APPLICATION FOR CERTIFICATION

On Behalf of

LG Electronics Inc.

Wi-Fi module

Model No.：WN8122E

FCC ID：BEJWN8122E

Brand : LG

Prepared for : LG Electronics Inc.
19-1, Cheongho-ri, Jinwi-myeon,
Pyeongtaek-si, Gyeonggi-do, 451-713, Korea

Prepared by : AUDIX Technology Corporation
EMC Department
No. 53-11, Dingfu, Linkou Dist.,
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File Number	：	C1M1109126
Report Number	：	EM-F1000826
Date of Test	：	Sep. 20 ~ 26, 2011
Date of Report	：	Sep. 26, 2011

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TEST REPORT CERTIFICATION

Applicant	:	LG Electronics Inc.
Manufacturer	:	Arcadyan Technology Corp.
EUT Description	:	Wi-Fi module
FCC ID	:	**BEJWN8122E**
	(A) Model No.	: WN8122E
	(B) Serial No.	: N/A
	(C) Brand	: LG
	(D) Power Supply	: DC 5V (Powered by Notebook PC)

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C & E, Oct. 2010
And ANSI C63.4/2003

(FCC CFR 47 Part 15C & E, §15.205, §15.207, §15.209 and 15.407)

The device described above was tested by AUDIX Technology Corporation to determine the maximum emission levels emanating from the device. The maximum emission levels were compared to the FCC Part 15 subpart C & E limits.

The measurement results are contained in this test report and AUDIX Technology Corporation is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the FCC official limits.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of AUDIX Technology Corporation.

Date of Test: Sep. 20 ~ 26, 2011 Date of Report: Sep. 26, 2011

Producer: (Tina Huang/Administrator)

Signatory: (Ben Cheng/Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Description	:	Wi-Fi module The frequency range of 5150MHz ~ 5250MHz was tested in this report. The frequency range of 2400MHz ~ 2483.5MHz、5725MHz ~ 5850MHz has been tested and the test data are reported in other report of EM-F1000825.
Model Number	:	WN8122E
Serial Number	:	N/A
Brand	:	LG
FCC ID	:	BEJWN8122E
Applicant	:	LG Electronics Inc. 19-1, Cheongho-ri, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do, 451-713, Korea
Manufacturer	:	Arcadyan Technology Corp. 4F, No.9, Park Avenue II, Science-based Industrial Park, Hsinchu, 300 Taiwan
Fundamental Range	:	2412MHz ~ 2462MHz and 5180MHz ~ 5240MHz and 5745MHz ~ 5825MHz
Radio Technology	:	802.11b: DSSS Modulation (DBPSK/DQPSK/CCK) 802.11a/g/n-HT20/n-HT40: OFDM Modulation 2T2R, (BPSK/QPSK/16QAM/64QAM)
Data Transfer Rate	:	802.11b: 1/2/5.5/11Mbps 802.11a/g: 6/9/12/18/24/48/54Mbps 802.11n: up to 300Mbps
Antenna Gain	:	2.4GHz: -0.68dBi (Peak) 5.8GHz: 0.62dBi (Peak)
Date of Receipt of Sample	:	Sep. 09, 2011
Date of Test	:	Sep. 20 ~ 26, 2011

Antenna Information

Antenna Part Number	Manufacture	Antenna Type	Peak Gain W/ Cable loss (dBi)	
			Frequency (MHz)	Max Gain (dBi)
Ant./120800003400J	arcadyan	MIFA Antenna	2.4GHz	-0.91dBi (peak)
			2.45GHz	-0.79dBi (peak)
			2.5GHz	-0.68dBi (peak)
			5.15GHz	0.47dBi (peak)
			5.25GHz	0.54dBi (peak)
			5.35GHz	0.12dBi (peak)
			5.47GHz	-0.84dBi (peak)
			5.725GHz	0.00dBi (peak)
			5.85GHz	0.52dBi (peak)
Inner Ant./120800003500J	arcadyan	MIFA Antenna	2.4GHz	-1.46dBi (peak)
			2.45GHz	-1.54dBi (peak)
			2.5GHz	-1.29dBi (peak)
			5.15GHz	0.62dBi (peak)
			5.25GHz	0.57dBi (peak)
			5.35GHz	0.50dBi (peak)
			5.47GHz	-0.18dBi (peak)
			5.725GHz	-0.77dBi (peak)
			5.85GHz	-0.51dBi (peak)

1.2. Data Rate Relative to Output Power

802.11a			
Channel	Modulation	Date Rate (Mbps)	Power (dBm)
36	BPSK	6	13.26
36	BPSK	9	13.25
36	QPSK	12	13.22
36	QPSK	18	13.22
36	16-QAM	24	13.20
36	16-QAM	36	13.19
36	64-QAM	48	13.18
36	64-QAM	54	13.18

802.11n-HT20				802.11n-HT40			
Channel	Modulation	Date Rate (Mbps)	Power (dBm)	Channel	Modulation	Date Rate (Mbps)	Power (dBm)
36	BPSK	6.5	14.20	38	BPSK	6.5	14.08
36	QPSK	13	14.19	38	QPSK	13	14.05
36	QPSK	19.5	14.18	38	QPSK	19.5	14.03
36	16-QAM	26	14.17	38	16-QAM	26	14.01
36	16-QAM	39	14.15	38	16-QAM	39	13.99
36	64-QAM	52	14.13	38	64-QAM	52	13.98
36	64-QAM	58.6	14.13	38	64-QAM	58.6	13.97
36	64-QAM	65	14.11	38	64-QAM	65	13.95

1.3. Test Configuration for Each Test Item

Test Item	802.11a	802.11n-HT20	802.11n-HT40
	Data Rate for Test(Mbps)		
26dB Bandwidth	6	6.5	13.5
Emission Limitations	6	6.5	13.5
Maximum peak output power	6	6.5	13.5
Power spectral density	6	6.5	13.5
Peak power Excursion	6	6.5	13.5
Frequency Stability	6	6.5	13.5

1.4. Tested Supporting System Details

1.4.1. NOTEBOOK PC

Model Number	:	PP2130
Serial Number	:	5Y32KSQZ40ME
FCC ID	:	By DoC
BSMI ID	:	3912A556
Brand	:	Compaq
AC Adapter	:	COMPAQ, M/N: PA-1650-02C DC Cord: Non-Shielded, Undetachable, 1.8m
USB Cable	:	Non-Shielded, Detachable, 0.25m
Power Cord	:	Non-Shielded, Detachable, 1.8m

1.5. Description of Test Facility

Name of Firm	:	**AUDIX Technology Corporation** EMC Department No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan, R.O.C.
Test Site (C5/Semi-AC)	:	**No. 5 Shielded Room &** No. 67-4, Dingfu, Linkou Dist., New Taipei City 244, Taiwan, R.O.C. **Semi-Anechoic Chamber** No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan, R.O.C. May 14, 2009 Renewal on Federal Communication Commission Registration Number: 90993
NVLAP Lab. Code	:	200077-0
TAF Accreditation No	:	1724

1.6. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty (dB)
Conduction Test	150kHz~30MHz	± 1.73dB
Radiation Test (Distance: 3m)	30MHz~300MHz	± 2.91dB
	300MHz~1000MHz	± 2.74dB
	Above 1GHz	± 5.02dB

Remark：Uncertainty = $ku_c(y)$

Test Item	Uncertainty
26dB Bandwidth	± 0.2kHz
Emission Limitations	± 0.13dB
Maximum peak output power	± 0.33dBm
Power spectral density	± 0.13dB
Peak power Excursion	± 0.14dB

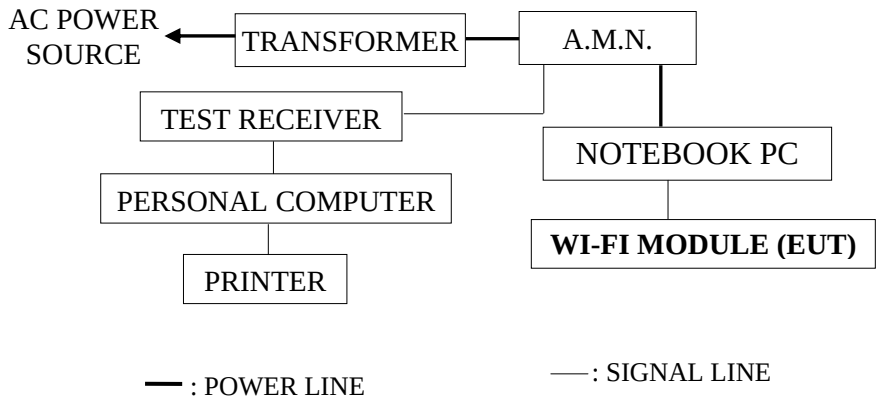
2. CONDUCTED EMISSION MEASUREMENT

2.1. Test Equipment

The following test equipment was used during the powerline conducted emission measurement: (No. 5 Shielded Room)

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R & S	ESCS 30	100039	Jun. 23, 11’	Jun. 22, 12’
2.	A.M.N.	R & S	ENV4200	100003	Jun. 09, 11’	Jun. 08, 12’

2.2. Block Diagram of Test Setup



2.3. Powerline Conducted Emission Limit (§15.207, Class B)

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level	Average Level
150kHz ~ 500kHz	66 ~ 56 dBμV	56 ~ 46 dBμV
500kHz ~ 5MHz	56 dBμV	46 dBμV
5MHz ~ 30MHz	60 dBμV	50 dBμV

Remark: 1. If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with the average detector is unnecessary.
2. The lower limit applies at the band edges.

2.4. Operating Condition of EUT

2.4.1. Setup the EUT and simulator as shown on 2.2.

2.4.2. Turn on the power of all equipment.

2.4.3. The Notebook PC was running test software “Broadcom WL Command” to set EUT (Wi-Fi module) on transmitting and receiving during all testing.

2.5. Test Procedure

The EUT (link Notebook PC) was put on table which was above the ground by 80cm and Notebook PC’s AC adapter’s power cord connected to the AC mains through an Artificial Mains Network (A.M.N.). This provided a 50Ω coupling impedance for the tested equipment. (Please refer to the block diagram of the test setup and photographs.)
Both sides of A.C. line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables were changed according to FCC ANSI C63.4-2003 during conducted measurement.

The bandwidth of the R&S Test Receiver ESCS30 was set at 9kHz.

The frequency range from 150kHz to 30MHz was pre-scanned with a peak detector.

The all final readings from test receiver were measured with Quasi-Peak detector and Average detector. (Remark : If the Average limit is met when using a Quasi-Peak detector, the Average detector is unnecessary)

2.6. Powerline Conducted Emission Measurement Results

PASSED.
(All the emissions not reported below are too low against the prescribed limits.)

EUT was performed during this section testing and all the test results are attached in next pages.

EUT：Wi-Fi module M/N：WN8122E

Test Date：Sep. 23, 2011 Temperature：24℃ Humidity：50%

Reference Test Data：Neutral # 2; Line # 1

AUDIX Corp. EMC Laboratory
No.53-11, Tin-fu Tsun, Lin-kou Hsiang, Taipei County, Taiwan R.O.C. Post Code:24443
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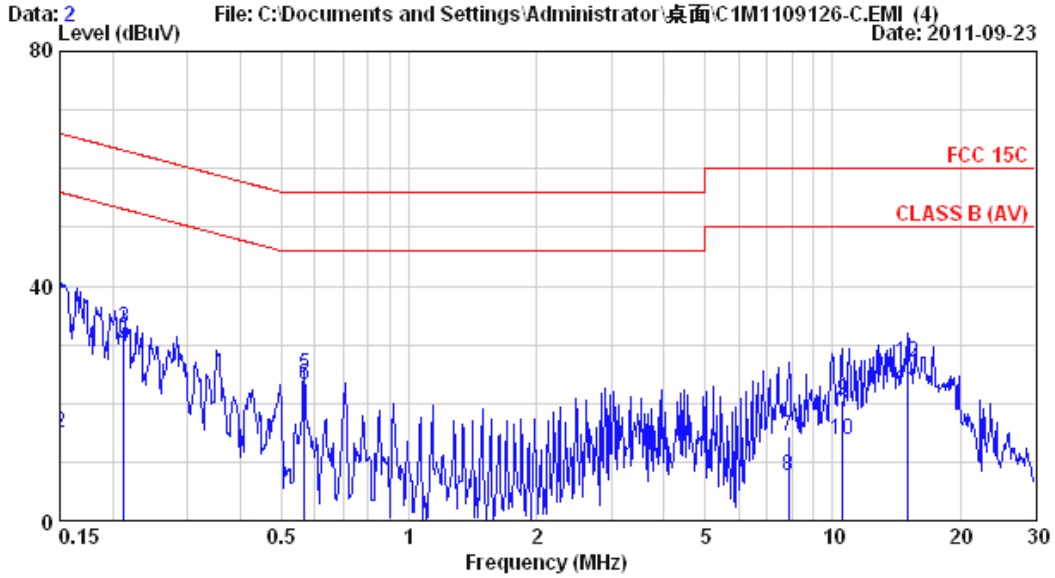

Site : NO.5 Shielded Room
Condition : ENV 4200
Limit : FCC 15C
Env. / Ins. : 24*C/50% ESCS 30 (039)
EUT M/N : WN8122E
Power Rating : 120Vac / 60Hz
Test Mode : operating

Data : 2
Phase : NEUTRAL
Engineer: Jasper Hong

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.150	10.10	0.20	21.88	32.18	66.00	33.82	QP
2	0.150	10.10	0.20	4.51	14.81	56.00	41.19	AVERAGE
3	0.213	10.00	0.20	22.60	32.80	63.10	30.30	QP
4	0.213	10.00	0.20	19.34	29.54	53.10	23.56	AVERAGE
5	0.567	9.87	0.20	14.89	24.96	56.00	31.04	QP
6	0.567	9.87	0.20	13.02	23.09	46.00	22.91	AVERAGE
7	7.852	9.93	0.60	3.87	14.40	60.00	45.60	QP
8	7.852	9.93	0.60	-2.90	7.62	50.00	42.38	AVERAGE
9	10.564	10.00	0.70	9.89	20.59	60.00	39.41	QP
10	10.564	10.00	0.70	3.19	13.89	50.00	36.11	AVERAGE
11	15.053	10.00	0.70	11.55	22.25	50.00	27.75	AVERAGE
12	15.053	10.00	0.70	16.39	27.09	60.00	32.91	QP

Remarks: 1.Emission Level= AMN Factor + Cable Loss + Reading.
2.If the average limit is met when using a quasi-peak detector ,the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

AUDIX Corp. EMC Laboratory
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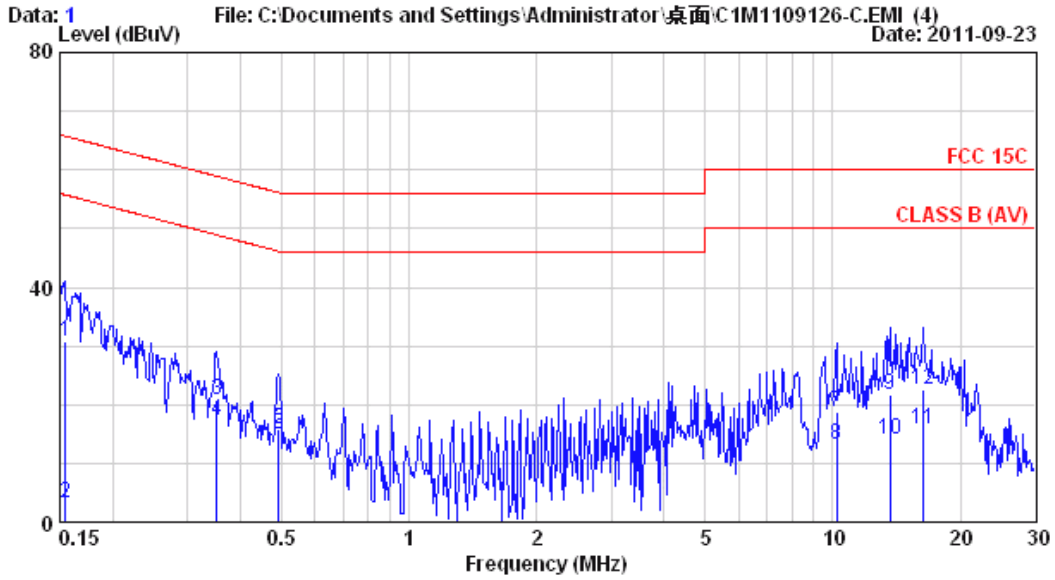


Site : NO.5 Shielded Room Data : 1
Condition : ENV 4200 Phase : LINE
Limit : FCC 15C
Env. / Ins. : 24*C/50% ESCS 30 (039) Engineer: Jasper Hong
EUT M/N : WN8122E
Power Rating : 120Vac / 60Hz
Test Mode : operating

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.155	10.10	0.20	20.54	30.84	65.74	34.90	QP
2	0.155	10.10	0.20	-7.22	3.09	55.74	52.65	AVERAGE
3	0.352	9.92	0.20	10.72	20.84	58.91	38.07	QP
4	0.352	9.92	0.20	7.11	17.23	48.91	31.68	AVERAGE
5	0.491	9.88	0.20	5.72	15.80	56.14	40.34	QP
6	0.491	9.88	0.20	4.72	14.80	46.14	31.34	AVERAGE
7	10.233	9.90	0.70	8.22	18.82	60.00	41.18	QP
8	10.233	9.90	0.70	2.59	13.19	50.00	36.81	AVERAGE
9	13.623	9.90	0.70	11.16	21.76	60.00	38.24	QP
10	13.623	9.90	0.70	3.33	13.93	50.00	36.07	AVERAGE
11	16.312	9.93	0.70	5.12	15.75	50.00	34.25	AVERAGE
12	16.312	9.93	0.70	11.87	22.50	60.00	37.50	QP

Remarks: 1.Emission Level= AMN Factor + Cable Loss + Reading.
2.If the average limit is met when using a quasi-peak detector ,the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

3. RADIATED EMISSION MEASUREMENT

3.1. Test Equipment

The following test equipment was used during the radiated emission measurement:

3.1.1. For Frequency Range 30MHz~1000MHz (at Semi-Anechoic Chamber)

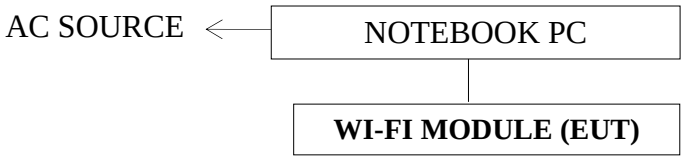
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E4446A	US44300366	Aug. 04, 11’	Aug. 03, 12’
2.	Test Receiver	R & S	ESCS30	100338	Jul. 12, 11’	Jul. 11, 12’
3.	Amplifier	HP	8447D	2944A06305	Feb. 10, 11’	Feb. 09, 12’
4.	Log Periodic Antenna	Schwarzbeck	UHALP 9108-A	0810	Mar. 08, 11’	Mar. 07, 12’
5.	Biconical Antenna	CHASE	VBA6106A	1264	Mar. 08, 11’	Mar. 07, 12’

3.1.2. For Frequency Above 1GHz (at Semi-Anechoic Chamber)

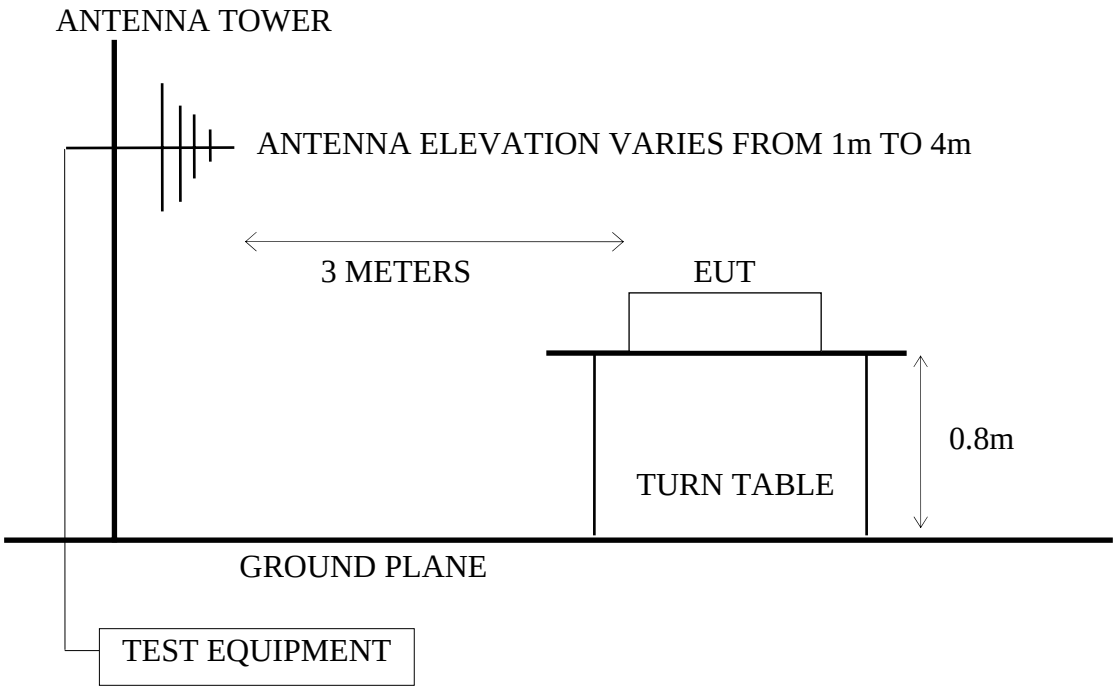
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E4446A	US44300366	Aug. 04, 11’	Aug. 03, 12’
2.	Test Receiver	R & S	ESCS30	100338	Jul. 12, 11’	Jul. 11, 12’
3.	Amplifier	HP	8449B	3008A00529	Dec. 10, 10’	Dec. 09, 11’
4.	Horn Antenna	EMCO	3115	9112-3775	May 09, 11’	May 08, 12’
5.	Horn Antenna	EMCO	3116	2653	Oct. 04, 10’	Oct. 03, 11’

3.2. Test Setup

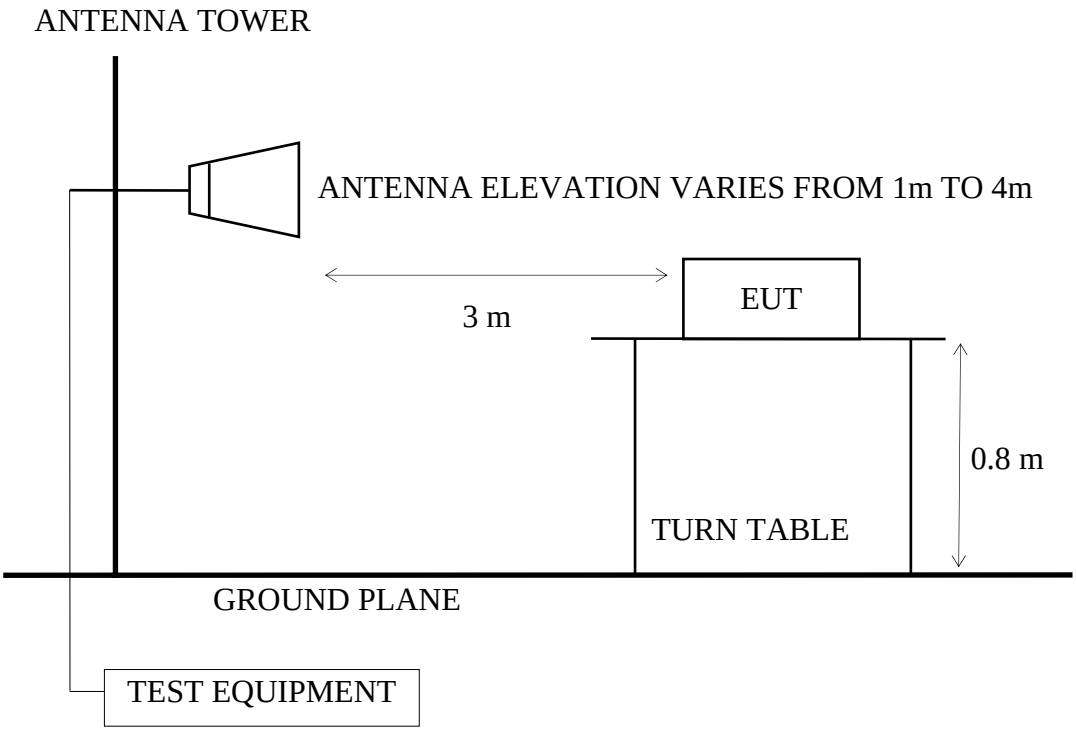
3.2.1. Block Diagram of connection between EUT and simulators



3.2.2. Semi-Anechoic Chamber (3m) Setup Diagram for 30-1000MHz



3.2.3. Semi-Anechoic Chamber (3m) Setup Diagram for above 1GHz



3.3. Radiated Emission Limits (§15.209)

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMITS	
		μV/m	dBμV/m
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0
Above 1000	3	74.0 dBμV/m (Peak) 54.0 dBμV/m (Average)	

Remark：(1) Emission level (dBμV/m) = 20 log Emission level (μV/m)
(2) The tighter limit applies at the edge between two frequency bands.
(3) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
(4) The limits in this table are based on CFR 47 Part 15.205(a)(b) and Part 15.209 (a).
(5) The over 1GHz limit, FCC limit is used based on CFR 47 Part 15.35 (b) and Part 15.205(b) & Part 15.209(e) and Part 15.207(c).

3.4. Operating Condition of EUT

3.4.1. Set up the EUT (Wi-Fi module) via Notebook PC and simulator as shown on 3.2.

3.4.2. To turn on the power of all equipments.

3.4.3. The EUT was set the Notebook PC using test program “Broadcom WL Command”.

3.4.4. The EUT supports 802.11a/n-HT20/n-HT40 modes, we performed pre-scan high, middle, low channels for each mode for spurious emission and listed the worst channel of each mode in test report.

The worst channel of each mode as following:

Mode	Type of Network	Channel
1.	802.11a	CH 48
2.	802.11n-HT20	CH 48
3.	802.11n-HT40	CH 46

3.5. Test Procedure

The EUT and its simulators were placed on a turn table which was 0.8 meter above the ground. The turn table rotated 360 degrees to determine the position of the maximum emission level. EUT was set 3 meters away from the receiving antenna which was mounted on a antenna tower. The antenna moved up and down between 1 to 4 meters to find out the maximum emission level. Broadband antenna such as calibrated biconical and log-periodical antenna or horn antenna were used as a receiving antenna. Both horizontal and vertical polarization of the antenna were set on measurement. In order to find the maximum emission, all of the interface cables were manipulated according to FCC ANSI C63.4-2003 regulation.

The bandwidth of the R&S Test Receiver was set at 120kHz. (For 30MHz to 1000MHz)

The resolution bandwidth and video bandwidth of test spectrum analyzer is 1MHz for peak detection (PK) at frequency above 1GHz.

The resolution bandwidth of test spectrum analyzer is 1MHz and the video bandwidth is 10Hz for average detection (AV) at frequency above 1GHz.

The frequency range from 30MHz to 40GHz (Up to 10^{th} harmonics from fundamental frequency) was checked. 30MHz to 1000MHz was measured with Quasi-Peak detector.

Above 1GHz was measured with peak and average detector. For frequency from 5.3GHz to 40GHz, we checked it in 1 meter distance and with a shorter cable 2 meter instead of original's. There is no signal exist.

3.6. Test Results

PASSED.
(All emissions not reported below are too low against the prescribed limits.)

EUT：Wi-Fi module M/N：WN8522D2

Test Date：Oct. 29, 2010 Temperature：23℃ Humidity：59%

The radiation tests on three different axes (stand, lie and side), we assessed the value and we selected the worst radiation position “stand” for our measured results.

For Frequency Range 30MHz~1000MHz:

The EUT select **worst position “lie”** and with following test modes was performed during this section testing and all the test results are listed in section 3.6.1.

Mode	Type of Network	Channel	Frequency	Test Mode	Reference Test Data	
					Horizontal	Vertical
1.	802.11a	CH 48	5240MHz	Transmit	# 2	# 1
2.	802.11n-HT20	CH 48	5240MHz	Transmit	# 2	# 1
3.	802.11n-HT40	CH 46	5230MHz	Transmit	# 2	# 1

* Above all final readings were measured with Quasi-Peak detector.

For Frequency above 1GHz:

The emissions (up to 40GHz) not reported are too low to be measured.

For Restricted Bands:

The EUT was tested in restricted bands and all the test results are listed in section 3.6.3. (The restricted bands defined in part 15.205(a))

Mode	Type of Network	Channel	Frequency	Test Mode	Reference Test Data	
					Horizontal	Vertical
1.	802.11a	CH 36	5180MHz	Transmit	# 2, # 3	# 1, # 4
2.	802.11n-HT20	CH 36	5180MHz	Transmit	# 2, # 3	# 1, # 4
3.	802.11n-HT40	CH 38	5190MHz	Transmit	# 3, # 2	# 4, # 1

3.6.1. Frequency Range 30-1000MHz

802.11a, Transmit, Frequency: 5240MHz

```
Site no.      : A/C Chamber                 Data no.  : 2
Dis. / Ant.   : 3m   VBA6106A/UHALP9108A    Ant. pol. : HORIZONTAL
Limit         : FCC PART-15C
Env. / Ins.   : E4446A 27℃/49%                          Jarwei Wang
EUT           : WN8122E
Power Rating  : DC 5V via Notebook
Test Mode     : TX5240(802.11a)
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	137.670	20.01	2.43	18.71	41.15	43.50	2.35	
2	235.640	22.67	3.40	8.46	34.53	46.00	11.47	
3	399.570	17.69	4.80	9.87	32.35	46.00	13.65	
4	665.350	22.65	6.40	8.10	37.15	46.00	8.85	
5	704.150	23.56	6.60	10.08	40.24	46.00	5.76	
6	798.240	24.09	6.90	7.86	38.85	46.00	7.15	
7	966.050	26.89	7.70	1.75	36.34	54.00	17.66	

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

```
Site no.      : A/C Chamber                 Data no.  : 1
Dis. / Ant.   : 3m   VBA6106A/UHALP9108A    Ant. pol. : VERTICAL
Limit         : FCC PART-15C
Env. / Ins.   : E4446A 27℃/49%                          Jarwei Wang
EUT           : WN8122E
Power Rating  : DC 5V via Notebook
Test Mode     : TX5240(802.11a)
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	133.790	19.89	2.40	12.80	35.09	43.50	8.41	
2	400.540	17.66	4.80	4.66	27.12	46.00	18.88	
3	532.460	19.64	7.00	9.54	36.18	46.00	9.82	
4	667.290	22.80	6.40	15.25	44.45	46.00	1.55	
5	704.150	23.56	6.60	6.71	36.87	46.00	9.13	
6	796.300	24.04	6.90	2.15	33.09	46.00	12.91	
7	971.870	26.79	7.70	0.40	34.89	54.00	19.11	

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

802.11n-HT20, Transmit, Frequency: 5240MHz

```
Site no.      : A/C Chamber                  Data no.   : 2
Dis. / Ant.   : 3m   VBA6106A/UHALP9108A     Ant. pol. : HORIZONTAL
Limit         : FCC PART-15C
Env. / Ins.   : E4446A 27℃/49%                          Jarwei Wang
EUT           : WN8122E
Power Rating  : DC 5V via Notebook
Test Mode     : TX5240(802.11n-HT20)
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	135.730	19.95	2.40	17.41	39.76	43.50	3.74	
2	400.540	17.66	4.80	7.75	30.21	46.00	15.79	
3	600.360	21.31	6.30	5.08	32.69	46.00	13.31	
4	667.290	22.80	6.40	9.71	38.91	46.00	7.09	
5	704.150	23.56	6.60	10.47	40.63	46.00	5.37	
6	798.240	24.09	6.90	5.68	36.67	46.00	9.33	
7	933.070	25.23	7.50	3.76	36.49	46.00	9.51	

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

```
Site no.      : A/C Chamber                  Data no.   : 1
Dis. / Ant.   : 3m   VBA6106A/UHALP9108A     Ant. pol. : VERTICAL
Limit         : FCC PART-15C
Env. / Ins.   : E4446A 27℃/49%                          Jarwei Wang
EUT           : WN8122E
Power Rating  : DC 5V via Notebook
Test Mode     : TX5240(802.11n-HT20)
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	133.790	19.89	2.40	13.07	35.36	43.50	8.14	
2	399.570	17.69	4.80	5.67	28.15	46.00	17.85	
3	501.420	18.95	6.52	9.65	35.13	46.00	10.87	
4	534.400	19.57	7.00	10.83	37.40	46.00	8.60	
5	665.350	22.65	6.40	11.32	40.37	46.00	5.63	
6	933.070	25.23	7.50	3.17	35.90	46.00	10.10	

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

802.11n-HT40, Transmit, Frequency: 5230MHz

```
Site no.      : A/C Chamber                  Data no.  : 2
Dis. / Ant.   : 3m   VBA6106A/UHALP9108A     Ant. pol. : HORIZONTAL
Limit         : FCC PART-15C
Env. / Ins.   : E4446A 27℃/49%                          Jarwei Wang
EUT           : WN8122E
Power Rating  : DC 5V via Notebook
Test Mode     : TX5230(802.11n-HT40)
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	137.670	20.01	2.43	18.39	40.83	43.50	2.67	
2	241.460	23.16	3.40	6.17	32.73	46.00	13.27	
3	400.540	17.66	4.80	7.00	29.46	46.00	16.54	
4	600.360	21.31	6.30	5.23	32.84	46.00	13.16	
5	667.290	22.80	6.40	14.34	43.54	46.00	2.46	
6	704.150	23.56	6.60	10.08	40.24	46.00	5.76	
7	800.180	24.14	6.90	5.16	36.19	46.00	9.81	

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

```
Site no.      : A/C Chamber                  Data no.  : 1
Dis. / Ant.   : 3m   VBA6106A/UHALP9108A     Ant. pol. : VERTICAL
Limit         : FCC PART-15C
Env. / Ins.   : E4446A 27℃/49%                          Jarwei Wang
EUT           : WN8122E
Power Rating  : DC 5V via Notebook
Test Mode     : TX5230(802.11n-HT40)
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	133.790	19.89	2.40	11.49	33.78	43.50	9.72	
2	399.570	17.69	4.80	4.48	26.96	46.00	19.04	
3	501.420	18.95	6.52	8.78	34.26	46.00	11.74	
4	534.400	19.57	7.00	10.44	37.01	46.00	8.99	
5	667.290	22.80	6.40	8.57	37.77	46.00	8.23	
6	861.290	26.09	7.20	-0.26	33.03	46.00	12.97	
7	969.930	26.83	7.69	0.77	35.30	54.00	18.70	

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

3.6.2. Restricted Bands Measurement Results

Date of Test： Sep. 20, 2011 Temperature： 27℃

EUT： Wi-Fi module Humidity： 49%

Test Mode： 802.11a, Transmit, Channel: 36, Frequency: 5180MHz

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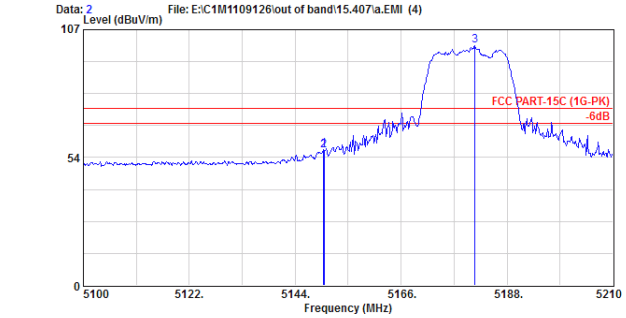


```
Site no.      : A/C Chamber                Data no.  : 2
Dis. / Ant.   : 3m   3115(3775)            Ant. pol. : HORIZONTAL
Limit         : FCC PART-15C (1G-PK)
Env. / Ins.   : E4446A 27℃/49%                       Jarwei Wang
EUT           : WN8122E
Power Rating  : DC 5V via Notebook
Test Mode     : TX5180(802.11a)
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	5149.940	33.45	9.43	13.84	56.72	74.00	17.28	Peak
2	5150.050	33.45	9.43	13.71	56.60	74.00	17.40	Peak
3	5181.290	33.48	9.46	57.24	100.18	74.00	-26.18	Peak

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

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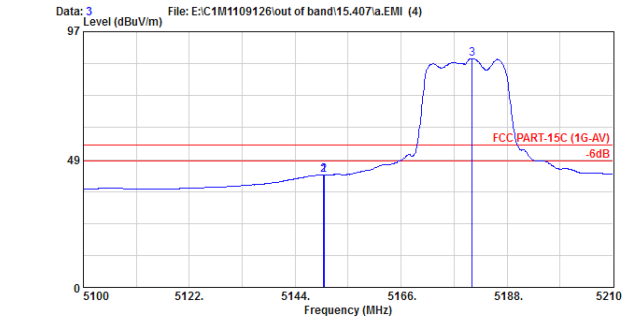


