FCC PART 15.247

TEST REPORT

For

Rosewill Inc.

Wireless N Adapter

Model No.: RNX-MININ1

Prepared for	:	Rosewill Inc.
Address	:	17708 Rowland St. City Of Industry, CA91748, United States
Prepared by	:	SHENZHEN LCS CERTIFICATION SERVICES INC.
Address	:	Xingyuan Industrial Park, Tongda Road, Bao'an Blvd, Bao'an District, Shenzhen, Guangdong, China

Report Number	:	LLCS1104050341F
Date of Test	:	April 06, 2011 – April 26, 2011
Date of Report	:	April 26, 2011

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1. TEST RESULT CERTIFICATION

Applicant	:	Rosewill Inc.
Manufacturer	:	Shenzhen AEE Technology Co., Ltd.
EUT	:	Wireless N Adapter
Trade Mark	:	Rosewill
Model No.	:	RNX-MININ1
Serial Number	:	N/A
Test Rule Part(s)	:	47 CRR FCC Part Subpart C §15.247
Date of Test	:	April 06, 2011 – April 26, 2011

APPLICABLE STANDARDS	
STANDARD	**TESTRESULT**
FCC PART 15.247 (2010)	No non-compliance noted

SHENZHEN LCS CERTIFICATION SERVICES INC. as requested by the applicant to evaluate the EMC performance of the product Sample received on April 06, 2010 would like to declare that the tested sample has been evaluated And found to be in compliance with the tested rule parts. The data recorded as well as the test Configuration specified is true and accurate for showing the sample's EMC nature.

Compiled by:	**Supervised by:**	**Approved by:**
Bobo Li	Vito Gao	Gavin Liang
Bobo Li/ File administrators	Vito/ Technique principal	Gavin Liang/ Manager

2. GENERAL INFORMATION

2.1. Product Description for Equipment Under Test (EUT)

Applicant	:	Rosewill Inc.
Address		17708 Rowland St. City Of Industry, CA91748, United States
Manufacturer	:	Catch-Tec., Inc
Address		7F, No.173, Jian 8th Rd., Zhonghe Dis., New Taipei City, 23585, Taiwn
EUT	:	Wireless N Adapter
Trade Mark	:	Rosewill
Model No.	:	RNX-MININ1
Serial Number	:	N/A
Input Voltage	:	DC 5V
EUT Description	:	18mm L x 6.0mm W x 14cm H
File Number	:	LCS1104050341F
Date of Test	:	April 06, 2011 – April 26, 2011

2.2. Objective

This Type approval report is prepared on behalf of Shenzhen Rosewill Inc. in accordance with Part 2, Subpart J, Part 15, Subparts A, B and C of the Federal Communication Commissions rules. The tests were performed in order to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.209 and 15.247 rules.

2.3. Related Submittal(s)/Grant(s)

No Related Submittals.

2.4. Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2009, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.
All emissions measurement was performed and SHENZHEN LCS CERTIFICATION SERVICES INC. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

2.5. Facilities

All measurement facilities used to collect the measurement data are located at Xingyuan Industrial Park, Tongda Road, Bao'an Blvd, Bao'an District, Shenzhen, Guangdong, China.
The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

2.6. External I/O Cable

N/A

2.7. Laboratory Accreditations And Listings

Site Description

EMC Lab. : **CNAS-Lab Code: L4595**

SHENZHEN LCS CERTIFICATION SERVICES INC. has been assessed and proved to be in compliance with CNAS-CL01: 2006 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

FCC-Registration No.: 752021

Anbotek Compliance Laboratory Limited, EMC Laboratory has been registeredand fully described in a report filed with the FCC (Federal Communications Commission). Theacceptance letter from the FCC is maintained in our files. Registration No. August 20, 2010.

Name of Firm : SHENZHEN LCS CERTIFICATION SERVICES INC

Site Location : Xingyuan Industrial Park, Tongda Road, Bao'an Blvd, Bao'an District, Shenzhen, Guangdong, China

3. SYSTEM TEST CONFIGURATION

3.1. Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

3.2. EUT Exercise Software

N/A

3.3. Special Accessories

The special accessories were supplied by SHENZHEN LCS CERTIFICATION SERVICES INC.

