

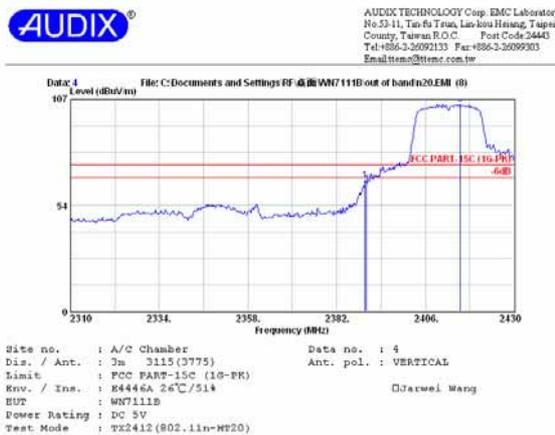
Date of Test : Oct. 11, 2011 Temperature : 26

EUT : WLAN Adapter Card Humidity : 51%

Test Mode : 802.11n-HT20, Transmit, Channel: 01, Frequency: 2412MHz

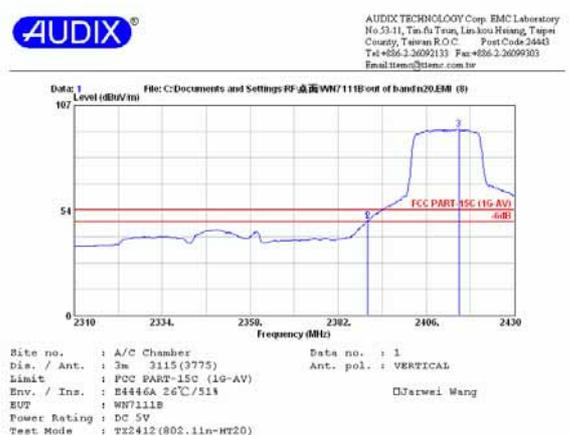
	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Vertical dBμV	Emission Level Vertical dBμV/m	Limits dBμV/m	Margin dB
Peak *	2389.680	28.10	6.34	31.94	66.38	74.00	7.62
Average *	2389.920	28.10	6.34	13.51	47.95	54.00	6.05

- Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. Low frequency section (spurious in the restricted band 2310-2430MHz).
 3. ‘*’ The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.



Peak #	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2389.680	28.10	6.34	31.94	66.38	74.00	7.62	Peak
2	2390.040	28.10	6.34	29.43	63.07	74.00	10.13	Peak
3	2413.480	28.11	6.36	70.28	104.76	74.00	-30.76	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Average #	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2389.920	28.10	6.34	13.51	47.95	54.00	6.05	Average
2	2390.040	28.10	6.34	13.63	40.07	54.00	5.93	Average
3	2413.880	28.11	6.36	60.28	94.75	54.00	-40.75	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

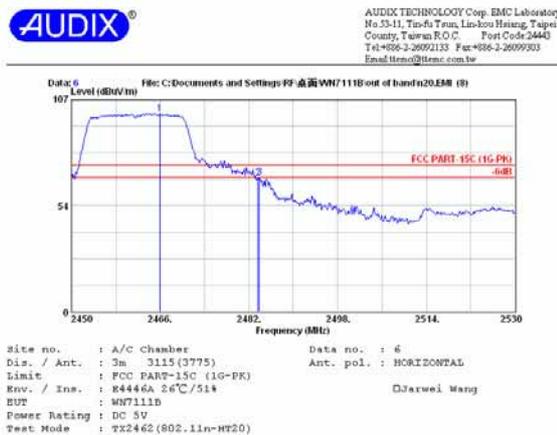
Date of Test : Oct. 11, 2011 Temperature : 26

EUT : WLAN Adapter Card Humidity : 51%

Test Mode : 802.11n-HT20, Transmit, Channel: 11, Frequency: 2462MHz

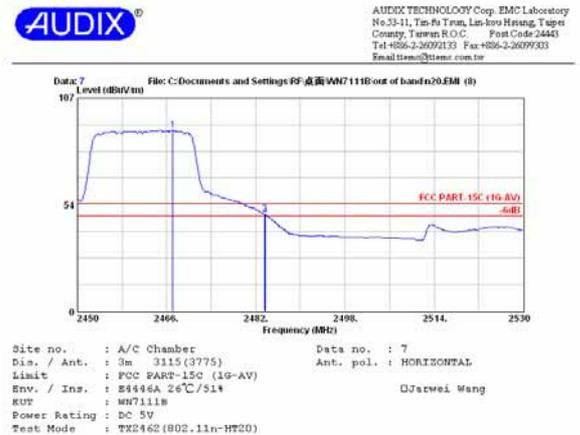
	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Horizontal dBμV	Emission Level Horizontal dBμV/m	Limits dBμV/m	Margin dB
Peak *	2483.920	28.18	6.45	33.02	67.65	74.00	6.35
Average *	2483.600	28.18	6.45	14.01	48.64	54.00	5.36

- Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. High frequency section (spurious in the restricted band 2450-2530MHz).
 3. '*' The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.



Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1 2465.920	28.17	6.42	65.43	100.02	74.00	-26.02	Peak X
2 2483.600	28.18	6.45	32.70	67.34	74.00	6.66	Peak
3 2483.920	28.18	6.45	33.02	67.65	74.00	6.35	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1 2467.120	28.17	6.42	56.23	90.82	54.00	-36.82	Average #
2 2483.600	28.18	6.45	14.01	48.65	54.00	5.35	Average !
3 2483.680	28.18	6.45	13.88	48.52	54.00	5.48	Average !

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : Oct. 11, 2011 Temperature : 26

EUT : WLAN Adapter Card Humidity : 51%

Test Mode : 802.11n-HT20, Transmit, Channel: 11, Frequency: 2462MHz

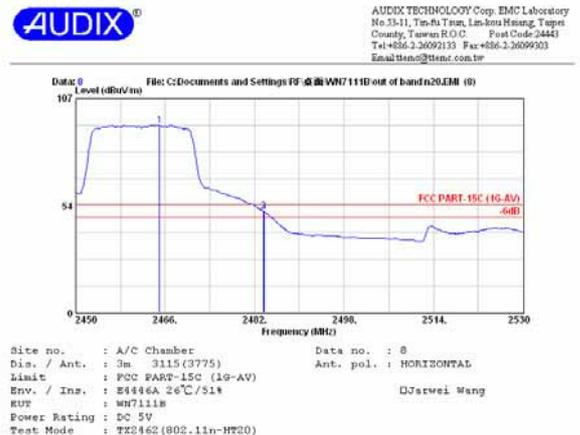
	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Vertical dBμV	Emission Level Vertical dBμV/m	Limits dBμV/m	Margin dB
Peak *	2483.760	28.18	6.45	36.25	70.88	74.00	3.12
Average *	2483.600	28.18	6.45	16.04	50.67	54.00	3.33

- Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. High frequency section (spurious in the restricted band 2450-2530MHz).
 3. '*' The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.



Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1 2464.960	28.17	6.42	68.45	103.04	74.00	-29.04	Peak X
2 2483.600	28.18	6.45	36.08	70.72	74.00	3.28	Peak i
3 2483.760	28.18	6.45	36.25	70.80	74.00	3.12	Peak i

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1 2464.960	28.17	6.42	59.09	93.68	54.00	-39.68	Average @
2 2483.600	28.18	6.45	16.04	50.68	54.00	3.32	Average i
3 2483.680	28.18	6.45	15.94	50.58	54.00	3.42	Average i

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

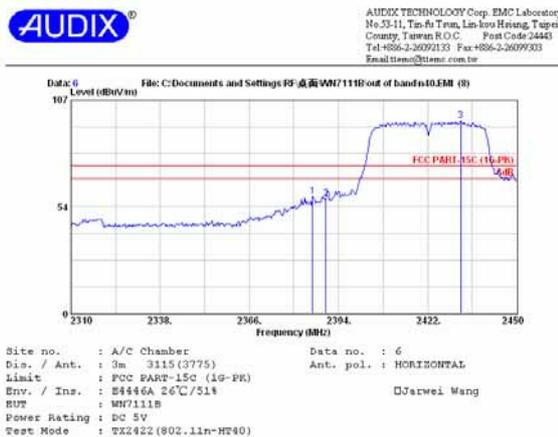
Date of Test : Oct. 11, 2011 Temperature : 26

EUT : WLAN Adapter Card Humidity : 51%

Test Mode : 802.11n-HT40, Transmit, Channel: 03, Frequency: 2422MHz

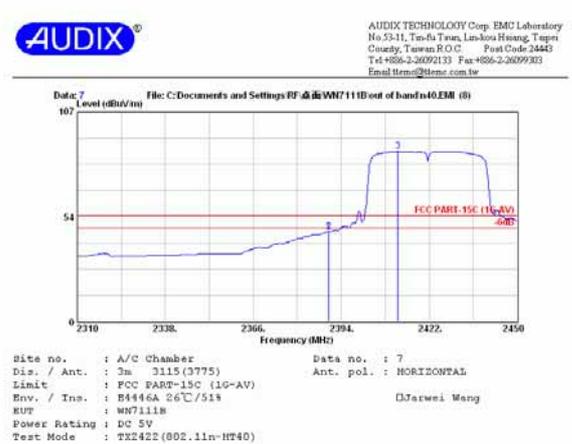
	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Horizontal dBμV	Emission Level Horizontal dBμV/m	Limits dBμV/m	Margin dB
Peak *	2385.880	28.10	6.33	24.27	58.70	74.00	15.30
Average *	2389.940	28.10	6.34	11.61	46.05	54.00	7.95

- Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. Low frequency section (spurious in the restricted band 2310-2450MHz).
 3. '*' The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.



Peak	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2385.880	28.10	6.33	24.27	58.70	74.00	15.30	Peak
2	2390.080	28.10	6.34	23.34	57.78	74.00	16.22	Peak
3	2422.360	28.13	6.29	62.13	96.65	74.00	-22.65	Peak X

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Average	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2389.940	28.10	6.34	11.61	46.04	54.00	7.96	Average
2	2390.080	28.10	6.34	11.60	46.04	54.00	7.96	Average
3	2412.060	28.11	6.36	52.35	86.83	54.00	-32.83	Average X

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

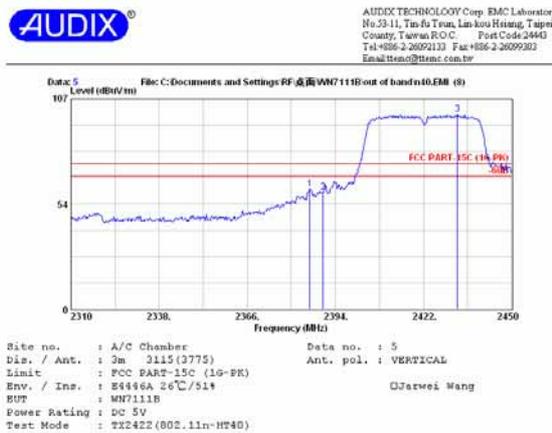
Date of Test : Oct. 11, 2011 Temperature : 26

EUT : WLAN Adapter Card Humidity : 51%

Test Mode : 802.11n-HT40, Transmit, Channel: 03, Frequency: 2422MHz

	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Vertical dBμV	Emission Level Vertical dBμV/m	Limits dBμV/m	Margin dB
Peak *	2385.880	28.10	6.33	26.91	61.34	74.00	12.66
Average *	2389.520	28.10	6.34	14.94	49.38	54.00	4.62

- Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. Low frequency section (spurious in the restricted band 2310-2450MHz).
 3. ‘*’ The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.



Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1 2385.880	28.10	6.33	26.91	61.34	74.00	12.66	Peak
2 2390.090	28.10	6.34	14.94	49.38	74.00	14.33	Peak
3 2422.700	28.13	6.39	64.73	95.25	74.00	-25.25	Peak X

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1 2389.520	28.10	6.34	14.94	49.38	54.00	4.62	Average I
2 2390.090	28.10	6.34	14.94	49.38	54.00	4.67	Average I
3 2422.060	28.11	6.36	54.70	89.18	54.00	-35.18	Average X

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

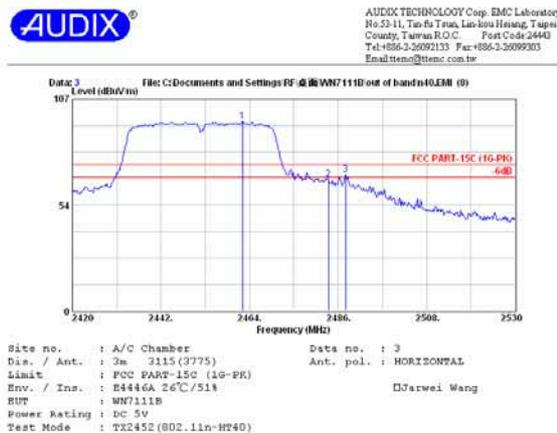
Date of Test : Oct. 11, 2011 Temperature : 26

EUT : WLAN Adapter Card Humidity : 51%

Test Mode : 802.11n-HT40, Transmit, Channel: 09, Frequency: 2452MHz

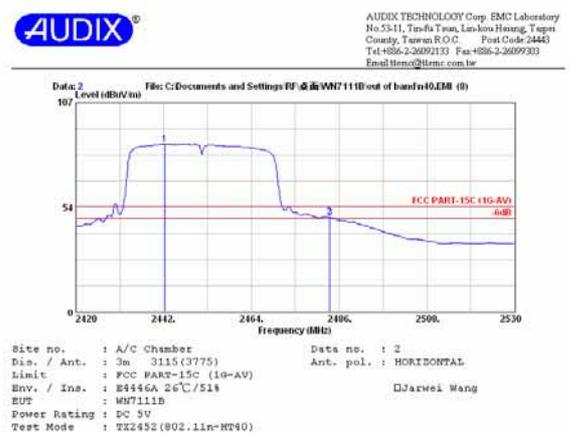
	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Horizontal dBμV	Emission Level Horizontal dBμV/m	Limits dBμV/m	Margin dB
Peak *	2487.870	28.20	6.45	34.31	68.96	74.00	5.04
Average *	2483.580	28.18	6.45	13.78	48.41	54.00	5.59

- Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. High frequency section (spurious in the restricted band 2420-2530MHz).
 3. '*' The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.



Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1 2462.250	28.17	6.42	61.29	95.88	74.00	-21.88	Peak X
2 2483.580	28.18	6.45	32.08	66.71	74.00	7.29	Peak
3 2487.870	28.20	6.45	34.31	68.96	74.00	5.04	Peak 1

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1 2442.220	28.15	6.40	51.32	85.87	54.00	-31.87	Average X
2 2483.580	28.18	6.45	13.78	48.42	54.00	5.58	Average 1
3 2487.870	28.18	6.45	13.69	48.32	54.00	5.68	Average 1

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

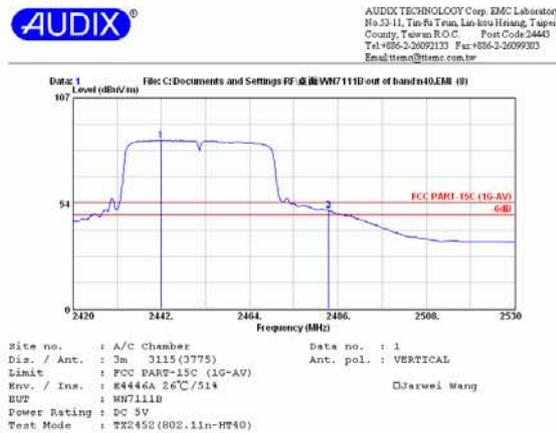
Date of Test : Oct. 11, 2011 Temperature : 26

EUT : WLAN Adapter Card Humidity : 51%

Test Mode : 802.11n-HT40, Transmit, Channel: 09, Frequency: 2452MHz

	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Vertical dBμV	Emission Level Vertical dBμV/m	Limits dBμV/m	Margin dB
Peak *	2488.420	28.20	6.45	35.78	70.43	74.00	3.57
Average *	2483.580	28.18	6.45	15.36	49.99	54.00	4.01

- Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. High frequency section (spurious in the restricted band 2420-2530MHz).
 3. '*' The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.



Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1 2441.890	28.15	6.40	51.07	85.62	54.00	-31.62	Average X
2 2483.580	28.18	6.45	15.36	49.99	54.00	4.01	Average i
3 2483.690	28.18	6.45	15.25	49.88	54.00	4.12	Average i

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1 2462.240	28.17	6.42	63.90	98.49	74.00	-24.49	Peak X
2 2483.580	28.18	6.45	32.71	67.35	74.00	6.65	Peak i
3 2488.420	28.20	6.45	35.78	70.43	74.00	3.57	Peak i

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

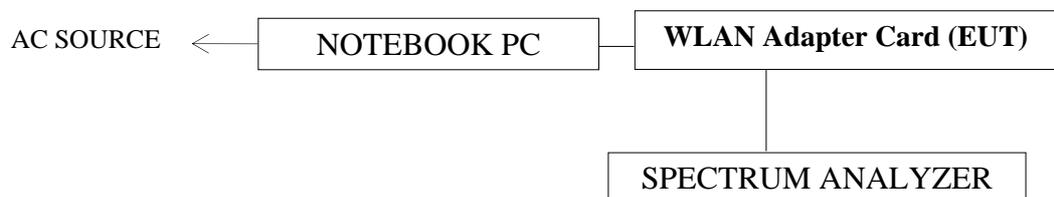
4. 6dB BANDWIDTH MEASUREMENT

4.1. Test Equipment

The following test equipment was used during the Emission Bandwidth measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9010A-507	MY49061167	Feb. 24, 11'	Feb. 23, 12'

4.2. Block Diagram of Test Setup



4.3. Specification Limits (§15.247(a)(2), RSS-210 A8.2 (a))

The minimum 6dB bandwidth shall be at least 500kHz.

4.4. Operating Condition of EUT

The test program “QA Tool” was used to enable the EUT to transmit data at different channel frequency individually.

4.5. Test Procedure

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer with 100kHz RBW and 100kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

The measurement guideline was according to KDB 558074.

4.6. Test Results

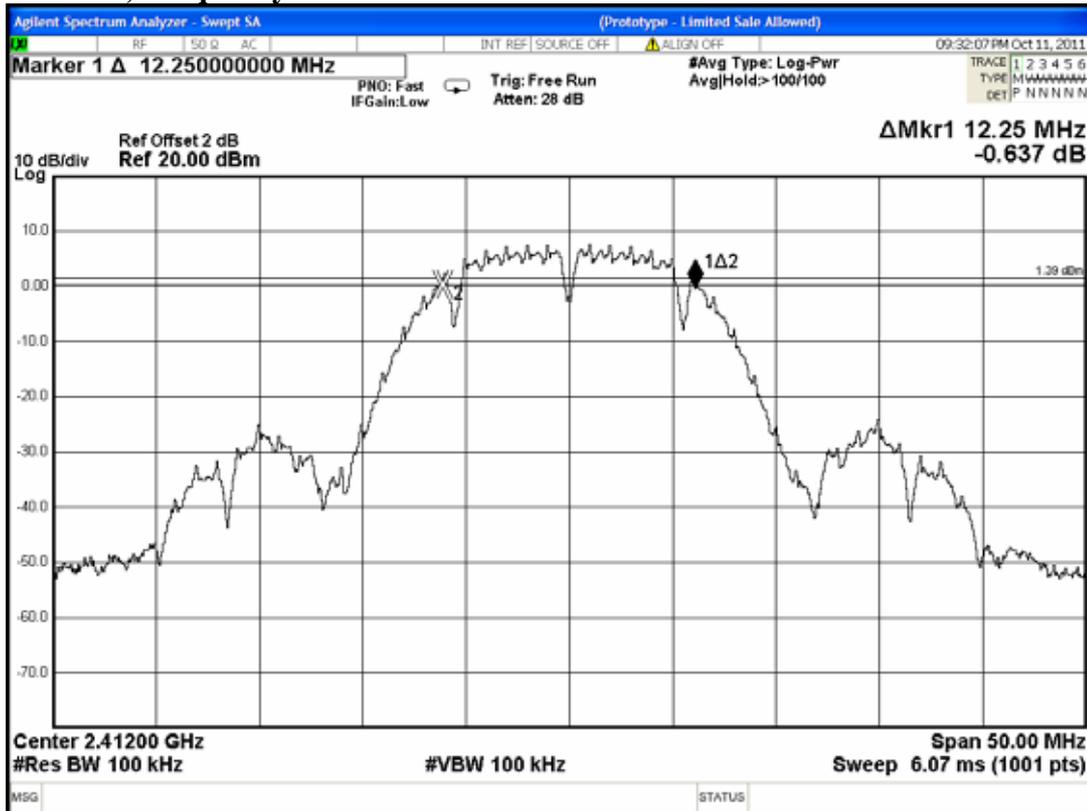
PASSED. All the test results are attached in next pages.