```
Site no.      : A/C Chamber                Data no.  : 3
Dis. / Ant.   : 3m   3115(3775)            Ant. pol. : HORIZONTAL
Limit         : FCC PART-15C (1G-AV)
Env. / Ins.   : E4446A 27℃/49%                       Jarwei Wang
EUT           : WN8122E
Power Rating  : DC 5V via Notebook
Test Mode     : TX5180(802.11a)
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	5149.940	33.45	9.43	-0.29	42.59	54.00	11.41	Average
2	5150.050	33.45	9.43	-0.28	42.61	54.00	11.39	Average
3	5180.740	33.48	9.46	43.88	86.82	54.00	-32.82	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：	Sep. 20, 2011	Temperature：	27℃
EUT：	Wi-Fi module	Humidity：	49%
Test Mode：	802.11a, Transmit, Channel: 36, Frequency: 5180MHz		

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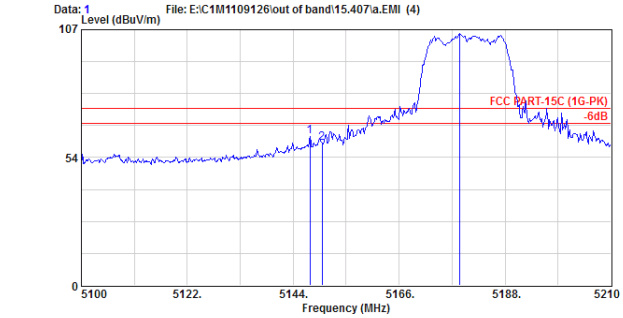


```
Site no.      : A/C Chamber                Data no.  : 1
Dis. / Ant.   : 3m   3115(3775)            Ant. pol. : VERTICAL
Limit         : FCC PART-15C (1G-PK)
Env. / Ins.   : E4446A 27℃/49%                       Jarwei Wang
EUT           : WN8122E
Power Rating  : DC 5V via Notebook
Test Mode     : TX5180(802.11a)
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	5147.520	33.45	9.43	19.25	62.14	74.00	11.86	Peak
2	5150.050	33.45	9.43	16.86	59.74	74.00	14.26	Peak
3	5178.540	33.48	9.46	62.58	105.52	74.00	-31.52	Peak

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

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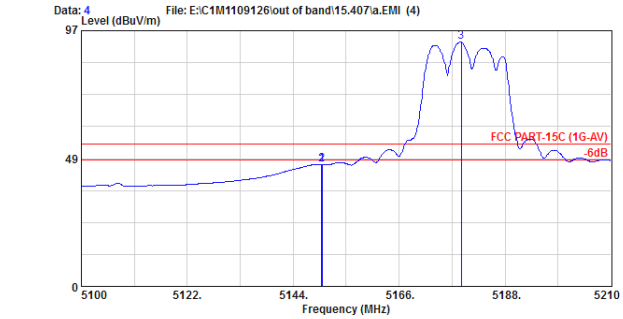


```
Site no.      : A/C Chamber                Data no.  : 4
Dis. / Ant.   : 3m   3115(3775)            Ant. pol. : VERTICAL
Limit         : FCC PART-15C (1G-AV)
Env. / Ins.   : E4446A 27℃/49%                       Jarwei Wang
EUT           : WN8122E
Power Rating  : DC 5V via Notebook
Test Mode     : TX5180(802.11a)
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	5149.940	33.45	9.43	3.39	46.27	54.00	7.73	Average
2	5150.050	33.45	9.43	3.38	46.26	54.00	7.74	Average
3	5178.870	33.48	9.46	49.68	92.63	54.00	-38.63	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： Sep. 20, 2011 Temperature： 27℃

EUT： Wi-Fi module Humidity： 49%

Test Mode： 802.11n-HT20, Transmit, Channel: 36, Frequency: 5180MHz

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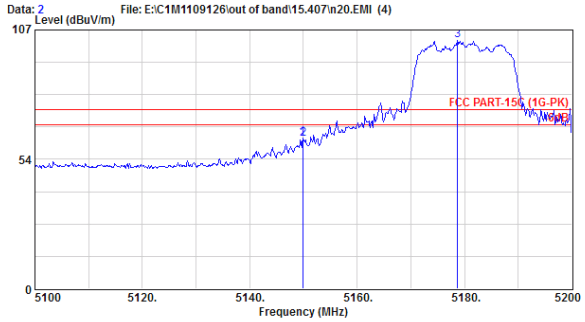


```
Site no.      : A/C Chamber              Data no.  : 2
Dis. / Ant.   : 3m   3115(3775)          Ant. pol. : HORIZONTAL
Limit         : FCC PART-15C (1G-PK)
Env. / Ins.   : E4446A 27℃/49%                     Jarwei Wang
EUT           : WN8122E
Power Rating  : DC 5V via Notebook
Test Mode     : TX5180(802.11n-HT20)
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	5149.900	33.45	9.43	19.60	62.48	74.00	11.52	Peak
2	5150.000	33.45	9.43	19.07	61.95	74.00	12.05	Peak
3	5178.700	33.48	9.46	59.85	102.80	74.00	-28.80	Peak

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

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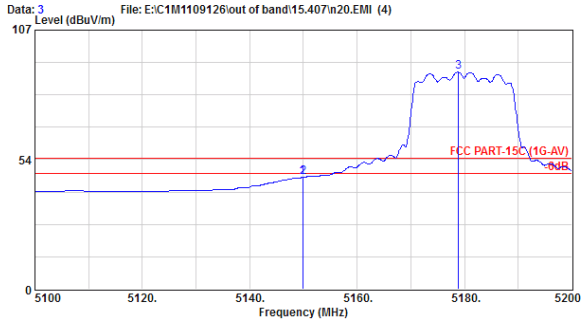


```
Site no.      : A/C Chamber              Data no.  : 3
Dis. / Ant.   : 3m   3115(3775)          Ant. pol. : HORIZONTAL
Limit         : FCC PART-15C (1G-AV)
Env. / Ins.   : E4446A 27℃/49%                     Jarwei Wang
EUT           : WN8122E
Power Rating  : DC 5V via Notebook
Test Mode     : TX5180(802.11n-HT20)
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	5149.900	33.45	9.43	3.26	46.14	54.00	7.86	Average
2	5150.000	33.45	9.43	3.29	46.17	54.00	7.83	Average
3	5178.900	33.48	9.46	46.72	89.67	54.00	-35.67	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：	Sep. 20, 2011	Temperature：	27℃
EUT：	Wi-Fi module	Humidity：	49%
Test Mode：	802.11n-HT20, Transmit, Channel: 36, Frequency: 5180MHz		

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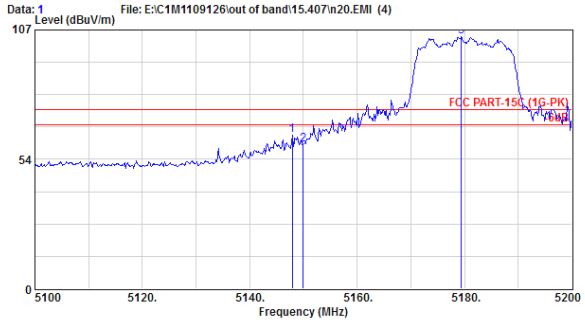


```
Site no.      : A/C Chamber                Data no.  : 1
Dis. / Ant.   : 3m   3115(3775)            Ant. pol. : VERTICAL
Limit         : FCC PART-15C (1G-PK)
Env. / Ins.   : E4446A 27℃/49%                       Jarwei Wang
EUT           : WN8122E
Power Rating  : DC 5V via Notebook
Test Mode     : TX5180(802.11n-HT20)
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	5147.900	33.45	9.43	20.57	63.46	74.00	10.54	Peak
2	5150.000	33.45	9.43	16.77	59.65	74.00	14.35	Peak
3	5179.400	33.48	9.46	61.29	104.24	74.00	-30.24	Peak

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

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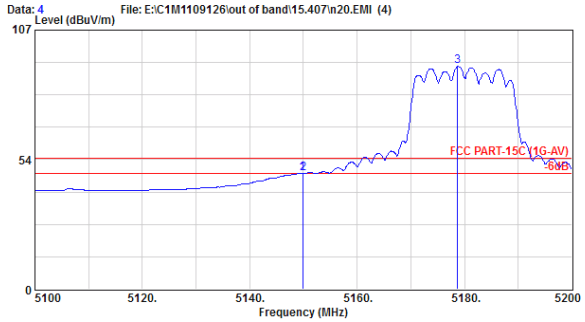


```
Site no.      : A/C Chamber                Data no.  : 4
Dis. / Ant.   : 3m   3115(3775)            Ant. pol. : VERTICAL
Limit         : FCC PART-15C (1G-AV)
Env. / Ins.   : E4446A 27℃/49%                       Jarwei Wang
EUT           : WN8122E
Power Rating  : DC 5V via Notebook
Test Mode     : TX5180(802.11n-HT20)
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	5149.900	33.45	9.43	4.75	47.63	54.00	6.37	Average
2	5150.000	33.45	9.43	4.81	47.69	54.00	6.31	Average
3	5178.700	33.48	9.46	49.01	91.96	54.00	-37.96	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：	Sep. 20, 2011	Temperature：	27℃
EUT：	Wi-Fi module	Humidity：	49%
Test Mode：	802.11n-HT40, Transmit, Channel: 38, Frequency: 5190MHz		

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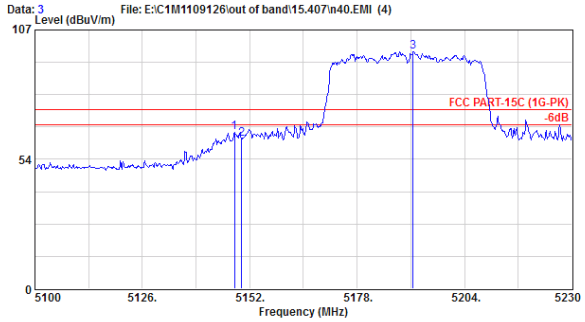


```
Site no.      : A/C Chamber                Data no.  : 3
Dis. / Ant.   : 3m   3115(3775)            Ant. pol. : HORIZONTAL
Limit         : FCC PART-15C (1G-PK)
Env. / Ins.   : E4446A 27℃/49%                       Jarwei Wang
EUT           : WN8122E
Power Rating  : DC 5V via Notebook
Test Mode     : TX5190(802.11n-HT40)
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	5148.360	33.45	9.43	21.71	64.60	74.00	9.40	Peak
2	5150.050	33.45	9.43	19.08	61.96	74.00	12.04	Peak
3	5191.520	33.50	9.48	55.09	98.06	74.00	-24.06	Peak

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

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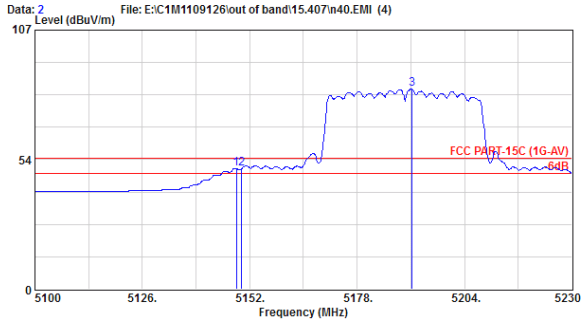


```
Site no.      : A/C Chamber                Data no.  : 2
Dis. / Ant.   : 3m   3115(3775)            Ant. pol. : VERTICAL
Limit         : FCC PART-15C (1G-AV)
Env. / Ins.   : E4446A 27℃/49%                       Jarwei Wang
EUT           : WN8122E
Power Rating  : DC 5V via Notebook
Test Mode     : TX5190(802.11n-HT40)
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	5148.750	33.45	9.43	6.98	49.86	54.00	4.14	Average
2	5150.050	33.45	9.43	6.81	49.69	54.00	4.31	Average
3	5191.260	33.50	9.48	39.68	82.65	54.00	-28.65	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：	Sep. 20, 2011	Temperature：	27℃
EUT：	Wi-Fi module	Humidity：	49%
Test Mode：	802.11n-HT20, Transmit, Channel: 36, Frequency: 5180MHz		

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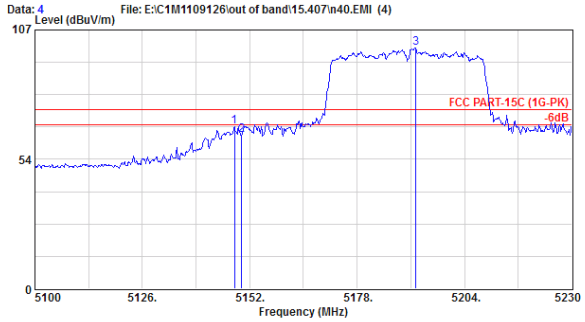
Email:ttemc@ttemc.com.tw




```
Site no.      : A/C Chamber                Data no.  : 4
Dis. / Ant.   : 3m   3115(3775)            Ant. pol. : VERTICAL
Limit         : FCC PART-15C (1G-PK)
Env. / Ins.   : E4446A 27℃/49%                       Jarwei Wang
EUT           : WN8122E
Power Rating  : DC 5V via Notebook
Test Mode     : TX5190(802.11n-HT40)
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	5148.360	33.45	9.43	23.98	66.87	74.00	7.13	Peak
2	5150.050	33.45	9.43	20.66	63.54	74.00	10.46	Peak
3	5192.170	33.50	9.48	56.77	99.74	74.00	-25.74	Peak

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

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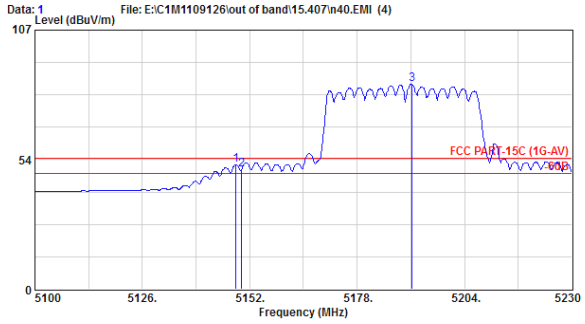



```
Site no.      : A/C Chamber                Data no.  : 1
Dis. / Ant.   : 3m   3115(3775)            Ant. pol. : VERTICAL
Limit         : FCC PART-15C (1G-AV)
Env. / Ins.   : E4446A 27℃/49%                       Jarwei Wang
EUT           : WN8122E
Power Rating  : DC 5V via Notebook
Test Mode     : TX5190(802.11n-HT40)
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	5148.620	33.45	9.43	8.46	51.35	54.00	2.65	Average
2	5150.050	33.45	9.43	6.57	49.45	54.00	4.55	Average
3	5191.260	33.50	9.48	41.58	84.55	54.00	-30.55	Average

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

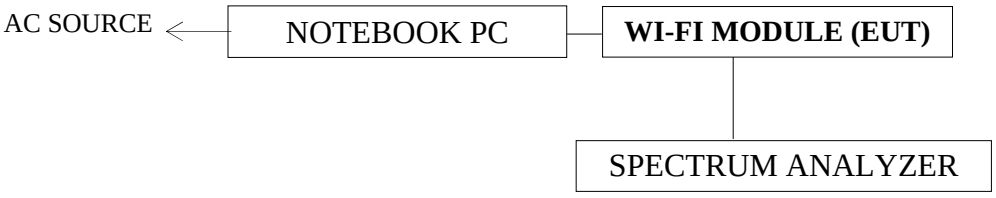
4. 26dB BANDWIDTH MEASUREMENT

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. Operating Condition of EUT

The test program “Broadcom WL Command” was used to enable the EUT to transmit data at different channel frequency individually.

4.4. Test Procedure

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer with RBW=300kHz VBW=1MHz. The 26dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 26dB.

The measurement guideline was according to DA-02-2138A1

4.5. Test Results

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

(Test Date : Sep. 21, 2011 Temperature : 26℃ Humidity : 55%)
(Test Date : Sep. 22, 2011 Temperature : 24℃ Humidity : 53%)

4.5.1. For 802.11a

Mode	Type of Network	Channel	Frequency	**26dB Bandwidth**
1.	802.11a	CH 36	5180MHz	**18.45MHz**
2.		CH 40	5200MHz	**18.75MHz**
3.		CH 48	5240MHz	**18.90MHz**

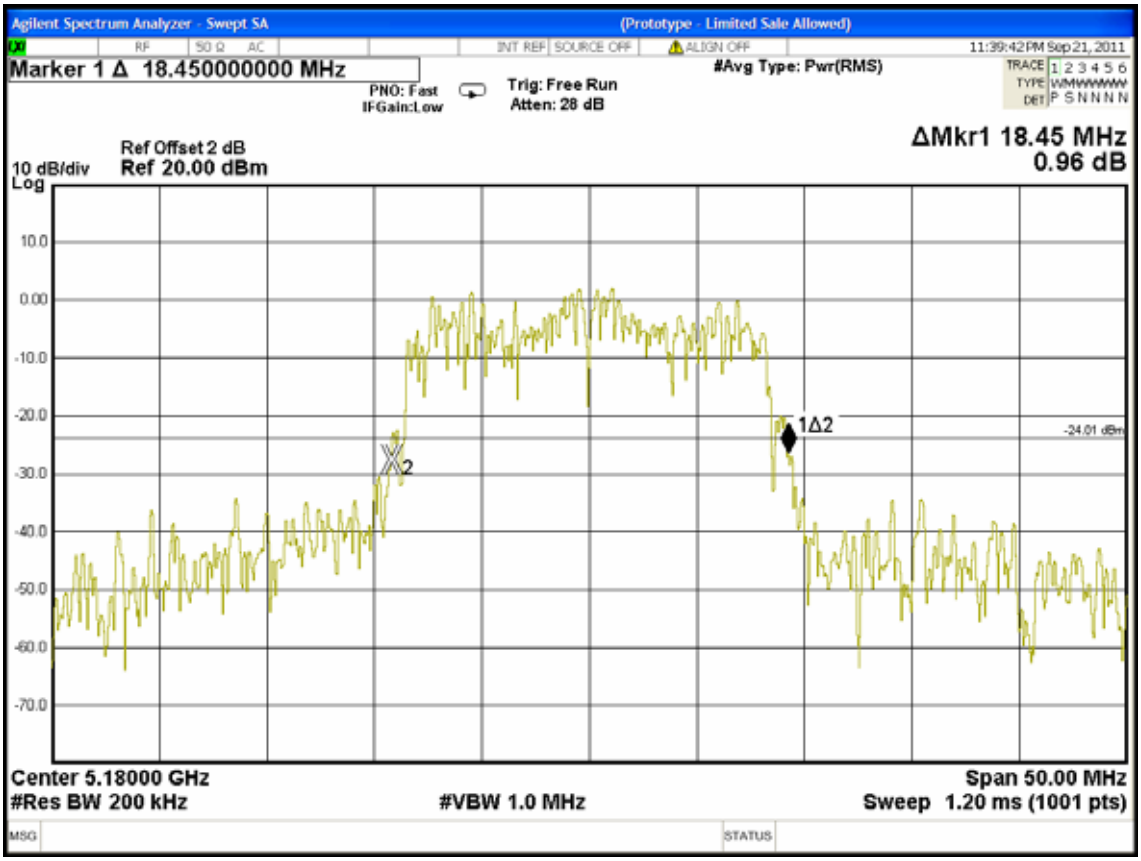
4.5.2. For 802.11n-HT20

Mode	Type of Network	Channel	Frequency	**26dB Bandwidth**
1.	802.11n-HT20	CH 36	5180MHz	**19.15MHz**
2.		CH 40	5200MHz	**19.05MHz**
3.		CH 48	5240MHz	**18.80MHz**

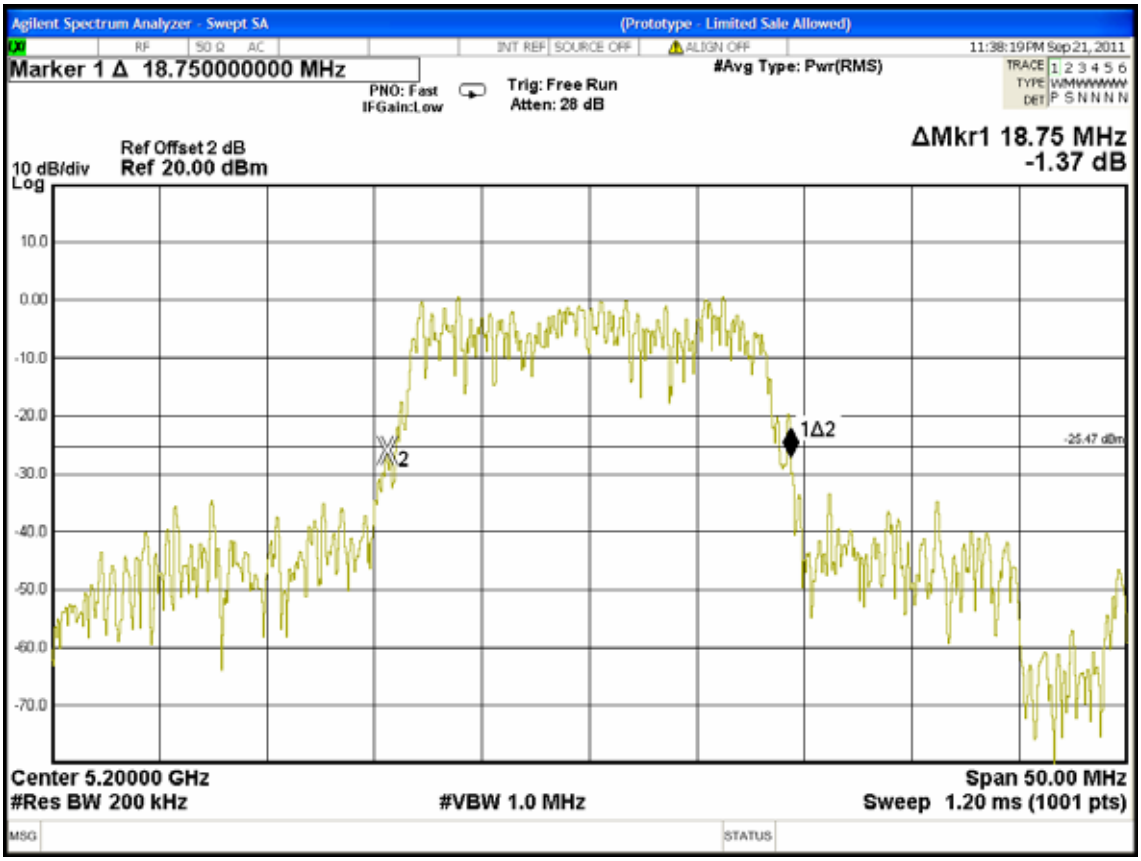
4.5.3. For 802.11n-HT40

Mode	Type of Network	Channel	Frequency	**26dB Bandwidth**
1.	802.11n-HT40	CH 38	5190MHz	**37.92MHz**
2.		CH 46	5230MHz	**38.48MHz**

