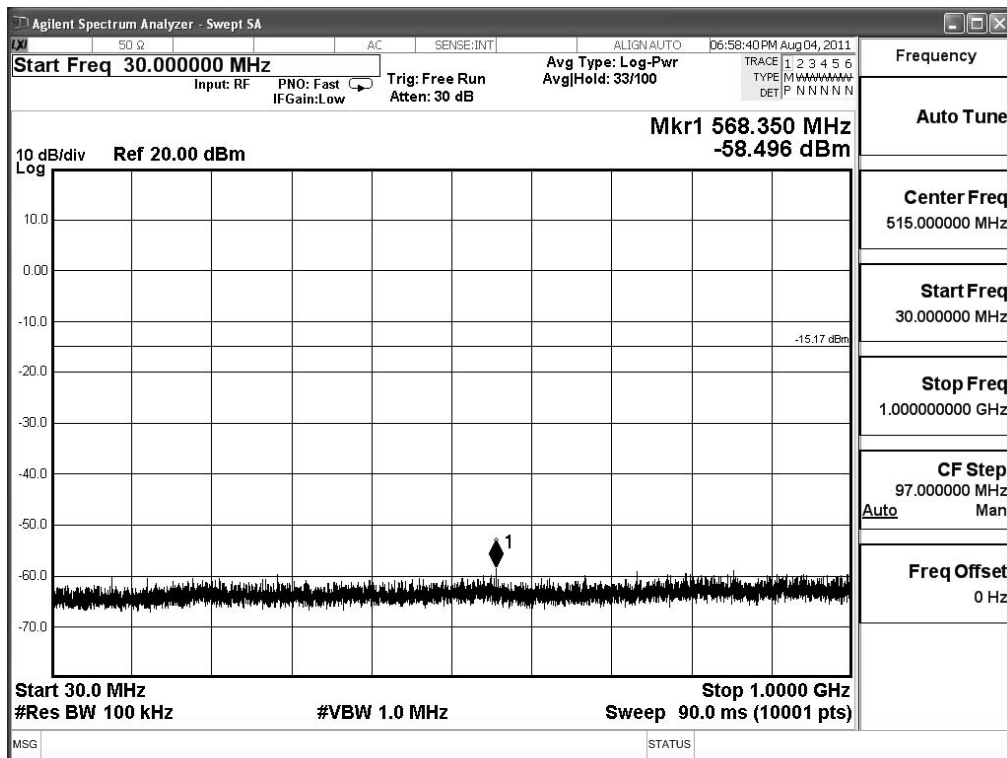
Product : IEEE 802.11b/g/n WIFI/ BT Combo slim module
 Test Item : RF Antenna Conducted Spurious