(Test Date: Oct. 11, 2011 Temperature : 26 Humidity : 53%)

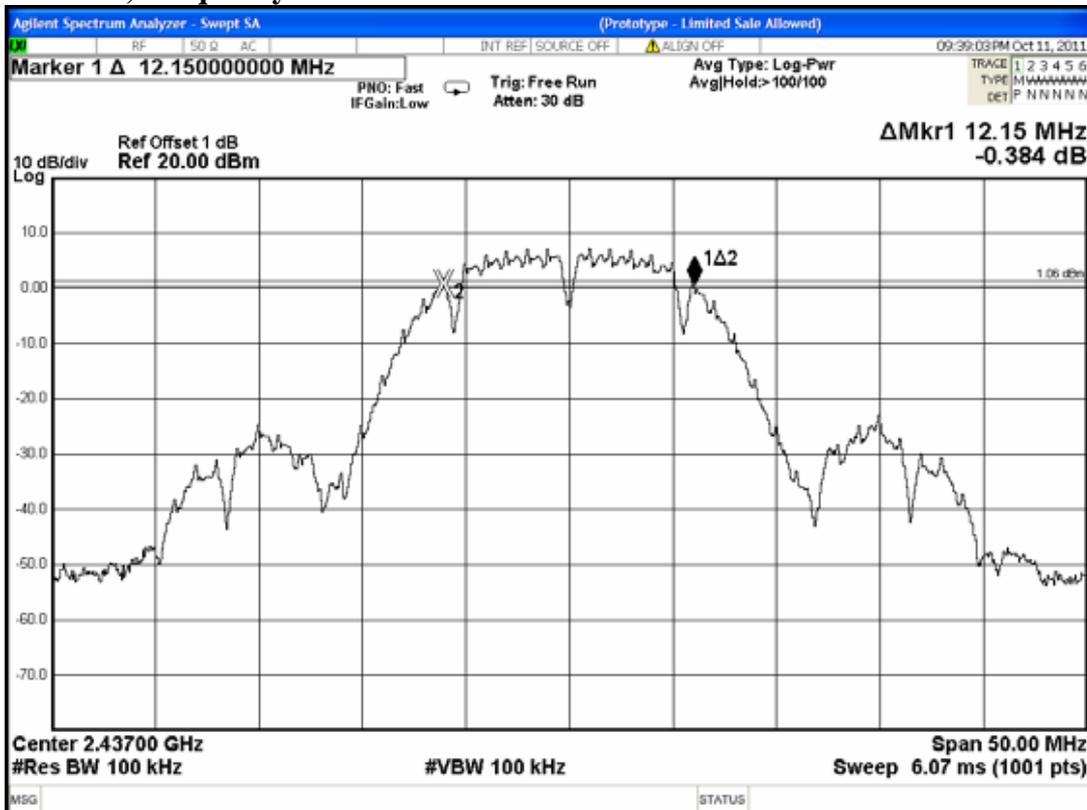
Mode	Type of Network	Channel	Frequency	6dB Bandwidth
1.	802.11b	CH 1	2412MHz	12.25MHz
2.		CH 6	2437MHz	12.15MHz
3.		CH 11	2462MHz	12.25MHz
4.	802.11g	CH 1	2412MHz	16.60MHz
5.		CH 6	2437MHz	16.60MHz
6.		CH 11	2462MHz	16.55MHz
7.	802.11n-HT20	CH 1	2412MHz	17.70MHz
8.		CH 6	2437MHz	17.75MHz
9.		CH 11	2462MHz	17.65MHz
10.	802.11n-HT40	CH 3	2422MHz	36.48MHz
11.		CH 6	2437MHz	36.48MHz
12.		CH 9	2452MHz	36.24MHz

[Limit: least 500kHz]