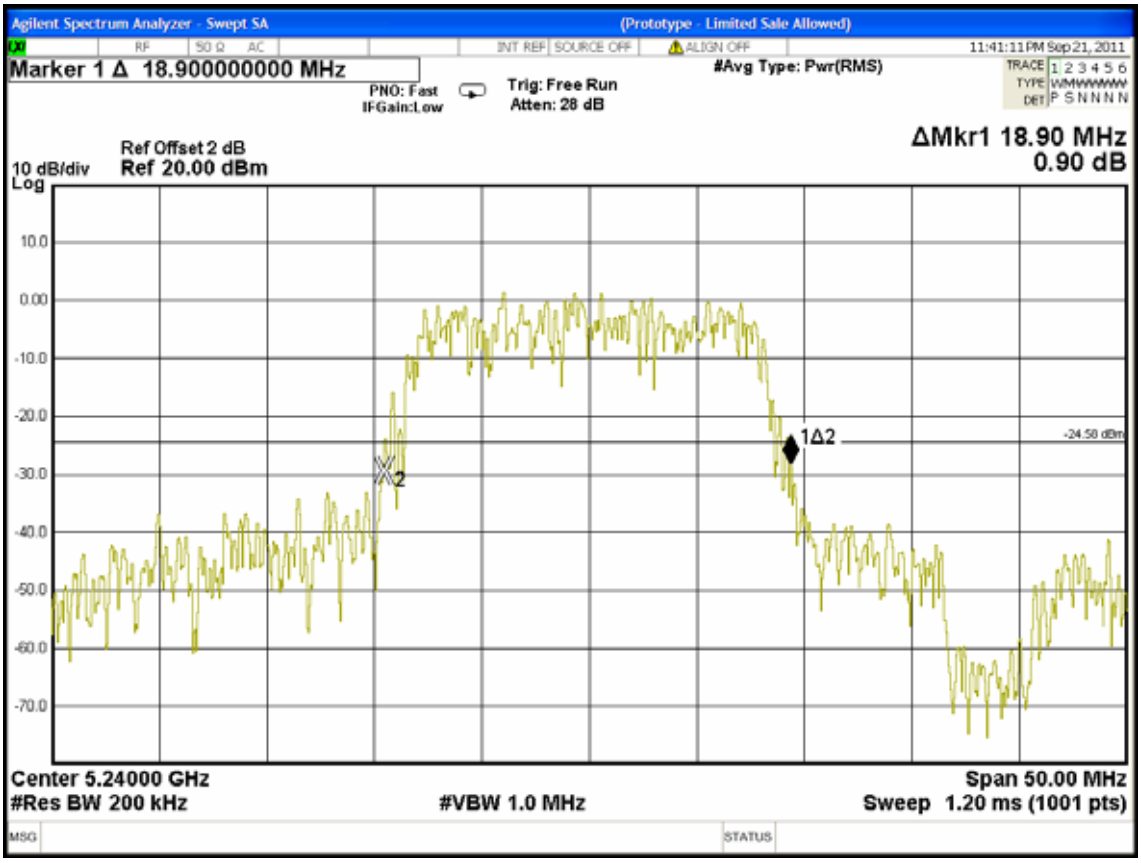
802.11a, Frequency: 5180MHz



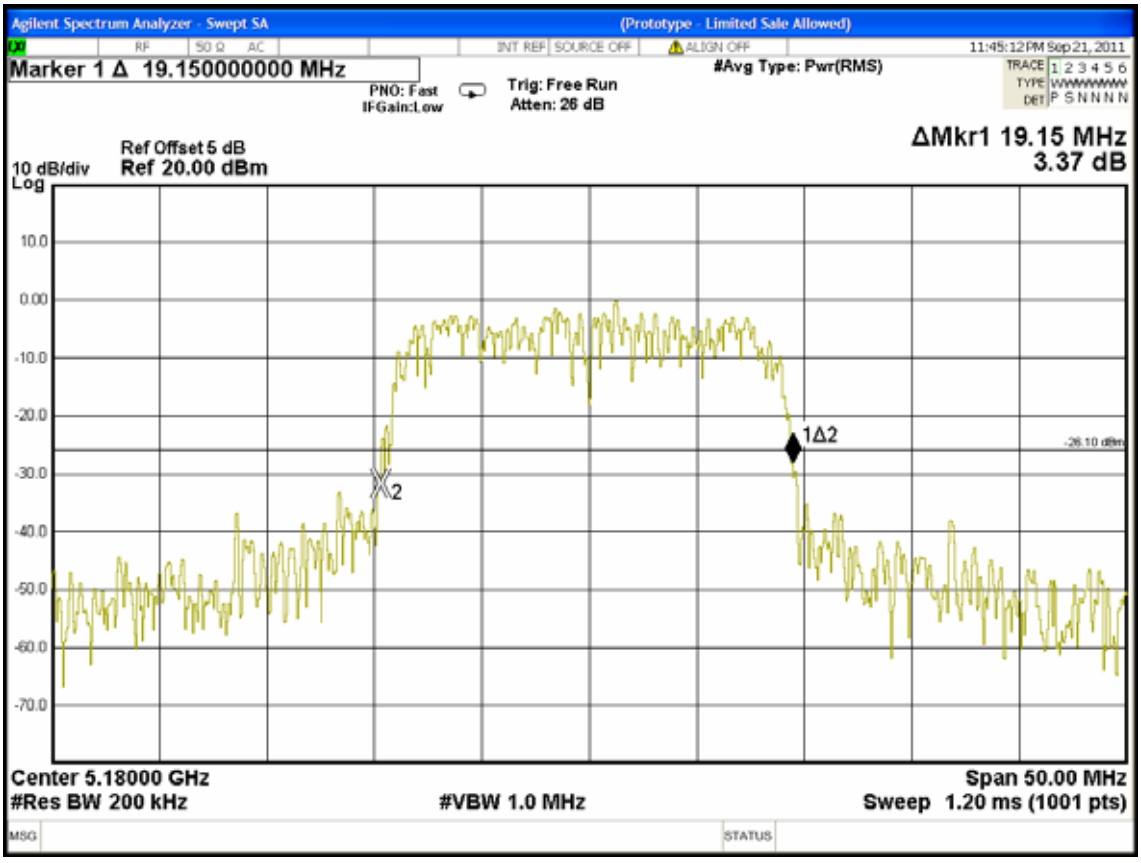
802.11a, Frequency: 5200MHz



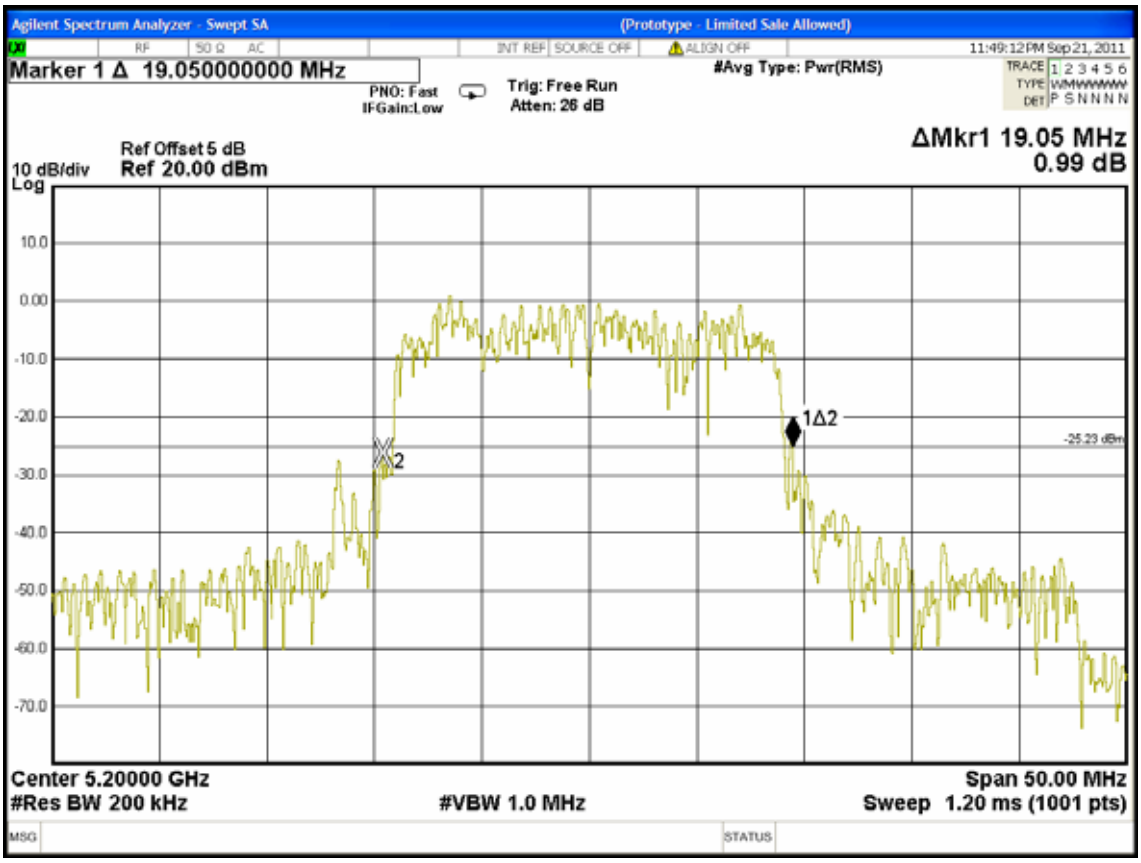
802.11a, Frequency: 5240MHz



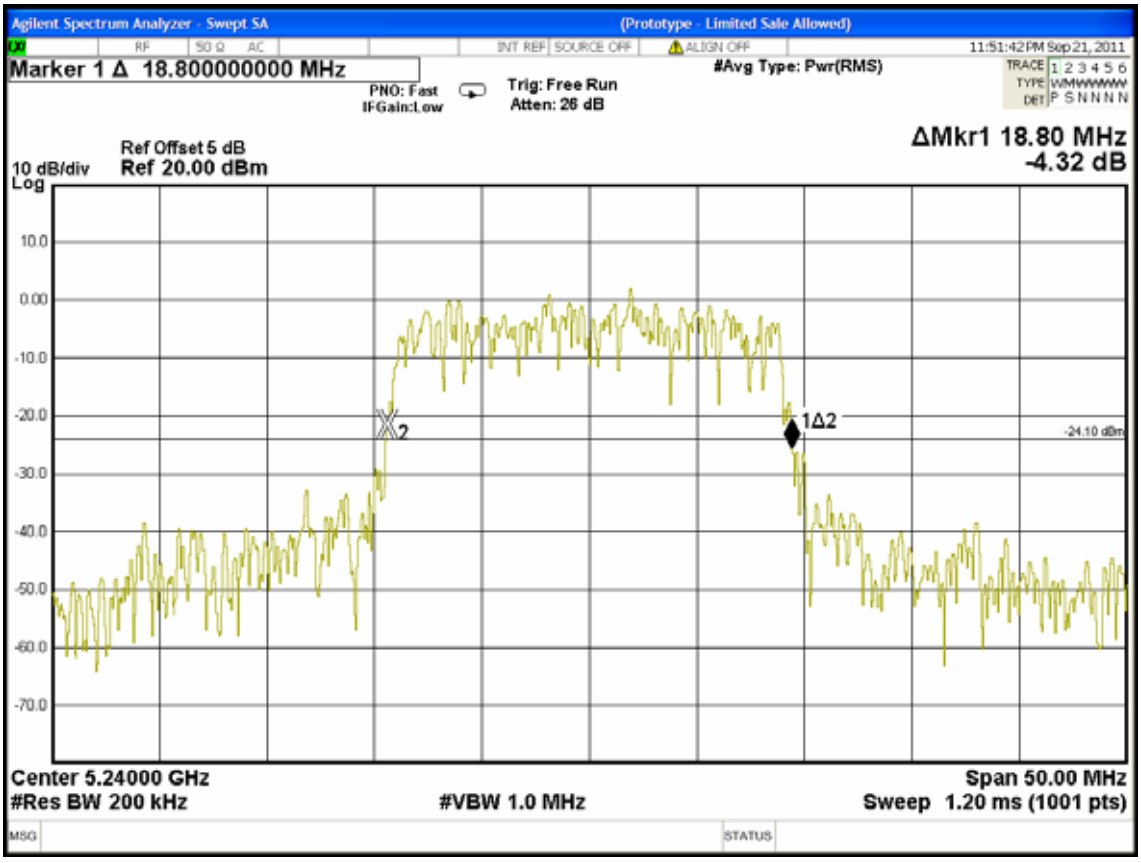
802.11n-HT20, Frequency: 5180MHz



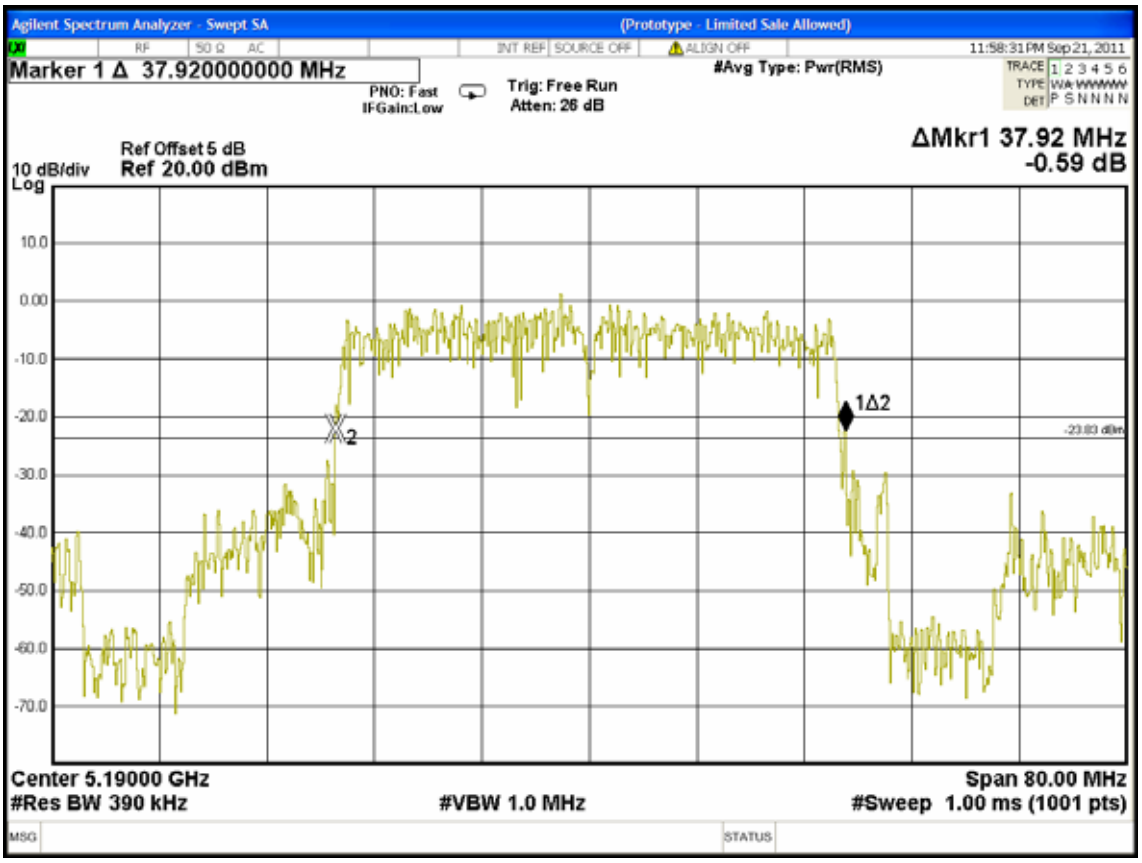
802.11n-HT20, Frequency: 5200MHz



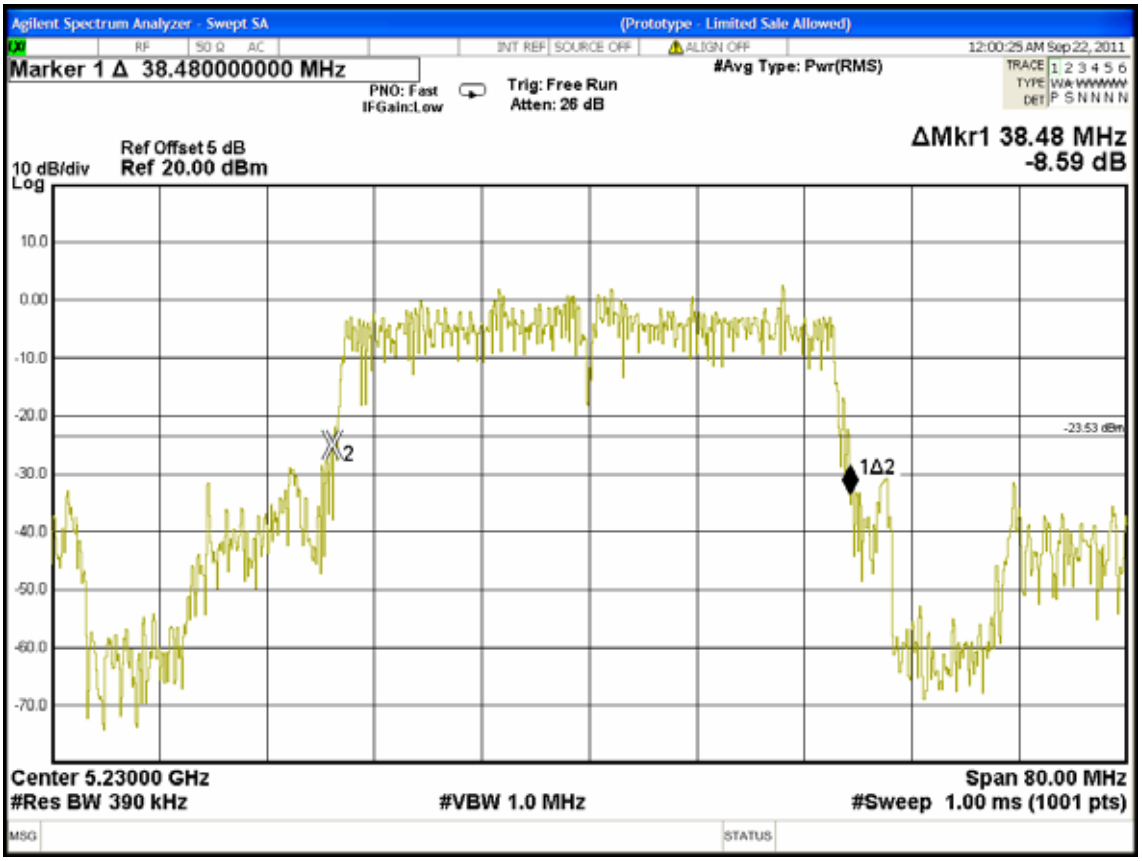
802.11n-HT20, Frequency: 5240MHz



802.11n-HT40, Frequency: 5190MHz



802.11n-HT40, Frequency: 5230MHz



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 (§15.407(a)-(1))

5.3.1. For 802.11a

Frequency	Limit 1	Limit 2 (4dBm+10log B)
5150~5250MHz	50mW (17dBm)	16.76dBm

Remark: B= 26dB Bandwidth

5.3.2. For 802.11n-HT20

Frequency	Limit 1	Limit 2 (4dBm+10log B)
5150~5250MHz	50mW (17dBm)	16.82dBm

Remark: B= 26dB Bandwidth

5.3.3. For 802.11n-HT40

Frequency	Limit 1	Limit 2 (4dBm+10log B)
5150~5250MHz	50mW (17dBm)	19.85dBm

Remark: B= 26dB Bandwidth

5.4. Operating Condition of EUT

The test program “Broadcom WL Command” was used to enable the EUT to transmit data at different channel frequency individually.

5.5. Test Procedure

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices-Part 15, Subpart E, August 2002.

The transmitter output operates continuously therefore Method#1 is used.

The measurement guideline was according to DA-02-2138A1

5.6. Test Results

PASSED. All the test results are listed below.

(Test Date : Sep. 21, 2011 Temperature : 26℃ Humidity : 55%)

5.6.1. For 802.11a

Mode	Type of Network	Channel	Frequency	**Peak output power (dBm)**		**Total Peak Output Power (dBm)**	Power Setting
				Ant. 0	**Ant. 1**		
1.	802.11a	CH 36	5180MHz	**10.42**	**10.08**	**13.26**	40
2.		CH 40	5200MHz	**10.40**	**10.48**	**13.89**	40
3.		CH 48	5240MHz	**10.88**	**10.87**	**13.45**	40

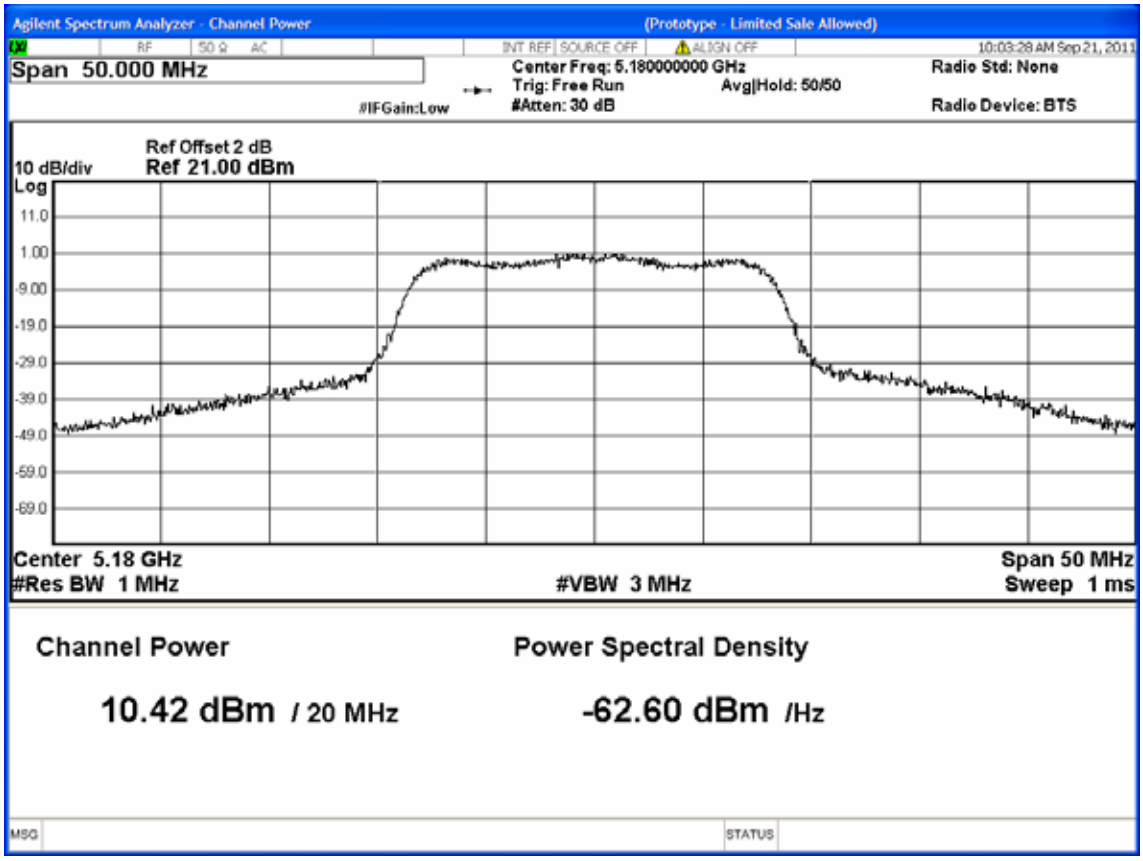
5.6.2. For 802.11n-HT20

Mode	Type of Network	Channel	Frequency	**Peak output power (dBm)**		**Total Peak Output Power (dBm)**	Power Setting
				Ant. 0	**Ant. 1**		
1.	802.11n-HT20	CH 36	5180MHz	**11.13**	**11.25**	**14.20**	40
2.		CH 40	5200MHz	**11.21**	**11.15**	**14.19**	40
3.		CH 48	5240MHz	**11.66**	**11.66**	**14.67**	40

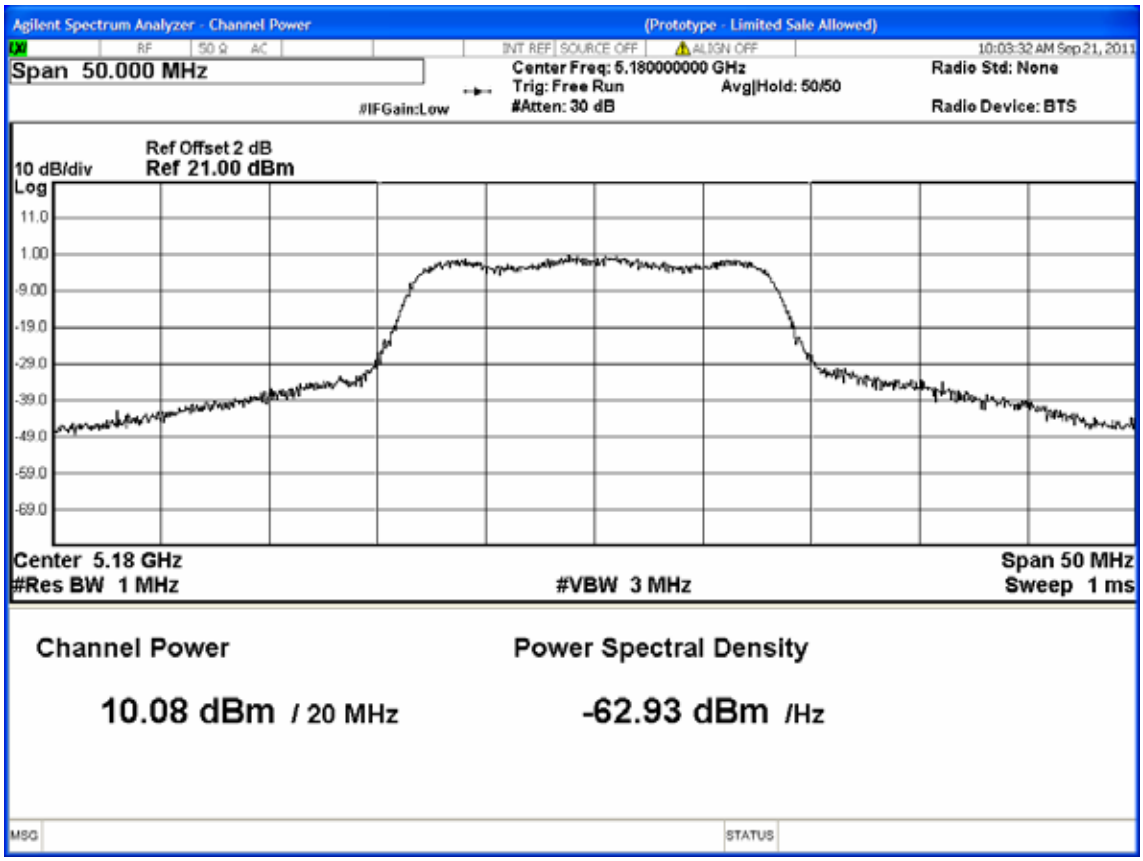
5.6.3. For 802.11n-HT40

Mode	Type of Network	Channel	Frequency	**Peak output power (dBm)**		**Total Peak Output Power (dBm)**	Power Setting
				Ant. 0	**Ant. 1**		
1.	802.11n-HT40	CH 38	5190MHz	**11.02**	**11.11**	**14.08**	56
2.		CH 46	5230MHz	**12.39**	**12.47**	**15.44**	56

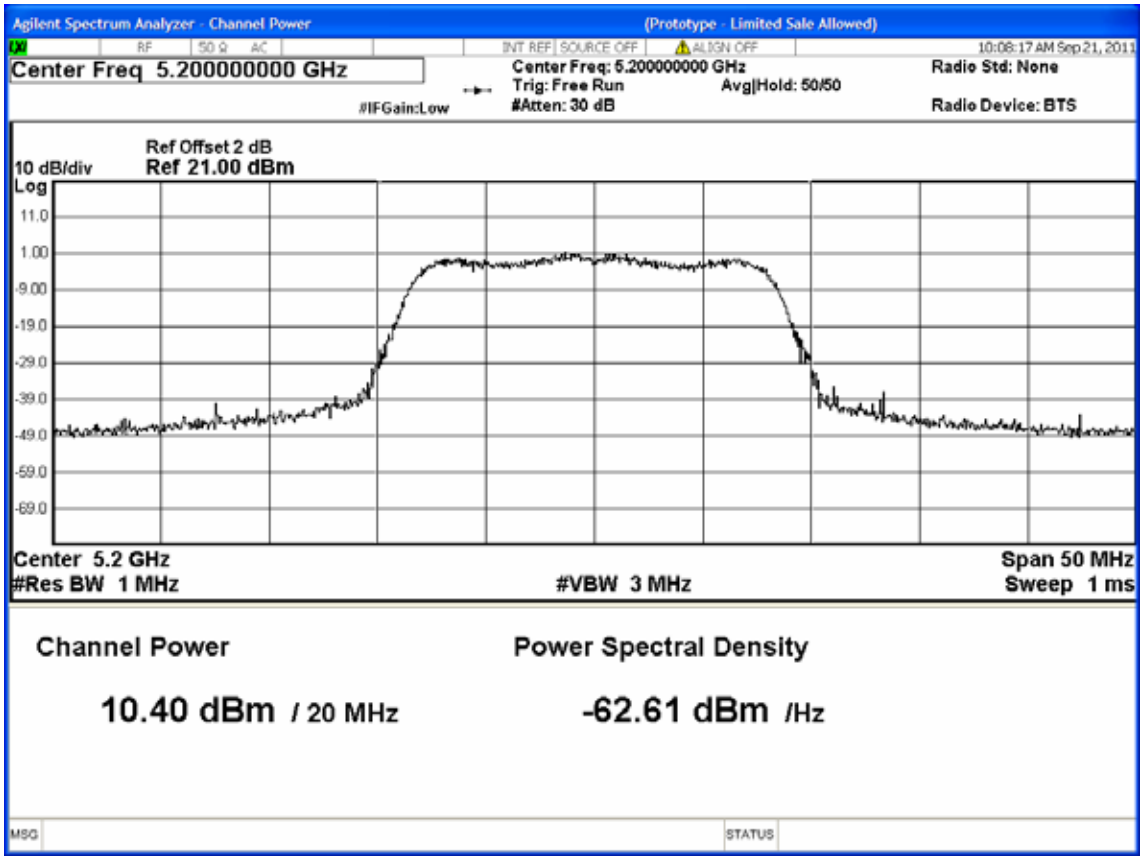
802.11a, Frequency: 5180MHz (Ant. 0)



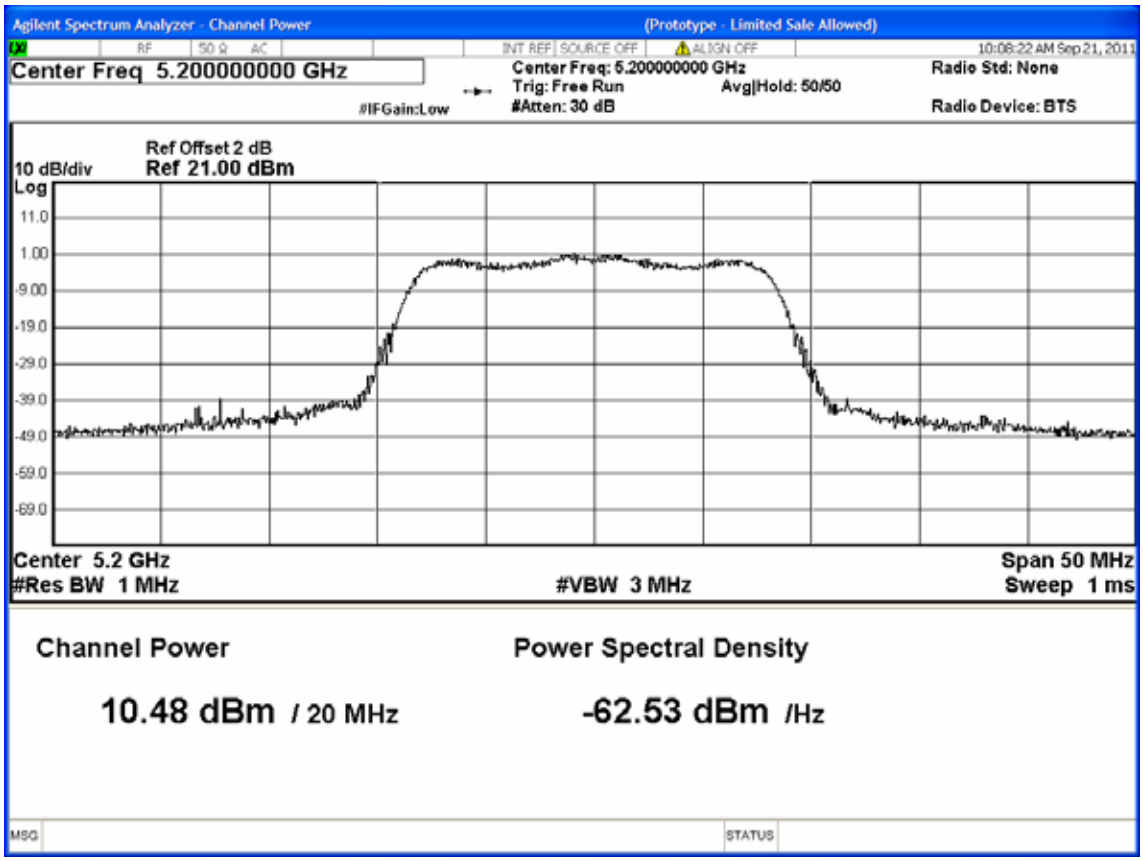
802.11a, Frequency: 5180MHz (Ant. 1)



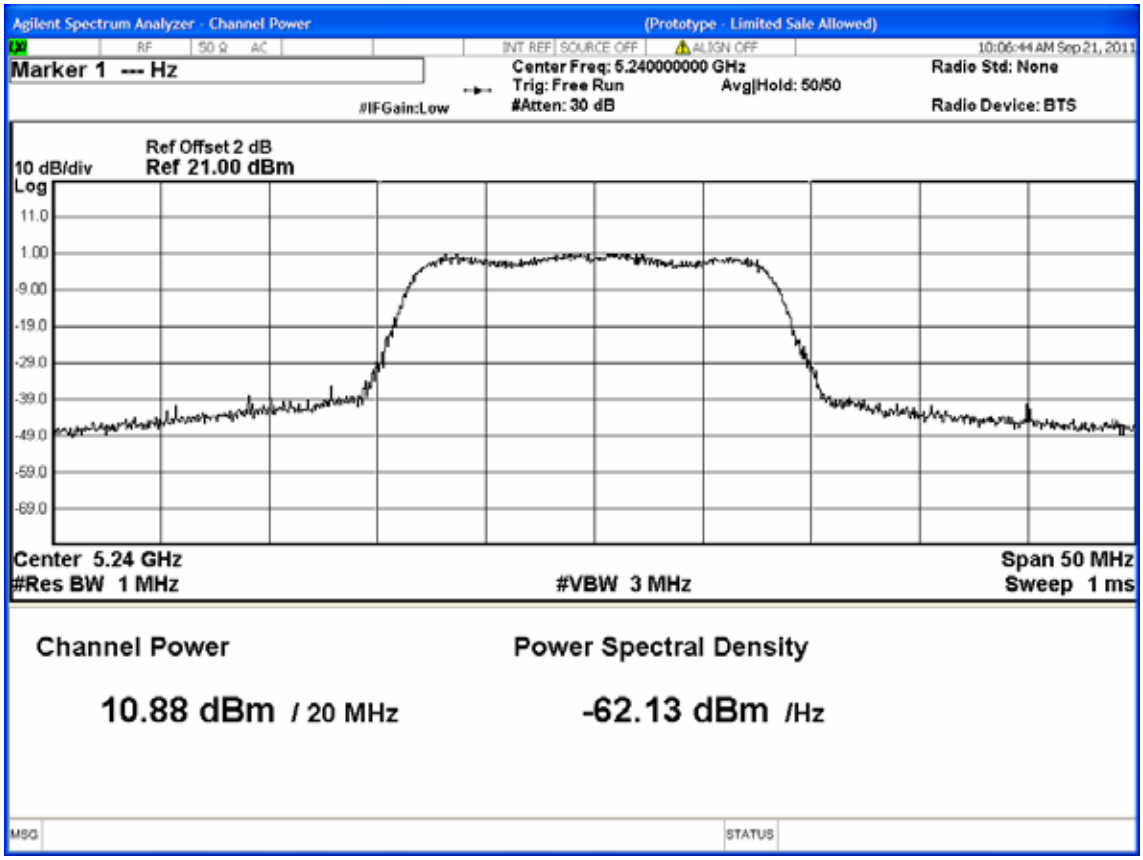
802.11a, Frequency: 5200MHz (Ant. 0)



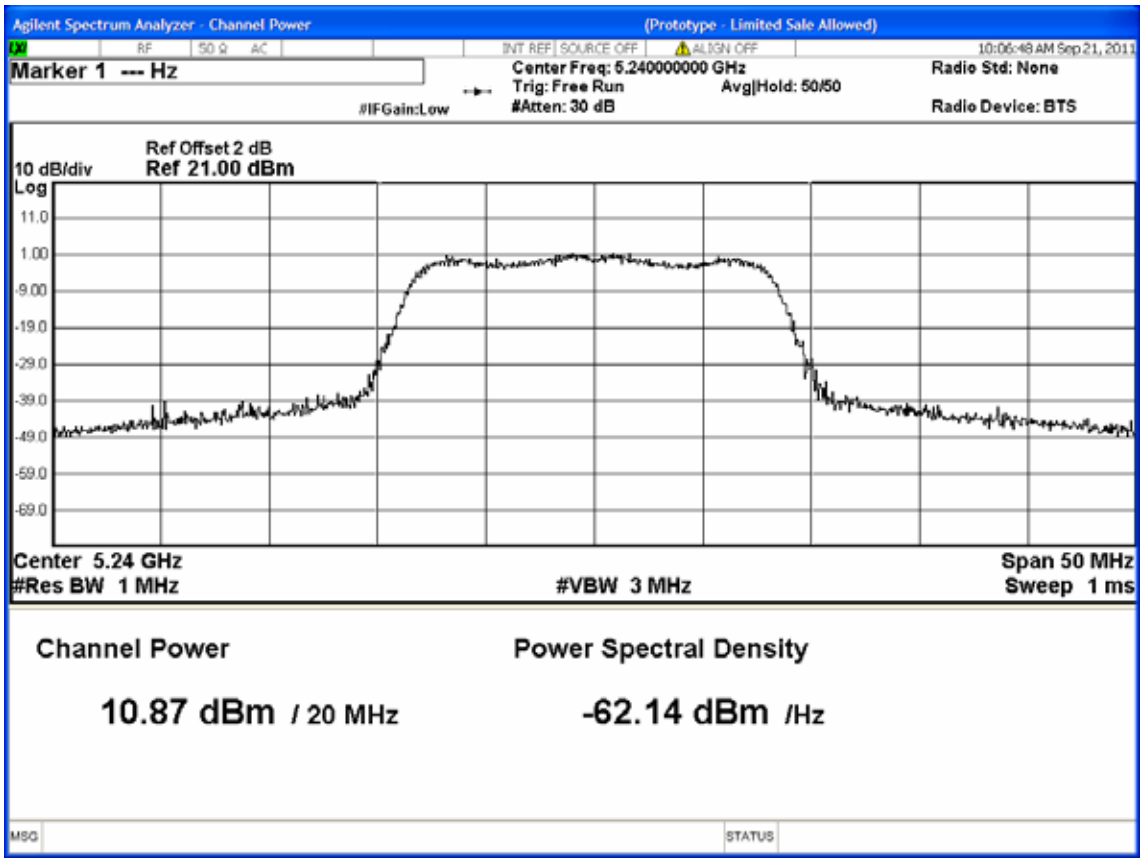
802.11a, Frequency: 5200MHz (Ant. 1)



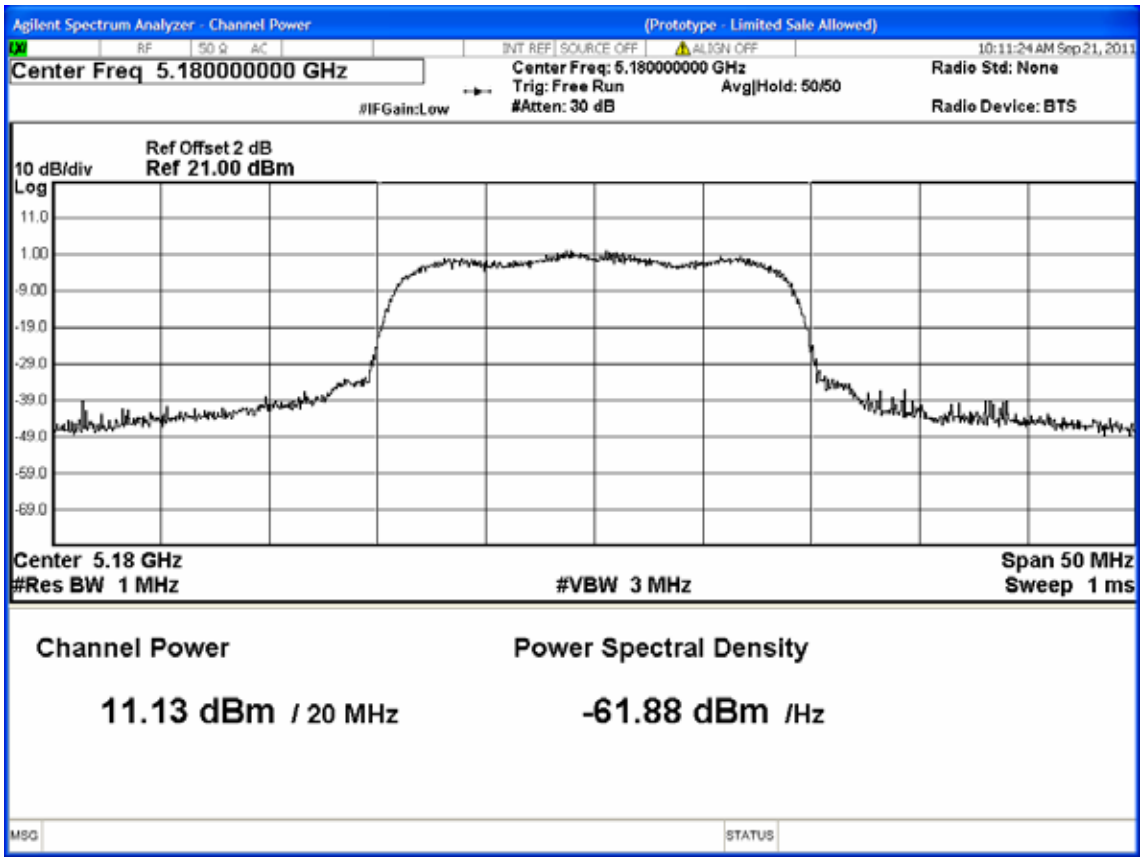
802.11a, Frequency: 5240MHz (Ant. 0)



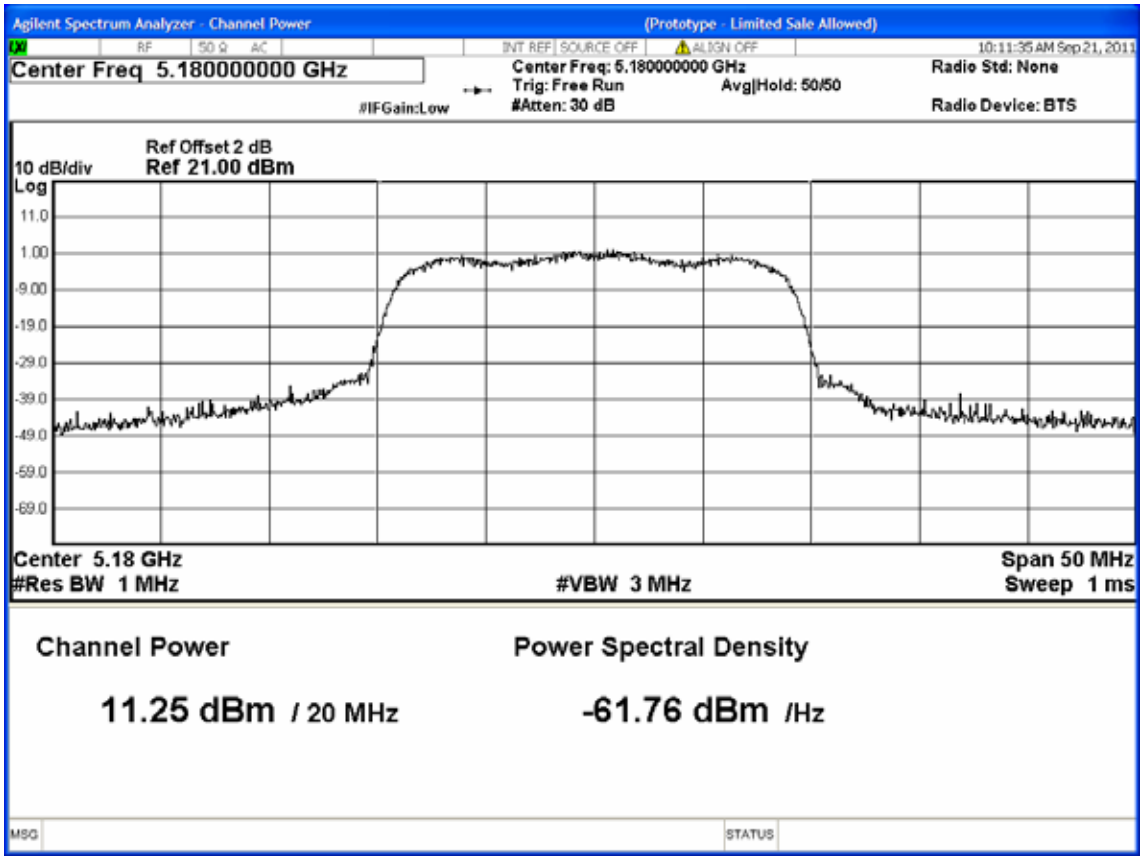
802.11a, Frequency: 5240MHz (Ant. 0)



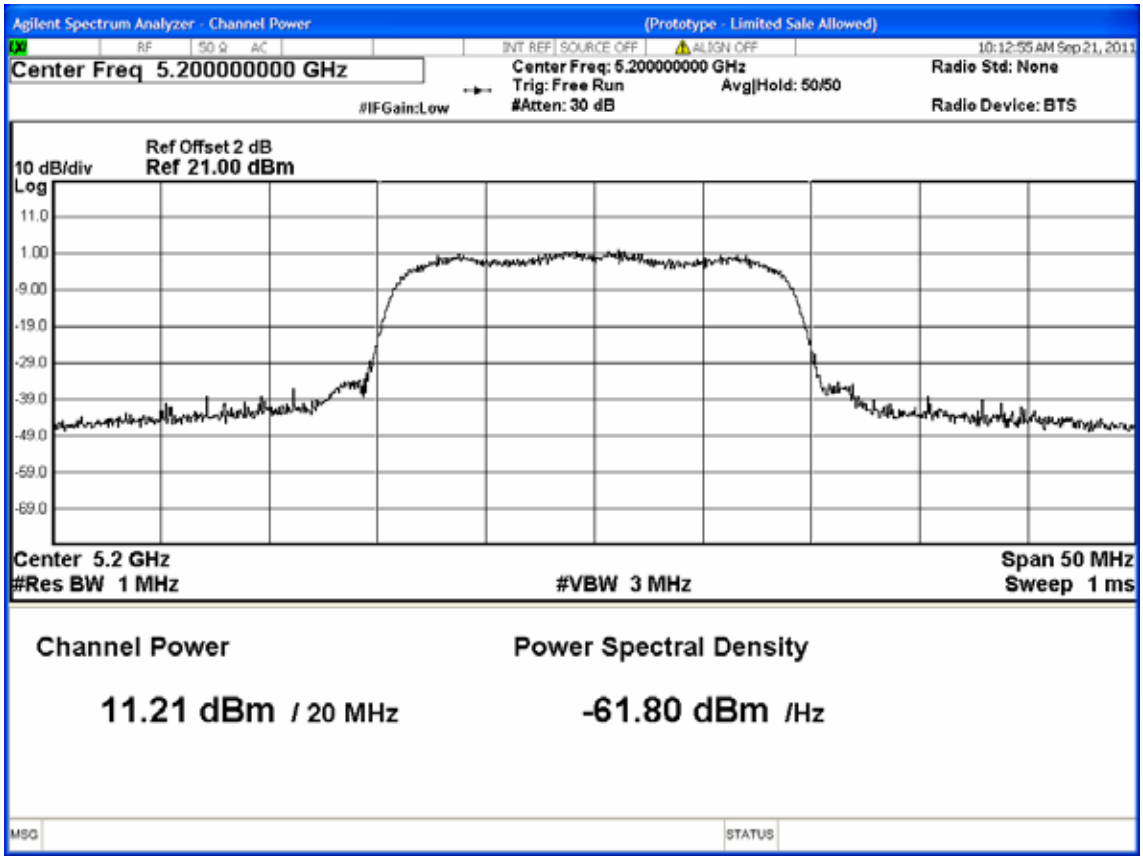
802.11n-HT20, Frequency: 5180MHz (Ant. 0)