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

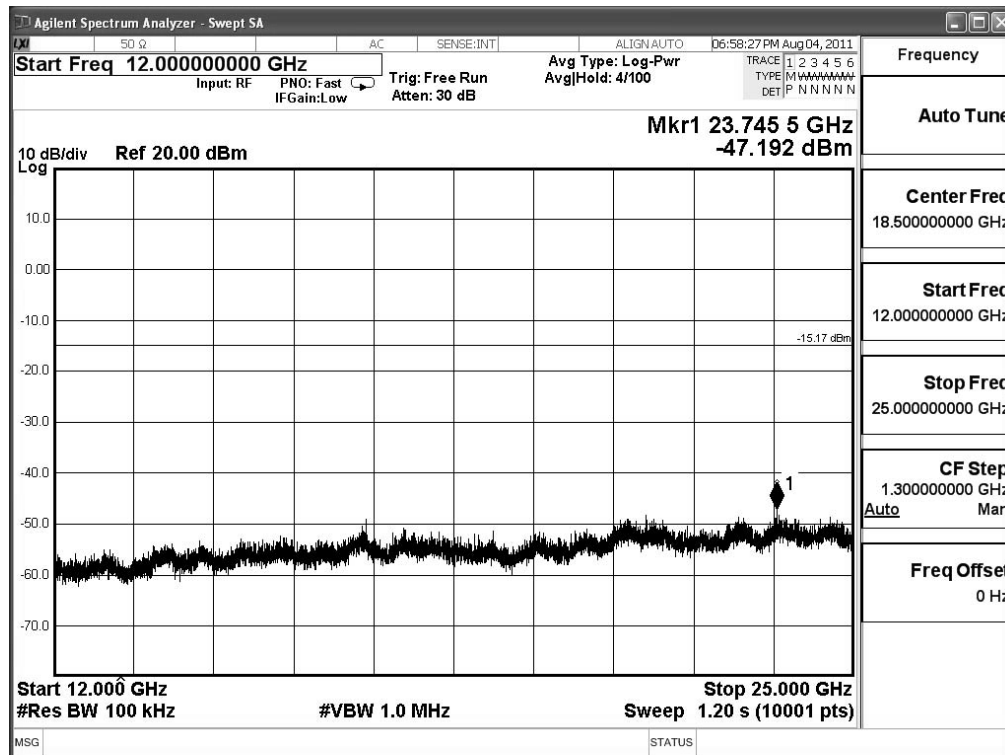
Channel 01 (2412MHz)