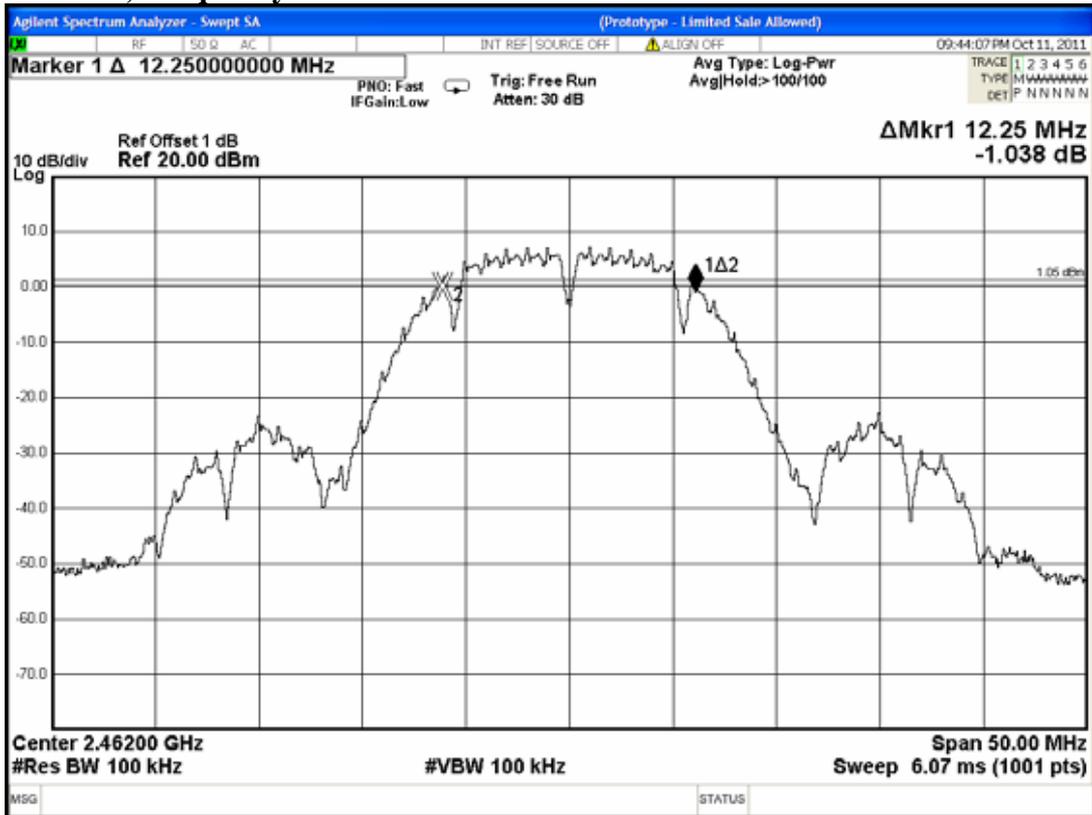
802.11b, Frequency: 2412MHz



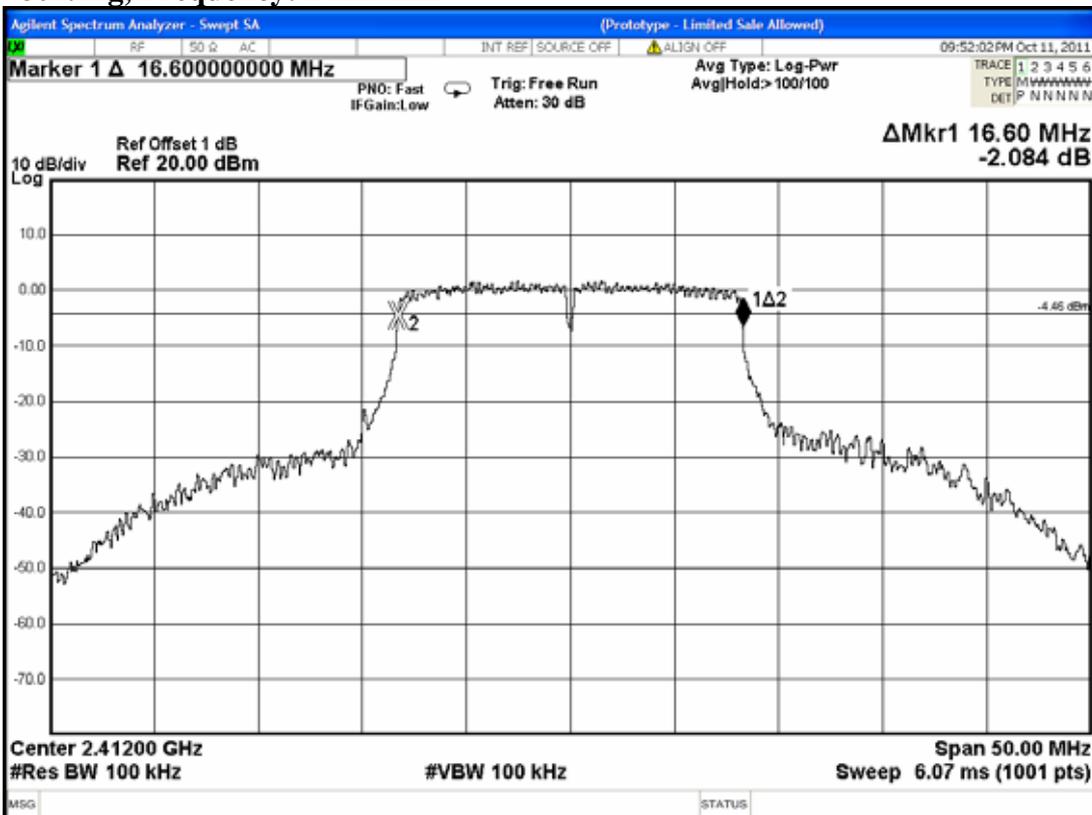
802.11b, Frequency: 2437MHz



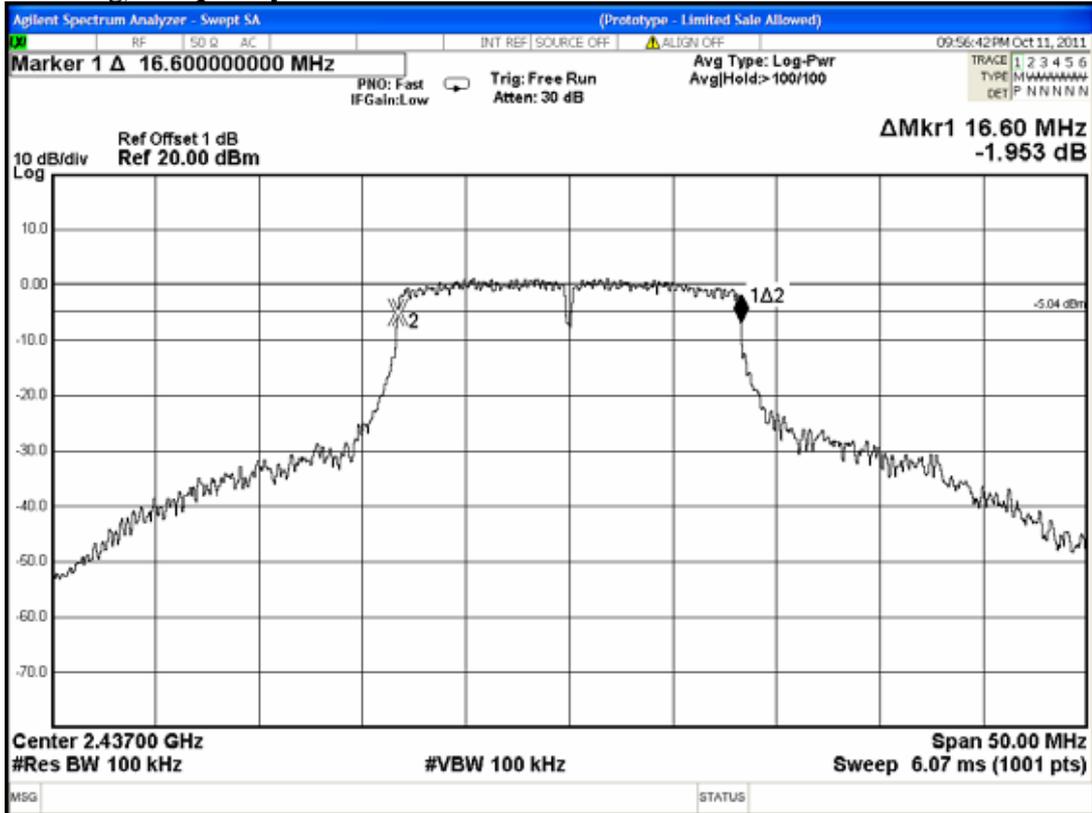
802.11b, Frequency: 2462MHz



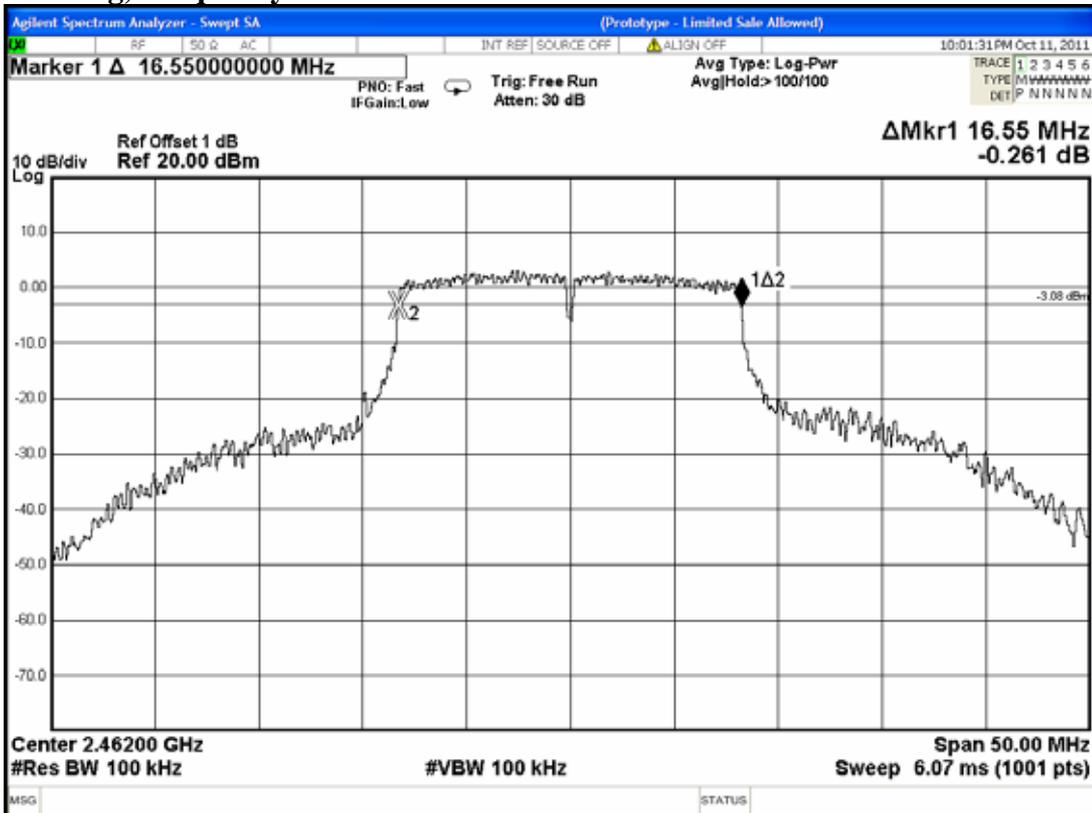
802.11g, Frequency: 2412MHz



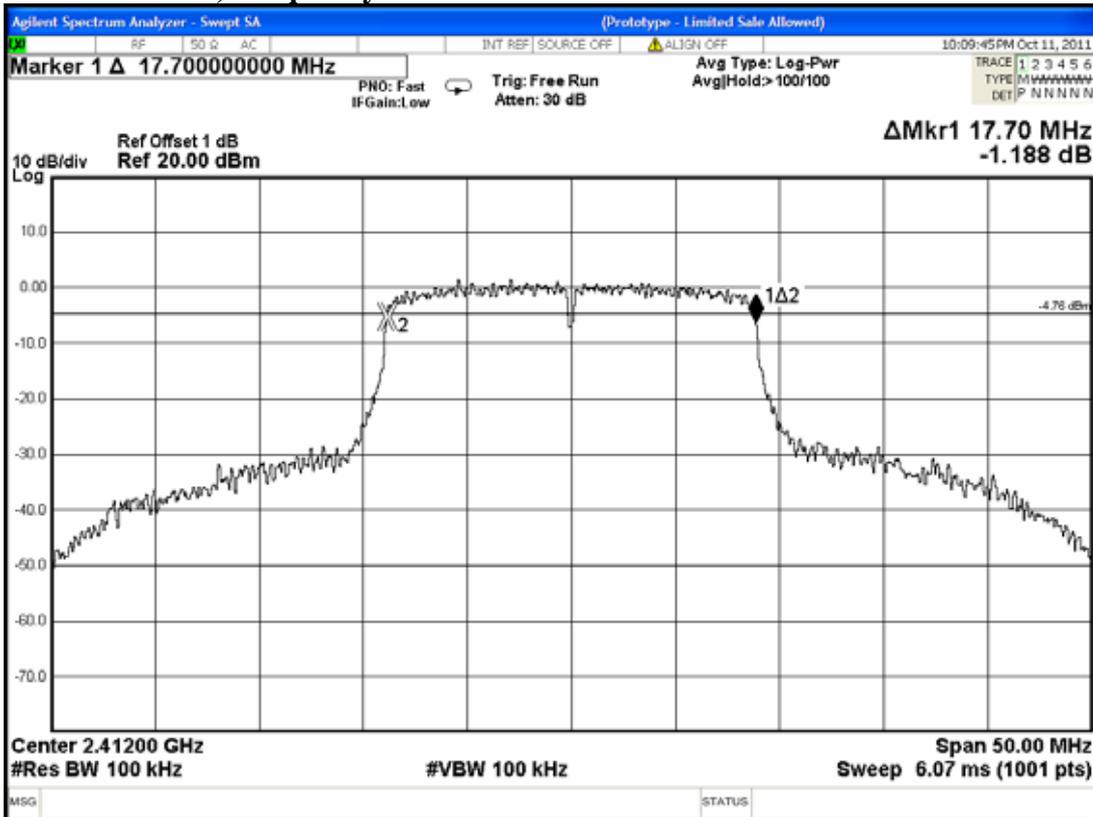
802.11g, Frequency: 2437MHz



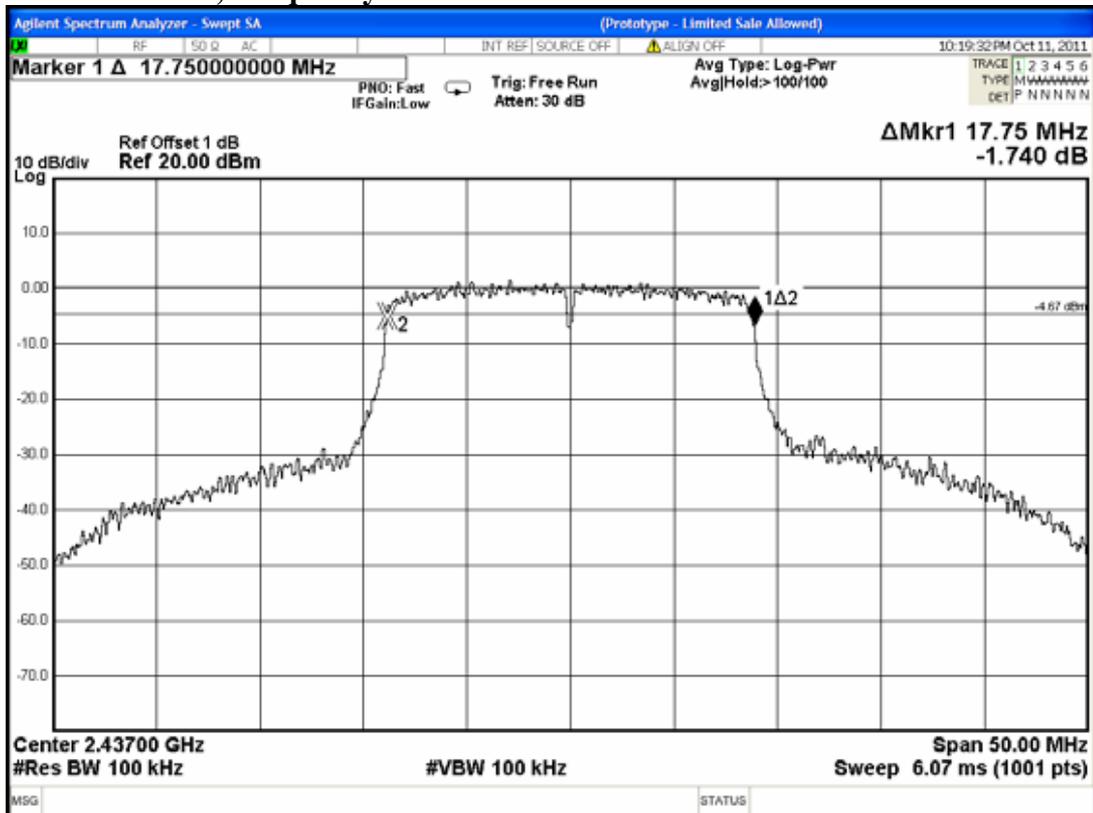
802.11g, Frequency: 2462MHz



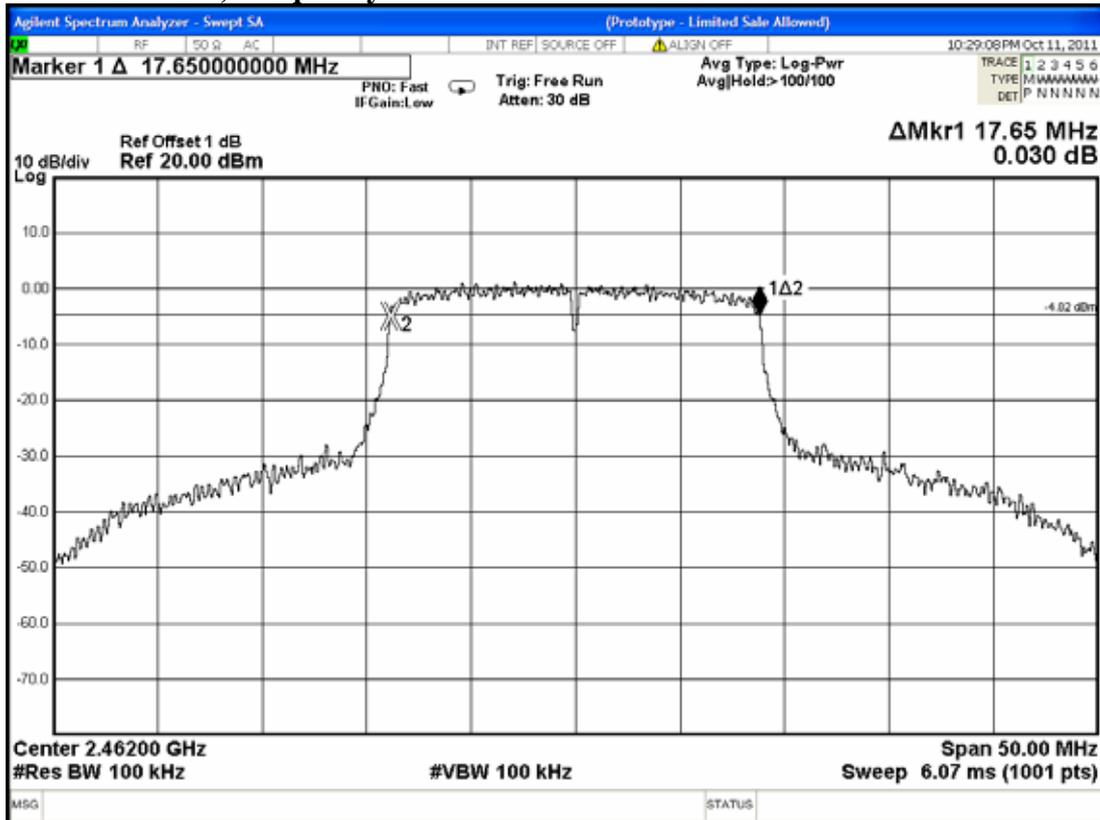
802.11n-HT20, Frequency: 2412MHz



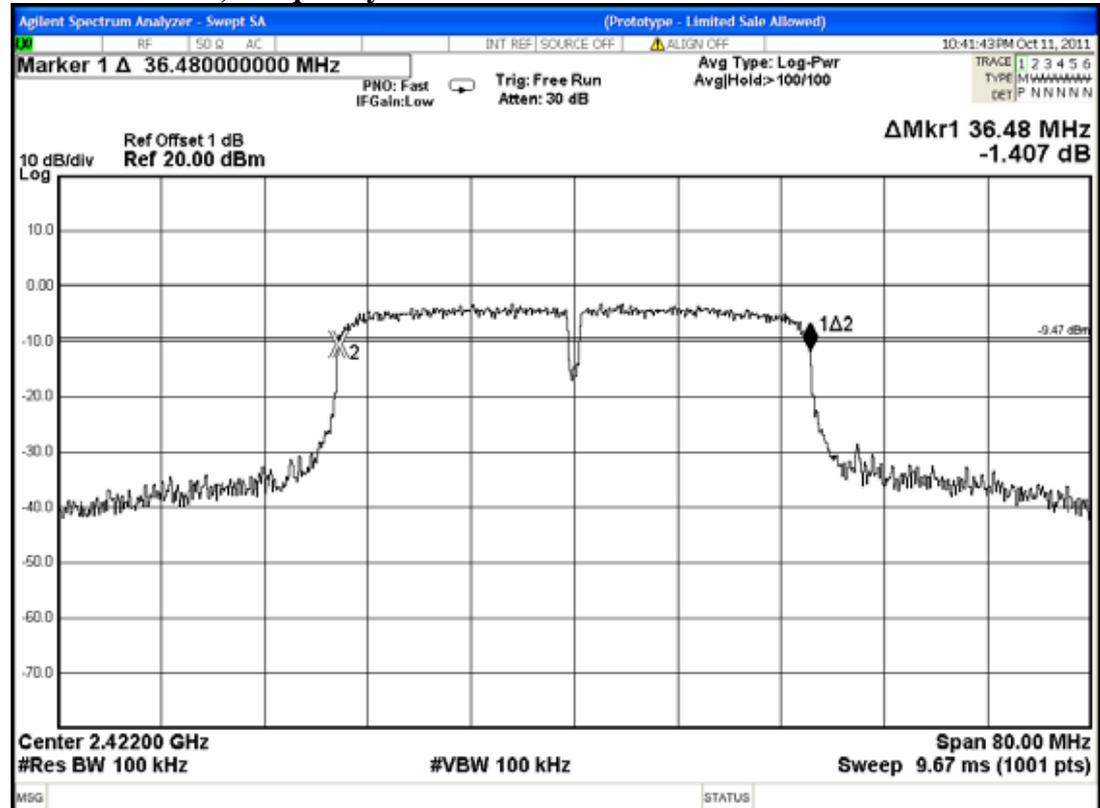
802.11n-HT20, Frequency: 2437MHz



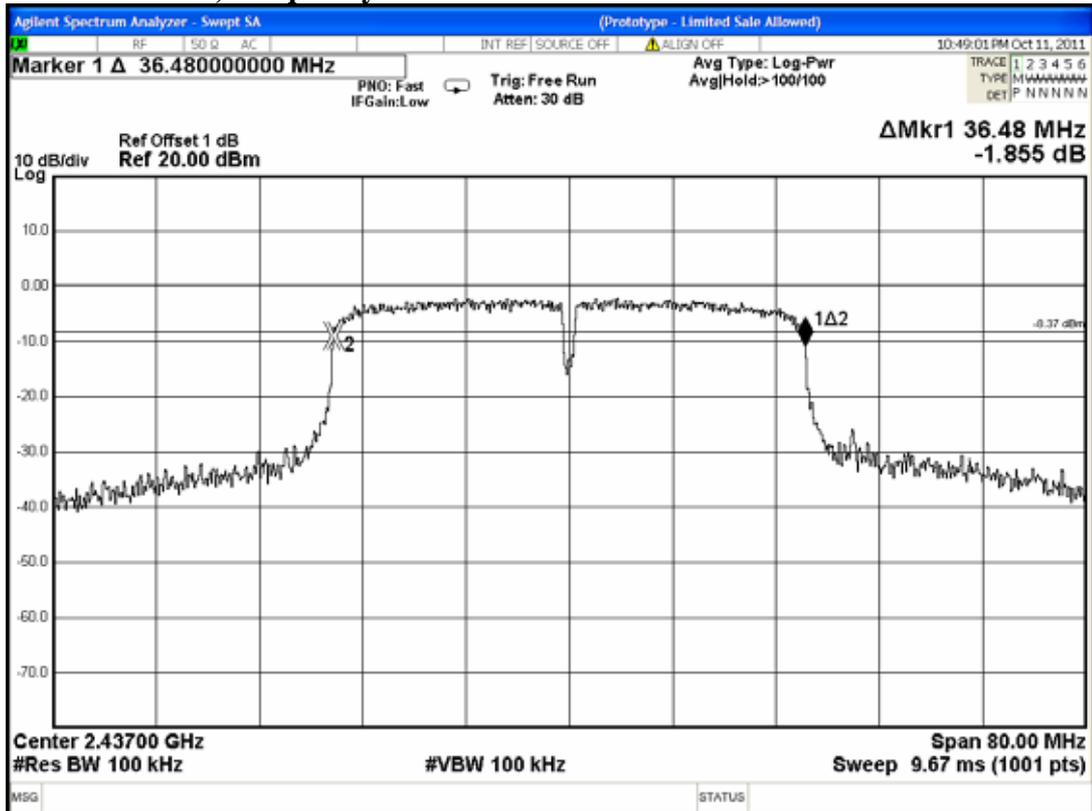
802.11n-HT20, Frequency: 2462MHz



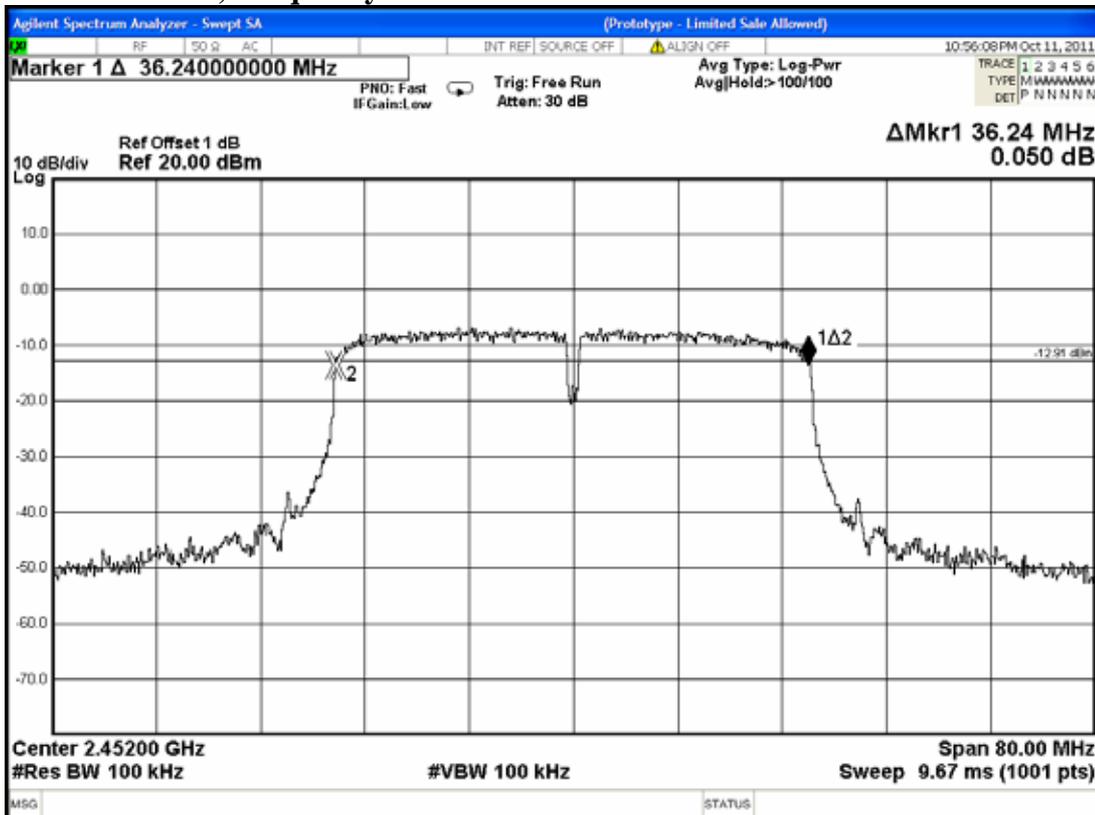
802.11n-HT40, Frequency: 2422MHz



802.11n-HT40, Frequency: 2437MHz



802.11n-HT40, Frequency: 2452MHz



5. MAXIMUM PEAK OUTPUT POWER MEASUREMENT

5.1. Test Equipment

The following test equipment was used during the maximum peak output power measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9010A-507	MY49061167	Feb. 24, 11'	Feb. 23, 12'

5.2. Block Diagram of Test Setup

The same as section.4.2.

5.3. Specification Limits (§15.247(b)-(3), RSS-210 A8.4 (4))

The Limits of maximum Peak Output Power for digital modulation in 2400-2483.5MHz is : 1Watt. (30dBm)

5.4. Operating Condition of EUT

The test program “QA Tool” was used to enable the EUT to transmit data at different channel frequency individually.

5.5. Test Procedure

Setting the spectrum span to encompass the EBW, RBW=1MHz and VBW=3MHz. Compute power by channel power function of spectrum analyzer.

The measurement guideline was according to KDB 558074.

5.6. Test Results

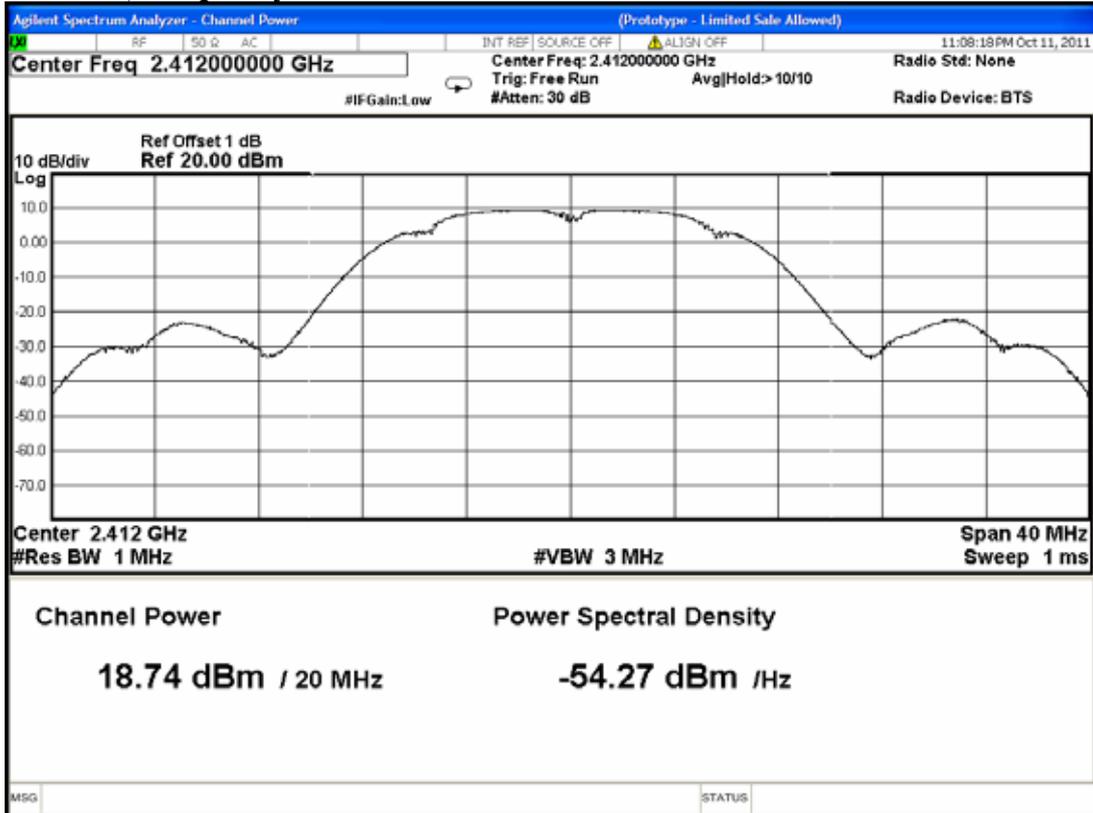
PASSED. All the test results are listed below.

(Test Date: Oct. 11, 2011 Temperature : 26 Humidity : 53%)

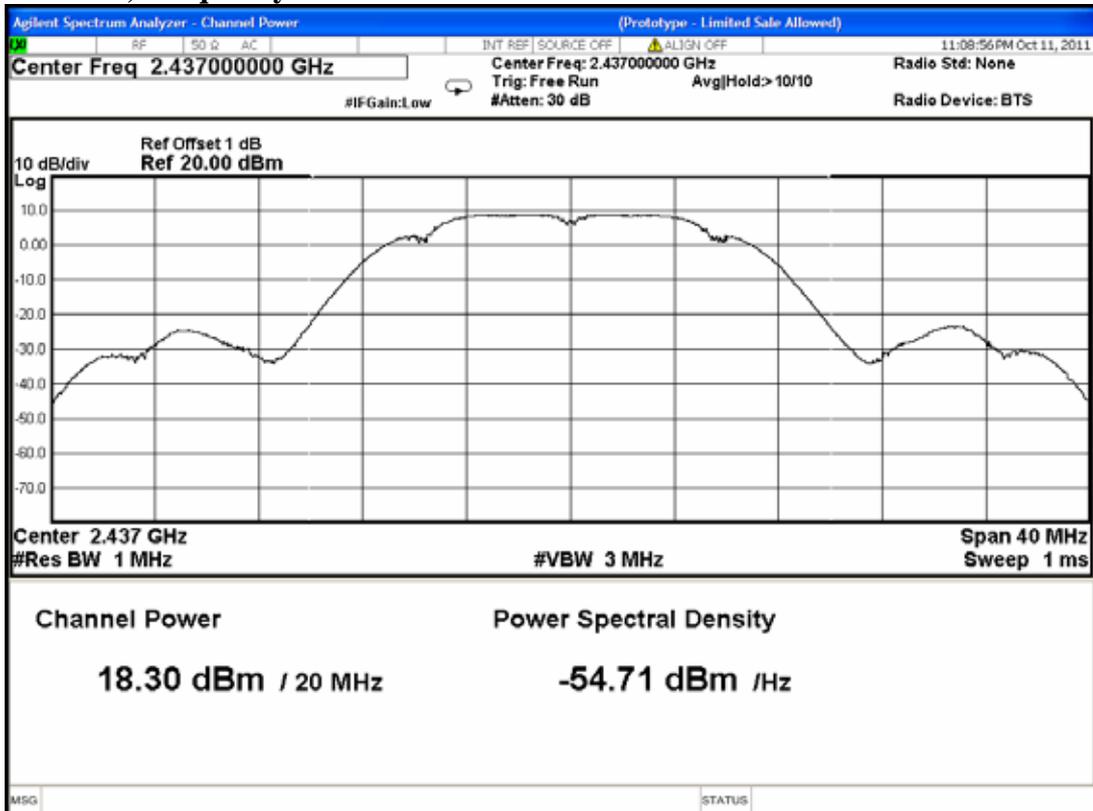
Mode	Type of Network	Channel	Frequency	Peak Output Power (dBm)
1.	802.11b	CH 1	2412MHz	18.74dBm
2.		CH 6	2437MHz	18.30dBm
3.		CH 11	2462MHz	17.59dBm
4.	802.11g	CH 1	2412MHz	14.30dBm
5.		CH 6	2437MHz	14.23dBm
6.		CH 11	2462MHz	15.12dBm
7.	802.11n-HT20	CH 1	2412MHz	14.33dBm
8.		CH 6	2437MHz	14.29dBm
9.		CH 11	2462MHz	14.69dBm
10.	802.11n-HT40	CH 3	2422MHz	12.16dBm
11.		CH 6	2437MHz	13.99dBm
12.		CH 9	2452MHz	10.88dBm

[Limit: 1Watt. (30dBm)]