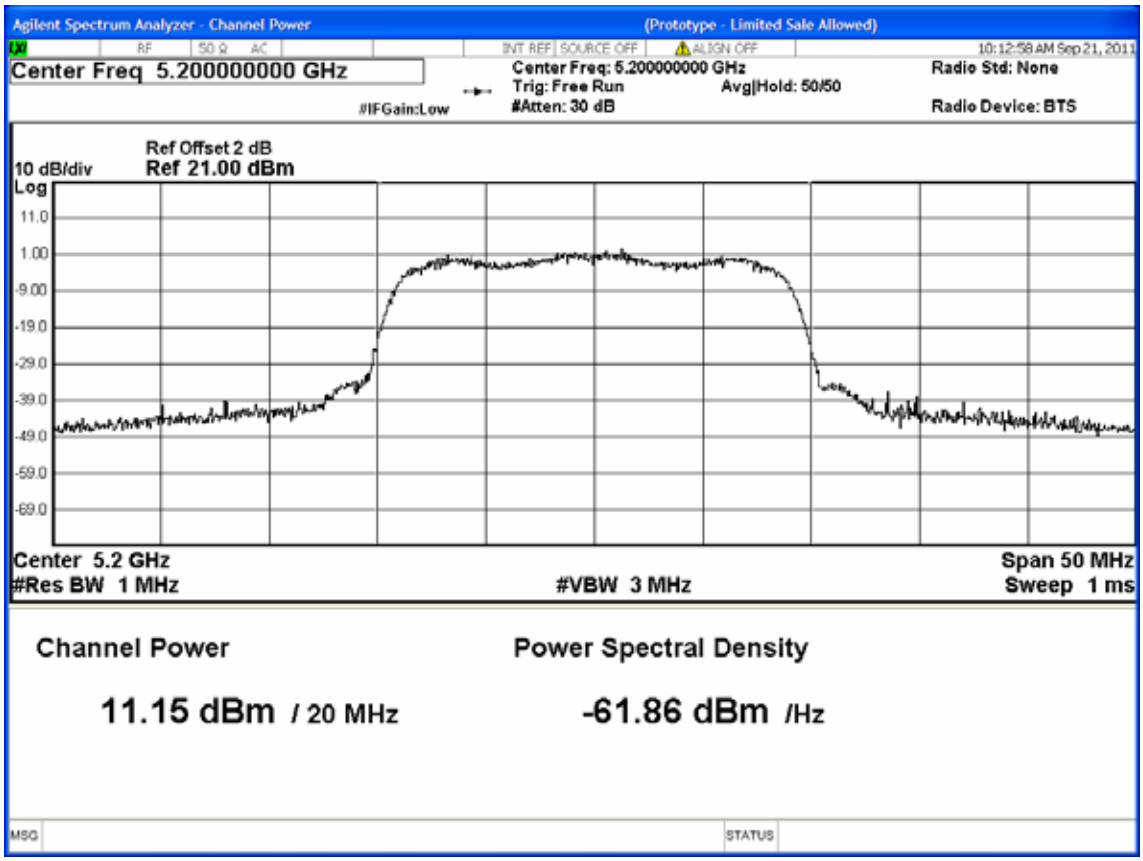
802.11n-HT20, Frequency: 5180MHz (Ant. 1)



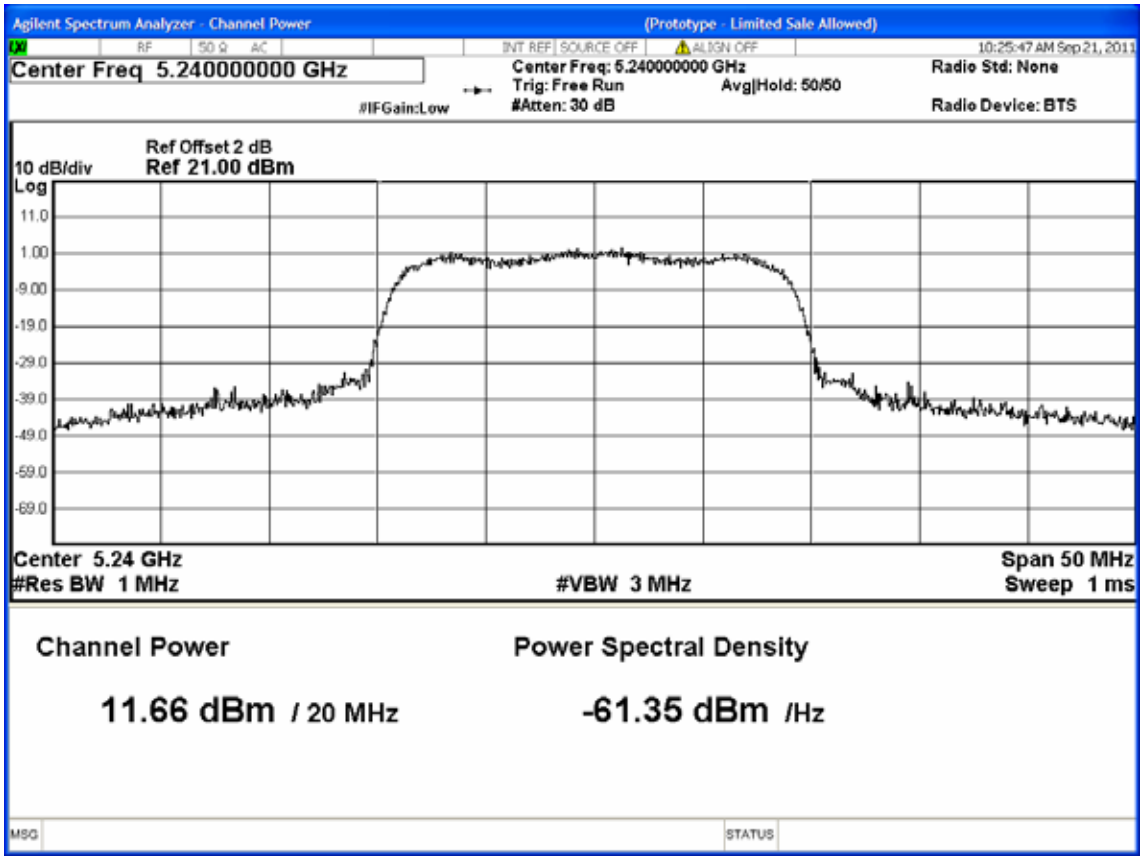
802.11n-HT20, Frequency: 5200MHz (Ant. 0)



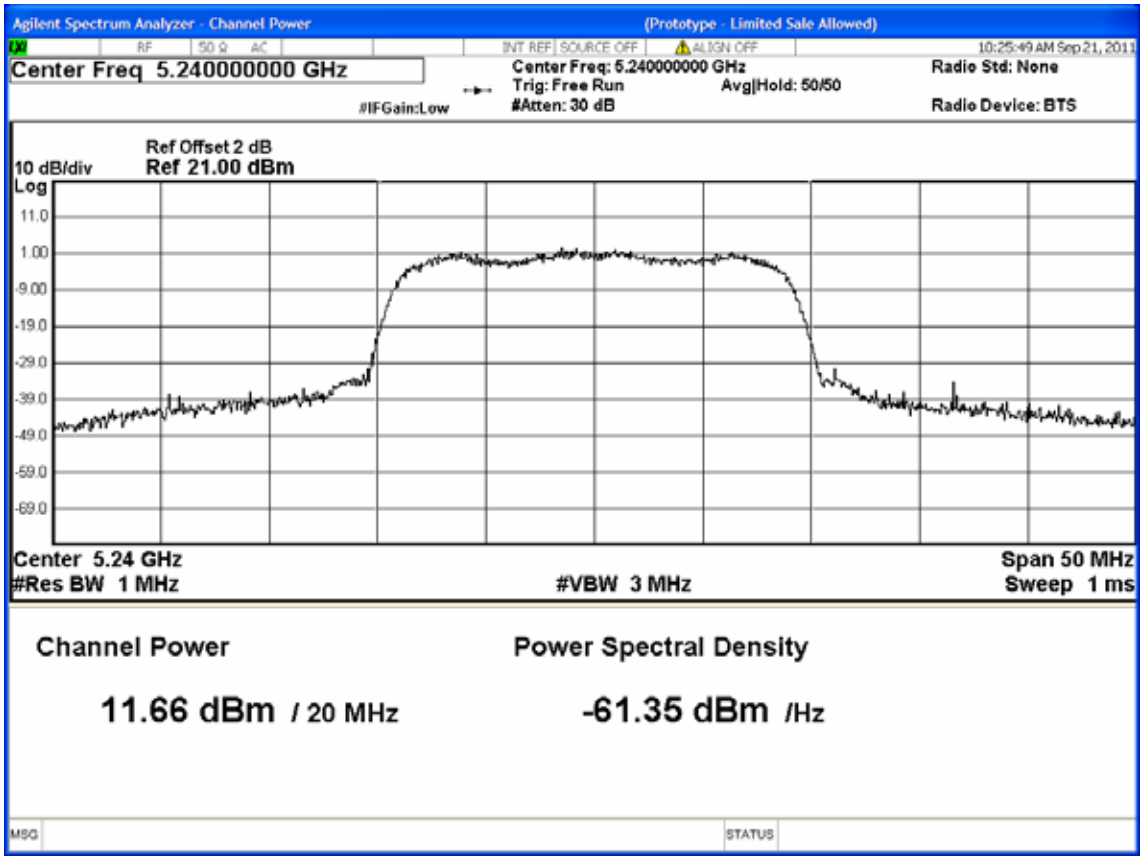
802.11n-HT20, Frequency: 5200MHz (Ant. 1)



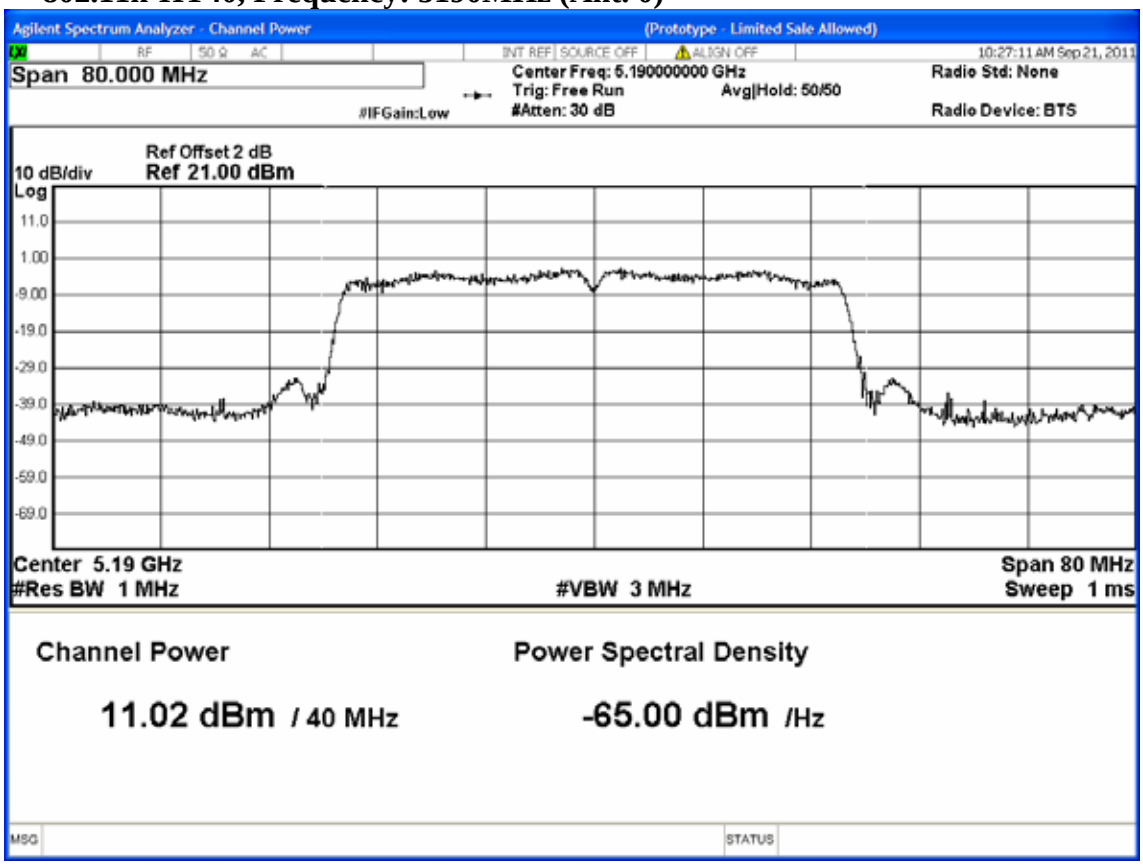
802.11n-HT20, Frequency: 5240MHz (Ant. 0)



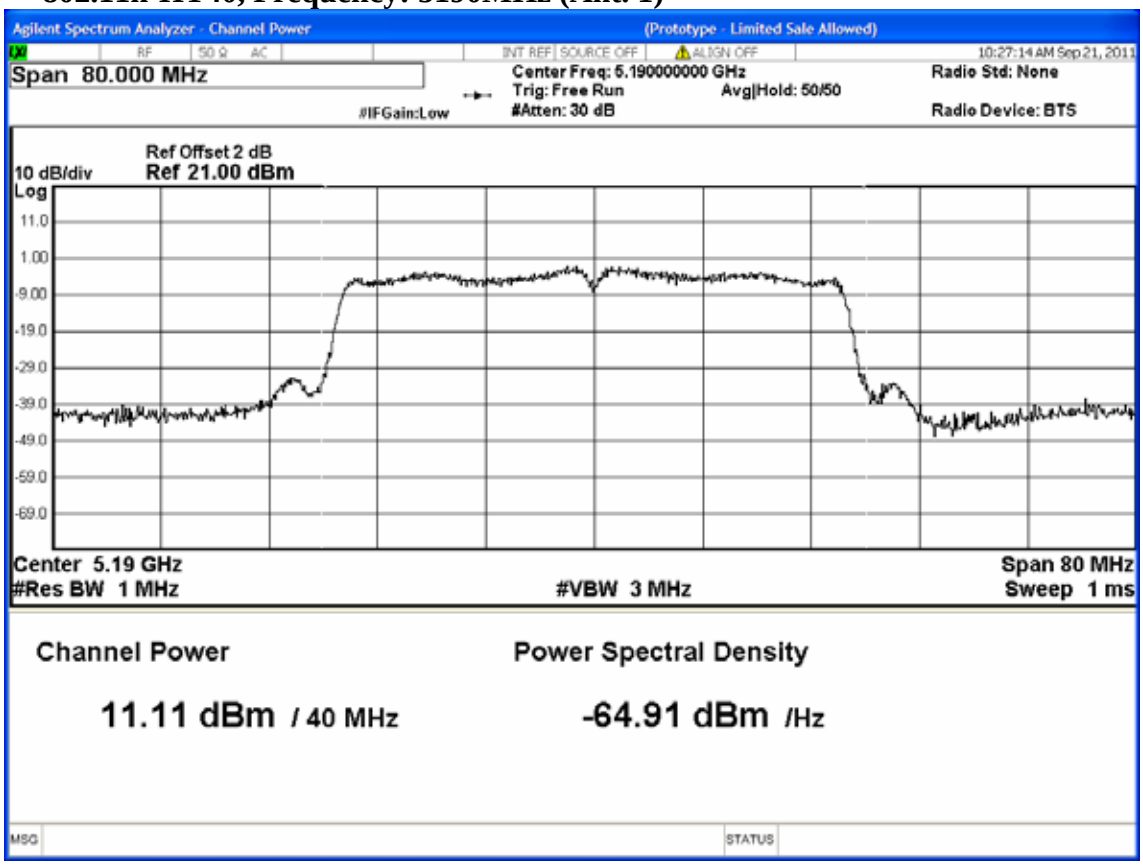
802.11n-HT20, Frequency: 5240MHz (Ant. 1)



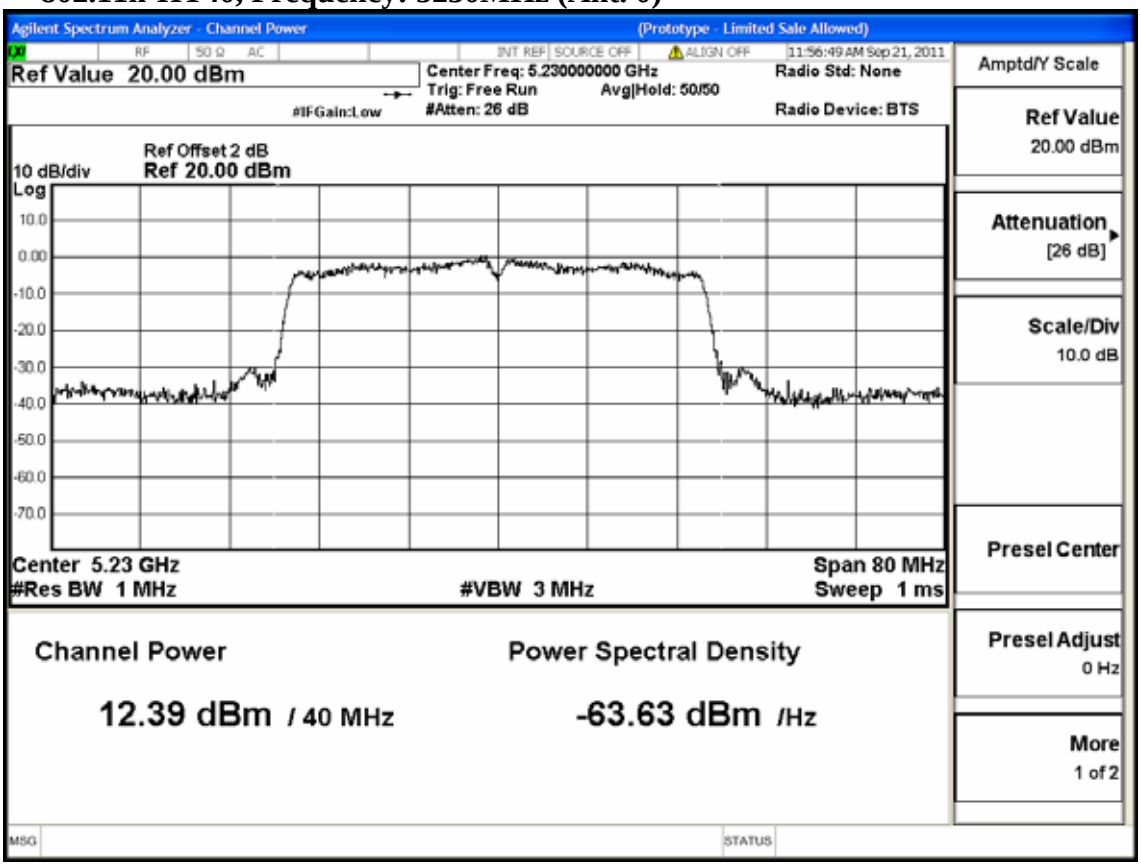
802.11n-HT40, Frequency: 5190MHz (Ant. 0)



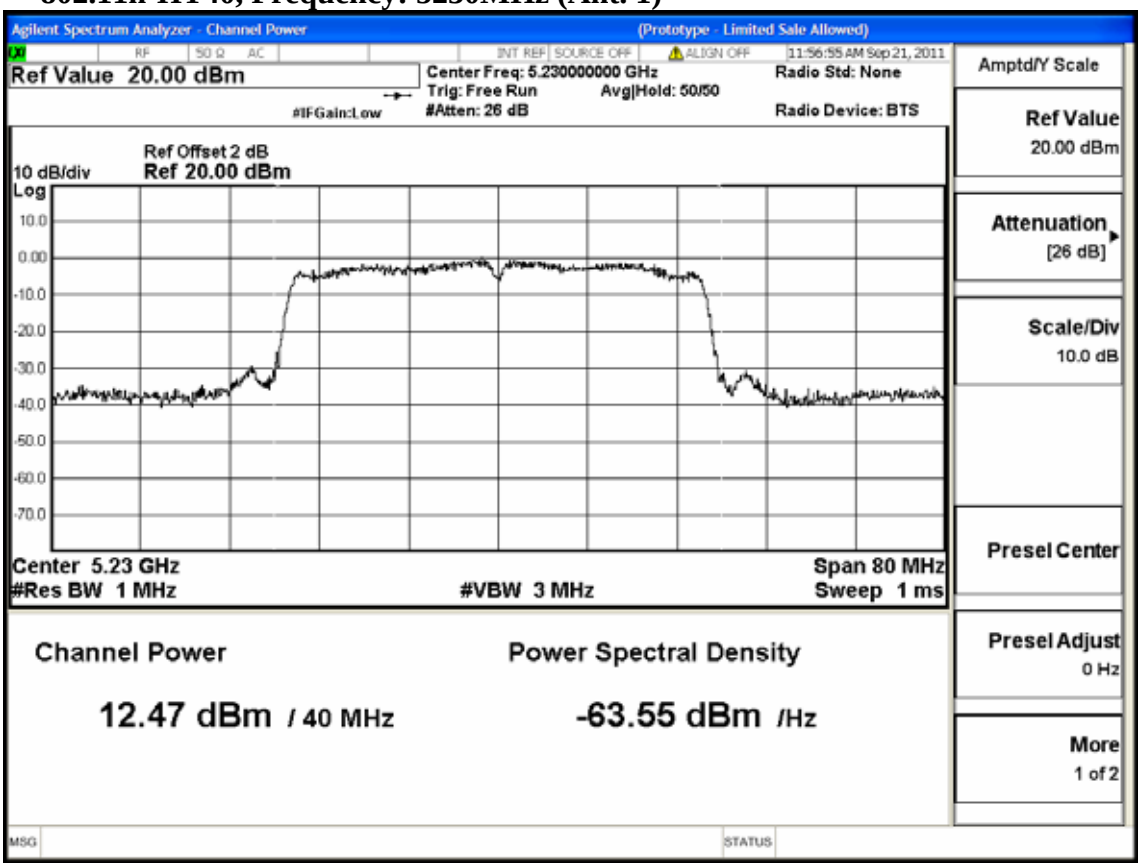
802.11n-HT40, Frequency: 5190MHz (Ant. 1)



802.11n-HT40, Frequency: 5230MHz (Ant. 0)



802.11n-HT40, Frequency: 5230MHz (Ant. 1)



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	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 (§15.407(b)-(1))

For transmitters operating in the 5.15-5.25GHz band: all emission outside of the 5.150-5.350GHz band shall not exceed an EIRP of -27dBm/MHz.

Maximum Antenna Gain: 0.62dBi
Spurious Limit: -27dBm/MHz eirp
Limit Used on Plots [Note 1]: -26.38dBm/MHz

[Note 1]: The -27dBm/MHz limit is an eirp limit. The limit for antenna port conducted measurements is adjusted to take into consideration the maximum antenna gain (limit = -27dBm+antenna gain). Radiated field strength measurements for signals more than 50MHz from the bands and that are close to the limit are made to determine compliance as the antenna gain is not known at these frequencies.

6.4. Operating Condition of EUT

The test program “Broadcom WL Command” 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 1MHz RBW and 1MHz VBW.

The measurement guideline was according to DA-02-2138A1

Pursuant to KDB 662911, we performed conducted tests for both antenna chains and submit test data measured on chain 0 as worse performance.

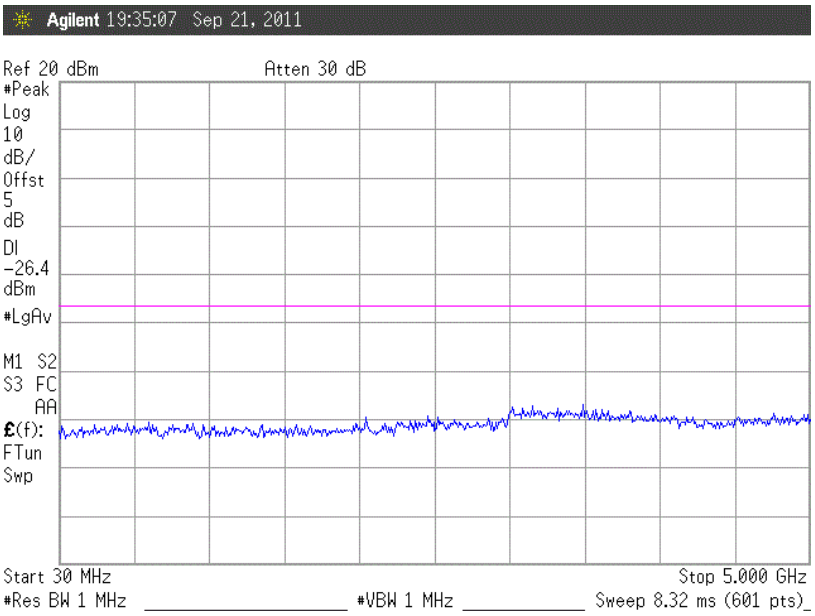
6.6. Test Results

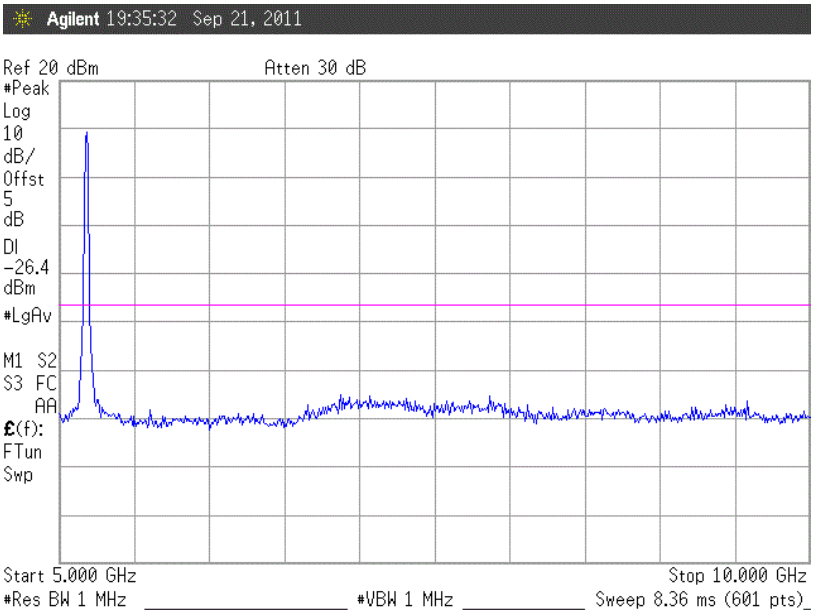
PASSED. The testing data was attached in the next pages.

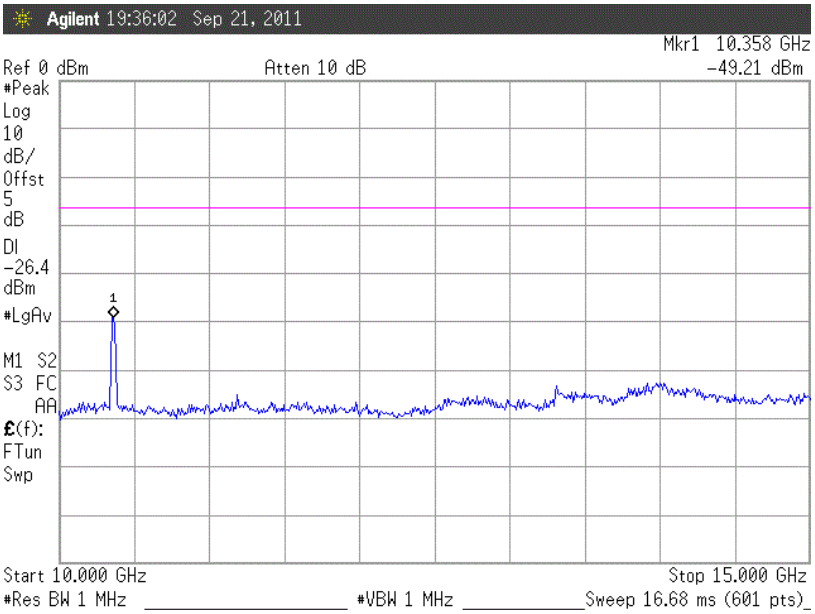
Pursuant to KDB 662911, the test result has been included 3 dB is calculated from 10log(N), where N is the number of outputs.

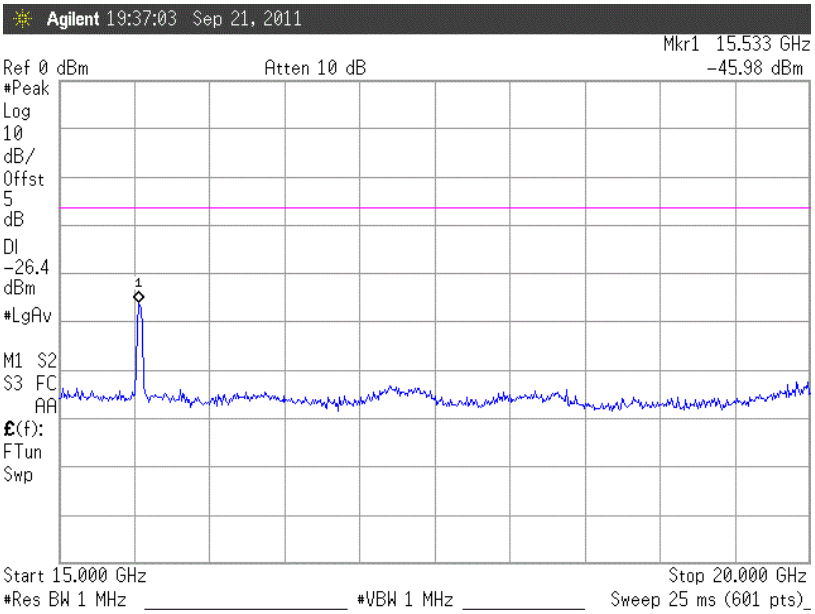
Test Date: Sep. 21, 2011 Temperature : 26℃ Humidity : 55 %

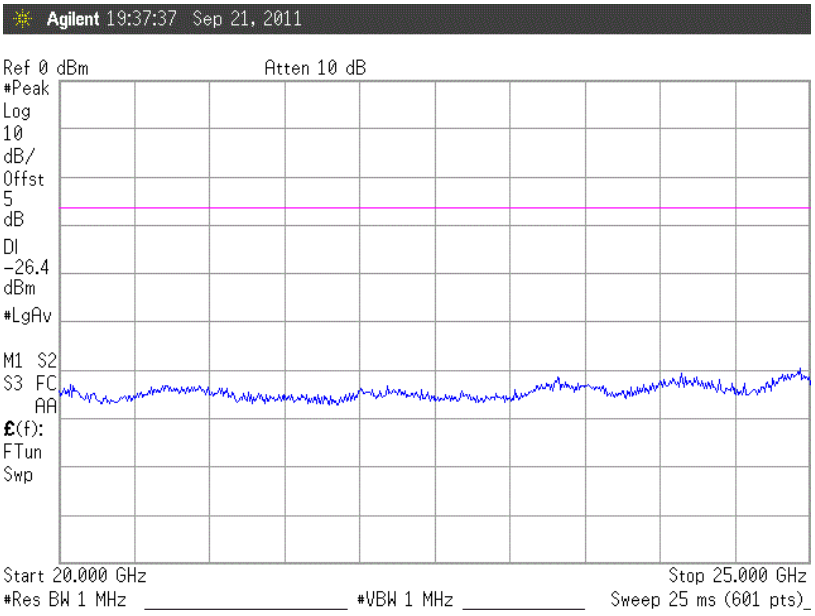
802.11a, Frequency: 5180MHz

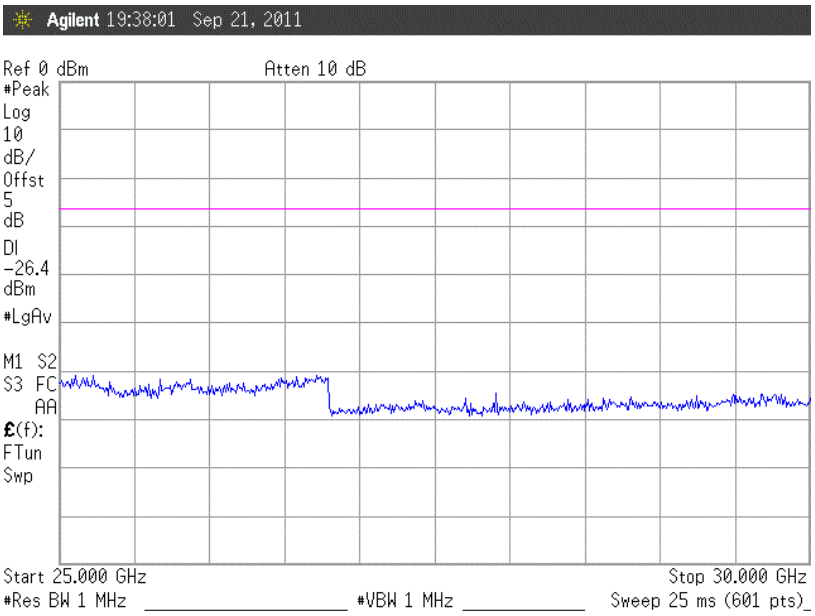





Agilent 19:36:02 Sep 21, 2011
Mkr1 10.358 GHz
Ref 0 dBm
Atten 10 dB
-49.21 dBm
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 10.000 GHz
Stop 15.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 16.68 ms (601 pts)

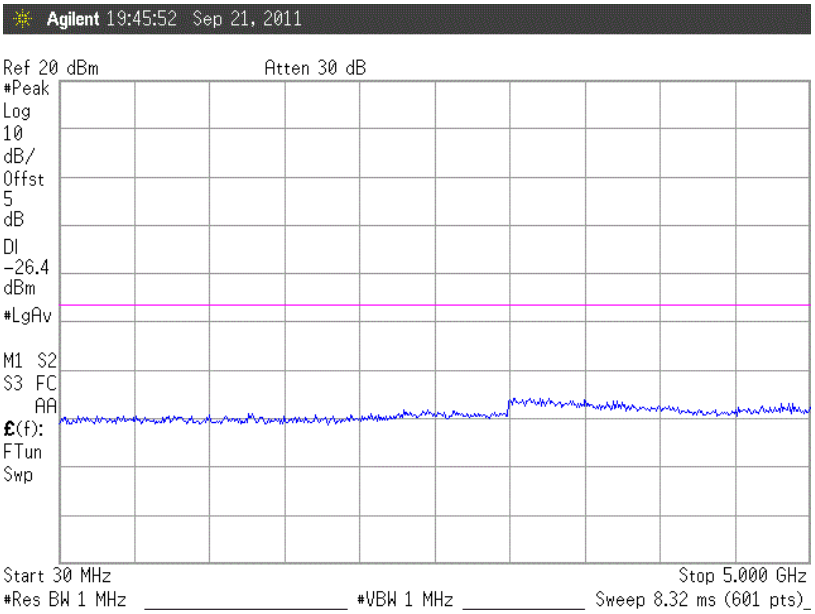

Agilent 19:37:03 Sep 21, 2011
Mkr1 15.533 GHz
Ref 0 dBm
Atten 10 dB
-45.98 dBm
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 15.000 GHz
Stop 20.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 25 ms (601 pts)

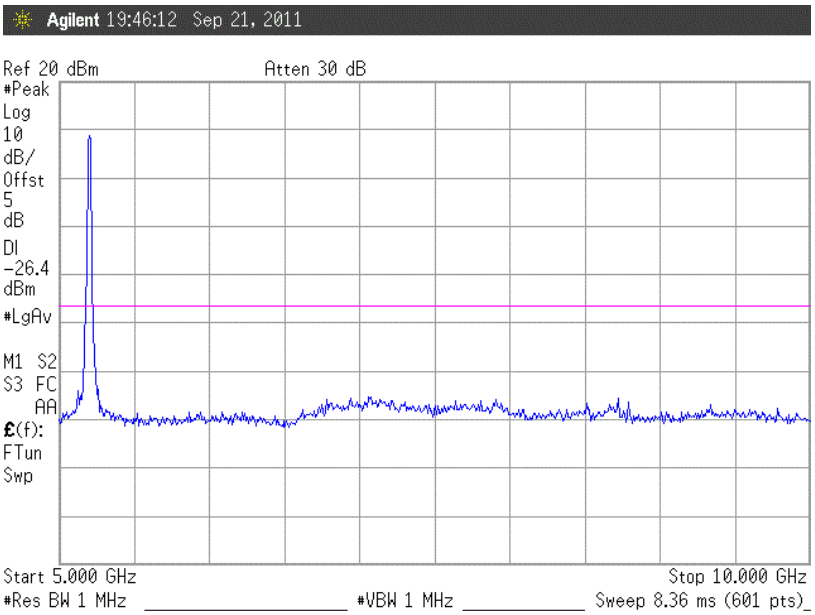

Agilent 19:37:37 Sep 21, 2011
Ref 0 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 20.000 GHz
Stop 25.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 25 ms (601 pts)