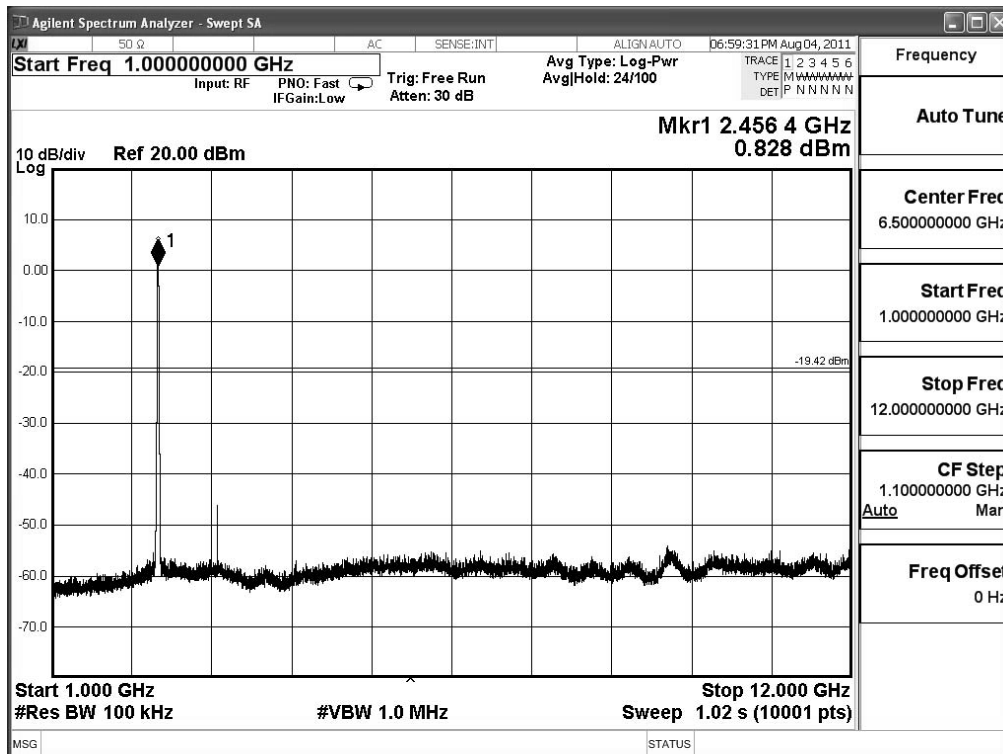
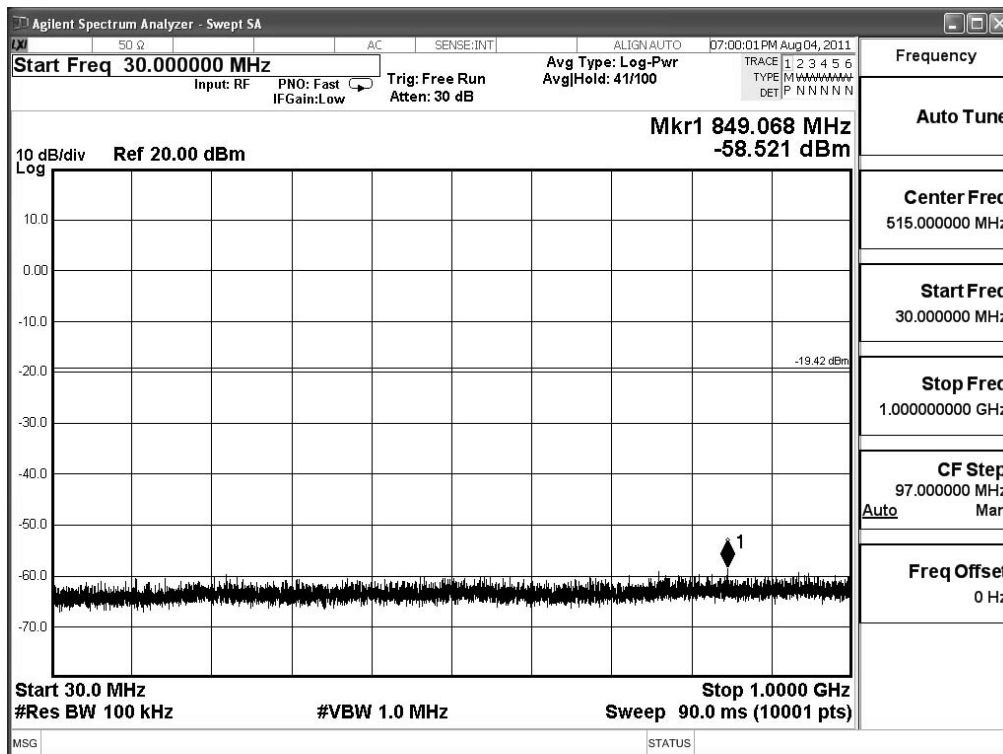


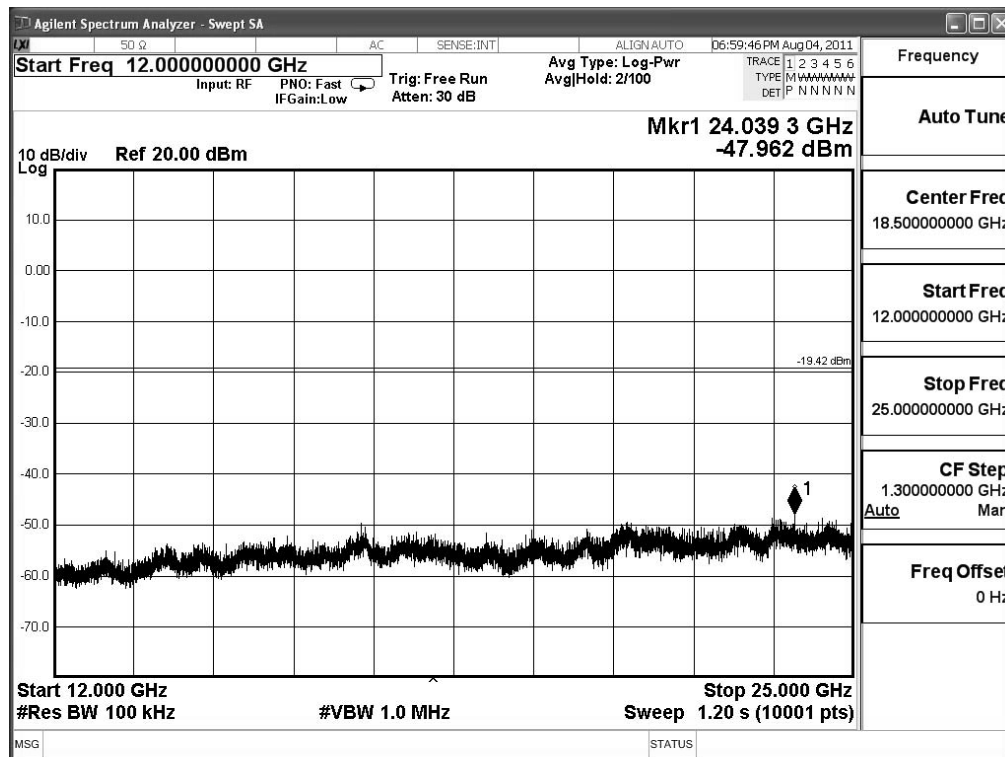
