MEASUREMENT REPORT
of
WIFI module

Applicant	**:**	PEGATRON CORPORATION
EUT	**:**	WIFI module
Model No.	**:**	UPWL6024
FCC ID	**:**	VUIUPWL6024

Tested by :

Training Research Co., Ltd.

TEL : 886-2-26935155 FAX : 886-2-26934440

No. 255, Nanyang Street, Shijr, Taipei Hsien 221, Taiwan, R.O.C.

CERTIFICATION

We here by verify that:

The test data, data evaluation, test procedures and equipment configurations shown in this report were made mainly in accordance with the procedures given in ANSI C63.4 (2003) as a reference. All test were conducted by ***Training Research Co., Ltd.***, 255 Nanyang Street, Shijr, Taipei Hsien 221, Taiwan, R.O.C. Also, we attest to the accuracy of each.

We further submit that the energy emitted by the sample EUT tested as described in the report is **in compliance with** the technical requirements set forth in the FCC Rules Part 15 Subpart C Section 15.247.

Applicant	**:**	PEGATRON CORPORATION
Applicant Address	**:**	5F, NO. 76, LIGONG ST., BEITOU DISTRICT, TAIPEI CITY, Taiwan
FCC ID	**:**	VUIUPWL6024
Report No.	**:**	P5515090223
Test Date	**:**	October 26, 2009 ~ December 12, 2009

Prepared by: Jack Tsai *Jack Tsai* **Approved by:** Frank Tsai *Frank Tsai*

Conditions of issue :

(1) ***This test report shall not be reproduced except in full, without written approval of TRC. And the test result contained within this report only relate to the sample submitted for testing.***

(2) ***This report must not be used by the client to claim product endorsement by NVLAP or any agency of U.S. Government.***

(3) ***This test report, measurements made by TRC are traceable to the NIST only Conducted and Radiated Method.***

NVLAP LAB CODE 200174-0

Tables of Contents

Ⅰ. GENERAL

1.1 Introduction

The following measurement report is submitted on behalf of applicant in support that the certification in accordance with Part 2 Subpart J and Part 15 Subpart A, B and C of the Commission's Rules and Regulations.

1.2 Description of EUT

FCC ID	:	VUIUPWL6024
Product Name	:	WIFI module
Model Name	:	UPWL6024
Frequency Range	:	IEEE 802.11b/g/n Draft 1.0 20M: 2.412GHz ~ 2.462GHz
		IEEE 802.11n Draft 1.0 40M: 2.422GHz ~ 2.452GHz
Channel Spacing	:	5MHz
Support Channel	:	IEEE 802.11b/g/n Draft 1.0 20M: 11 Channels
		IEEE 802.11n Draft 1.0 40M: 7 Channels
Modulation Skill	:	DBPSK, DQPSK, CCK, OFDM
Power Type	:	Powered by PCI Express interface of client's device

1.3 Test method

1.3.1 Insert the EUT into the PCI Express interface of extend card of the test fixture.

1.3.2 Using the computer and software provided by the manufacturer to control EUT. The software is operated under the Windows to control the EUT in the mode of continuous transmission; the test is performed under the specific conditions.

1.3.3 Set different data rate and channel (IEEE 802.11b/g/n Draft 1.0 20M: CH01/CH06/CH11, IEEE 802.11n Draft 1.0 40M: CH03/CH06/CH09) being tested and repeat the procedures above.

(a) Conducted test and Radiated test:
making EUT to the continuously (TX) mode.

1.4 Description of Support Equipment

In order to construct the minimum testing, following equipment were used as the support units.

Notebook	**:**	**DELL**
Model No.	:	JX285 (PP26L)
Serial No.	:	410362204
FCC ID	:	Doc Approved
BSMI	:	R33002

Power Adaptor	**:**	**DELL**
Model No.	:	LA65NS1-00
Part No.	:	PA-1650-05D3
Serial No.	:	CN-0YD637-716145-82T-0B8F
FCC ID	:	Doc Approved
BSMI	:	R33275
Power type	:	100 ~ 240VAC / 50 - 60Hz, 1.5A, Switching

Power cord (Main power to adaptor): Non-shielded, 0.90m length, Plastic hood, No ferrite core

Power cord (DC plug to adaptor): Shielded, 1.83m length, Plastic hood, ferrite core

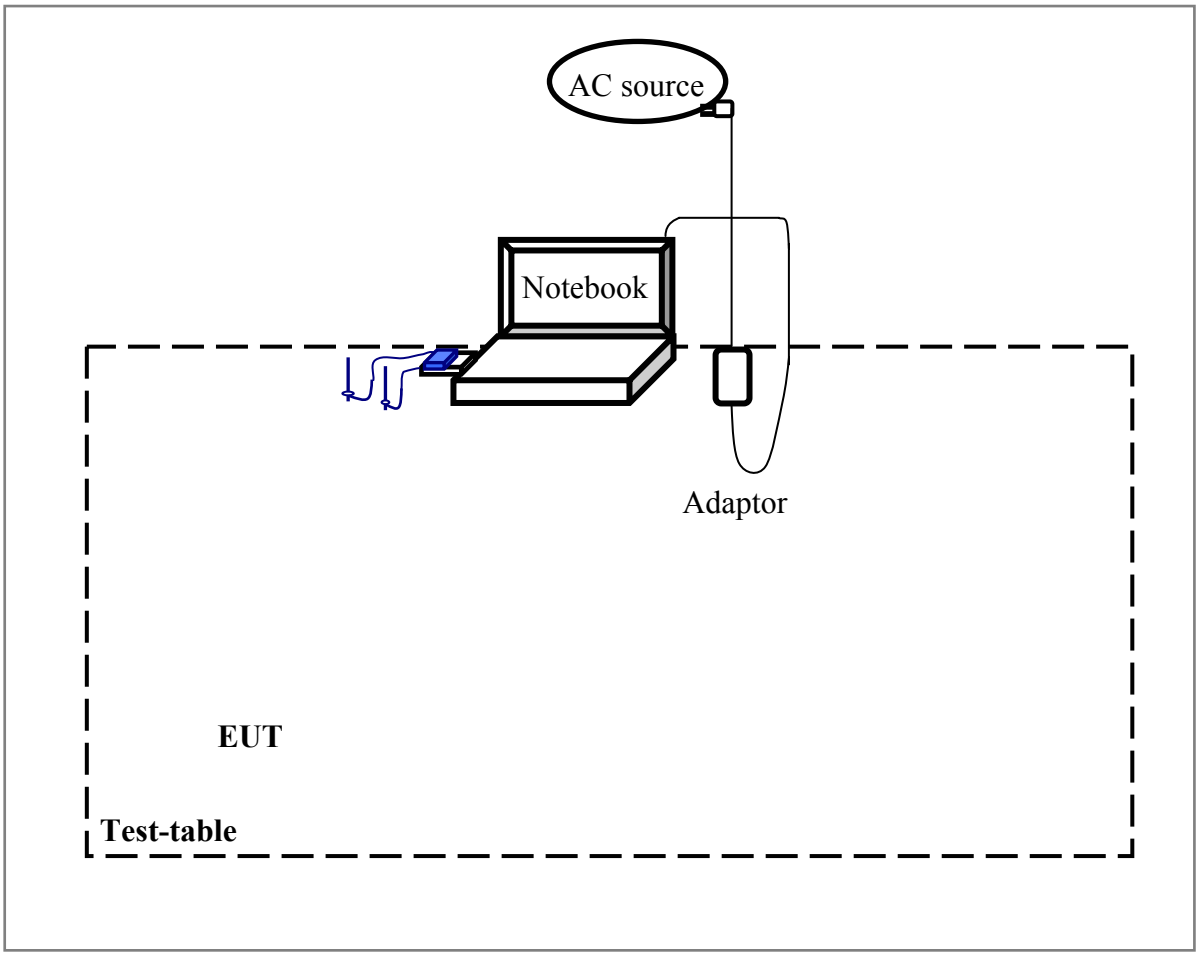
Test fixture

(PCI Express Extend Card):PEGATRON CORPORATION

Model No.	:	ADC-PEMCCC01
Serial No.	:	N/A
Power type	:	By NB

1.5 Configuration of System Under Test

1.5.1 Conducted and Radiated Emission Test



Notebook PC:

*Mini-PCI Port …… **EUT**

The tests below are carried with the EUT transmitter set at high power in TDD mode. The EUT is forced to select of output power level and channel number by USB port.

The setting up procedure was recorded in 1.3 test method.

1.6 Verify the Frequency and Channel

Channel	Frequency (GHz)
1	2.412
2	2.417
3	2.422
4	2.427
5	2.432
6	2.437
7	2.442
8	2.447
9	2.452
10	2.457
11	2.462

Note:

1. This is for confirming that all frequencies of IEEE 802.11b/g/n Draft 1.0 20M are in 2.412GHz to 2.462GHz. and all frequencies of IEEE 802.11n Draft 1.0 40M are in 2.422GHz to 2.452GHz.
2. Section 15.31(m): Measurements on intentional radiators or receivers shall be performed at three frequencies for operating frequency range over 10 MHz
   (The locations of these frequencies one near the top, one near the middle and one near the bottom.)
3. After test, the EUT operating frequencies are in 2.412GHz to 2.462GHz and 2.422GHz to 2.452GHz. So all the items as followed in testing report are need to test these three frequencies: IEEE 802.11b/g/n Draft 1.0 20M: CH01/CH06/CH11, IEEE 802.11n Draft 1.0 40M: CH03/CH06/CH09

1.7 Test Procedure

All measurements contained in this report were performed mainly according to the techniques described in ANSI C63.4 (2003) and the pre-setup was written on 1.3 test method, the detail setup was written on each test item.

1.8 Location of the Test Site

The radiated emissions measurements required by the rules were performed on the **three-meter**, **Semi-anechoic Chamber (FCC Registration Number: 93906)** maintained by *Training Research Co., Ltd.* 1F, No. 255 Nanyang Street, Shijr, Taipei Hsien 221, Taiwan, R.O.C. Complete description and measurement data have been placed on file with the commission. The conducted power line emissions tests and other test items were performed in a semi-anechoic chamber also located at Training Research Co., Ltd.

No. 255 Nanyang Street, Shijr, Taipei Hsien 221, Taiwan, R.O.C. *Training Research Co., Ltd.* is listed by the FCC as a facility available to do measurement work for others on a contract basis.

1.9 General Test Condition

The conditions under which the EUT operates were varied to determine their effect on the equipment's emission characteristics. The final configuration of the test system and the mode of operation used during these tests were chosen as that which produced the highest emission levels. However, only those conditions, which the EUT was considered likely to encounter in normal use were investigated.

In test, they were set in high power and continuously transmitting mode that controlled by computer. The ch01, ch06 and ch11 of EUT were all tested. The setting up procedure is recorded on 1.3 test method.

II. Section 15.203: Antenna requirement

The EUT can be equipped with detachable antenna. The external antenna is affixed to the EUT using a unique connector. The antenna requirement stated in Section15.203 is inapplicable to this EUT.

The antenna specification of list as follows,

Antenna No.	**Antenna Manufacturer**	**Model**	**Connector**	**Antenna Type**	**Antenna Gain (Max.)**
Antenna#1	PEGATRON	UCW2583	MHF	PCB	5.34dBi
Antenna#2	PEGATRON	UCW2620	MHF	PCB	2.55dBi

Note:

1) For more detailed features description, please reference to the Antenna Specifications. (Please reference to RF Exposure Information)

III. Section 15.207: Power Line Conducted Emissions for AC Powered Units

3.1 Test Condition & Setup

The power line conducted emission measurements were performed in an semi-anechoic chamber. The EUT was assembled on a wooden table, which is 80 centimeters high, was placed 40 centimeters from the backwall and at least 1 meter from the sidewall.

Power was fed to the EUT from the public utility power grid through a line filter and Line Impedance Stabilization Networks (LISNs). The LISN housing, measuring instrumentation case, ground plane, etc., were electrically bonded together at the same RF potential. The Spectrum analyzer (or EMI receiver) was connected to the AC line through an isolation transformer. The 50-ohm output of the LISN was connected to the spectrum analyzer directly. Conducted emission levels were in the CISPR quasi-peak and average detection mode. The analyzer's 6 dB bandwidth was set to 9 KHz. No post-detector video filter was used.

The spectrum was scanned from 150 KHz to 30 MHz. The physical arrangement of the test system and associated cabling was varied (within the scope of arrangements likely to be encountered in actual use) to determine the effect on the unit's emanations in amplitude and frequency. All spurious emission frequencies were observed. The highest emission amplitudes relative to the appropriate limit were measured and have been recorded in paragraph 4.3

There is a test condition apply in this test item, the test procedure description as <1.3>. Three channels were tested, one in the top, one in the middle and the other in bottom.

3.2 List of Test Instruments

Calibration Date

Instrument Name	Model	Brand	Serial No.	Next time
EMI Receiver	8546A	HP	3520A00242	01/15/10
RF Filter Section	85460A	HP	3448A00217	01/15/10
LISN (EUT)	LISN-01	TRC	99-05	02/10/10
LISN (Support E.)	LISN-01	TRC	9912-03, 04	12/22/09
Pre-amplifier	15542 ZFL-500	Mini – Circuits	0 0117	01/10/10
6dB Attenuator	MCL BW-S6W2	Mini – Circuits	9915 – Conducted	01/10/10
10dB Attenuator	A5542 VAT010	Mini – Circuits	0215 – Conducted	01/10/10
Coaxial Cable (2.0 meter)	A30A30-0058-50FS-2M	Jyebao	SMA-08	01/10/10
Coaxial Cable (1.1 meter)	A30A30-0058-50FS-1M	Jyebao	SMA-09	01/10/10
Coaxial Cable (20 meter)	RG-214/U	Jyebao	NP-01	01/10/10
Coaxial Cable (20 meter)	RG-214/U	Jyebao	NP-02	01/10/10
Auto Switch Box (< 30MHz)	ASB-01	TRC	9904-01	01/10/10

3.3 Test Result of Power Line Conducted Emissions

The following table shows a summary of the highest emissions of power line conducted emissions on the LIVE and NETURAL conductors of the EUT power cord. Show as follows.

Test Conditions: Temperature : 25 °C Humidity : 73 % RH

Test mode: IEEE 802.11b Channel 1

Power Connected Emissions					*Class B*		
Conductor	***Frequency (KHz)***	***Peak (dBμV)***	***QP (dBμV)***	***Average (dBμV)***	***QP-limit (dBμV)***	***AVG-limit (dBμV)***	***Margin (dB)***
Line 1	167.000	48.95	---	---	65.51	55.51	-6.56
	224.000	48.03	---	---	63.89	53.89	-5.86
	277.000	45.96	---	---	62.37	52.37	-6.41
	3349.000	41.87	---	---	56.00	46.00	-4.13
	3872.375	48.15	44.46	31.29	56.00	46.00	-11.54
	3931.555	48.30	45.02	30.64	56.00	46.00	-10.98
Line 2	169.000	49.06	---	---	65.46	55.46	-6.40
	224.000	48.46	---	---	63.89	53.89	-5.43
	504.000	37.43	---	---	56.00	46.00	-8.57
	3381.000	41.30	---	---	56.00	46.00	-4.70
	3592.270	50.11	45.52	28.24	56.00	46.00	-10.48
	3874.300	52.55	49.18	31.95	56.00	46.00	-6.82

NOTE:

(1)Margin = Peak Amplitude – Limit, *The reading amplitudes are all under limit.*

(2)A "+" sign in the margin column means the emission is OVER the Class B Limit and "–" sign of means UNDER the Class B limit

Test mode: IEEE 802.11b Channel 6

Power Connected Emissions					*Class B*		
Conductor	*Frequency (KHz)*	*Peak (dBμV)*	*QP (dBμV)*	*Average (dBμV)*	*QP-limit (dBμV)*	*AVG-limit (dBμV)*	*Margin (dB)*
Line 1	222.000	47.93	---	---	63.94	53.94	-6.01
	269.000	46.56	---	---	62.60	52.60	-6.04
	504.000	38.38	---	---	56.00	46.00	-7.62
	3542.000	41.81	---	---	56.00	46.00	-4.19
	3858.000	38.60	---	---	56.00	46.00	-7.40
	4131.000	38.74	---	---	56.00	46.00	-7.26
Line 2	169.000	49.96	---	---	65.46	55.46	-5.50
	222.000	48.16	---	---	63.94	53.94	-5.78
	331.000	44.47	---	---	60.83	50.83	-6.36
	592.000	42.91	---	---	56.00	46.00	-3.09
	3592.905	49.26	45.45	29.34	56.00	46.00	-10.55
	3818.160	50.44	48.50	32.08	56.00	46.00	-7.50

Test mode: IEEE 802.11b Channel 11

Power Connected Emissions					*Class B*		
Conductor	*Frequency (KHz)*	*Peak (dBμV)*	*QP (dBμV)*	*Average (dBμV)*	*QP-limit (dBμV)*	*AVG-limit (dBμV)*	*Margin (dB)*
Line 1	171.000	48.31	---	---	65.40	55.40	-7.09
	264.000	45.21	---	---	62.74	52.74	-7.53
	331.000	43.41	---	---	60.83	50.83	-7.42
	3638.000	41.14	---	---	56.00	46.00	-4.86
	3821.755	46.75	43.08	28.26	56.00	46.00	-12.92
	3975.000	39.77	---	---	56.00	46.00	-6.23
Line 2	222.000	47.34	---	---	63.94	53.94	-6.60
	269.000	44.28	---	---	62.60	52.60	-8.32
	499.000	37.78	---	---	56.03	46.03	-8.25
	3366.200	48.79	39.70	23.84	56.00	46.00	-16.30
	3594.870	50.57	45.28	29.04	56.00	46.00	-10.72
	3975.000	42.73	---	---	56.00	46.00	-3.27

Test mode: IEEE 802.11g Channel 1

Power Connected Emissions					*Class B*		
Conductor	*Frequency (KHz)*	*Peak (dBμV)*	*QP (dBμV)*	*Average (dBμV)*	*QP-limit (dBμV)*	*AVG-limit (dBμV)*	*Margin (dB)*
Line 1	169.000	51.24	---	---	65.46	55.46	-4.22
	339.285	44.66	40.72	34.10	60.43	50.43	-16.33
	350.810	44.03	29.79	17.82	60.03	50.03	-30.24
	504.000	37.12	---	---	56.00	46.00	-8.88
	3606.000	41.94	---	---	56.00	46.00	-4.06
	3881.385	45.73	43.81	28.74	56.00	46.00	-12.19
Line 2	167.000	50.54	---	---	65.51	55.51	-4.97
	224.000	49.06	47.54	40.20	64.11	54.11	-13.91
	334.000	43.47	---	---	60.74	50.74	-7.27
	3540.000	49.37	44.85	26.97	56.00	46.00	-11.15
	3707.000	49.03	45.12	26.06	56.00	46.00	-10.88
	3992.000	48.08	46.48	28.32	56.00	46.00	-9.52

Test mode: IEEE 802.11g Channel 6

Power Connected Emissions					*Class B*		
Conductor	*Frequency (KHz)*	*Peak (dBμV)*	*QP (dBμV)*	*Average (dBμV)*	*QP-limit (dBμV)*	*AVG-limit (dBμV)*	*Margin (dB)*
Line 1	164.000	49.67	---	---	65.60	55.60	-5.93
	224.000	48.58	---	---	63.89	53.89	-5.31
	271.000	46.59	---	---	62.54	52.54	-5.95
	329.000	42.89	---	---	60.89	50.89	-8.00
	1451.000	37.04	---	---	56.00	46.00	-8.96
	3858.000	42.04	---	---	56.00	46.00	-3.96
Line 2	169.000	47.80	---	---	65.46	55.46	-7.66
	220.000	47.97	---	---	64.00	54.00	-6.03
	264.000	45.89	---	---	62.74	52.74	-6.85
	334.000	42.73	---	---	60.74	50.74	-8.01
	3542.000	42.99	---	---	56.00	46.00	-3.01
	3592.775	49.06	43.14	26.22	56.00	46.00	-12.86

Test mode: IEEE 802.11g Channel 11

Power Connected Emissions					*FCC Class B*		
Conductor	*Frequency (KHz)*	*Peak (dBμV)*	*QP (dBμV)*	*Average (dBμV)*	*QP-limit (dBμV)*	*AVG-limit (dBμV)*	*Margin (dB)*
Line 1	166.000	49.99	---	---	65.54	55.54	-5.55
	222.000	48.46	---	---	63.94	53.94	-5.48
	257.000	44.74	---	---	62.94	52.94	-8.20
	334.000	42.64	---	---	60.74	50.74	-8.10
	504.000	37.77	---	---	56.00	46.00	-8.23
	3932.300	47.23	45.62	29.32	56.00	46.00	-10.38
Line 2	169.000	47.80	---	---	65.46	55.46	-7.66
	226.000	48.55	---	---	63.83	53.83	-5.28
	277.000	45.87	---	---	62.37	52.37	-6.50
	499.000	36.92	---	---	56.03	46.03	-9.11
	3484.545	49.11	42.51	25.49	56.00	46.00	-13.49
	3822.540	51.37	47.06	29.06	56.00	46.00	-8.94

Test mode: IEEE 802.11n 20M Channel 1

Power Connected Emissions					*Class B*		
Conductor	*Frequency (KHz)*	*Peak (dBμV)*	*QP (dBμV)*	*Average (dBμV)*	*QP-limit (dBμV)*	*AVG-limit (dBμV)*	*Margin (dB)*
Line 1	169.000	48.03	---	---	65.46	55.46	-7.43
	226.000	48.44	---	---	63.83	53.83	-5.39
	267.000	45.81	---	---	62.66	52.66	-6.85
	338.000	42.46	---	---	60.63	50.63	-8.17
	499.000	38.99	---	---	56.03	46.03	-7.04
	3931.565	47.20	45.08	30.02	56.00	46.00	-10.92
Line 2	224.000	48.53	---	---	63.89	53.89	-5.36
	277.000	46.30	---	---	62.37	52.37	-6.07
	329.000	45.10	---	---	60.89	50.89	-5.79
	504.000	37.55	---	---	56.00	46.00	-8.45
	3477.000	42.42	---	---	56.00	46.00	-3.58
	3820.340	50.62	49.12	31.78	56.00	46.00	-6.88

Test mode: IEEE 802.11n 20M Channel 6

Power Connected Emissions					*Class B*		
Conductor	*Frequency (KHz)*	*Peak (dBμV)*	*QP (dBμV)*	*Average (dBμV)*	*QP-limit (dBμV)*	*AVG-limit (dBμV)*	*Margin (dB)*
Line 1	224.000	48.56	---	---	63.89	53.89	-5.33
	277.000	46.45	---	---	62.37	52.37	-5.92
	329.000	44.51	---	---	60.89	50.89	-6.38
	560.880	39.46	35.66	29.98	56.00	46.00	-16.02
	3819.545	47.01	46.46	31.48	56.00	46.00	-9.54
	3932.600	49.27	45.09	30.91	56.00	46.00	-10.91
Line 2	166.000	47.31	---	---	65.54	55.54	-8.23
	222.000	47.67	---	---	63.94	53.94	-6.27
	499.000	38.07	---	---	56.03	46.03	-7.96
	578.405	35.10	24.97	5.91	56.00	46.00	-31.03
	3483.740	48.68	43.82	27.19	56.00	46.00	-12.18
	3538.730	48.86	44.80	28.48	56.00	46.00	-11.20

Test mode: IEEE 802.11n 20M Channel 11

Power Connected Emissions					*Class B*		
Conductor	*Frequency (KHz)*	*Peak (dBμV)*	*QP (dBμV)*	*Average (dBμV)*	*QP-limit (dBμV)*	*AVG-limit (dBμV)*	*Margin (dB)*
Line 1	169.000	49.75	---	---	65.46	55.46	-5.71
	222.000	47.63	---	---	63.94	53.94	-6.31
	331.000	44.51	---	---	60.83	50.83	-6.32
	499.000	39.30	---	---	56.03	46.03	-6.73
	3708.760	46.85	43.28	29.99	56.00	46.00	-12.72
	3897.000	42.19	---	---	56.00	46.00	-3.81
Line 2	169.000	51.18	---	---	65.46	55.46	-4.28
	277.000	43.18	---	---	62.37	52.37	-9.19
	331.000	44.70	---	---	60.83	50.83	-6.13
	499.000	39.21	---	---	56.03	46.03	-6.82
	3538.190	49.33	44.66	26.74	56.00	46.00	-11.34
	3821.835	49.98	47.87	31.34	56.00	46.00	-8.13

Test mode: IEEE 802.11n 40M Channel 3

Power Connected Emissions					*Class B*		
Conductor	***Frequency (KHz)***	***Peak (dBμV)***	***QP (dBμV)***	***Average (dBμV)***	***QP-limit (dBμV)***	***AVG-limit (dBμV)***	***Margin (dB)***
Line 1	167.000	48.30	---	---	65.51	55.51	-7.21
	224.000	48.44	---	---	63.89	53.89	-5.45
	326.000	43.98	---	---	60.97	50.97	-6.99
	841.000	38.22	---	---	56.00	46.00	-7.78
	1230.000	38.04	---	---	56.00	46.00	-7.96
	3780.000	41.47	---	---	56.00	46.00	-4.53
Line 2	167.000	49.11	---	---	65.51	55.51	-6.40
	391.000	39.62	---	---	59.11	49.11	-9.49
	504.000	38.00	---	---	56.00	46.00	-8.00
	3537.075	49.96	44.41	26.43	56.00	46.00	-11.59
	3774.410	50.35	41.45	20.85	56.00	46.00	-14.55
	3878.580	49.08	47.61	31.15	56.00	46.00	-8.39

Test mode: IEEE 802.11n 40M Channel 6

Power Connected Emissions					*Class B*		
Conductor	***Frequency (KHz)***	***Peak (dBμV)***	***QP (dBμV)***	***Average (dBμV)***	***QP-limit (dBμV)***	***AVG-limit (dBμV)***	***Margin (dB)***
Line 1	167.000	49.62	---	---	65.51	55.51	-5.89
	394.000	39.05	---	---	59.03	49.03	-9.98
	504.000	37.70	---	---	56.00	46.00	-8.30
	1295.000	36.06	---	---	56.00	46.00	-9.94
	3702.000	42.42	---	---	56.00	46.00	-3.58
	4014.000	42.68	---	---	56.00	46.00	-3.32
Line 2	169.080	51.26	49.61	43.09	65.40	55.40	-12.14
	175.205	75.84	43.56	32.92	65.23	55.23	-21.84
	226.000	48.32	---	---	63.83	53.83	-5.51
	3365.005	47.44	35.76	16.51	56.00	46.00	-20.24
	3725.000	49.68	40.80	21.03	56.00	46.00	-15.20
	4048.160	48.10	46.50	29.42	56.00	46.00	-9.50

Test mode: IEEE 802.11n 40M Channel 9

Power Connected Emissions					*FCC Class B*		
Conductor	***Frequency (KHz)***	***Peak (dBμV)***	***QP (dBμV)***	***Average (dBμV)***	***QP-limit (dBμV)***	***AVG-limit (dBμV)***	***Margin (dB)***
Line 1	167.000	50.50	---	---	65.51	55.51	-5.01
	224.000	45.83	---	---	63.89	53.89	-8.06
	1230.000	37.45	---	---	56.00	46.00	-8.55
	3413.000	41.39	---	---	56.00	46.00	-4.61
	3638.000	42.50	---	---	56.00	46.00	-3.50
	4053.000	39.58	---	---	56.00	46.00	-6.42
Line 2	167.000	47.85	---	---	65.51	55.51	-7.66
	224.000	48.21	---	---	63.89	53.89	-5.68
	504.000	36.69	---	---	56.00	46.00	-9.31
	674.000	36.83	---	---	56.00	46.00	-9.17
	3652.715	49.57	45.82	29.79	56.00	46.00	-10.18
	3825.000	51.62	47.92	30.45	56.00	46.00	-8.08

IV. Section 15.247 (a): Technical description of the EUT

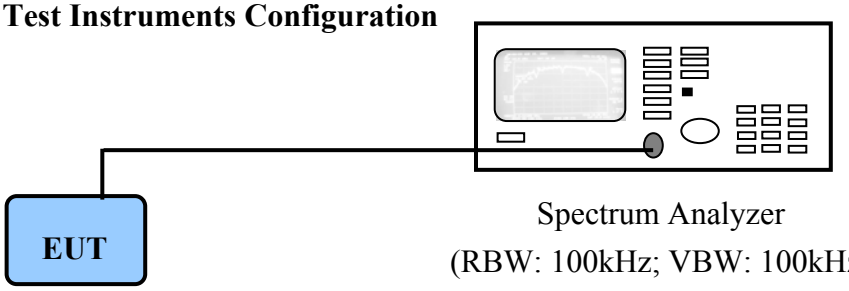
Direct Sequence System is a spread spectrum system in which the carrier has been modulated by a high speed spreading code and an information data stream. The high speed code sequence dominates the "modulating function" and is the direct cause of the wide spreading of the transmitted signal. In the operational description demonstrates the operation principles of the Baseband processor employed by the EUT, shows that which is a complete DSSS baseband processor and meets the definition of the direct sequence spread spectrum system.