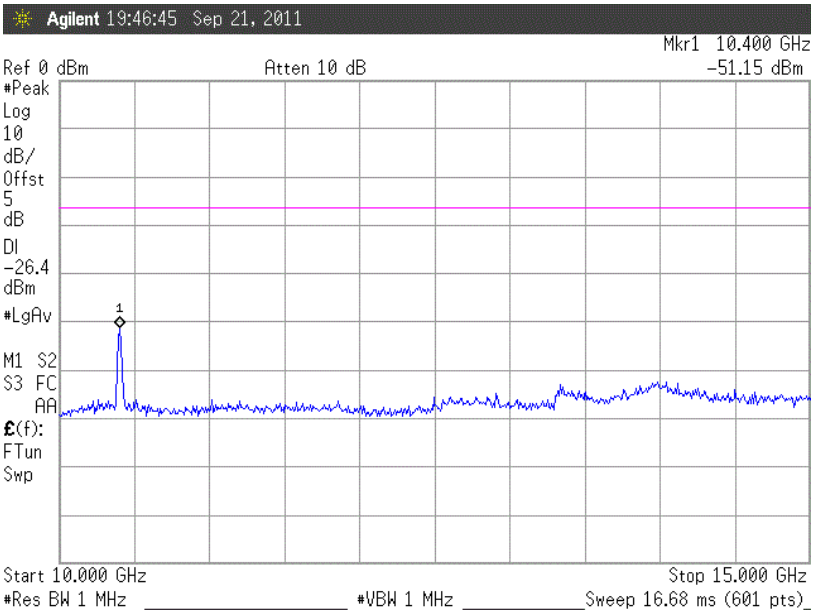

Agilent 19:38:01 Sep 21, 2011
Ref 0 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 25.000 GHz
Stop 30.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 25 ms (601 pts)

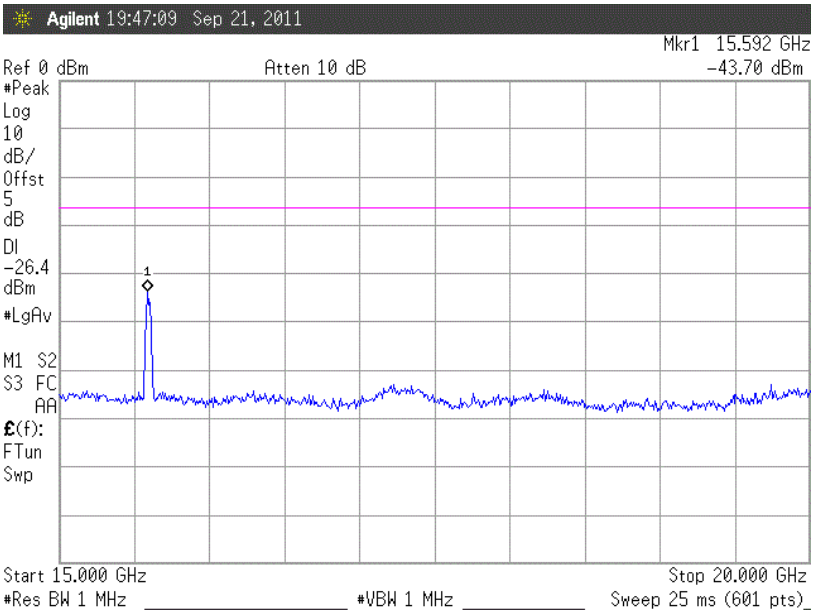

Agilent 19:38:37 Sep 21, 2011
Ref 0 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 30.000 GHz
Stop 40.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 50 ms (601 pts)

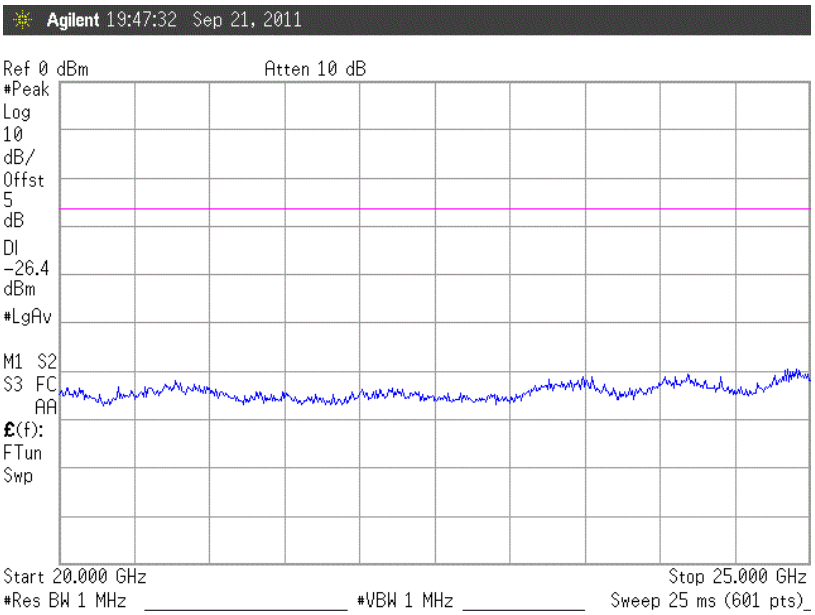
802.11a, Frequency: 5200MHz

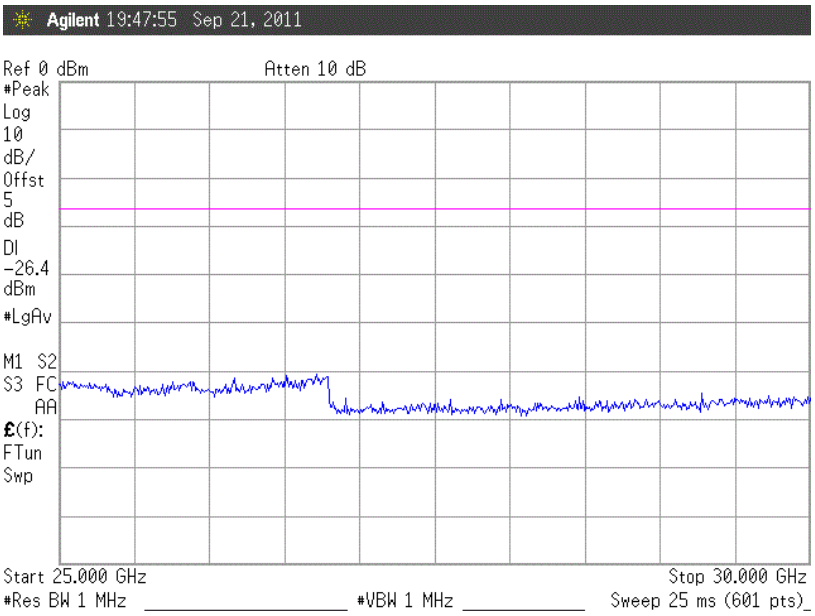


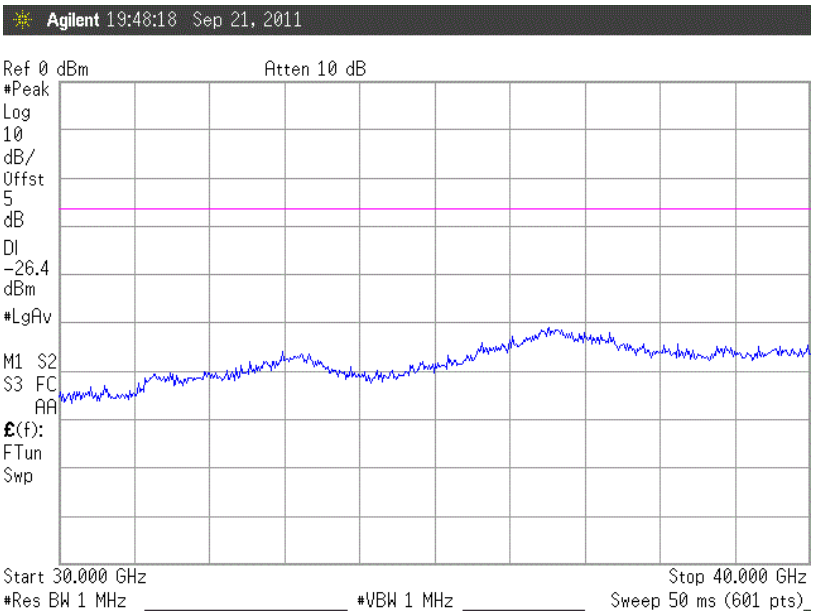



Agilent 19:46:45 Sep 21, 2011
Mkr1 10.400 GHz
Ref 0 dBm
Atten 10 dB
-51.15 dBm
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 10.000 GHz
Stop 15.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 16.68 ms (601 pts)

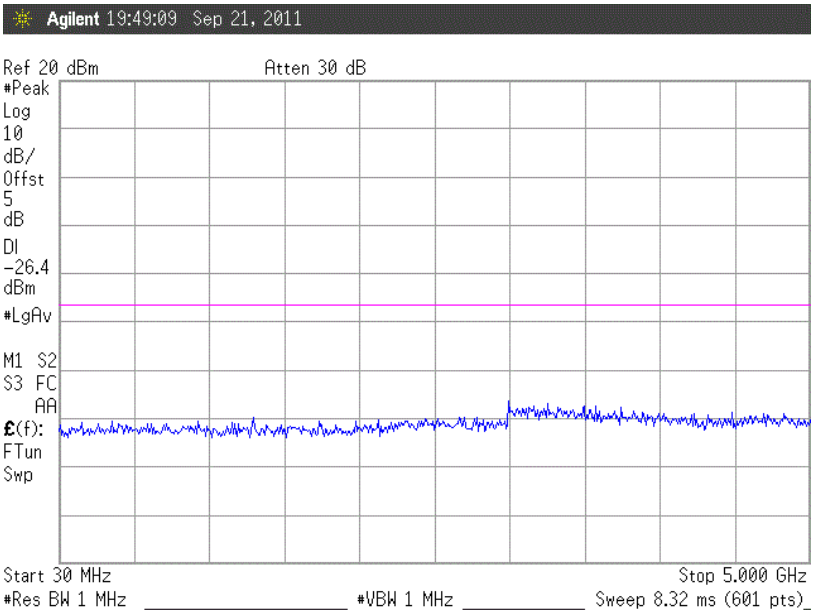

Agilent 19:47:09 Sep 21, 2011
Mkr1 15.592 GHz
Ref 0 dBm
Atten 10 dB
-43.70 dBm
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 15.000 GHz
Stop 20.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 25 ms (601 pts)

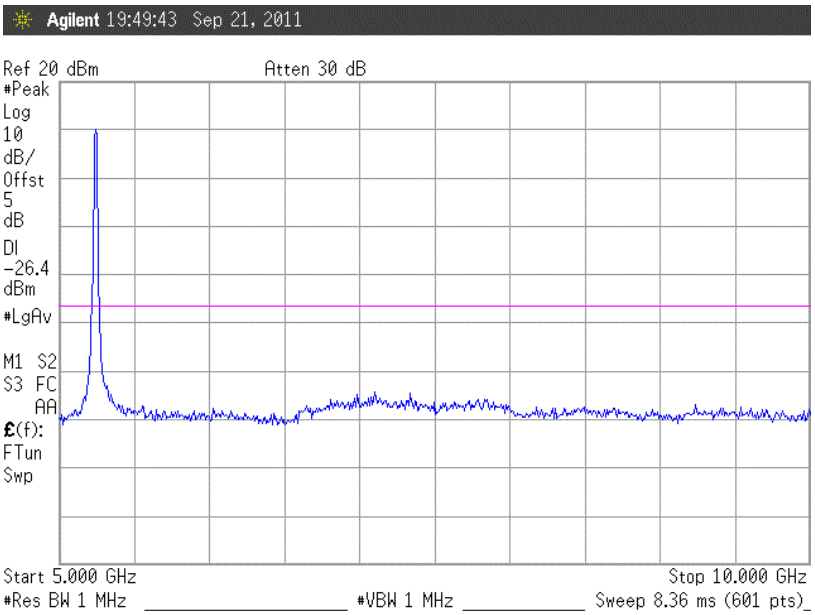

Agilent 19:47:32 Sep 21, 2011
Ref 0 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 20.000 GHz
Stop 25.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 25 ms (601 pts)

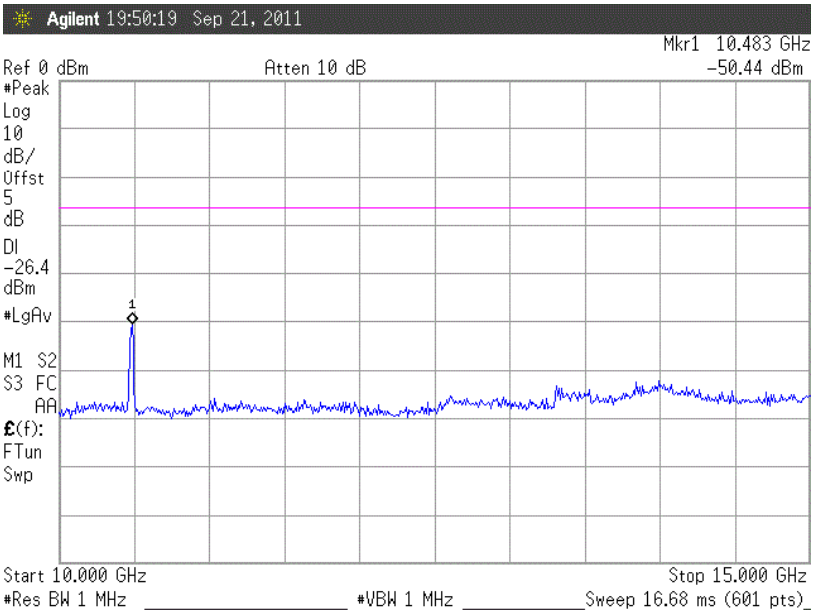

Agilent 19:47:55 Sep 21, 2011
Ref 0 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 25.000 GHz
Stop 30.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 25 ms (601 pts)

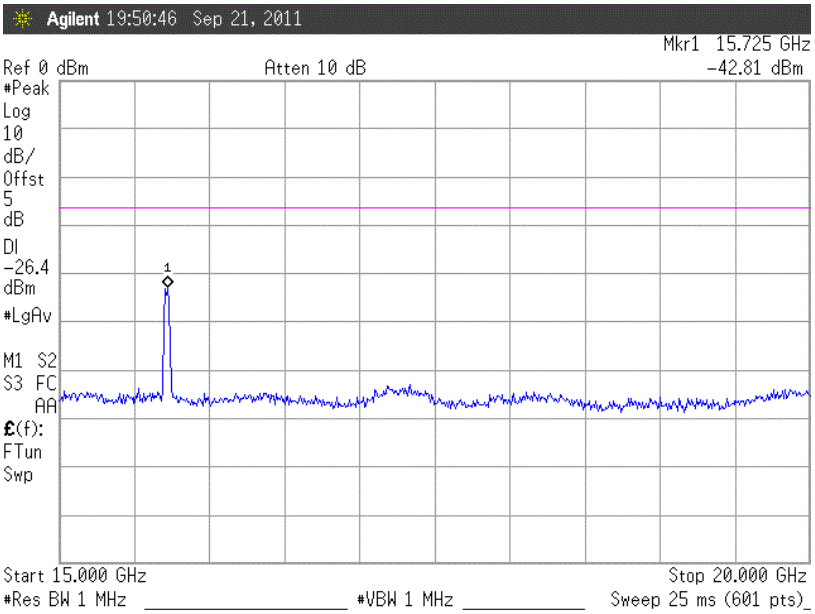

Agilent 19:48:18 Sep 21, 2011
Ref 0 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 30.000 GHz
Stop 40.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 50 ms (601 pts)

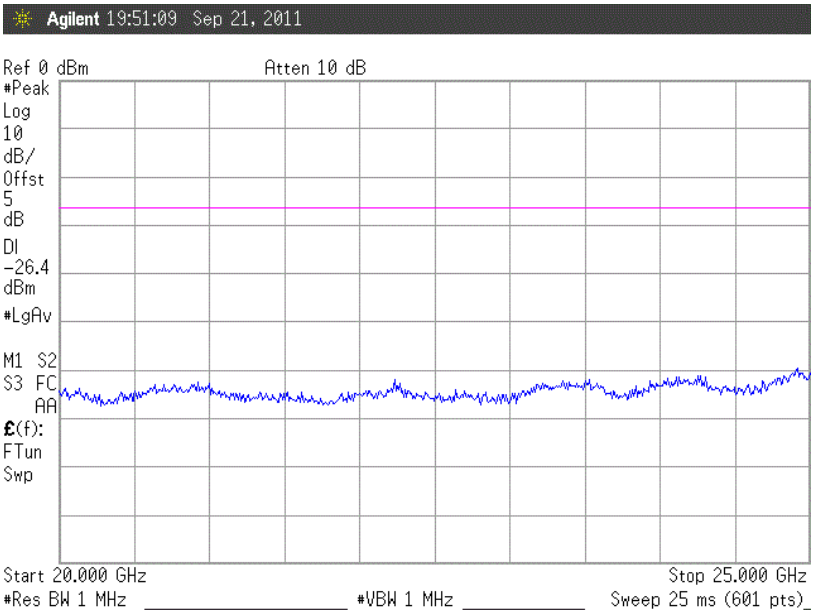
802.11a, Frequency: 5240MHz

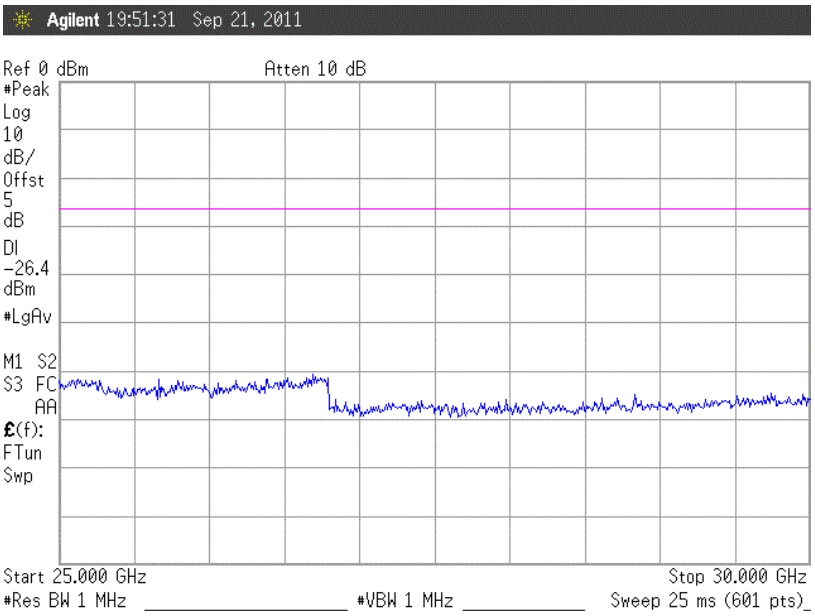


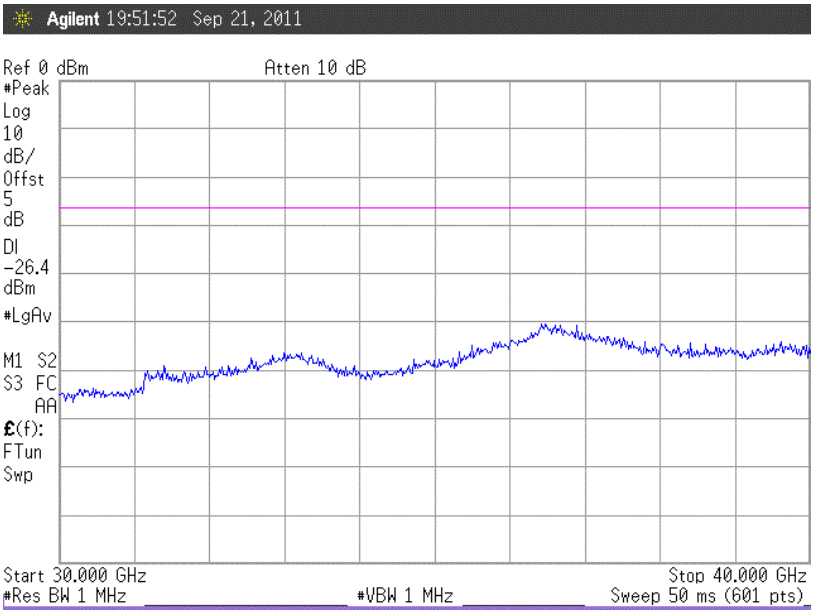



Agilent 19:50:19 Sep 21, 2011
Mkr1 10.483 GHz
Ref 0 dBm
Atten 10 dB
-50.44 dBm
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 10.000 GHz
Stop 15.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 16.68 ms (601 pts)

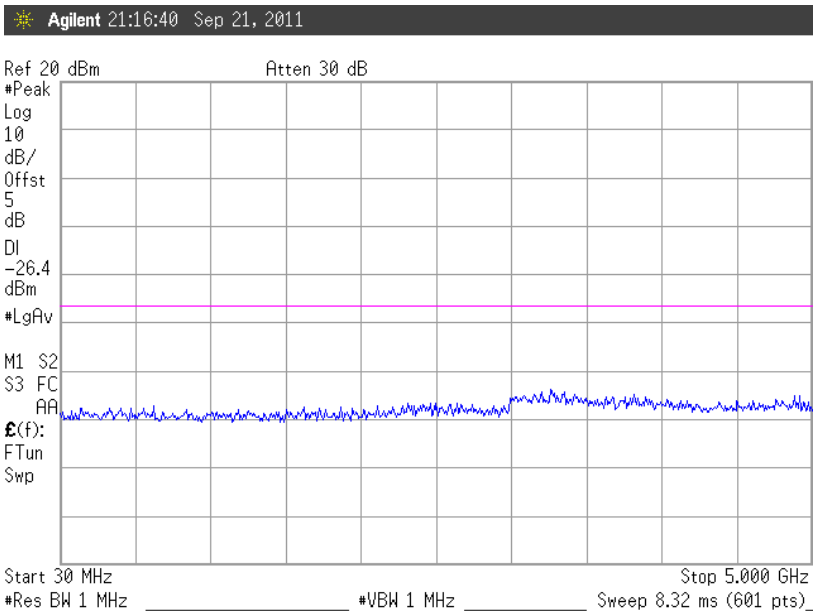

Agilent 19:50:46 Sep 21, 2011
Mkr1 15.725 GHz
Ref 0 dBm
Atten 10 dB
-42.81 dBm
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 15.000 GHz
Stop 20.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 25 ms (601 pts)

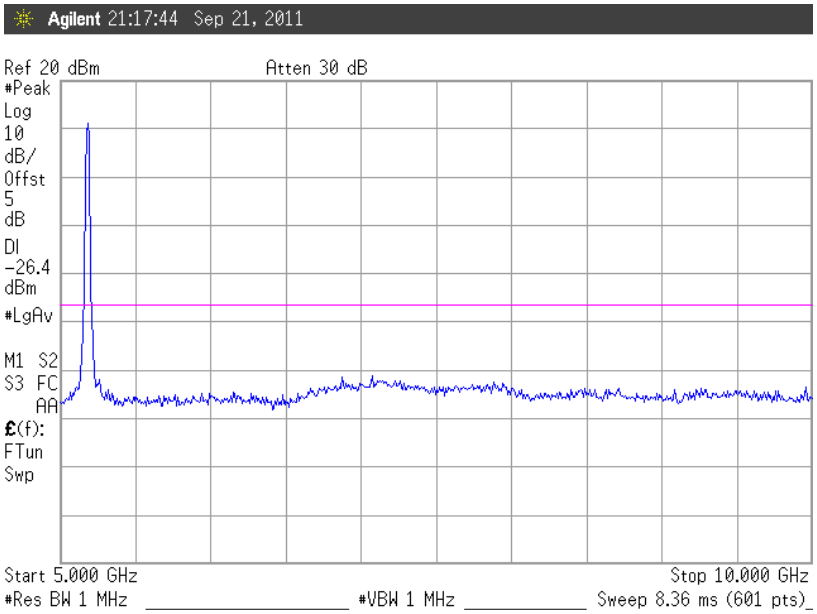

Agilent 19:51:09 Sep 21, 2011
Ref 0 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 20.000 GHz
Stop 25.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 25 ms (601 pts)

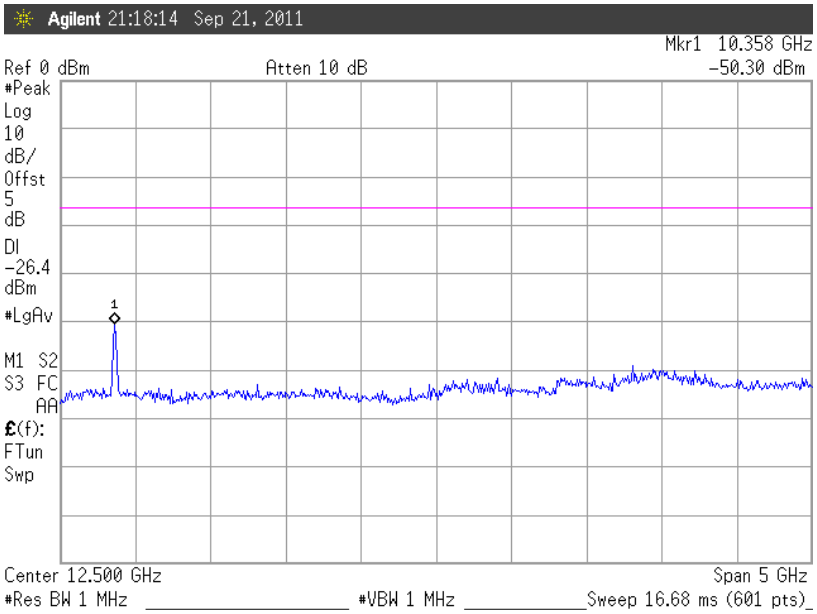

Agilent 19:51:31 Sep 21, 2011
Ref 0 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 25.000 GHz
Stop 30.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 25 ms (601 pts)

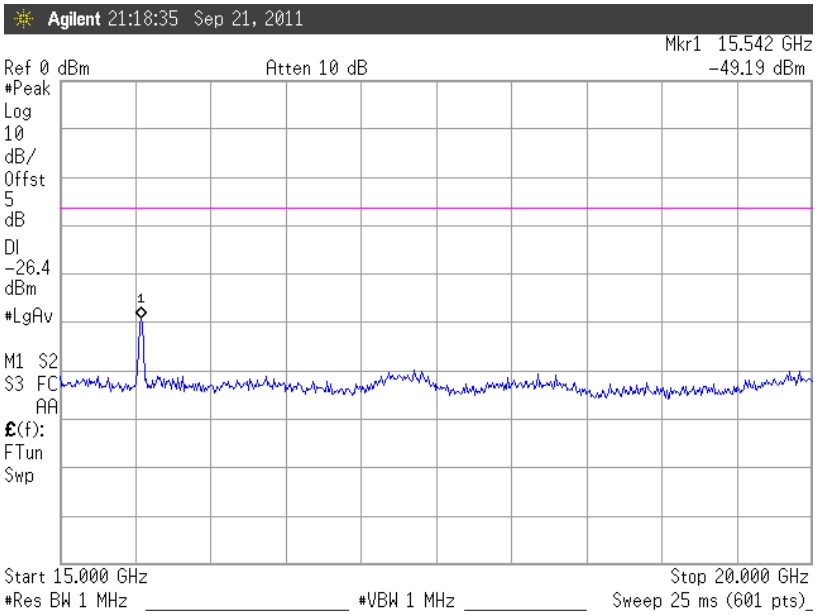

Agilent 19:51:52 Sep 21, 2011
Ref 0 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 30.000 GHz
Stop 40.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 50 ms (601 pts)

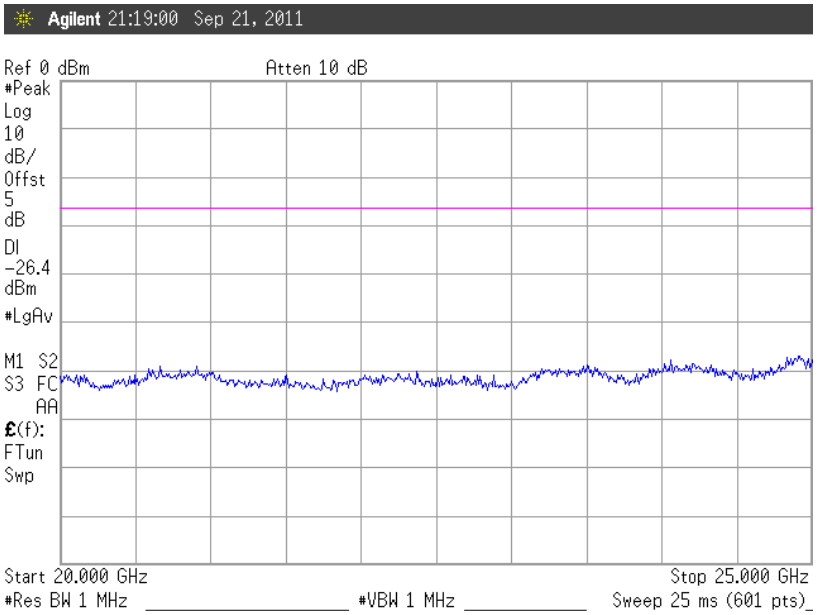
802.11n-HT20, Frequency: 5180MHz

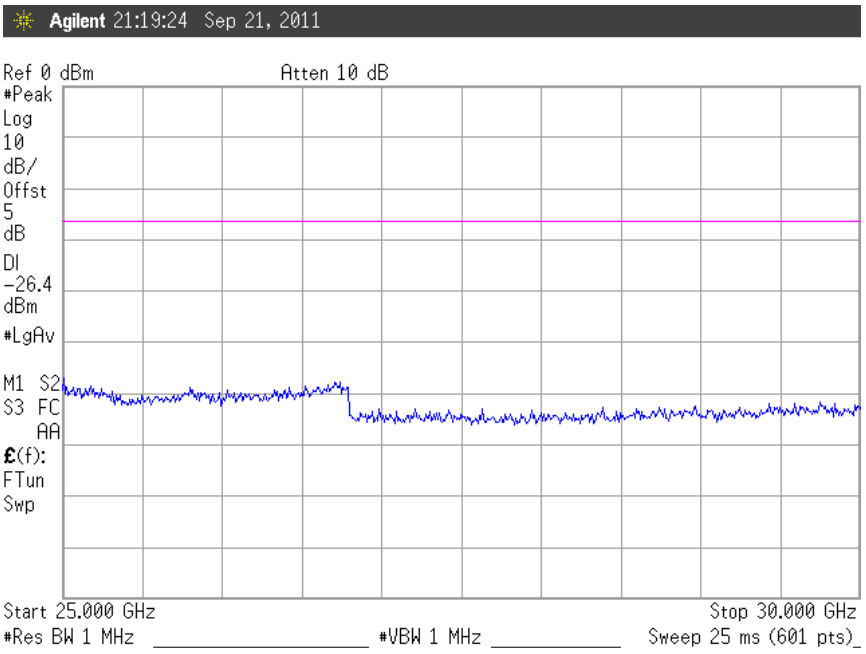


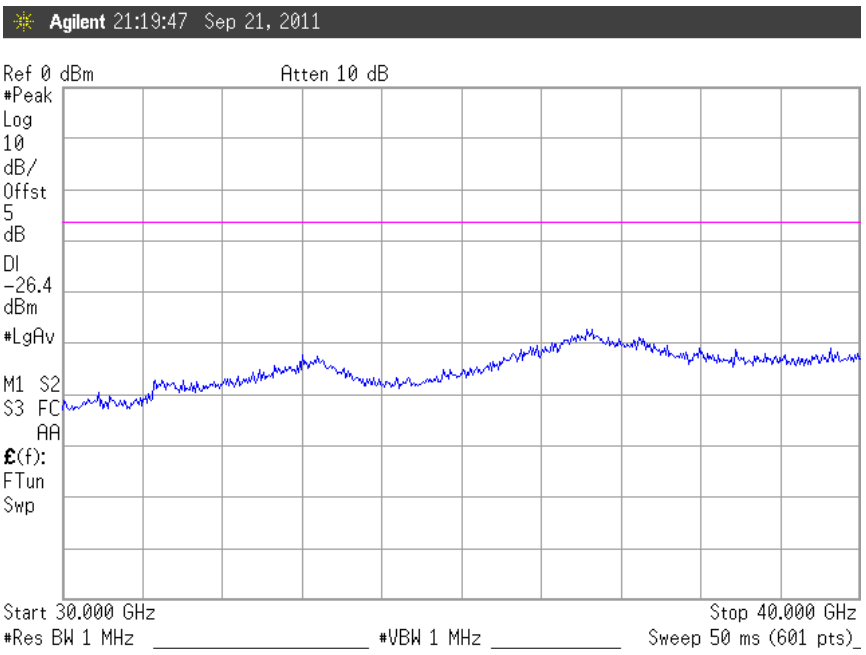



Agilent 21:18:14 Sep 21, 2011
Mkr1 10.358 GHz
Ref 0 dBm
Atten 10 dB
-50.30 dBm
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Center 12.500 GHz
Span 5 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 16.68 ms (601 pts)

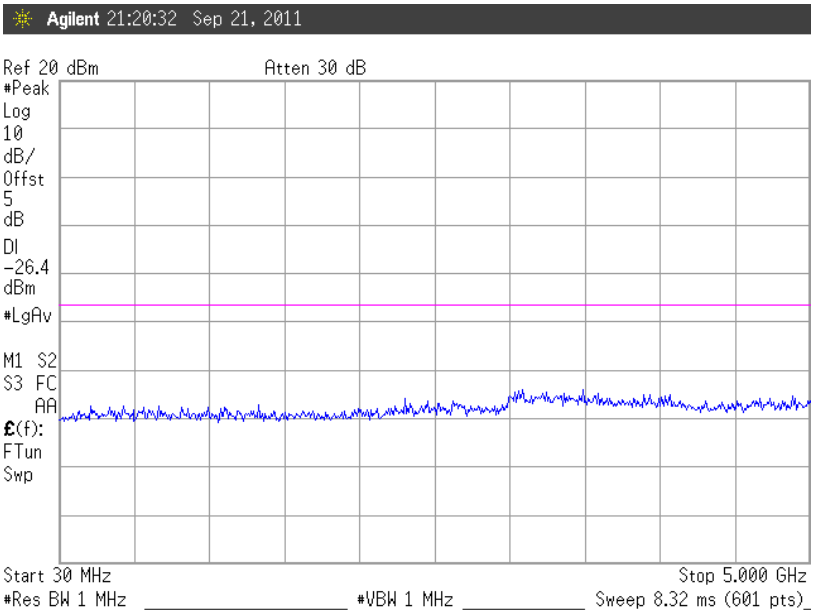

Agilent 21:18:35 Sep 21, 2011
Mkr1 15.542 GHz
Ref 0 dBm
Atten 10 dB
-49.19 dBm
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 15.000 GHz
Stop 20.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 25 ms (601 pts)

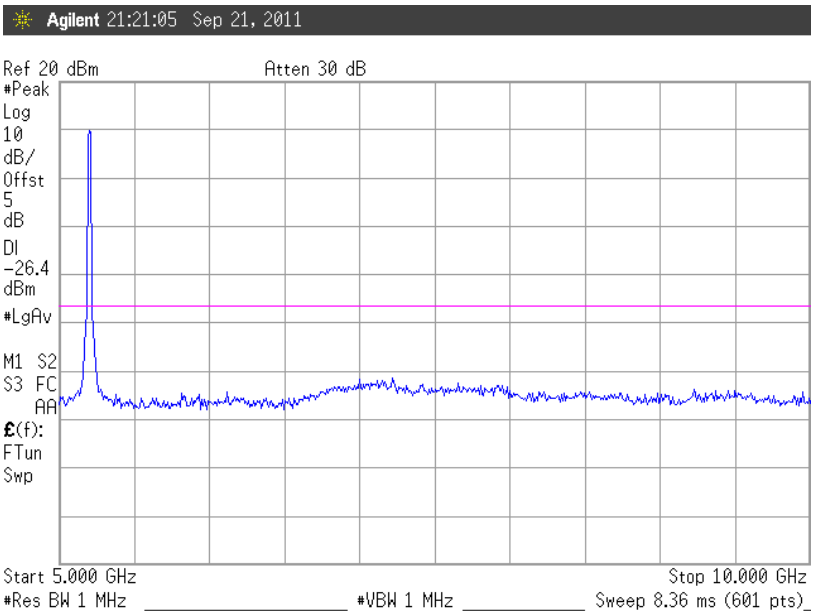

Agilent 21:19:00 Sep 21, 2011
Ref 0 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 20.000 GHz
Stop 25.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 25 ms (601 pts)