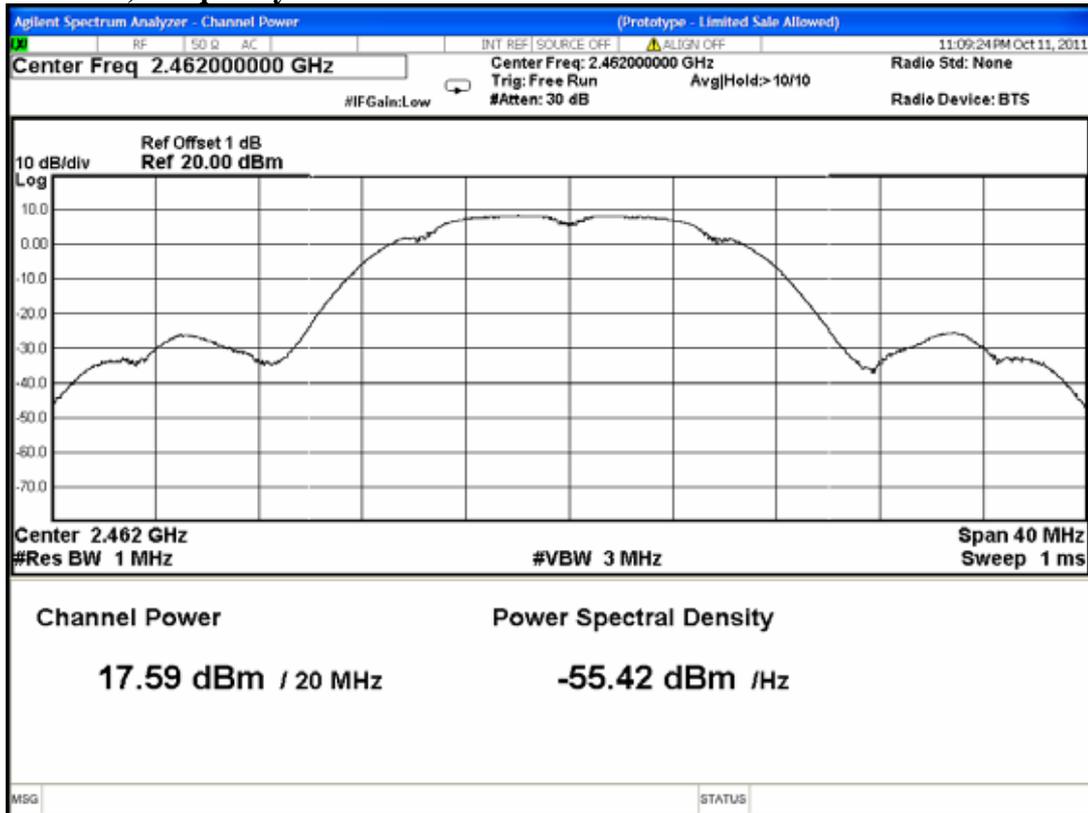
802.11b, Frequency: 2412MHz



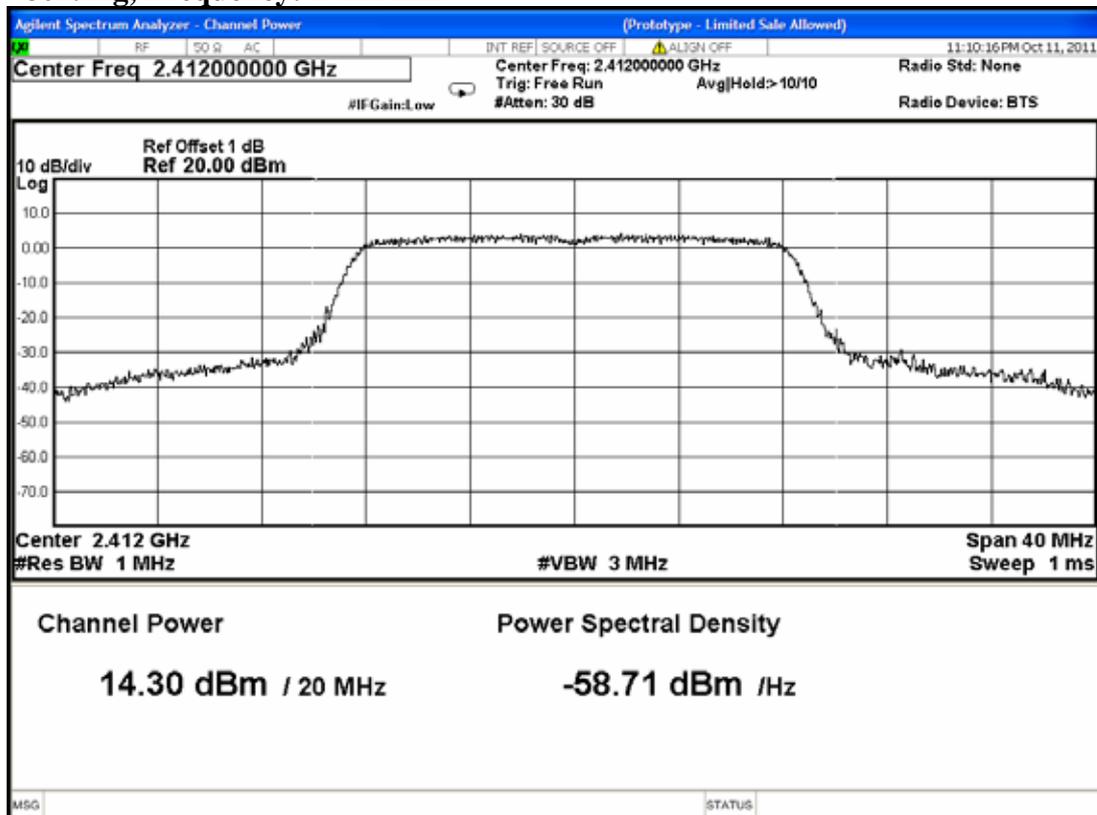
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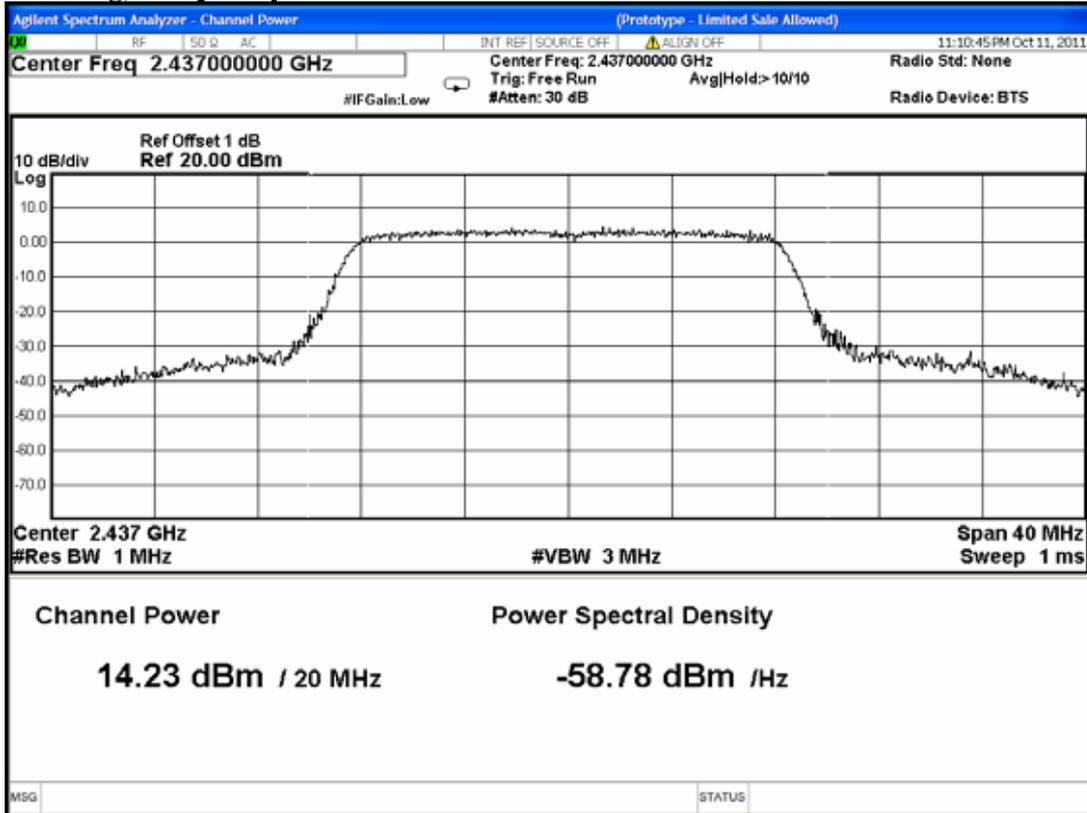
802.11b, Frequency: 2462MHz



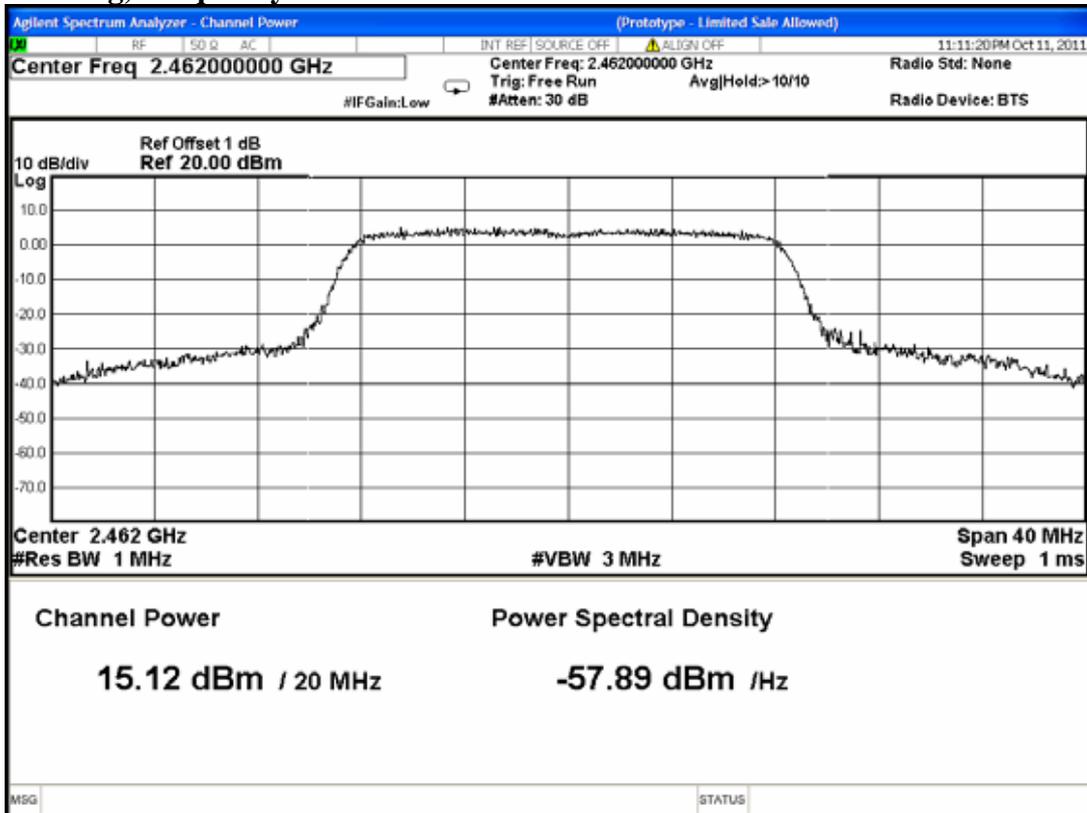
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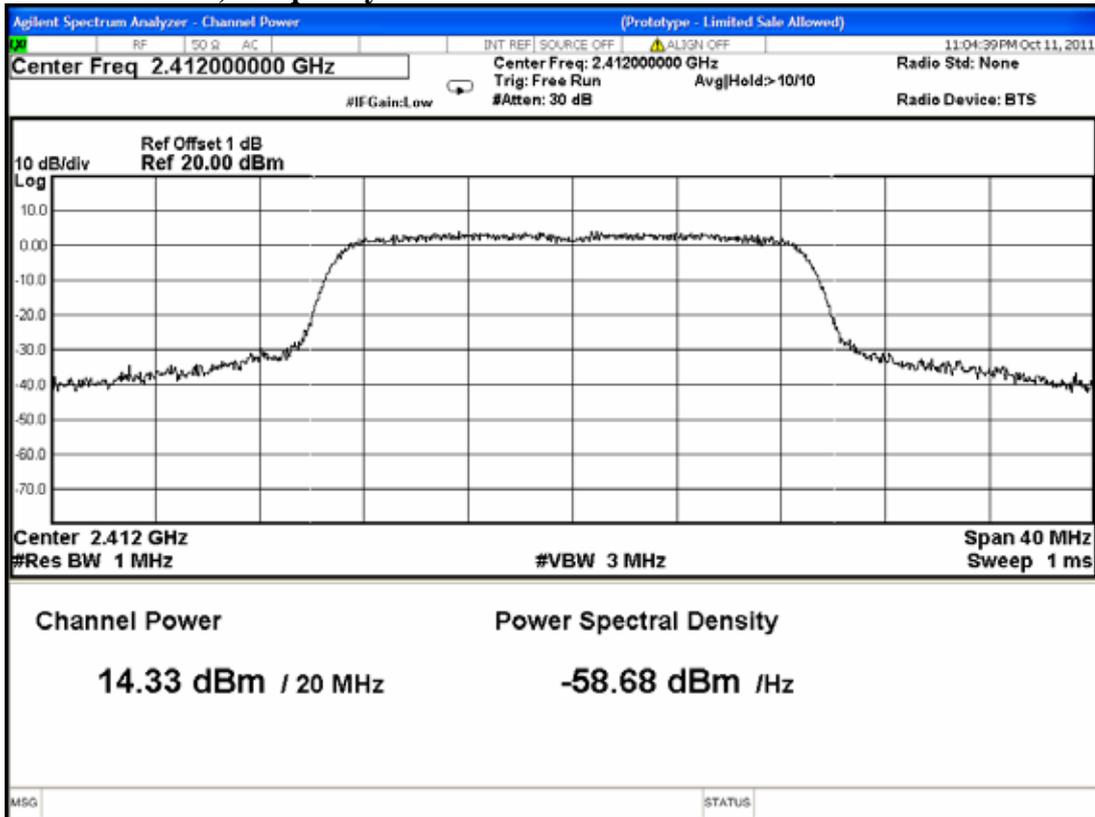
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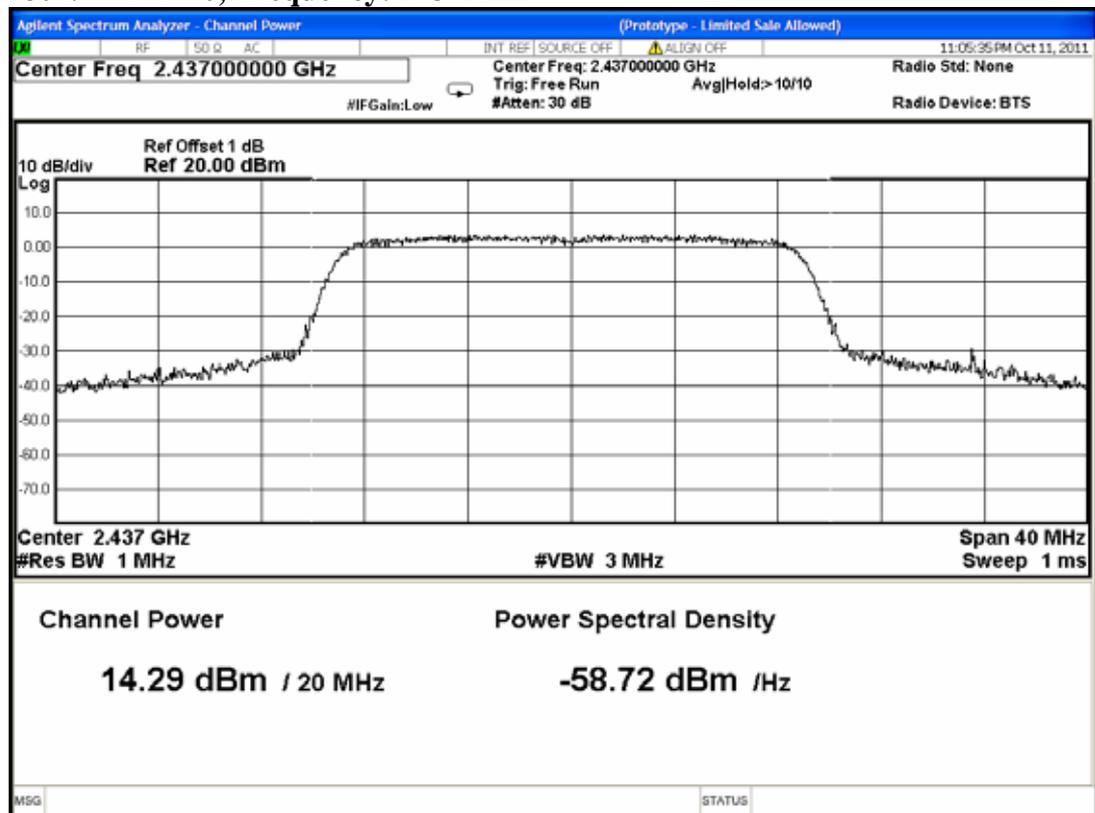
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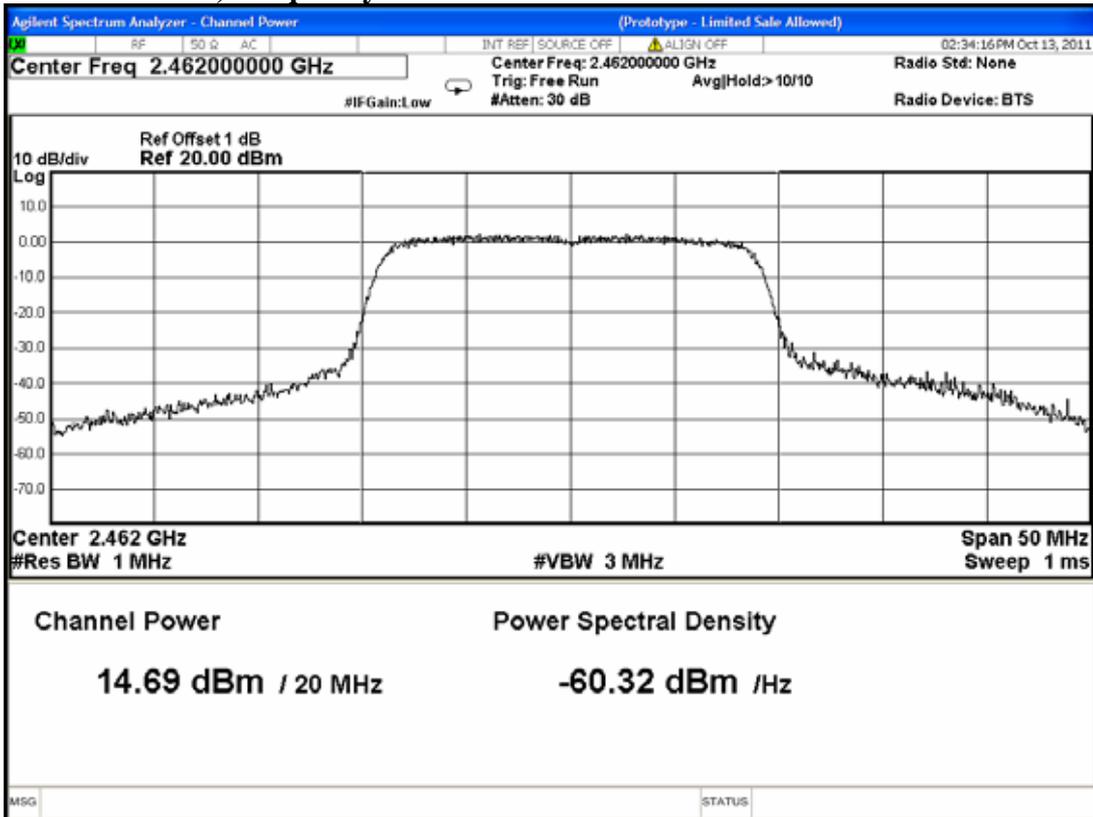
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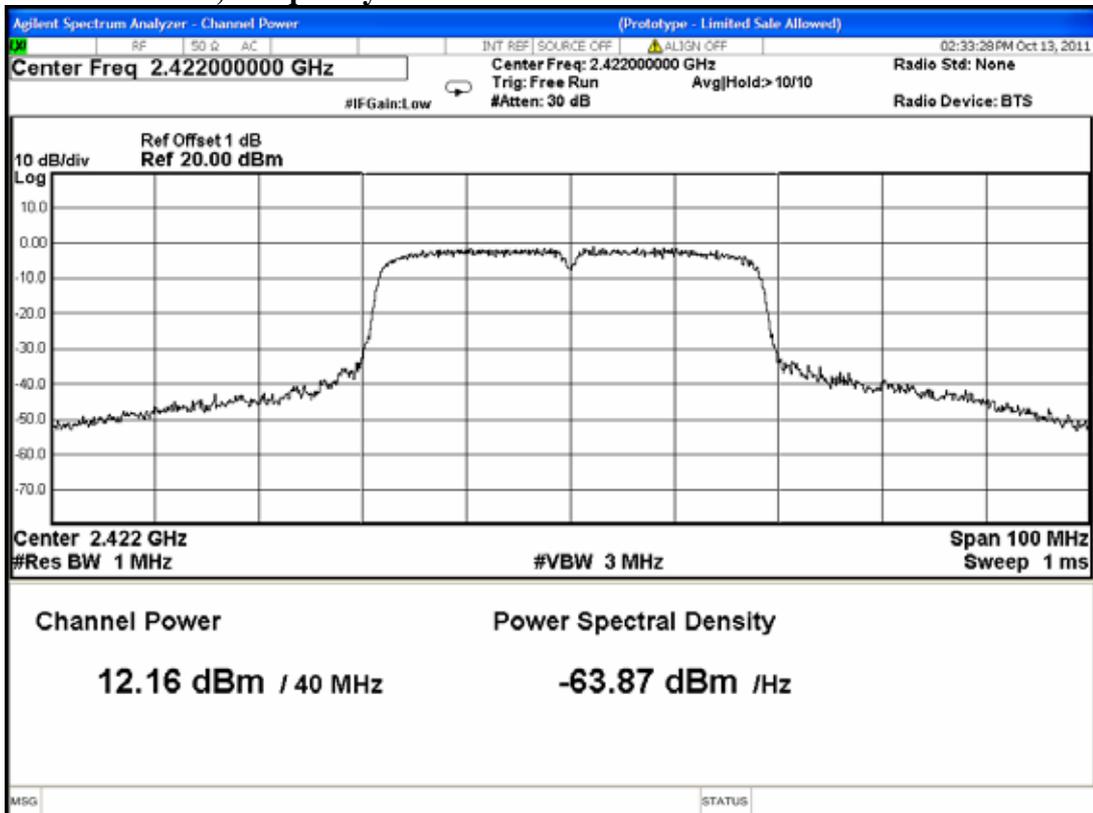
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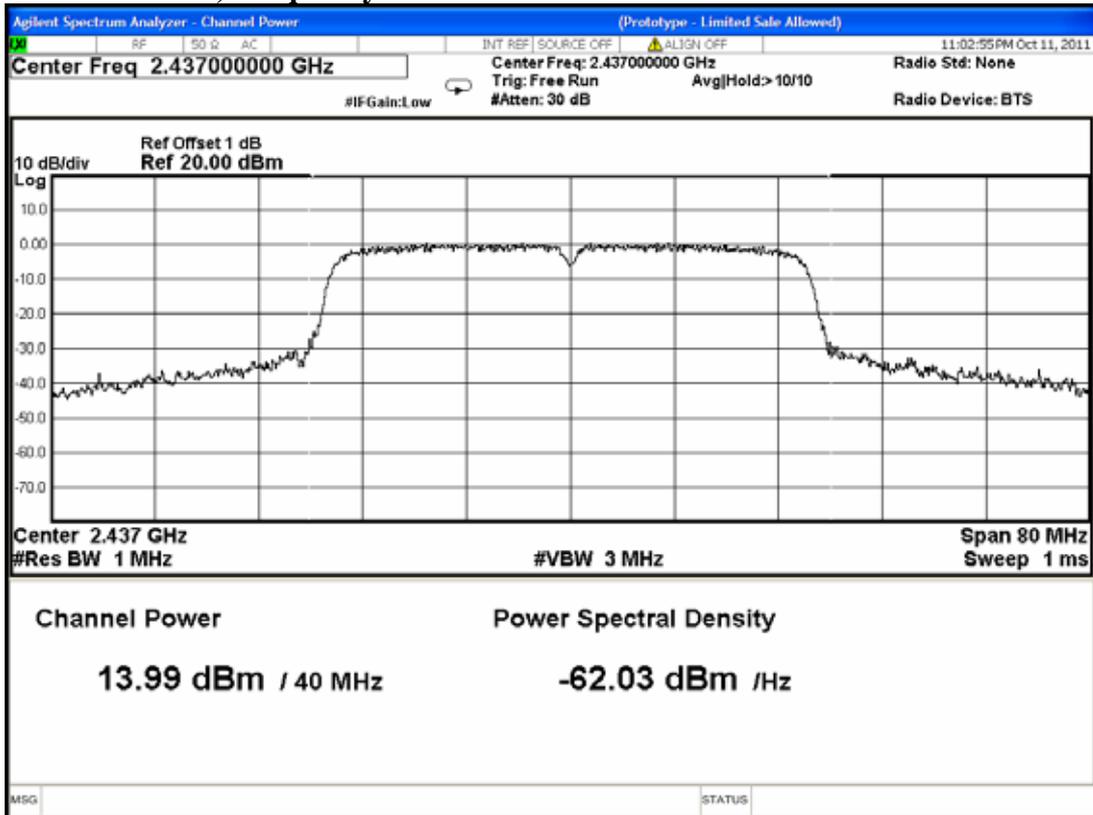
802.11n-HT20, Frequency: 2462MHz



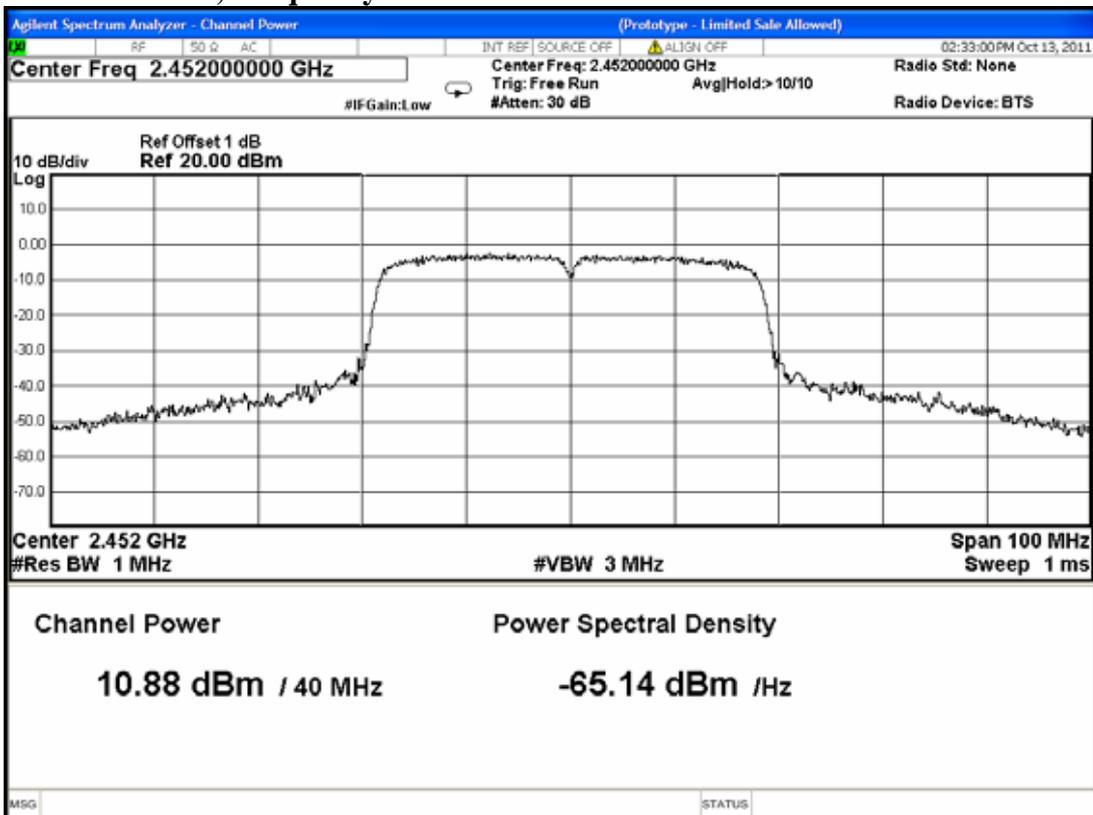
802.11n-HT40, Frequency: 2422MHz



802.11n-HT40, Frequency: 2437MHz



802.11n-HT40, Frequency: 2452MHz



6. EMISSION LIMITATIONS MEASUREMENT

6.1. Test Equipment

The following test equipment was used during the emission limitations test :

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9010A-507	MY49061167	Feb. 24, 11'	Feb. 23, 12'
2.	Spectrum Analyzer	Agilent	E4446A	US44300366	Aug. 04, 11'	Aug. 03, 12'

6.2. Block Diagram of Test Setup

The same as section.4.2.

