FCC PART 15.247
EMI MEASUREMENT AND TEST REPORT
For

AIKUN(CHINA) ELECTRONICS COMPANY LIMITED

A2 Building, Lianhe Industrial Park, Fengtang Road, Fuyong Town,
Shenzhen, China

FCC ID: RWCAT90H

March 15, 2013

This Report Concerns: Original Report	Equipment Type: TABLET PC
Test Engineer:	Anna Lv
Test Engineer of performing the tests:	Hans Hu
Report No.:	BST13011031YER-3
Receive EUT Date/Test Date:	March 04, 2013/ March 04, 2013- March 15, 2013
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1. GENERAL INFORMATION

1.1. Report information

This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that AIKUN(CHINA) ELECTRONICS COMPANY LIMITED approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that AIKUN(CHINA) ELECTRONICS COMPANY LIMITED in any way guarantees the later performance of the product/equipment.

The sample/s mentioned in this report is/are supplied by Applicant, AIKUN(CHINA) ELECTRONICS COMPANY LIMITED therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.

Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through AIKUN(CHINA) ELECTRONICS COMPANY LIMITED, unless the applicant has authorized AIKUN(CHINA) ELECTRONICS COMPANY LIMITED in writing to do so.

Test Facility -

The test site used to collect the radiated data is located on the address of
Global United Technology Service Co., Ltd
(FCC Registered Test Site Number: 600491) on
2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan District, Shenzhen, China 518102

The Test Site is constructed and calibrated to meet the FCC requirements.

1.2. Measurement Uncertainty

The reported uncertainty of measurement y ± U,where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2,providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	RF power,conducted	±0.16dB
3	Spurious emissions,conducted	±0.21dB
4	All emissions,radiated(<1G)	±4.68dB
5	All emissions,radiated(>1G)	±4.89dB
6	Temperature	±0.5°C
7	Humidity	±2%

2. PRODUCT DESCRIPTION

2.1. EUT Description

Applicant	:	AIKUN(CHINA) ELECTRONICS COMPANY LIMITED
Address	:	A2 Building, Lianhe Industrial Park, Fengtang Road, Fuyong Town, Shenzhen, China
Manufacturer	:	AIKUN(CHINA) ELECTRONICS COMPANY LIMITED
Address	:	A2 Building, Lianhe Industrial Park, Fengtang Road, Fuyong Town, Shenzhen, China
EUT Description	:	TABLET PC
Trade Name	:	AIKUN
Modulation	:	802.11b: DSSS(11/5.5/2/1Mbps) 802.11g: OFDM(54/48/36/24/18/12/9/6Mbps) 802.11n(20MHz): OFDM (up to 65 Mbps)
Wi-fi Frequency Band	:	IEEE 802.11b/g: 2412-2462MHz IEEE802.11n HT20: 2412-2462MHz
Number of Channels	:	IEEE 802.11b/g: 11 Channels IEEE802.11n HT20: 11 Channels
Model Number	:	AT90H, AT9, AT90, AT901HC, AT902HC, AT903, AT904, AT905, AT906, AT907, AT908, AT909, AT91H, AT92H, AT93HC, AT95G, AT96G, AT97, AT98HC, AT99H, AT910, AT920, AT930, AT950, AT960, AT970, AT971HC, AT972HC , AT973HC, AT975HC, AT976HC
Power Supply	:	DC 3.7V or DC 5V (Powered by 120V/60 Hz Adapter)
Battery information	:	DC 3.4-4.2V
Antenna gain	:	0dBi
Antenna type	:	PIFA

The series products, model name: AT90H, AT9, AT90, AT901HC, AT902HC, AT903, AT904, AT905, AT906, AT907, AT908, AT909, AT91H, AT92H, AT93HC, AT95G, AT96G, AT97, AT98HC, AT99H, AT910, AT920, AT930, AT950, AT960, AT970, AT971HC, AT972HC , AT973HC, AT975HC, AT976HC have the same circuit diagram,PCB layout, software, RF Module, Features and functionality. The differences are the model name, so, we select AT90H to test.

2.2. Block Diagram of EUT Configuration

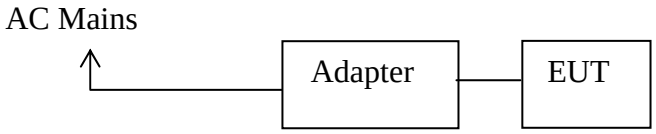


Figure 1 EUT SETUP

2.3. Support Equipment List

Table 2 Ancillary Equipment

Name	Model No	S/N	Manufacturer	Used (Y/N)
Switching Adapter Input: 100-240Vac, 50/60Hz, Max 0.6A Output: 5Vdc, 2A	SAPA05010US	--	--	*Y*

2.4. Test Conditions

Temperature: 23~25℃
Relative Humidity: 50~63 %

After the preliminary test, we found to emit the worst emissions and therefore had been tested under operating condition.
IEEE 802.11b:
Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 1Mbps data rate were chosen for full testing.
IEEE 802.11g:
Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6Mbps data rate were chosen for full testing.
IEEE 802.11n HT20:
Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6.5Mbps data rate were chosen for full testing.

3. TEST RESULTS SUMMARY

FCC 15 Subpart C,Paragraph 15.247

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.203	Antenna Requirement	PASS
§15.207 (a)	Conducted Emissions	PASS
§15.247(d)	Spurious Emissions at Antenna Port	PASS
§15.205	Restricted Bands	PASS
§15.209, §15.205, §15.247(d)	Spurious Emissions	PASS
§15.247 (a)(2)	6 dB Bandwidth	PASS
§15.247(b)(3)	Maximum Peak Output Power	PASS
§15.247(d)	100kHz Bandwidth of Frequency Band Edge	PASS
§15.247(e)	Power Spectral Density	PASS

Modifications

No modification was made.

4. TEST EQUIPMENT USED

EQUIPMENT/FACILITIES	MANUFACTURER	MODEL	SERIAL NO.	DATE OF CAL.	CAL. INTERVAL
3m Semi-Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	Mar. 30 2012	1 Year
Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	Jul. 04 2012	1 Year
BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	Feb. 25 2013	1 Year
Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS208	June 30 2012	1 Year
Horn Antenna	ETS-LINDGREN	3160	GTS217	Mar. 30 2012	1 Year
EMI Test Software	AUDIX	E3	N/A	N/A	N/A
Cable	Resenberger	N/A	NO.1	Apr. 6, 2012	1 Year
Cable	SCHWARZBECK	N/A	NO.2	Apr. 6, 2012	1 Year
Cable	SCHWARZBECK	N/A	NO.3	Apr. 6, 2012	1 Year
Amplifier(100kHz-3GHz)	HP	8347A	GTS204	Jul. 04 2012	1 Year
Amplifier(2GHz-20GHz)	HP	8349B	GTS206	Jul. 04 2012	1 Year
Amplifier (18-26GHz)	R&S	AFS33-18002 650-30-8P-44	GTS218	June 30 2012	1 Year
Band filter	Amindeon	82346	GTS219	Mar. 31 2012	1 Year
Active Loop Antenna	Beijing Daze	ZN30900A	GTS215	Mar. 31 2012	1 Year
Power Meter	R&S	NRVS	GTS216	Apr. 6, 2012	1 Year
Power Sensor	R&S	NRV-Z33	GTS220	Apr. 6, 2012	1 Year
Shielding Room	ZhongYu Electron	7.0(L)x3.0(W)x3.0(H)	GTS264	Sep. 08 2012	1 Year
EMI Test Receiver	R&S	ESCS30	GTS223	Jul. 04 2012	1 Year
10dB Pulse Limita	R&S	N/A	GTS224	Jul. 04 2012	1 Year
Coaxial Switch	ANRITSU CORP	MP59B	GTS225	Jul. 04 2012	1 Year
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	GTS226	Jul. 04 2012	1 Year
Coaxial Cable	SCHWARZBECK	N/A	NO.4	Apr. 6, 2012	1 Year
EMI Test Software	AUDIX	E3	N/A	N/A	N/A
Spectrum analyzer	agilent	E4440A	GTS251	N/A	N/A

5. §15.203 - ANTENNA REQUIREMENT

5.1. Standard Applicable

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

a. Antenna must be permanently attached to the unit.
b. Antenna must use a unique type of connector to attach to the EUT.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

And according to FCC 47 CFR section 15.247 (b), if the transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.2. Antenna Connector Construction

The antenna used for this product is a PIFA antenna. The antenna is permanently attached. Refer to the product photo.

5.3. Result

Compliance

6. §15.207 - CONDUCTED EMISSIONS

6.1. Applicable Standard

The specification used was with the FCC Part 15.207 limits.

6.2. Test Procedure

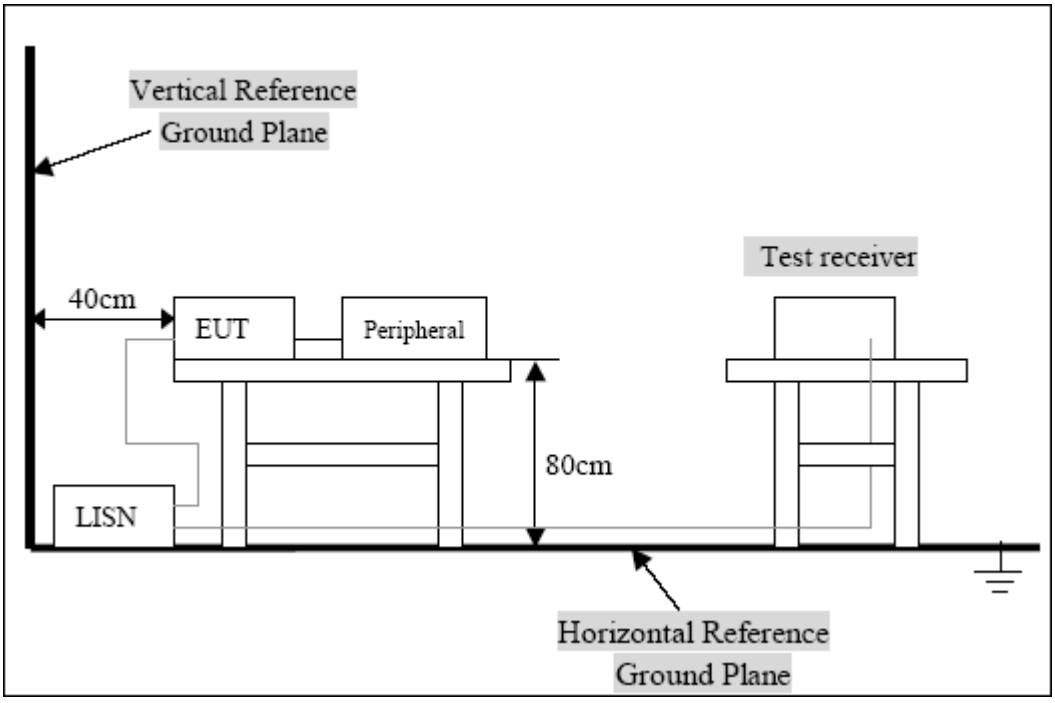
During the conducted emission test, the EUT was connected to the outlet of the LISN. Maximizing procedure was performed on the six (6) highest emissions of the EUT. All data was recorded in the Quasi-peak and average detection mode.

6.3. Conducted Power line Emission Limits

FCC Part 15 Paragraph 15.207 (dBuV)		
Frequency Range (MHz)	Class A QP/AV	Class B QP/AV
0.15-0.5	79/66	65-56/56-46
0.5-5.0	73/60	56-46
5.0-3.0	73/60	60-50

Note: In the above table, the tighter limit applies at the band edges.

6.4. Block Diagram of Test Setup



6.5. Conducted Power Line Test Result

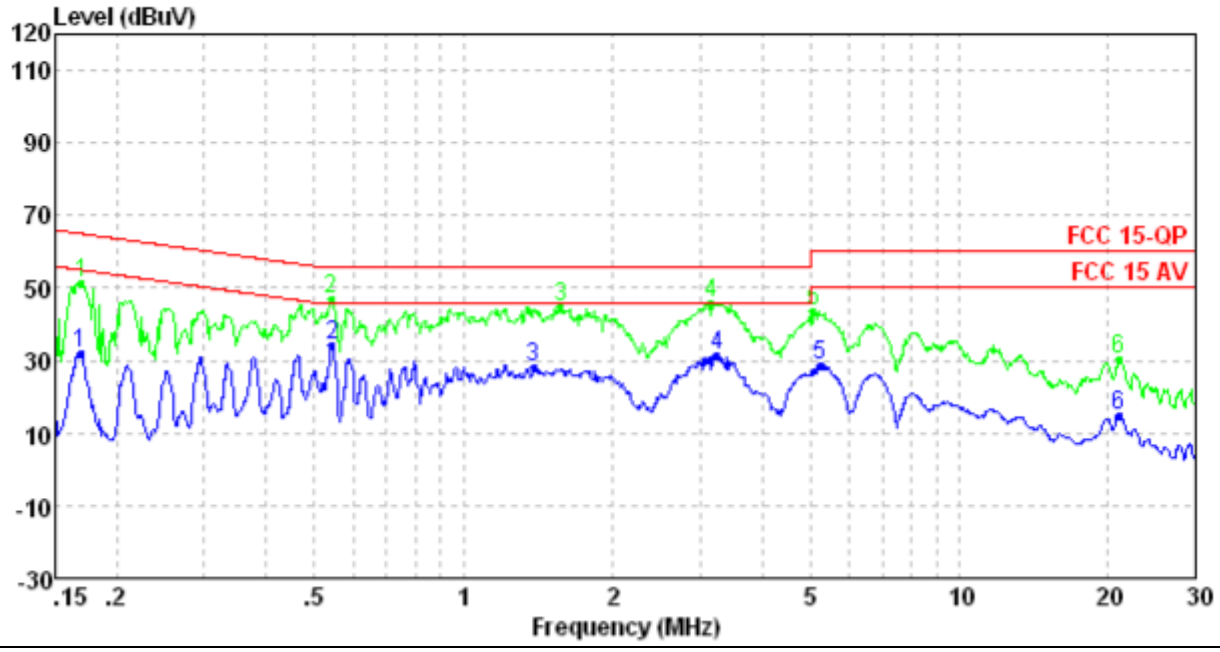
Pass.

The worst test mode: Wi-Fi TX 802.11b 2412MHz

L line

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV)	(dBµV)	(dB)	
0.17	21.76	10.43	32.19	55.03	-22.84	AVG
0.54	23.68	10.42	34.10	46.00	-11.90	AVG
1.39	17.86	10.40	28.26	46.00	-17.74	AVG
3.24	20.97	10.37	31.34	46.00	-14.66	AVG
5.25	18.38	10.38	28.76	50.00	-21.24	AVG
21.04	4.69	10.29	14.98	50.00	-35.02	AVG
0.17	40.79	10.43	51.22	64.99	-13.77	QP
0.54	36.34	10.42	46.76	56.00	-9.24	QP
1.57	34.22	10.40	44.62	56.00	-11.38	QP
3.16	35.49	10.37	45.86	56.00	-10.14	QP
5.08	33.23	10.38	43.61	60.00	-16.39	QP
21.04	19.94	10.29	30.23	60.00	-29.77	QP

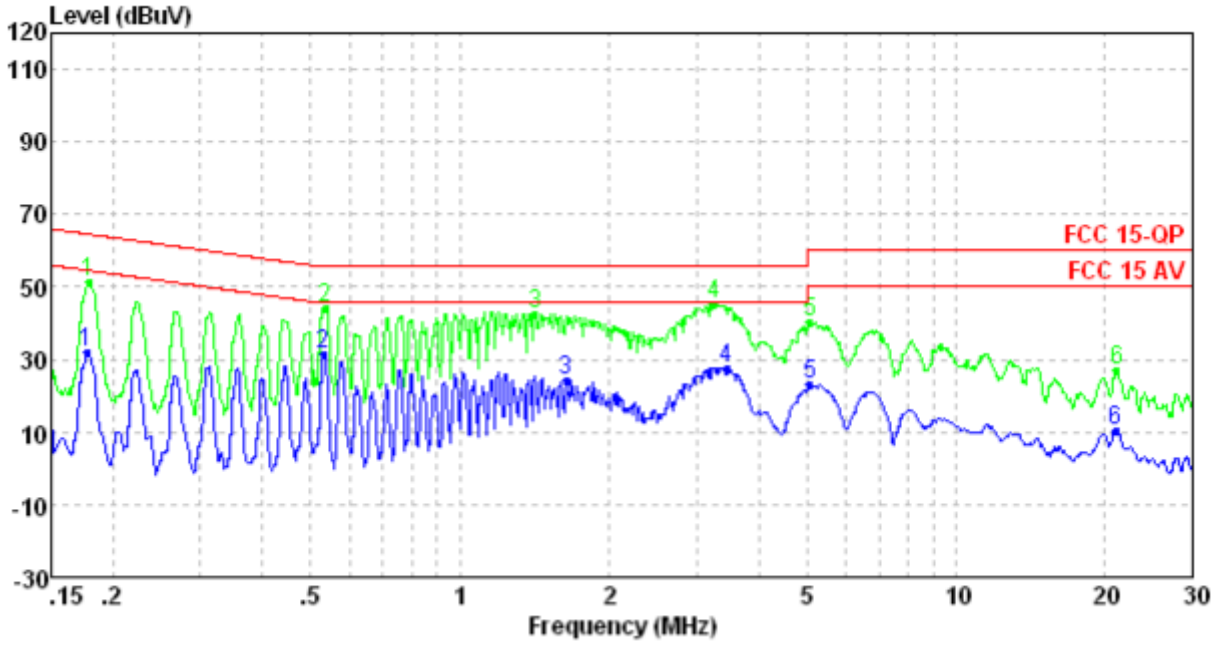
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



N line

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV)	(dBµV)	(dB)	
0.18	21.29	10.43	31.72	54.64	-22.92	AVG
0.53	20.75	10.42	31.17	46.00	-14.83	AVG
1.64	14.08	10.40	24.48	46.00	-21.52	AVG
3.45	17.47	10.37	27.84	46.00	-18.16	AVG
5.08	12.98	10.38	23.36	50.00	-26.64	AVG
21.04	0.33	10.29	10.62	50.00	-39.38	AVG
0.18	40.83	10.43	51.26	64.55	-13.29	QP
0.53	33.59	10.42	44.01	56.00	-11.99	QP
1.42	32.28	10.40	42.68	56.00	-13.32	QP
3.24	34.99	10.37	45.36	56.00	-10.64	QP
5.08	29.86	10.38	40.24	60.00	-19.76	QP
21.15	16.97	10.29	27.26	60.00	-32.74	QP

Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



7. §15.209, §15.205, §15.247(D) - Spurious Emissions

7.1. Test Equipment

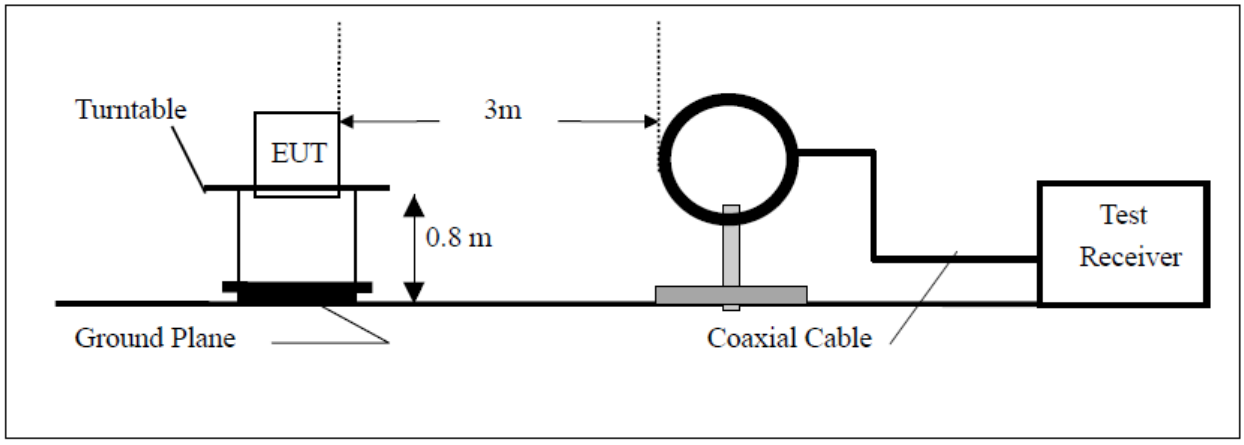
Please refer to section 5 this report.