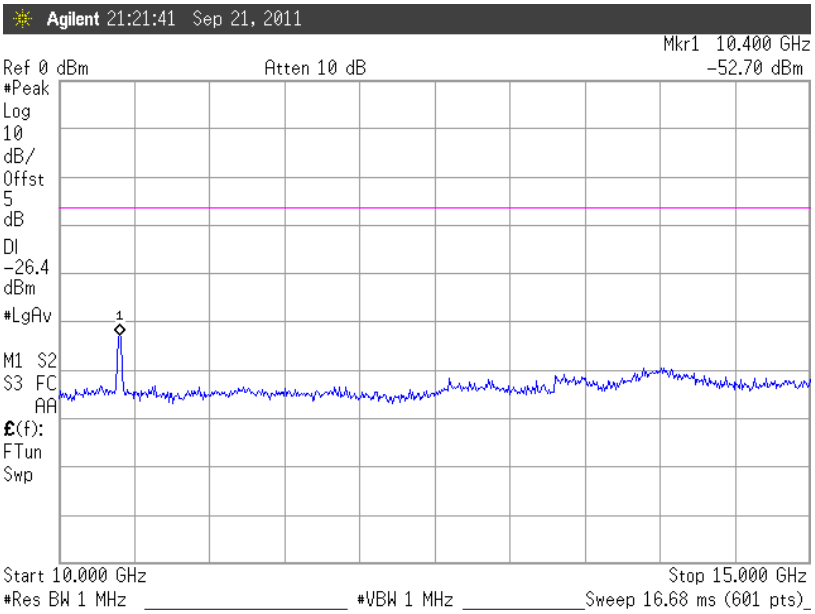

Agilent 21:19:24 Sep 21, 2011
Ref 0 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 25.000 GHz
Stop 30.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 25 ms (601 pts)

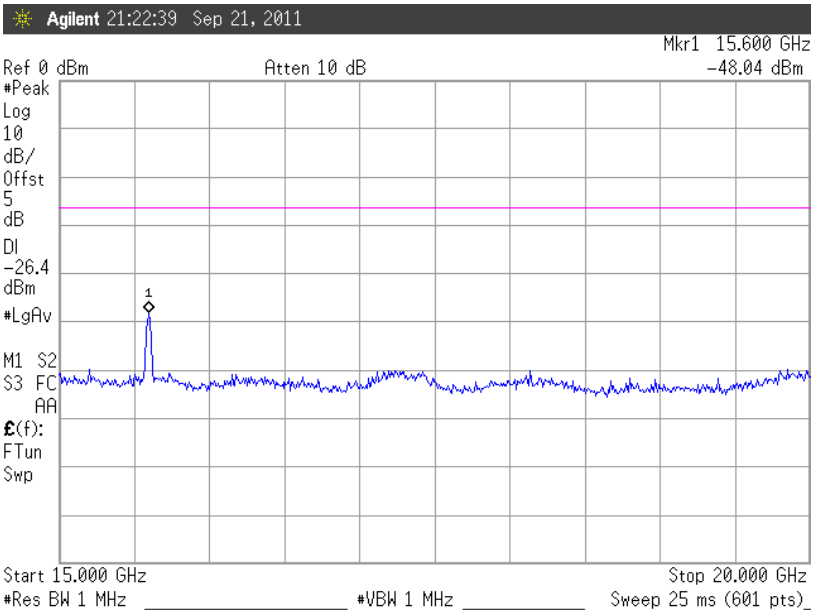

Agilent 21:19:47 Sep 21, 2011
Ref 0 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 30.000 GHz
Stop 40.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 50 ms (601 pts)

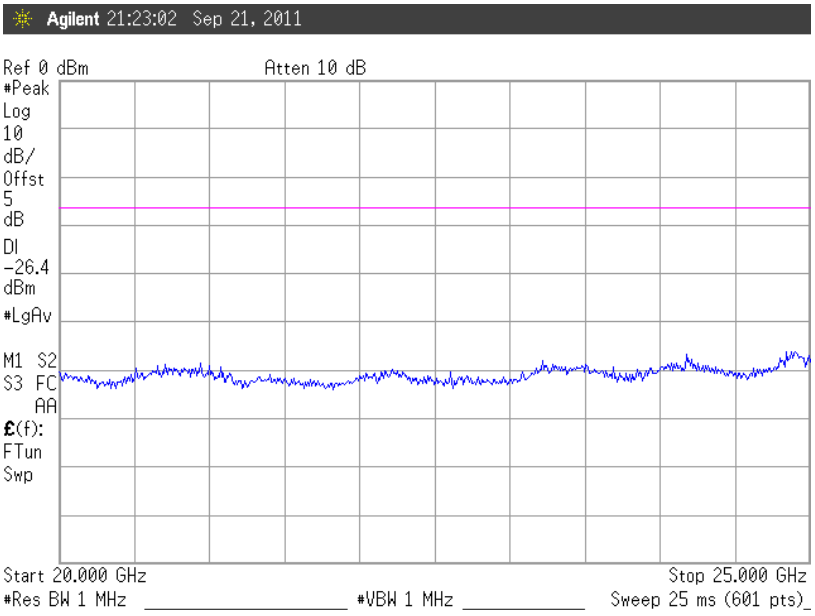
802.11n-HT20, Frequency: 5200MHz

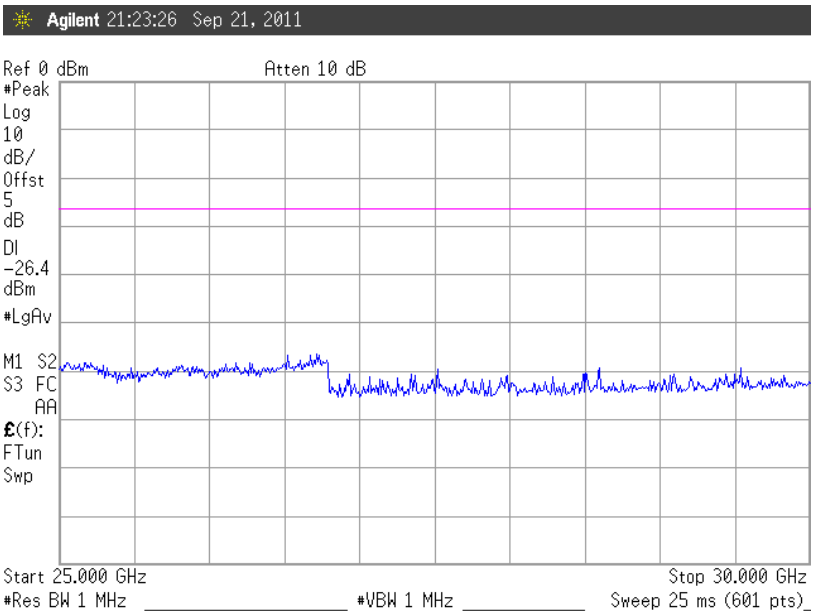





Agilent 21:21:41 Sep 21, 2011
Mkr1 10.400 GHz
Ref 0 dBm
Atten 10 dB
-52.70 dBm
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 10.000 GHz
Stop 15.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 16.68 ms (601 pts)

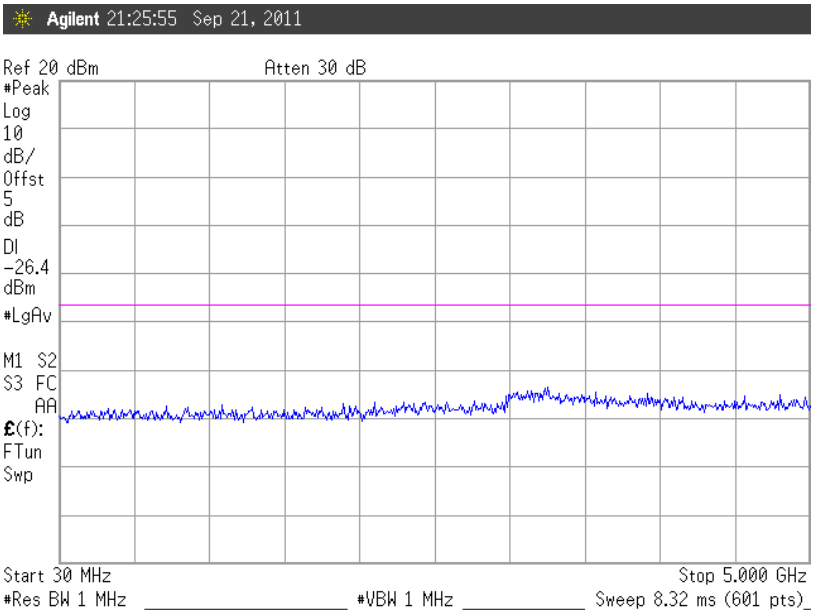

Agilent 21:22:39 Sep 21, 2011
Mkr1 15.600 GHz
Ref 0 dBm
Atten 10 dB
-48.04 dBm
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 15.000 GHz
Stop 20.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 25 ms (601 pts)

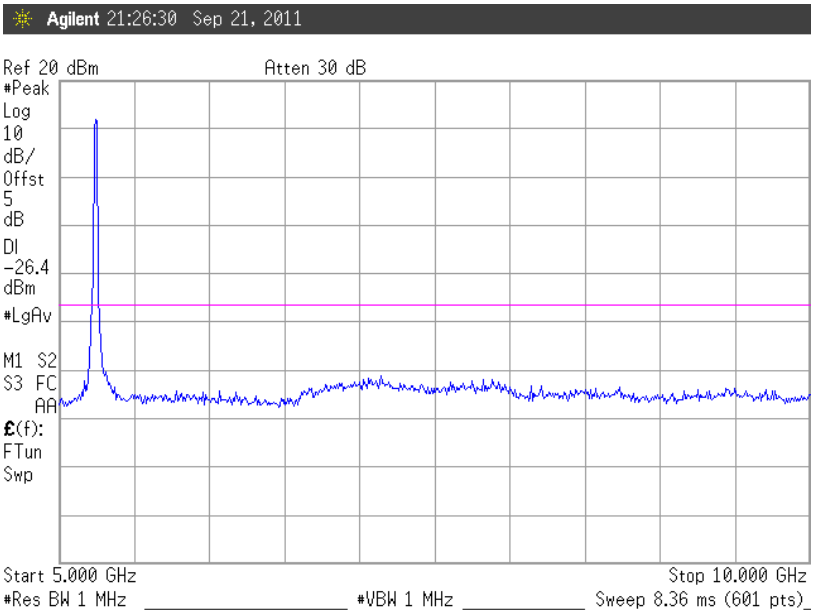

Agilent 21:23:02 Sep 21, 2011
Ref 0 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 20.000 GHz
Stop 25.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 25 ms (601 pts)

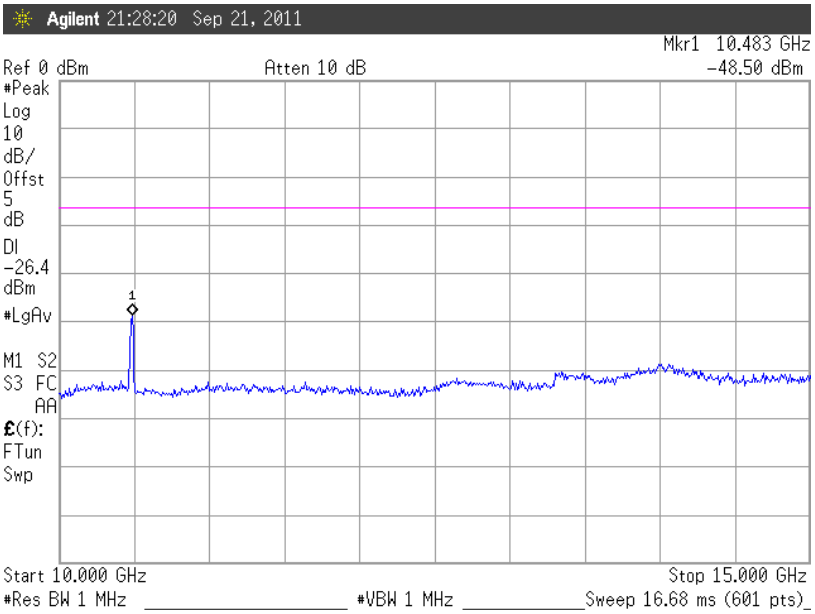

Agilent 21:23:26 Sep 21, 2011
Ref 0 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 25.000 GHz
Stop 30.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 25 ms (601 pts)

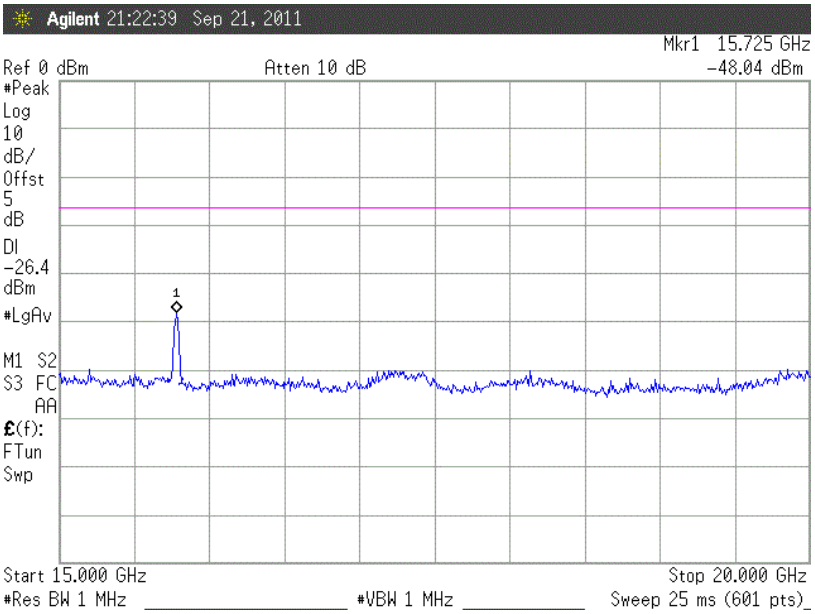

Agilent 21:24:42 Sep 21, 2011
Ref 0 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 30.000 GHz
Stop 40.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 50 ms (601 pts)

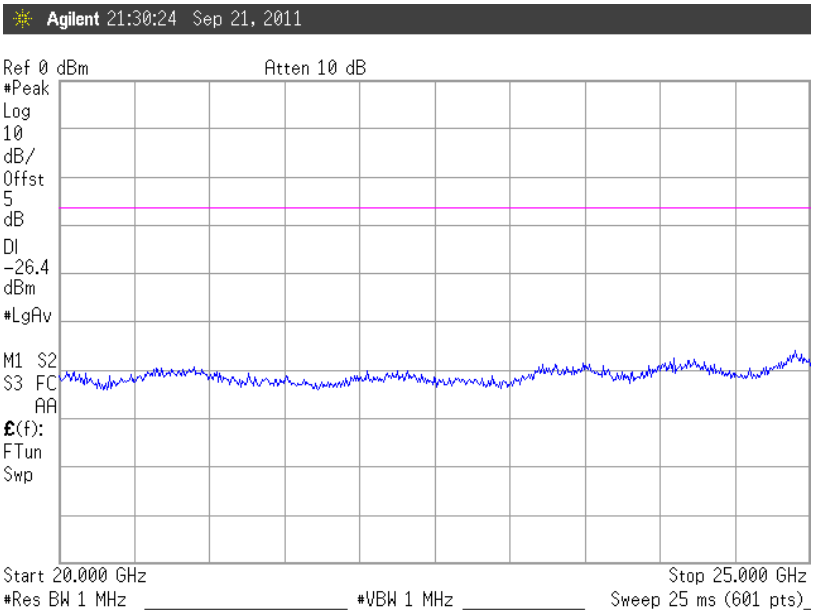
802.11n-HT20, Frequency: 5240MHz

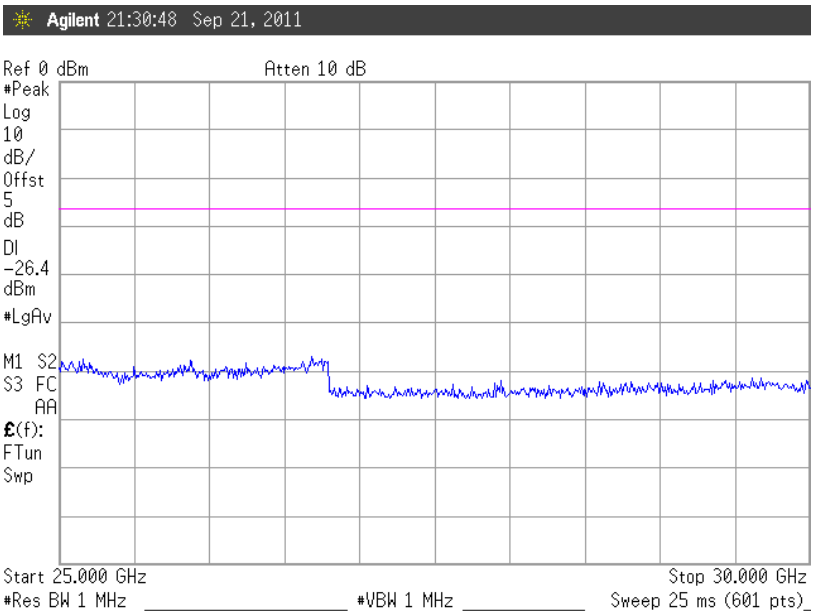


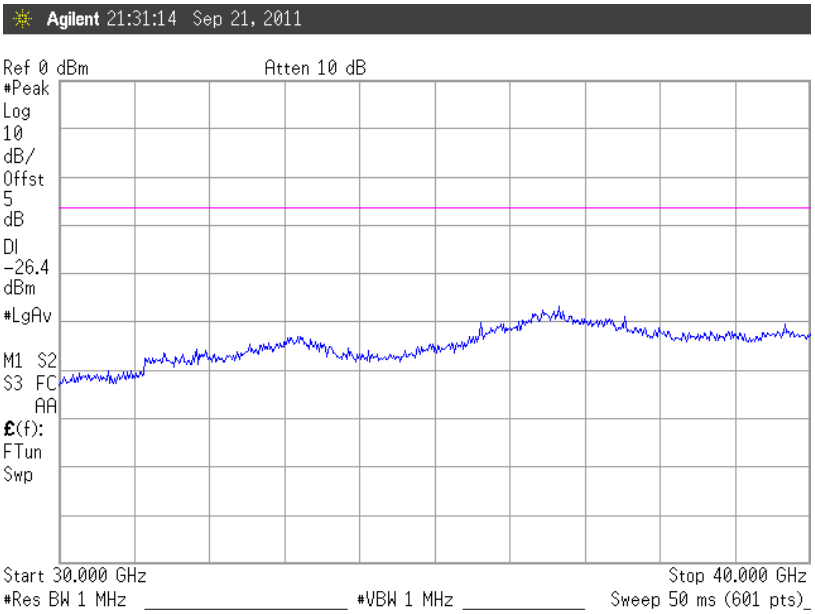



Agilent 21:28:20 Sep 21, 2011
Mkr1 10.483 GHz
Ref 0 dBm
Atten 10 dB
-48.50 dBm
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 10.000 GHz
Stop 15.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 16.68 ms (601 pts)

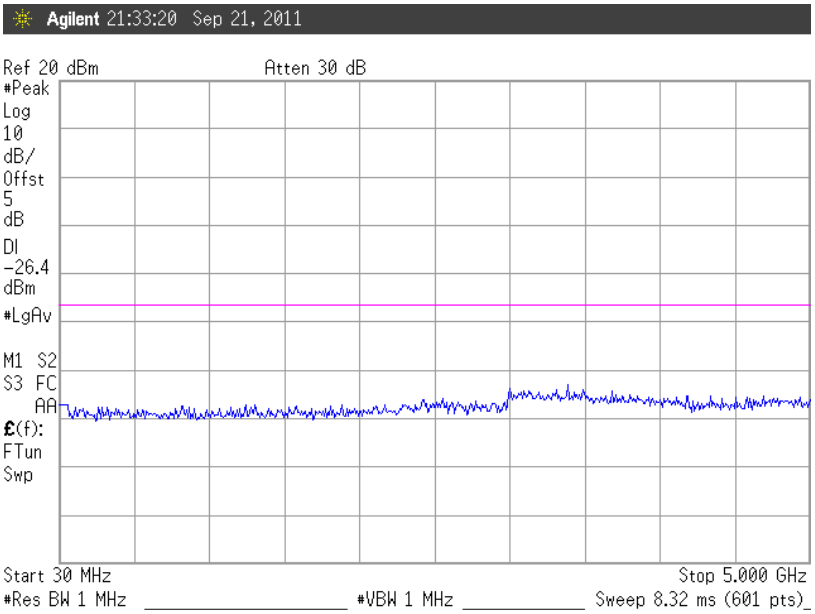

Agilent 21:22:39 Sep 21, 2011
Mkr1 15.725 GHz
Ref 0 dBm
Atten 10 dB
-48.04 dBm
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 15.000 GHz
Stop 20.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 25 ms (601 pts)

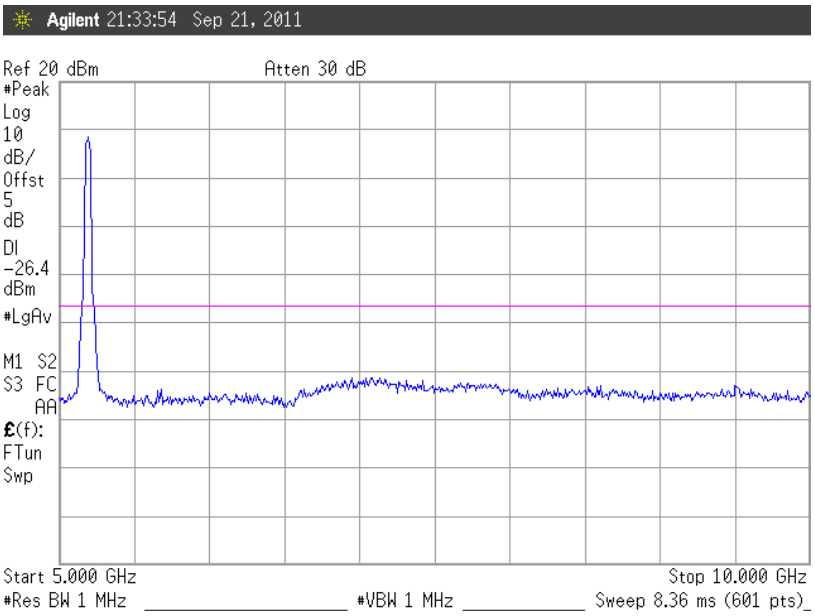

Agilent 21:30:24 Sep 21, 2011
Ref 0 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 20.000 GHz
Stop 25.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 25 ms (601 pts)

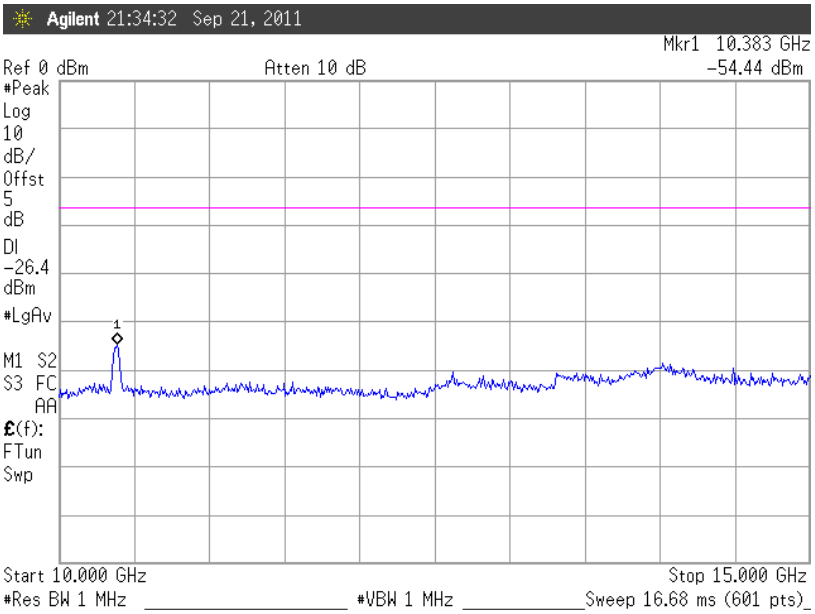

Agilent 21:30:48 Sep 21, 2011
Ref 0 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 25.000 GHz
Stop 30.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 25 ms (601 pts)

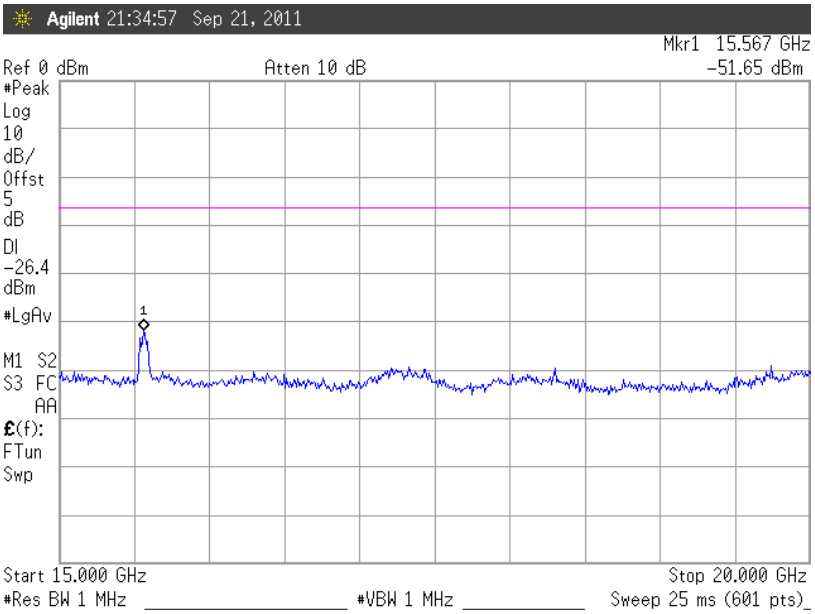

Agilent 21:31:14 Sep 21, 2011
Ref 0 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 30.000 GHz
Stop 40.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 50 ms (601 pts)

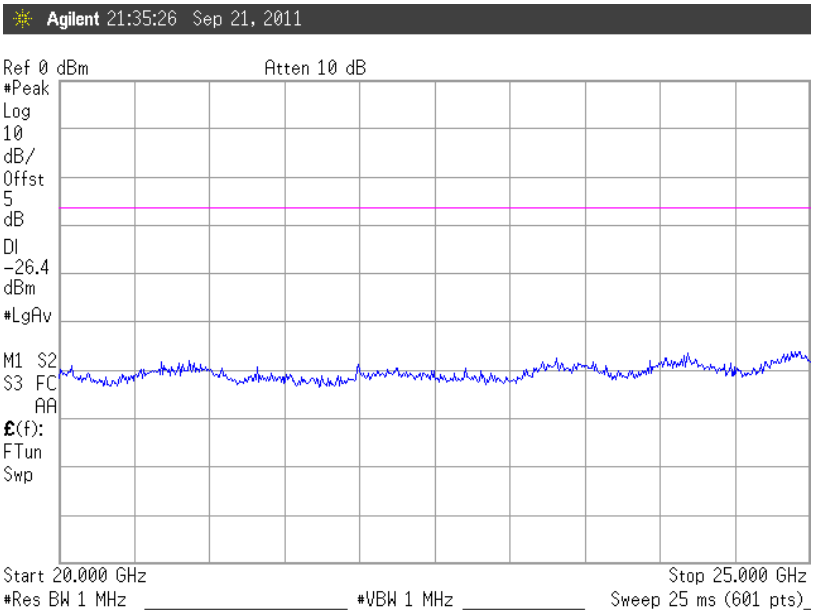
802.11n-HT40, Frequency: 5190MHz

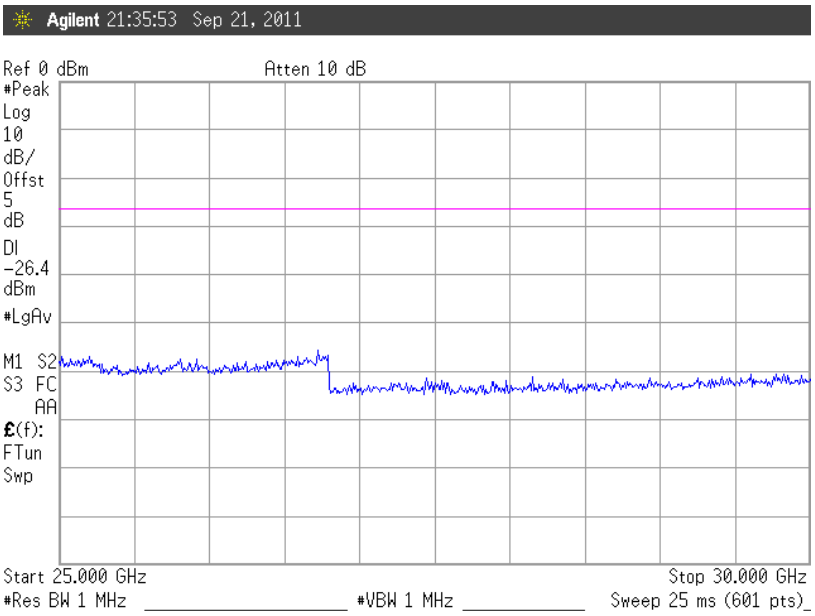


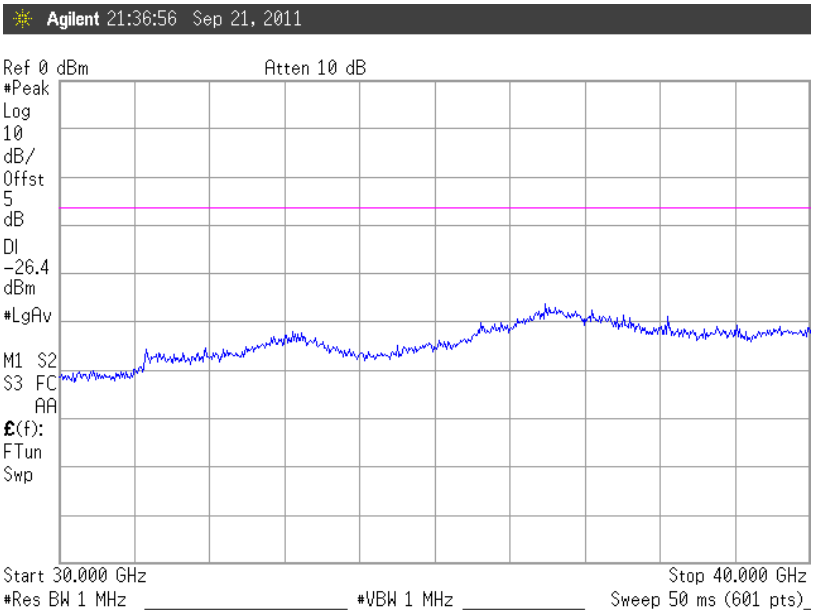



Agilent 21:34:32 Sep 21, 2011
Mkr1 10.383 GHz
Ref 0 dBm
Atten 10 dB
-54.44 dBm
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 10.000 GHz
Stop 15.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 16.68 ms (601 pts)

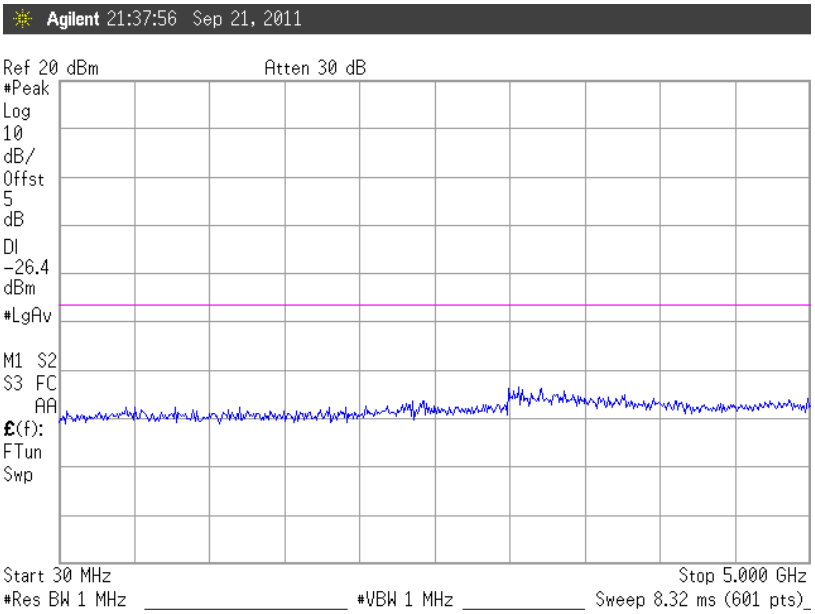

Agilent 21:34:57 Sep 21, 2011
Mkr1 15.567 GHz
Ref 0 dBm
Atten 10 dB
-51.65 dBm
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 15.000 GHz
Stop 20.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 25 ms (601 pts)

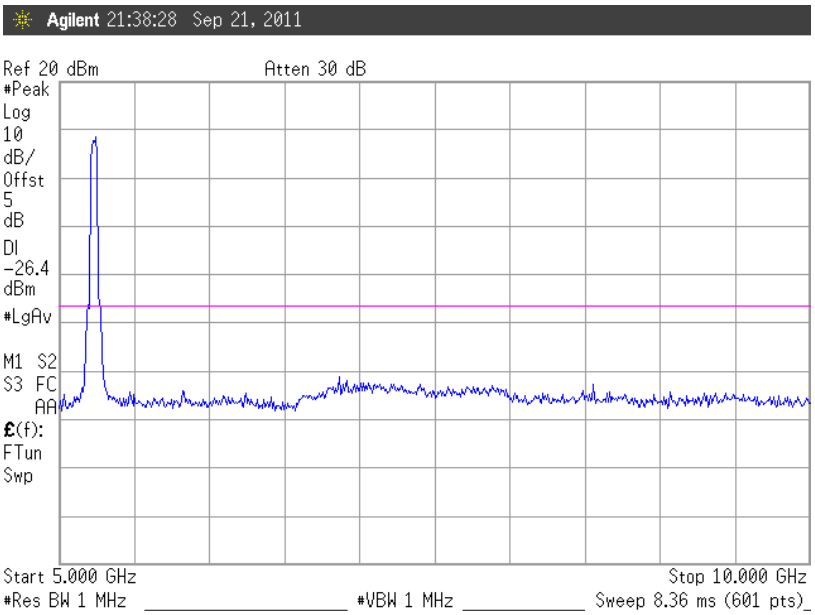

Agilent 21:35:26 Sep 21, 2011
Ref 0 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 20.000 GHz
Stop 25.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 25 ms (601 pts)

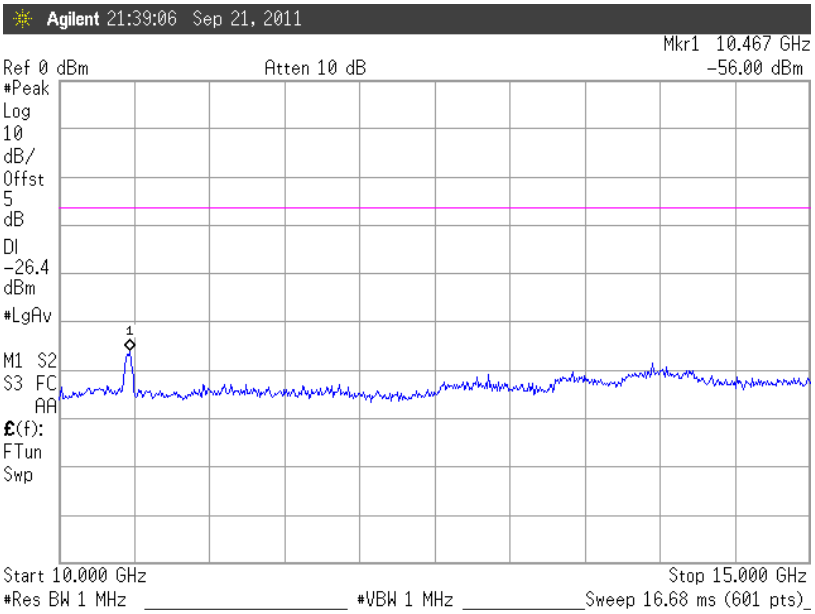

Agilent 21:35:53 Sep 21, 2011
Ref 0 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 25.000 GHz
Stop 30.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 25 ms (601 pts)