Channel 06 (2437MHz)





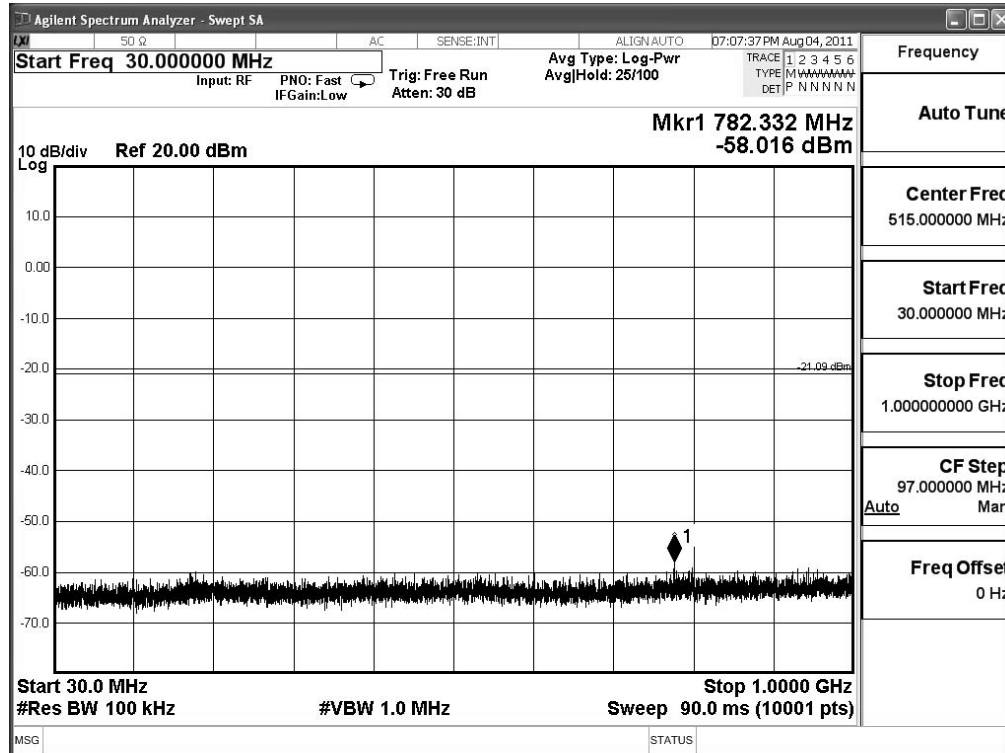
Channel 11 (2462MHz)

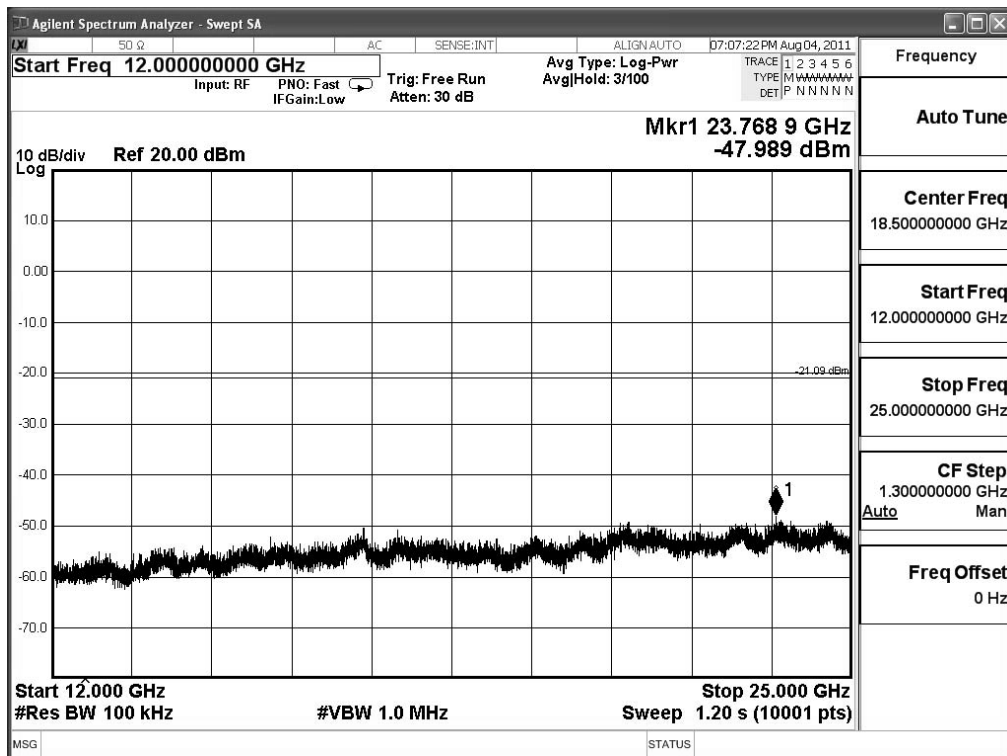