V. Section 15.247(a)(2): Bandwidth for Direct Sequence System.

5.1 Test Condition & Setup

The transmitter bandwidth measurements were performed by the contact manner. The EUT was set to transmit continuously, also various channels were investigated to find the maximum occupied bandwidth. The output of the EUT was connected to the spectrum analyzer. The bandwidth of the fundamental frequency is observed by the spectrum analyzer with 100kHz RBW and 100kHz VBW.

5.2 Test Instruments Configuration



PC to control the EUT at maximal power output and channel number and set antenna kit

5.3 List of Test Instruments

Instrument Name	Model No.	Brand	Serial No.	Next time
Spectrum Analyzer	MS2665C	ANRITSU	6200175476	12/19/09

5.4 Test Result of Bandwidth

IEEE 802.11b

Channel	Limited (kHz)	Antenna(MHz)
CH01	≧ 500	9.52
CH06	≧ 500	9.56
CH11	≧ 500	9.52

IEEE 802.11g

CH01	≧ 500	16.68
CH06	≧ 500	16.60
CH11	≧ 500	16.60

IEEE 802.11n 20M

Channel	Limit (kHz)	Antenna#1(MHz)	Antwnna#2(MHz)
CH01	≧ 500	17.76	17.76
CH06	≧ 500	17.80	17.76
CH11	≧ 500	17.76	17.76

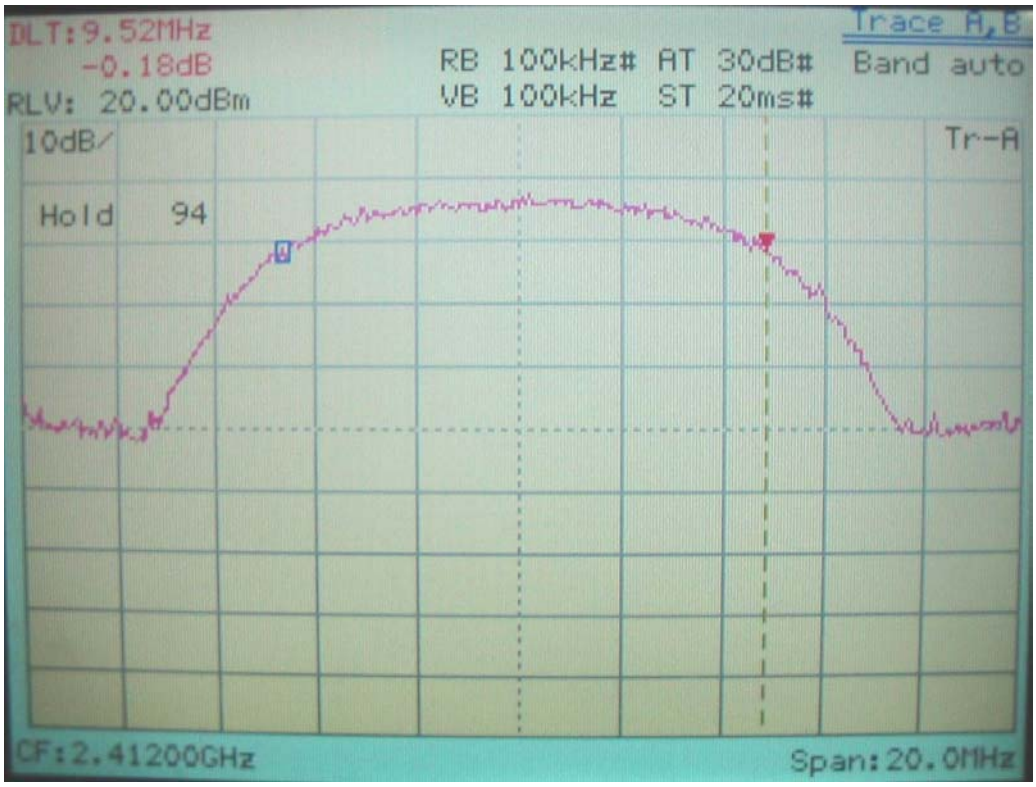
IEEE 802.11n 40M

CH03	≧ 500	36.80	36.70
CH06	≧ 500	36.80	36.80
CH09	≧ 500	36.80	36.80

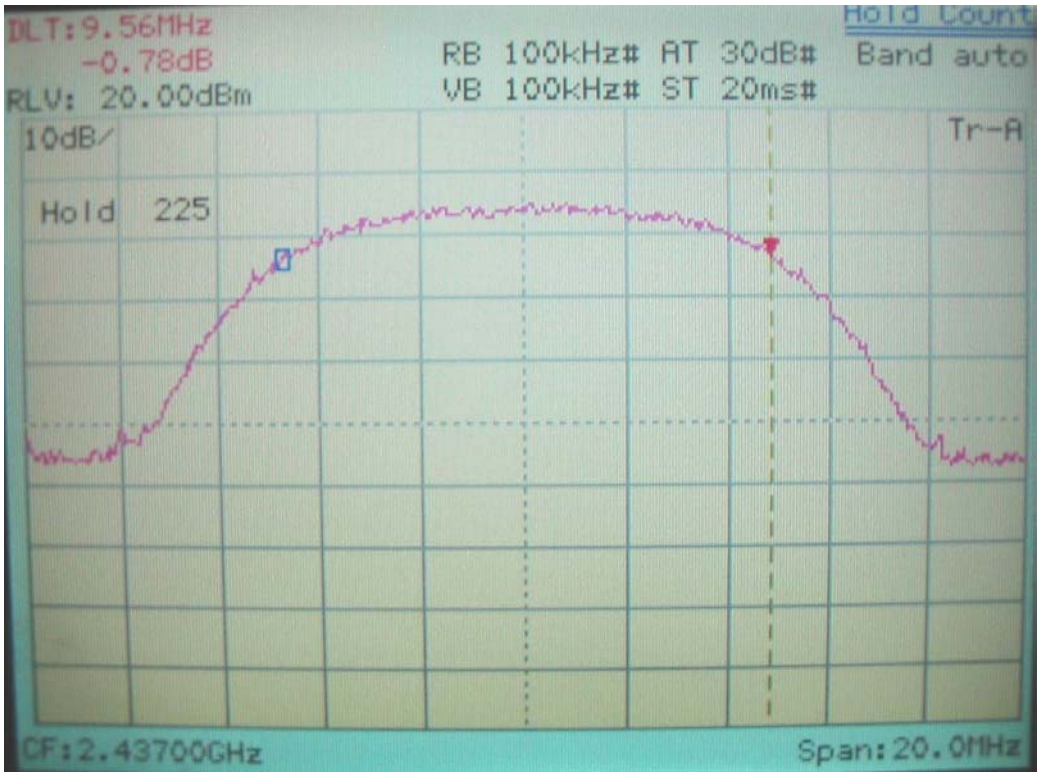
Note: 1. The data in the above table are summarizing the following attachment spectrum analyzer hard copy. According to the guidance, we'd made the measurement with the spectrum analyzer's resolution bandwidth *(RBW)=100kHz* and set the *span>>RBW*. The results show the measured 6dB bandwidth comply with the minimum 500kHz requirement.

2. The attachments show these on the following pages.

6dB Bandwidth of Channel CH01 IEEE 802.11b, 2412MHz

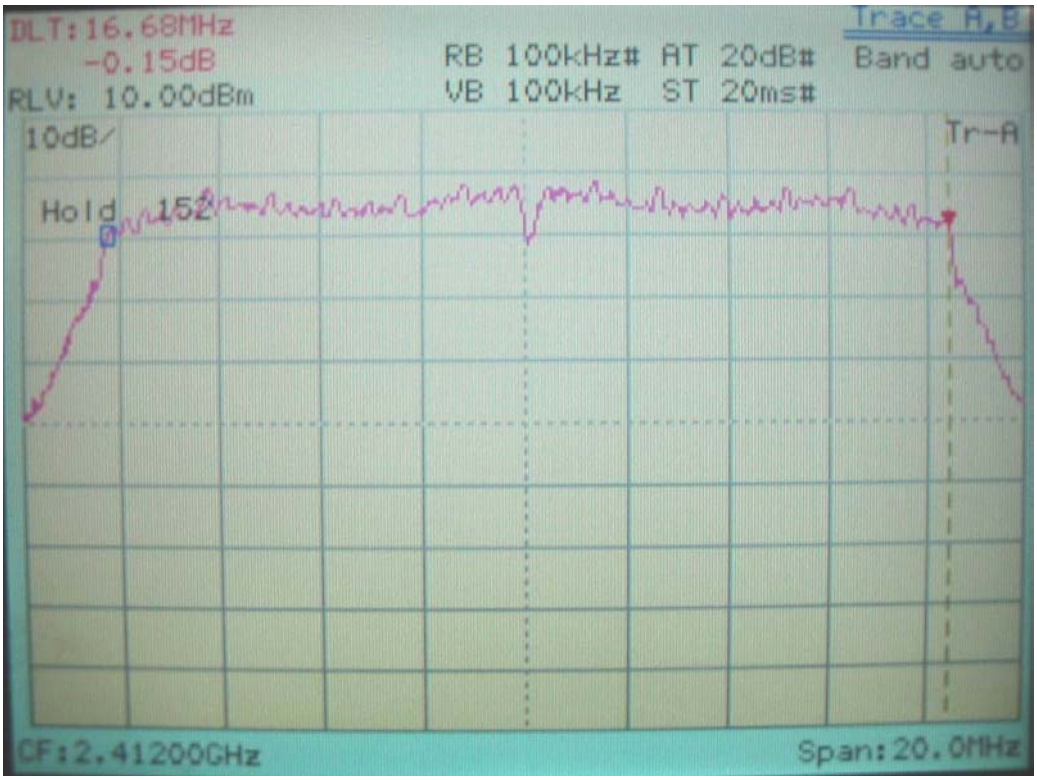


6dB Bandwidth of Channel CH06 IEEE 802.11b, 2437MHz

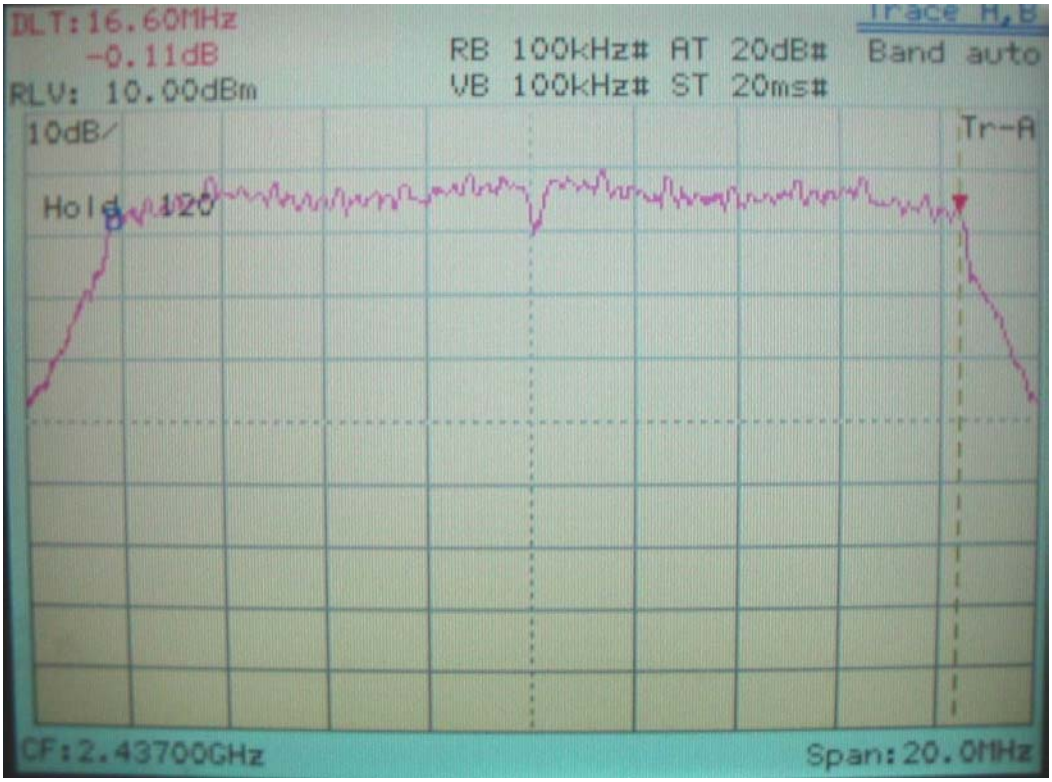


6dB Bandwidth of Channel CH11 IEEE 802.11b, 2462MHz

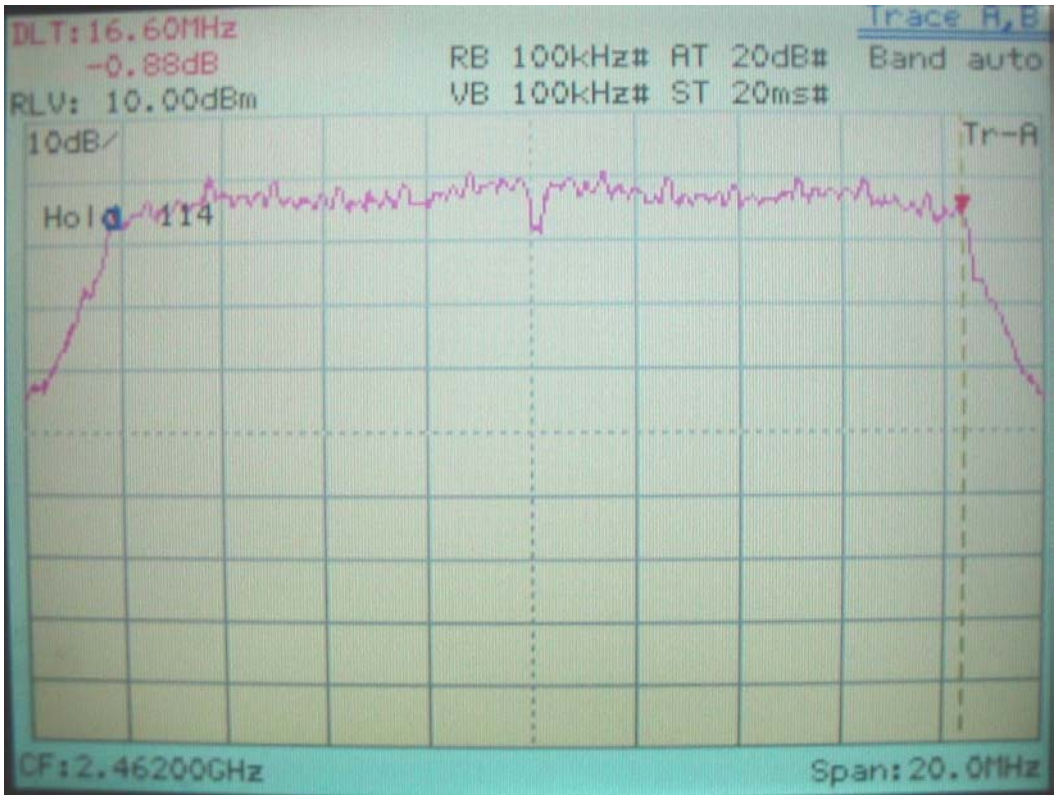
6dB Bandwidth of Channel CH01 IEEE 802.11g, 2412MHz