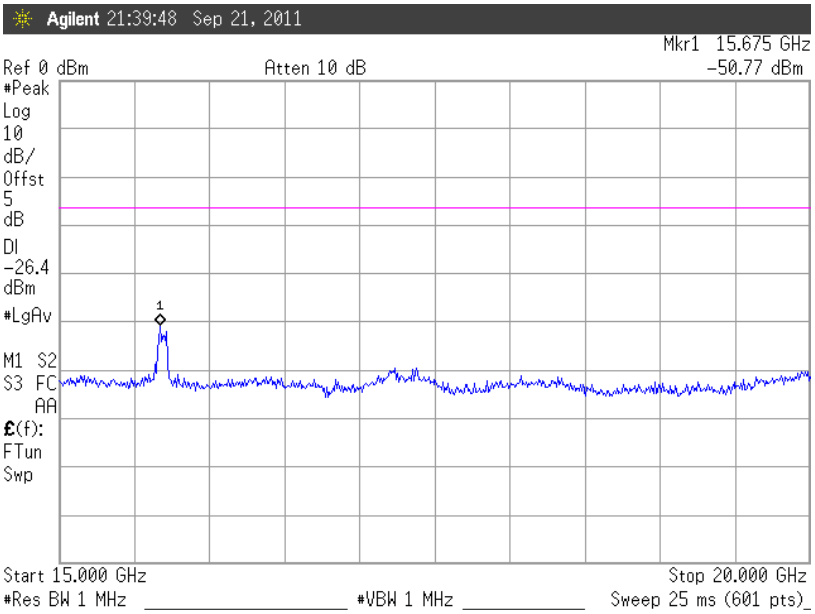

Agilent 21:36:56 Sep 21, 2011
Ref 0 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 30.000 GHz
Stop 40.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 50 ms (601 pts)

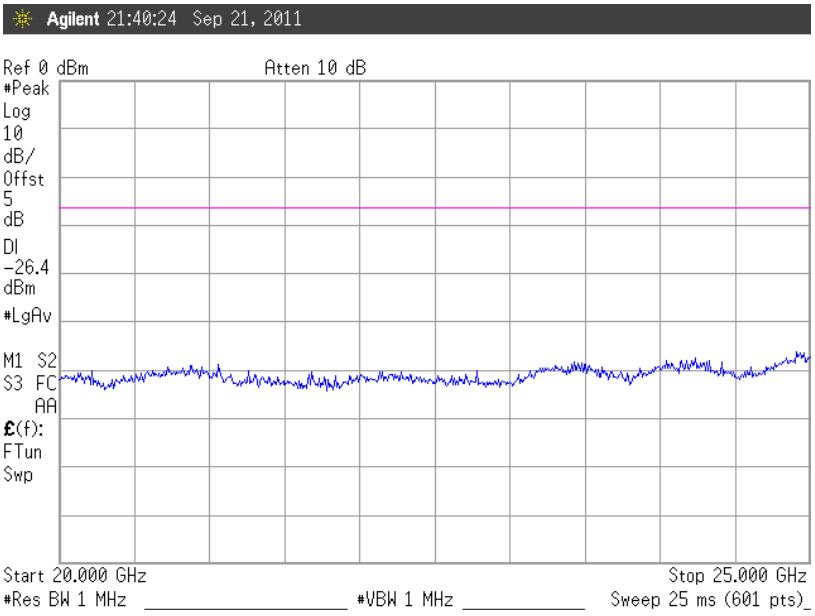
802.11n-HT40, Frequency: 5230MHz

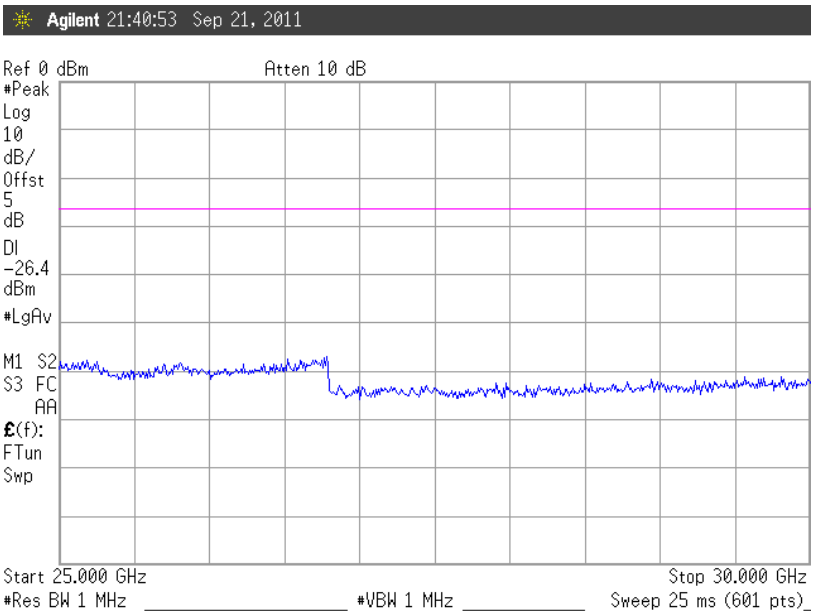


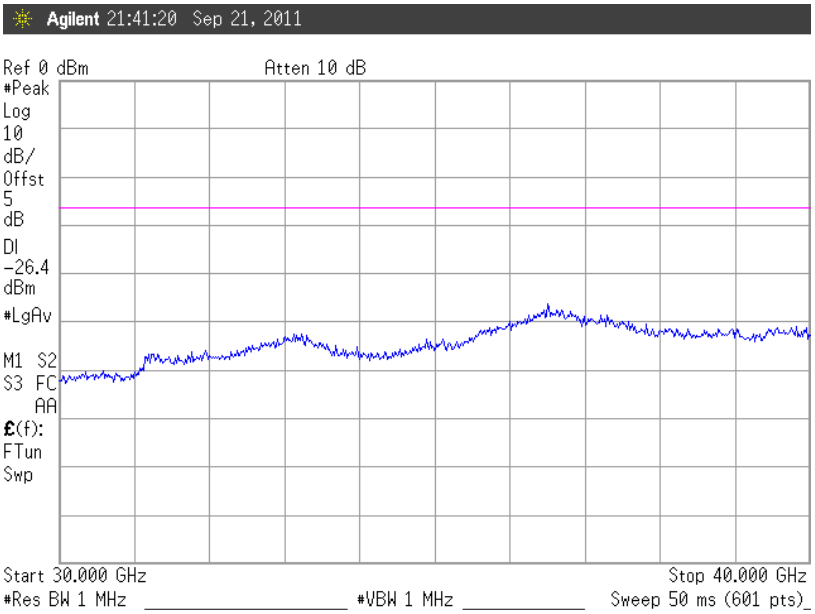



Agilent 21:39:06 Sep 21, 2011
Mkr1 10.467 GHz
Ref 0 dBm
Atten 10 dB
-56.00 dBm
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 10.000 GHz
Stop 15.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 16.68 ms (601 pts)


Agilent 21:39:48 Sep 21, 2011
Mkr1 15.675 GHz
Ref 0 dBm
Atten 10 dB
-50.77 dBm
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 15.000 GHz
Stop 20.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 25 ms (601 pts)


Agilent 21:40:24 Sep 21, 2011
Ref 0 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 20.000 GHz
Stop 25.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 25 ms (601 pts)


Agilent 21:40:53 Sep 21, 2011
Ref 0 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 25.000 GHz
Stop 30.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 25 ms (601 pts)


Agilent 21:41:20 Sep 21, 2011
Ref 0 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
5
dB
Dl
-26.4
dBm
#LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 30.000 GHz
Stop 40.000 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 50 ms (601 pts)

7. BAND EDGES MEASUREMENT

7.1. Test Equipment

The following test equipment was used during the band edges 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'

7.2. Block Diagram of Test Setup

The same as section.4.2.

7.3. Specification Limits (§15.407(b)-(1))

For transmitters operating in the 5.15-5.25GHz band: all emission outside of the 5.150-5.350GHz band shall not exceed an EIRP of -27dBm/MHz.

Maximum Antenna Gain: 0.62dBi
Spurious Limit: -27dBm/MHz eirp
Limit Used on Plots [Note 1]: -26.38dBm/MHz

[Note 1]: The -27dBm/MHz limit is an eirp limit. The limit for antenna port conducted measurements is adjusted to take into consideration the maximum antenna gain (limit = -27dBm+antenna gain). Radiated field strength measurements for signals more than 50MHz from the bands and that are close to the limit are made to determine compliance as the antenna gain is not known at these frequencies.

7.4. Operating Condition of EUT

The test program "Broadcom WL Command" was used to enable the EUT to transmit data at different channel frequency individually.

7.5. Test Procedure

The transmitter output was connected to the spectrum analyzer. Set both RBW and VBW of spectrum analyzer to 1MHz with suitable frequency span including 100MHz bandwidth from band edge.

The measurement guideline was according to DA-02-2138A1

Pursuant to KDB 662911, we performed conducted tests for both antenna chains and submit test data measured on chain 0 as worse performance.

7.6. Test Results

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

Pursuant to KDB 662911, the test result has been included 3 dB is calculated from 10log(N), where N is the number of outputs.

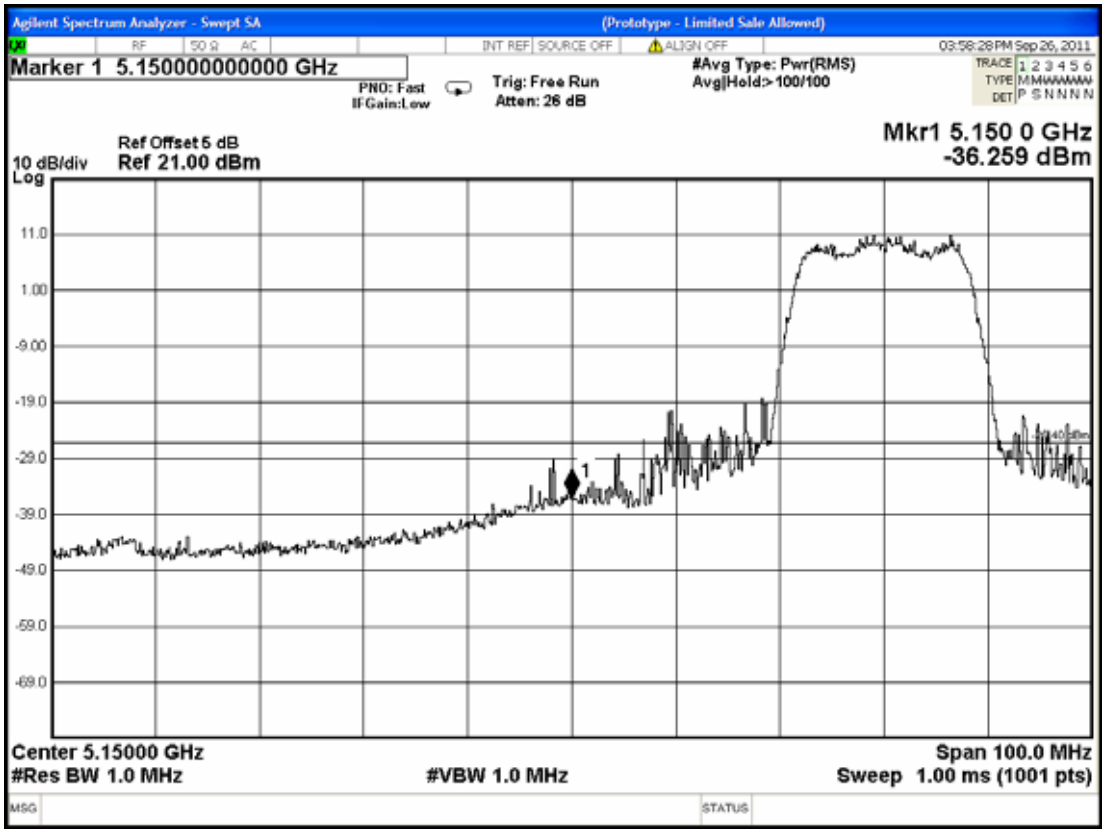
(Test Date : Sep. 26, 2011 Temperature : 25℃ Humidity : 54%)

802.11a
The highest emission level is -36.259dBm on 5.1500GHz。

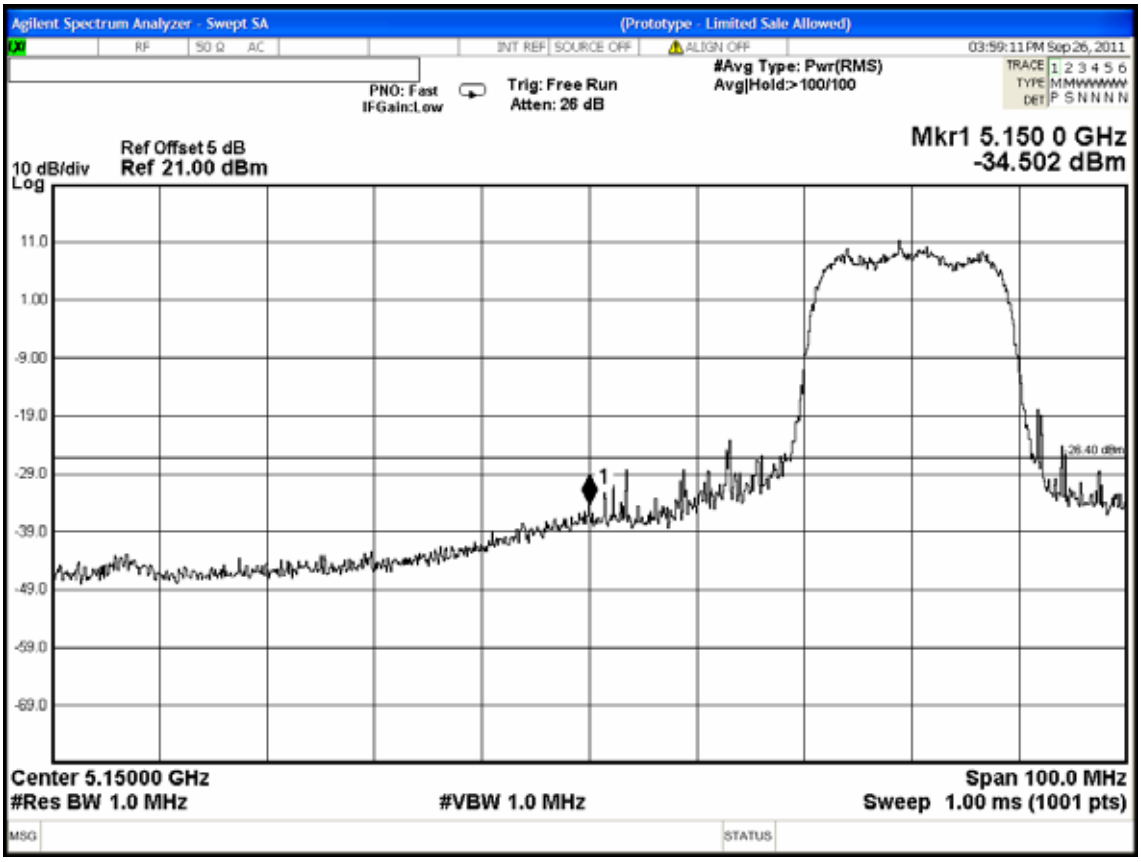
802.11n-HT20
The highest emission level is -34.502dBm on 5.1500GHz。

802.11n-HT40
The highest emission level is -27.985dBm on 5.1500GHz。

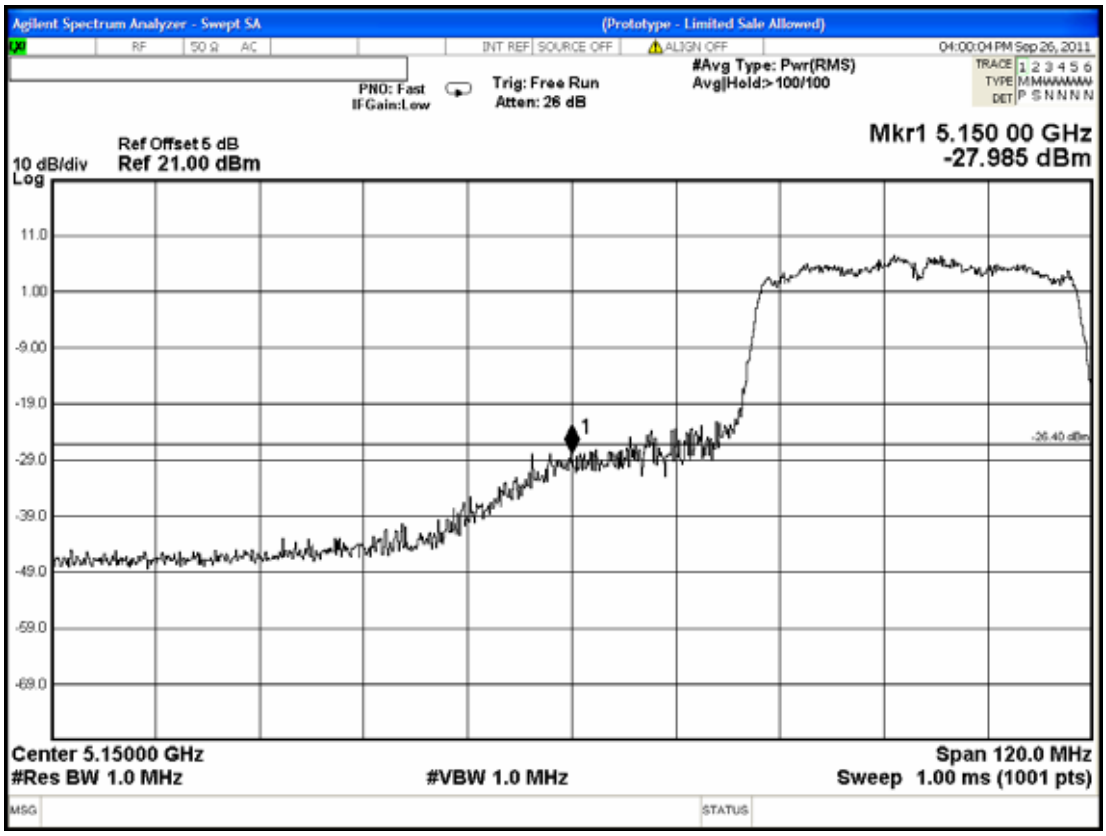
802.11a
Below Band edge



802.11n-HT20



802.11n-HT40


Agilent Spectrum Analyzer - Swept SA
(Prototype - Limited Sale Allowed)
RF
50 Ω AC
INT REF
SOURCE OFF
ALIGN OFF
04:00:04 PM Sep 26, 2011
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 26 dB
#Avg Type: Pwr(RMS)
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE MWWWWW
DET P S N N N N
Ref Offset 5 dB
10 dB/div
Log
Ref 21.00 dBm
Mkr1 5.150 00 GHz
-27.985 dBm
11.0
1.00
-9.00
-19.0
-29.0
-39.0
-49.0
-59.0
-69.0
1
-26.40 dBm
Center 5.15000 GHz
#Res BW 1.0 MHz
#VBW 1.0 MHz
Span 120.0 MHz
Sweep 1.00 ms (1001 pts)
MSG
STATUS

8. POWER SPECTRAL DENSITY MEASUREMENT

8.1. Test Equipment

The following test equipment was used during the power spectral density 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'

8.2. Block Diagram of Test Setup

The same as section.4.2.

8.3. Specification Limits (§15.407(a)-(1))

For the band 5.15-5.25GHz, the peak power spectral density shall not exceed 4dBm in any 1MHz band.

8.4. Operating Condition of EUT

The test program "Broadcom WL Command" was used to enable the EUT to transmit data at different channel frequency individually.

8.5. Test Procedure

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices-Part 15, Subpart E, August 2002.
PPSD Method#2 was used.

The measurement guideline was according to DA-02-2138A1

Pursuant to KDB 662911, we performed conducted tests for both antenna chains and submit test data measured on chain 0 as worse performance.

8.6. Test Results

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

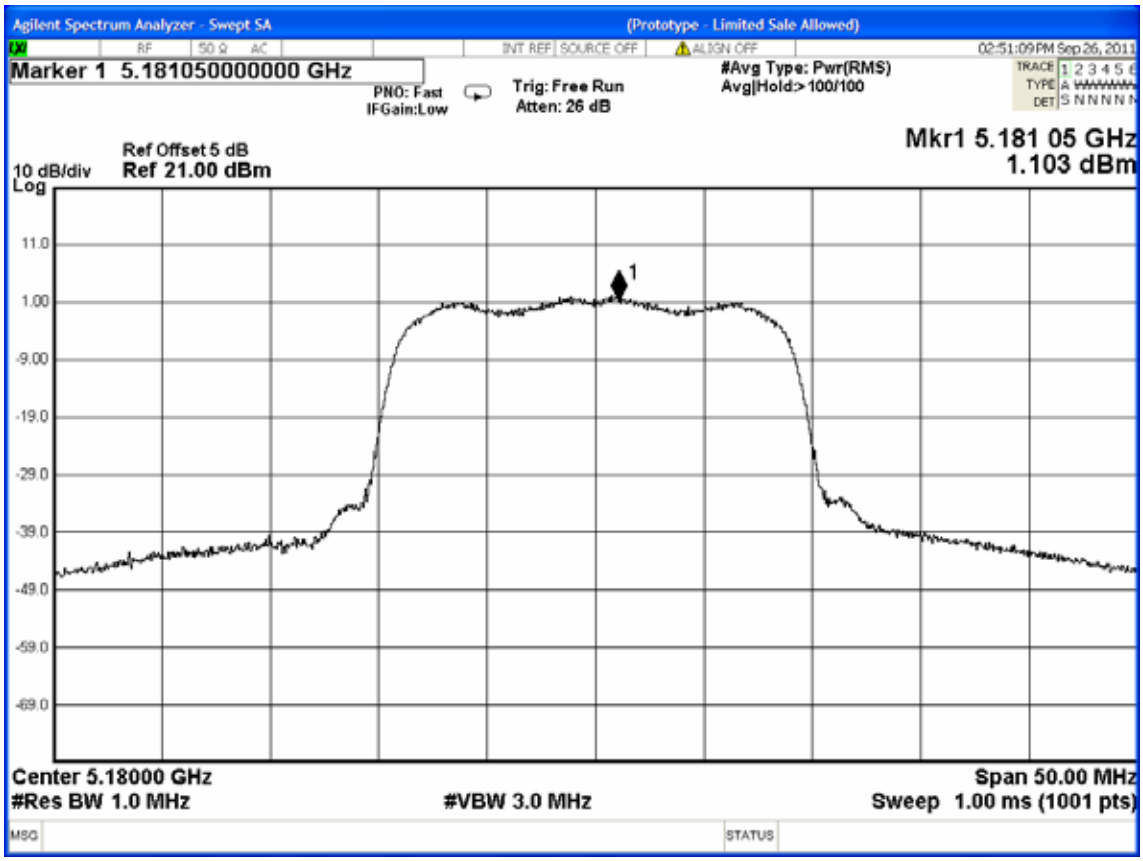
Pursuant to KDB 662911, the test result has been included 3 dB is calculated from 10log(N), where N is the number of outputs.

(Test Date : Sep. 20, 2011 Temperature : 25℃ Humidity : 51%)
(Test Date : Sep. 26, 2011 Temperature : 25℃ Humidity : 54%)

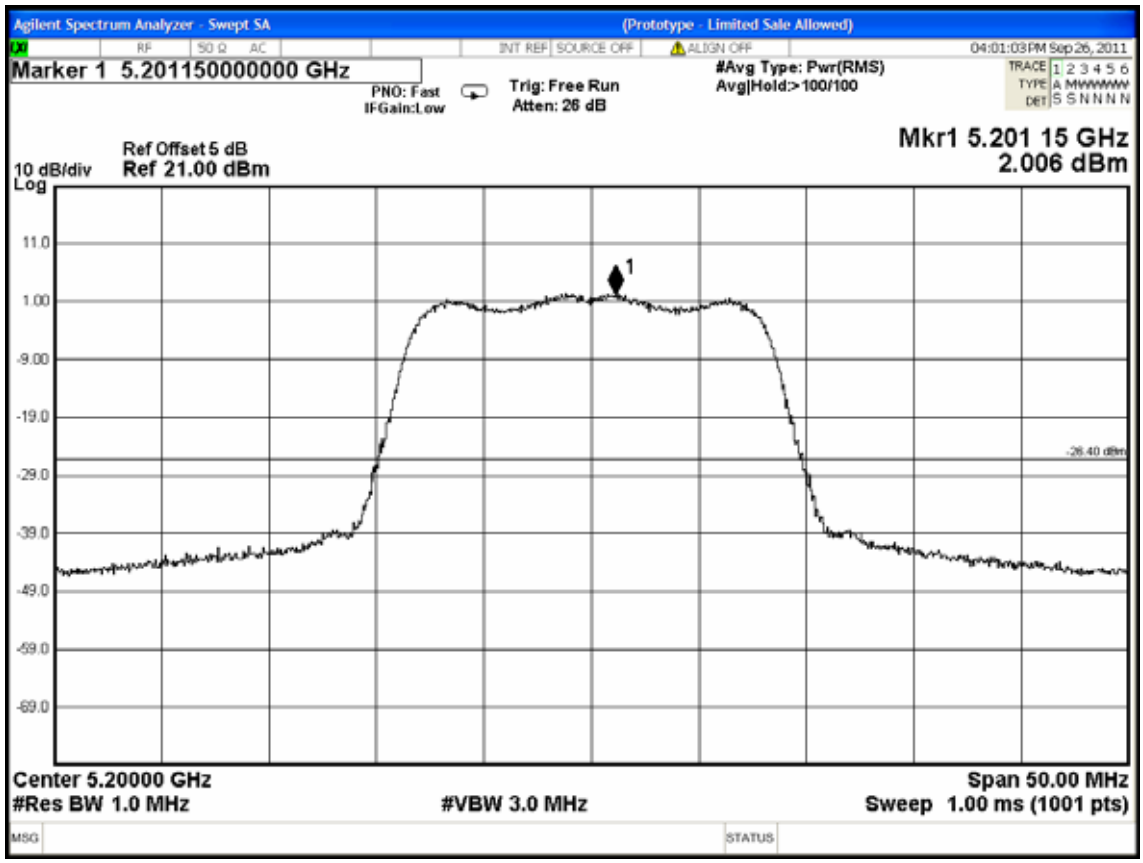
Mode	Type of Network	Channel	Frequency	**Power Spectral Density (dBm)**
1.	802.11a	CH 36	5180MHz	**1.103**
2.		CH 40	5200MHz	**2.006**
3.		CH 48	5240MHz	**2.772**
4.	802.11n-HT20	CH 36	5180MHz	**2.147**
5.		CH 40	5200MHz	**2.793**
6.		CH 48	5240MHz	**2.702**
7.	802.11n-HT40	CH 38	5190MHz	**1.507**
8.		CH 46	5230MHz	**-0.821**

[Limit: 4dBm]