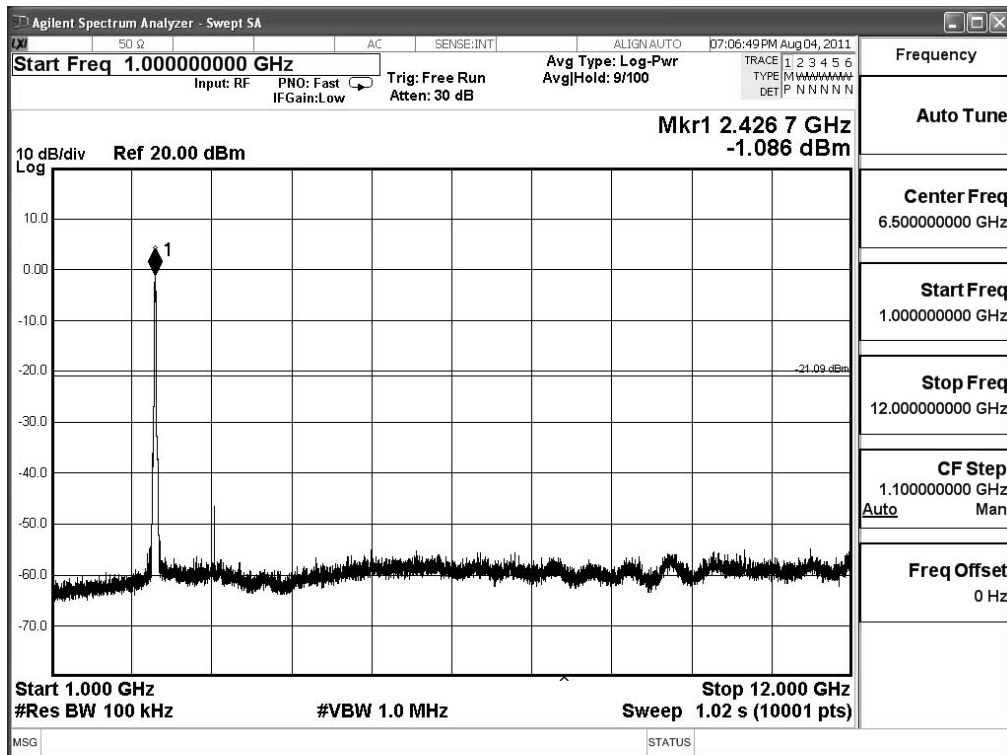




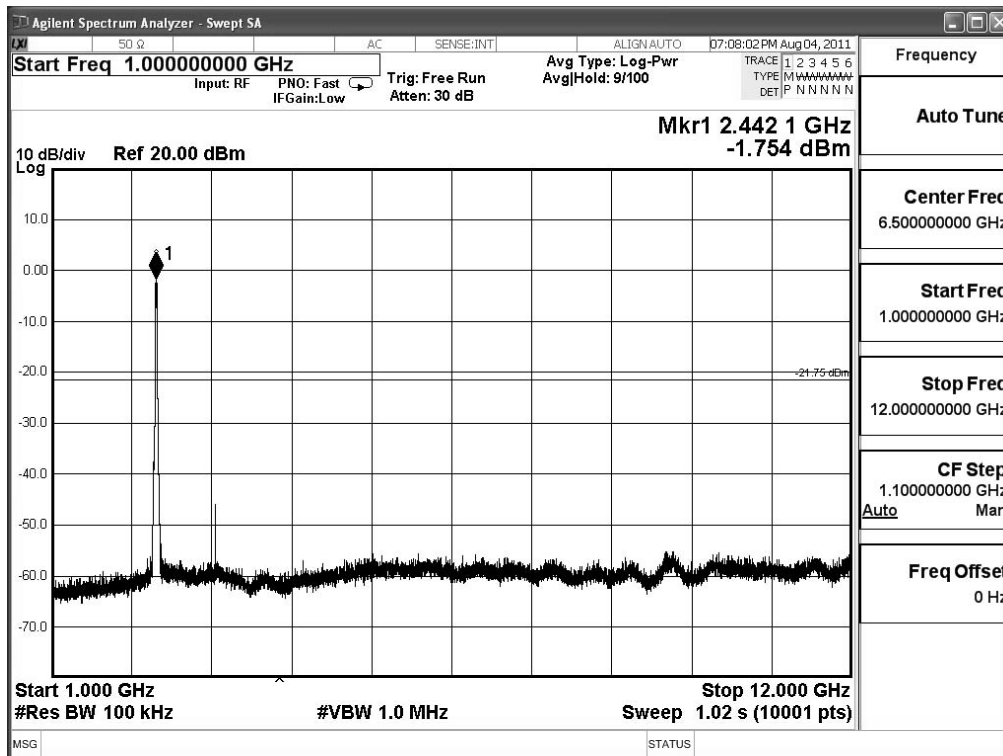
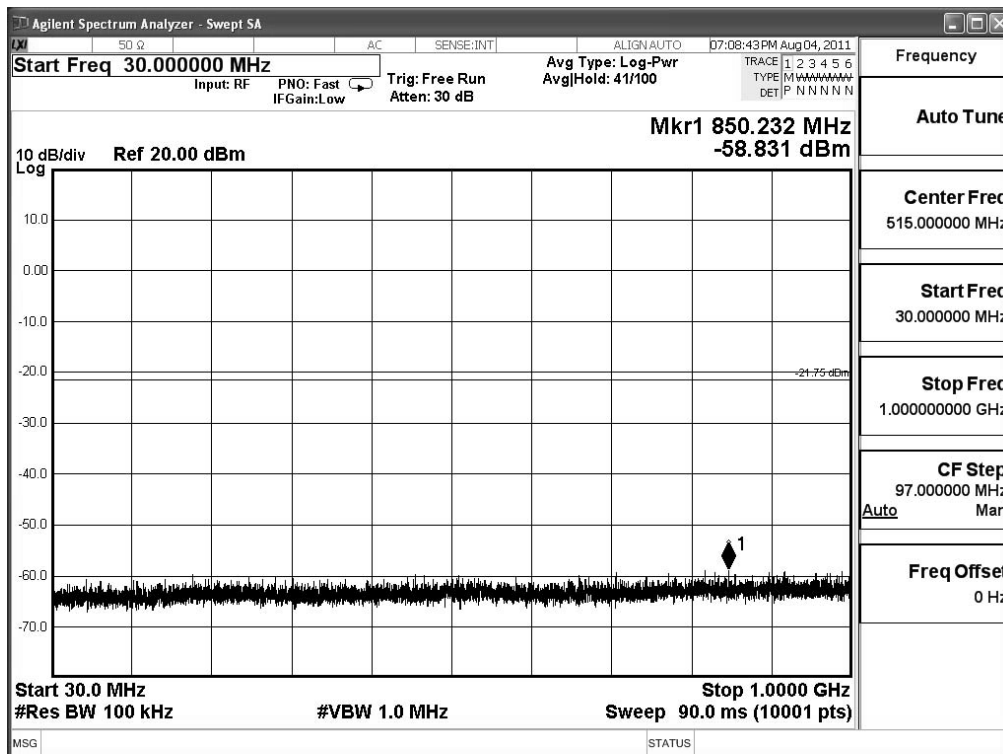