6dB Bandwidth of Channel CH06 IEEE 802.11g, 2437MHz

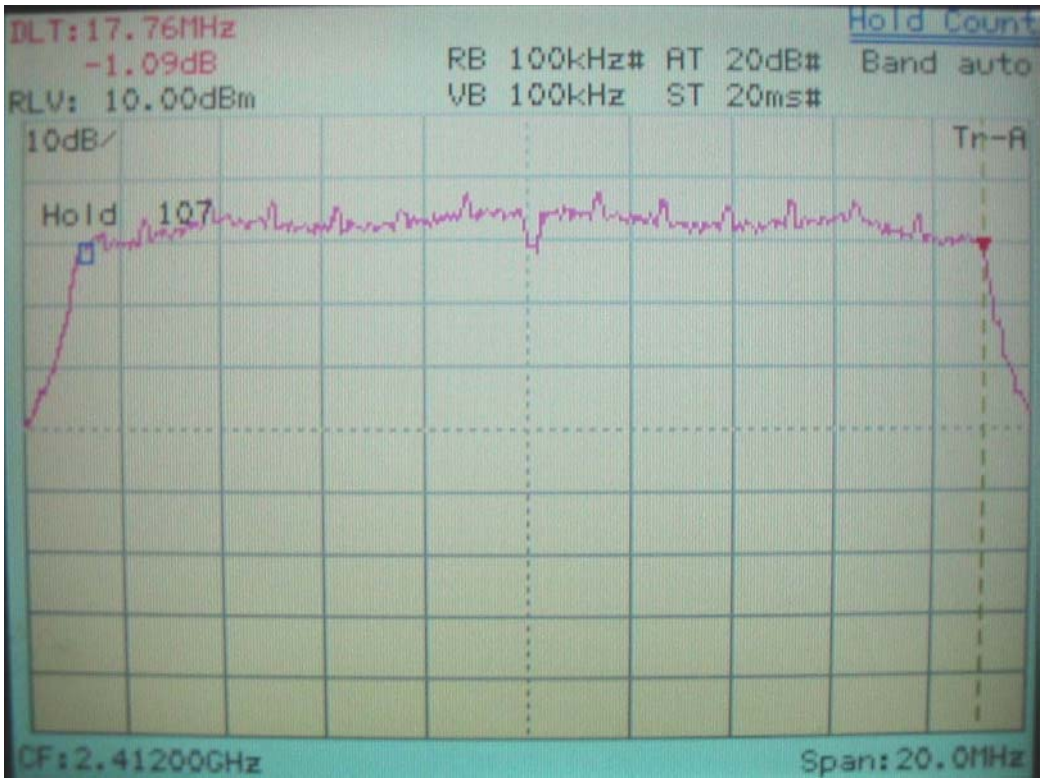


6dB Bandwidth of Channel CH11 IEEE 802.11g, 2462MHz



6dB Bandwidth of Channel 01 IEEE 802.11n 20M, 2412MHz

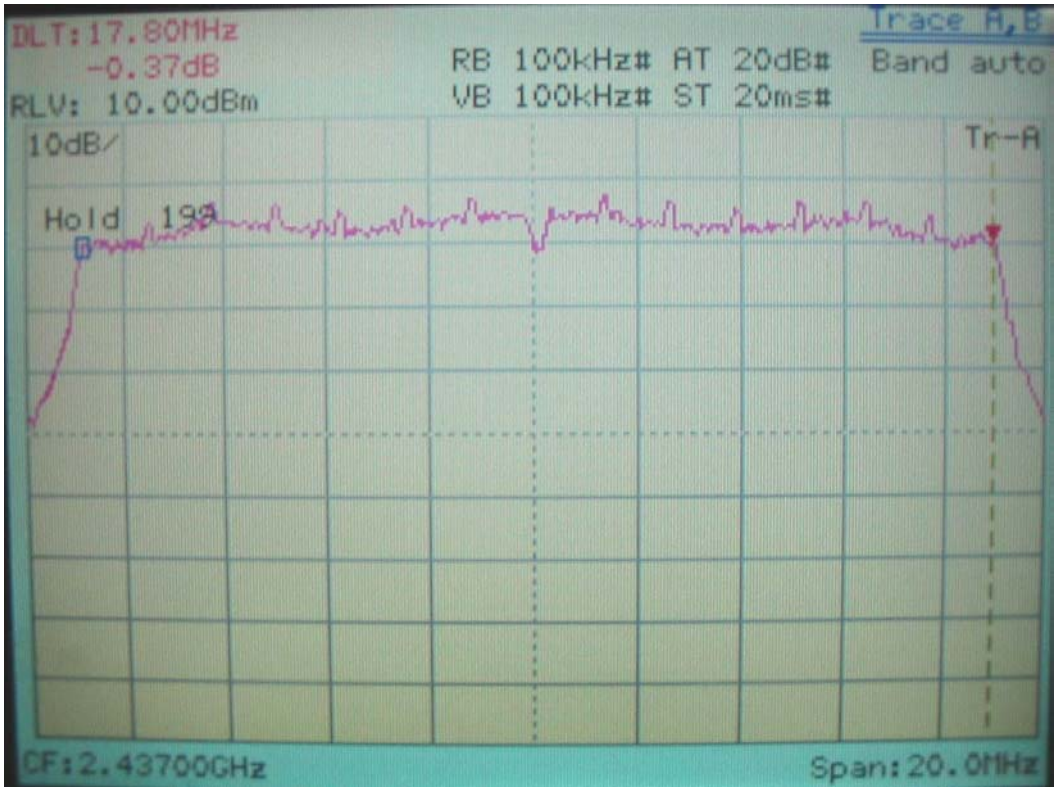
Ant#1



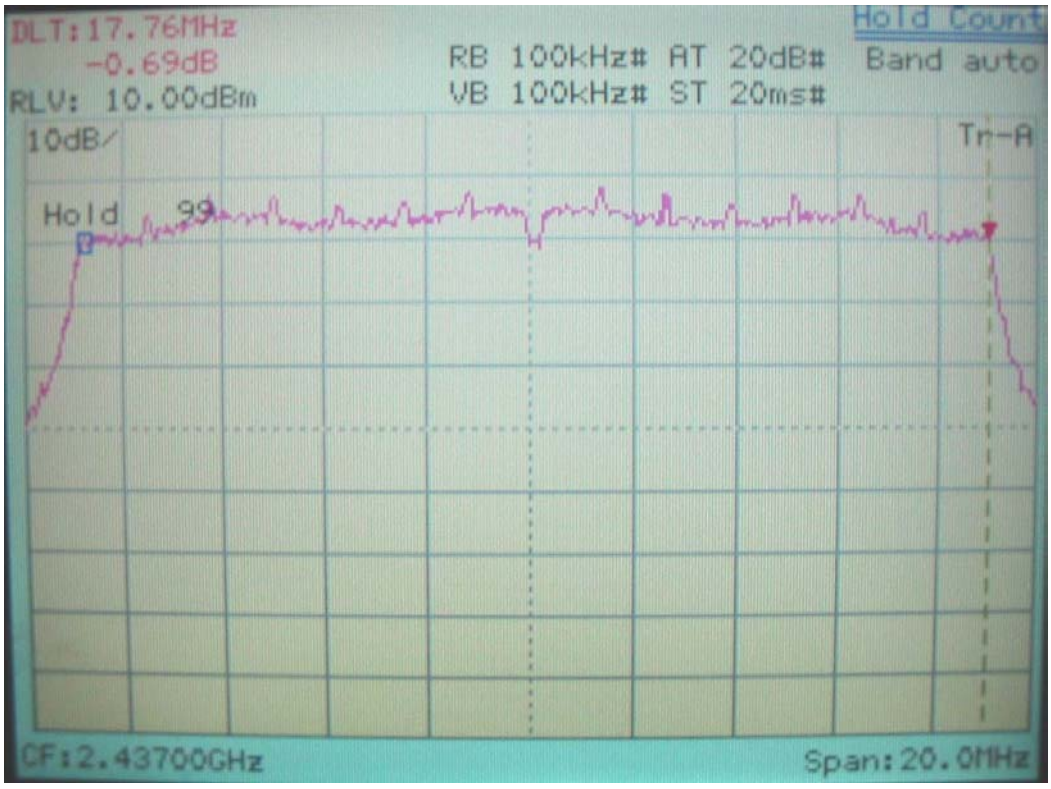
Ant#2

6dB Bandwidth of Channel 06 IEEE 802.11n 20M, 2437MHz

Ant#1

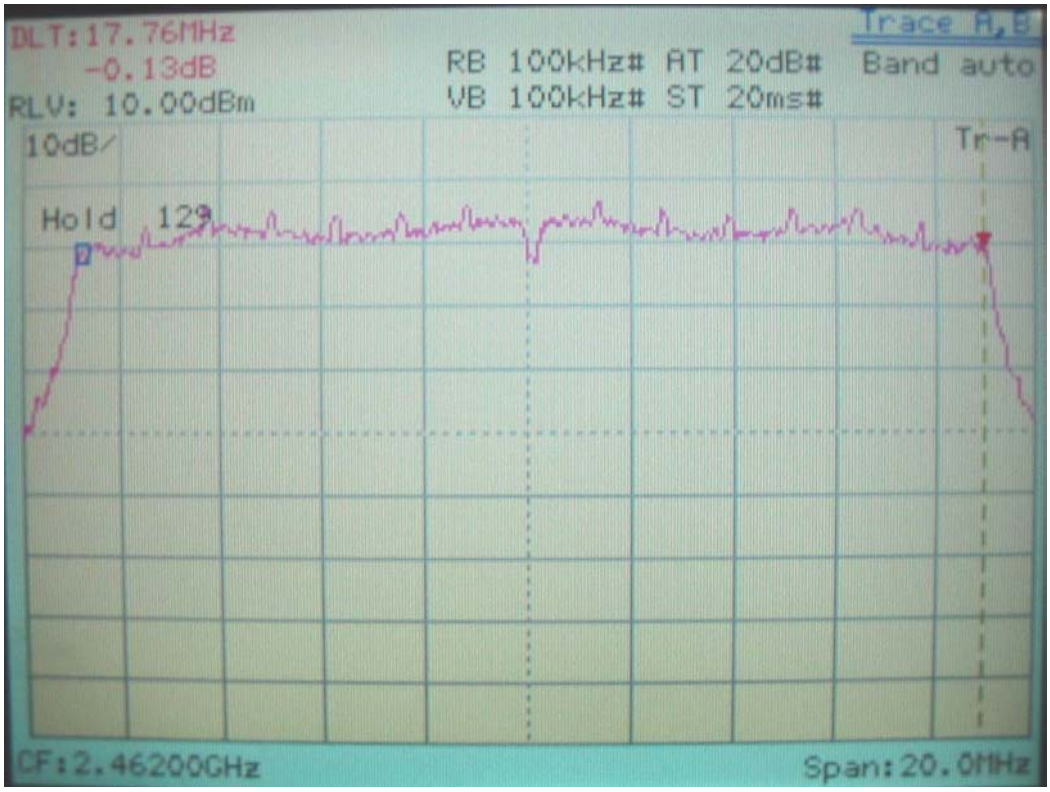


Ant#2

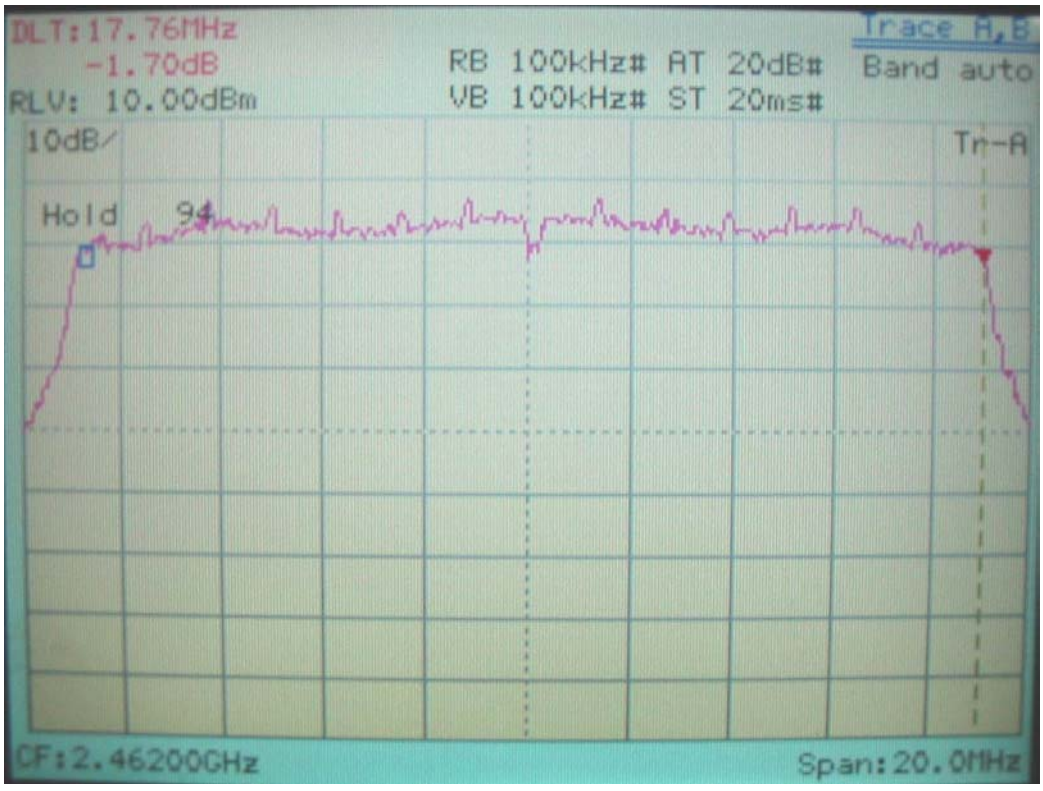


6dB Bandwidth of Channel 11 IEEE 802.11n 20M, 2462MHz

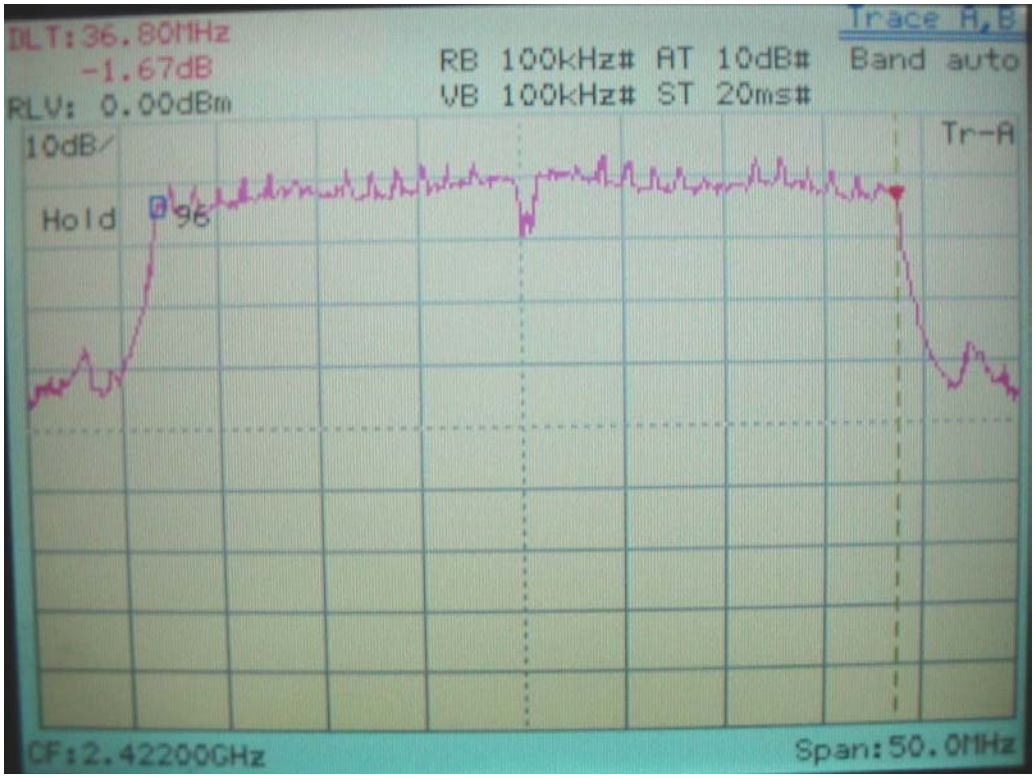
Ant#1



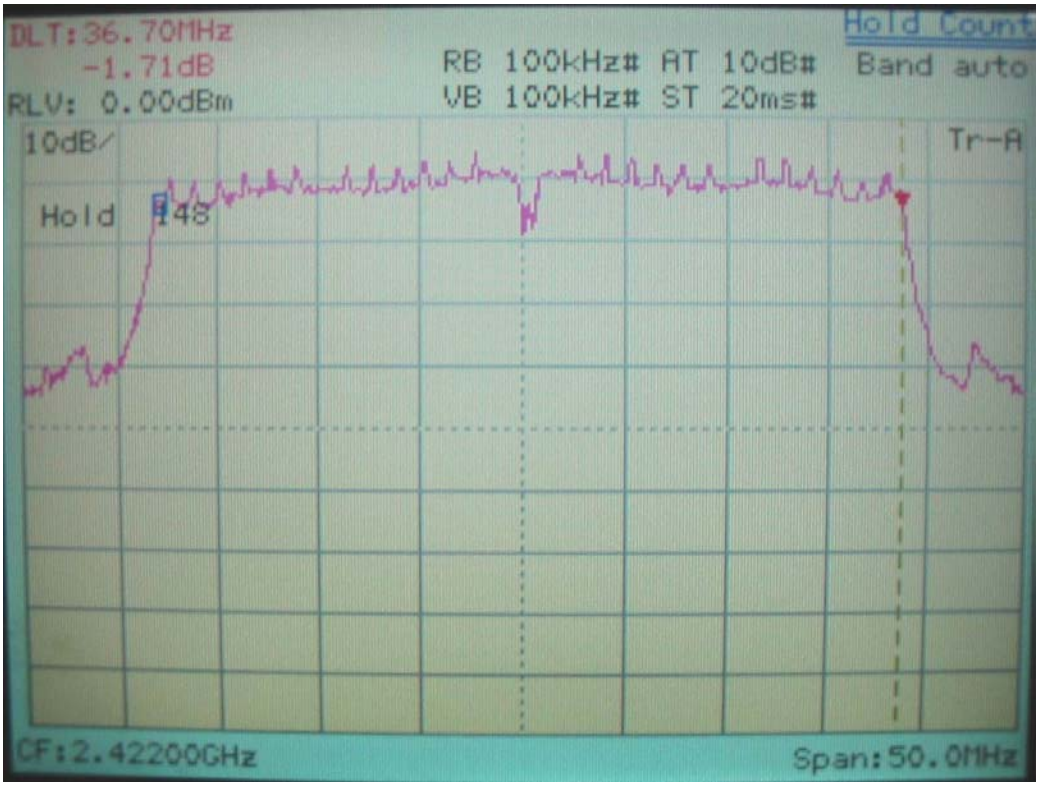
Ant#2



6dB Bandwidth of Channel 03 IEEE 802.11n 40M, 2422MHz



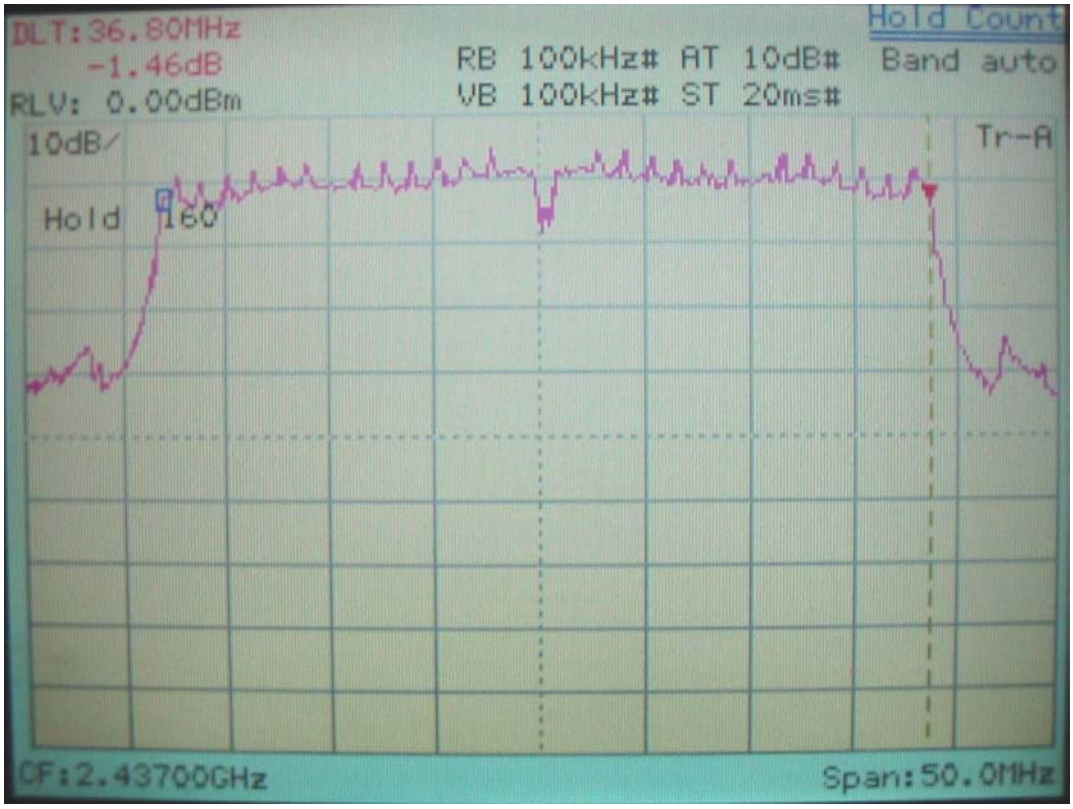
Ant#1



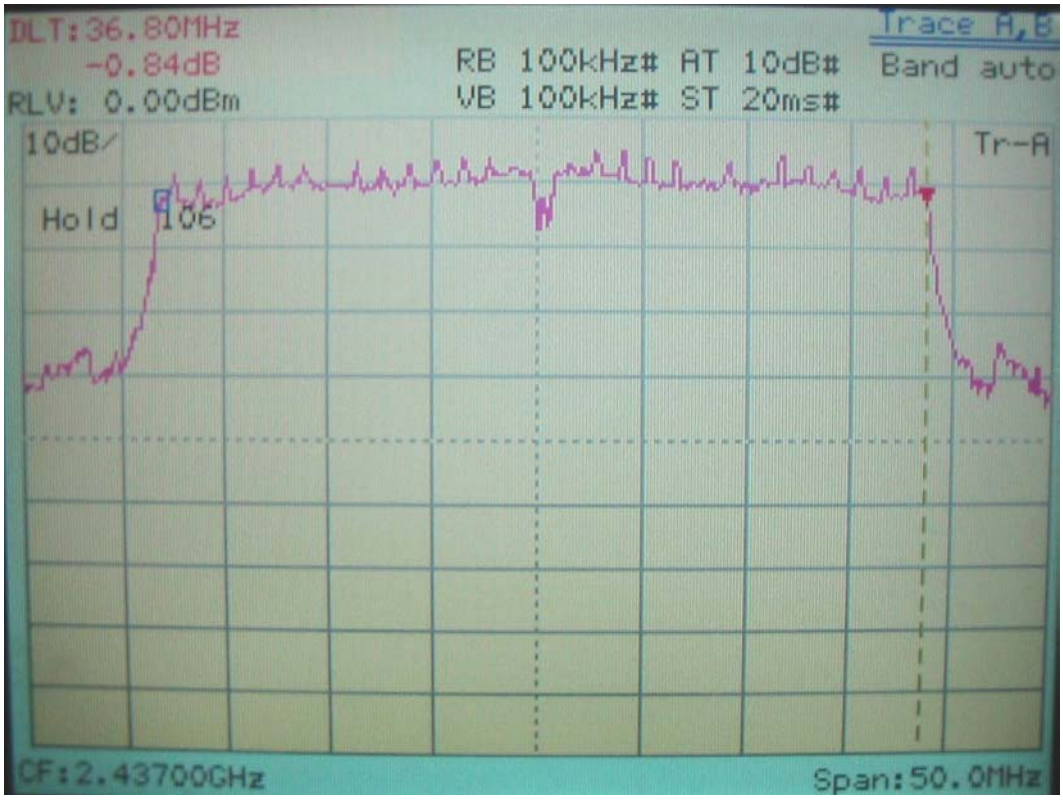
Ant#2

6dB Bandwidth of Channel 06 IEEE 802.11n 40M, 2437MHz

Ant#1

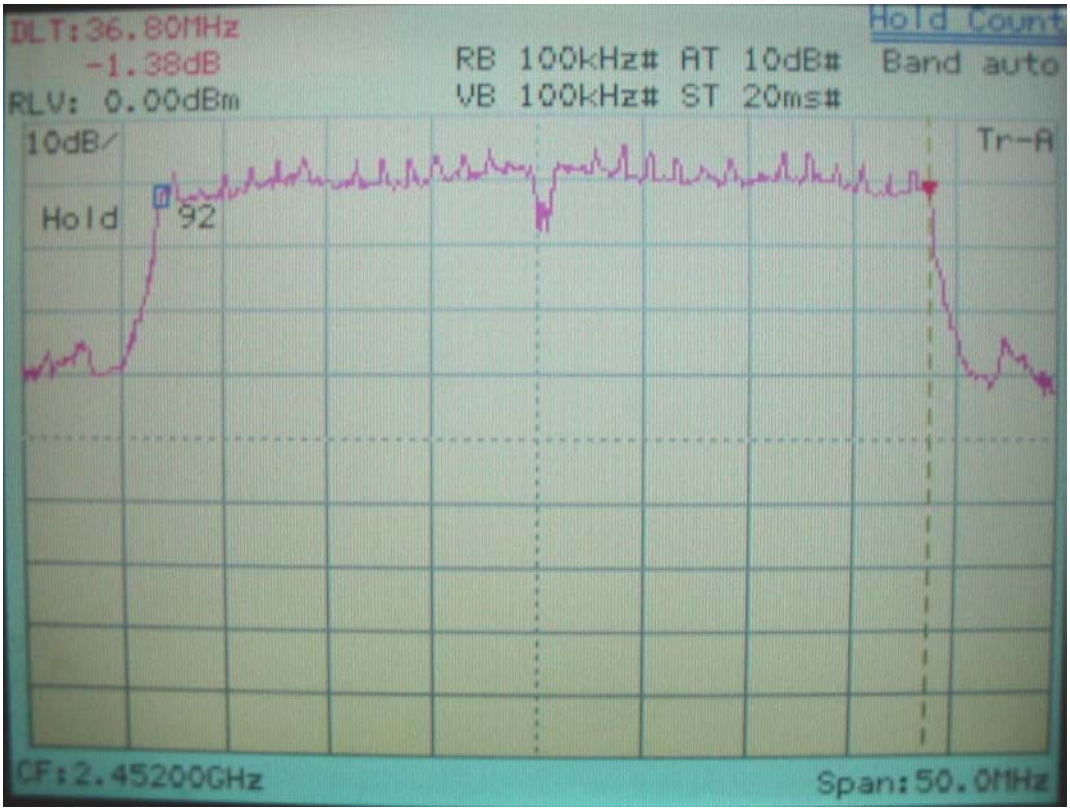


Ant#2

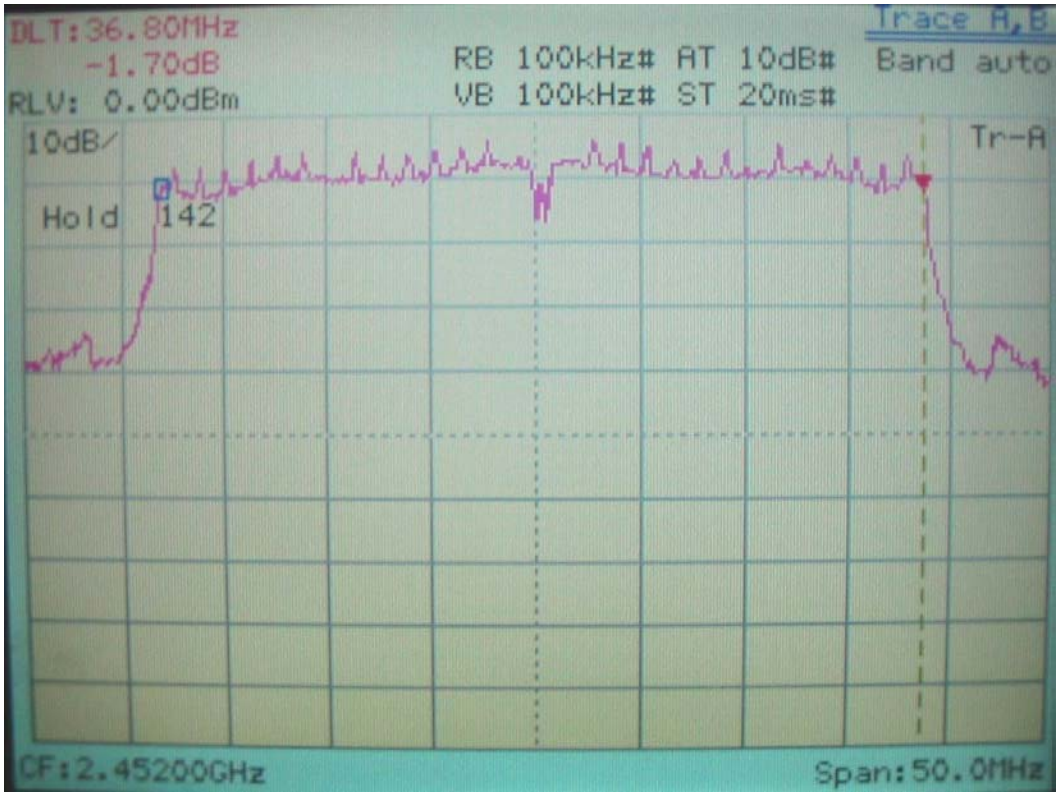


6dB Bandwidth of Channel 09 IEEE 802.11n 40M, 2452MHz

Ant#1

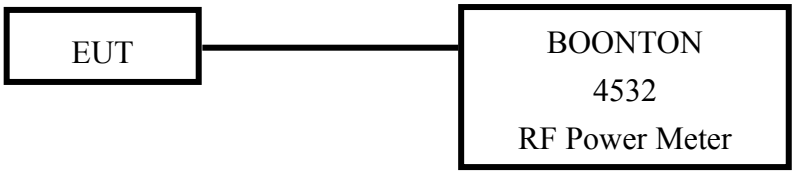


Ant#2



VI. Section 15.247(b): Power Output

6.1 Test Condition & Setup



1. The output of the transmitter is connected to the BOONTON RF Power Meter.
2. The calibration is performed before every test. The values of the output power of the EUT will shown in the dBm directly are the transmitter output peak power. Recording as follows.