7.2. Test Procedure

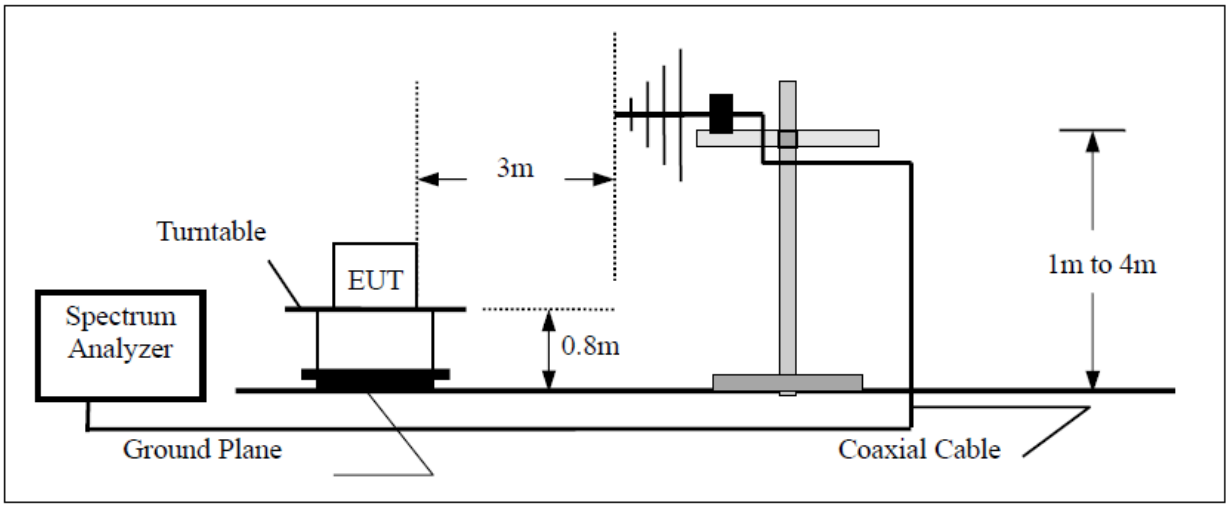
The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level.
Calibrated Loop antenna is used as receiving antenna for frequencies below 30MHz, Calibrated Bilog antenna is used as receiving antenna for frequencies between 30 MHz and 1 GHz, Calibrated Horn antenna is used as receiving antenna for frequencies above 1000MHz. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated emission measurement.
The bandwidth of test receiver is set at 9kHz in below 30MHz. and set at 120kHz in 30-1000MHz, and 1MHz in above 1000MHz.
The frequency range from 9kHz to 25GHz is checked.
The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Peak detector and Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.
Through three orthogonal axes to determine which attitude and equipment arrangement produces the highest emission relative to the limit. And X direction is worst mode

7.3. Radiated Test Setup

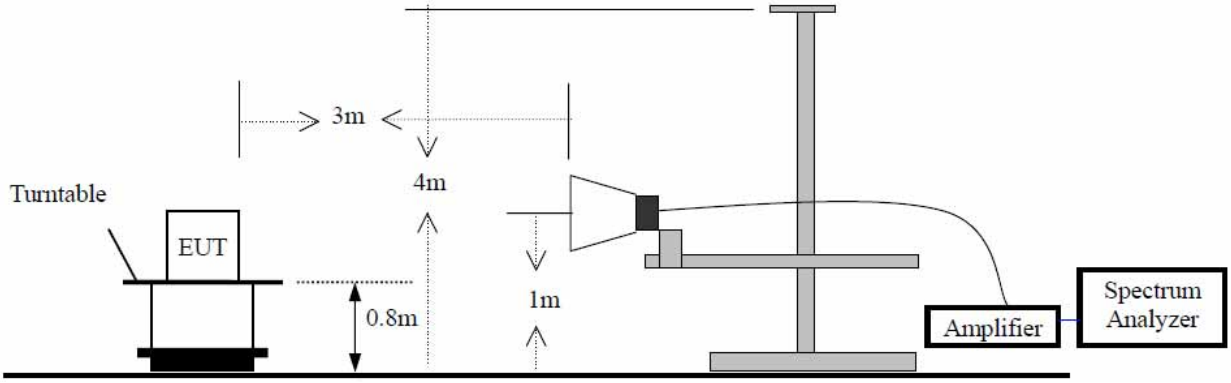
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



7.4. Radiated Emission Limit

Frequency (MHz)	Limit			
	Field Strength of Quasi-peak Value (microvolts/m)	Field Strength of Quasi-peak Value (dBμV/m)	Measurement distance (m)	The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.
0.009 - 0.490	2400/F(kHz)	/	300	
0.490 - 1.705	24000/F(kHz)	/	30	
1.705-30	30	29.5	30	
30 - 88	100	40	3	
88 - 216	150	43.5	3	
216 - 960	200	46	3	
Above 960	500	54	3	

Note: (1) RF Voltage (dBuV)=20 log Voltage(uV)
(2) In the Above Table,the tighter limit applies at the band edges.
(3) Distaqnce refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

7.5. Radiated Emission Test Result

According to the data below, the FCC Part 15.205, 15.209 and 15.247 standards, and had the worst margin of:

-5.41 dB at 453.89MHz in the Horizontal polarization, with 9KHz to 25 GHz, 3Meters Note: this EUT was tested in 3 orthogonal positions and the worst case position data was reported.

From 9KHz to 30MHz: Conclusion: PASS

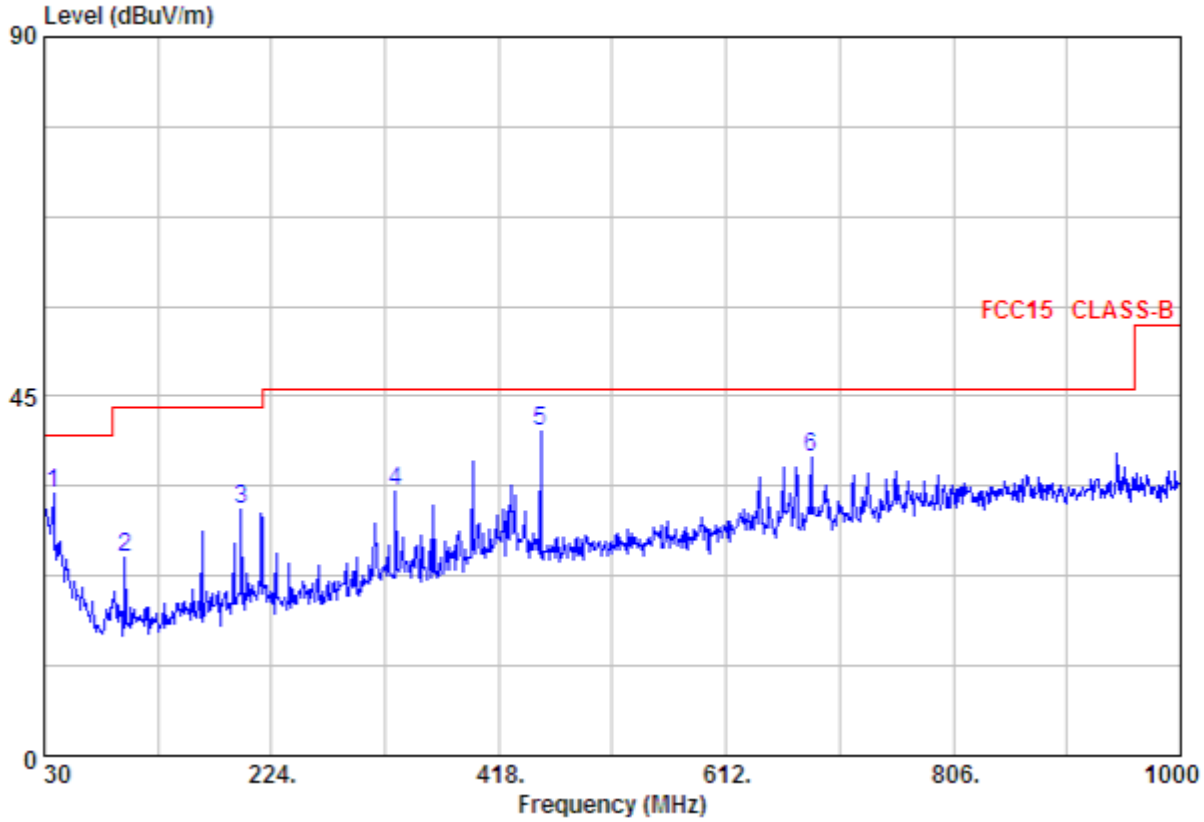
Note: The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

For below 1000MHz

The worst test mode: WiFi Tx 802.11b 2412MHz

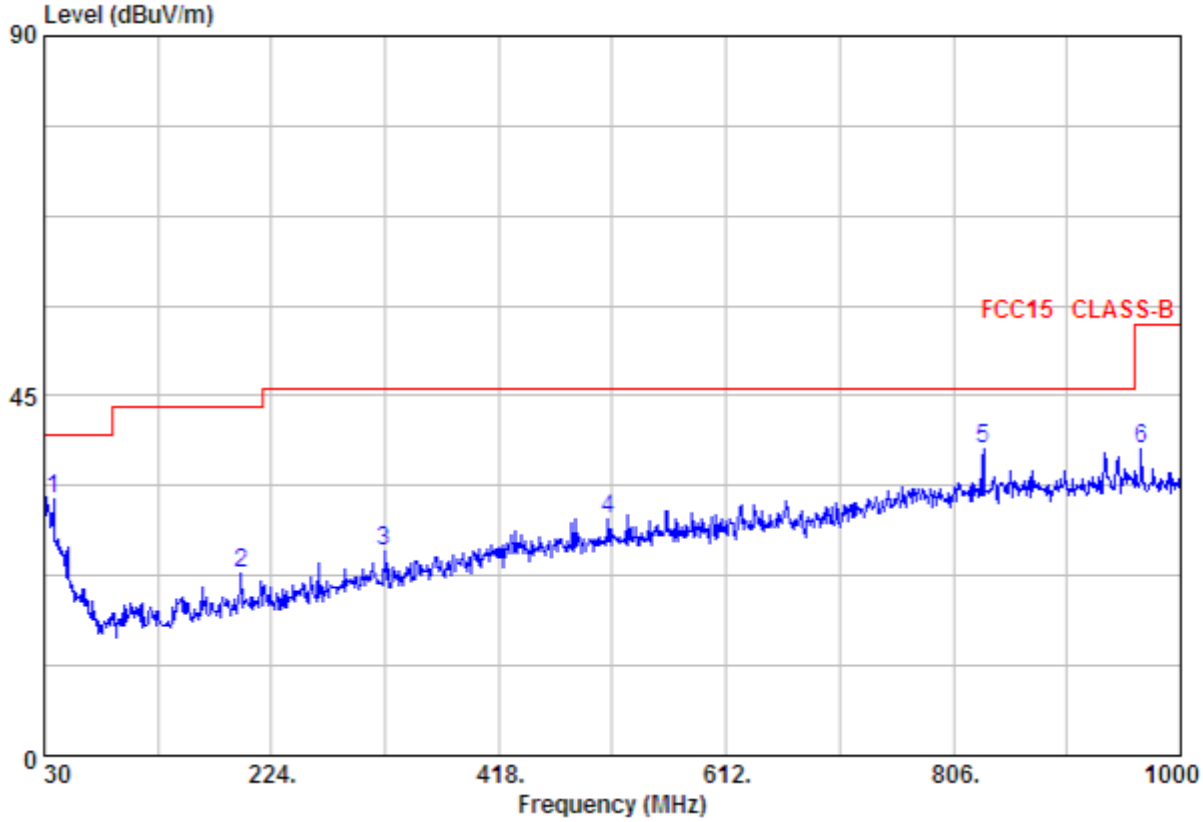
Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Horizontal



Frequency (MHz)	Meter Reading (dBµV)	Factor (dB)	Emission Level (dBµV/m)	Limit (dBµV)	Margin (dB)	Detector
37.76	22.51	10.24	32.75	40.00	-7.25	QP
98.87	13.44	11.26	24.70	43.50	-18.80	QP
197.81	15.15	15.58	30.73	43.50	-12.77	QP
329.73	14.67	18.45	33.12	46.00	-12.88	QP
453.89	28.23	12.36	40.59	46.00	-5.41	QP
684.75	24.9	12.49	37.39	46.00	-8.61	QP

Vertical



Frequency (MHz)	Meter Reading (dBµV)	Factor (dB)	Emission Level (dBµV/m)	Limit (dBµV)	Margin (dB)	Detector
37.76	26.01	6.16	32.17	40.00	-7.83	QP
197.81	12.81	9.90	22.71	43.50	-20.79	QP
320.03	13.84	11.86	25.70	46.00	-20.30	QP
511.12	16.88	12.73	29.61	46.00	-16.39	QP
832.19	26.33	11.92	38.25	46.00	-7.25	QP
966.05	25.72	12.66	38.38	54.00	-15.62	QP

For 1000MHz-25000MHz Spurious

Test mode 802.11b

Frequency MHz	Detector	Meter Reading dBuV	Polar H / V	Antenna Loss dB	Cable loss dB	Amplifier dB	Correction Amplitude dBuV/m	Limit dBuV/m	Margin dB
Low Channel (2412MHz)									
4824	PK	44.42	V	34.1	5.2	33.0	50.72	74.00	-23.28
4824	PK	45.17	H	34.1	5.2	33.0	51.47	74.00	-22.53
7236	PK	49.32	V	37.4	6.1	33.5	59.32	74.00	-14.68
7236	PK	51.84	H	37.4	6.1	33.5	61.84	74.00	-12.16
4824	AV	36.33	V	34.1	5.2	33.0	42.63	54.00	-11.37
4824	AV	37.07	H	34.1	5.2	33.0	43.37	54.00	-10.63
7236	AV	36.26	V	37.4	6.1	33.5	46.26	54.00	-7.74
7236	AV	38.2	H	37.4	6.1	33.5	48.20	54.00	-5.80
Middle Channel (2437MHz)									
4874	PK	43.96	V	34.1	5.2	33.0	50.26	74.00	-23.74
4874	PK	44.17	H	34.1	5.2	33.0	50.47	74.00	-23.53
7311	PK	49.56	V	37.4	6.1	33.5	59.56	74.00	-14.44
7311	PK	51.25	H	37.4	6.1	33.5	61.25	74.00	-12.75
4874	AV	36.33	V	34.1	5.2	33.0	42.63	54.00	-11.37
4874	AV	36.75	H	34.1	5.2	33.0	43.05	54.00	-10.95
7311	AV	35.26	V	37.4	6.1	33.5	45.26	54.00	-8.74
7311	AV	37.75	H	37.4	6.1	33.5	47.75	54.00	-6.25
HighChannel (2462MHz)									
4924	PK	43.6	V	34.1	5.2	33.0	49.90	74.00	-24.10
4924	PK	42.76	H	34.1	5.2	33.0	49.06	74.00	-24.94
7386	PK	39.29	V	37.4	6.1	33.5	49.29	74.00	-24.71
7386	PK	40.01	H	37.4	6.1	33.5	50.01	74.00	-23.99
4924	AV	35.52	V	34.1	5.2	33.0	41.82	54.00	-12.18
4924	AV	35.63	H	34.1	5.2	33.0	41.93	54.00	-12.07
7386	AV	35.28	V	37.4	6.1	33.5	45.28	54.00	-8.72
7386	AV	36.31	H	37.4	6.1	33.5	46.31	54.00	-7.69

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. Level = Meter Reading + Antenna Loss + Cable loss - Amplifier.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Test mode 802.11g

Frequency MHz	Detector	Meter Reading dBuV	Polar H / V	Antenna Loss dB	Cable loss dB	Amplifier dB	Correction Amplitude dBuV/m	Limit dBuV/m	Margin dB
Low Channel (2412MHz)									
4824	PK	46.16	V	34.1	5.2	33.0	52.46	74.00	-21.54
4824	PK	46.75	H	34.1	5.2	33.0	53.05	74.00	-20.95
7236	PK	45.37	V	37.4	6.1	33.5	55.37	74.00	-18.63
7236	PK	46.25	H	37.4	6.1	33.5	56.25	74.00	-17.75
4824	AV	36.54	V	34.1	5.2	33.0	42.84	54.00	-11.16
4824	AV	36.96	H	34.1	5.2	33.0	43.26	54.00	-10.74
7236	AV	37.53	V	37.4	6.1	33.5	47.53	54.00	-6.47
7236	AV	37.84	H	37.4	6.1	33.5	47.84	54.00	-6.16
Middle Channel (2437MHz)									
4874	PK	46.93	V	34.1	5.2	33.0	53.23	74.00	-20.77
4874	PK	47.52	H	34.1	5.2	33.0	53.82	74.00	-20.18
7311	PK	47.17	V	37.4	6.1	33.5	57.17	74.00	-16.83
7311	PK	48.85	H	37.4	6.1	33.5	58.85	74.00	-15.15
4874	AV	37.17	V	34.1	5.2	33.0	43.47	54.00	-10.53
4874	AV	37.39	H	34.1	5.2	33.0	43.69	54.00	-10.31
7311	AV	36.83	V	37.4	6.1	33.5	46.83	54.00	-7.17
7311	AV	37.39	H	37.4	6.1	33.5	47.39	54.00	-6.61
HighChannel (2462MHz)									
4924	PK	46.64	V	34.1	5.2	33.0	52.94	74.00	-21.06
4924	PK	46.79	H	34.1	5.2	33.0	53.09	74.00	-20.91
7386	PK	49.16	V	37.4	6.1	33.5	59.16	74.00	-14.84
7386	PK	50.03	H	37.4	6.1	33.5	60.03	74.00	-13.97
4924	AV	36.28	V	34.1	5.2	33.0	42.58	54.00	-11.42
4924	AV	37.37	H	34.1	5.2	33.0	43.67	54.00	-10.33
7386	AV	38.52	V	37.4	6.1	33.5	48.52	54.00	-5.48
7386	AV	38.98	H	37.4	6.1	33.5	48.98	54.00	-5.02