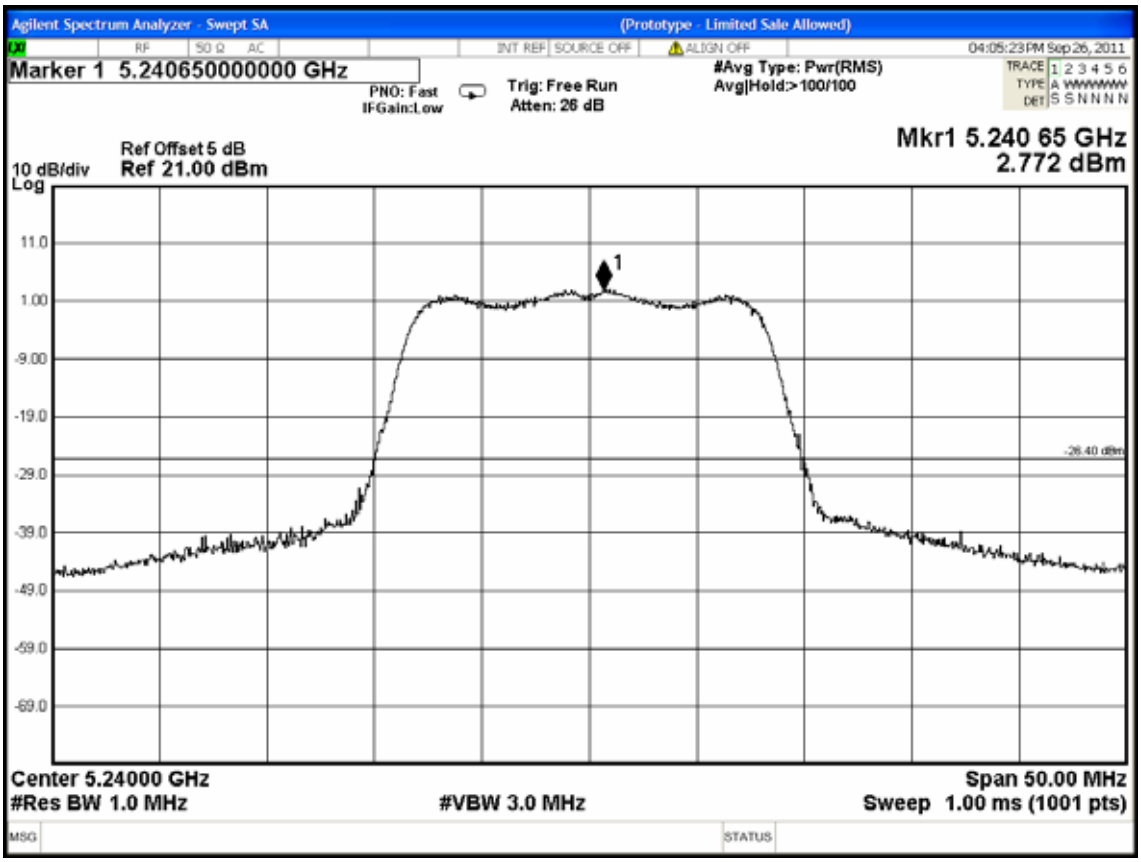
802.11a, Frequency: 5180MHz



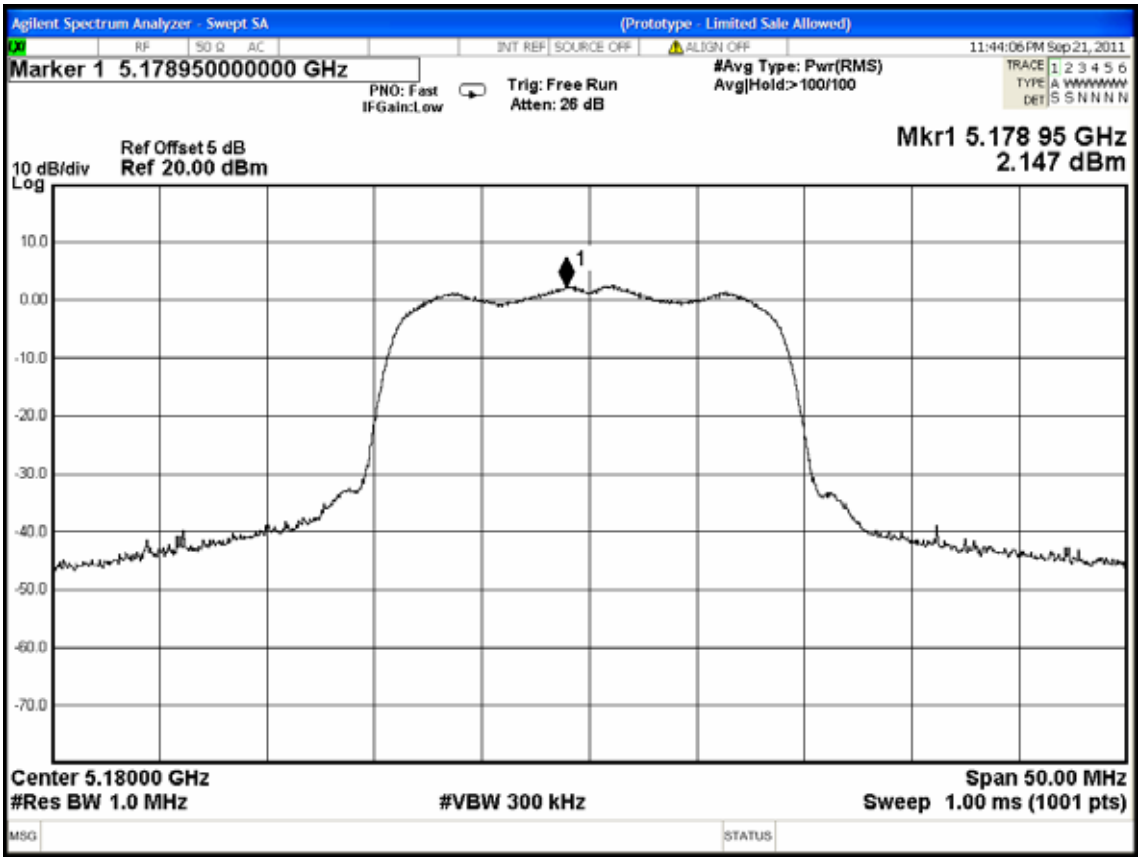
802.11a, Frequency: 5200MHz



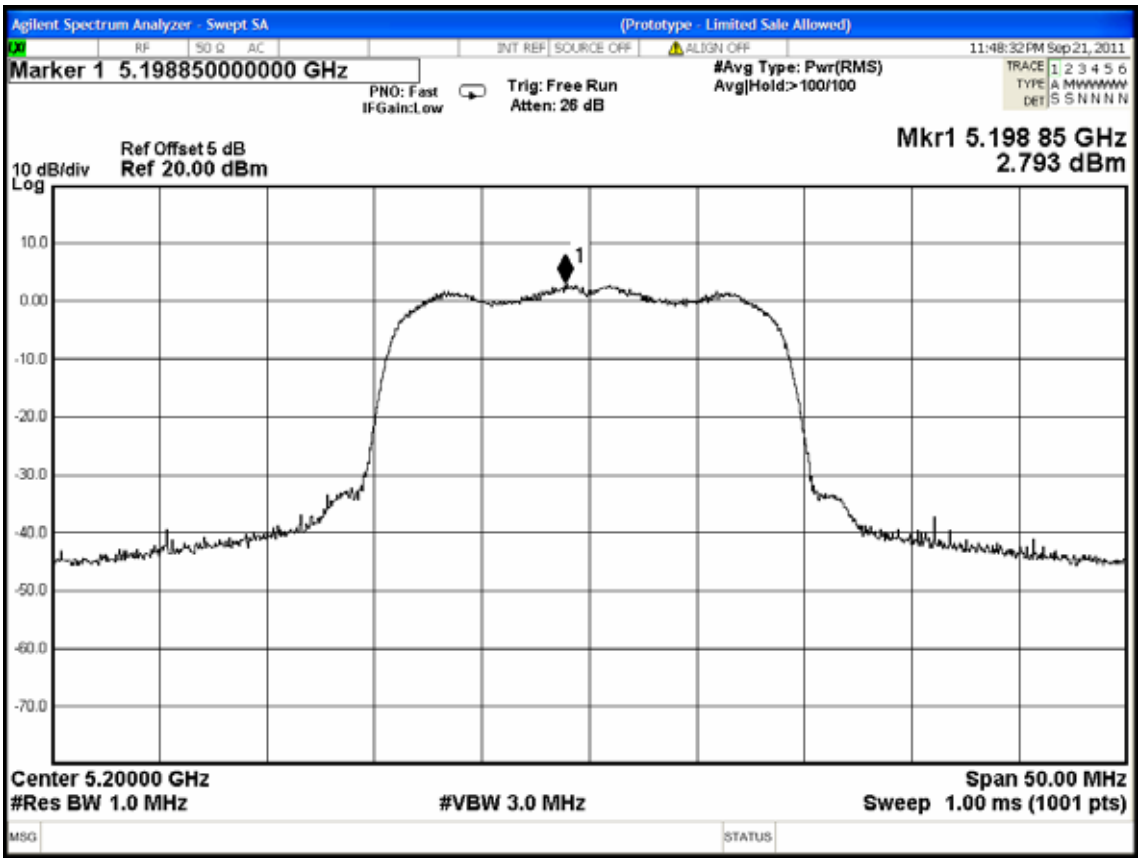
802.11a, Frequency: 5240MHz



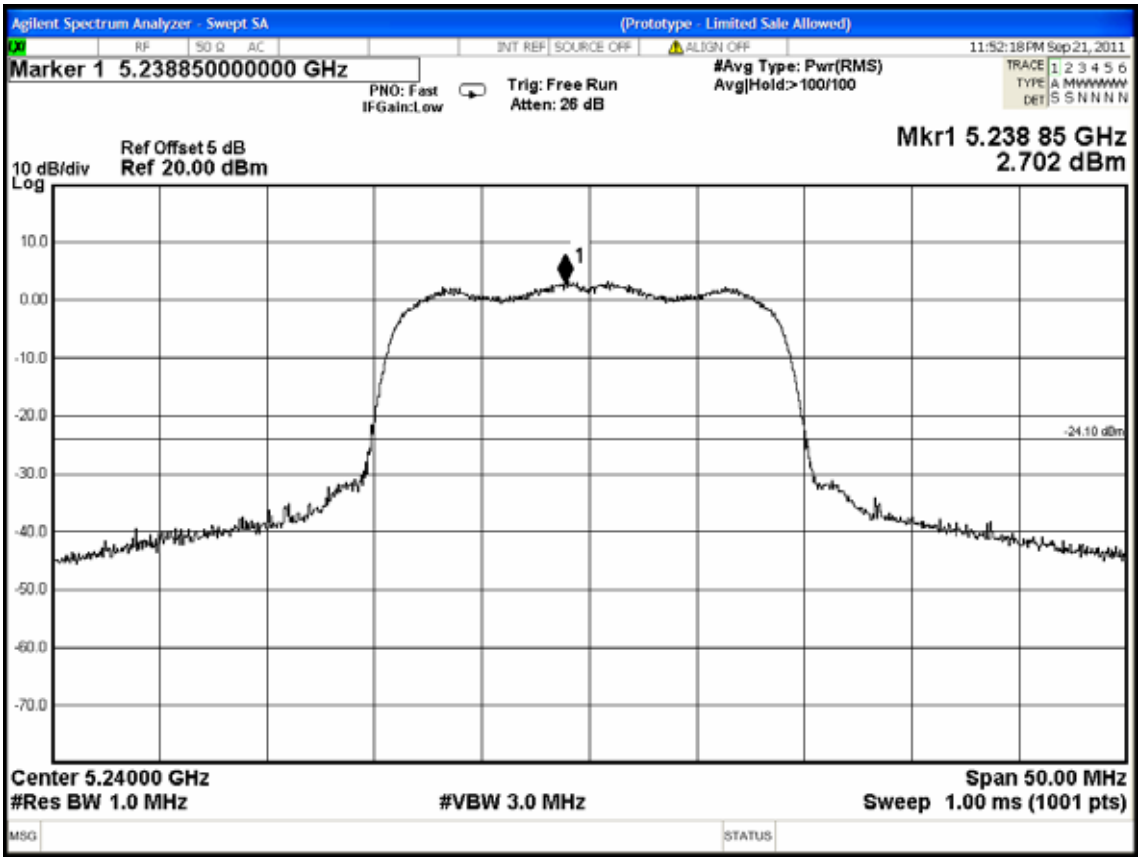
802.11n-HT20, Frequency: 5180MHz



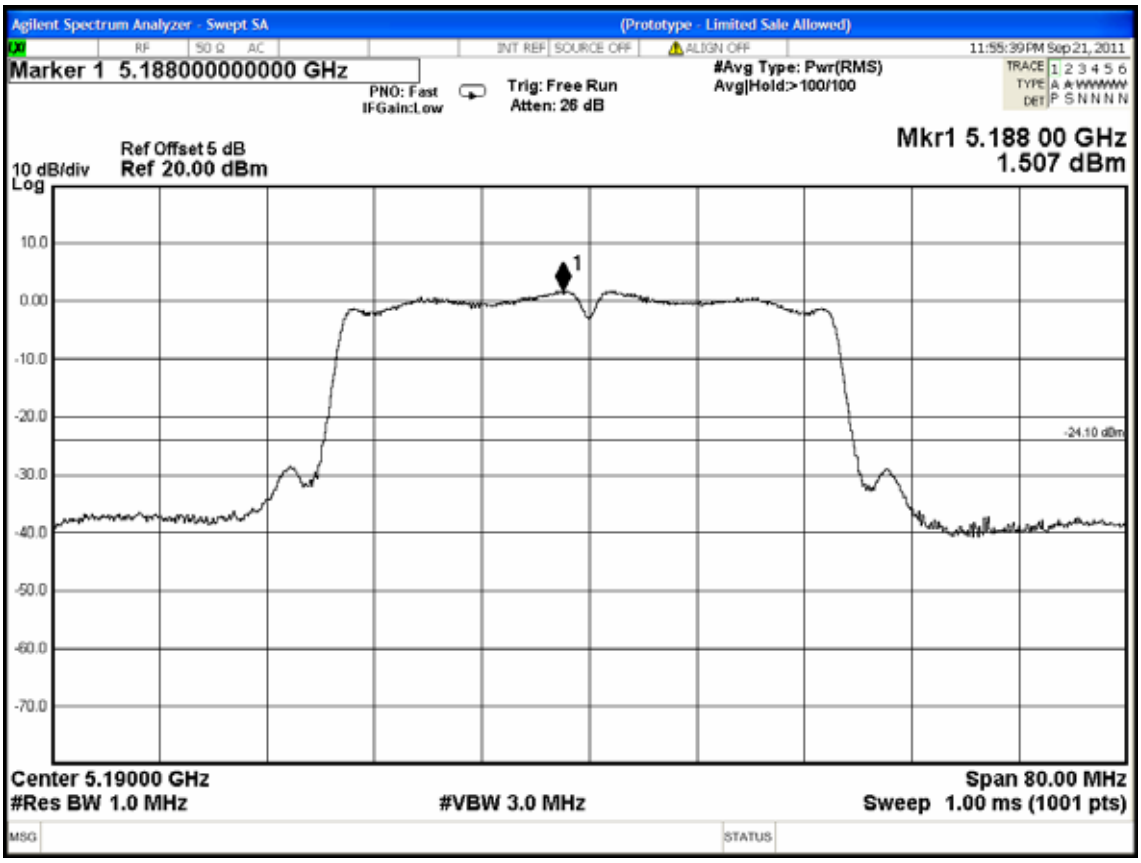
802.11n-HT20, Frequency: 5200MHz



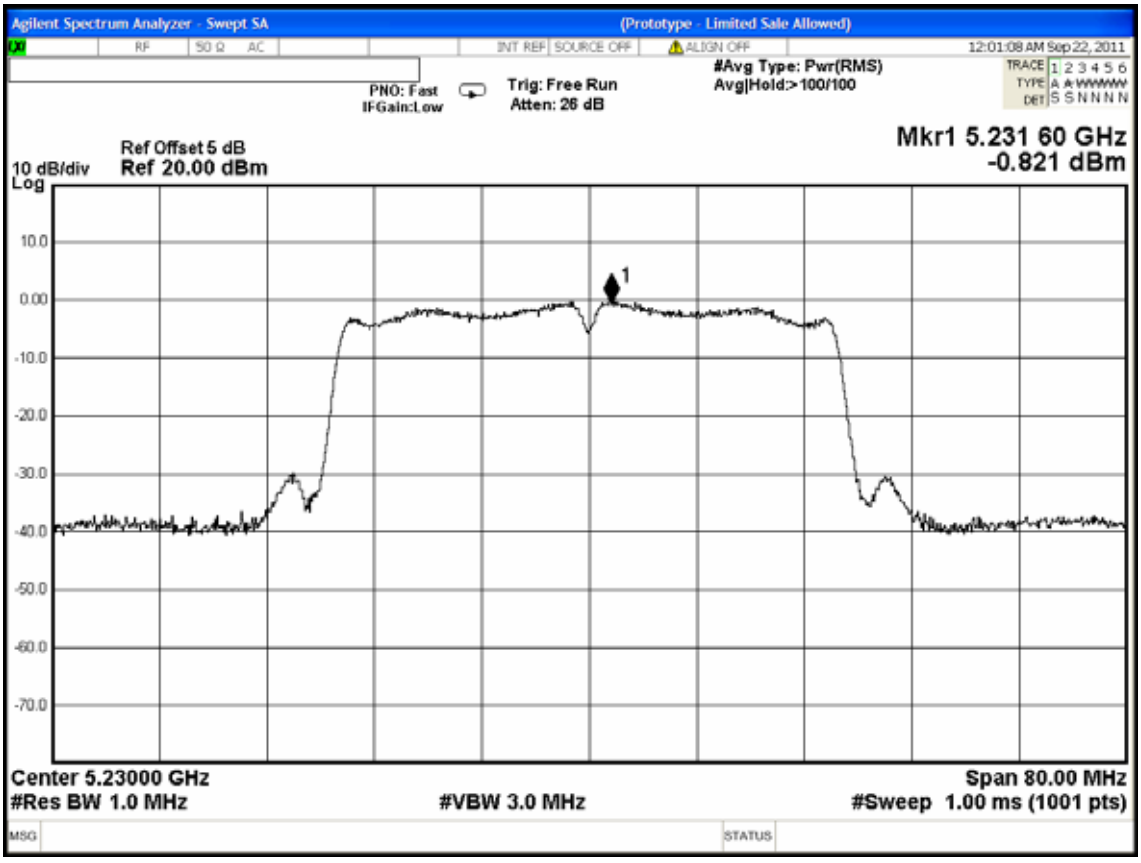
802.11n-HT20, Frequency: 5240MHz



802.11n-HT40, Frequency: 5190MHz



802.11n-HT40, Frequency: 5230MHz



9. PEAK POWER EXCURSION MEASUREMENT

9.1. Test Equipment

The following test equipment was used during the power spectral density 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’

9.2. Block Diagram of Test Setup

The same as section.4.2.

9.3. Specification Limits (§15.407(a)-(6))

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13dB across any 1MHz bandwidth or the emission bandwidth whichever is less.

9.4. Operating Condition of EUT

The test program “Broadcom WL Command” was used to enable the EUT to transmit data at different channel frequency individually.

9.5. Test Procedure

Transmitter output was connected to the spectrum analyzer. Using peak detector and Max-hold function for Trace 1 (RBW=1MHz, VBW=3MHz) and Trace 2 (RBW=1MHz, VBW=300kHz).

The measurement guideline was according to DA-02-2138A1

Pursuant to KDB 662911, we performed conducted tests for both antenna chains and submit test data measured on chain 0 as worse performance.

9.6. Test Results

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

Pursuant to KDB 662911, the test result has been included 3 dB is calculated from 10log(N), where N is the number of outputs.

(Test Date : Sep. 20, 2011 Temperature : 25℃ Humidity : 51%)
(Test Date : Sep. 26, 2011 Temperature : 25℃ Humidity : 54%)

9.6.1. For 802.11a

Mode	Type of Network	Channel	Frequency	**Peak Power Excursion**
1.	802.11a	CH 36	5180MHz	**-4.49dB**
2.		CH 40	5200MHz	**-6.02dB**
3.		CH 48	5240MHz	**-6.57dB**

[Limit: 13dB]

9.6.2. For 802.11n-HT20

Mode	Type of Network	Channel	Frequency	**Peak Power Excursion**
1.	802.11n-HT20	CH 36	5180MHz	**5.75dB**
2.		CH 40	5200MHz	**-7.090dB**
3.		CH 48	5240MHz	**-4.22dB**

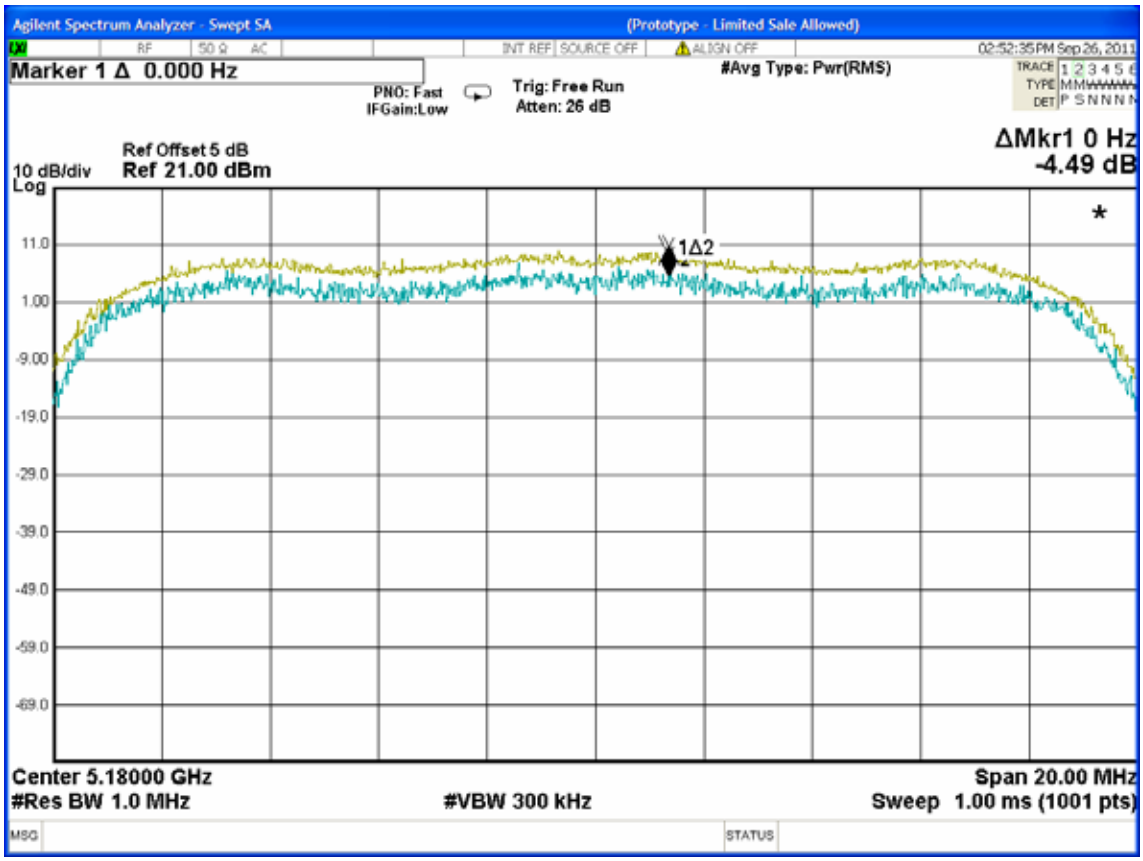
[Limit: 13dB]

9.6.3. For 802.11n-HT40

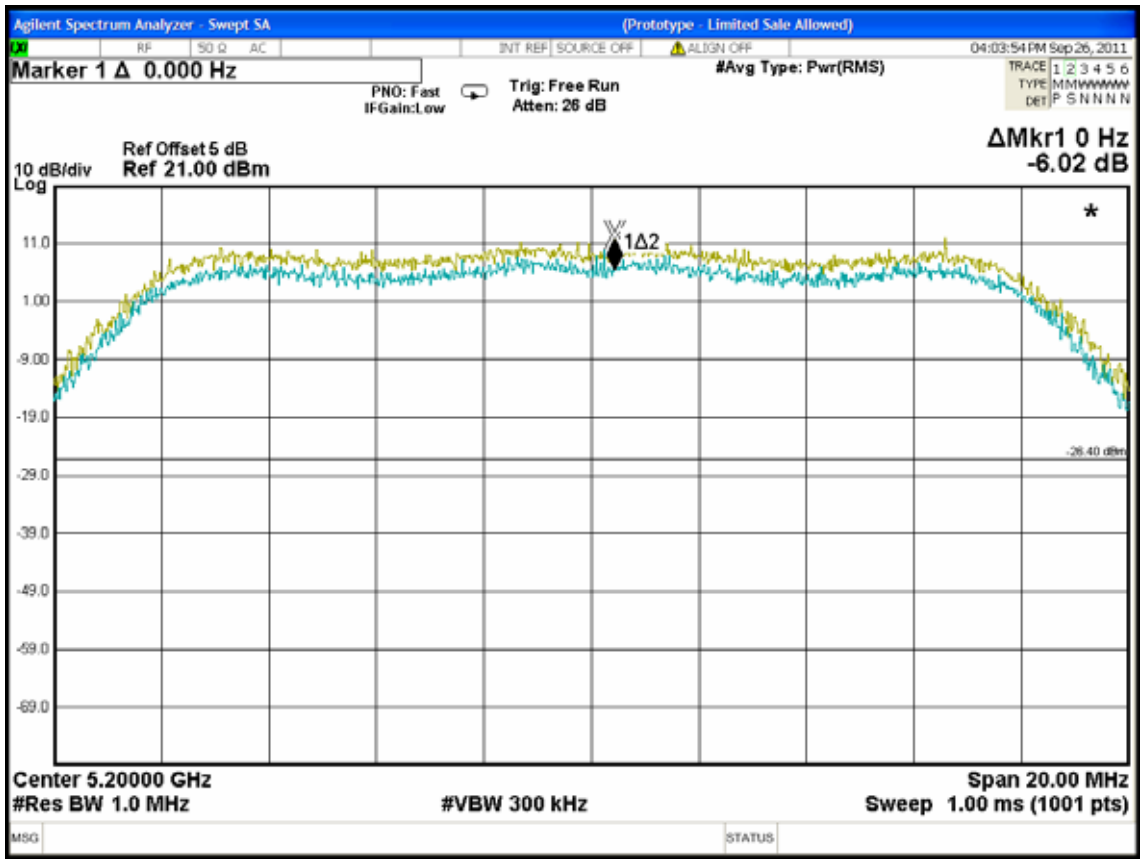
Mode	Type of Network	Channel	Frequency	**Peak Power Excursion**
1.	802.11n-HT40	CH 38	5190MHz	**-3.425dB**
2.		CH 46	5230MHz	**-4.680dB**

[Limit: 13dB]

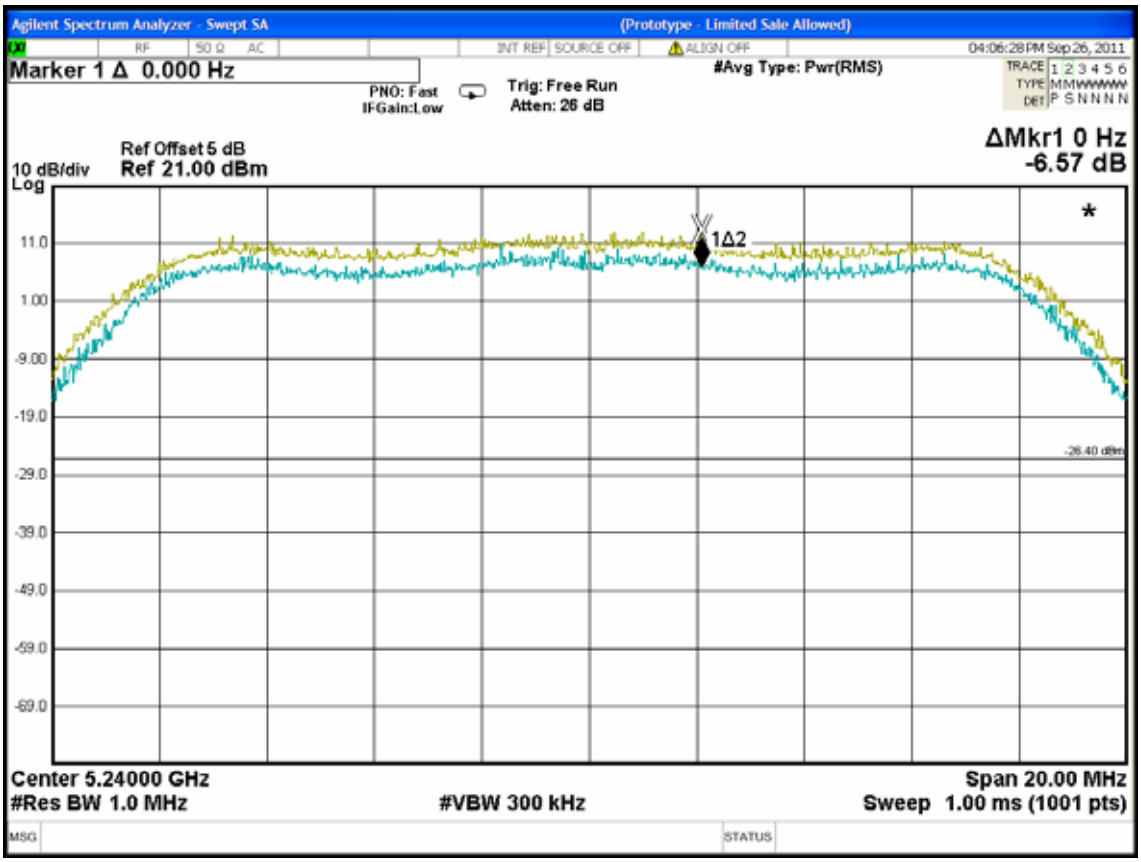
802.11a, Frequency: 5180MHz



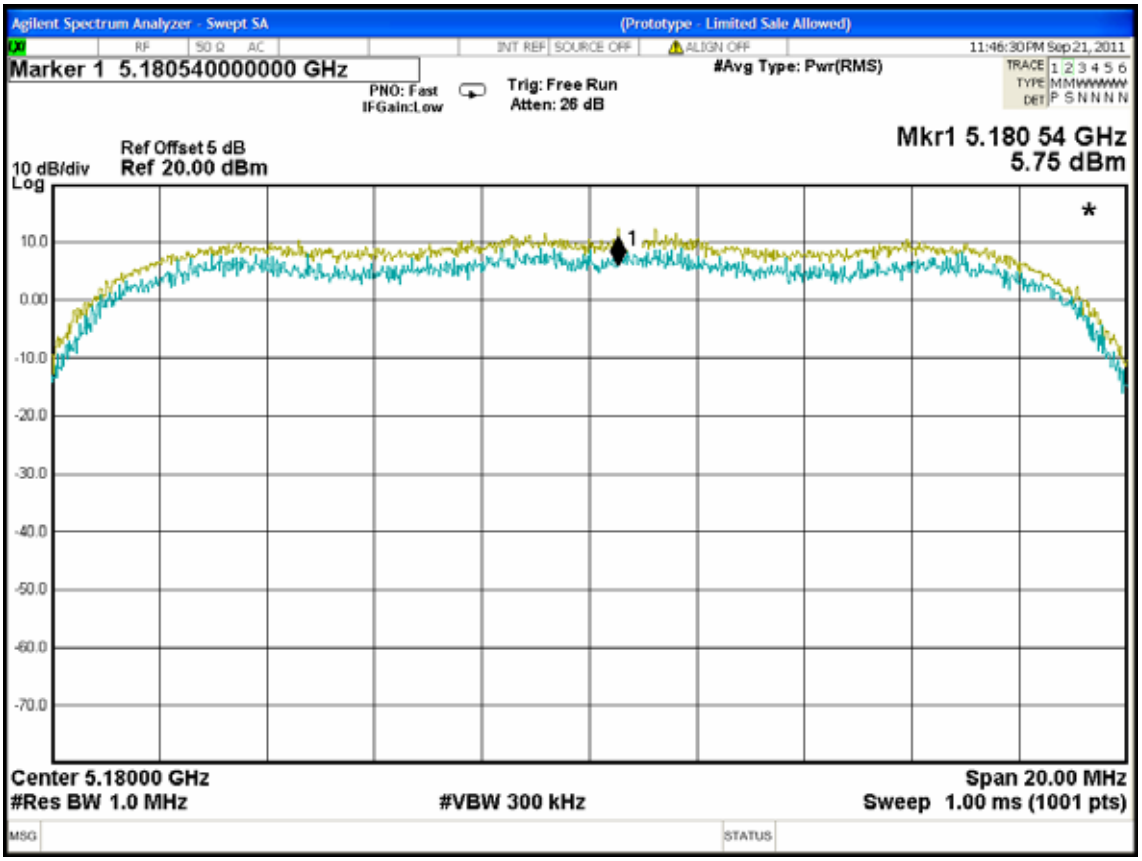
802.11a, Frequency: 5200MHz



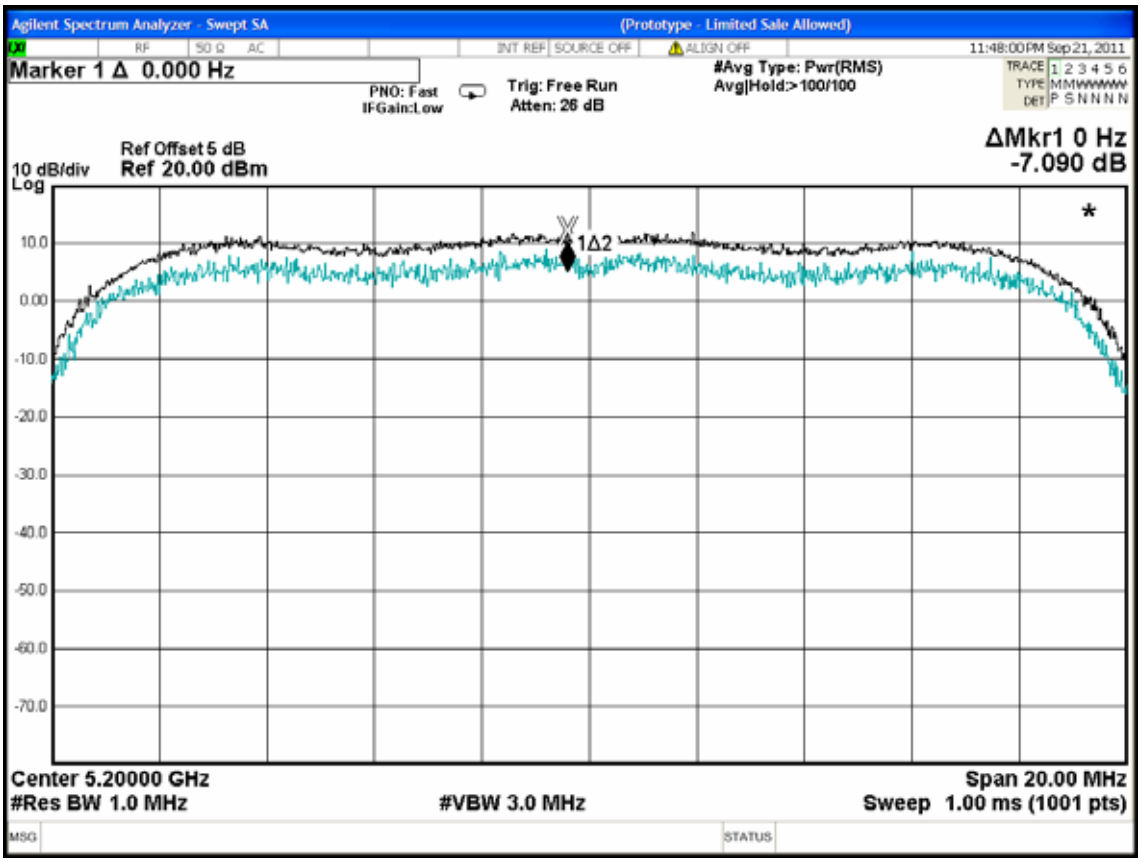
802.11a, Frequency: 5240MHz



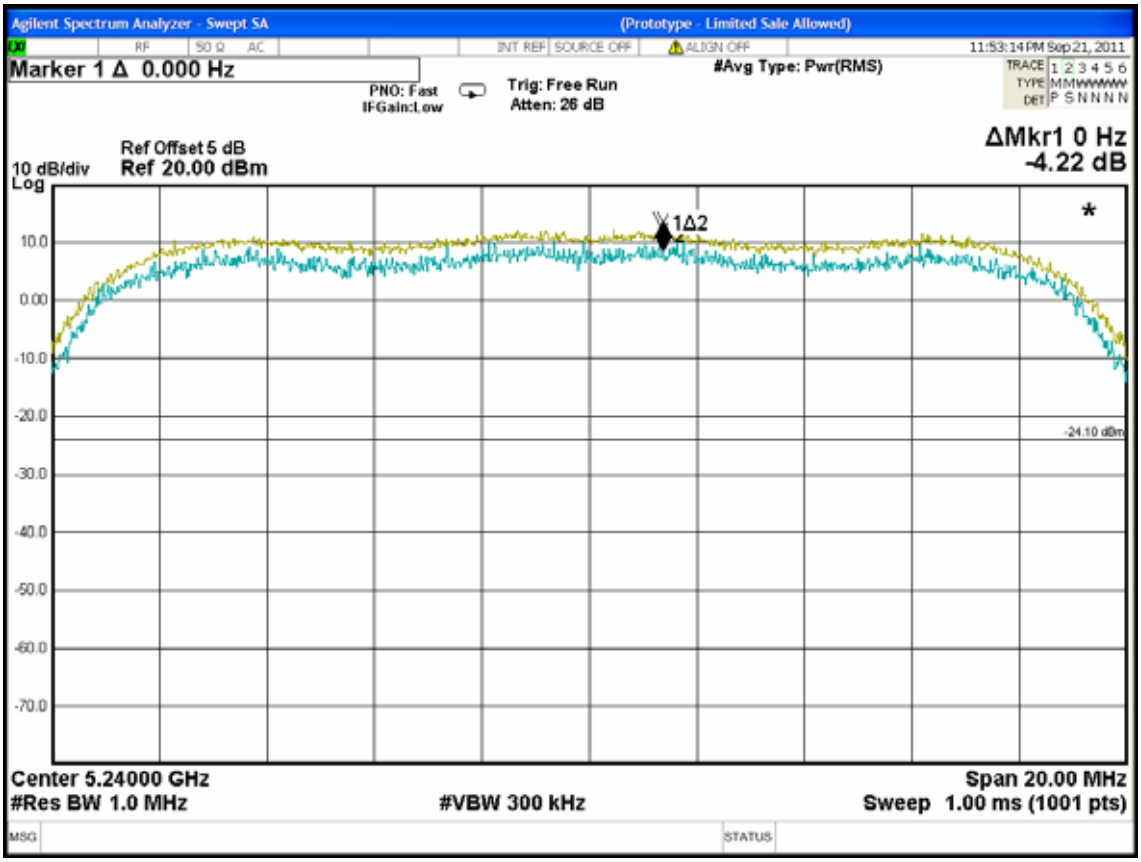
802.11n-HT20, Frequency: 5180MHz



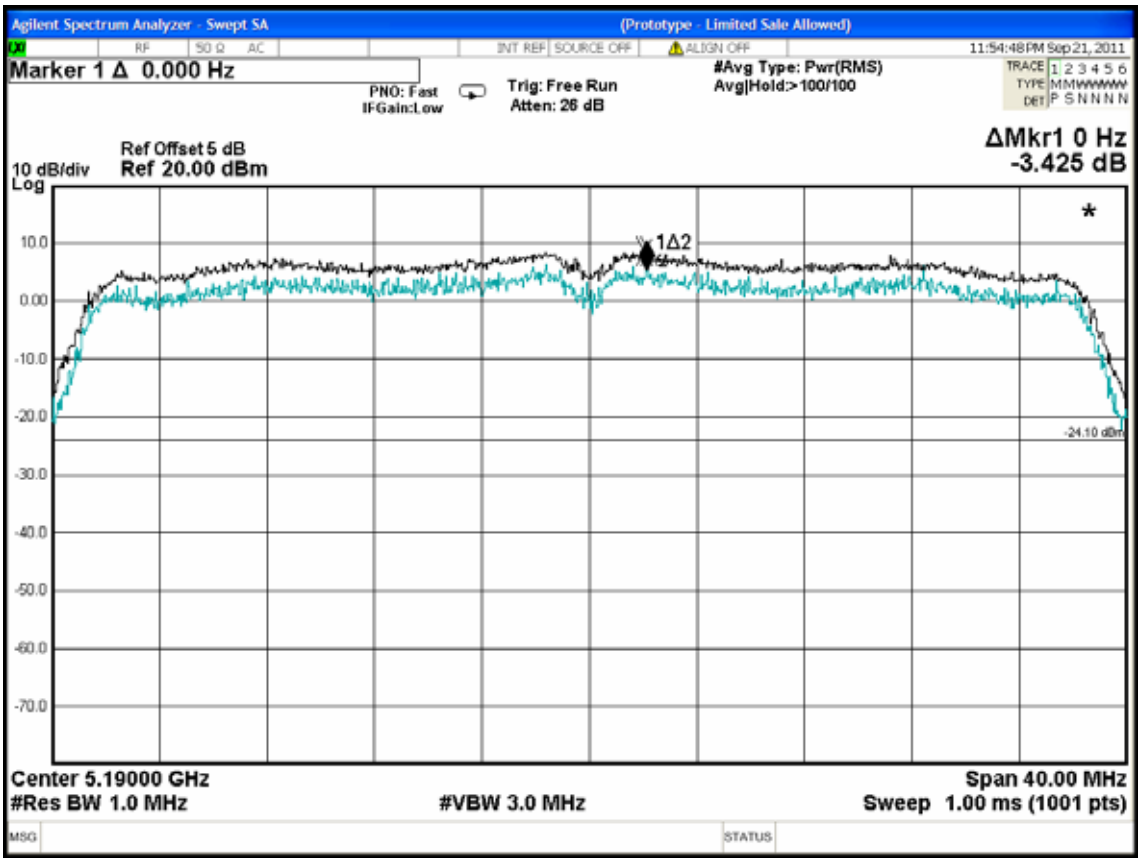
802.11n-HT20, Frequency: 5200MHz



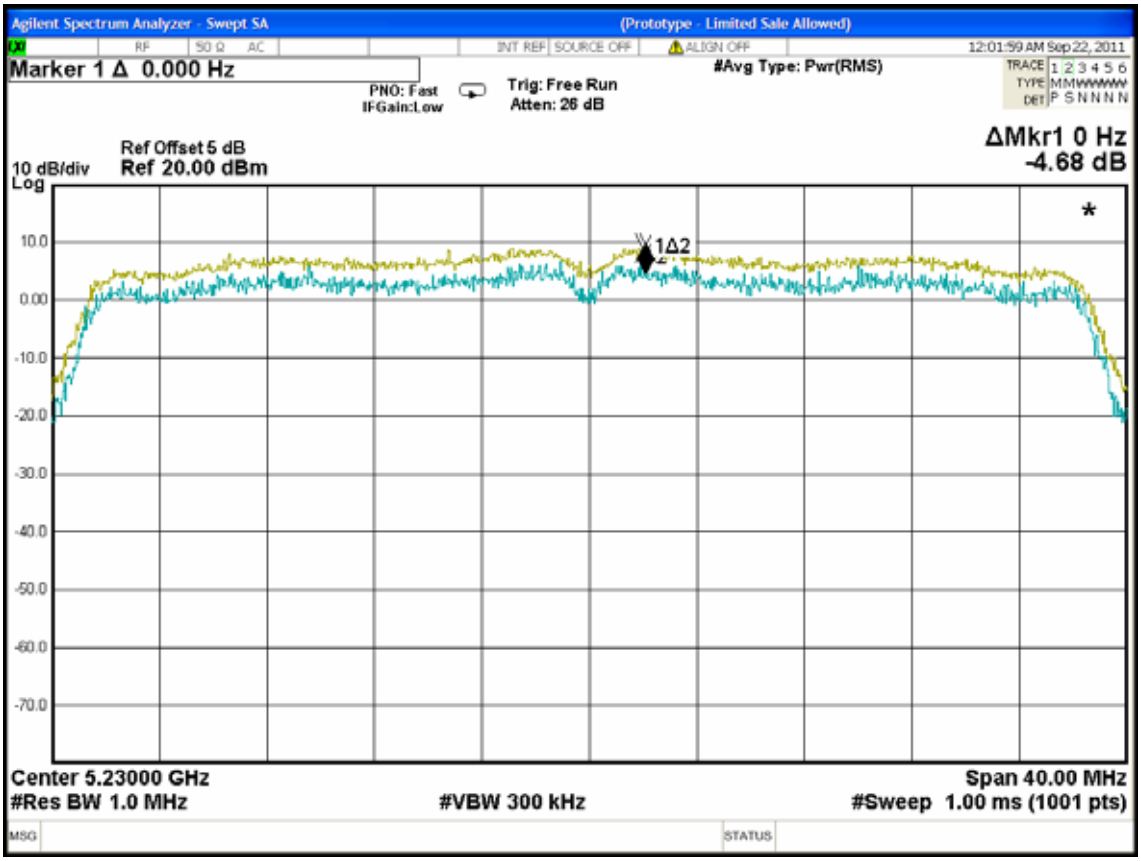
802.11n-HT20, Frequency: 5240MHz



802.11n-HT40, Frequency: 5190MHz



802.11n-HT40, Frequency: 5230MHz



10. DEVIATION TO TEST SPECIFICATIONS

【NONE】