6.2 List of Test Instruments

Instrument Name	Model	Brand	Serial No.	Next time
RF Power Meter	4532	BOONTON	117501	03/11/10
Peak Power Sensor	57340	BOONTON	2696	03/11/10

6.3 Test Result

Formula:
RF Output of EUT + |Cable Loss| = Output Peak Power

Channel (MHz)	Output Level	Cable Loss	Limit	Output Peak Power	
	dBm	**dBm**	**(DSS)**	**dBm**	**mW**
IEEE 802.11b					
CH 01 /2412	22.12	1.00	30dBm	23.12	205.12
CH 06 /2437	20.03	1.00	30dBm	21.03	126.77
CH 11 /2462	23.48	1.00	30dBm	24.48	280.54
IEEE 802.11g					
CH 01 /2412	22.19	1.00	30dBm	23.19	208.45
CH 06 /2437	22.75	1.00	30dBm	23.75	237.14
CH 11 /2462	23.37	1.00	30dBm	24.37	273.53

Formula:
Total Power = 10 log (10^ (Ant#1 Power / 10) + 10^ (Ant#2 Power / 10))

Channel (MHz)	Output Level		Cable Loss	Limit	Total Output Peak Power	
	Ant#1	Ant#2				
	dBm	**dBm**	**dB**	**(DSS)**	**dBm**	**mW**
802.11n 20M						
CH Lowest/2412	22.14	22.53	1.00	30dBm	26.35	431.49
CH Middle/2437	22.05	22.46	1.00	30dBm	26.27	423.66
CH Highest/2462	20.97	22.18	1.00	30dBm	25.63	365.37
802.11n 40M						
CH Lowest /2422	19.96	19.46	1.00	30dBm	23.73	235.91
CH Middle/2437	20.21	20.52	1.00	30dBm	24.38	274.04
CH Highest/2452	21.04	21.39	1.00	30dBm	25.22	332.54

VII. Section 15.247 (C): Spurious Emissions (Radiated)

7.1 Test Condition & Setup

We'd performed the test by the *radiated emission* skill: The EUT was placed in an semi-anechoic chamber, and set the EUT transmitting continuously and scanned at 3-meter distance to determine its emission characteristics. The physical arrangement of the EUT was varied (within the scope of arrangements likely to be encountered in actual use) to determine the effect on the unit's emanations in amplitude, directivity, and frequency. The exact system configuration, which produced the highest emissions was noted so it could be reproduced later during the final tests. For the measurement above 1GHz, according to the guidance we'd set the spectrum analyzer's 6dB bandwidth RBW to 1MHz.

This was done to ensure that the final measurements would demonstrate the worst-case interference potential of the EUT.

Final radiation measurements were made on a three-meter, semi-anechoic chamber. The EUT system was placed on a nonconductive turntable, which is 0.8 meters height, top surface 1.0 x 1.5 meter.

The spectrum was examined from 30MHz to 1000MHz using an Hewlett Packard 85460A EMI Receiver, SCHWARZECK whole range Small Biconical Antenna (Model No.: UBAA9114 & BBVU9135) is used to measure frequency from 30 MHz to 1GHz. The final test is used the HP 85460A spectrum and 8564E spectrum was examined from 1GHz to 25GHz using an Hewlett Packard Spectrum Analyzer, EMCO/HP Horn Antenna (Model 3115 / 84125-80008) for 1G - 25GHz.

At each frequency, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.

Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. There are two spectrum analyzers use on this testing, HP 85460A for frequency 30MHz to 1000MHz, and 8564E for frequency 1GHz to 25GHz. No post-detector video filters were used in the test. The spectrum analyzer's 6dB bandwidth was set to 120KHz (spectrum was examined from 30 MHz to 1000 MHz), the spectrum analyzer's 6 dB bandwidth was set to 1 MHz (spectrum was examined from 1GHz to 25GHz) and the analyzer was operated in the maximum hold mode. There is a test condition applies in this test item, the test procedure description as the following:

Three channels were tested, one in the top, one in the middle and the other in bottom. The setting up procedure is recorded on <1.3>

With the transmitter operating from a AC source and using the internal of EUT, radiates spurious emissions falling within the restricted bands of 15.209 were measured at operating frequencies corresponding to upper, middle and bottom channels in the 2400 ~ 2483.5 MHz band.

The actual field intensity in decibels referenced to 1 microvolt per meter (dBμV/m) is determined by algebraically adding the measured reading in dBμV, the antenna factor (dB), and cable loss (dB) at the appropriate frequency. Since the EUT was set to transmit continuously, no *duty cycle* is present.

For frequency between 30MHz to 1000MHz

FIa (dBuV/m) = FIr (dBμV) + Correction Factors

FIa : Actual Field Intensity

FIr : Reading of the Field Intensity

Correction Factors = Antenna Factor + (Cable Loss – Amplifier Gain) + Switching Box Loss

For frequency between 1GHz to 25GHz

FIa (dBμV/m) = FIr (dBμV) + Correction Factor

FIa : Actual Field Intensity

FIr : Reading of the Field Intensity

Correction Factors = Antenna Factor + (Cable Loss – Amplifier Gain) + Switching Box Loss

7.2 List of Test Instruments

Calibration Date

Instrument Name	Model	Brand	Serial No.	Next time
EMI Receiver	8546A	HP	3520A00242	01/15/10
RF Filter Section	85460A	HP	3448A00217	01/15/10
Small Biconical Antenna	UBAA9114 & BBVU9135	SCHWARZECK	127	01/10/10
Pre-amplifier	PA1F	TRC	1FAC	01/10/10
Coaxial Cable (Double shielded, 15 meter)	A30A30-0058-50FS-15M	JYEBAO	SMA-01	01/10/10
Coaxial Cable (1.1 meter)	A30A30-0058-50FS-1M	JYEBAO	SMA-02	01/10/10
Spectrum Analyzer	8564E	HP	3720A00840	12/17/09
Microwave Preamplifier	84125C	HP	US36433002	02/05/10
Horn Antenna	3115	EMCO	9104-3668	02/06/10
Standard Guide Horn Antenna	84125-80008	HP	18-26.5GHz	12/14/09
Standard Guide Horn Antenna	84125-80001	HP	26.5-40GHz	02/12/10
Horn Antenna	1196E (3115)	HP (EMCO)	9704-5178	02/13/10
Pre-amplifier	PA2F	TRC	2F1GZ	01/10/10
Coaxial Cable (3 miter)	A30A30-0058-50FST118	JYEBAO	MSA-05	01/10/10
Coaxial Cable (1 meter)	A30A30-0058-50FST118	JYEBAO	MSA-04	01/10/10

7.3 Test Result of Spurious Radiated Emissions

The highest peak values of radiated emissions form the EUT at various antenna heights, antenna polarizations, EUT orientation, etc. are recorded on the following.

Test Conditions: Temperature : 25 ° C Humidity : 73 % RH

Test mode: IEEE 802.11b CH01 for 30MHz to 1GHz [Horizontal]

Radiated Emission				*Correction Factors*	*Corrected Amplitude*	*Class B (3 m)*	
Frequency (MHz)	*Amplitude (dBμV)*	*Ant. H. (m)*	*Table ( )*	*(dB)*	*(dBμV/m)*	*Limit (dBμV/m)*	*Margin (dB)*
167.01	34.91	1.00	154	-4.10	30.81	43.50	-12.69
197.32	44.40	1.00	154	-3.42	40.98	43.50	-2.52
261.59	38.02	1.00	168	-3.88	34.14	46.00	-11.86
302.81	41.06	1.00	261	-2.86	38.20	46.00	-7.80
369.50	41.86	1.00	189	-1.81	40.05	46.00	-5.95
433.76	33.30	1.00	178	0.45	33.75	46.00	-12.25

Test mode: IEEE 802.11b CH01 for 30MHz to 1GHz [Vertical]

Radiated Emission				*Correction Factors*	*Corrected Amplitude*	*Class B (3 m)*	
Frequency (MHz)	*Amplitude (dBμV)*	*Ant. H. (m)*	*Table ( )*	*(dB)*	*(dBμV/m)*	*Limit (dBμV/m)*	*Margin (dB)*
168.22	34.66	1.00	180	-4.10	30.56	43.50	-12.94
197.32	36.33	1.00	128	-3.42	32.91	43.50	-10.59
321.00	34.52	1.00	318	-2.64	31.88	46.00	-14.12
369.50	31.48	1.00	163	-1.81	29.67	46.00	-16.33
561.08	27.93	1.00	311	5.37	33.30	46.00	-12.70
700.51	25.56	1.00	265	9.54	35.10	46.00	-10.90

Note:

1. Margin = Amplitude – limit, *if margin is minus means under limit.*
2. Corrected Amplitude = Reading Amplitude + Correction Factors
3. Correction factor = Antenna factor + (Cable Loss – Amplitude gain) + Switching Box Loss

Test mode: IEEE 802.11b CH01 for 1GHz to 26.5GHz [Horizontal]

Frequency	*Ant. H.*	*Table*	*Amplitude*		*Correction Factor*	*Corrected Amplitude*		*Limit*		*Margin*
			Peak / Ave.			*Peak / Ave.*		*Peak / Ave.*		
MHz	*m*	*degree*	*dBμV*		*dB/m*	*dBμV/m*		*dBμV/m*		*dB*
2251.97	1.00	74	46.16	33.67	8.80	54.96	42.47	73.96	53.96	-11.49
2571.96	1.00	118	50.32	39.83	9.63	59.95	49.46	73.96	53.96	-4.50
2652.14	1.00	33	47.66	37.00	9.78	57.44	46.78	73.96	53.96	-7.18
2731.94	1.00	33	45.32	35.00	9.93	55.25	44.93	73.96	53.96	-9.03
9650.42	1.00	31	34.94	---	11.47	46.41	---	73.96	53.96	-7.55
19296.25	1.00	314	46.74	---	1.60	48.34	---	73.96	53.96	-5.62

Test mode: IEEE 802.11b CH01 for 1GHz to 26.5GHz [Vertical]

Frequency	*Ant. H.*	*Table*	*Amplitude*		*Correction Factor*	*Corrected Amplitude*		*Limit*		*Margin*
			Peak / Ave.			*Peak / Ave.*		*Peak / Ave.*		
MHz	*m*	*degree*	*dBμV*		*dB/m*	*dBμV/m*		*dBμV/m*		*dB*
2573.43	1.00	44	54.66	43.33	9.63	64.29	52.96	73.96	53.96	-1.00
2652.14	1.00	141	52.66	41.00	9.78	62.44	50.78	73.96	53.96	-3.18
2731.92	1.00	141	51.83	40.00	9.93	61.76	49.93	73.96	53.96	-4.03
3215.95	1.00	360	40.51	34.00	11.47	51.98	45.47	73.96	53.96	-8.49
4823.12	1.00	317	47.77	---	3.76	51.53	---	73.96	53.96	-2.43
24120.00	1.00	202	44.87	---	3.40	48.27	---	73.96	53.96	-5.69

Note:

1. Margin = Corrected - Limit.
2. The EUT utilizes a *permanently attached antenna*. In addition the spurious RF radiated emissions levels do comply with the *20dBc limit* both at its bandedges and other spurious emissions.
3. As stated in Section 15.35(b), for any frequencies above 1000MHz, radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. As the results of our test, the peak amplitudes are already below the FCC limit. Thus the average amplitudes of the rest are omitted.

Test mode: IEEE 802.11b CH06 for 30MHz to 1GHz [Horizontal]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
168.22	36.38	1.00	136	-4.10	32.28	43.50	-11.22
197.32	44.05	1.00	146	-3.42	40.63	43.50	-2.87
259.16	37.87	1.00	187	-3.82	34.05	46.00	-11.95
302.81	41.52	1.00	160	-2.86	38.66	46.00	-7.34
369.50	42.12	1.00	180	-1.81	40.31	46.00	-5.69
434.97	32.71	1.00	170	0.51	33.22	46.00	-12.78

Test mode: IEEE 802.11b CH06 for 30MHz to 1GHz [Vertical]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
168.22	34.41	1.00	178	-4.10	30.31	43.50	-13.19
198.54	36.22	1.00	117	-3.36	32.86	43.50	-10.64
301.60	33.55	1.00	161	-2.88	30.67	46.00	-15.33
323.42	34.77	1.00	27	-2.60	32.17	46.00	-13.83
561.08	28.27	1.00	331	5.37	33.64	46.00	-12.36
698.09	24.56	1.00	257	9.47	34.03	46.00	-11.97

Test mode: IEEE 802.11b CH06 for 1GHz to 26.5GHz [Horizontal]

Frequency	*Ant. H.*	*Table*	*Amplitude*		*Correction Factor*	*Corrected Amplitude*		*Limit*		*Margin*
			Peak / Ave.			*Peak / Ave.*		*Peak / Ave.*		
MHz	*m*	*degree*	*dBμV*		*dB/m*	*dBμV/m*		*dBμV/m*		*dB*
2272.95	1.00	291	43.50	31.67	8.85	52.35	40.52	73.96	53.96	-13.44
2495.05	1.00	168	45.66	31.83	9.48	55.14	41.31	73.96	53.96	-12.65
2602.31	1.00	360	49.33	40.67	9.68	59.01	50.35	73.96	53.96	-3.61
2681.98	1.00	360	43.33	35.67	9.83	53.16	45.50	73.96	53.96	-8.46
12187.92	1.00	179	38.27	---	9.74	48.01	---	73.96	53.96	-5.95
24371.46	1.00	183	45.56	---	3.26	48.82	---	73.96	53.96	-5.14

Test mode: IEEE 802.11b CH06 for 1GHz to 26.5GHz [Vertical]

Frequency	*Ant. H.*	*Table*	*Amplitude*		*Correction Factor*	*Corrected Amplitude*		*Limit*		*Margin*
			Peak / Ave.			*Peak / Ave.*		*Peak / Ave.*		
MHz	*m*	*degree*	*dBμV*		*dB/m*	*dBμV/m*		*dBμV/m*		*dB*
2557.68	1.00	360	47.51	34.67	9.60	57.11	44.27	73.96	53.96	-9.69
2600.97	1.00	360	54.16	43.33	9.68	63.84	53.01	73.96	53.96	-0.95
2682.98	1.00	116	50.50	39.33	9.83	60.33	49.16	73.96	53.96	-4.80
2764.97	1.00	116	46.33	36.67	9.99	56.32	46.66	73.96	53.96	-7.30
12187.92	1.00	201	38.44	---	9.74	48.18	---	73.96	53.96	-5.78
24371.46	1.00	210	45.69	---	3.26	48.95	---	73.96	53.96	-5.01

Test mode: IEEE 802.11b CH11 for 30MHz to 1GHz [Horizontal]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
168.22	36.01	1.00	147	-4.10	31.91	43.50	-11.59
198.54	44.07	1.00	158	-3.36	40.71	43.50	-2.79
300.39	41.07	1.00	264	-2.90	38.17	46.00	-7.83
321.00	37.73	1.00	264	-2.64	35.09	46.00	-10.91
368.29	41.86	1.00	192	-1.83	40.03	46.00	-5.97
434.97	33.37	1.00	182	0.51	33.88	46.00	-12.12

Test mode: IEEE 802.11b CH11 for 30MHz to 1GHz [Vertical]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
168.22	35.20	1.00	180	-4.10	30.52	43.50	-12.98
198.54	35.20	1.00	118	-3.36	31.84	43.50	-11.66
561.08	28.31	1.00	318	5.37	33.68	46.00	-12.32
601.09	27.29	1.00	300	6.49	33.78	46.00	-12.22
696.87	24.74	1.00	279	9.44	34.18	46.00	-11.82
801.15	24.85	1.00	11	11.67	36.52	46.00	-9.48

Test mode: IEEE 802.11b CH11 for 1GHz to 26.5GHz [Horizontal]

Frequency	*Ant. H.*	*Table*	*Amplitude*		*Correction Factor*	*Corrected Amplitude*		*Limit*		*Margin*
			Peak / Ave.			*Peak / Ave.*		*Peak / Ave.*		
MHz	*m*	*degree*	*dBμV*		*dB/m*	*dBμV/m*		*dBμV/m*		*dB*
1660.61	1.00	165	39.34	24.83	13.38	52.72	38.21	73.96	53.96	-15.75
2621.96	1.00	289	50.33	39.50	9.72	60.05	49.22	73.96	53.96	-4.74
2701.53	1.00	289	43.99	33.50	9.87	53.86	43.37	73.96	53.96	-10.59
2783.33	1.00	237	41.84	---	10.02	51.86	---	73.96	53.96	-2.10
12308.75	1.00	210	39.11	---	9.56	48.67	---	73.96	53.96	-5.29
24619.37	1.00	101	45.75	---	3.01	48.76	---	73.96	53.96	-5.20

Test mode: IEEE 802.11b CH11 for 1GHz to 26.5GHz [Vertical]

Frequency	*Ant. H.*	*Table*	*Amplitude*		*Correction Factor*	*Corrected Amplitude*		*Limit*		*Margin*
			Peak / Ave.			*Peak / Ave.*		*Peak / Ave.*		
MHz	*m*	*degree*	*dBμV*		*dB/m*	*dBμV/m*		*dBμV/m*		*dB*
2621.96	1.00	67	54.50	42.50	9.72	64.22	52.22	73.96	53.96	-1.74
2701.94	1.00	67	49.83	38.17	9.87	59.70	48.04	73.96	53.96	-5.92
2781.79	1.00	67	46.16	36.17	10.02	56.18	46.19	73.96	53.96	-7.77
2860.36	1.00	67	42.32	32.67	10.17	52.49	42.84	73.96	53.96	-11.12
4925.83	1.00	273	47.11	---	4.13	51.24	---	73.96	53.96	-2.72
24619.37	1.00	61	46.16	---	3.01	49.17	---	73.96	53.96	-4.79

Test mode: IEEE 802.11g CH01 for 30MHz to 1GHz [Horizontal]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
169.44	35.81	1.00	147	-4.11	31.70	43.50	-11.80
197.32	44.12	1.00	168	-3.42	40.70	43.50	-2.80
259.16	36.90	1.00	158	-3.82	33.08	46.00	-12.92
301.60	41.89	1.00	285	-2.88	39.01	46.00	-6.99
369.50	41.70	1.00	182	-1.81	39.89	46.00	-6.11
433.76	33.09	1.00	182	0.45	33.54	46.00	-12.46

Test mode: IEEE 802.11g CH01 for 30MHz to 1GHz [Vertical]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
169.44	35.00	1.00	189	-4.11	30.89	43.50	-12.61
197.32	36.12	1.00	127	-3.42	32.70	43.50	-10.80
322.21	34.82	1.00	315	-2.62	32.20	46.00	-13.80
521.06	27.97	1.00	339	3.14	31.11	46.00	-14.89
601.09	27.01	1.00	299	6.49	33.50	46.00	-12.50
696.87	25.31	1.00	271	9.44	34.75	46.00	-11.25

Test mode: IEEE 802.11g CH01 for 1GHz to 26.5GHz [Horizontal]

Frequency	*Ant. H.*	*Table*	*Amplitude*		*Correction Factor*	*Corrected Amplitude*		*Limit*		*Margin*
			Peak / Ave.			*Peak / Ave.*		*Peak / Ave.*		
MHz	*m*	*degree*	*dBμV*		*dB/m*	*dBμV/m*		*dBμV/m*		*dB*
1658.00	1.00	227	43.03	23.83	13.43	56.46	37.26	73.96	53.96	-16.70
2262.50	1.00	287	40.50	---	8.82	49.32	---	73.96	53.96	-4.64
2492.64	1.00	237	46.66	30.00	9.47	56.13	39.47	73.96	53.96	-14.49
2571.22	1.00	237	43.33	28.33	9.62	52.95	37.95	73.96	53.96	-16.01
7233.75	1.00	232	36.94	---	10.07	47.01	---	73.96	53.96	-6.95
19296.25	1.00	309	47.05	---	1.60	48.65	---	73.96	53.96	-5.31

Test mode: IEEE 802.11g CH01 for 1GHz to 26.5GHz [Vertical]

Frequency	*Ant. H.*	*Table*	*Amplitude*		*Correction Factor*	*Corrected Amplitude*		*Limit*		*Margin*
			Peak / Ave.			*Peak / Ave.*		*Peak / Ave.*		
MHz	*m*	*degree*	*dBμV*		*dB/m*	*dBμV/m*		*dBμV/m*		*dB*
2479.96	1.00	178	47.53	29.00	9.43	56.96	38.43	73.96	53.96	-15.53
2572.62	1.00	150	50.00	30.67	9.63	59.63	40.30	73.96	53.96	-13.66
2609.59	1.00	227	45.33	28.67	9.70	55.03	38.37	73.96	53.96	-15.59
2651.66	1.00	137	45.49	28.17	9.78	55.27	37.95	73.96	53.96	-16.01
9650.42	1.00	178	34.44	---	11.47	45.91	---	73.96	53.96	-8.05
24120.00	1.00	106	44.77	---	3.40	48.17	---	73.96	53.96	-5.79

Test mode: IEEE 802.11g CH06 for 30MHz to 1GHz [Horizontal]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
167.01	36.00	1.00	138	-4.10	31.90	43.50	-11.60
197.32	43.81	1.00	149	-3.42	40.39	43.50	-3.11
257.95	37.27	1.00	204	-3.73	33.54	46.00	-12.46
300.39	41.58	1.00	256	-2.90	38.68	46.00	-7.32
368.29	42.05	1.00	183	-1.83	40.22	46.00	-5.78
432.55	33.52	1.00	183	0.40	33.92	46.00	-12.08

Test mode: IEEE 802.11g CH06 for 30MHz to 1GHz [Vertical]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
169.44	34.81	1.00	185	-4.11	30.70	43.50	-12.80
197.32	35.76	1.00	113	-3.42	32.34	43.50	-11.16
242.19	34.14	1.00	353	-3.61	30.53	46.00	-15.47
322.21	34.48	1.00	353	-2.62	31.86	46.00	-14.14
561.08	28.55	1.00	304	5.37	33.92	46.00	-12.08
700.51	25.63	1.00	272	9.54	35.17	46.00	-10.83

Test mode: IEEE 802.11g CH06 for 1GHz to 26.5GHz [Horizontal]

Frequency	*Ant. H.*	*Table*	*Amplitude*		*Correction Factor*	*Corrected Amplitude*		*Limit*		*Margin*
			Peak / Ave.			*Peak / Ave.*		*Peak / Ave.*		
MHz	*m*	*degree*	*dBμV*		*dB/m*	*dBμV/m*		*dBμV/m*		*dB*
1664.76	1.00	221	41.30	24.33	13.32	54.62	37.65	73.96	53.96	-16.31
2493.24	1.00	22	44.34	29.83	9.47	53.81	39.30	73.96	53.96	-14.66
2600.31	1.00	22	44.66	29.17	9.68	54.34	38.85	73.96	53.96	-15.11
2681.25	1.00	22	41.17	---	9.83	51.00	---	73.96	53.96	-2.96
12187.92	1.00	344	38.27	---	9.74	48.01	---	73.96	53.96	-5.95
24371.46	1.00	203	45.21	---	3.26	48.47	---	73.96	53.96	-5.49

Test mode: IEEE 802.11g CH06 for 1GHz to 26.5GHz [Vertical]

Frequency	*Ant. H.*	*Table*	*Amplitude*		*Correction Factor*	*Corrected Amplitude*		*Limit*		*Margin*
			Peak / Ave.			*Peak / Ave.*		*Peak / Ave.*		
MHz	*m*	*degree*	*dBμV*		*dB/m*	*dBμV/m*		*dBμV/m*		*dB*
2491.03	1.00	19	49.17	30.67	9.46	58.63	40.13	73.96	53.96	-13.83
2606.95	1.00	18	51.82	32.50	9.69	61.51	42.19	73.96	53.96	-11.77
2682.00	1.00	5	47.00	30.17	9.83	56.83	40.00	73.96	53.96	-13.96
2766.89	1.00	133	42.50	27.67	9.99	52.49	37.66	73.96	53.96	-16.30
12187.92	1.00	252	37.94	---	9.74	47.68	---	73.96	53.96	-6.28
24371.46	1.00	216	45.81	---	3.26	49.07	---	73.96	53.96	-4.89

Test mode: IEEE 802.11g CH11 for 30MHz to 1GHz [Horizontal]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
168.22	36.65	1.00	147	-4.10	32.55	43.50	-10.95
199.75	44.06	1.00	158	-3.31	40.75	43.50	-2.75
260.37	38.28	1.00	158	-3.88	34.40	46.00	-11.60
301.60	40.87	1.00	264	-2.88	37.99	46.00	-8.01
369.50	41.82	1.00	192	-1.81	40.01	46.00	-5.99
436.19	32.65	1.00	182	0.56	33.21	46.00	-12.79

Test mode: IEEE 802.11g CH11 for 30MHz to 1GHz [Vertical]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
167.01	34.84	1.00	180	-4.10	30.74	43.50	-12.76
197.32	35.85	1.00	128	-3.42	32.43	43.50	-11.07
323.42	35.92	1.00	308	-2.60	33.32	46.00	-12.68
521.06	27.24	1.00	360	3.14	30.38	46.00	-15.62
561.08	28.02	1.00	311	5.37	33.39	46.00	-12.61
700.51	26.47	1.00	265	9.54	36.01	46.00	-9.99

Test mode: IEEE 802.11g CH11 for 1GHz to 26.5GHz [Horizontal]

Frequency	*Ant. H.*	*Table*	*Amplitude*		*Correction Factor*	*Corrected Amplitude*		*Limit*		*Margin*
			Peak / Ave.			*Peak / Ave.*		*Peak / Ave.*		
MHz	*m*	*degree*	*dBμV*		*dB/m*	*dBμV/m*		*dBμV/m*		*dB*
1658.42	1.00	181	40.44	24.33	13.42	53.86	37.75	73.96	53.96	-16.21
2621.65	1.00	278	46.83	29.67	9.72	56.55	39.39	73.96	53.96	-14.57
12308.75	1.00	214	37.44	---	9.56	47.00	---	73.96	53.96	-6.96
19696.46	1.00	132	45.04	---	1.81	46.85	---	73.96	53.96	-7.11
22157.92	1.00	266	44.11	---	3.25	47.36	---	73.96	53.96	-6.60
24619.37	1.00	89	45.48	---	3.01	48.49	---	73.96	53.96	-5.47

Test mode: IEEE 802.11g CH11 for 1GHz to 26.5GHz [Vertical]