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. Level = Meter Reading + Antenna Loss + Cable loss - Amplifier.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Test mode 802.11n(H20)

Frequency MHz	Detector	Meter Reading dBuV	Polar H / V	Antenna Loss dB	Cable loss dB	Amplifier dB	Correction Amplitude dBuV/m	Limit dBuV/m	Margin dB
Low Channel (2412MHz)									
4824	PK	46.43	V	34.1	5.2	33.0	52.73	74.00	-21.27
4824	PK	46.91	H	34.1	5.2	33.0	53.21	74.00	-20.79
7236	PK	49.84	V	37.4	6.1	33.5	59.84	74.00	-14.16
7236	PK	49.9	H	37.4	6.1	33.5	59.90	74.00	-14.1
4824	AV	36.28	V	34.1	5.2	33.0	42.58	54.00	-11.42
4824	AV	37.22	H	34.1	5.2	33.0	43.52	54.00	-10.48
7236	AV	37.22	V	37.4	6.1	33.5	47.22	54.00	-6.78
7236	AV	38.16	H	37.4	6.1	33.5	48.16	54.00	-5.84
Middle Channel (2437MHz)									
4874	PK	43.05	V	34.1	5.2	33.0	49.35	74.00	-24.65
4874	PK	44.17	H	34.1	5.2	33.0	50.47	74.00	-23.53
7311	PK	50.26	V	37.4	6.1	33.5	60.26	74.00	-13.74
7311	PK	51.33	H	37.4	6.1	33.5	61.33	74.00	-12.67
4874	AV	32.73	V	34.1	5.2	33.0	39.03	54.00	-14.97
4874	AV	33.07	H	34.1	5.2	33.0	39.37	54.00	-14.63
7311	AV	35.31	V	37.4	6.1	33.5	45.31	54.00	-8.69
7311	AV	36.23	H	37.4	6.1	33.5	46.23	54.00	-7.77
HighChannel (2462MHz)									
4924	PK	47	V	34.1	5.2	33.0	53.30	74.00	-20.7
4924	PK	49.91	H	34.1	5.2	33.0	56.21	74.00	-17.79
7386	PK	49.28	V	37.4	6.1	33.5	59.28	74.00	-14.72
7386	PK	50.21	H	37.4	6.1	33.5	60.21	74.00	-13.79
4924	AV	33.33	V	34.1	5.2	33.0	39.63	54.00	-14.37
4924	AV	33.52	H	34.1	5.2	33.0	39.82	54.00	-14.18
7386	AV	37.31	V	37.4	6.1	33.5	47.31	54.00	-6.69
7386	AV	36.24	H	37.4	6.1	33.5	46.24	54.00	-7.76

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. Level = Meter Reading + Antenna Loss + Cable loss - Amplifier.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

7.6. Conducted Emission Method

Please refer to section 5 this report.

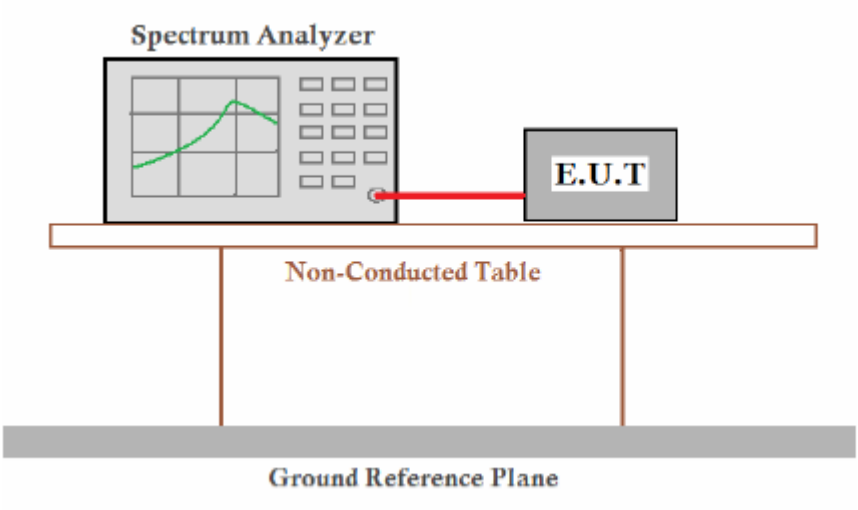
7.7. Test Requirement:

FCC Part15 C Section 15.247 (d)

7.8. Limit:

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

7.9. Test Setup

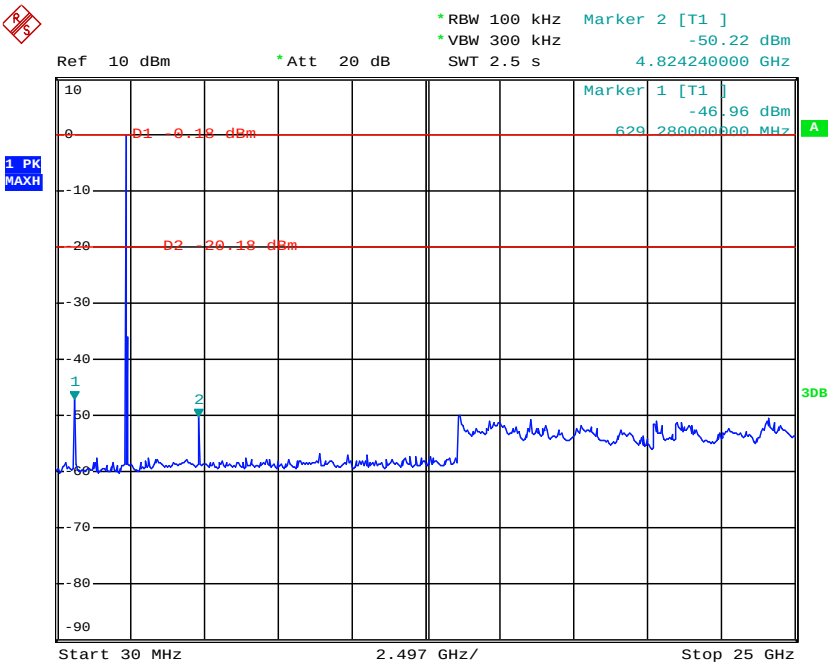


7.10.Test Result

Test plot as follows:

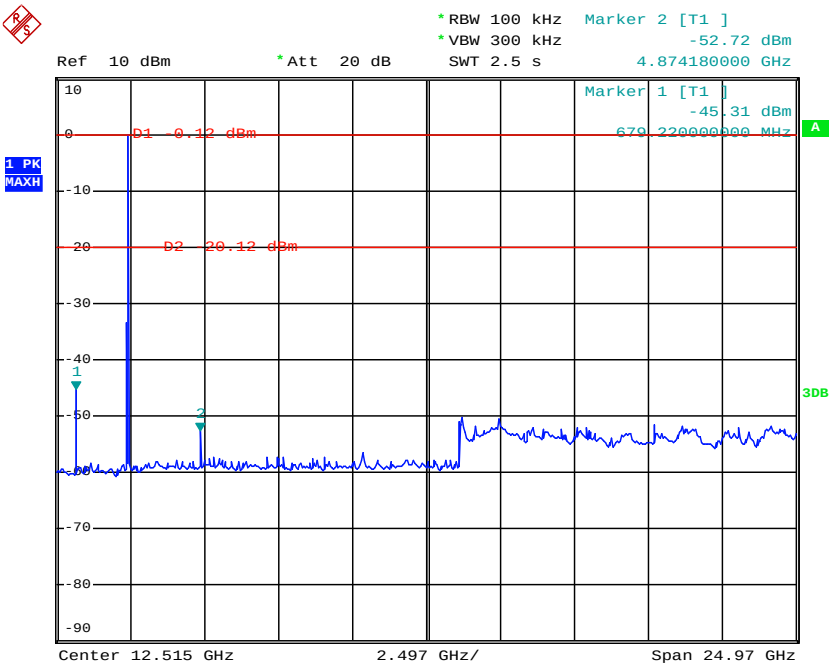
Test mode: 802.11b

Lowest channel 30MHz~25GHz



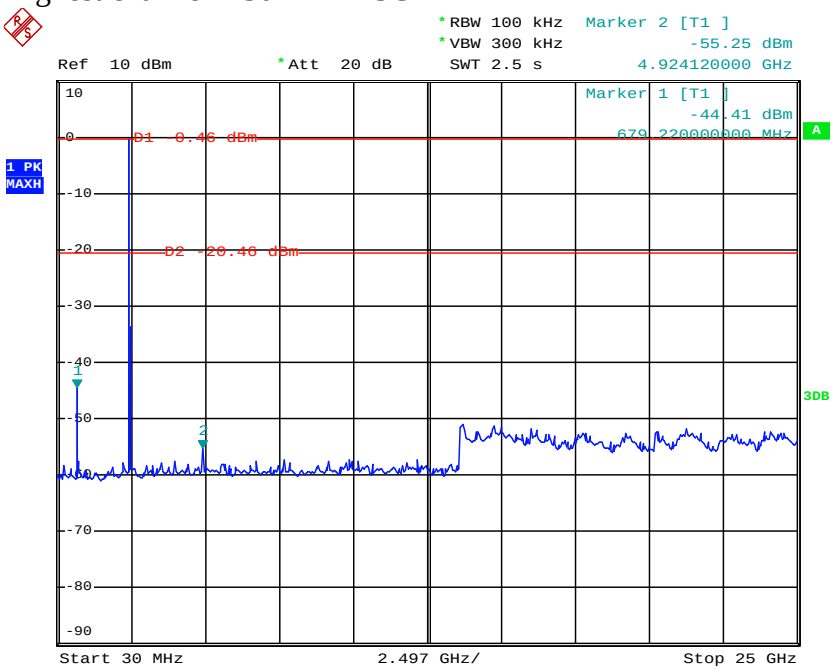
Date: 13.MAR.2013 08:55:28

Middle channel 30MHz~25GHz



Date: 13.MAR.2013 08:57:00

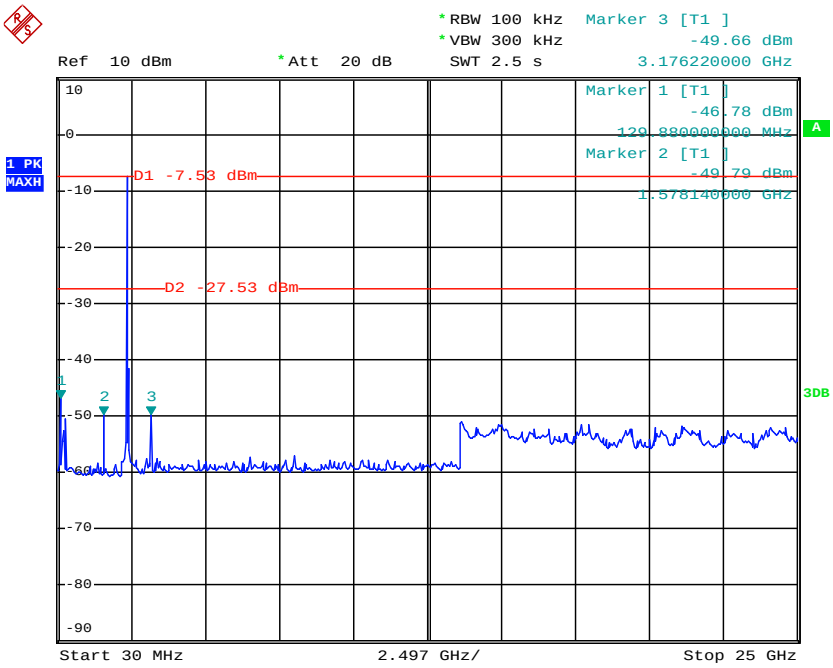
Highest channel 30MHz~25GHz



Date: 13.MAR.2013 08:59:57

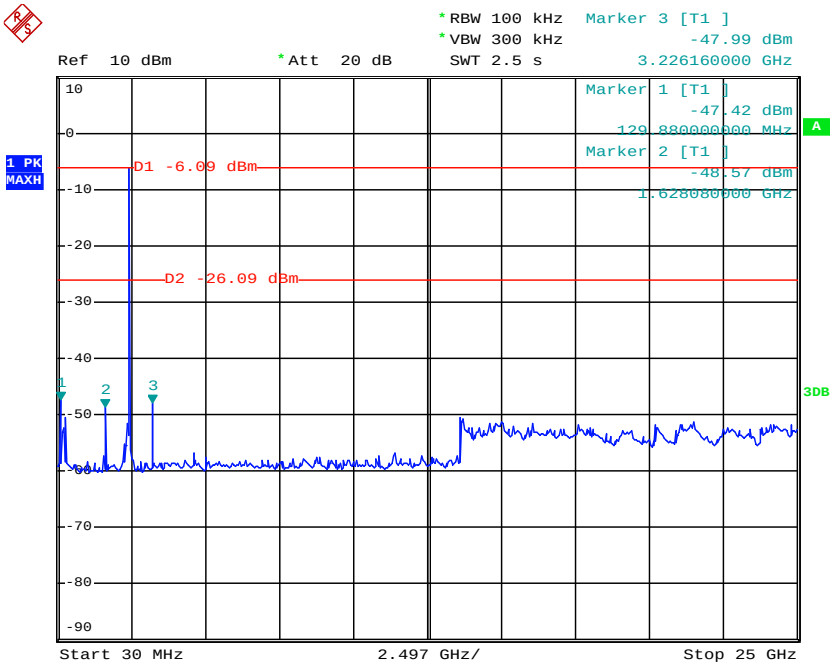
Test mode: 802.11g

Lowest channel 30MHz~25GHz



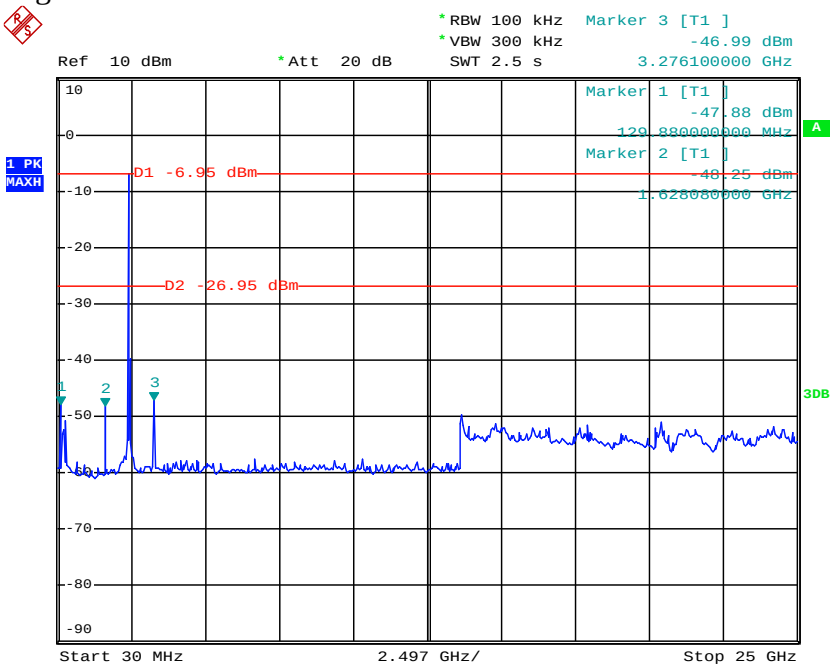
Date: 13.MAR.2013 09:36:40

Middle channel 30MHz~25GHz



Date: 13.MAR.2013 09:38:08

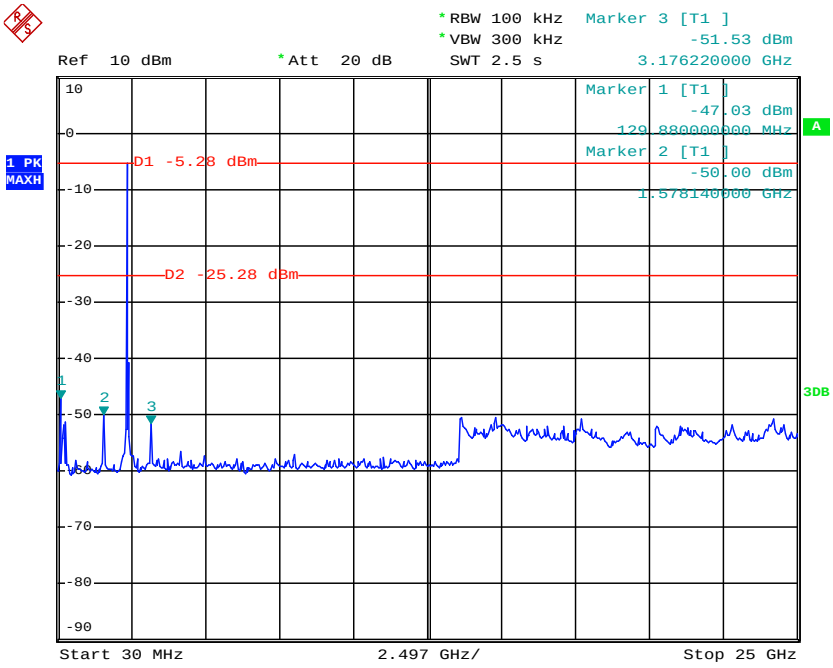
Highest channel 30MHz~25GHz



Date: 13.MAR.2013 09:43:58

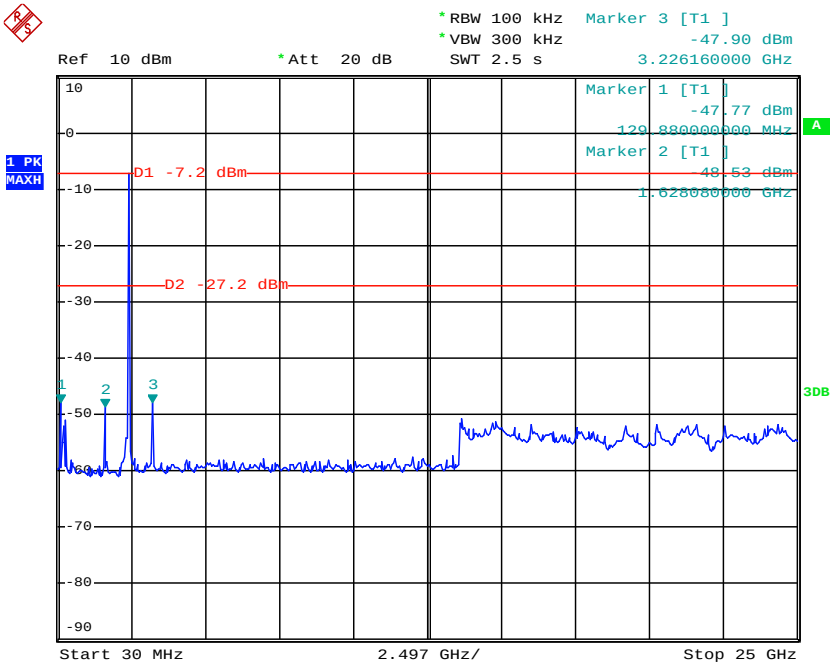
Test mode: 802.11n(H20)

Lowest channel 30MHz~25GHz



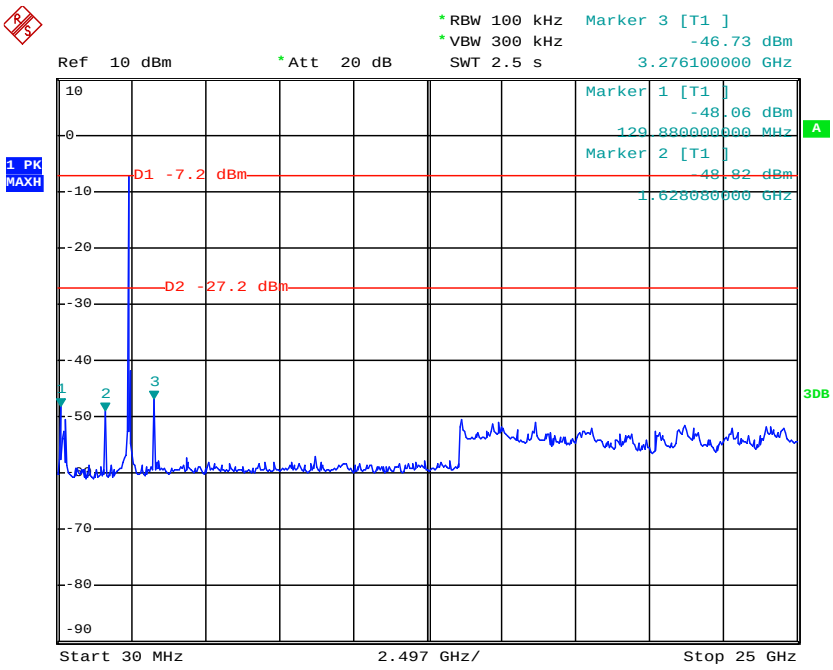
Date: 13.MAR.2013 09:45:31

Middle channel 30MHz~25GHz



Date: 13.MAR.2013 09:50:03

Highest channel 30MHz~25GHz



Date: 13.MAR.2013 09:50:50

8. §15.247(A) (2) – 6DB BANDWIDTH TESTING

8.1. Test Equipment

Please refer to Section 5 this report.