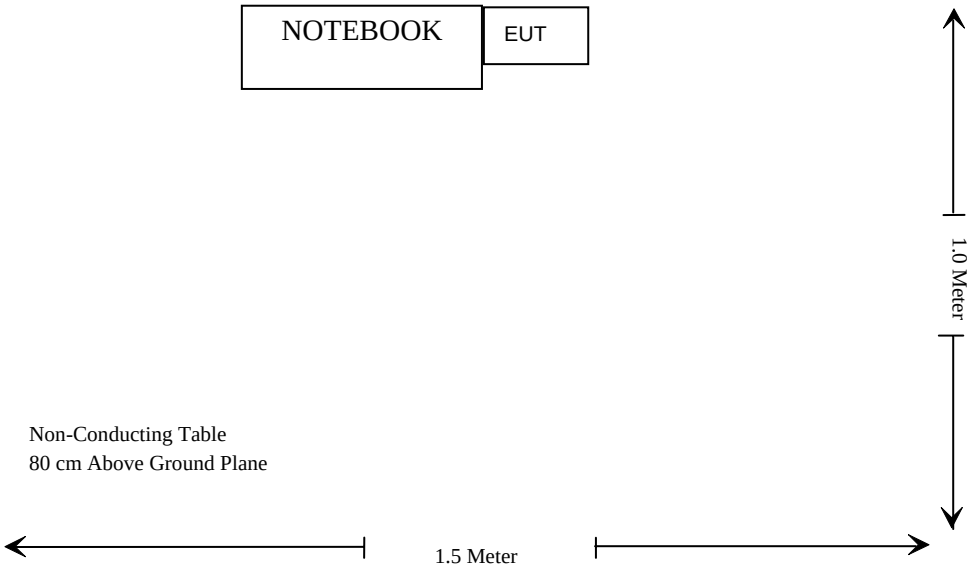
3.4. Block Diagram/Schematics

Please refer to the report

3.5. Equipment Modifications

SHENZHEN LCS CERTIFICATION SERVICES INC has not done any modification on the EUT.

3.6. Block Diagram of Test Setup



4. SUMMARY OF TEST RESULTS

Applied Standard: 47 CFR FCC Part 15 Subpart C		
FCC Rules	**Description of Test**	**Result**
§15.247(b)(3)	Maximum Conducted Output Power	Compliant
§15.247(e)	Power Spectral Density	Compliant
15.247(a)(2)	6dB Spectrum Bandwidth	Compliant
§15.247(d)	Radiated Emissions	Compliant
§15.247(d)	Band Edge Emissions	Compliant
§15.203	Antenna Requirements	Compliant
§15.247(i)§2.1093§1.1307	RF Exposure	Compliant

Test Items	Uncertainty	Remark
Maximum Conducted Output Power	±0.8dB	Confidence levels of 95%
Power Spectral Density	±0.5dB	Confidence levels of 95%
6dB Spectrum Bandwidth	±8.5×10	Confidence levels of 95%
Radiated Emissions (9kHz~30MHz)	±0.8dB	Confidence levels of 95%
Radiated Emissions (30MHz~1000MHz)	±1.9dB	Confidence levels of 95%
Radiated / Band Edge Emissions (1GHz~18GHz)	±1.9dB	Confidence levels of 95%
Radiated Emissions (18GHz~40GHz)	±1.9dB	Confidence levels of 95%
Temperature	±0.7℃	Confidence levels of 95%
Humidity	±3.2%	Confidence levels of 95%
DC / AC Power Source	±1.4%	Confidence levels of 95%

5. TEST RESULT

5.1. Maximum Conducted Output Power Measurement

5.1.1. Limit

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. The limited has to be reduced by the amount in dB that the gain of the antenna exceed 6dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

5.1.2. Measuring Instruments and Setting

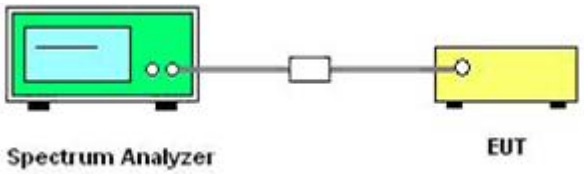
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RB	1000 kHz
VB	3000 kHz
Detector	RMS
Trace	RMS
Sweep Time	Auto

5.1.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. Test was performed in accordance with Measurement of Digital Transmission Systems Operating under Section 15.247.