6.3. Specification Limits (§15.247(c), RSS-210 A8.5)

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz 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 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)).(This test result attaching to §3.6.3)

6.4. Operating Condition of EUT

The test program “QA Tool” was used to enable the EUT to transmit data at different channel frequency individually.

6.5. Test Procedure

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer with 100kHz RBW and 100kHz VBW.

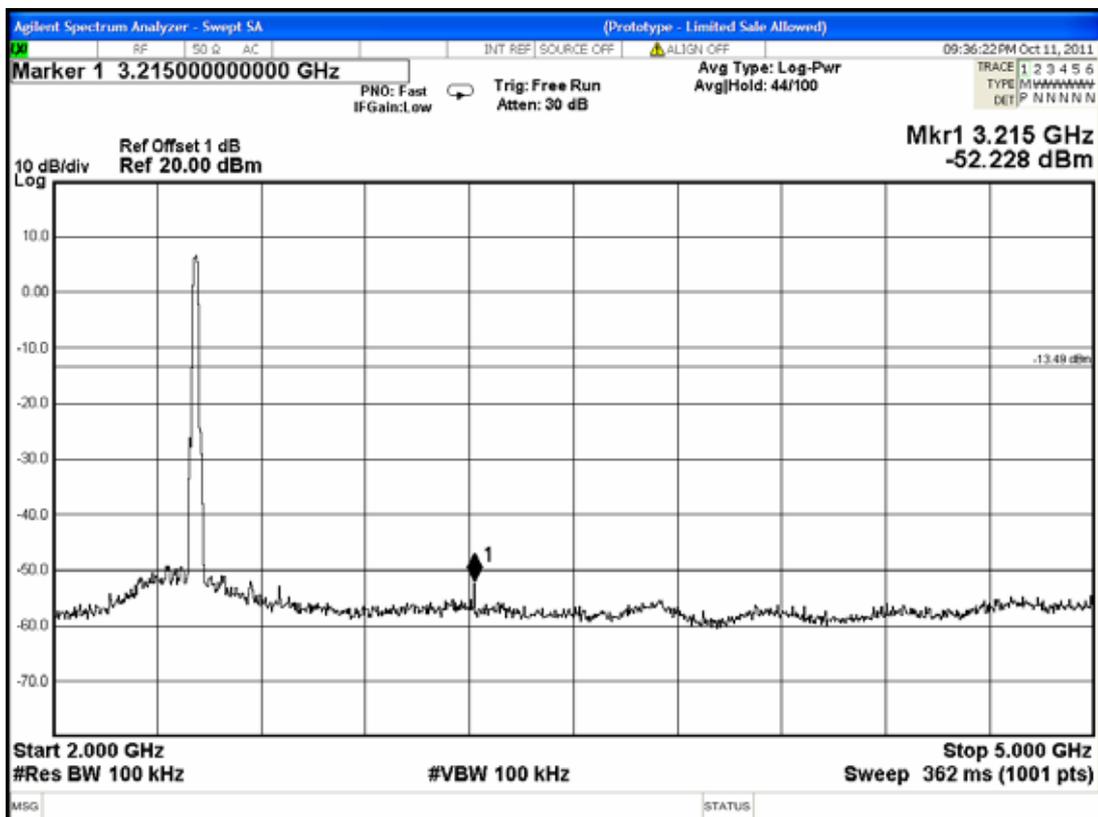
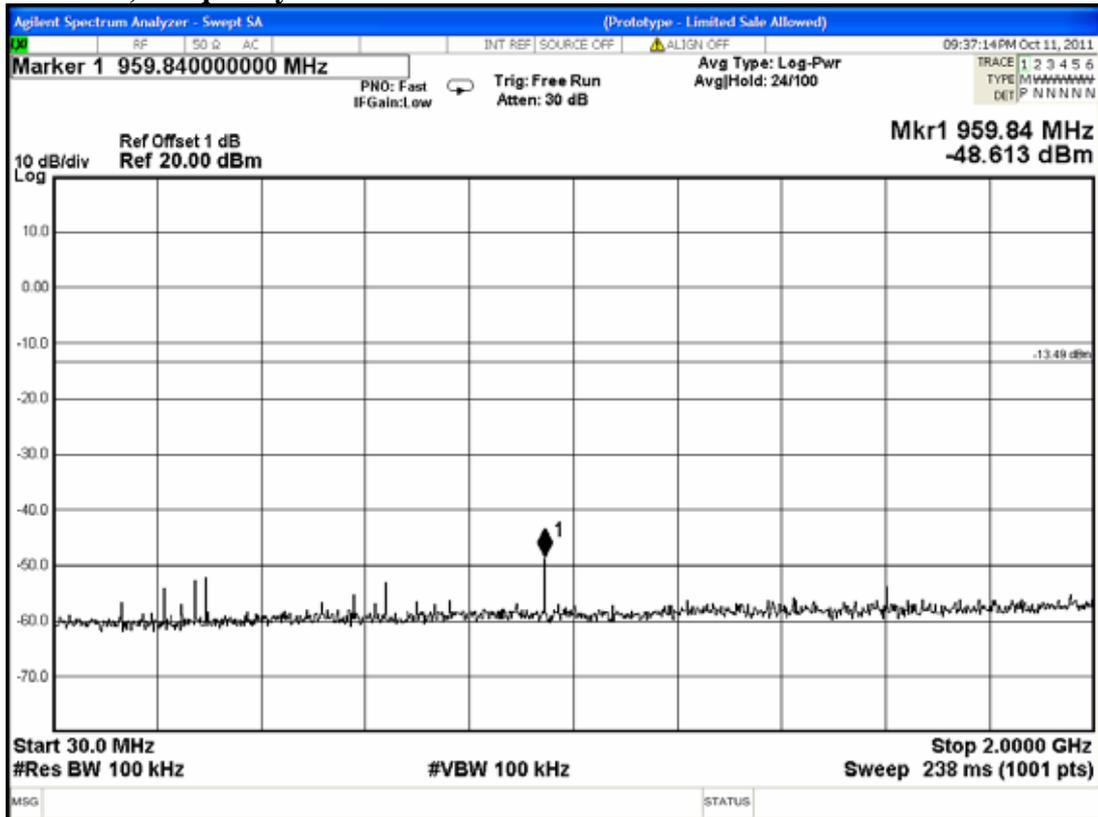
The measurement guideline was according to KDB 558074.

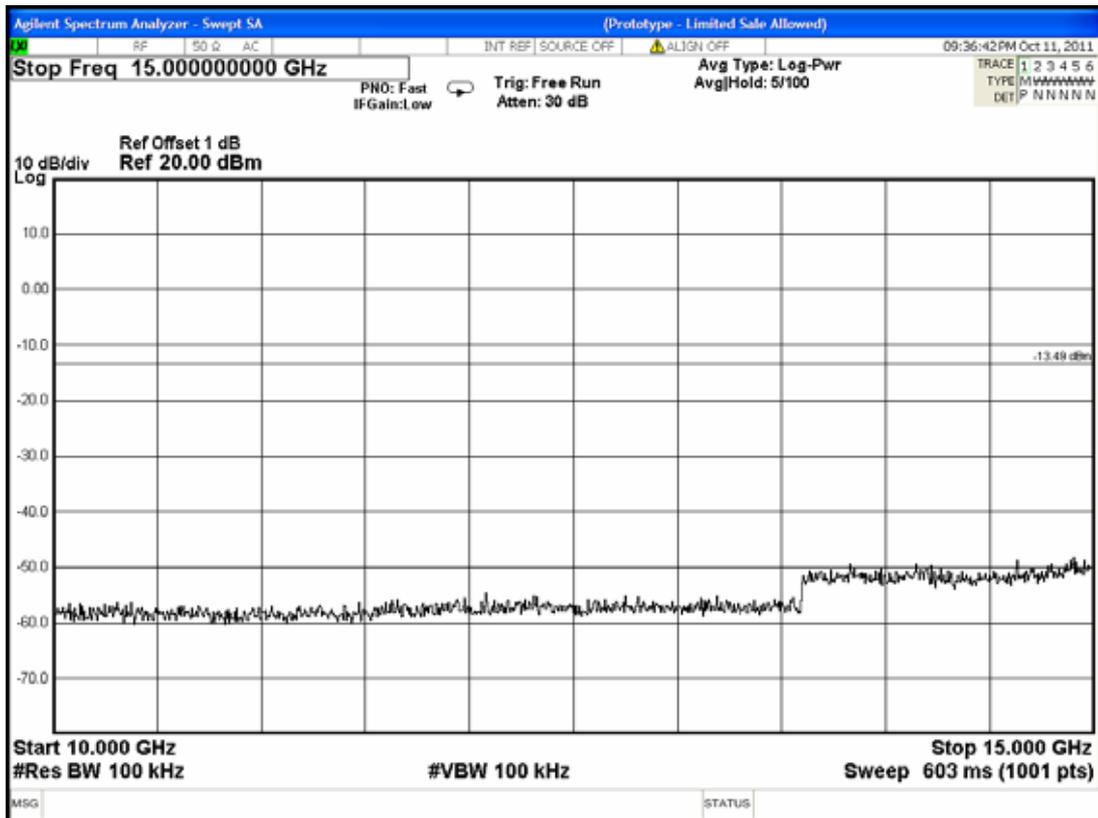
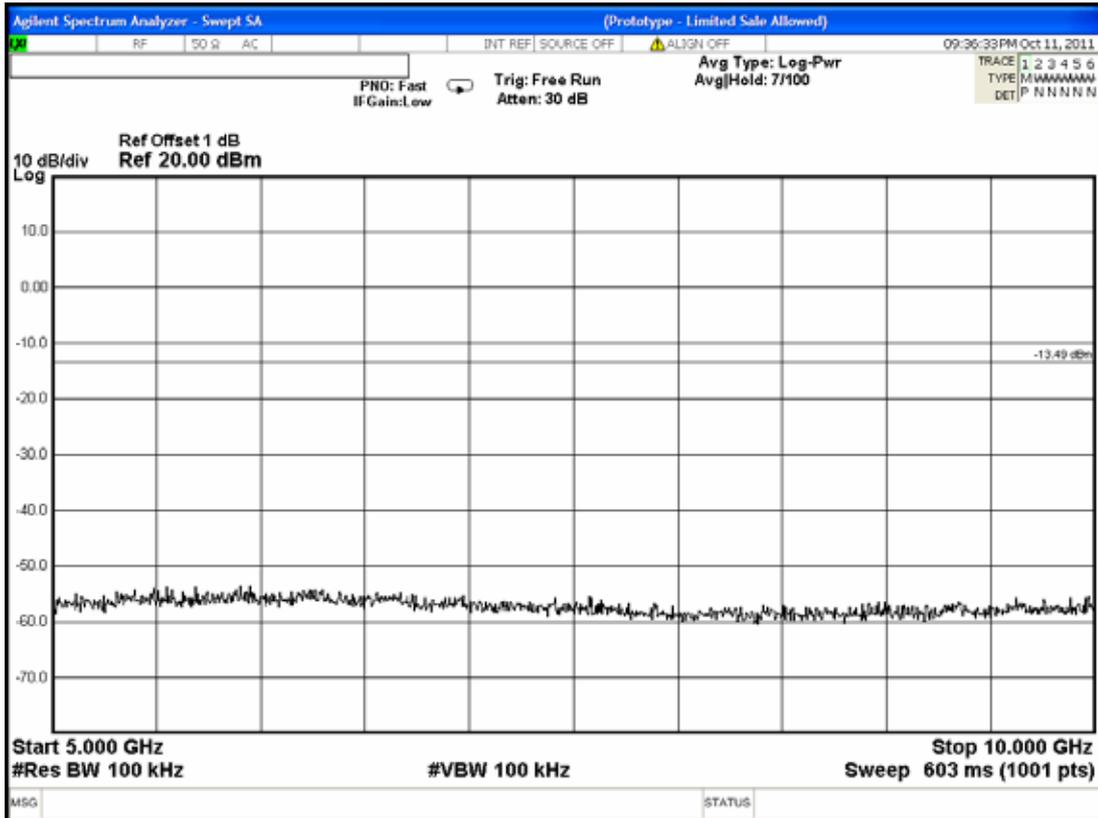
6.6. Test Results

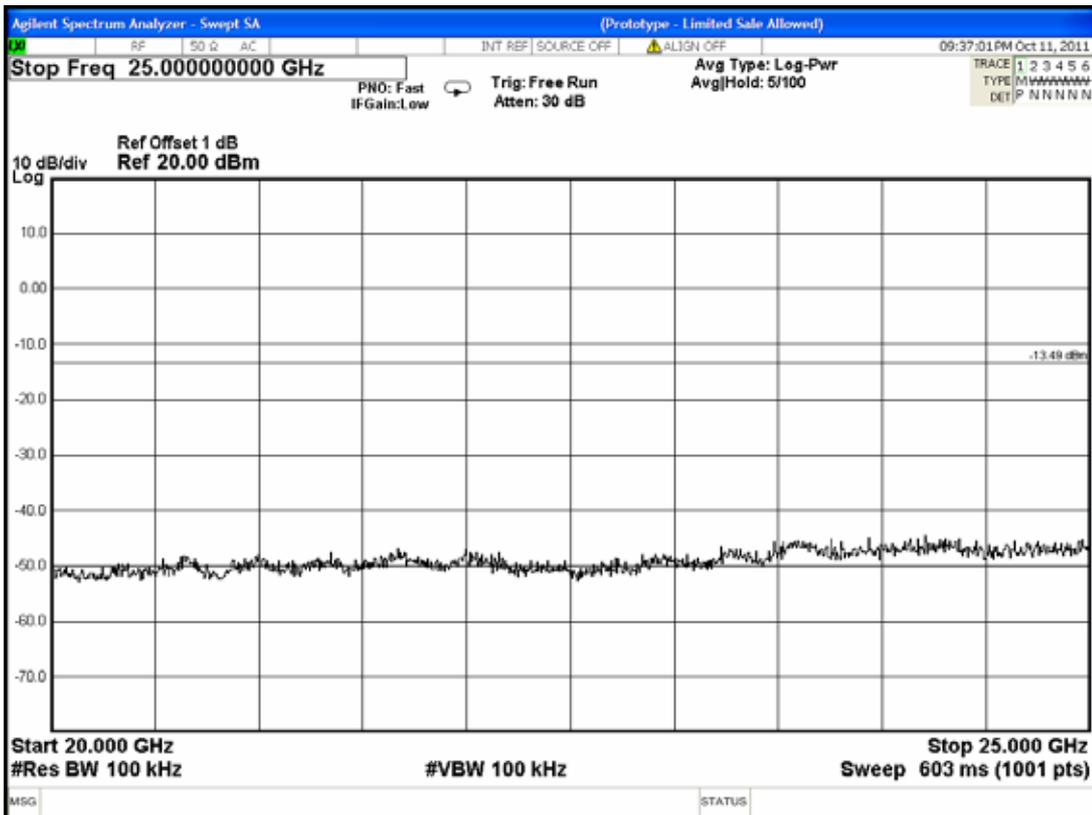
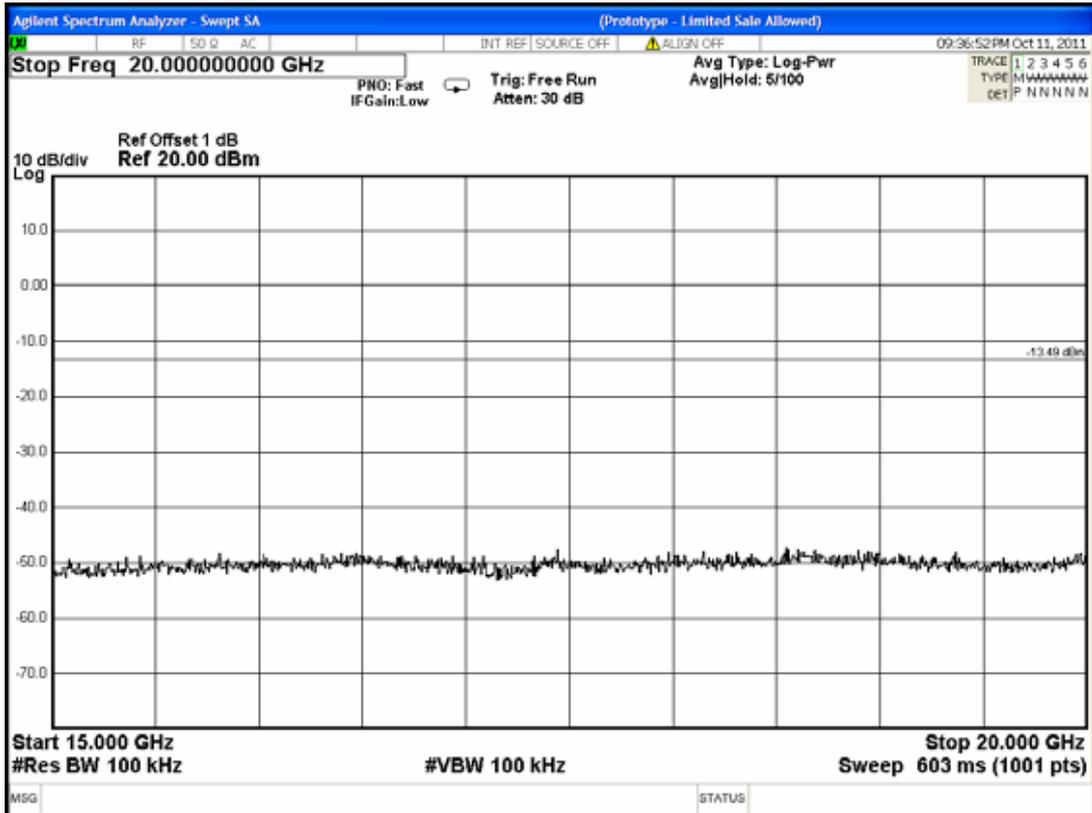
PASSED. The testing data was attached in the next pages.