Frequency	*Ant. H.*	*Table*	*Amplitude*		*Correction Factor*	*Corrected Amplitude*		*Limit*		*Margin*
			Peak / Ave.			*Peak / Ave.*		*Peak / Ave.*		
MHz	*m*	*degree*	*dBμV*		*dB/m*	*dBμV/m*		*dBμV/m*		*dB*
1658.64	1.00	166	40.10	24.67	13.42	53.52	38.09	73.96	53.96	-15.87
2541.17	1.00	171	44.99	28.17	9.57	54.56	37.74	73.96	53.96	-16.22
2621.64	1.00	223	52.83	32.33	9.72	62.55	42.05	73.96	53.96	-11.41
2696.61	1.00	223	45.17	29.00	9.86	55.03	38.86	73.96	53.96	-15.10
12308.75	1.00	0	37.77	---	9.56	47.33	---	73.96	53.96	-6.63
22157.92	1.00	136	45.60	---	3.25	48.85	---	73.96	53.96	-5.11

Test mode: IEEE 802.11n 20M CH01 for 30MHz to 1GHz [Horizontal]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
167.01	36.28	1.00	132	-4.10	32.18	43.50	-11.32
198.54	44.52	1.00	152	-3.36	41.16	43.50	-2.34
259.16	37.29	1.00	163	-3.82	33.47	46.00	-12.53
301.60	40.52	1.00	156	-1.88	38.64	46.00	-7.36
368.29	39.20	1.00	177	0.83	40.03	46.00	-5.97
432.55	32.19	1.00	177	1.40	33.59	46.00	-12.41

Test mode: IEEE 802.11n 20M CH01 for 30MHz to 1GHz [Vertical]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
167.01	34.95	1.00	178	-4.10	30.85	43.50	-12.65
197.32	35.46	1.00	117	-3.42	32.04	43.50	-11.46
257.95	34.43	1.00	209	-3.73	30.70	46.00	-15.30
322.21	34.03	1.00	326	-2.62	31.41	46.00	-14.59
561.08	28.30	1.00	318	5.37	33.67	46.00	-12.33
696.87	25.93	1.00	272	9.44	35.37	46.00	-10.63

Test mode: IEEE 802.11n 20M CH01 for 1GHz to 26.5GHz [Horizontal]

Frequency	*Ant. H.*	*Table*	*Amplitude*		*Correction Factor*	*Corrected Amplitude*		*Limit*		*Margin*
			Peak / Ave.			*Peak / Ave.*		*Peak / Ave.*		
MHz	*m*	*degree*	*dBμV*		*dB/m*	*dBμV/m*		*dBμV/m*		*dB*
1660.43	1.00	299	40.13	24.00	13.39	53.52	37.39	73.96	53.96	-16.57
2150.00	1.00	161	39.33	---	8.51	47.84	---	73.96	53.96	-6.12
2479.96	1.00	340	45.19	31.33	9.43	54.62	40.76	73.96	53.96	-13.20
2570.98	1.04	39	45.67	34.83	9.62	55.29	44.45	73.96	53.96	-9.51
9650.42	1.00	68	35.11	---	11.47	46.58	---	73.96	53.96	-7.38
24120.00	1.00	91	44.38	---	3.40	47.78	---	73.96	53.96	-6.18

Test mode: IEEE 802.11n 20M CH01 for 1GHz to 26.5GHz [Vertical]

Frequency	*Ant. H.*	*Table*	*Amplitude*		*Correction Factor*	*Corrected Amplitude*		*Limit*		*Margin*
			Peak / Ave.			*Peak / Ave.*		*Peak / Ave.*		
MHz	*m*	*degree*	*dBμV*		*dB/m*	*dBμV/m*		*dBμV/m*		*dB*
1658.33	1.00	258	37.33	---	13.42	50.75	---	73.96	53.96	-3.21
2479.95	1.00	4	48.19	35.00	9.43	57.62	44.43	73.96	53.96	-9.53
2571.35	1.00	14	49.34	38.83	9.62	58.96	48.45	73.96	53.96	-5.51
2651.67	1.00	39	45.33	34.17	9.78	55.11	43.95	73.96	53.96	-10.01
9650.42	1.00	49	34.94	---	11.47	46.41	---	73.96	53.96	-7.55
24120.00	1.00	93	44.69	---	3.40	48.09	---	73.96	53.96	-5.87

Test mode: IEEE 802.11n 20M CH06 for 30MHz to 1GHz [Horizontal]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
167.01	36.37	1.00	147	-4.10	32.27	43.50	-11.23
197.32	45.05	1.00	147	-3.42	41.63	43.50	-1.87
301.60	41.50	1.00	274	-2.88	38.62	46.00	-7.38
368.29	41.84	1.00	192	-1.83	40.01	46.00	-5.99
432.55	33.70	1.00	182	0.40	34.10	46.00	-11.90
500.45	27.24	1.00	309	1.77	29.01	46.00	-16.99

Test mode: IEEE 802.11n 20M CH06 for 30MHz to 1GHz [Vertical]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
167.01	34.79	1.00	178	-4.10	30.69	43.50	-12.81
198.54	36.31	1.00	117	-3.36	32.95	43.50	-10.55
322.21	33.28	1.00	326	-2.62	30.66	46.00	-15.34
561.08	28.13	1.00	332	5.37	33.50	46.00	-12.50
601.09	27.34	1.00	286	6.49	33.83	46.00	-12.17
700.51	25.67	1.00	102	9.54	35.21	46.00	-10.79

Test mode: IEEE 802.11n 20M CH06 for 1GHz to 26.5GHz [Horizontal]

Frequency	*Ant. H.*	*Table*	*Amplitude*		*Correction Factor*	*Corrected Amplitude*		*Limit*		*Margin*
			Peak / Ave.			*Peak / Ave.*		*Peak / Ave.*		
MHz	*m*	*degree*	*dBμV*		*dB/m*	*dBμV/m*		*dBμV/m*		*dB*
1664.58	1.00	232	36.67	---	13.32	49.99	---	73.96	53.96	-3.97
2604.17	1.00	5	44.00	32.87	9.69	53.69	42.56	73.96	53.96	-11.40
2685.42	1.00	59	39.50	---	9.84	49.34	---	73.96	53.96	-4.62
12187.92	1.00	283	37.77	---	9.74	47.51	---	73.96	53.96	-6.45
19498.12	1.00	238	46.78	---	1.70	48.48	---	73.96	53.96	-5.48
24371.46	1.00	189	45.13	---	3.26	48.39	---	73.96	53.96	-5.57

Test mode: IEEE 802.11n 20M CH06 for 1GHz to 26.5GHz [Vertical]

Frequency	*Ant. H.*	*Table*	*Amplitude*		*Correction Factor*	*Corrected Amplitude*		*Limit*		*Margin*
			Peak / Ave.			*Peak / Ave.*		*Peak / Ave.*		
MHz	*m*	*degree*	*dBμV*		*dB/m*	*dBμV/m*		*dBμV/m*		*dB*
1662.09	1.00	168	40.80	25.00	13.36	54.16	38.36	73.96	53.96	-15.60
2152.08	1.00	160	40.33	---	8.52	48.85	---	73.96	53.96	-5.11
2606.59	1.00	201	50.15	39.83	9.69	59.84	49.52	73.96	53.96	-4.44
2682.32	1.00	305	45.16	34.00	9.83	54.99	43.83	73.96	53.96	-10.13
12187.92	1.00	150	38.44	---	9.74	48.18	---	73.96	53.96	-5.78
21934.79	1.00	191	46.11	---	3.09	49.20	---	73.96	53.96	-4.76

Test mode: IEEE 802.11n 20M CH11 for 30MHz to 1GHz [Horizontal]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
167.01	36.11	1.00	149	-4.10	32.01	43.50	-11.49
197.32	44.38	1.00	149	-3.42	40.96	43.50	-2.54
259.16	38.54	1.00	128	-3.82	34.72	46.00	-11.28
301.60	41.66	1.00	277	-2.88	38.78	46.00	-7.22
369.50	41.56	1.00	173	-1.81	39.75	46.00	-6.25
432.55	32.98	1.00	183	0.40	33.38	46.00	-12.62

Test mode: IEEE 802.11n 20M CH11 for 30MHz to 1GHz [Vertical]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
169.44	34.97	1.00	189	-4.11	30.86	43.50	-12.64
197.32	35.67	1.00	137	-3.42	32.25	43.50	-11.25
323.42	34.41	1.00	357	-2.60	31.81	46.00	-14.19
368.29	31.02	1.00	171	-1.83	29.19	46.00	-16.81
561.08	28.25	1.00	303	5.37	33.62	46.00	-12.38
700.51	24.90	1.00	278	9.54	34.44	46.00	-11.56

Test mode: IEEE 802.11n 20M CH11 for 1GHz to 26.5GHz [Horizontal]

Frequency	*Ant. H.*	*Table*	*Amplitude*		*Correction Factor*	*Corrected Amplitude*		*Limit*		*Margin*
			Peak / Ave.			*Peak / Ave.*		*Peak / Ave.*		
MHz	*m*	*degree*	*dBμV*		*dB/m*	*dBμV/m*		*dBμV/m*		*dB*
1661.19	1.00	294	39.48	23.50	13.38	52.86	36.88	73.96	53.96	-17.08
2154.17	1.00	226	39.84	---	8.52	48.36	---	73.96	53.96	-5.60
2300.00	1.00	11	40.17	---	8.93	49.10	---	73.96	53.96	-4.86
2622.92	1.00	115	38.33	---	9.72	48.05	---	73.96	53.96	-5.91
12308.57	1.00	222	37.27	---	9.56	46.83	---	73.96	53.96	-7.13
24619.37	1.00	94	45.52	---	3.01	48.53	---	73.96	53.96	-5.43

Test mode: IEEE 802.11n 20M CH11for 1GHz to 26.5GHz [Vertical]

Frequency	*Ant. H.*	*Table*	*Amplitude*		*Correction Factor*	*Corrected Amplitude*		*Limit*		*Margin*
			Peak / Ave.			*Peak / Ave.*		*Peak / Ave.*		
MHz	*m*	*degree*	*dBμV*		*dB/m*	*dBμV/m*		*dBμV/m*		*dB*
1664.58	1.00	216	38.34	---	13.32	51.66	---	73.96	53.96	-2.30
2620.70	1.00	176	48.16	38.00	9.72	57.88	47.72	73.96	53.96	-6.24
12308.75	1.00	261	39.11	---	9.56	48.67	---	73.96	53.96	-5.29
19696.46	1.00	352	46.57	---	1.81	48.38	---	73.96	53.96	-5.58
22157.92	1.00	139	45.49	---	3.25	48.74	---	73.96	53.96	-5.22
24619.37	1.00	114	45.71	---	3.01	48.72	---	73.96	53.96	-5.24

Test mode: IEEE 802.11n 40M CH03 for 30MHz to 1GHz [Horizontal]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
167.01	36.18	1.00	137	-4.10	32.08	43.50	-11.42
198.54	44.84	1.00	147	-3.36	41.48	43.50	-2.02
261.59	38.60	1.00	147	-3.88	34.72	46.00	-11.28
300.39	42.09	1.00	285	-2.90	39.19	46.00	-6.81
323.42	38.31	1.00	171	-2.60	35.71	46.00	-10.29
368.29	42.07	1.00	192	-1.83	40.24	46.00	-5.76

Test mode: IEEE 802.11n 40M CH03 for 30MHz to 1GHz [Vertical]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
167.01	35.16	1.00	168	-4.10	31.06	43.50	-12.44
198.54	36.17	1.00	127	-3.36	32.81	43.50	-10.69
322.21	35.17	1.00	7	-2.62	32.55	46.00	-13.45
561.08	28.30	1.00	325	5.37	33.67	46.00	-12.33
601.09	26.85	1.00	293	6.49	33.34	46.00	-12.66
700.51	24.73	1.00	279	9.54	34.27	46.00	-11.73

Test mode: IEEE 802.11n 40M CH03 for 1GHz to 26.5GHz [Horizontal]

Frequency	*Ant. H.*	*Table*	*Amplitude*		*Correction Factor*	*Corrected Amplitude*		*Limit*		*Margin*
			Peak / Ave.			*Peak / Ave.*		*Peak / Ave.*		
MHz	*m*	*degree*	*dBμV*		*dB/m*	*dBμV/m*		*dBμV/m*		*dB*
1662.50	1.00	131	37.83	---	13.36	51.19	---	73.96	53.96	-2.77
2152.08	1.00	61	39.00	---	8.52	47.52	---	73.96	53.96	-6.44
2579.17	1.00	285	41.33	---	9.64	50.97	---	73.96	53.96	-2.99
12109.37	1.00	52	36.77	---	9.61	46.38	---	73.96	53.96	-7.58
19377.71	1.00	196	45.95	---	1.60	47.55	---	73.96	53.96	-6.41
24219.71	1.00	318	45.62	---	2.85	48.47	---	73.96	53.96	-5.49

Test mode: IEEE 802.11n 40M CH03 for 1GHz to 26.5GHz [Vertical]

Frequency	*Ant. H.*	*Table*	*Amplitude*		*Correction Factor*	*Corrected Amplitude*		*Limit*		*Margin*
			Peak / Ave.			*Peak / Ave.*		*Peak / Ave.*		
MHz	*m*	*degree*	*dBμV*		*dB/m*	*dBμV/m*		*dBμV/m*		*dB*
1661.71	1.00	191	38.75	25.17	13.37	52.12	38.54	73.96	53.96	-15.42
2152.08	1.00	326	39.00	---	8.52	47.52	---	73.96	53.96	-6.44
2573.45	1.00	118	44.01	31.67	9.63	53.64	41.30	73.96	53.96	-12.66
9686.67	1.00	67	34.94	---	11.63	46.57	---	73.96	53.96	-7.39
21796.67	1.00	173	44.40	---	2.72	47.12	---	73.96	53.96	-6.84
24219.17	1.00	315	45.62	---	2.85	48.47	---	73.96	53.96	-5.49

Test mode: IEEE 802.11n 40M CH06 for 30MHz to 1GHz [Horizontal]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
168.22	36.58	1.00	156	-4.10	32.48	43.50	-11.02
198.54	44.63	1.00	156	-3.36	41.27	43.50	-2.23
259.16	37.96	1.00	156	-3.82	34.14	46.00	-11.86
301.60	41.64	1.00	262	-2.88	38.76	46.00	-7.24
369.50	41.42	1.00	190	-1.81	39.61	46.00	-6.39
433.76	33.45	1.00	190	0.45	33.90	46.00	-12.10

Test mode: IEEE 802.11n 40M CH06 for 30MHz to 1GHz [Vertical]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
167.01	35.24	1.00	168	-4.10	31.14	43.50	-12.36
198.54	35.98	1.00	126	-3.36	32.62	43.50	-10.88
323.42	35.21	1.00	318	-2.60	32.61	46.00	-13.39
561.08	28.25	1.00	317	5.37	33.62	46.00	-12.38
601.09	27.64	1.00	307	6.49	34.13	46.00	-11.87
696.87	25.47	1.00	278	9.44	34.91	46.00	-11.09

Test mode: IEEE 802.11n 40M CH06 for 1GHz to 26.5GHz [Horizontal]

Frequency	*Ant. H.*	*Table*	*Amplitude*		*Correction Factor*	*Corrected Amplitude*		*Limit*		*Margin*
			Peak / Ave.			*Peak / Ave.*		*Peak / Ave.*		
MHz	*m*	*degree*	*dBμV*		*dB/m*	*dBμV/m*		*dBμV/m*		*dB*
1543.75	1.00	359	35.66	---	15.21	50.87	---	73.96	53.96	-3.09
2154.17	1.00	282	39.00	---	8.52	47.52	---	73.96	53.96	-6.44
2600.72	1.00	265	43.52	31.83	9.68	53.20	41.51	73.96	53.96	-12.45
12187.92	1.00	275	37.77	---	9.74	47.51	---	73.96	53.96	-6.45
21934.79	1.00	216	45.41	---	3.09	48.50	---	73.96	53.96	-5.46
24371.46	1.00	125	45.20	---	3.26	48.46	---	73.96	53.96	-5.50

Test mode: IEEE 802.11n 40M CH06 for 1GHz to 26.5GHz [Vertical]

Frequency	*Ant. H.*	*Table*	*Amplitude*		*Correction Factor*	*Corrected Amplitude*		*Limit*		*Margin*
			Peak / Ave.			*Peak / Ave.*		*Peak / Ave.*		
MHz	*m*	*degree*	*dBμV*		*dB/m*	*dBμV/m*		*dBμV/m*		*dB*
1663.14	1.00	179	40.55	24.33	13.34	53.89	37.67	73.96	53.96	-16.29
2596.97	1.00	12	49.52	31.17	9.67	59.19	40.84	73.96	53.96	-13.12
2756.67	1.00	12	42.66	23.67	9.97	52.63	33.64	73.96	53.96	-20.32
12187.92	1.00	82	38.94	---	9.74	48.68	---	73.96	53.96	-5.28
21934.79	1.00	267	44.83	---	3.09	47.92	---	73.96	53.96	-6.04
24371.46	1.00	277	45.50	---	3.26	48.76	---	73.96	53.96	-5.20

Test mode: IEEE 802.11n 40M CH09 for 30MHz to 1GHz [Horizontal]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
167.01	36.78	1.00	138	-4.10	32.68	43.50	-10.82
197.32	45.10	1.00	149	-3.42	41.68	43.50	-1.82
221.57	37.48	1.00	308	-3.74	33.74	46.00	-12.26
300.39	41.21	1.00	256	-2.90	38.31	46.00	-7.69
369.50	41.79	1.00	183	-1.81	39.98	46.00	-6.02
433.76	33.26	1.00	183	0.45	33.71	46.00	-12.29

Test mode: IEEE 802.11n 40M CH09 for 30MHz to 1GHz [Vertical]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
168.22	34.96	1.00	178	-4.10	30.86	43.50	-12.64
197.32	36.22	1.00	117	-3.42	32.80	43.50	-10.70
260.37	34.12	1.00	213	-3.88	30.24	46.00	-15.76
323.42	35.75	1.00	315	-2.88	32.87	46.00	-13.13
561.08	28.50	1.00	317	5.37	33.87	46.00	-12.13
700.51	24.94	1.00	285	9.54	34.48	46.00	-11.52

Test mode: IEEE 802.11n 40M CH09for 1GHz to 26.5GHz [Horizontal]

Frequency	*Ant. H.*	*Table*	*Amplitude Peak / Ave.*		*Correction Factor*	*Corrected Amplitude Peak / Ave.*		*Limit Peak / Ave.*		*Margin*
MHz	*m*	*degree*	*dBμV*		*dB/m*	*dBμV/m*		*dBμV/m*		*dB*
1664.58	1.00	230	37.67	---	13.32	50.99	---	73.96	53.96	-2.97
2604.17	1.00	274	40.50	---	9.69	50.19	---	73.96	53.96	-3.77
9807.50	1.00	138	35.11	---	11.92	47.03	---	73.96	53.96	-6.93
12260.42	1.00	240	38.11	---	9.86	47.97	---	73.96	53.96	-5.99
22069.37	1.00	92	45.22	---	2.77	47.99	---	73.96	53.96	-5.97
24520.21	1.00	251	45.68	---	2.37	48.05	---	73.96	53.96	-5.91

Test mode: IEEE 802.11n 40M CH09 for 1GHz to 26.5GHz [Vertical]

Frequency	*Ant. H.*	*Table*	*Amplitude Peak / Ave.*		*Correction Factor*	*Corrected Amplitude Peak / Ave.*		*Limit Peak / Ave.*		*Margin*
MHz	*m*	*degree*	*dBμV*		*dB/m*	*dBμV/m*		*dBμV/m*		*dB*
1660.42	1.00	208	38.16	---	13.39	51.55	---	73.96	53.96	-2.41
2293.75	1.00	147	40.34	---	8.91	49.25	---	73.96	53.96	-4.71
2611.97	1.00	73	44.50	32.67	9.70	54.20	42.37	73.96	53.96	-11.59
12260.42	1.00	287	37.94	---	9.86	47.80	---	73.96	53.96	-6.16
22069.37	1.00	76	45.07	---	2.77	47.84	---	73.96	53.96	-6.12
24520.21	1.00	266	45.37	---	2.37	47.74	---	73.96	53.96	-6.22

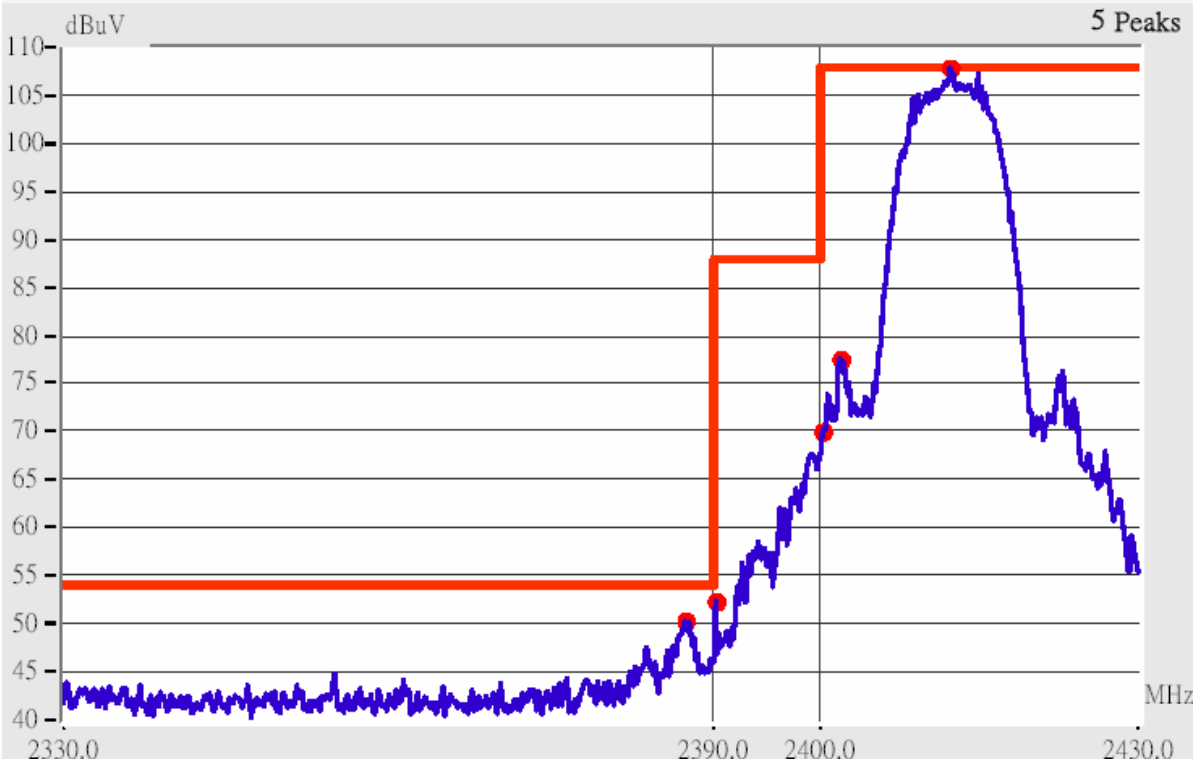
7.4 Test Result of the Bandedge

If any 100 kHz bandwidth outside these frequency bands, the radio frequency power that is produced by the modulation products of the spreading sequence, the information sequence and the carrier frequency shall be either *at least 20 dB below that in any 100 kHz bandwidth within the band that contains the highest level of the desired power or shall not exceed the general levels specified id §15.209(a)*,

We perform this section by the *radiated manner*, the RBW is set to 100kHz and VBW>RBW. We'd made the observation *up to 10th harmonics and the criterion is all the harmonic/spurious emissions must be 20dB below the highest emission level measured.* If the emissions fall in the restricted bands stated in the Part15.205(a) must also *comply with the radiated emission limits specified in Part15.209(a). (Peak mode: RBW=VBW=1MHz, Average mode: RBW=1MHz; VBW=10Hz)*

The following pages show our observations referring to the channel 1 and 11 respectively.
Test Condition & Setup: same as < 8.1 >

Channel 1 of IEEE 802.11b

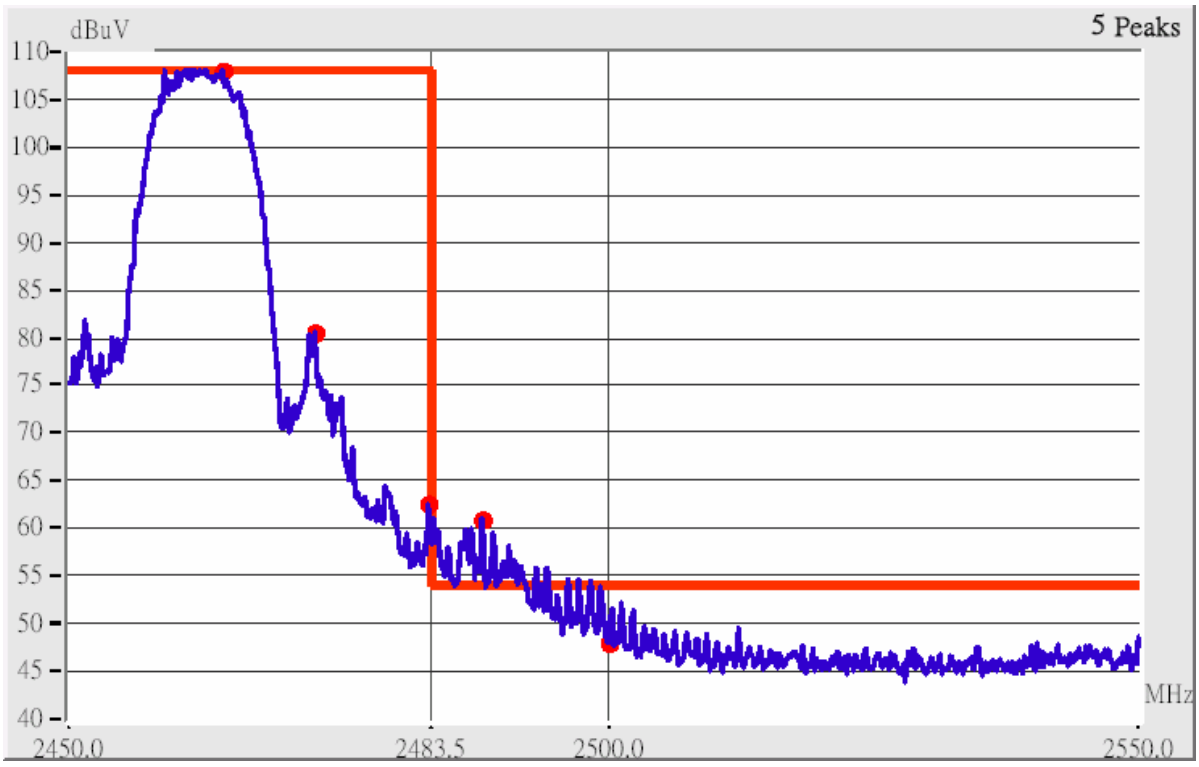


This is the hard copy of our bandedge measurement generated by our bandedge testing program. The plot shown above is the bandedge of channel 1.