8.2. Test Procedure

1. Set EUT in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW=100KHz,VBW>=RBW,Span=50MHz,Sweep=auto.
4. Mark the peak frequency and -6dB(upper and lower)frequency.
5. Repeat until all the rest channels are investigated.

8.3. Applicable Standard

Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

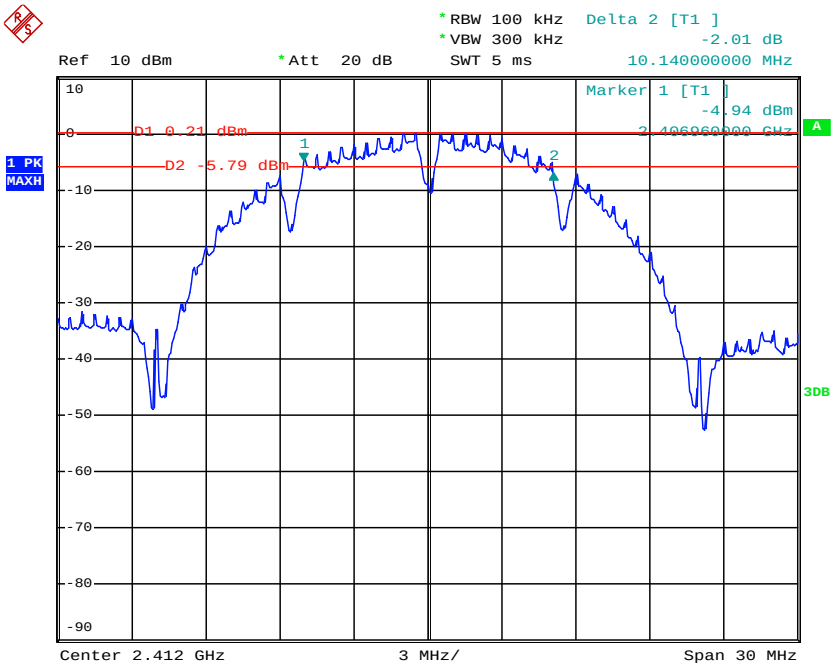
8.4. Test Result:Pass.

Please refer to the following tables

Channel Frequency (MHz)	Data Rate (Mbps)	6dB Bandwidth (MHz)	Limit (kHz)	Result
802.11b Mode				
2412	1	10.14	>=500	Pass
2437	1	10.14	>=500	Pass
2462	1	10.14	>=500	Pass
802.11g Mode				
2412	6	16.62	>=500	Pass
2437	6	16.50	>=500	Pass
2462	6	16.50	>=500	Pass
802.11n (20M) Mode				
2412	6.5	16.50	>=500	Pass
2437	6.5	16.50	>=500	Pass
2462	6.5	16.56	>=500	Pass

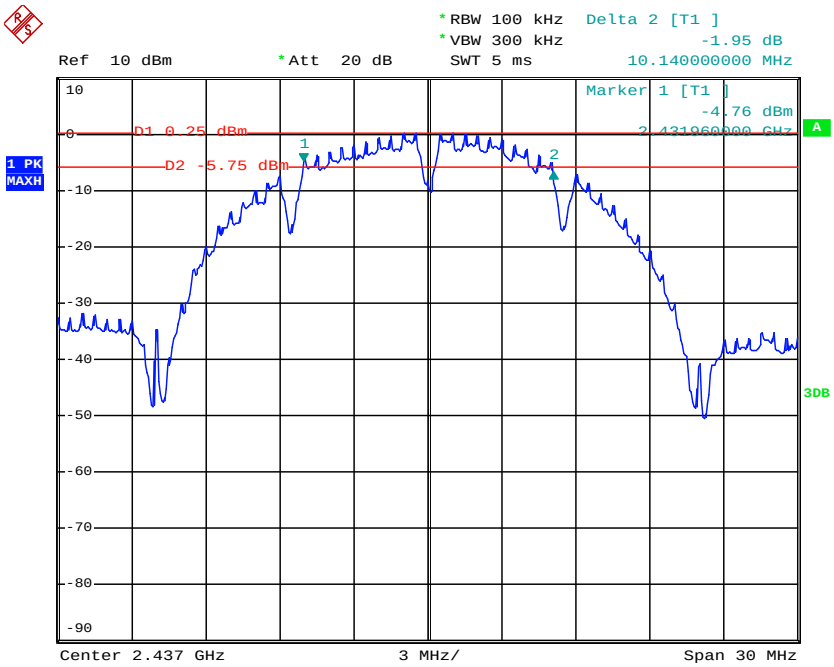
802.11b Mode:

Low Channel



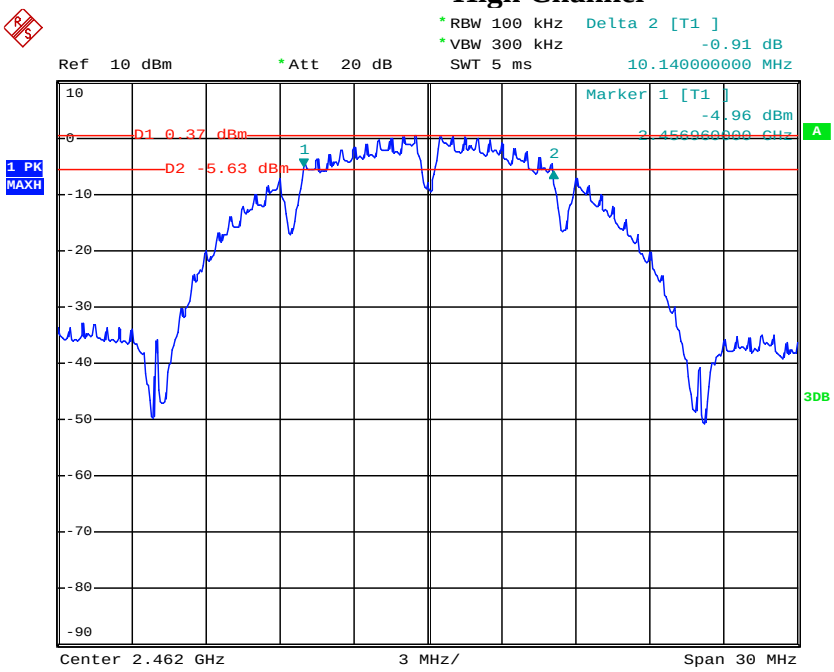
Date: 13.MAR.2013 08:51:17

Middle Channel



Date: 13.MAR.2013 08:57:31

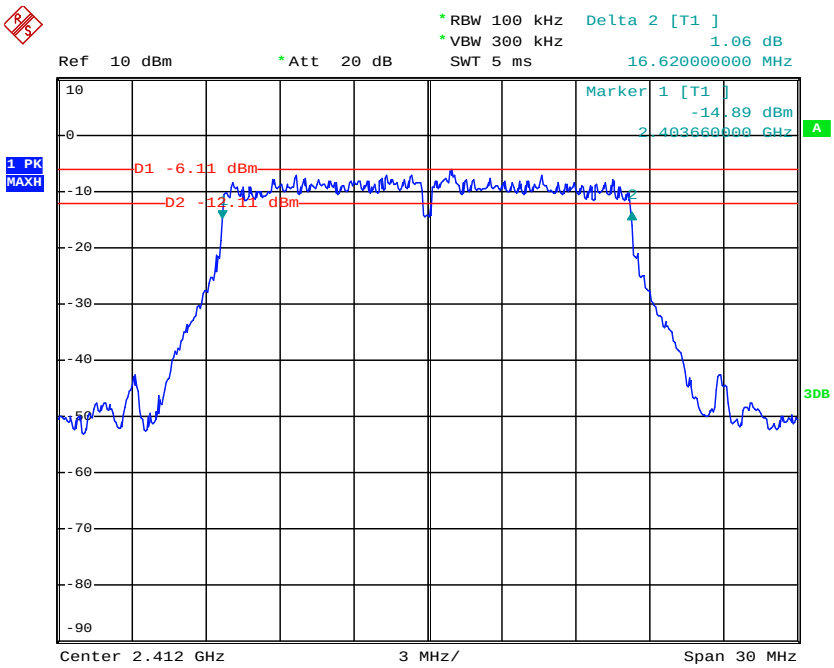
High Channel



Date: 13.MAR.2013 09:01:15

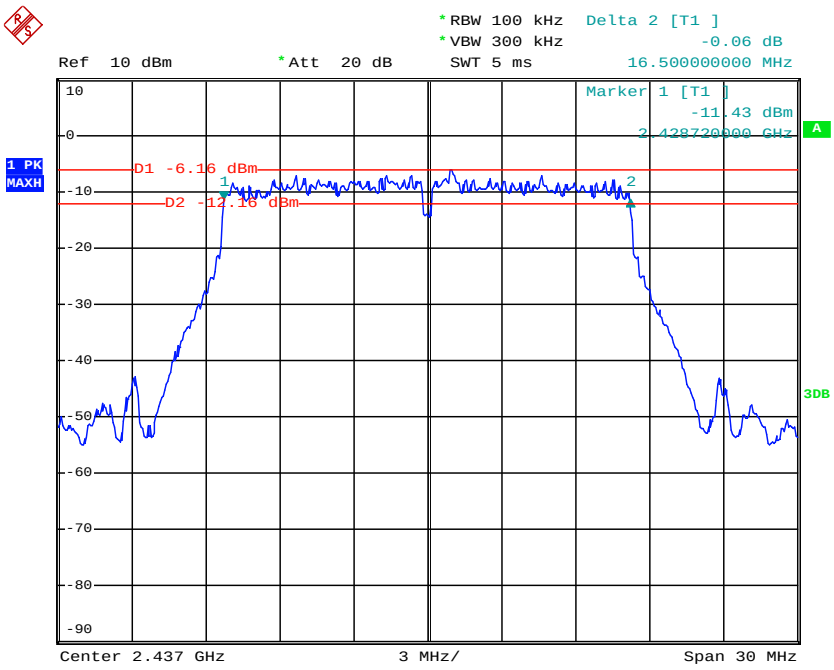
802.11g Mode:

Low Channel



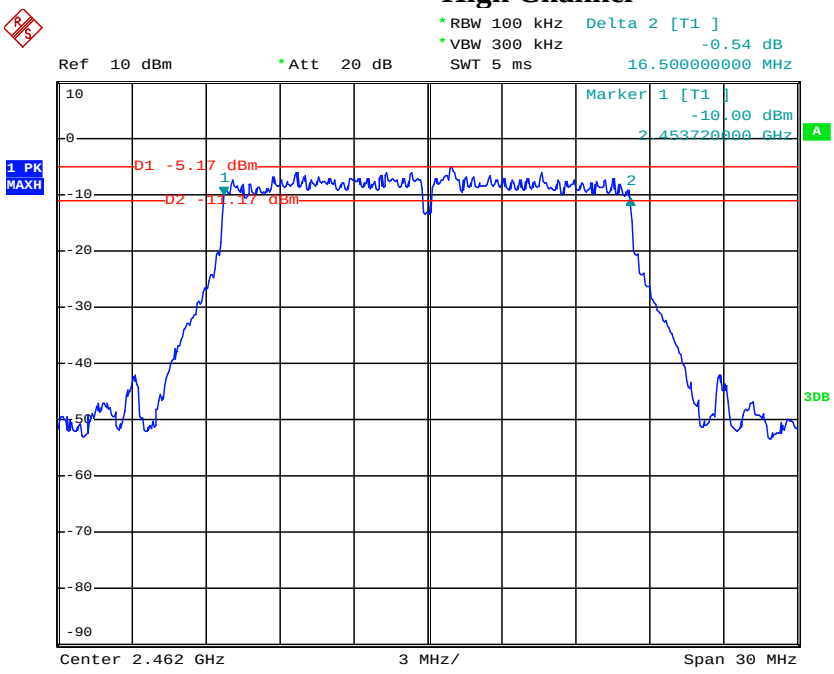
Date: 13.MAR.2013 09:34:53

Middle Channel



Date: 13.MAR.2013 09:38:52

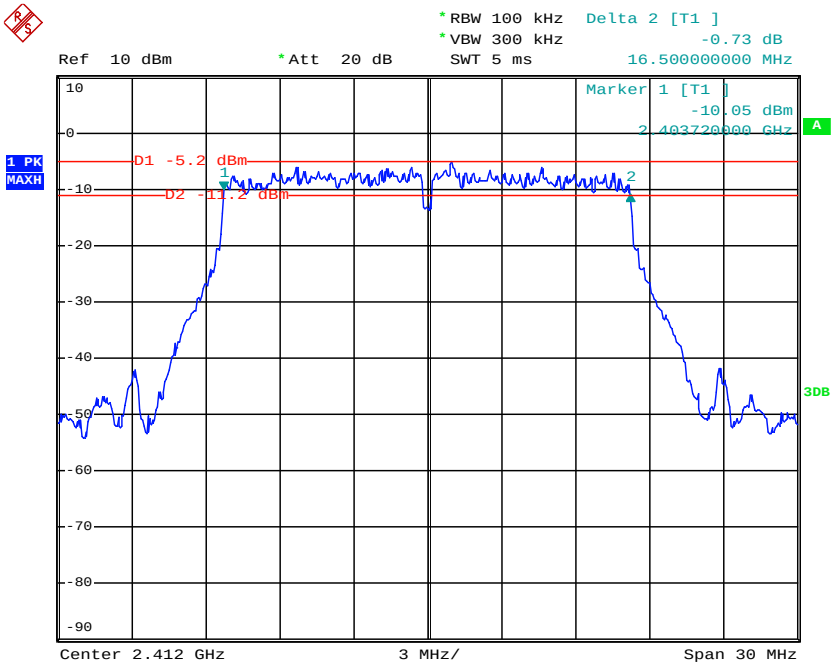
High Channel



Date: 13.MAR.2013 09:42:09

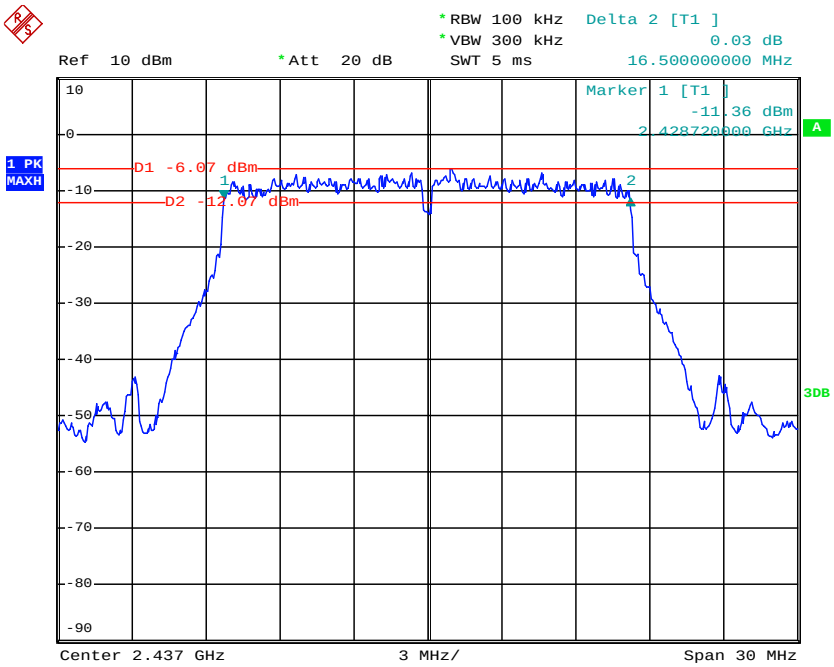
802.11n (20M) Mode:

Low Channel



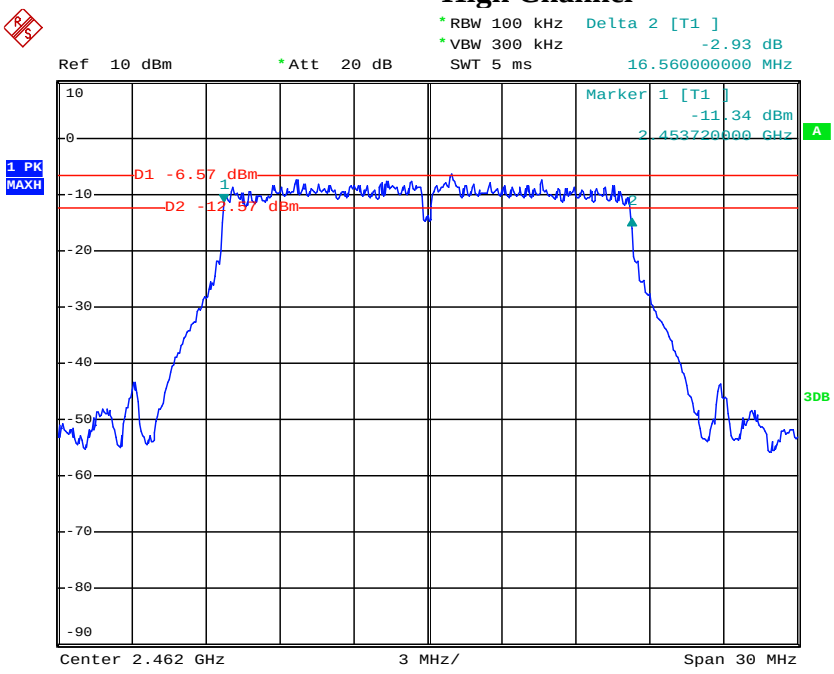
Date: 13.MAR.2013 09:46:52

Middle Channel



Date: 13.MAR.2013 09:48:53

High Channel



Date: 13.MAR.2013 09:52:41

9. §15.247(B) (3) - Maximum Peak Output Power

9.1. Test Equipment

Please refer to Section 4 this report.