5.1.4. Test Setup Layout



5.1.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.1.6. Test Result of Maximum Conducted Output Power

Temperature	25℃	Humidity	60%
Test Engineer	Vito Cao	Configurations	802.11b,g,n

802.11b

CH	Freq. (MHz)	Read PK (dBm)	Cable loss (dB)	ANT. loss (dB)	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412	11.31	0.1	0	11.41	30	Complies
6	2437	12.22	0.1	0	12.32	30	Complies
11	2462	12.12	0.1	0	12.22	30	Complies

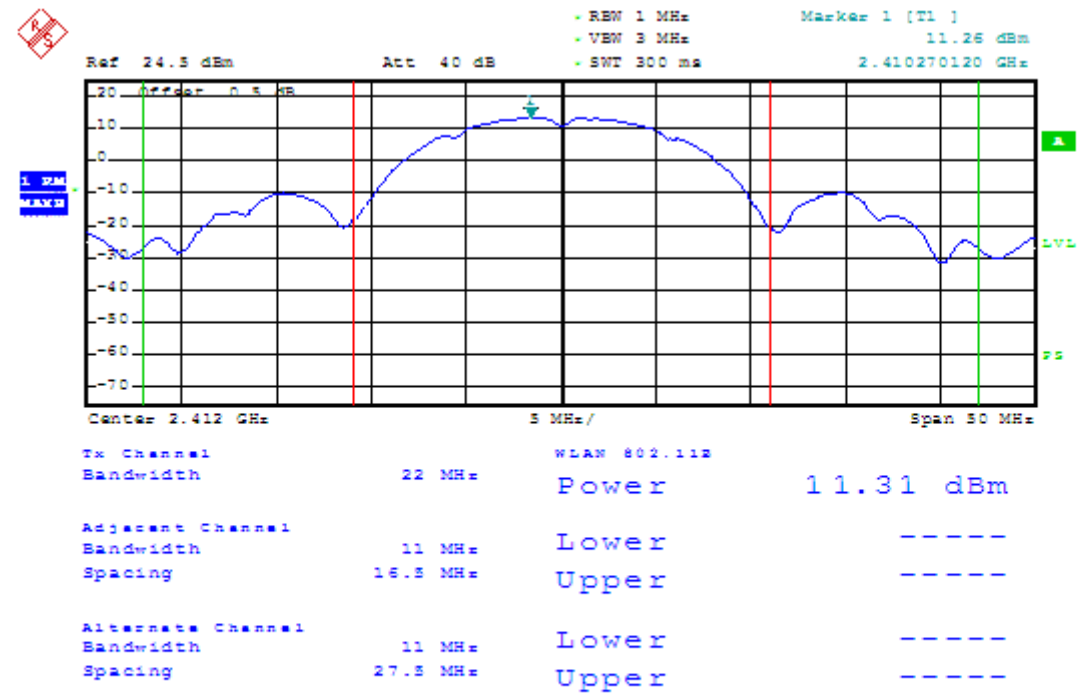
802.11g

CH	Freq. (MHz)	Read PK (dBm)	Cable loss (dB)	ANT. loss (dB)	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412	10.96	0.1	0	11.06	30	Complies
6	2437	10.86	0.1	0	10.96	30	Complies
11	2462	10.66	0.1	0	10.76	30	Complies

802.11n

CH	Freq. (MHz)	Read PK (dBm)	Cable loss (dB)	ANT. loss (dB)	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412	10.12	0.1	0	10.22	30	Complies
6	2437	10.52	0.1	0	10.62	30	Complies
11	2462	10.42	0.1	0	10.52	30	Complies