1. The lobe left by the fundamental side is already 20dB below the highest emission level.
2. The emissions recorded in the restricted band is do comply with the Part 15.209(a) – as below.

Radiated Emission					*Corrected Amplitude (dBμV/m)*		*Class B (3m)*		
Frequency (MHz)	*Ant. P.*	*Ant. H. (m)*	*Table ( )*	*Factors (dB)*	*Peak*	*Average*	*Limit (dBμV/m) Peak*	*Ave.*	*Margin (dB)*
2387.00	Hor	1.00	63	9.17	56.01	41.50	73.96	53.96	-12.46
2389.97	Hor	1.00	70	9.18	55.68	42.18	73.96	53.96	-11.78
2387.24	Ver	1.00	129	9.17	55.51	41.34	73.96	53.96	-12.62
2389.96	Ver	1.00	129	9.18	53.68	41.18	73.96	53.96	-12.78

Channel 11 of IEEE 802.11b

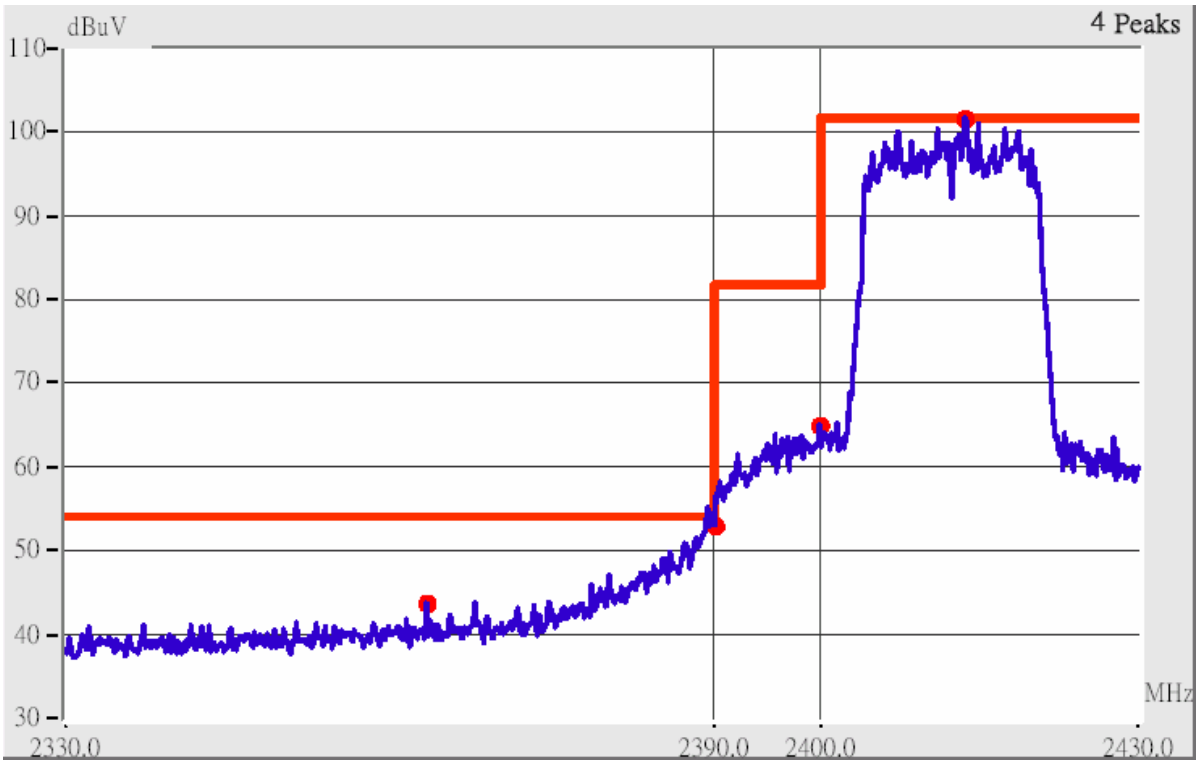


This is the hard copy of our bandedge measurement generated by our bandedge testing program. The plot shown above is the bandedge of channel 11.

3. The lobe right by the fundamental side is already 20dB below the highest emission level.
4. The emissions recorded in the restricted band is do comply with the Part 15.209(a) – as below

Radiated Emission					*Corrected Amplitude (dBμV/m)*		*Class B (3m)*		
Frequency (MHz)	*Ant. P.*	*Ant. H. (m)*	*Table ( )*	*Factors (dB)*	*Peak*	*Average*	*Limit (dBμV/m) Peak*	*Ave.*	*Margin (dB)*
2483.98	Hor	1.00	344	9.45	64.28	47.78	73.96	53.96	-6.18
2486.97	Hor	1.00	235	9.45	64.45	46.28	73.96	53.96	-7.68
2500.34	Hor	1.00	223	9.49	54.32	40.82	73.96	53.96	-13.14
2502.54	Hor	1.00	235	9.49	53.00	40.16	73.96	53.96	-13.80
2482.96	Ver	1.00	302	9.44	67.44	50.44	73.96	53.96	-3.52
2486.95	Ver	1.00	275	9.45	66.12	48.28	73.96	53.96	-5.68
2499.96	Ver	1.00	273	9.49	58.66	43.32	73.96	53.96	-10.64
2506.96	Ver	1.00	150	9.50	56.00	42.67	73.96	53.96	-11.29

Channel 1 of IEEE 802.11g

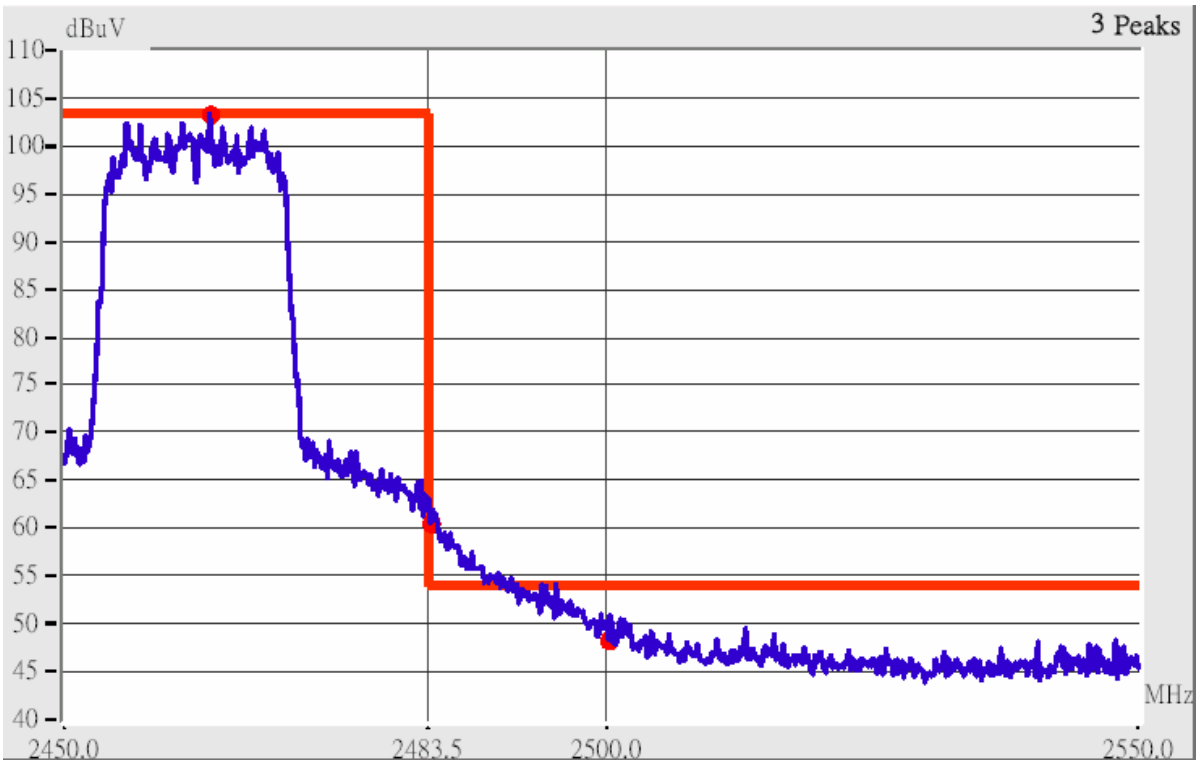


This is the hard copy of our bandedge measurement generated by our bandedge testing program. The plot shown above is the bandedge of channel 1.

5. The lobe left by the fundamental side is already 20dB below the highest emission level.
6. The emissions recorded in the restricted band is do comply with the Part 15.209(a) – as below.

Radiated Emission					*Corrected Amplitude (dBμV/m)*		*Class B (3m)*		
Frequency (MHz)	*Ant. P.*	*Ant. H. (m)*	*Table ( )*	*Factors (dB)*	*Peak*	*Average*	*Limit (dBμV/m) Peak*	*Ave.*	*Margin (dB)*
2385.33	Hor	1.00	286	9.17	63.34	37.34	73.96	53.96	-10.62
2390.50	Hor	1.00	285	9.18	64.68	41.18	73.96	53.96	-9.28
2386.29	Ver	1.00	124	9.17	69.17	39.67	73.96	53.96	-4.79
2390.42	Ver	1.00	200	9.18	71.68	43.35	73.96	53.96	-2.28

Channel 11 of IEEE 802.11g

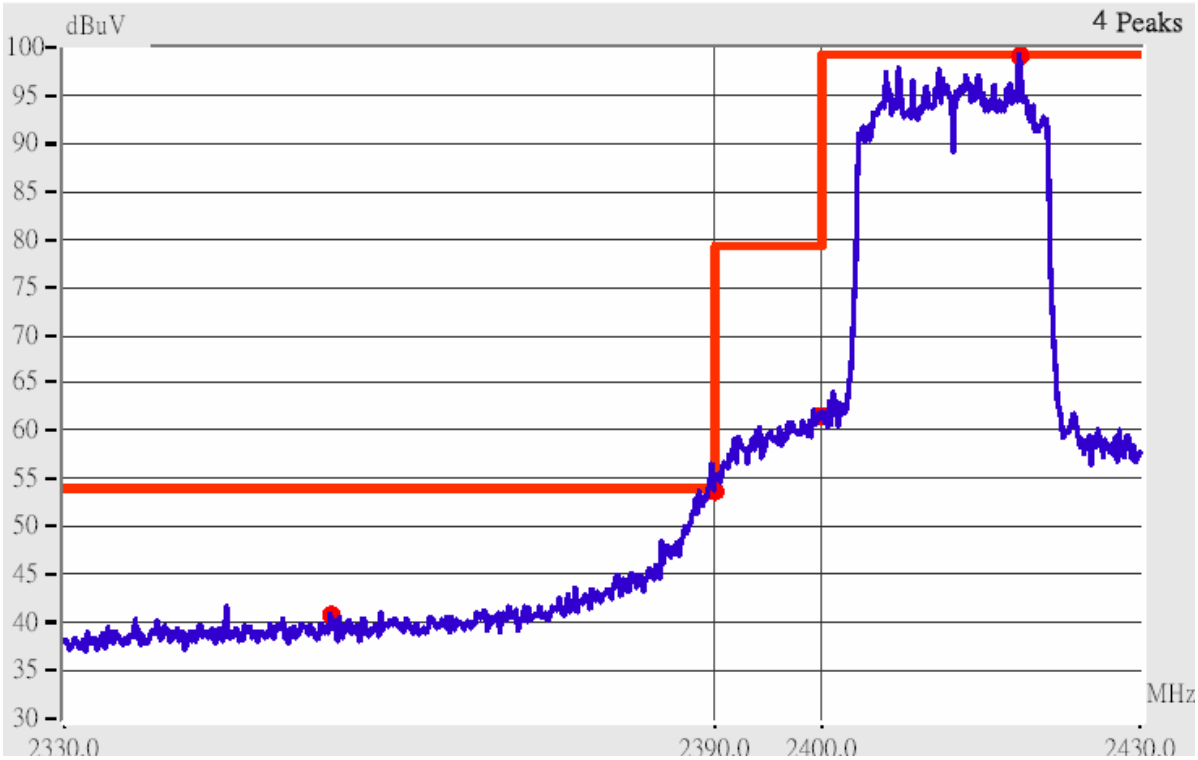


This is the hard copy of our bandedge measurement generated by our bandedge testing program. The plot shown above is the bandedge of channel 11.

7. The lobe right by the fundamental side is already 20dB below the highest emission level.
8. The emissions recorded in the restricted band is do comply with the Part 15.209(a) – as below

Radiated Emission					*Corrected Amplitude (dBμV/m)*		*Class B (3m)*		
Frequency (MHz)	*Ant. P.*	*Ant. H. (m)*	*Table ( )*	*Factors (dB)*	*Peak*	*Average*	*Limit (dBμV/m) Peak*	*Ave.*	*Margin (dB)*
2482.90	Hor	1.00	323	9.44	68.11	42.94	73.96	53.96	-5.85
2488.26	Hor	1.00	301	9.46	61.79	40.79	73.96	53.96	-12.17
2499.36	Hor	1.00	234	9.49	53.99	37.82	73.96	53.96	-16.14
2508.93	Hor	1.00	354	9.51	51.51	---	73.96	53.96	-2.45
2483.23	Ver	1.00	289	9.44	71.11	45.11	73.96	53.96	-2.85
2491.04	Ver	1.00	293	9.46	65.46	43.46	73.96	53.96	-8.50
2499.45	Ver	1.00	280	9.49	59.32	39.49	73.96	53.96	-14.47
2503.62	Ver	1.00	280	9.50	57.00	38.50	73.96	53.96	-15.46

Channel 01 of IEEE 802.11n 20M



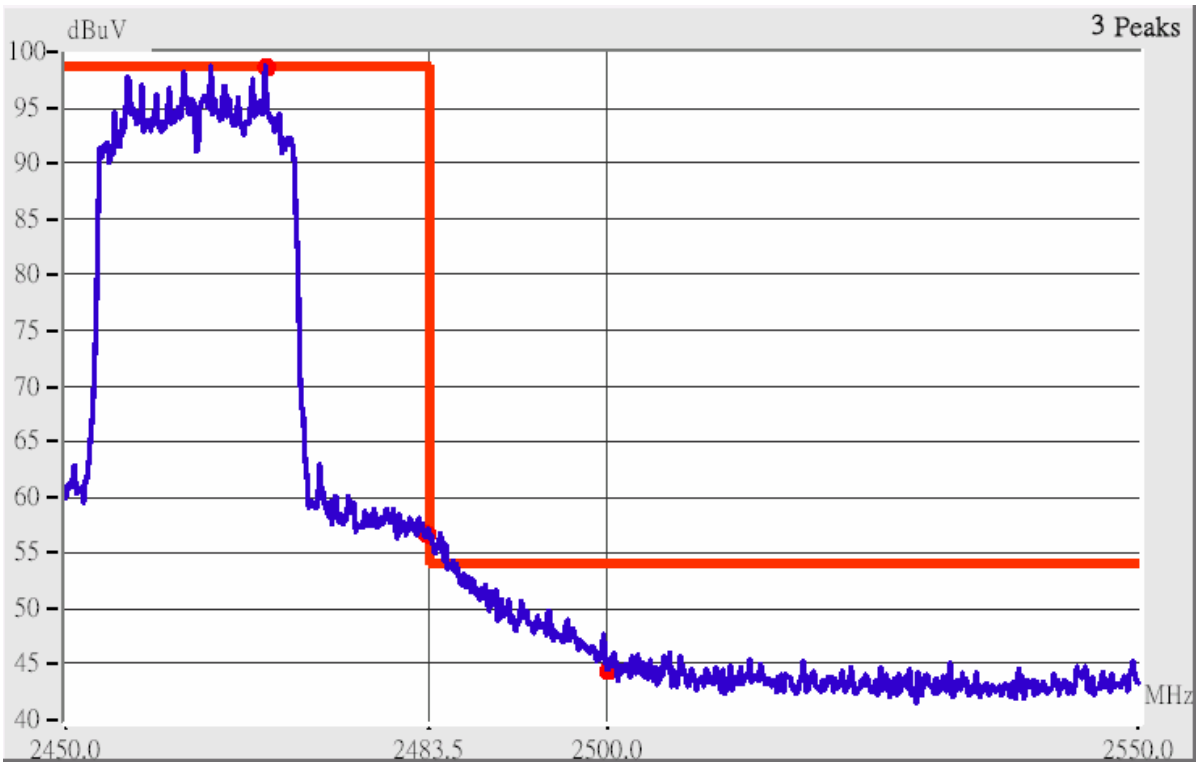
This is the hard copy of our bandedge measurement generated by our bandedge testing program. The plot shown above is the bandedge of channel 1.

9. The lobe left by the fundamental side is already 20dB below the highest emission level.

10. The emissions recorded in the restricted band is do comply with the Part 15.209(a) – as below.

Radiated Emission					*Corrected Amplitude (dBμV/m)*		*Class B (3m)*		
Frequency (MHz)	*Ant. P.*	*Ant. H. (m)*	*Table ( )*	*Factors (dB)*	*Peak*	*Average*	*Limit (dBμV/m) Peak*	*Ave.*	*Margin (dB)*
2386.28	Hor	1.00	100	9.17	58.67	44.00	73.96	53.96	-9.96
2390.13	Hor	1.00	107	9.18	65.35	49.68	73.96	53.96	-4.28
2386.91	Ver	1.00	141	9.17	66.00	47.34	73.96	53.96	-6.62
2390.09	Ver	1.00	300	9.18	68.18	52.51	73.96	53.96	-1.45

Channel 11 of IEEE 802.11n 20M



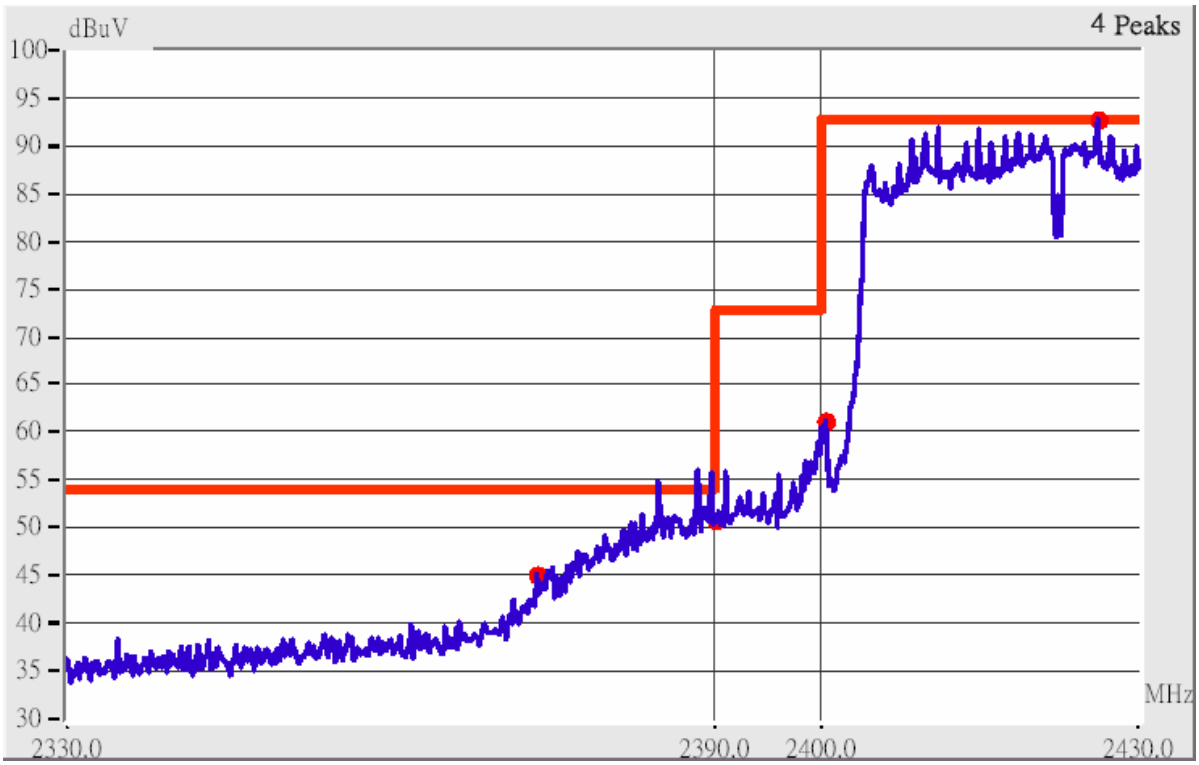
This is the hard copy of our bandedge measurement generated by our bandedge testing program. The plot shown above is the bandedge of channel 11.

11.The lobe right by the fundamental side is already 20dB below the highest emission level.

12.The emissions recorded in the restricted band is do comply with the Part 15.209(a) – as below

Radiated Emission					*Corrected Amplitude (dBμV/m)*		*Class B (3m)*		
Frequency (MHz)	*Ant. P.*	*Ant. H. (m)*	*Table ( )*	*Factors (dB)*	*Peak*	*Average*	*Limit (dBμV/m) Peak*	*Ave.*	*Margin (dB)*
2483.02	Hor	1.00	358	9.44	63.11	49.44	73.96	53.96	-4.52
2485.73	Hor	1.00	46	9.45	60.28	46.78	73.96	53.96	-7.18
2500.01	Hor	1.00	128	9.49	50.99	---	73.96	53.96	-2.97
2504.62	Hor	1.00	349	9.50	50.83	---	73.96	53.96	-3.13
2483.54	Ver	1.00	232	9.44	67.94	52.94	73.96	53.96	-1.02
2485.00	Ver	1.00	83	9.45	66.28	52.28	73.96	53.96	-1.68
2499.57	Ver	1.00	324	9.49	56.16	43.99	73.96	53.96	-9.97
2505.43	Ver	1.00	229	9.50	55.17	42.83	73.96	53.96	-11.13

Channel CH03 of IEEE 802.11n 40M



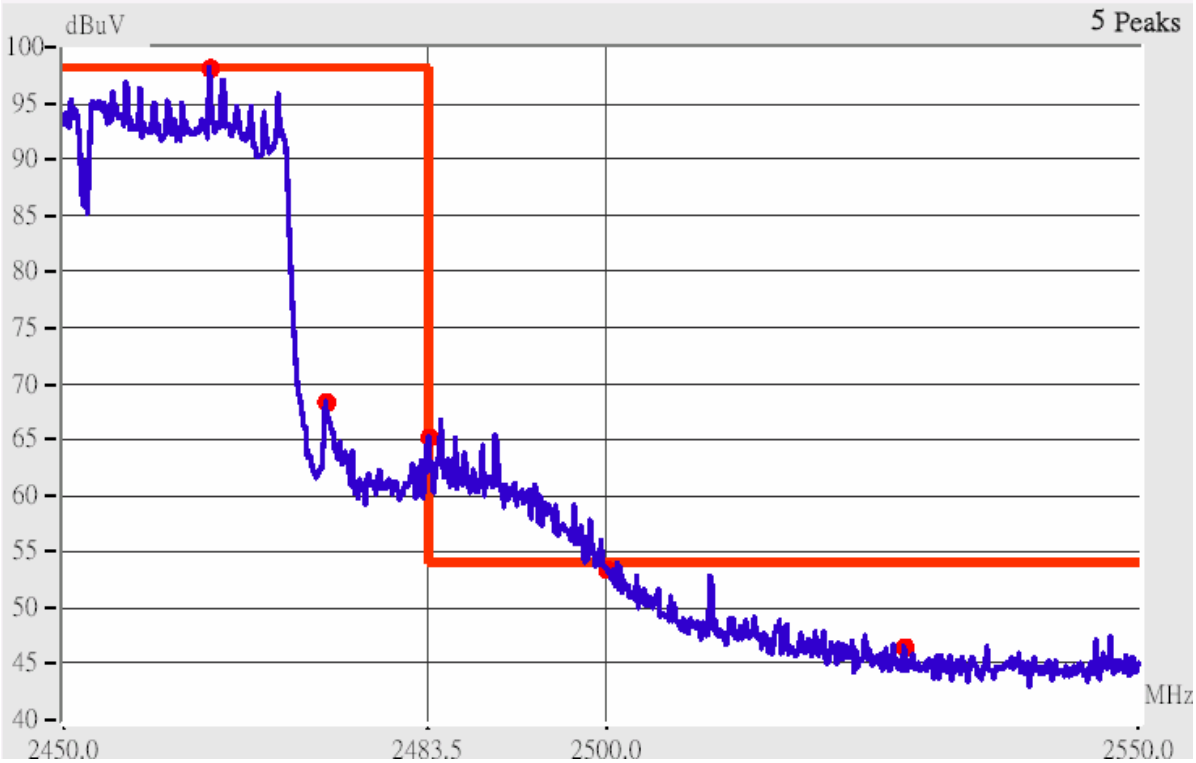
This is the hard copy of our bandedge measurement generated by our bandedge testing program. The plot shown above is the bandedge of channel 3.