9.2. Test Procedure

1. The EUT was directly connected to the power meter

9.3. Applicable Standard

According to §15.247(b) (3), for systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

9.4. Test Result

Pass

802.11b Mode:

Channel	Frequency (MHz)	Data Rate (Mbps)	Conducted Power (dBm)	Limit (dBm)
Low	2412	1	8.53	30
Mid	2437	1	8.15	30
High	2462	1	7.67	30

802.11g Mode:

Channel	Frequency (MHz)	Data Rate (Mbps)	Conducted Power (dBm)	Limit (dBm)
Low	2412	6	7.82	30
Mid	2437	6	6.54	30
High	2462	6	5.83	30

802.11n (20M) Mode:

Channel	Frequency (MHz)	Data Rate (Mbps)	Conducted Power (dBm)	Limit (dBm)
Low	2412	6.5	6.67	30
Mid	2437	6.5	5.98	30
High	2462	6.5	5.12	30

10. §15.247(D) – 100 KHZ Bandwidth of Frequency Band Edge

10.1.Test Equipment

Please refer to Section 4 this report.

10.2.Test Procedure

1, Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2, Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3, Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
Note: For Rdstricted Band
RBW=1MHz
VBW=1 MHz
4, Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5, Repeat above procedures until all measured frequencies were complete.

10.3.Applicable Standard

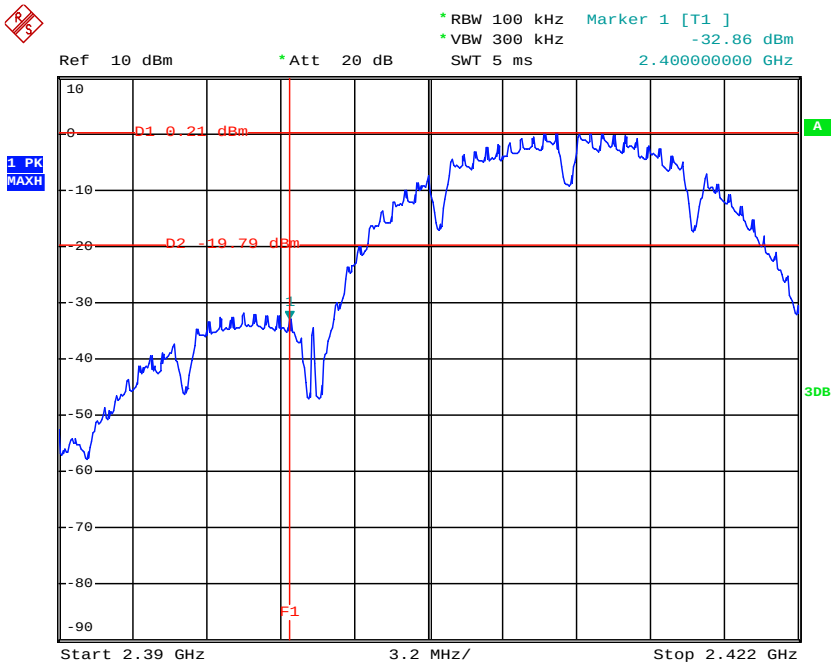
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

10.4.Test Result

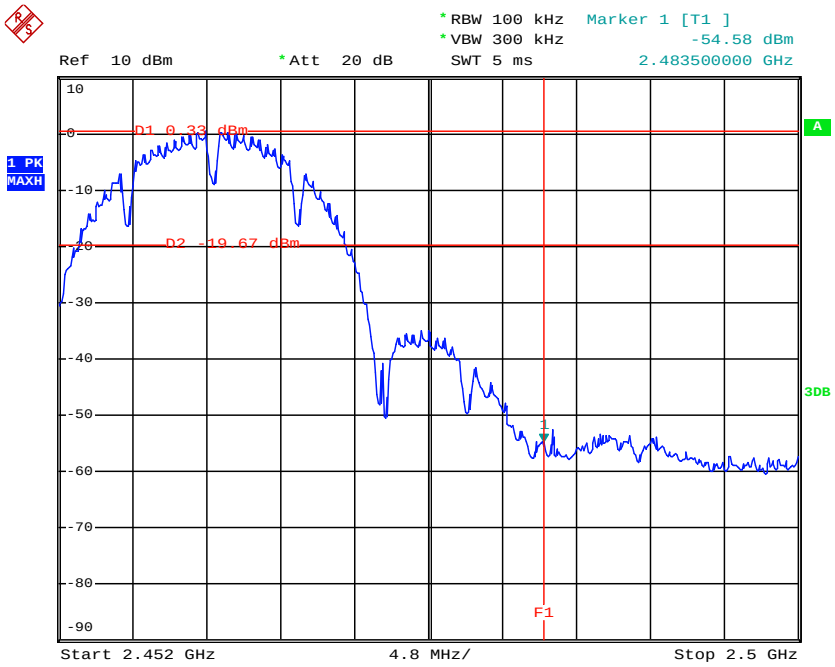
Pass.

Conducted test

802.11b Mode:

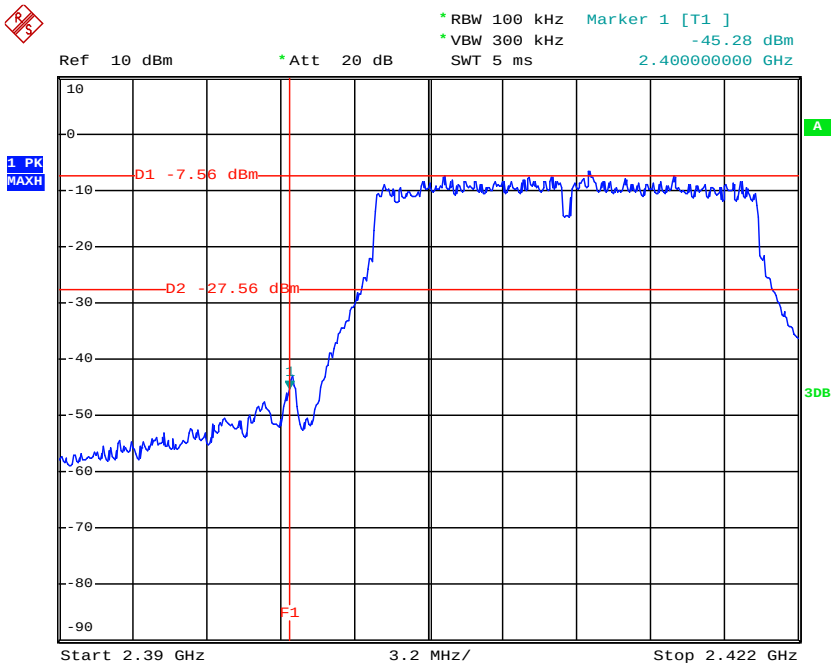


Date: 13.MAR.2013 08:53:16

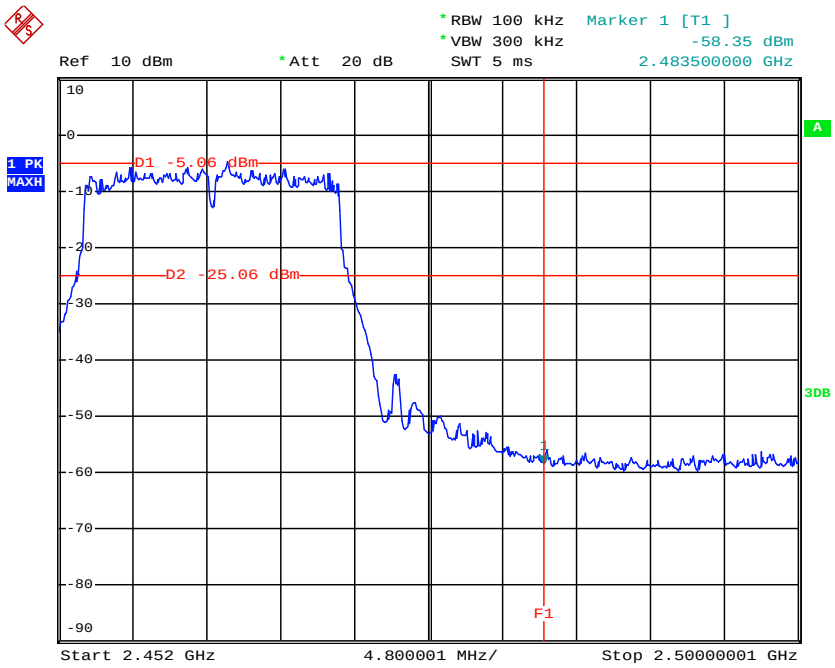


Date: 13.MAR.2013 09:00:36

802.11g Mode:

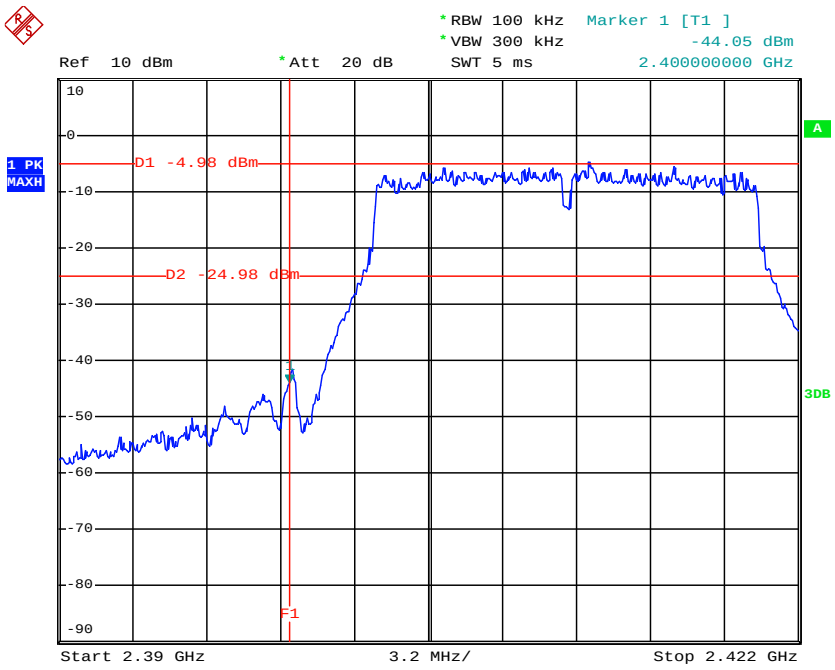


Date: 13.MAR.2013 09:35:47

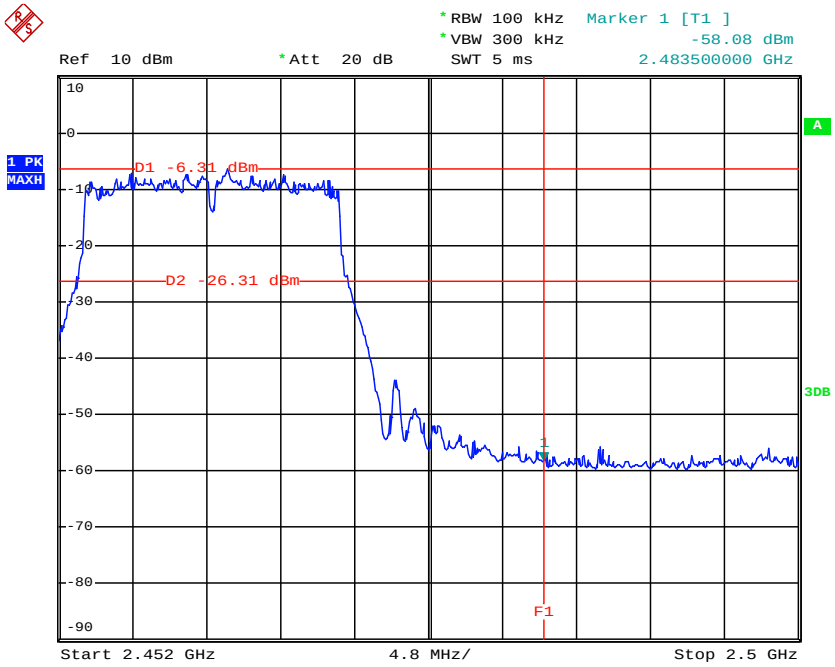


Date: 13.MAR.2013 09:43:15

802.11n (20M) Mode:

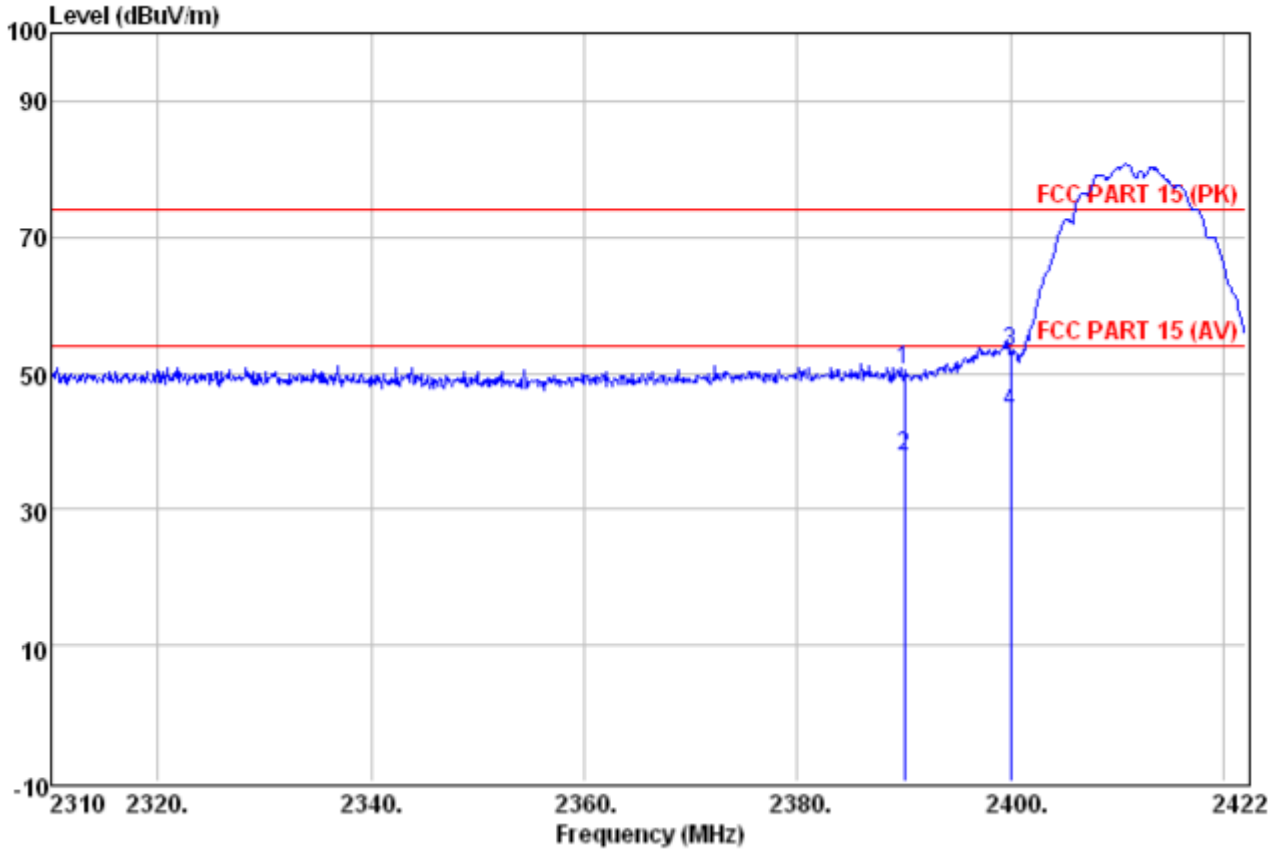


Date: 13.MAR.2013 09:46:01



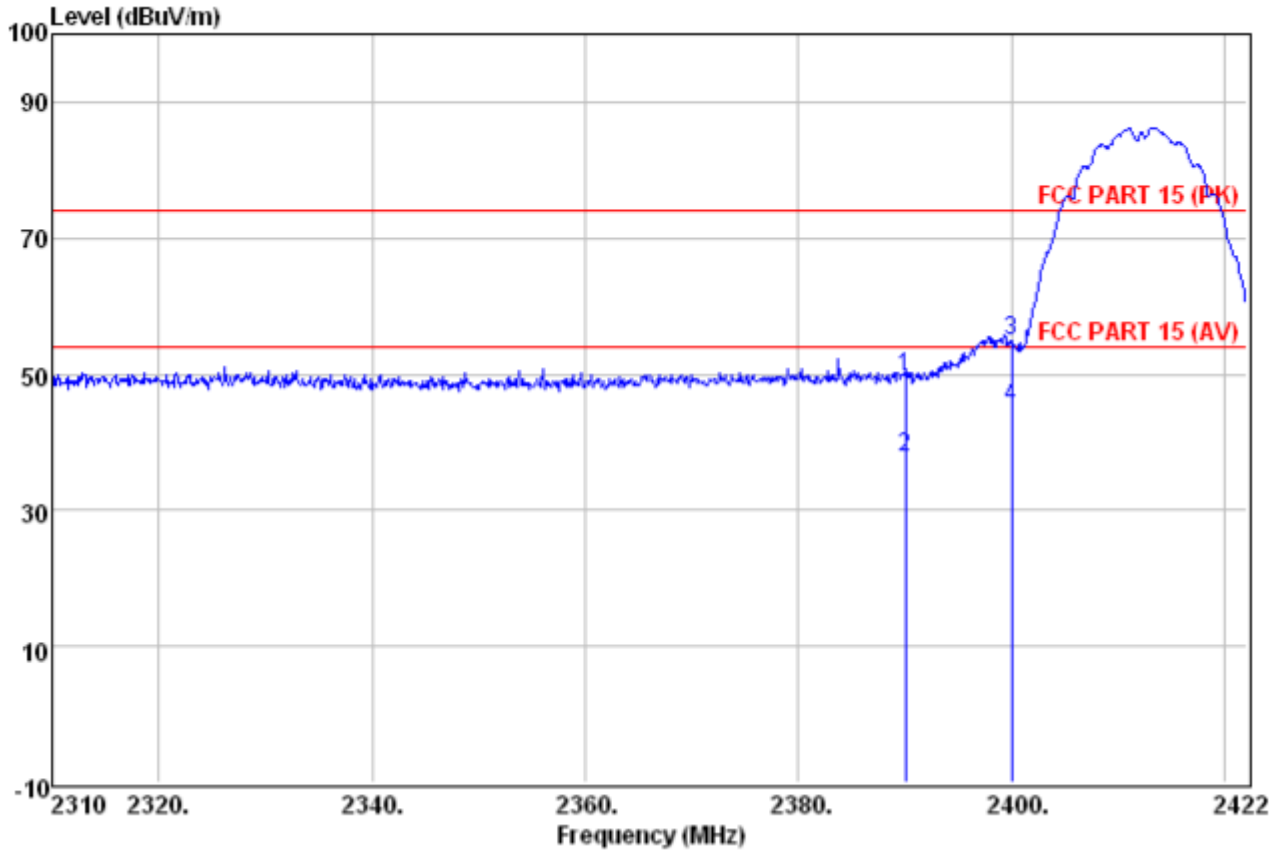
Date: 13.MAR.2013 09:51:22

Radiated test
802.11b Mode
Horizontal TX 2412MHz



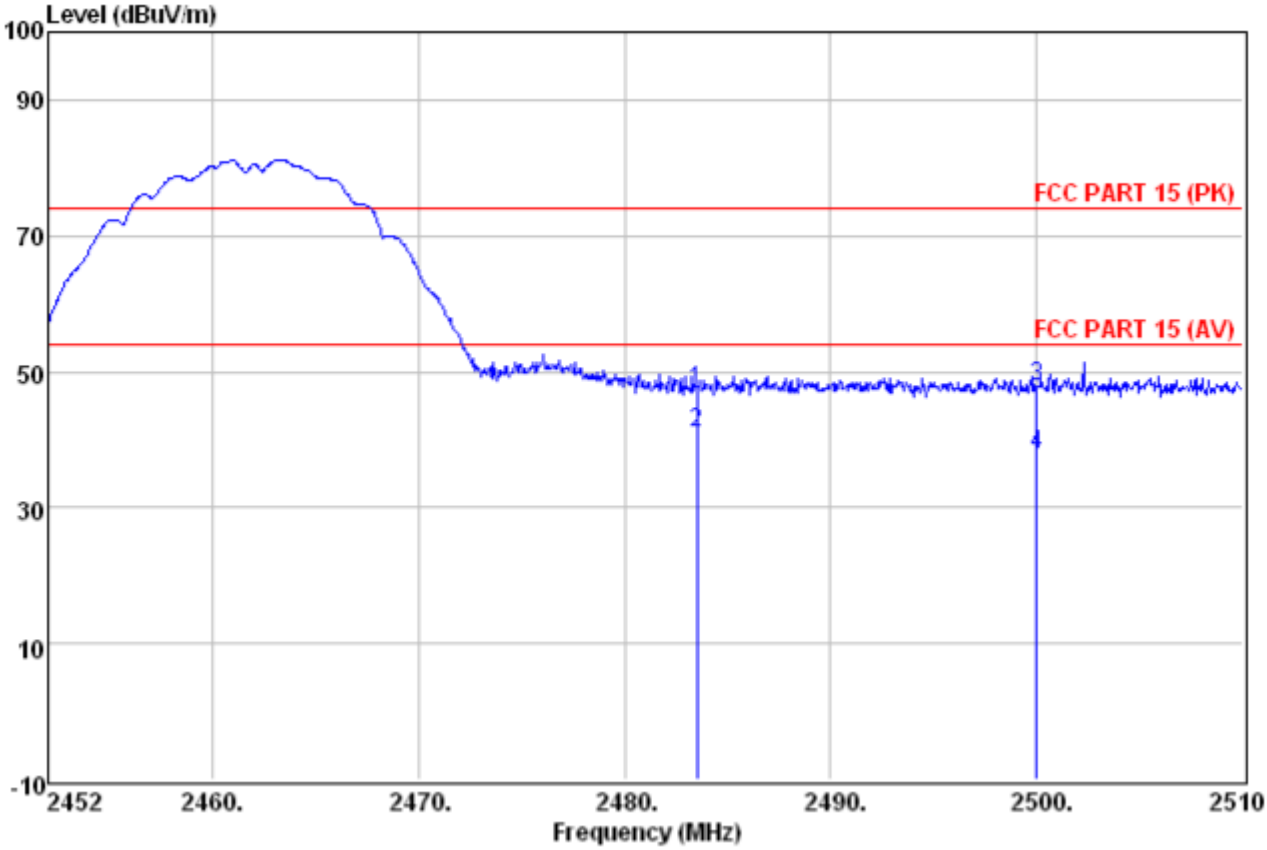
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2390.000	49.19	27.58	3.81	30.10	50.48	74.00	-23.52	Peak
2	2390.000	36.38	27.58	3.81	30.10	37.67	54.00	-16.33	Average
3	2400.000	51.68	27.58	3.83	30.10	52.99	74.00	-21.01	Peak
4	2400.000	43.04	27.58	3.83	30.10	44.35	54.00	-9.65	Average

Vertical TX 2412MHz



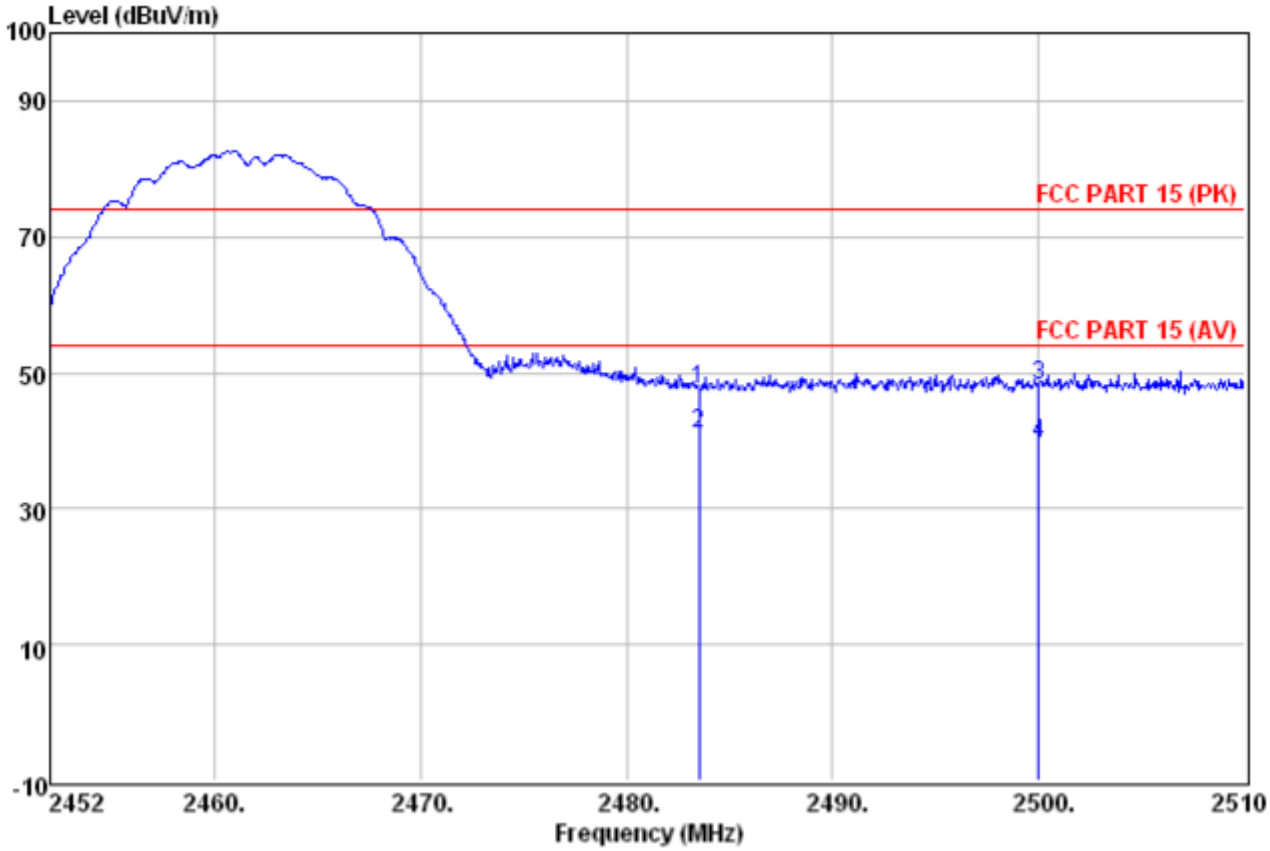
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2390.000	48.42	27.58	3.81	30.10	49.71	74.00	-24.29	Peak
2	2390.000	36.46	27.58	3.81	30.10	37.75	54.00	-16.25	Average
3	2400.000	53.58	27.58	3.83	30.10	54.89	74.00	-19.11	Peak
4	2400.000	43.84	27.58	3.83	30.10	45.15	54.00	-8.85	Average

Horizontal TX 2462MHz



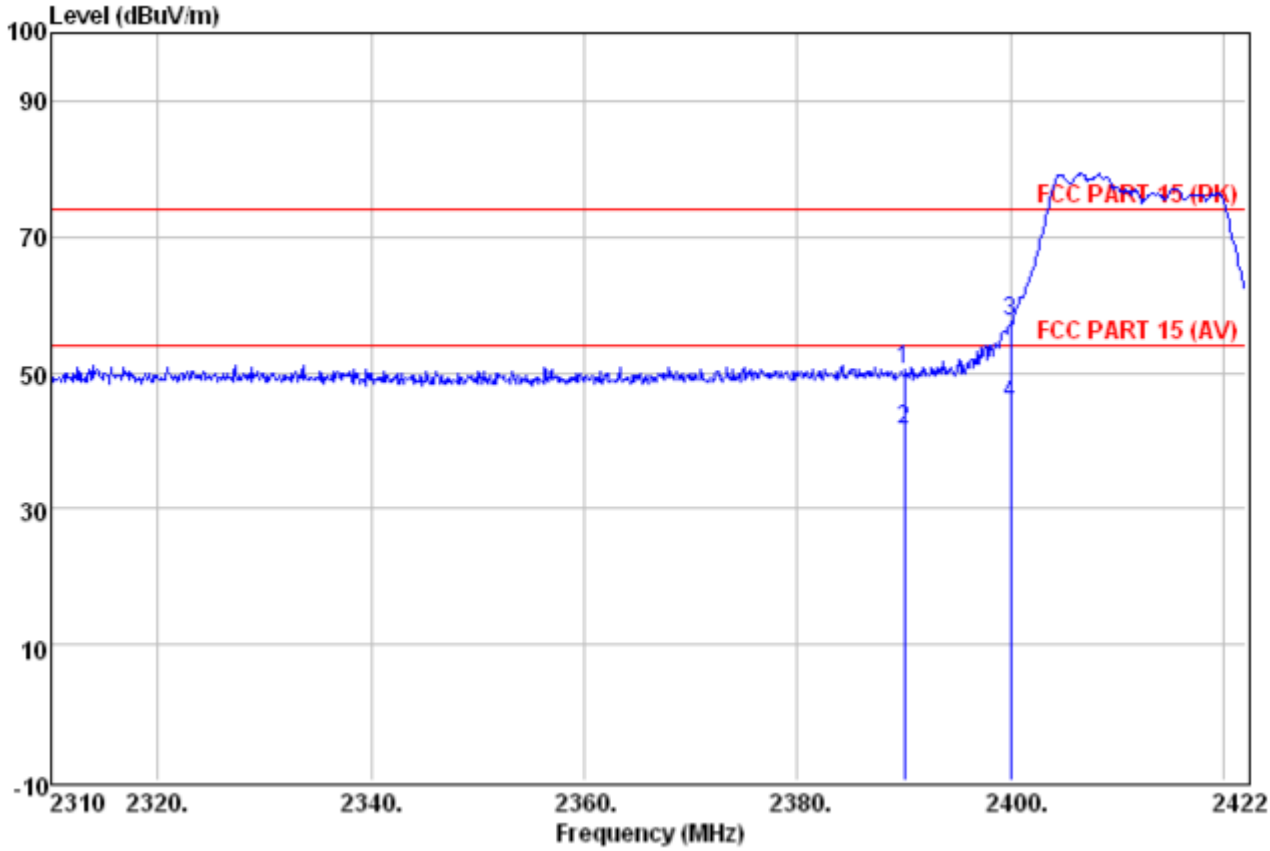
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2483.500	46.39	27.52	3.89	30.60	47.20	74.00	-26.80	Peak
2	2483.500	40.32	27.52	3.89	30.60	41.13	54.00	-12.87	Average
3	2500.000	46.97	27.55	3.90	30.70	47.72	74.00	-26.28	Peak
4	2500.000	37.15	27.55	3.90	30.70	37.90	54.00	-16.10	Average

Vertical TX 2462MHz



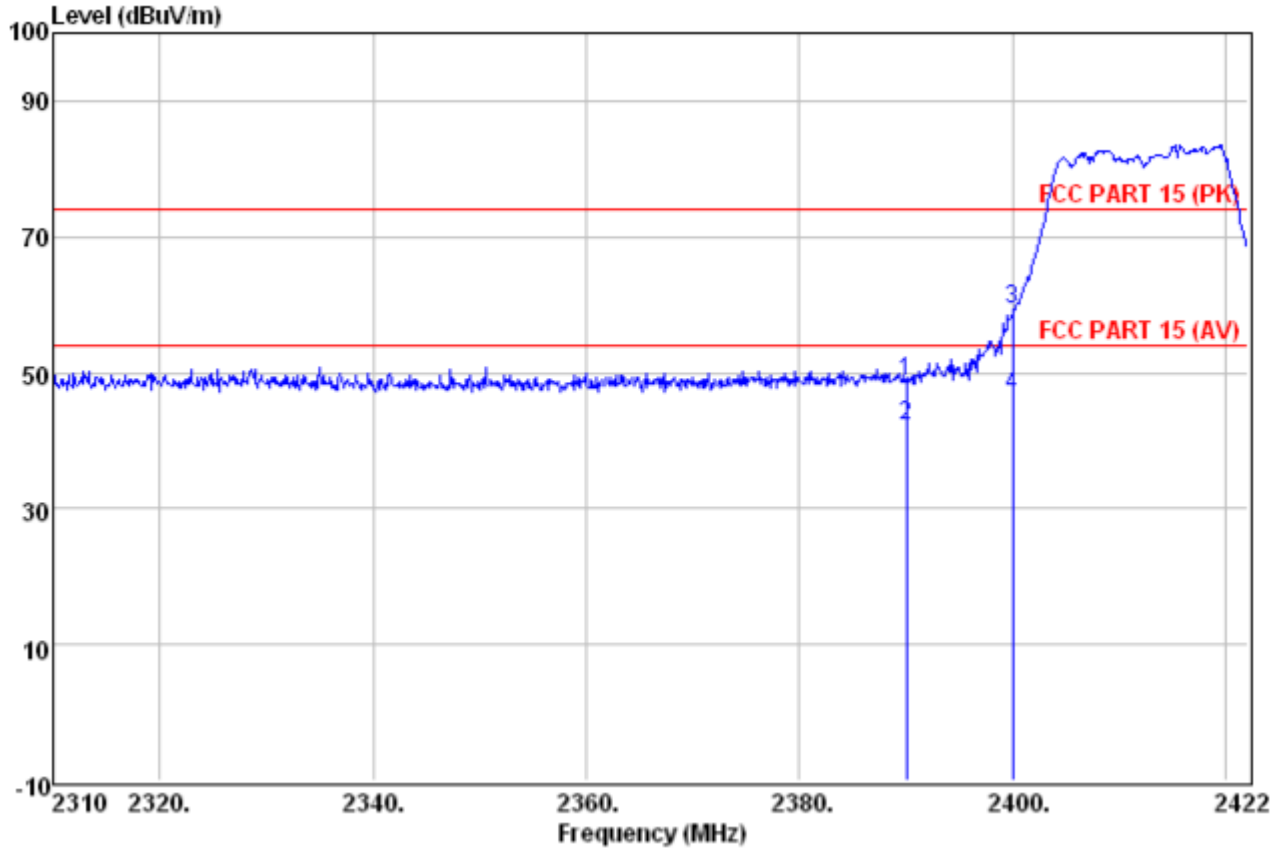
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2483.500	46.82	27.52	3.89	30.60	47.63	74.00	-26.37	Peak
2	2483.500	40.35	27.52	3.89	30.60	41.16	54.00	-12.84	Average
3	2500.000	47.33	27.55	3.90	30.70	48.08	74.00	-25.92	Peak
4	2500.000	38.68	27.55	3.90	30.70	39.43	54.00	-14.57	Average

802.11g Mode
Horizontal TX 2412MHz



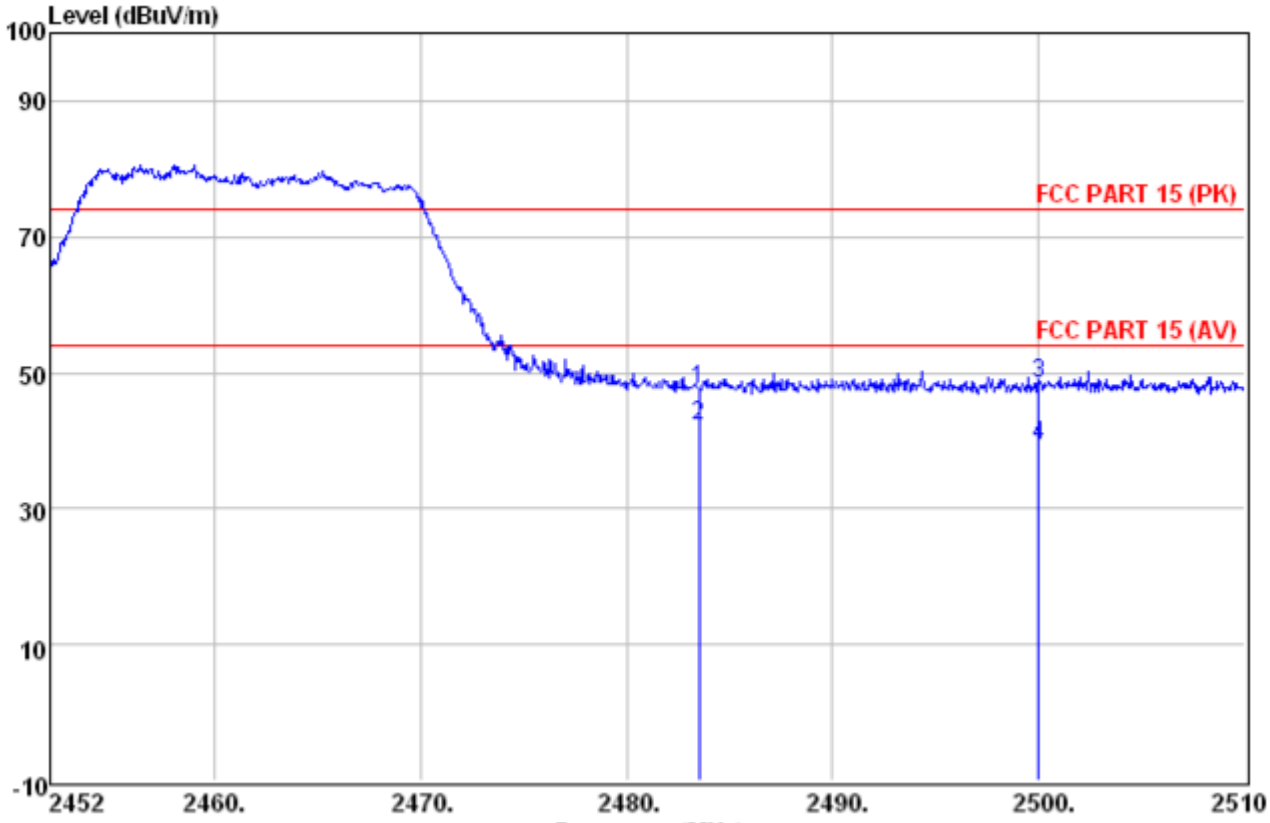
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2390.000	49.30	27.58	3.81	30.10	50.59	74.00	-23.41	Peak
2	2390.000	40.35	27.58	3.81	30.10	41.64	54.00	-12.36	Average
3	2400.000	56.32	27.58	3.83	30.10	57.63	74.00	-16.37	Peak
4	2400.000	44.26	27.58	3.83	30.10	45.57	54.00	-8.43	Average