(Test Date: Oct. 11, 2011 Temperature : 26 Humidity : 53%)

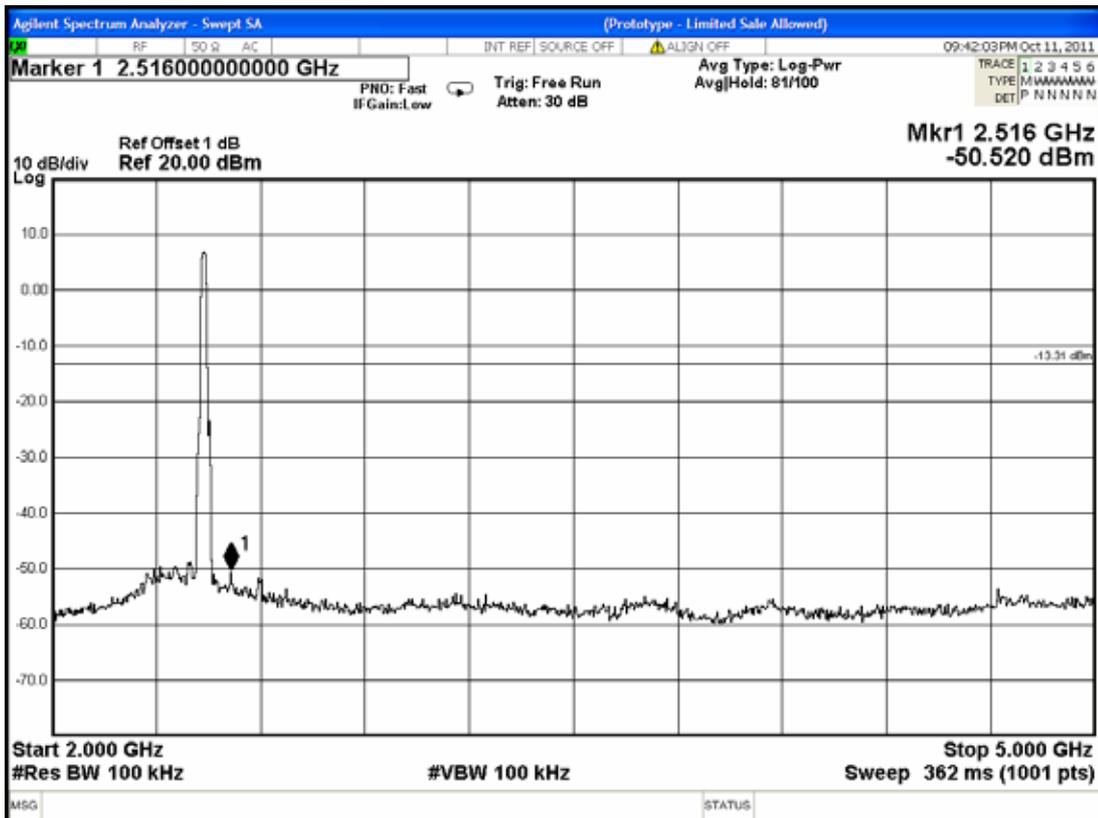
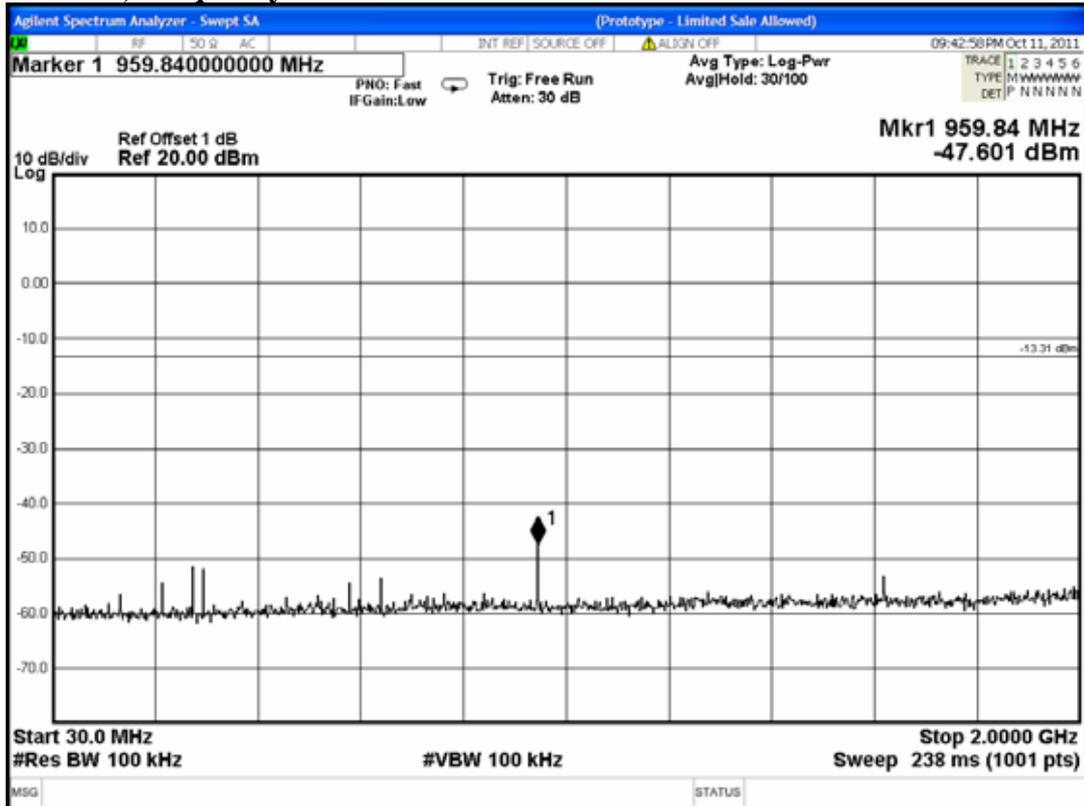
802.11b, Frequency: 2412MHz

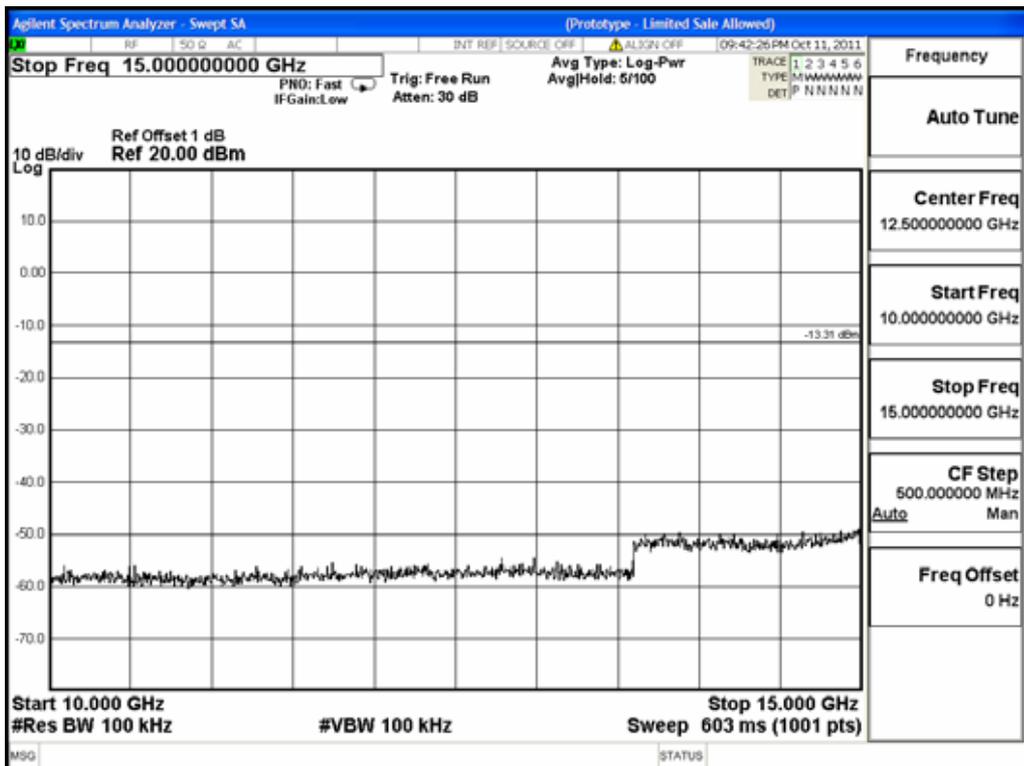
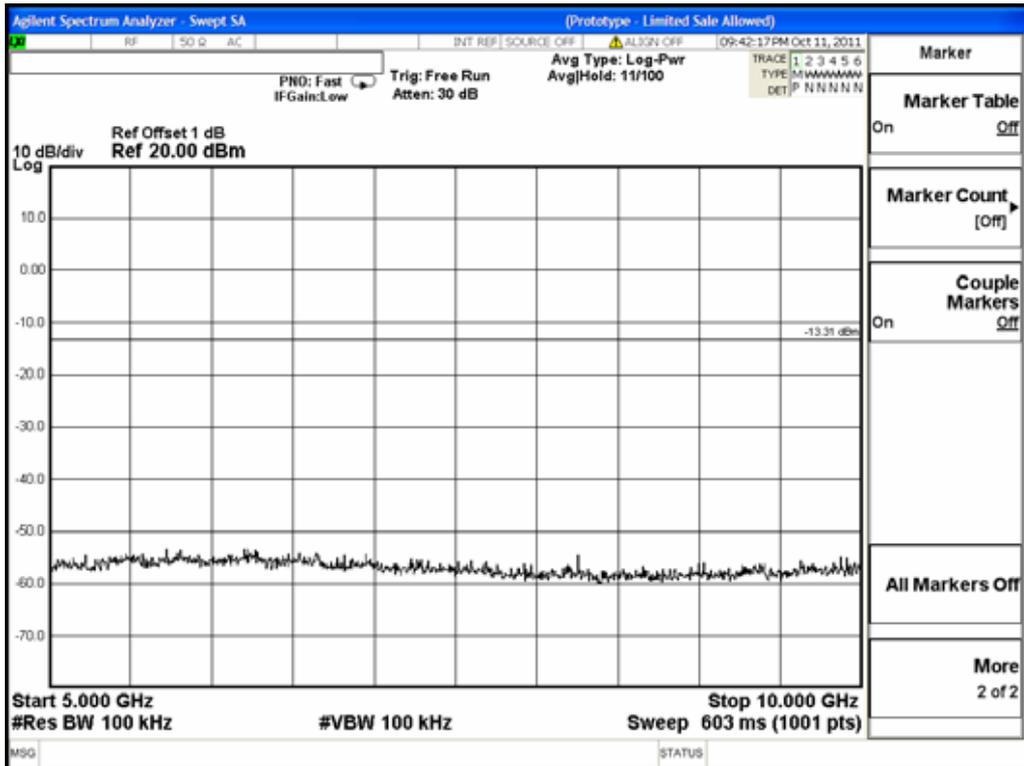


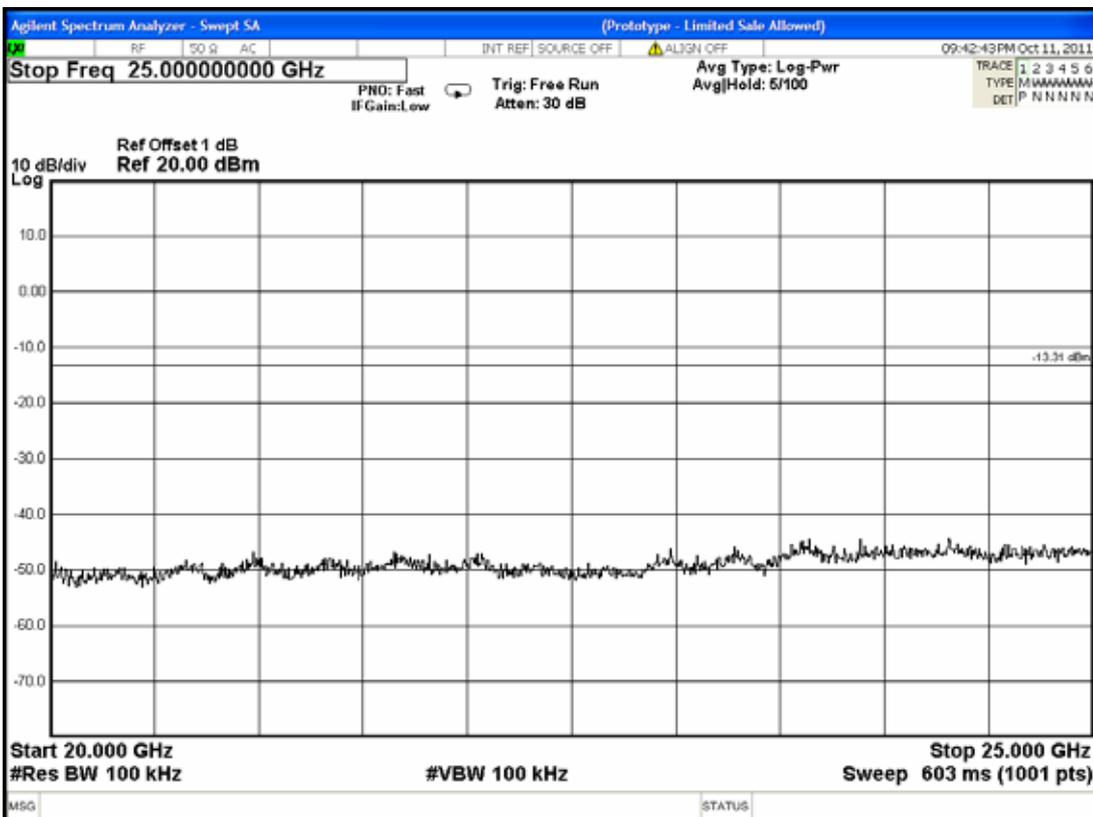
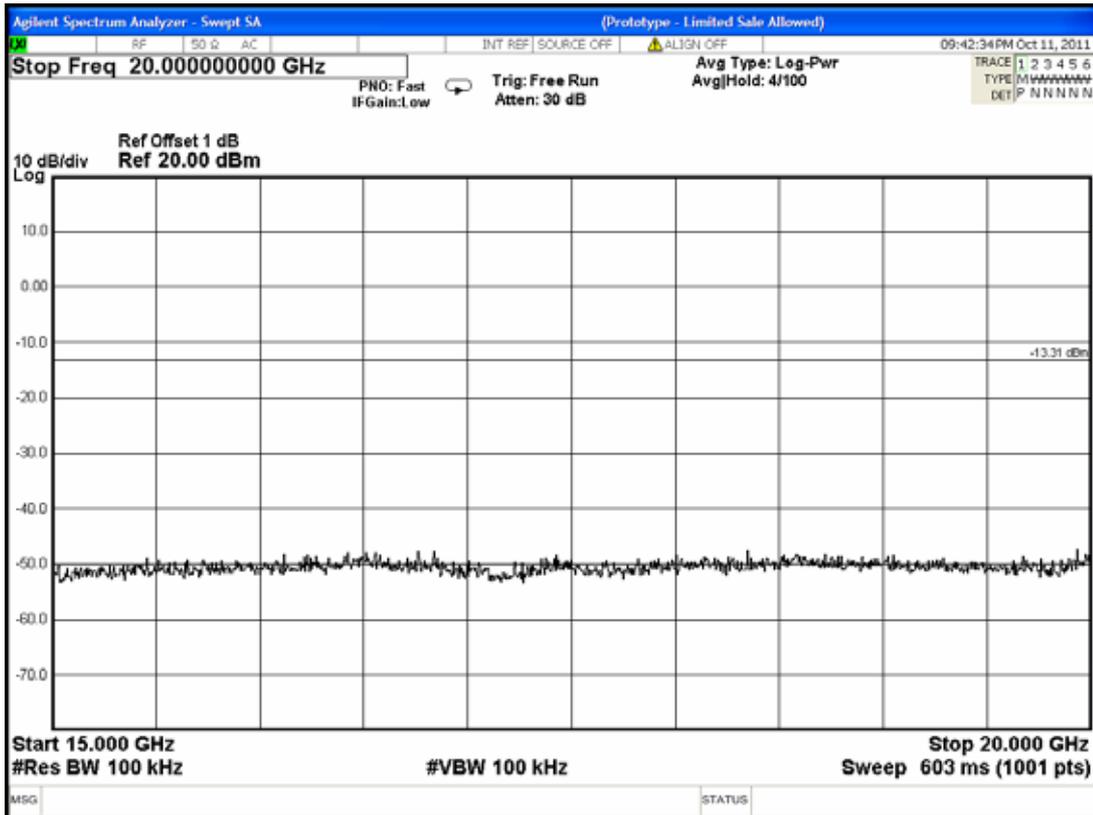




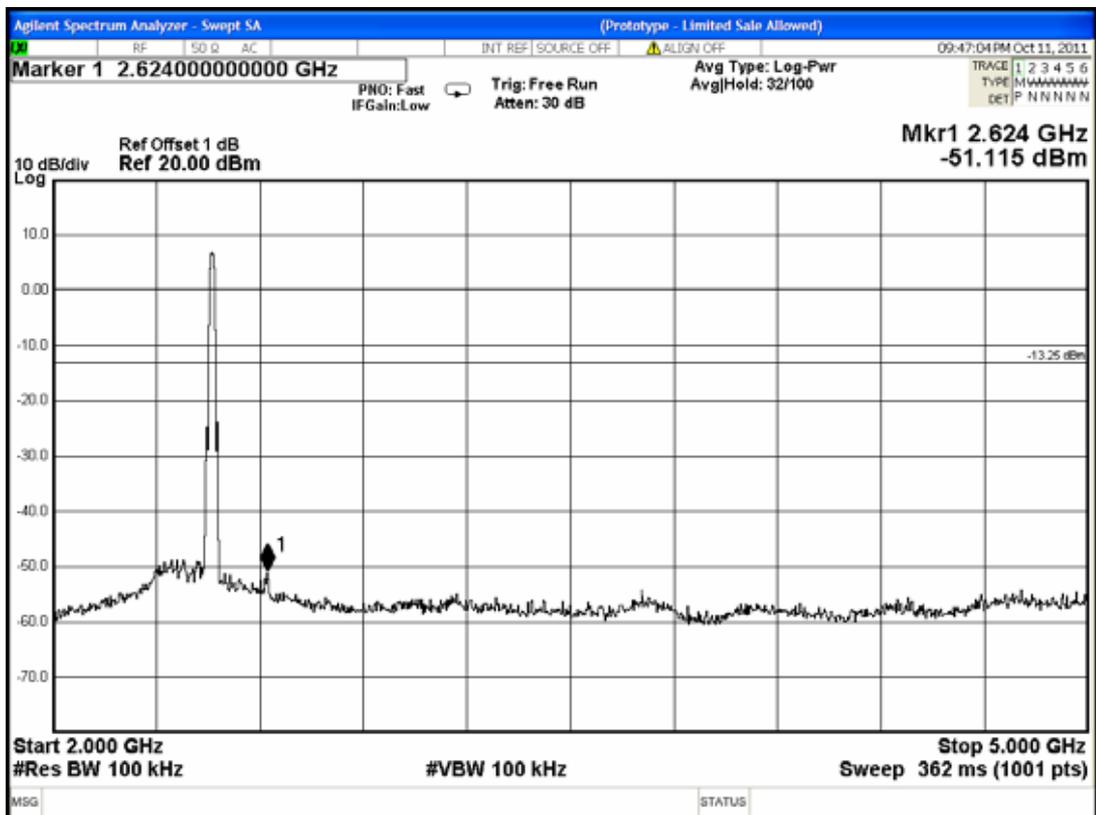
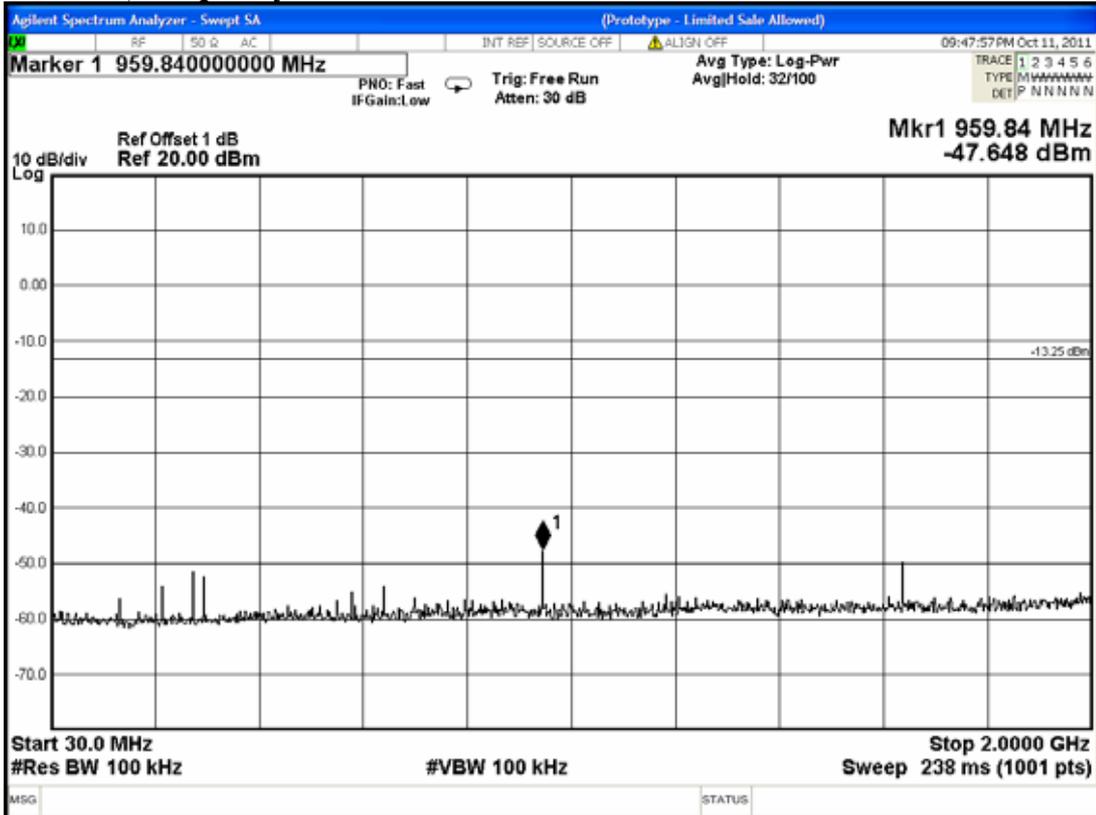
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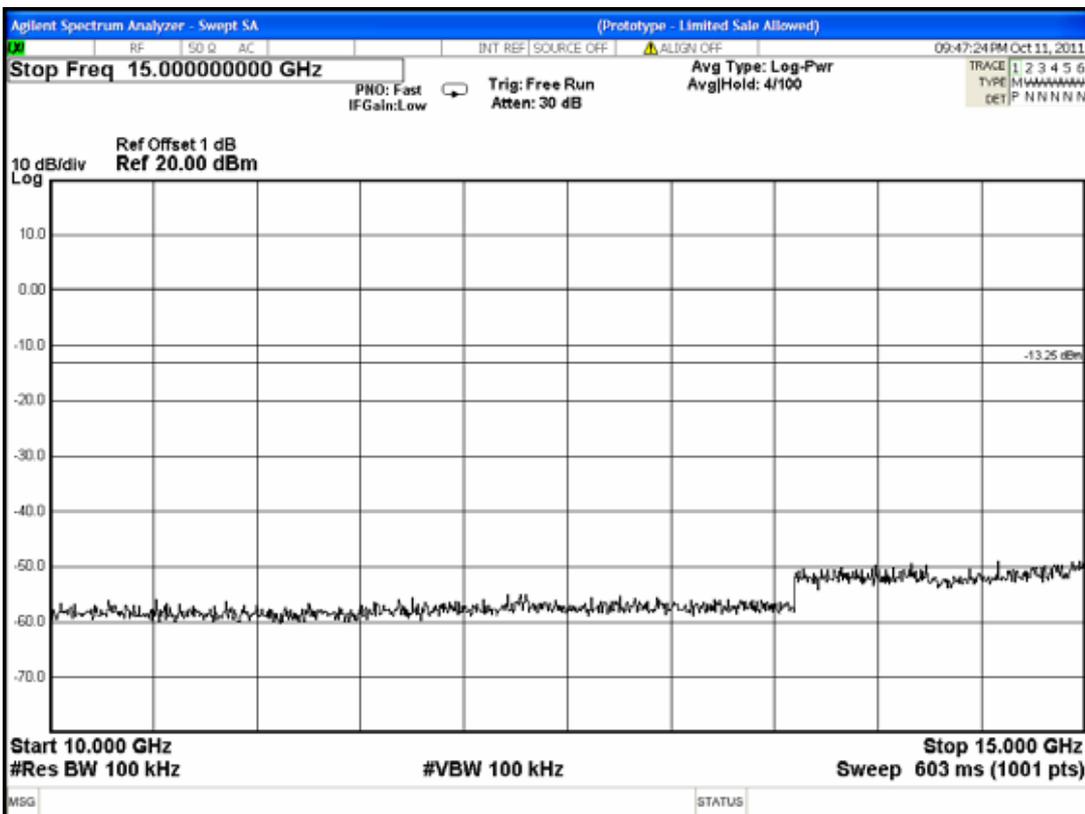
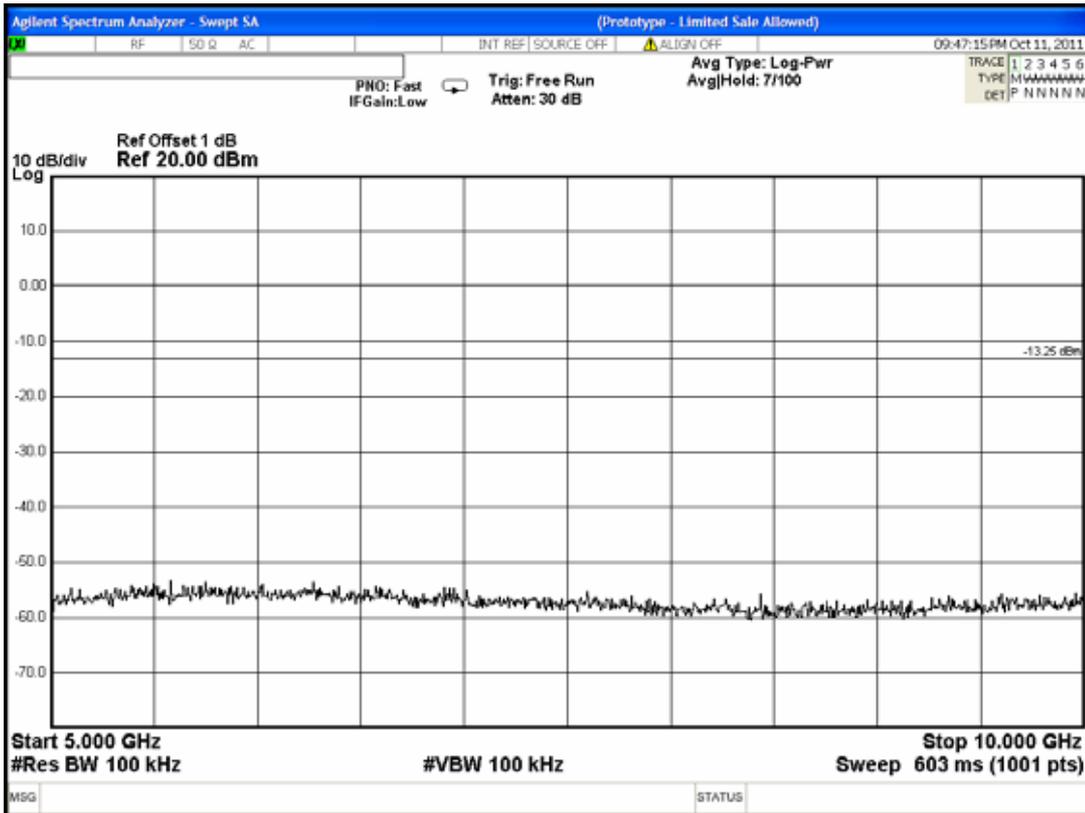