13.The lobe left by the fundamental side is already 20dB below the highest emission level.

14.The emissions recorded in the restricted band is do comply with the Part 15.209(a) – as below.

Radiated Emission					*Corrected Amplitude (dBμV/m)*		*Class B (3m)*		
Frequency (MHz)	*Ant. P.*	*Ant. H. (m)*	*Table ( )*	*Factors (dB)*	*Peak*	*Average*	*Limit (dBμV/m) Peak*	*Ave.*	*Margin (dB)*
2382.59	Hor	1.00	264	9.16	59.83	42.83	73.96	53.96	-11.13
2389.76	Hor	1.00	251	9.18	60.35	44.35	73.96	53.96	-9.61
2380.07	Ver	1.00	206	9.15	69.82	43.98	73.96	53.96	-4.14
2390.53	Ver	1.00	132	9.18	71.68	46.01	73.96	53.96	-2.28

Channel 09 of IEEE 802.11n 40M



This is the hard copy of our bandedge measurement generated by our bandedge testing program. The plot shown above is the bandedge of channel 09.

15.The lobe right by the fundamental side is already 20dB below the highest emission level.

16.The emissions recorded in the restricted band is do comply with the Part 15.209(a) – as below

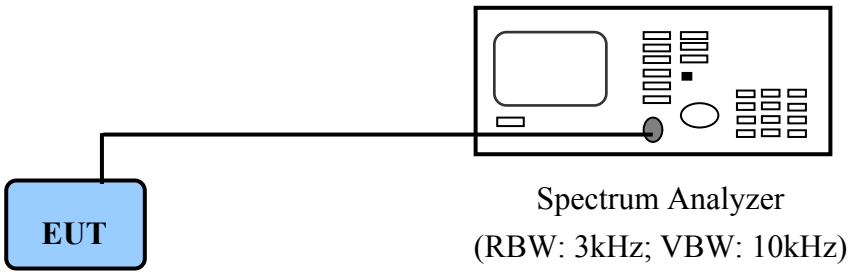
Radiated Emission					*Corrected Amplitude (dBμV/m)*		*Class B (3m)*		
Frequency (MHz)	*Ant. P.*	*Ant. H. (m)*	*Table ( )*	*Factors (dB)*	*Peak*	*Average*	*Limit (dBμV/m) Peak*	*Ave.*	*Margin (dB)*
2483.85	Hor	1.00	351	9.44	64.28	48.44	73.96	53.96	-5.52
2488.86	Hor	1.00	223	9.46	65.79	48.96	73.96	53.96	-5.00
2499.88	Hor	1.00	76	9.49	56.16	43.16	73.96	53.96	-10.80
2504.19	Hor	1.00	65	9.50	54.50	40.83	73.96	53.96	-13.13
2483.22	Ver	1.00	262	9.44	70.11	50.77	73.96	53.96	-3.19
2492.88	Ver	1.00	233	9.47	68.64	50.64	73.96	53.96	-3.32
2499.39	Ver	1.00	208	9.49	60.82	45.32	73.96	53.96	-8.64
2503.07	Ver	1.00	175	9.50	59.00	42.33	73.96	53.96	-11.63

VIII. Section 15.247(d): Power Spectral Density

8.1 Test Condition & Setup

The tests below are running with the EUT transmitter set at high power in TDD mode. The EUT is needed to force selection of output power level and channel number. While testing, the EUT was set to transmit continuously and to be tested by the contact manner with the spectrum analyzer.

8.2 Test Instruments Configuration



PC to control the EUT at maximal power output and channel number and set antenna kit

8.3 List of Test Instruments

Instrument Name	Model No.	Brand	Serial No.	Next time
Spectrum Analyzer	MS2665C	ANRITSU	6200175476	12/19/09

8.4 Test Result of Power spectral density

The following table shows a summary of the test results of the Power Spectral Density.

IEEE 802.11b

Channel	*Ppr (dBm)*	*Cable Loss (dB)*	*Ppq (dBm)*	*Limit (dB)*	*Margin (dB)*
CH 01	-1.20	1.00	-0.20	8.00	-8.20
CH 06	-2.37	1.00	-1.37	8.00	-9.37
CH 11	-0.85	1.00	0.15	8.00	8.15

IEEE 802.11g

Channel	*Ppr (dBm)*	*Cable Loss (dB)*	*Ppq (dBm)*	*Limit (dB)*	*Margin (dB)*
CH 01	-13.62	1.00	-12.62	8.00	-20.62
CH 06	-12.27	1.00	-11.27	8.00	-19.27
CH 11	-11.20	1.00	-10.20	8.00	-18.20

Note:

1. The following pages show the results of spectrum reading.
2. Ppr: spectrum read power density (using peak search mode),
   Ppq: actual peak power density in the spread spectrum band.
3. Ppq = Ppr + |Cable Loss|

Formula:

Total PPSD (Ppq) = 10 log (10^ (Ant#1 Ppr + cable loss / 10) + 10^ (Ant#2 Ppr + cable loss/ 10))

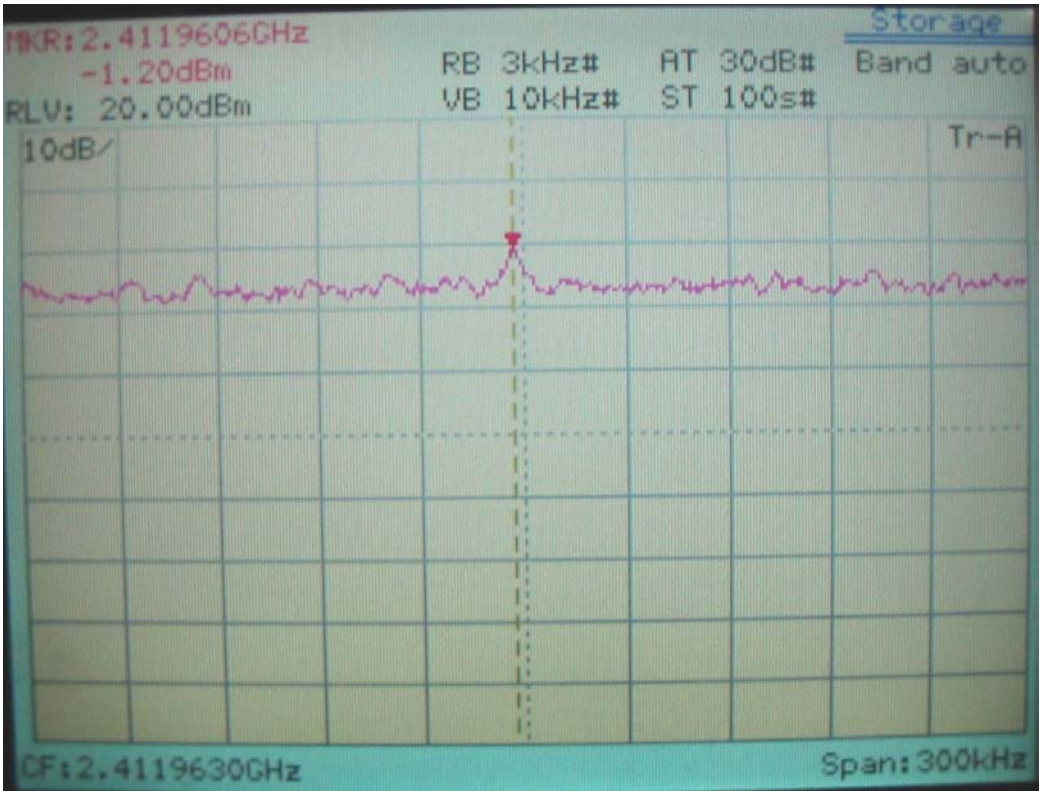
IEEE 802.11n 20M

Channel	*Ant#1 Ppr*	*Ant#2 Ppr*	*Cable Loss*	*Ppq*	*Limit*	*Margin*
	(dBm)		*(dB)*	*(dBm)*	*(dB)*	*(dB)*
CH 01/2412	-13.95	-14.03	1.00	-9.98	8.00	-17.98
CH 06/2437	-14.44	-14.05	1.00	-10.23	8.00	-18.23
CH 11/2462	-15.32	-15.32	1.00	-11.31	8.00	-19.31

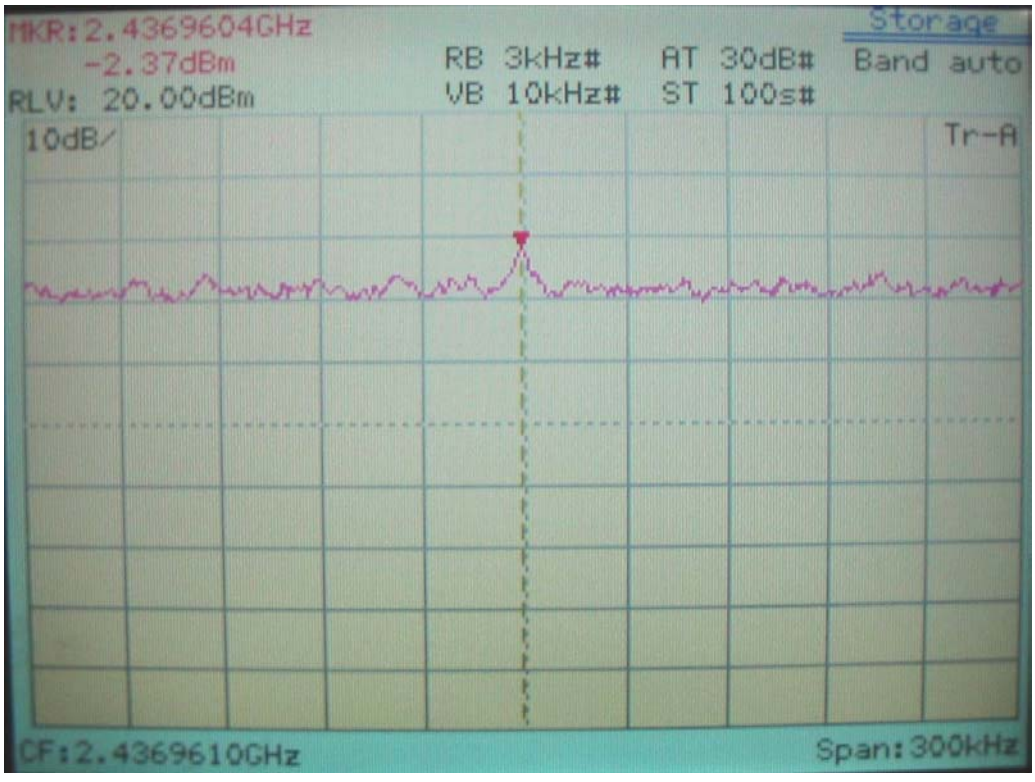
IEEE 802.11n 40M

Channel	*Ant#1 Ppr*	*Ant#2 Ppr*	*Cable Loss*	*Ppq*	*Limit*	*Margin*
	(dBm)		*(dB)*	*(dBm)*	*(dB)*	*(dB)*
CH 03/2412	-16.44	-16.39	1.00	-12.40	8.00	-20.40
CH 06/2437	-16.06	-15.55	1.00	-11.79	8.00	-19.79
CH 09/2452	-15.78	-14.88	1.00	-11.30	8.00	-19.30

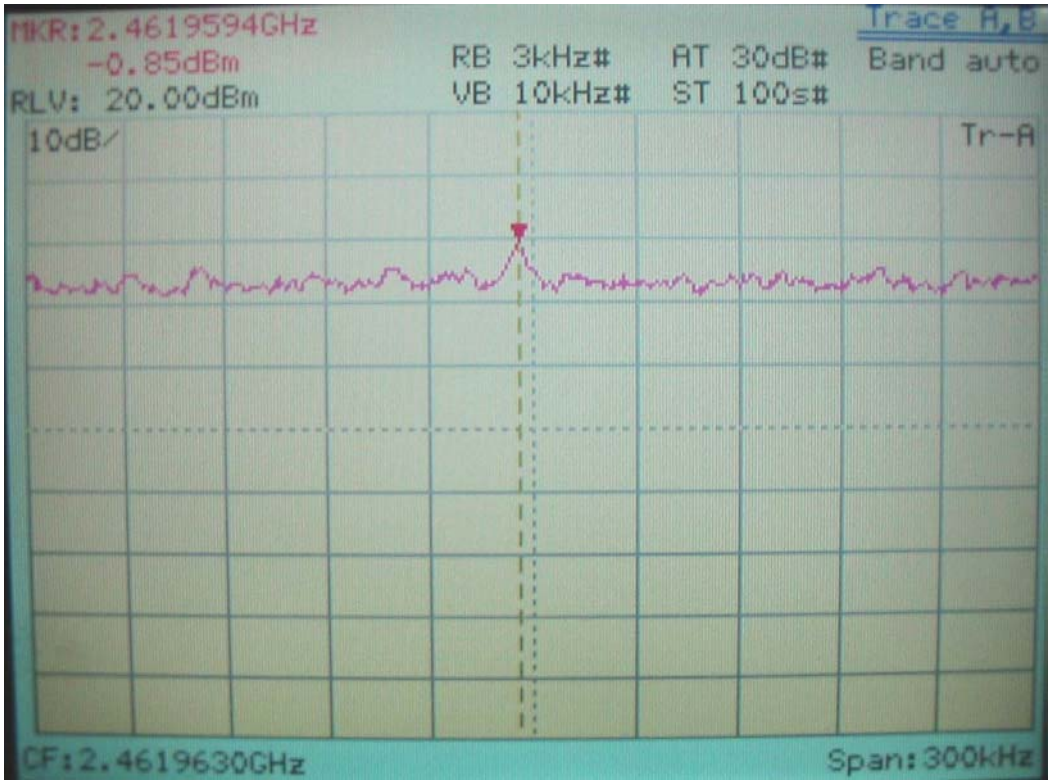
Power Spectral Density for IEEE 802.11b Channel 01, 2412MHz



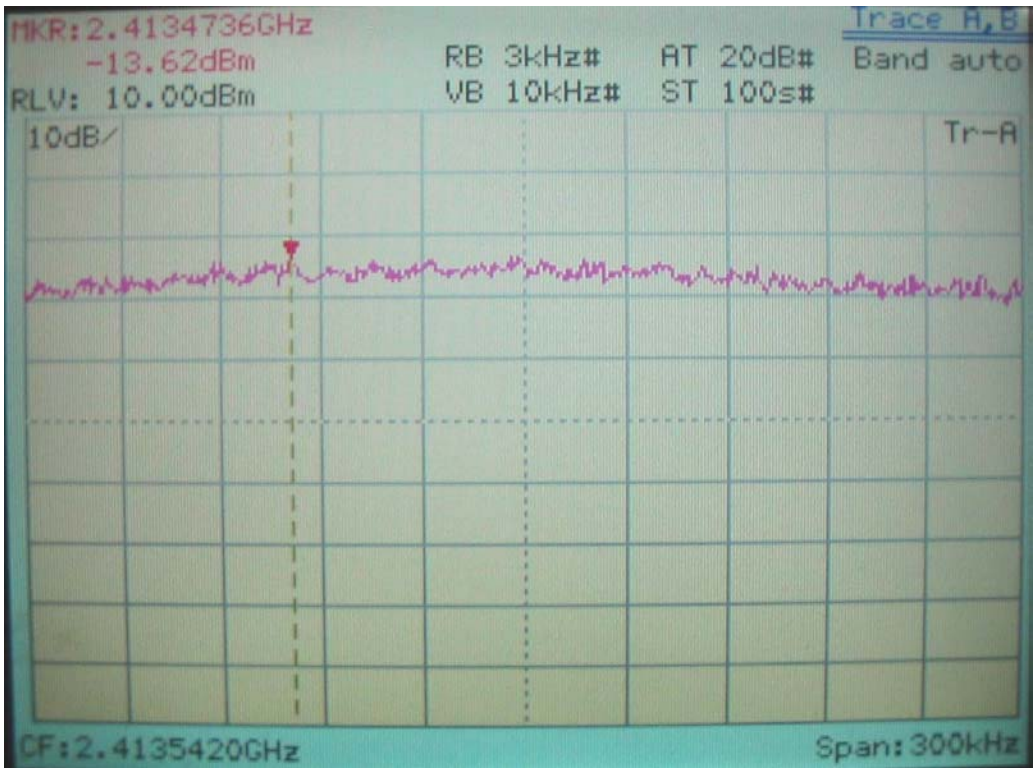
Power Spectral Density for IEEE 802.11b Channel 06, 2437MHz



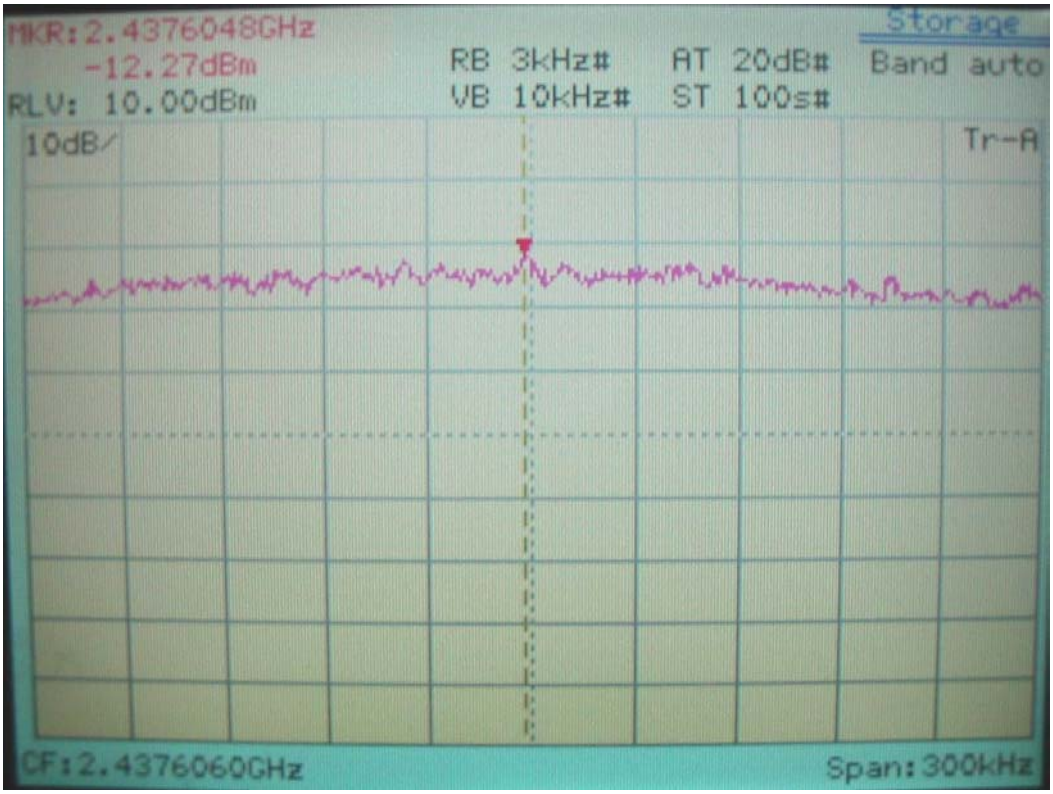
Power Spectral Density for IEEE 802.11b Channel 11, 2462MHz



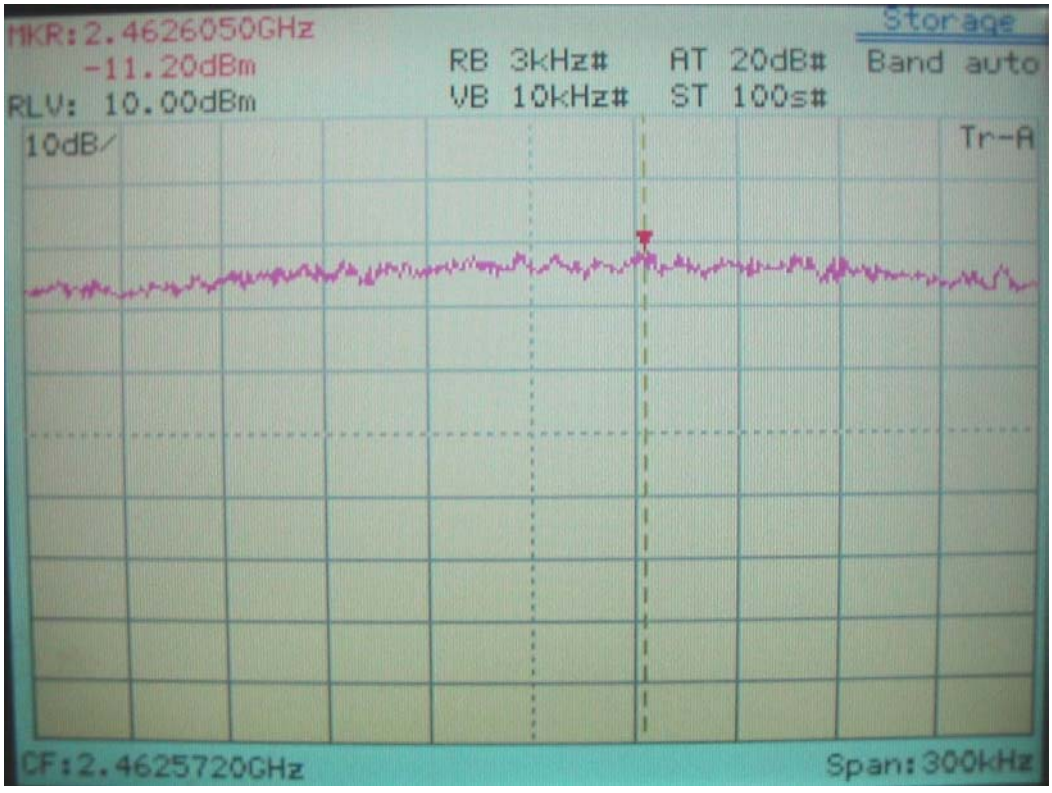
Power Spectral Density for IEEE 802.11g Channel 01, 2412MHz