Vertical TX 2412MHz



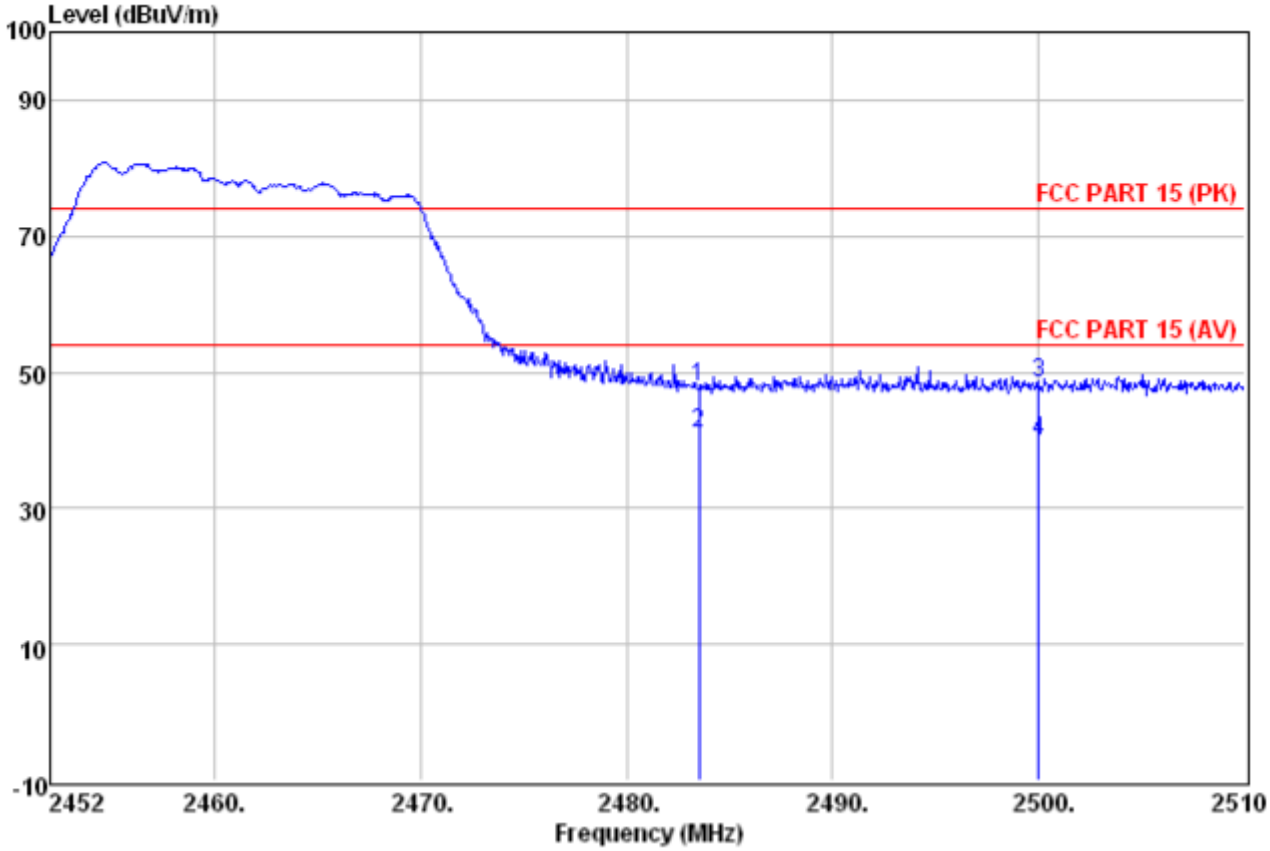
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2390.000	47.41	27.58	3.81	30.10	48.70	74.00	-25.30	Peak
2	2390.000	41.02	27.58	3.81	30.10	42.31	54.00	-11.69	Average
3	2400.000	58.03	27.58	3.83	30.10	59.34	74.00	-14.66	Peak
4	2400.000	45.28	27.58	3.83	30.10	46.59	54.00	-7.41	Average

Horizontal TX 2462MHz



	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2483.500	46.81	27.52	3.89	30.60	47.62	74.00	-26.38	Peak
2	2483.500	41.25	27.52	3.89	30.60	42.06	54.00	-11.94	Average
3	2500.000	47.77	27.55	3.90	30.70	48.52	74.00	-25.48	Peak
4	2500.000	38.36	27.55	3.90	30.70	39.11	54.00	-14.89	Average

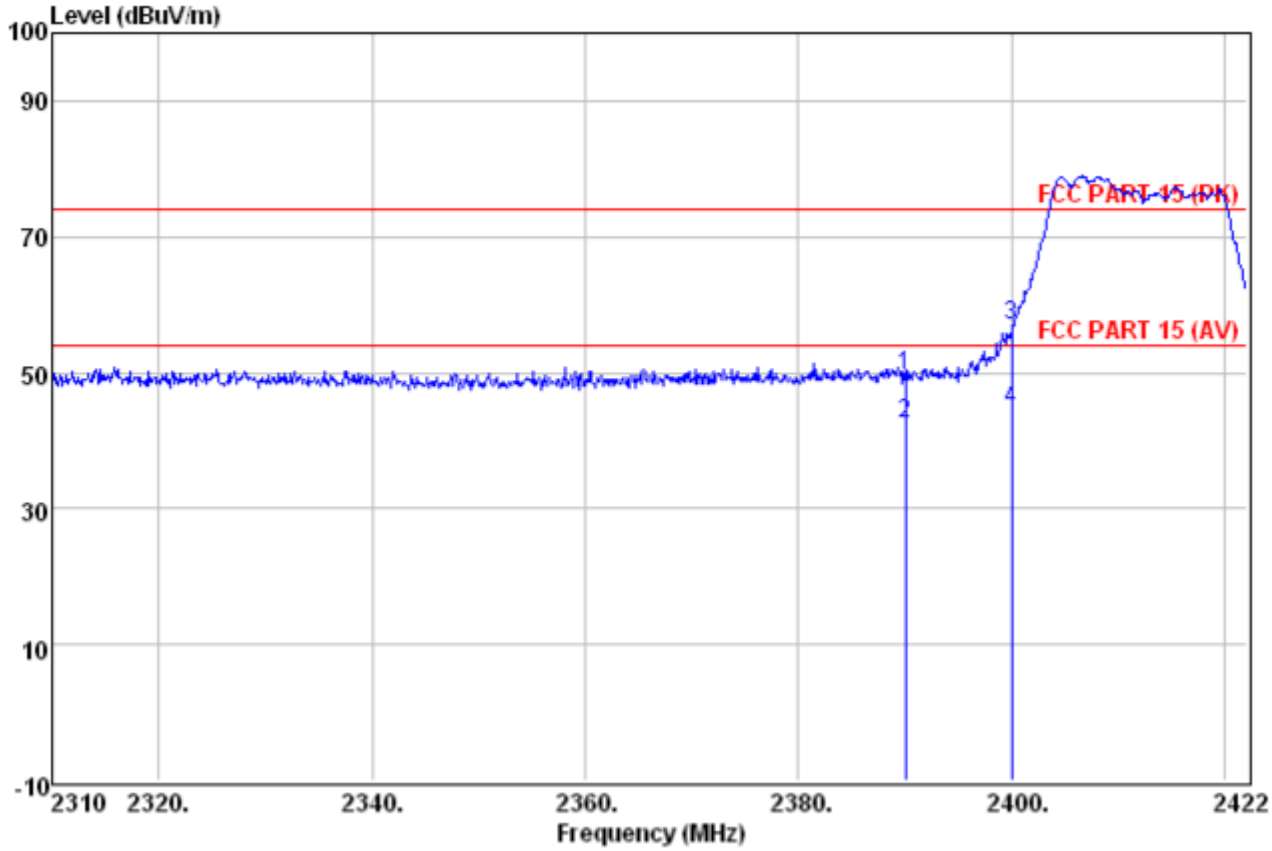
Vertical TX 2462MHz



	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2483.500	46.93	27.52	3.89	30.60	47.74	74.00	-26.26	Peak
2	2483.500	40.25	27.52	3.89	30.60	41.06	54.00	-12.94	Average
3	2500.000	47.65	27.55	3.90	30.70	48.40	74.00	-25.60	Peak
4	2500.000	39.18	27.55	3.90	30.70	39.93	54.00	-14.07	Average

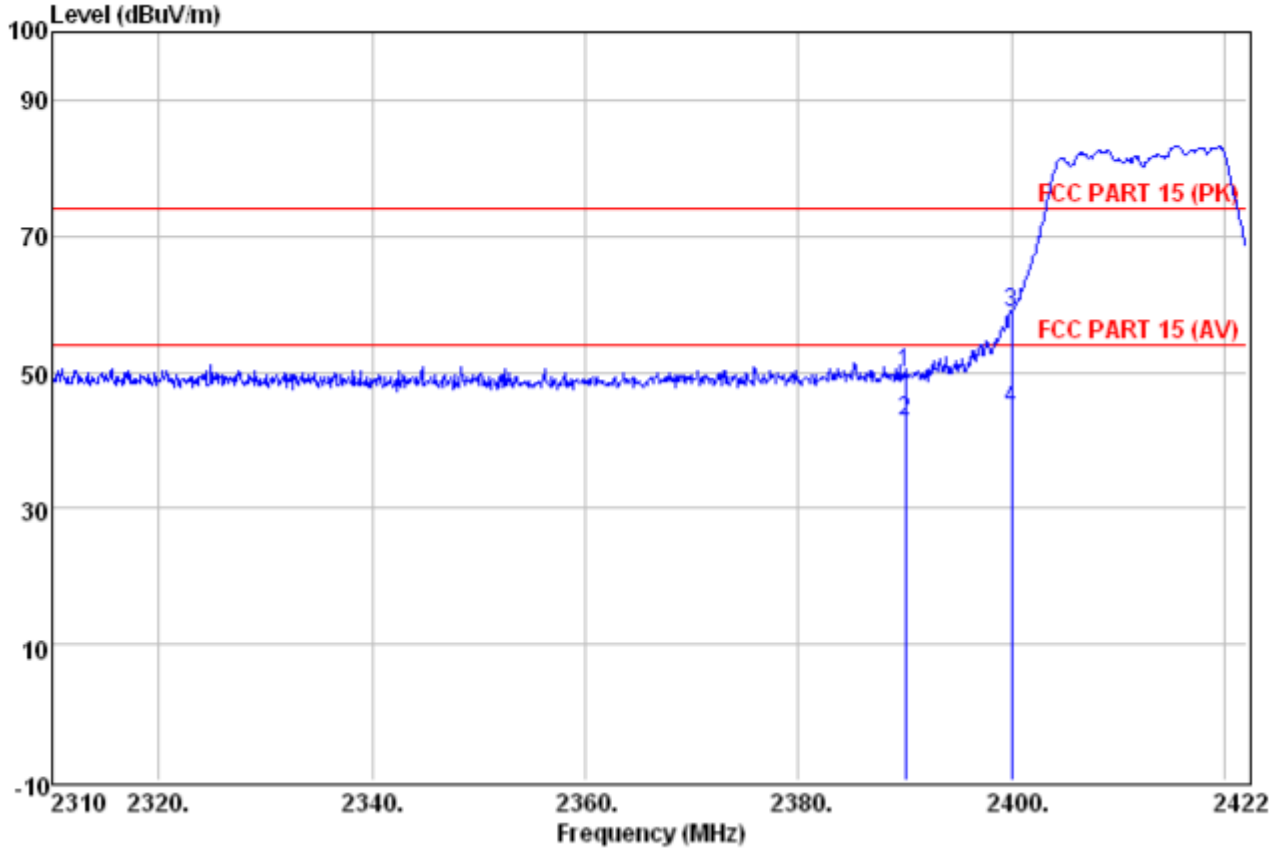
802.11n (20M) Mode

Horizontal TX 2412MHz



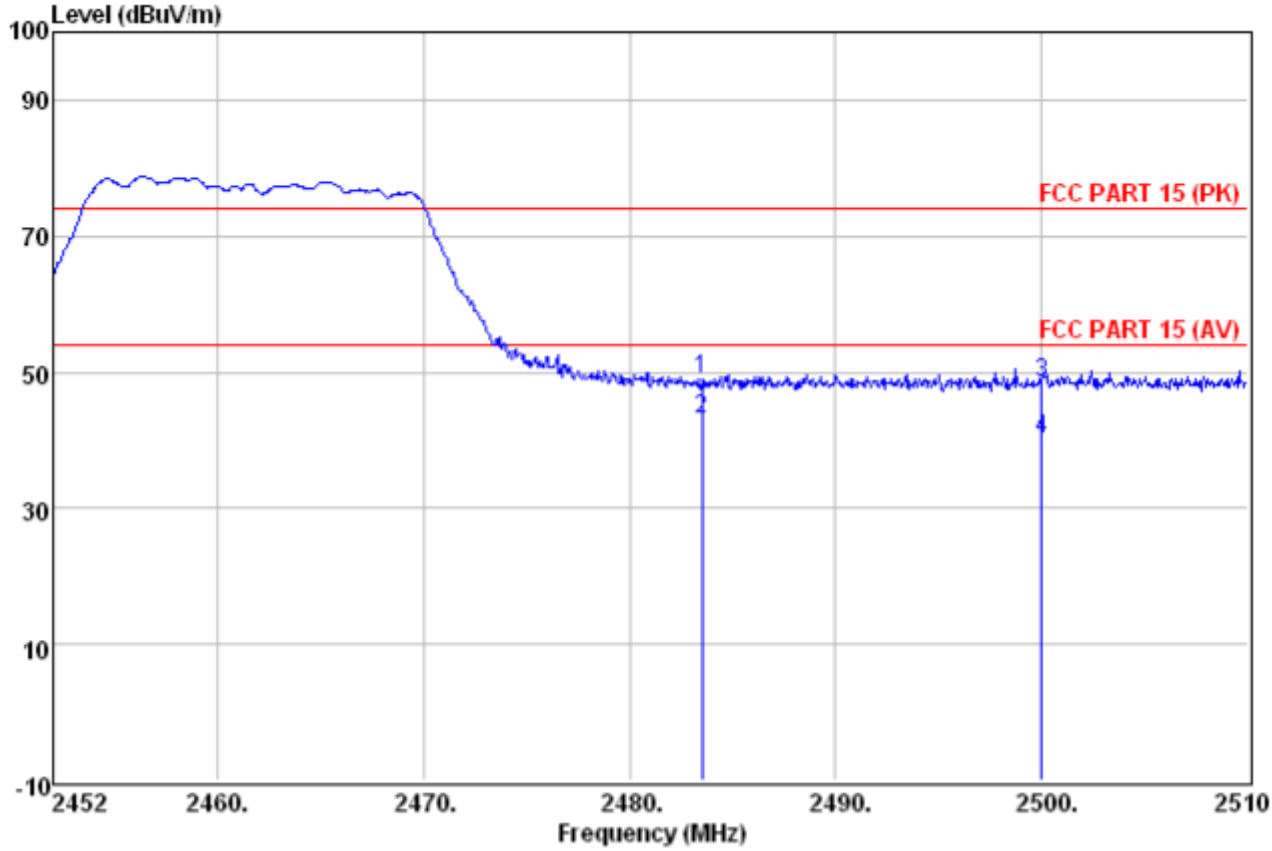
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2390.000	48.41	27.58	3.81	30.10	49.70	74.00	-24.30	Peak
2	2390.000	41.34	27.58	3.81	30.10	42.63	54.00	-11.37	Average
3	2400.000	55.51	27.58	3.83	30.10	56.82	74.00	-17.18	Peak
4	2400.000	43.35	27.58	3.83	30.10	44.66	54.00	-9.34	Average

Vertical TX 2412MHz



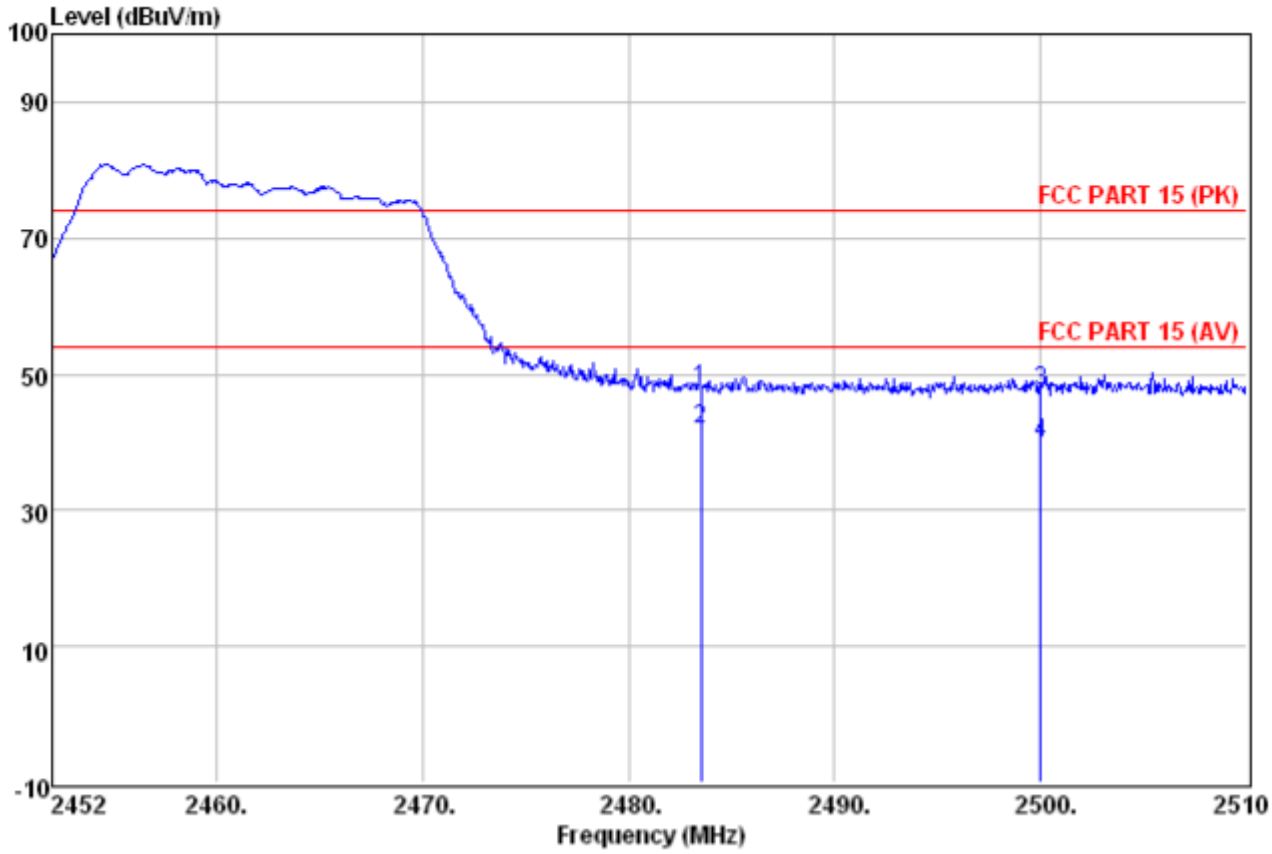
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2390.000	48.47	27.58	3.81	30.10	49.76	74.00	-24.24	Peak
2	2390.000	41.47	27.58	3.81	30.10	42.76	54.00	-11.24	Average
3	2400.000	57.54	27.58	3.83	30.10	58.85	74.00	-15.15	Peak
4	2400.000	43.25	27.58	3.83	30.10	44.56	54.00	-9.44	Average

Horizontal TX 2462MHz



	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2483.500	48.23	27.52	3.89	30.60	49.04	74.00	-24.96	Peak
2	2483.500	42.23	27.52	3.89	30.60	43.04	54.00	-10.96	Average
3	2500.000	47.67	27.55	3.90	30.70	48.42	74.00	-25.58	Peak
4	2500.000	39.45	27.55	3.90	30.70	40.20	54.00	-13.80	Average

Vertical TX 2462MHz



	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2483.500	47.04	27.52	3.89	30.60	47.85	74.00	-26.15	Peak
2	2483.500	41.23	27.52	3.89	30.60	42.04	54.00	-11.96	Average
3	2500.000	46.81	27.55	3.90	30.70	47.56	74.00	-26.44	Peak
4	2500.000	39.14	27.55	3.90	30.70	39.89	54.00	-14.11	Average

Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Set the Lowest and Highest Transmitting Channel, observed the outside band of 2400MHz to 2438.5MHz, then mark the higher-level emission for comparing with the FCC rules.