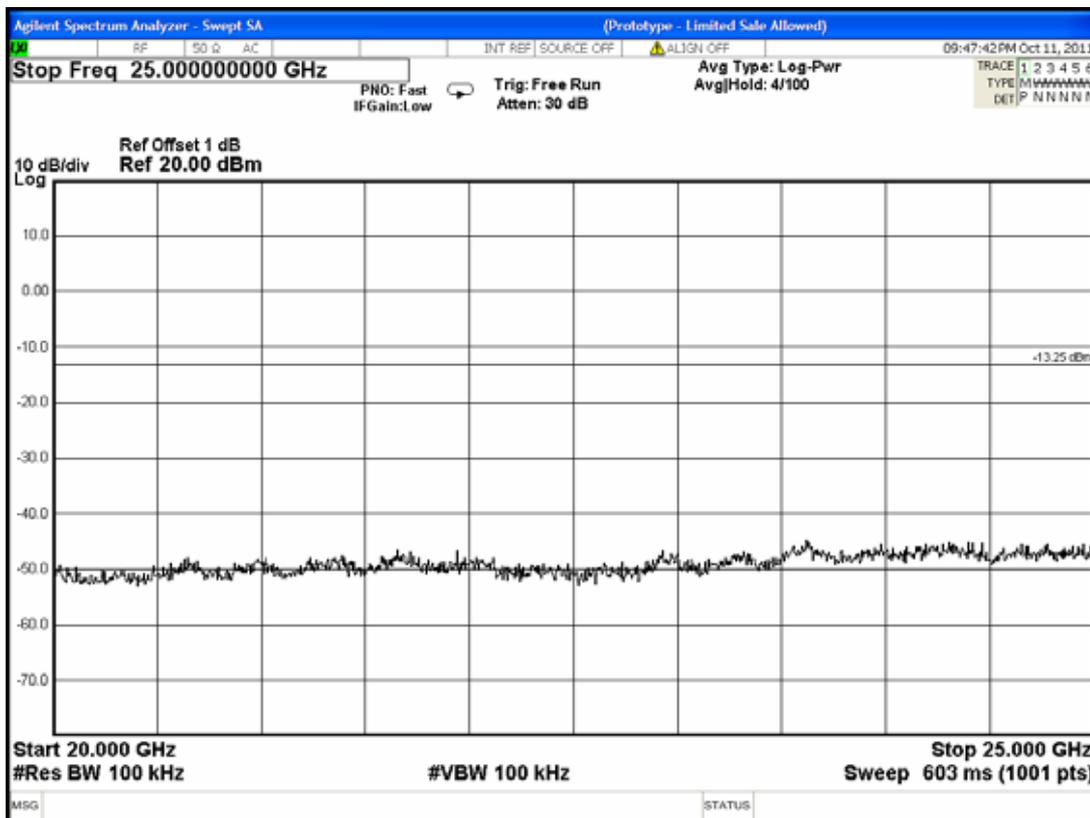
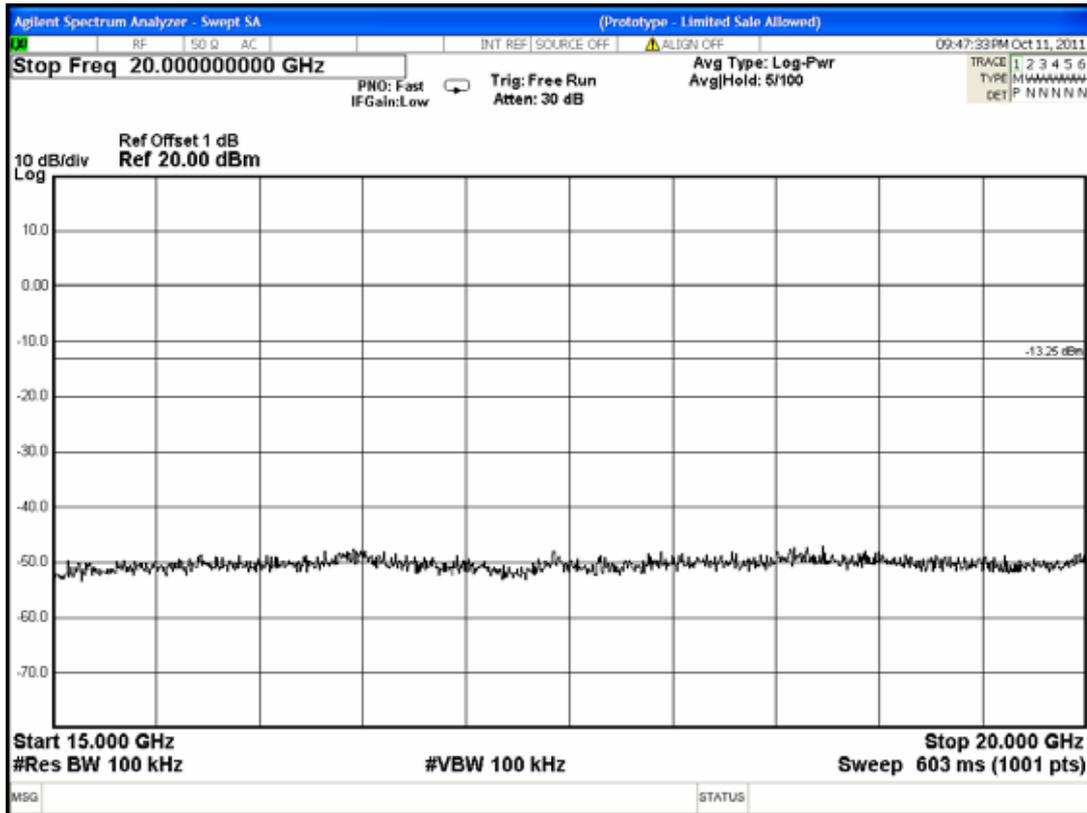




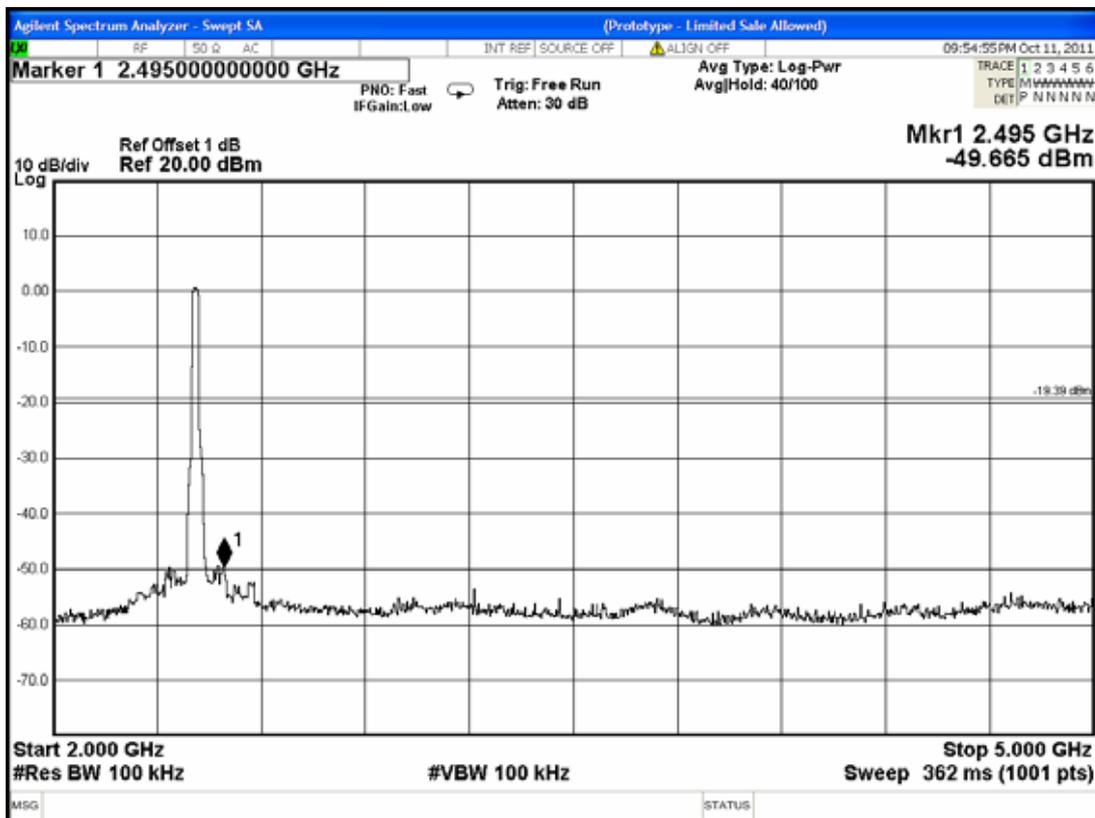
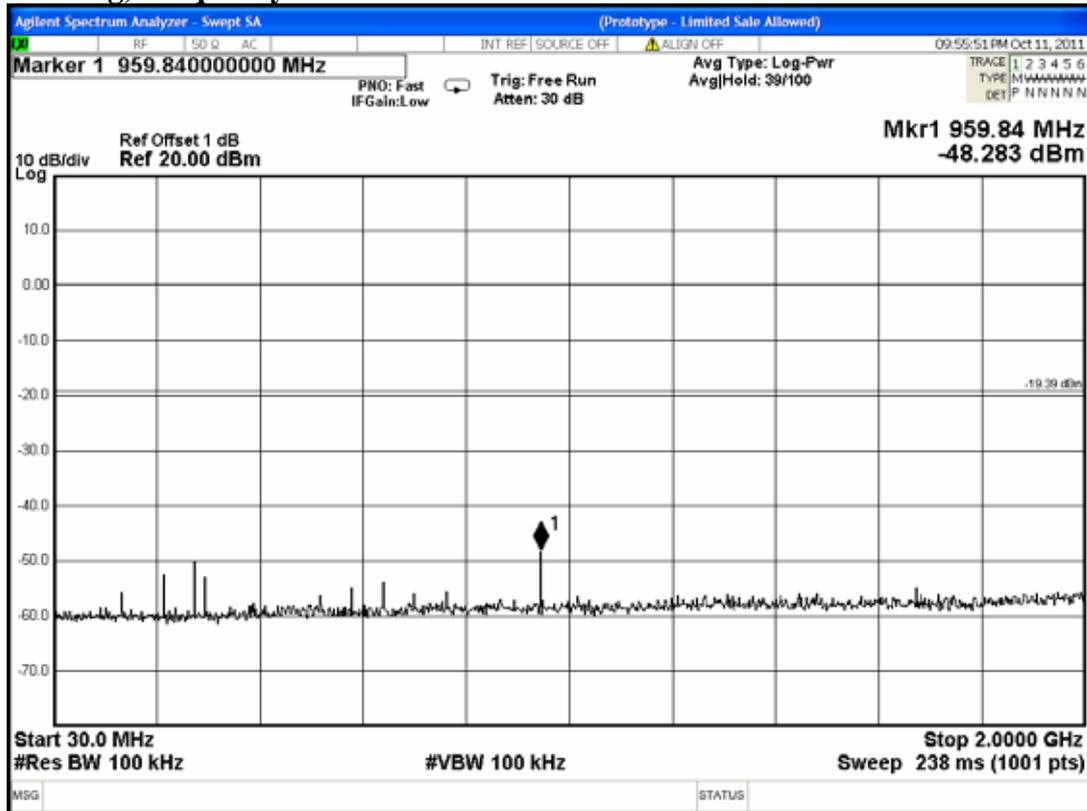
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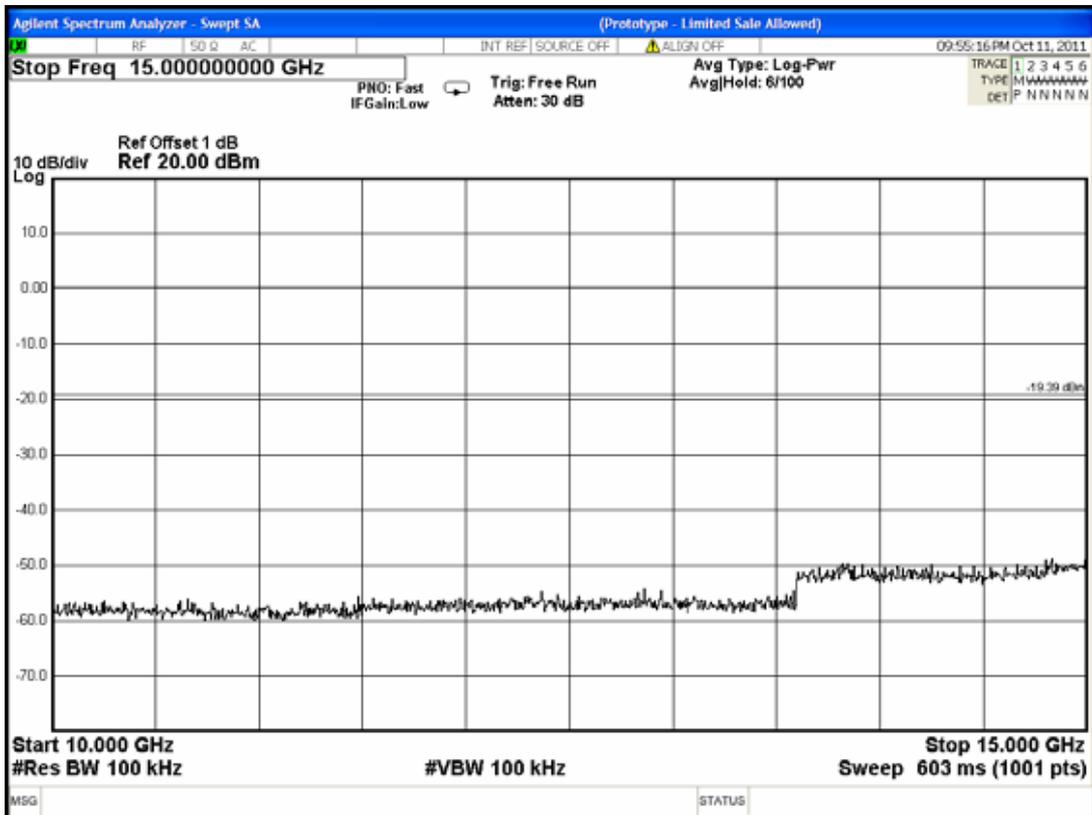
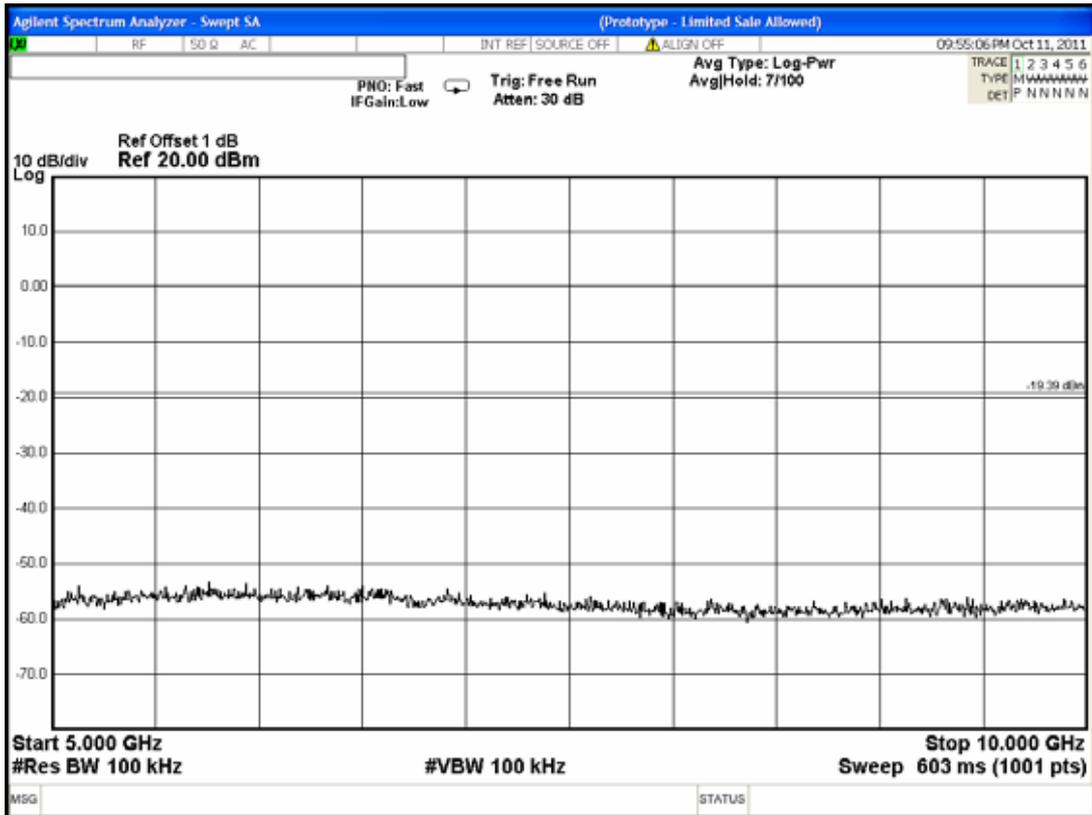