Product : IEEE 802.11b/g/n WIFI/ BT Combo slim module
 Test Item : RF Antenna Conducted Spurious
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

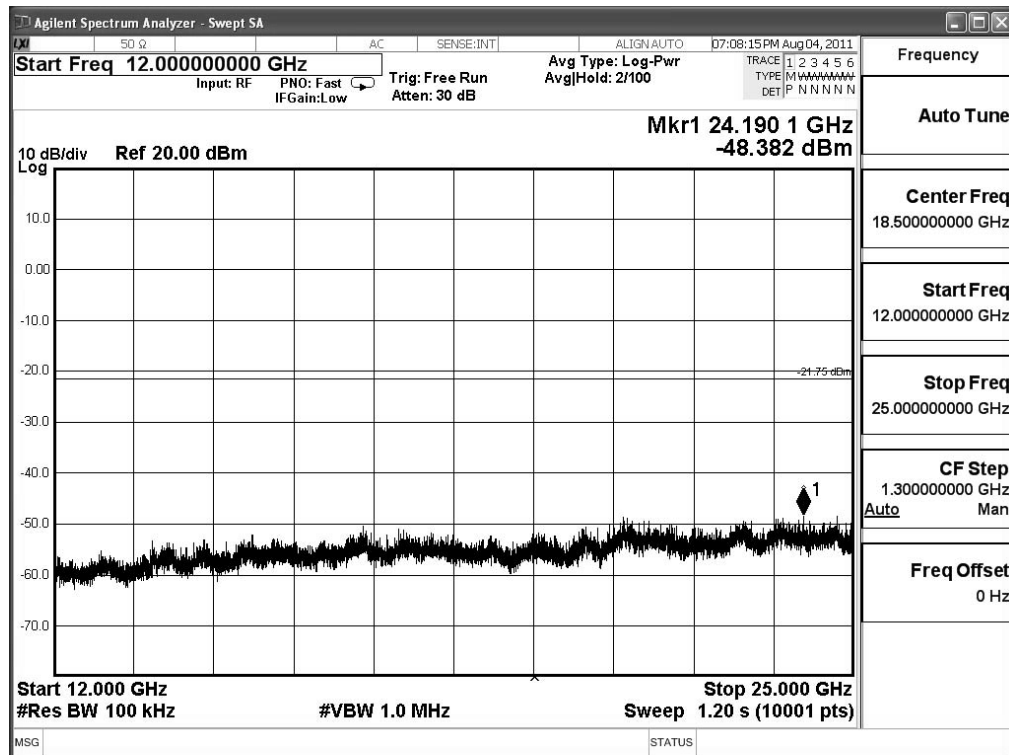
Channel 01 (2422MHz)





Channel 04 (2437MHz)





Channel 07 (2452MHz)