11. §15.247(E) - Power Spectral Density

11.1. Test Equipment

Please refer to Section 4 this report.

11.2.Test Procedure

1.Connect EUT test port to spectrum analyzer
2. Set the EUT to transmit maximum output power at 2.4GHz.
3. Then set the EUT to transmit at high, middle and low frequency and measure the conducted band edge spurious separately.

11.3.Applicable Standard

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

11.4.Test Result

PASS

Mode b

Frequency	PSD/ 3KHz(dBm)	Limit (dBm)	Result
2412MHz	-19.10	8	PASS
2437MHz	-18.69	8	PASS
2462MHz	-17.99	8	PASS

Mode g

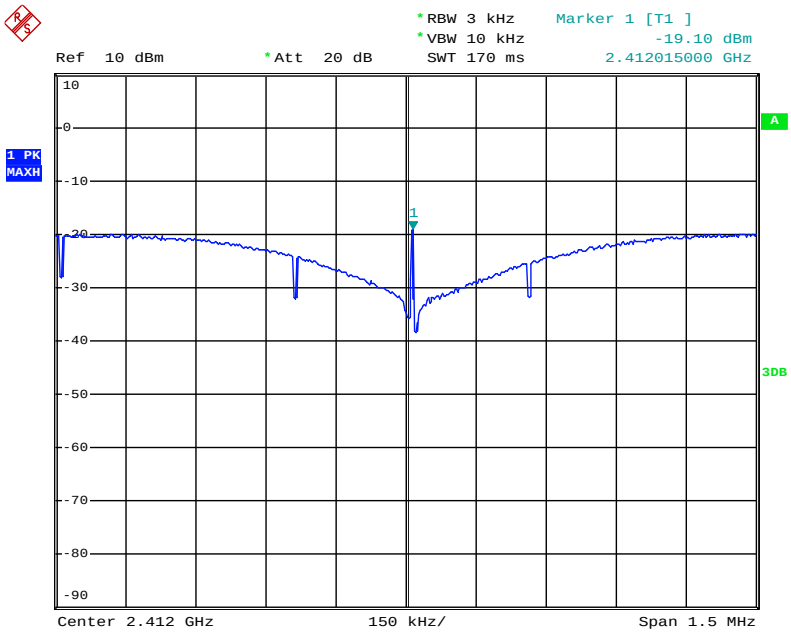
Frequency	PSD/ 3KHz(dBm)	Limit (dBm)	Result
2412MHz	-16.78	8	PASS
2437MHz	-16.78	8	PASS
2462MHz	-17.00	8	PASS

Mode(20M)

Frequency	PSD/ 3KHz(dBm)	Limit (dBm)	Result
2412MHz	-16.91	8	PASS
2437MHz	-16.91	8	PASS
2462MHz	-17.20	8	PASS

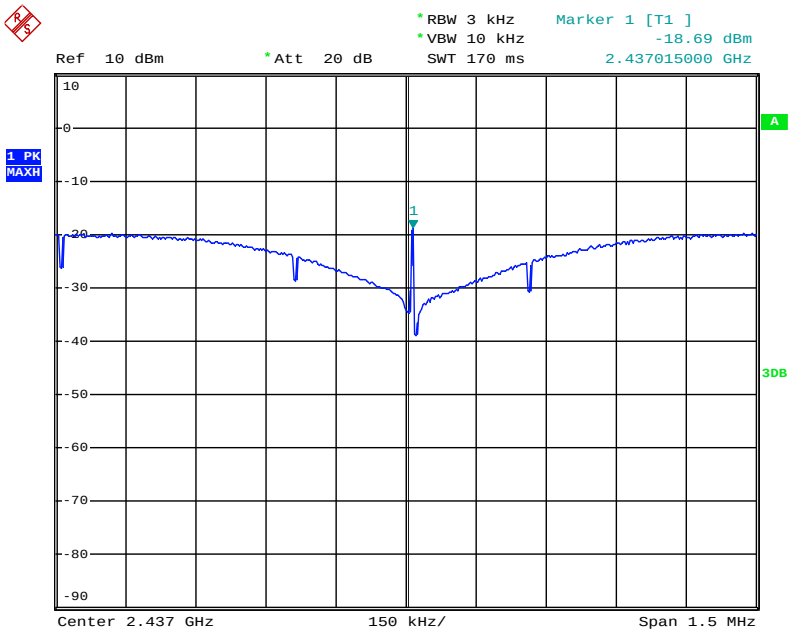
Please refer to the following plots

Power Spectral Density, 802.11b Low Channel



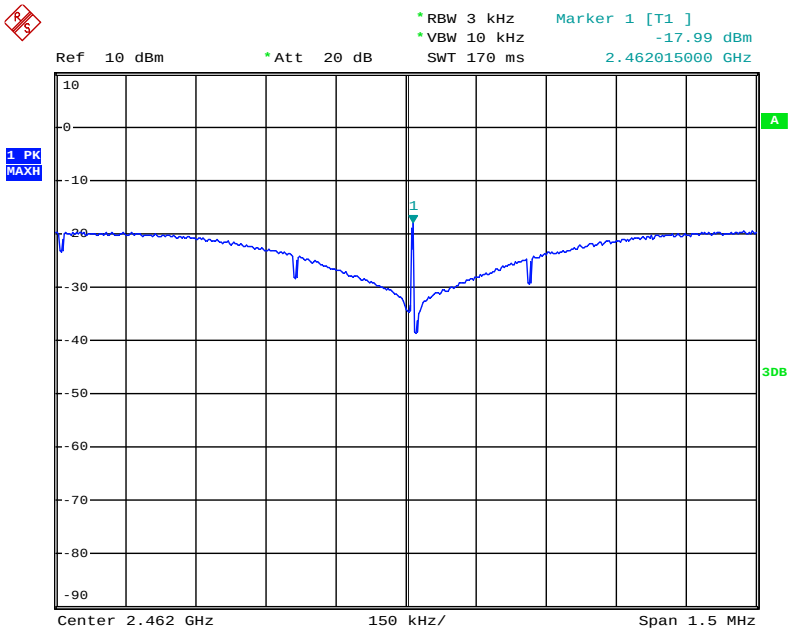
Date: 13.MAR.2013 08:52:11

Power Spectral Density, 802.11b Middle Channel



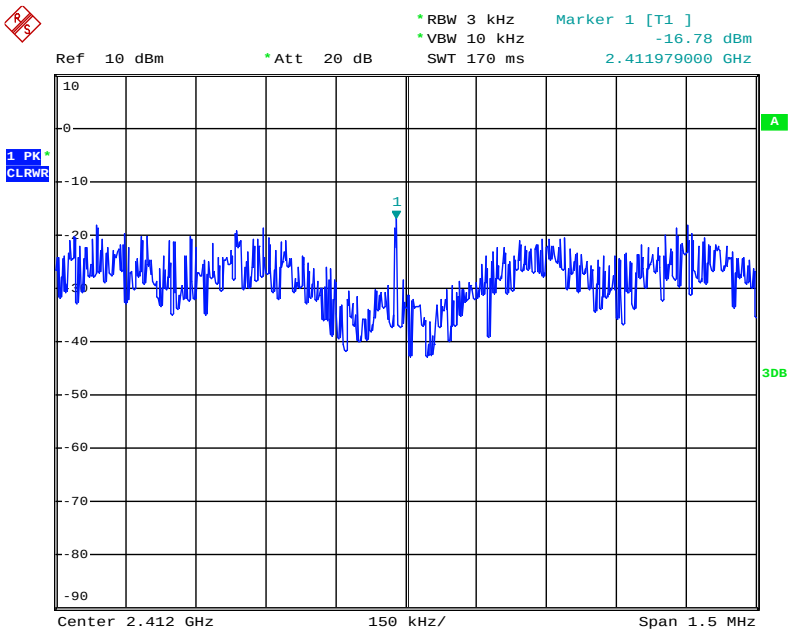
Date: 13.MAR.2013 08:58:29

Power Spectral Density, 802.11b High Channel



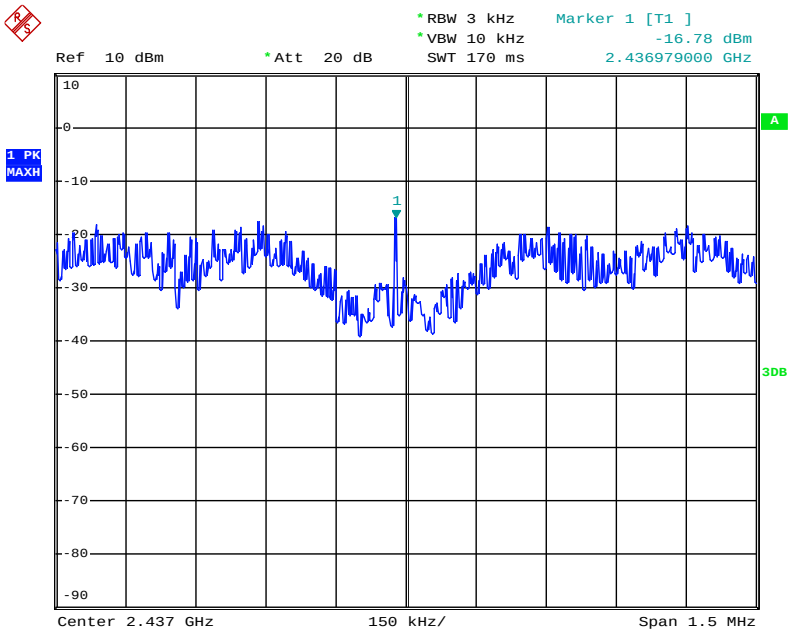
Date: 13.MAR.2013 09:02:05

Power Spectral Density, 802.11g Low Channel



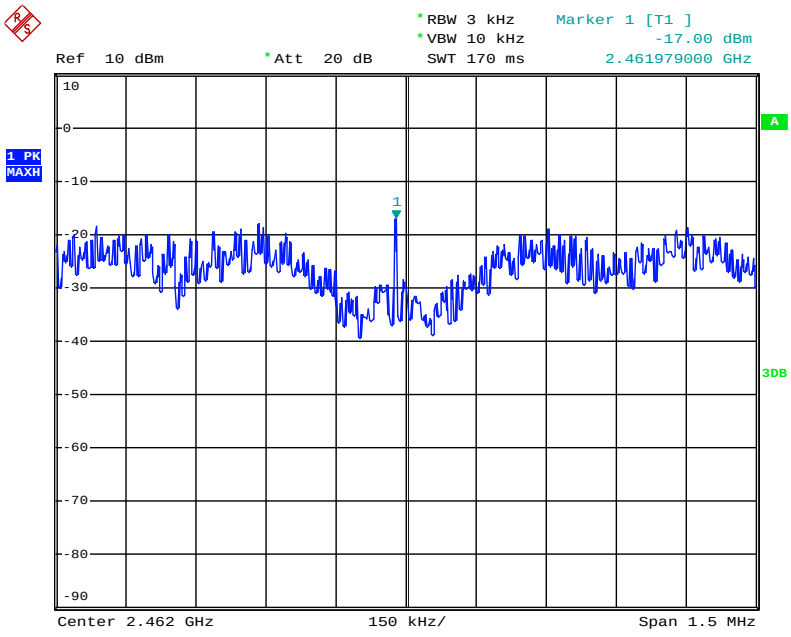
Date: 13.MAR.2013 09:40:35

Power Spectral Density, 802.11g Middle Channel



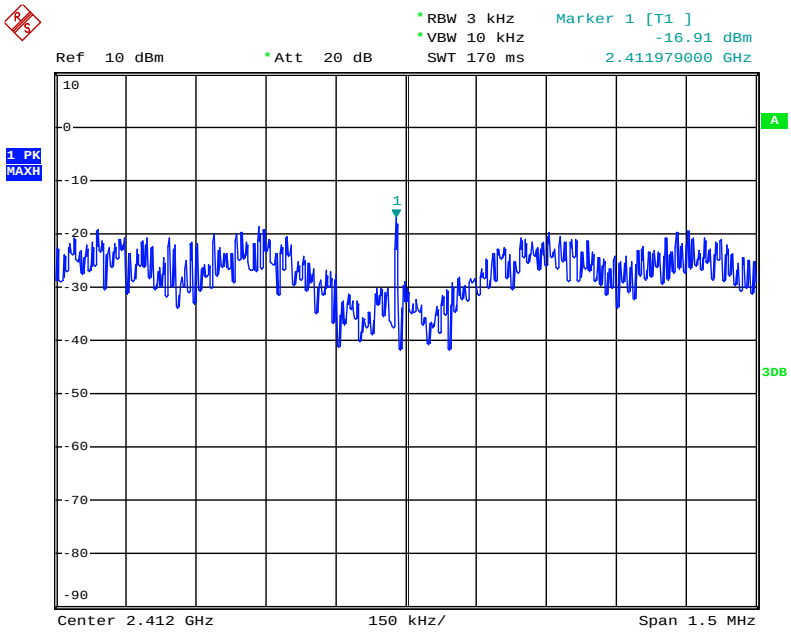
Date: 13.MAR.2013 09:39:43

Power Spectral Density, 802.11g High Channel



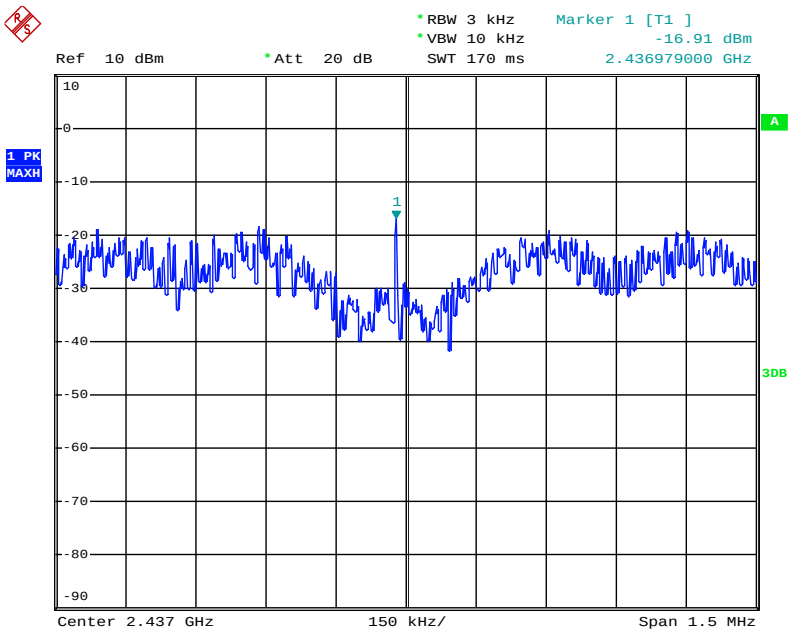
Date: 13.MAR.2013 09:41:16

Power Spectral Density, 802.11n20 Low Channel



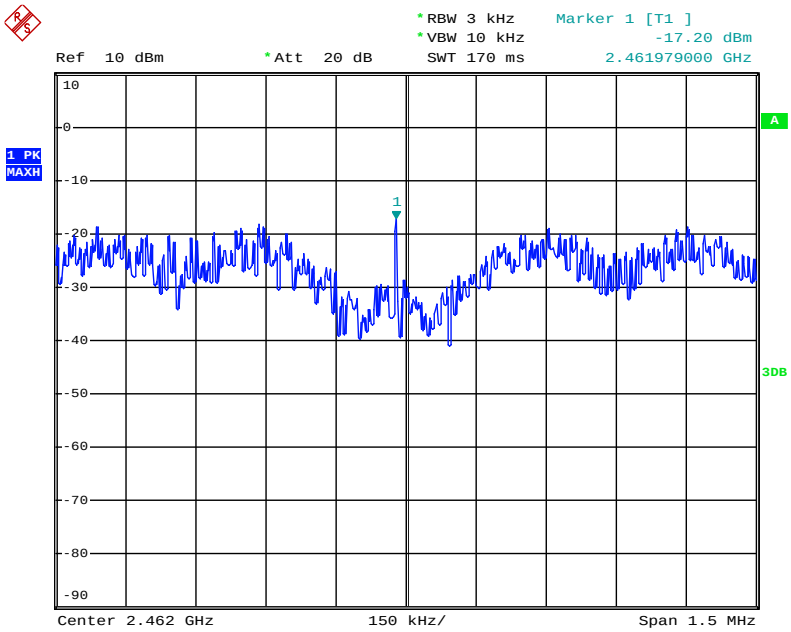
Date: 13.MAR.2013 09:47:28

Power Spectral Density, 802.11n20 Middle Channel



Date: 13.MAR.2013 09:48:05

Power Spectral Density, 802.11n20 High Channel



Date: 13.MAR.2013 09:54:00