Power Spectral Density for IEEE 802.11g Channel 06, 2437MHz

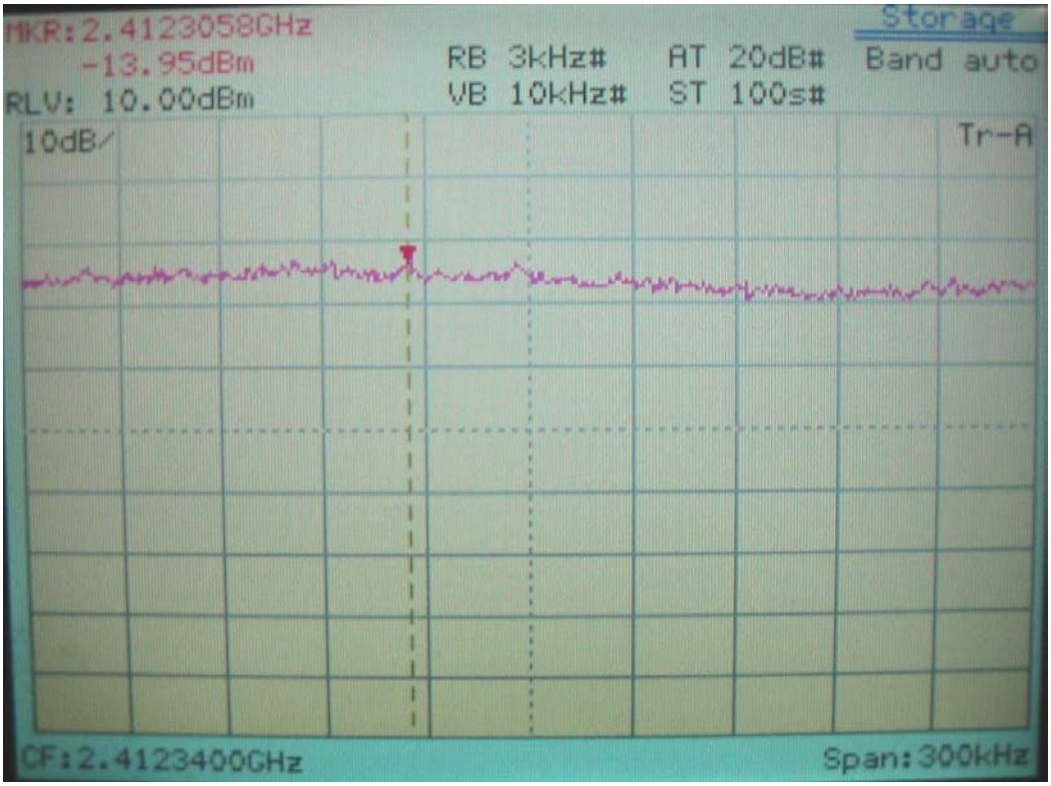


Power Spectral Density for IEEE 802.11g Channel 11, 2462MHz

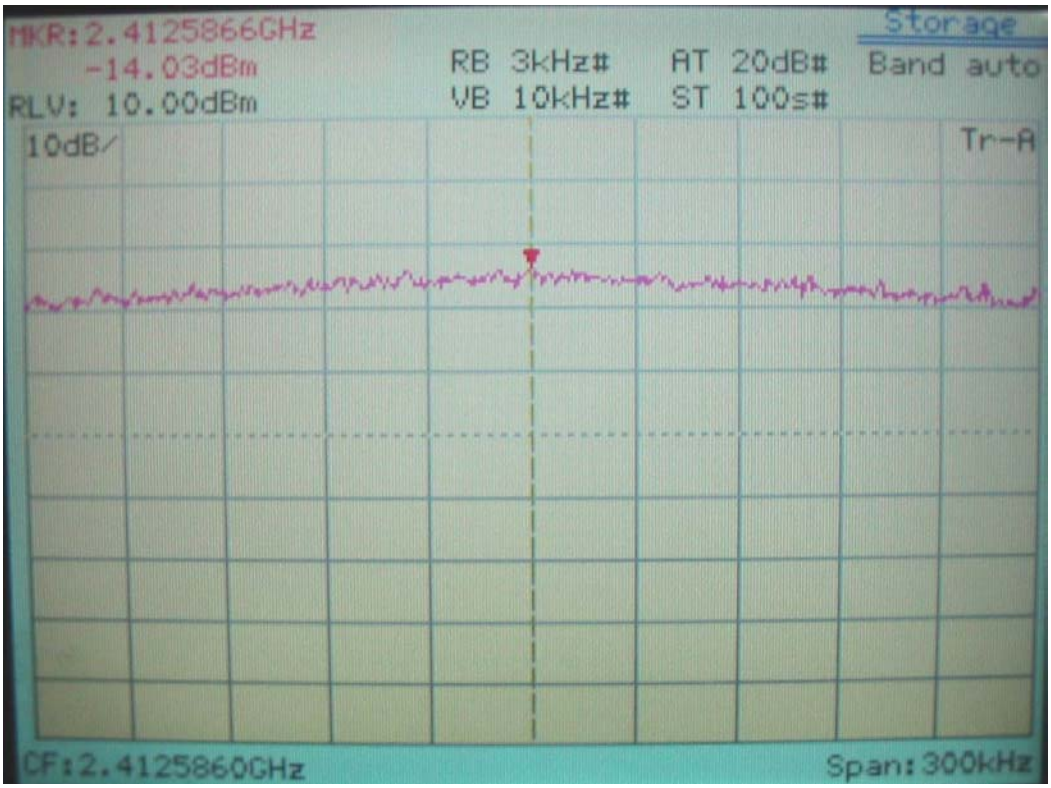


Power Spectral Density for IEEE 802.11n 20M Channel 01, 2412MHz

Ant #1



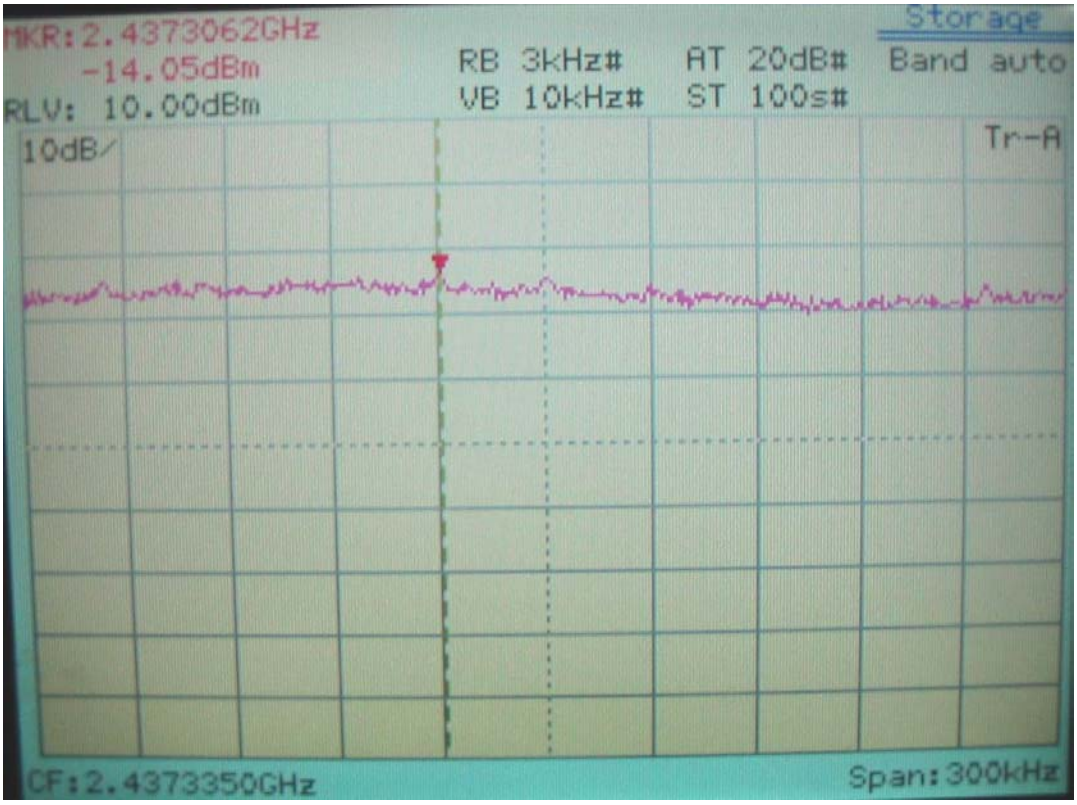
Ant #2



Power Spectral Density for IEEE 802.11n 20M Channel 06, 2437MHz

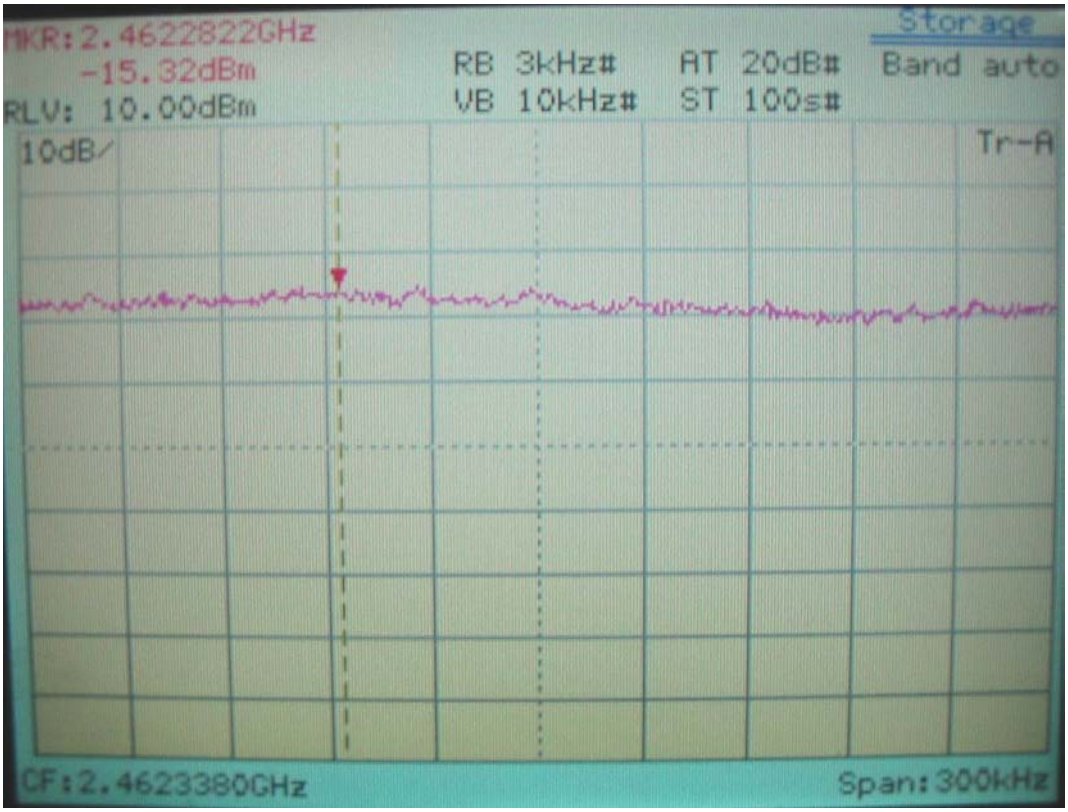
Ant #1

Ant #2

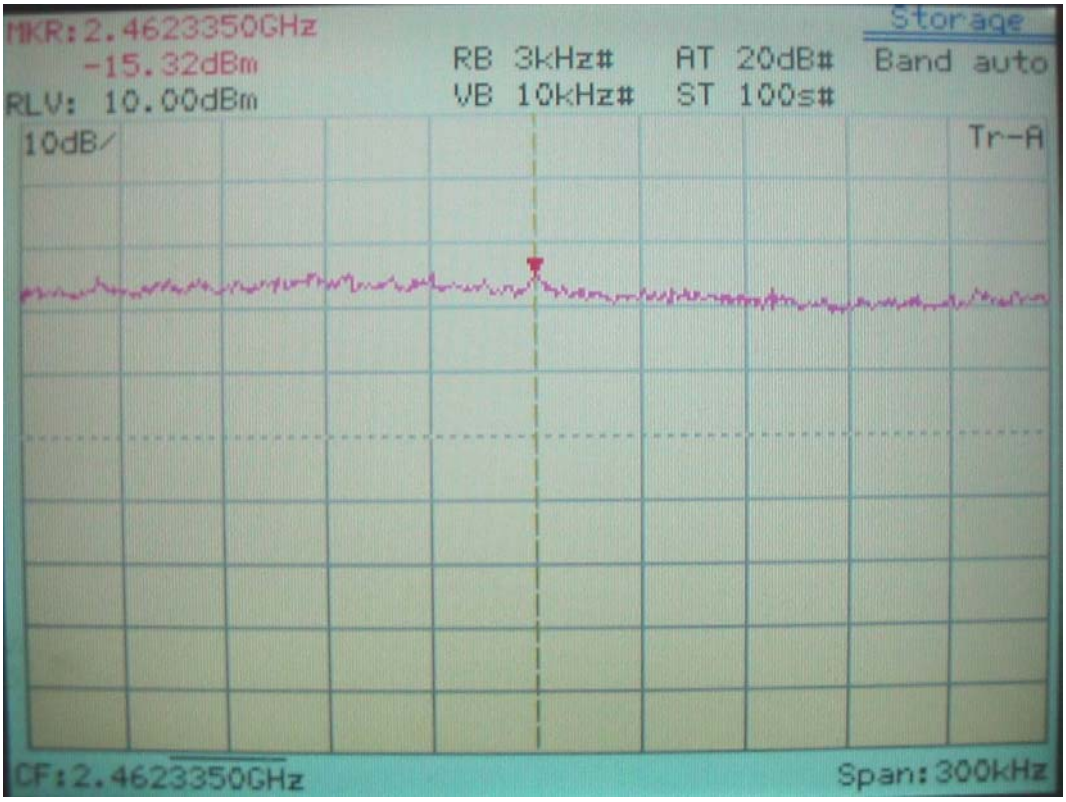


Power Spectral Density for IEEE 802.11n 20M Channel 11, 2462MHz

Ant #1

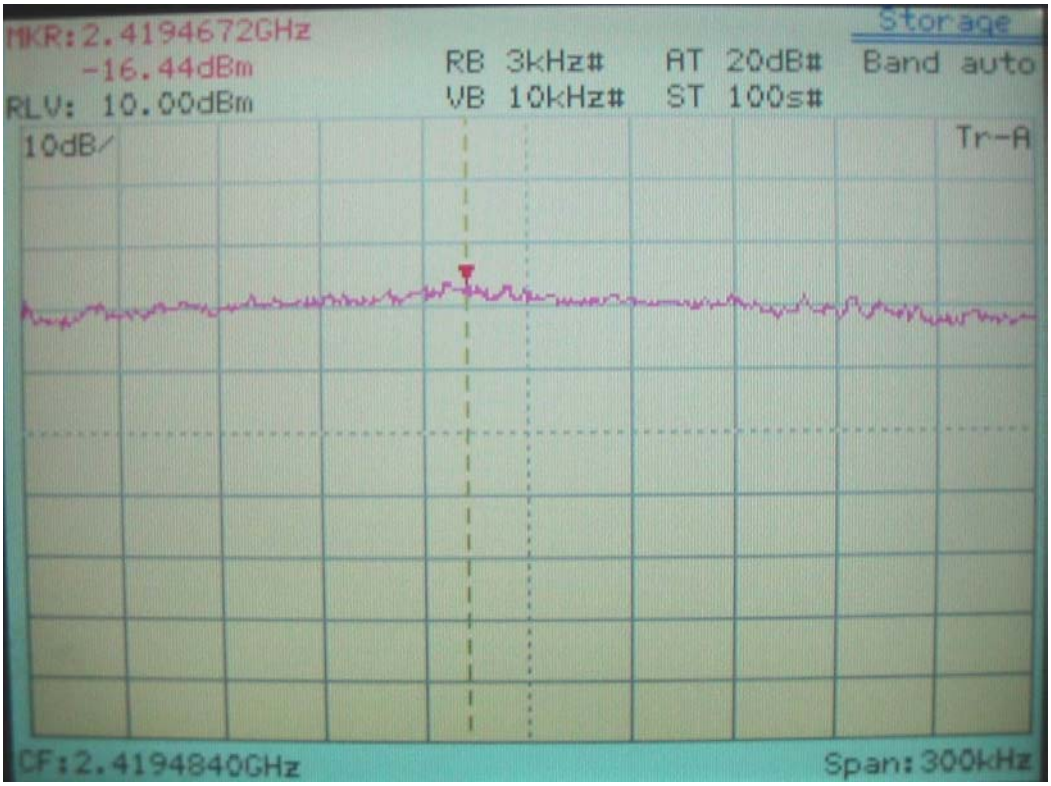


Ant #2

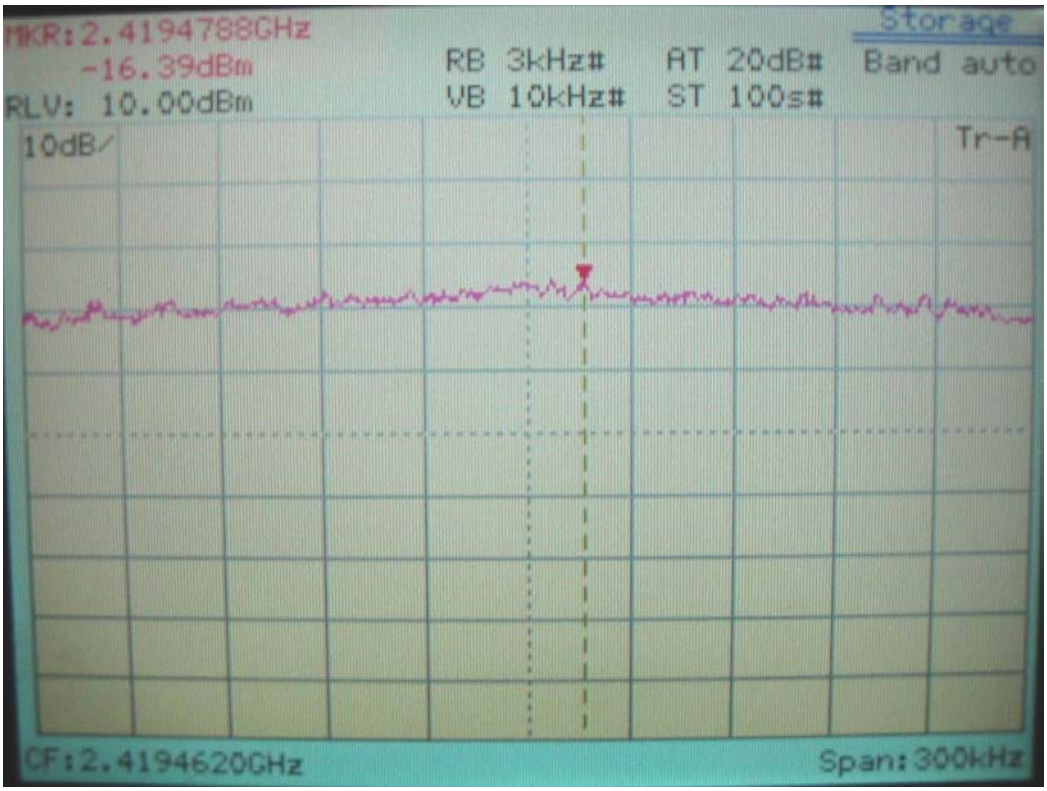


Power Spectral Density for IEEE 802.11n 40M Channel 03, 2422MHz

Ant #1

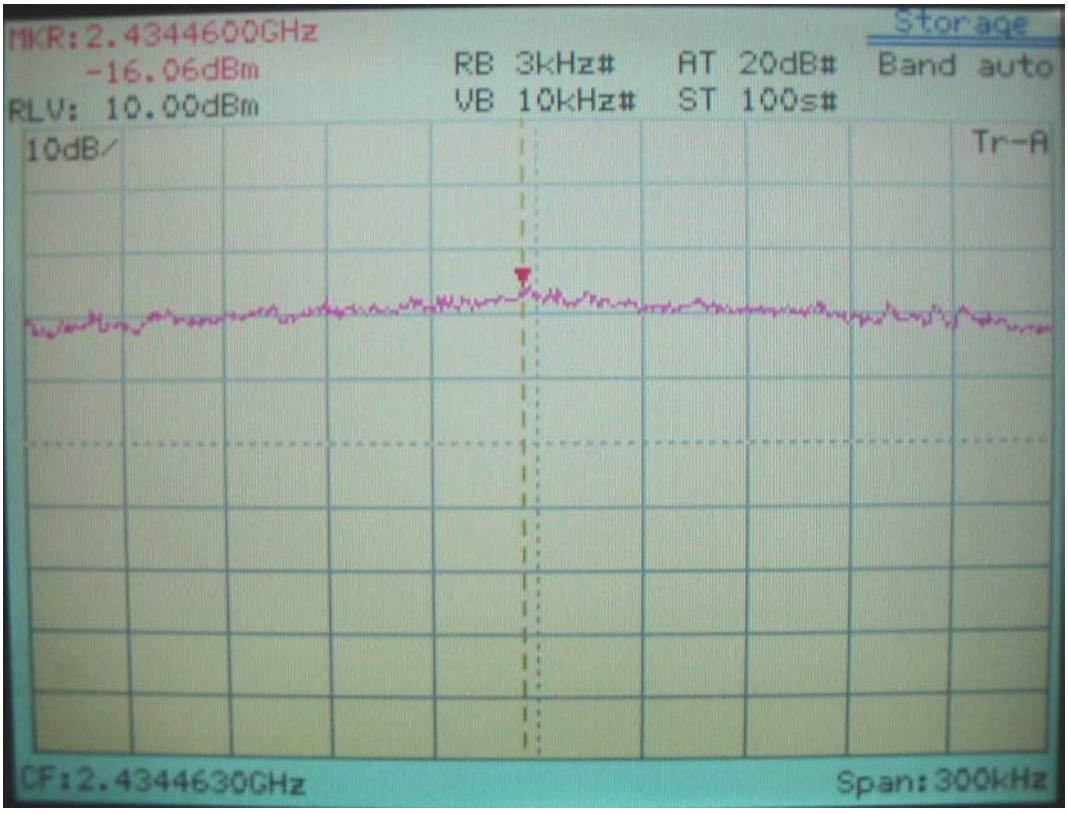


Ant #2

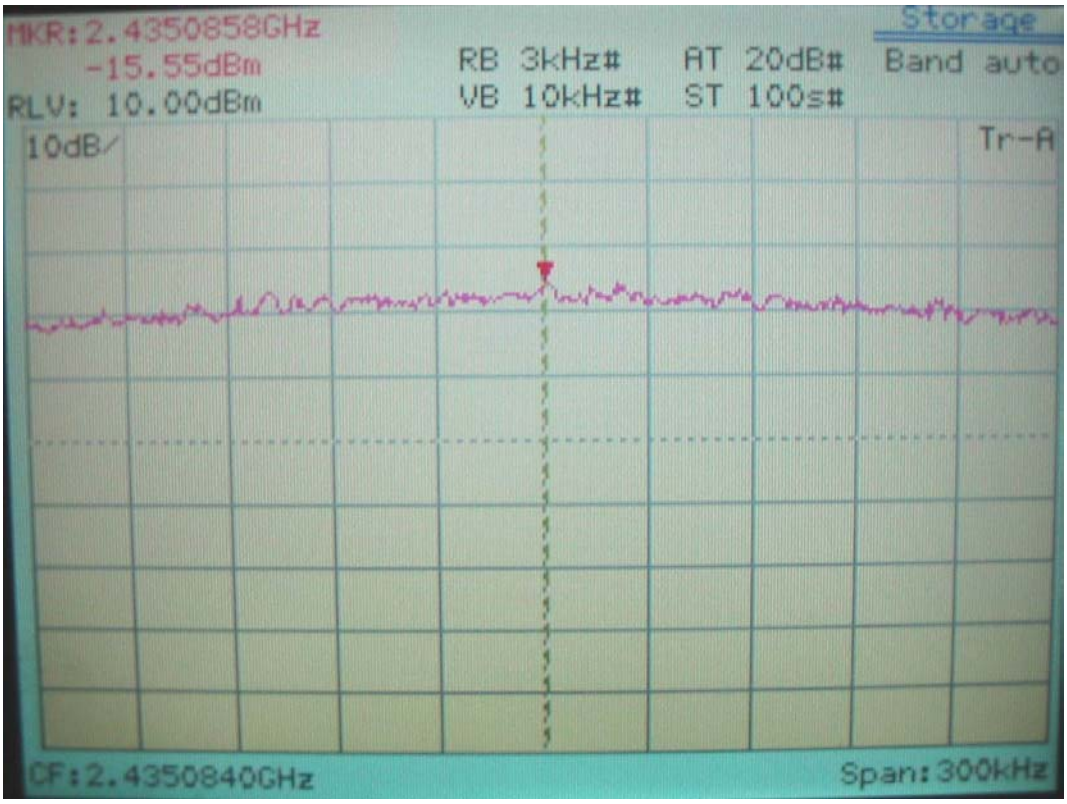


Power Spectral Density for IEEE 802.11n 40M Channel 06, 2437MHz

Ant #1

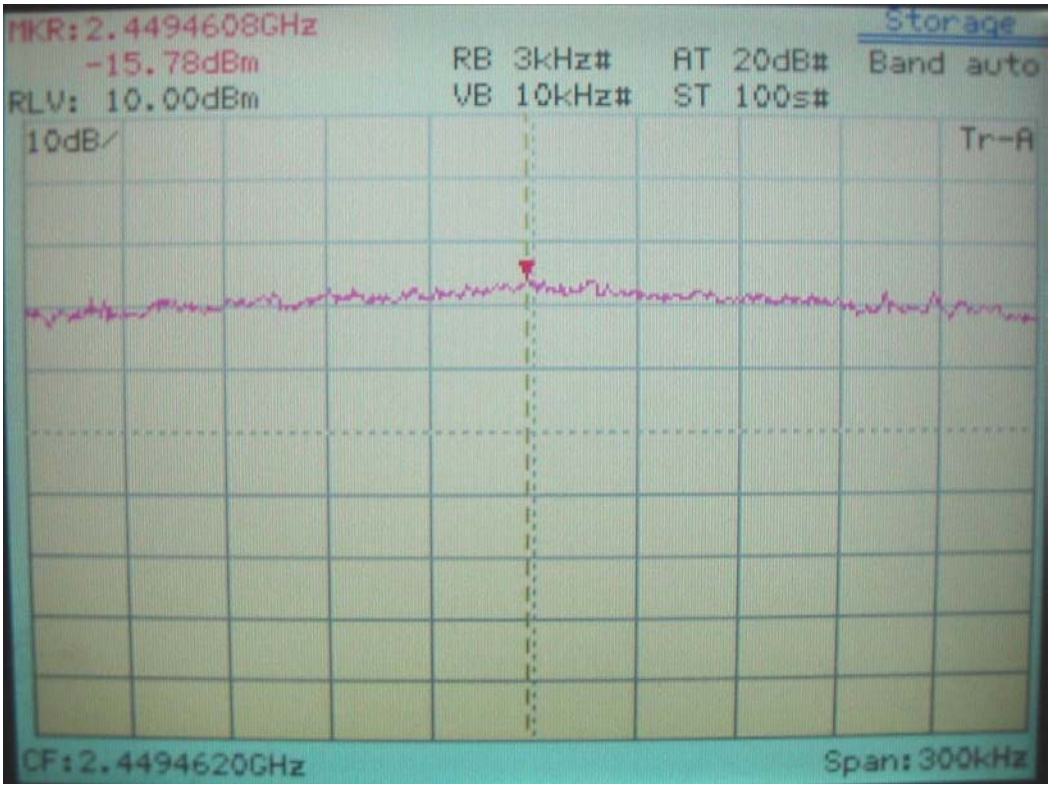


Ant #2



Power Spectral Density for IEEE 802.11n 40M Channel 09, 2452MHz

Ant #1



Ant #2