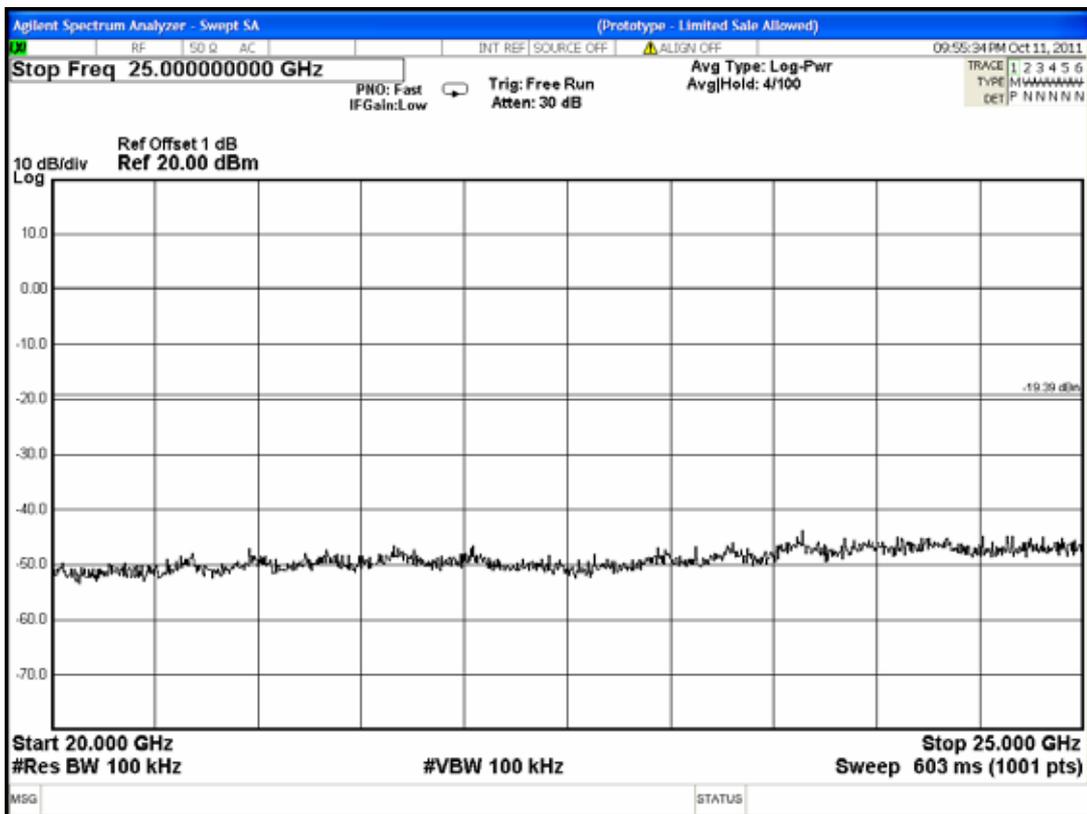
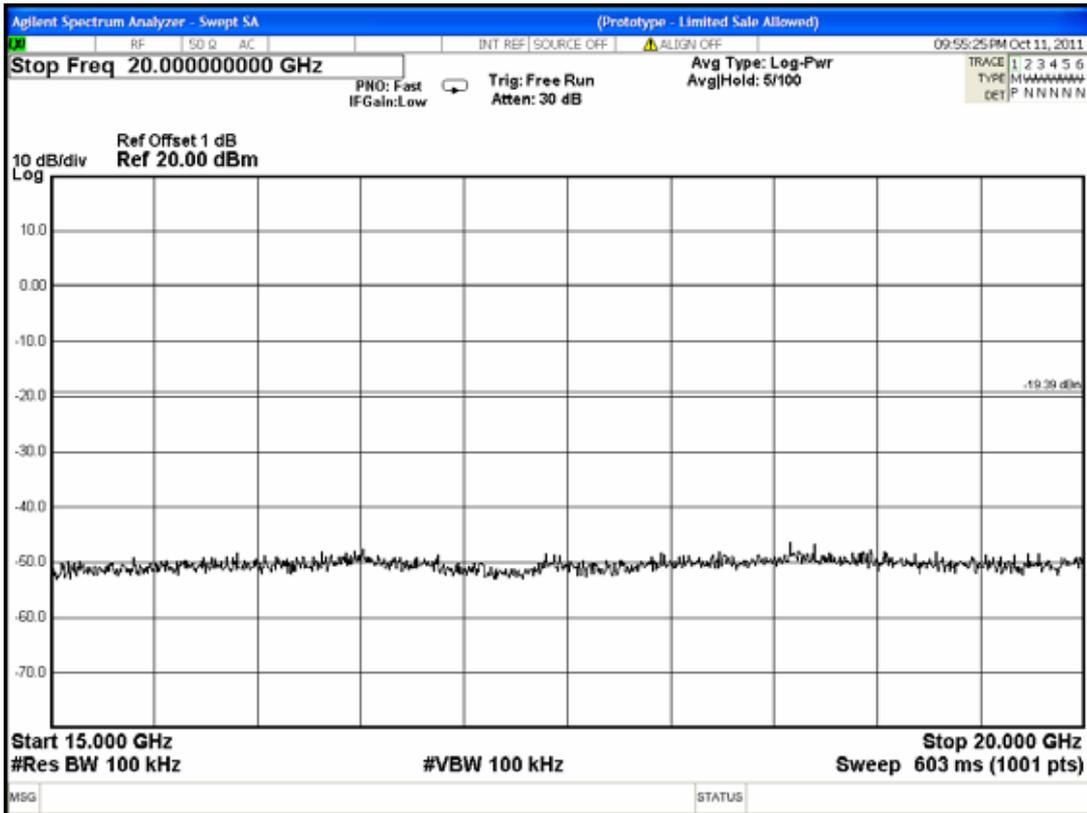




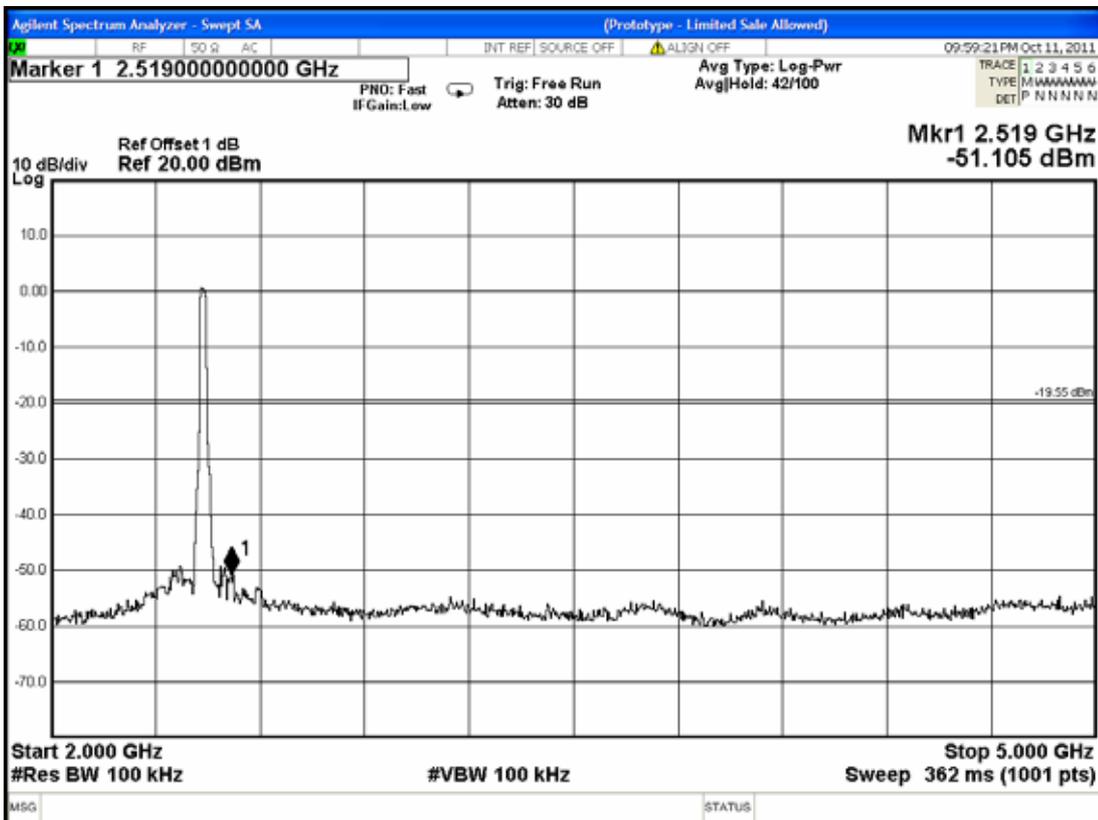
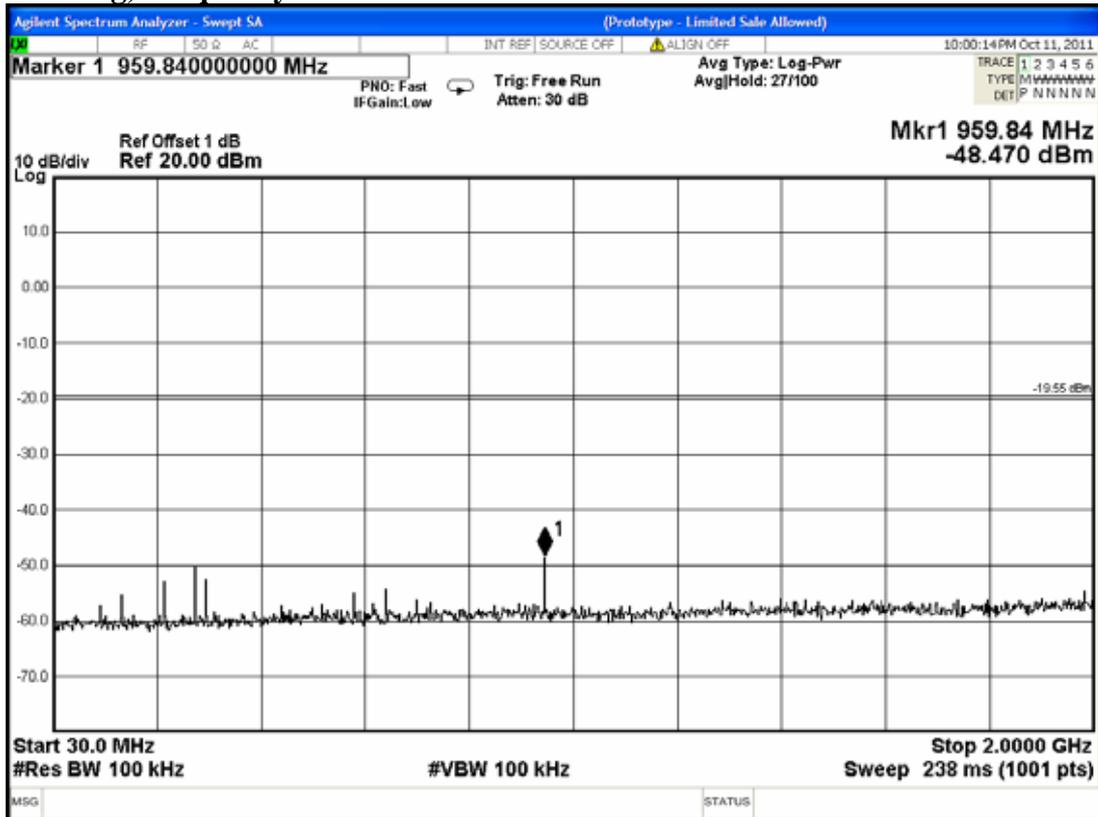
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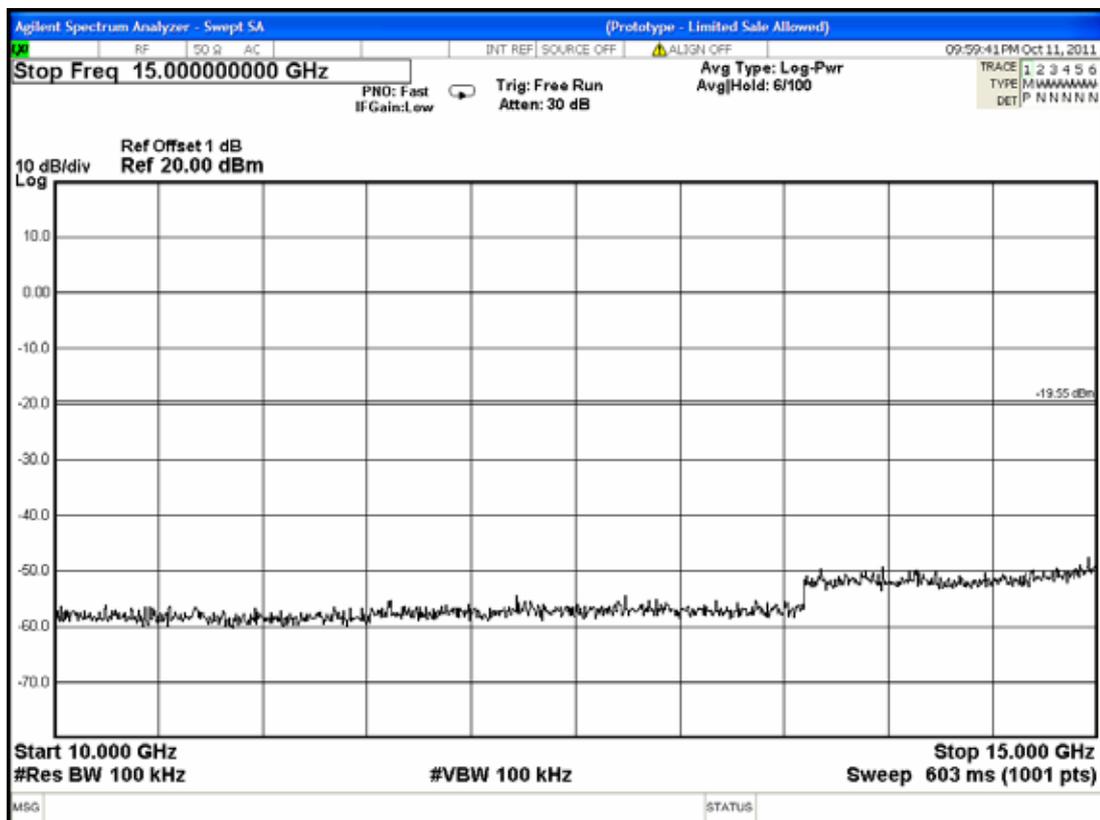
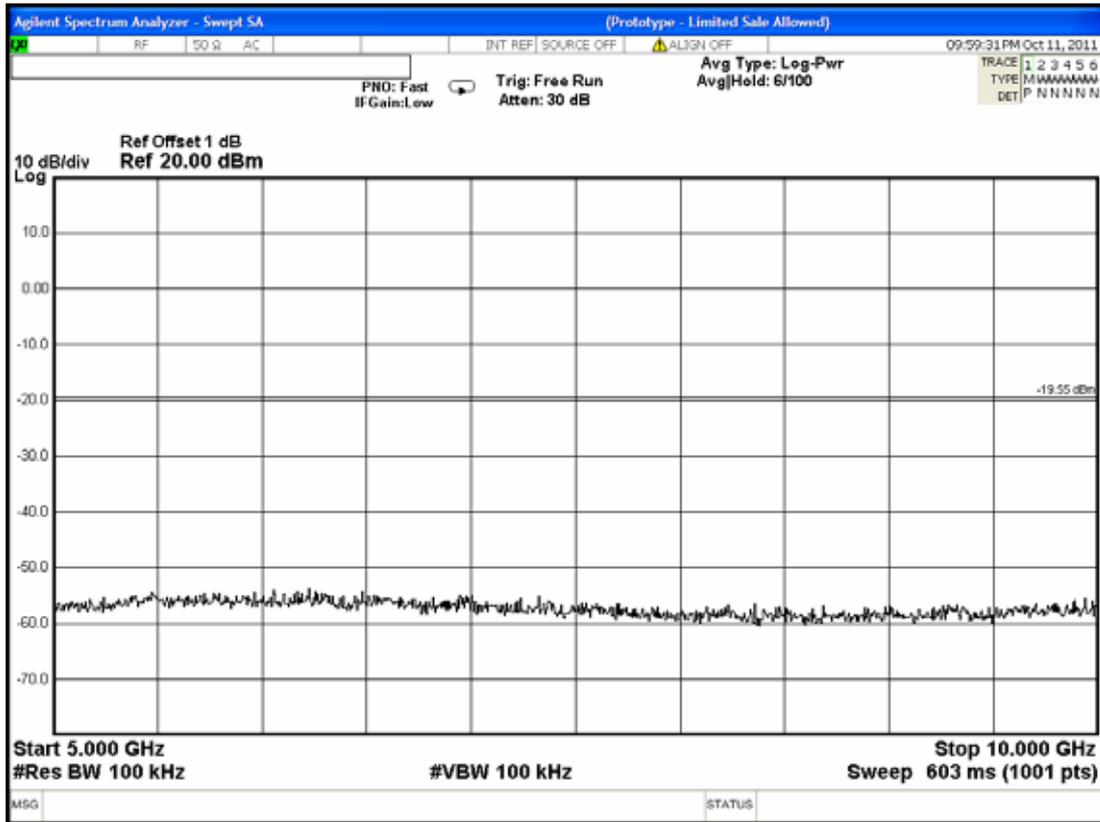


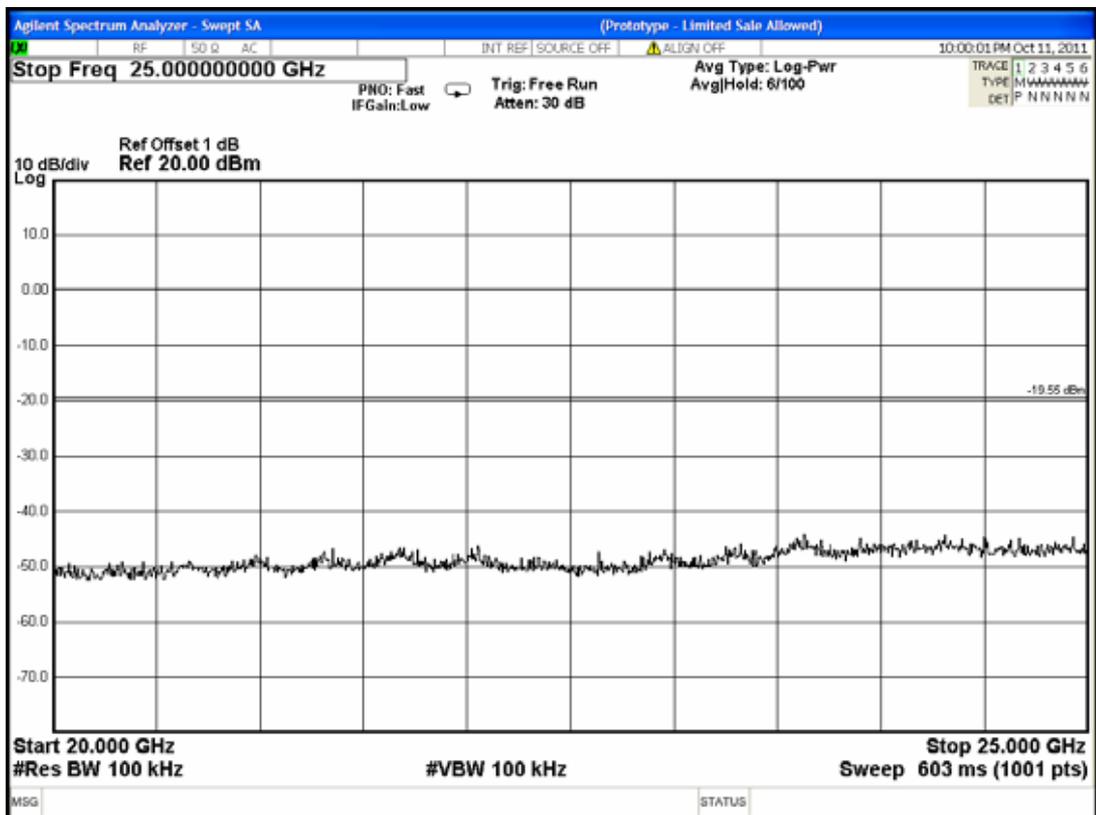
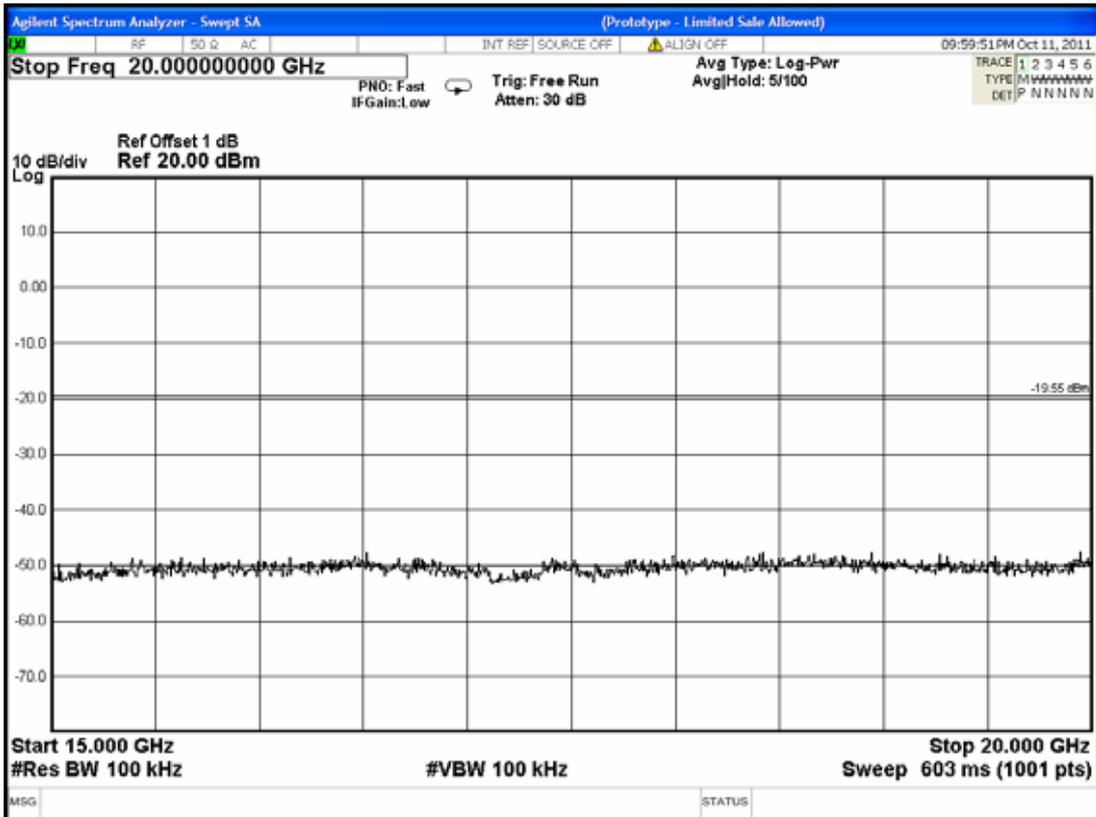




802.11g, Frequency: 2437MHz







802.11g, Frequency: 2462MHz