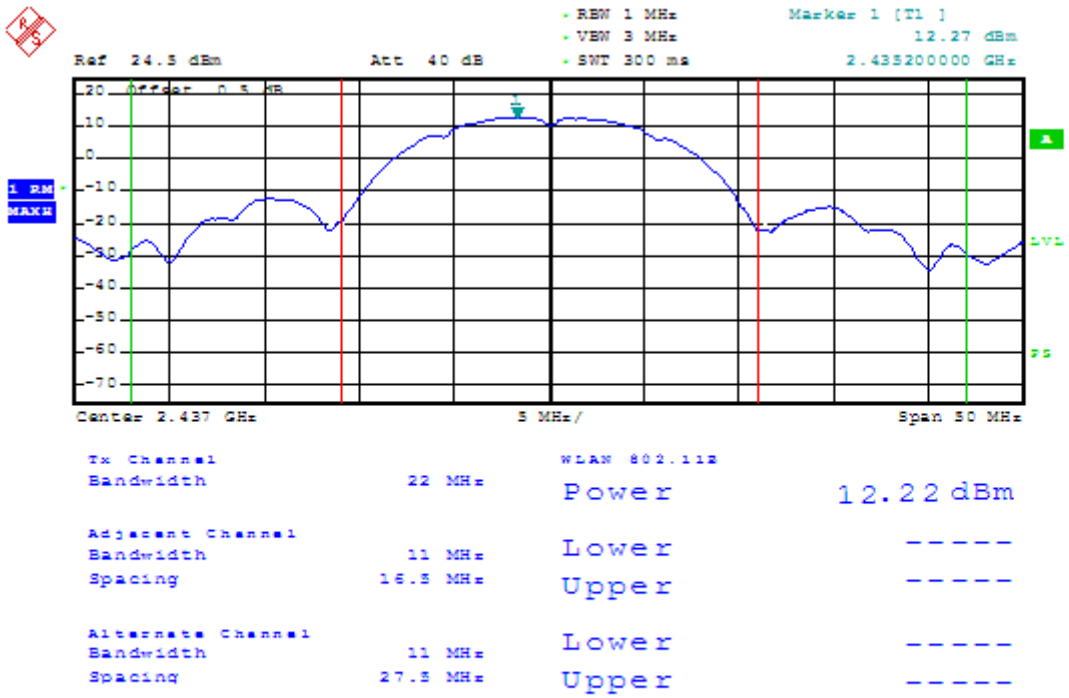
Note：Result= Read + Cable loss + Antenna Loss



802.11b, low channel,output power

Date: 22.APR.2011

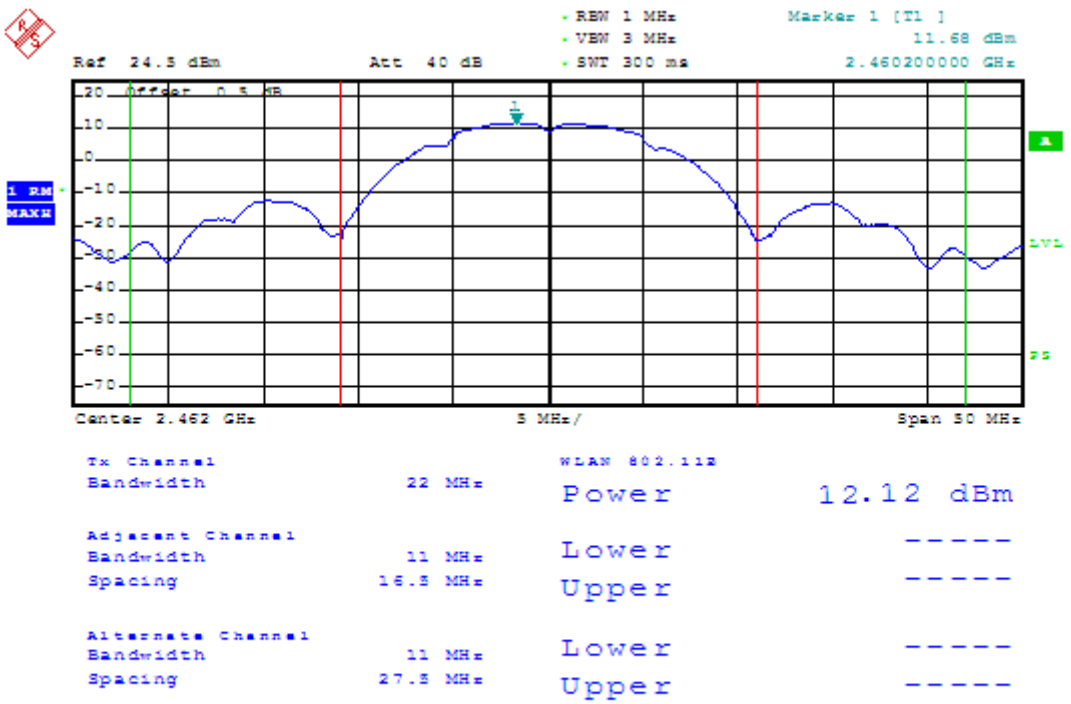
802.11b (CH1)



802.11b, middle channel,output power

Date: 22.APR.2011

802.11b (CH 6)



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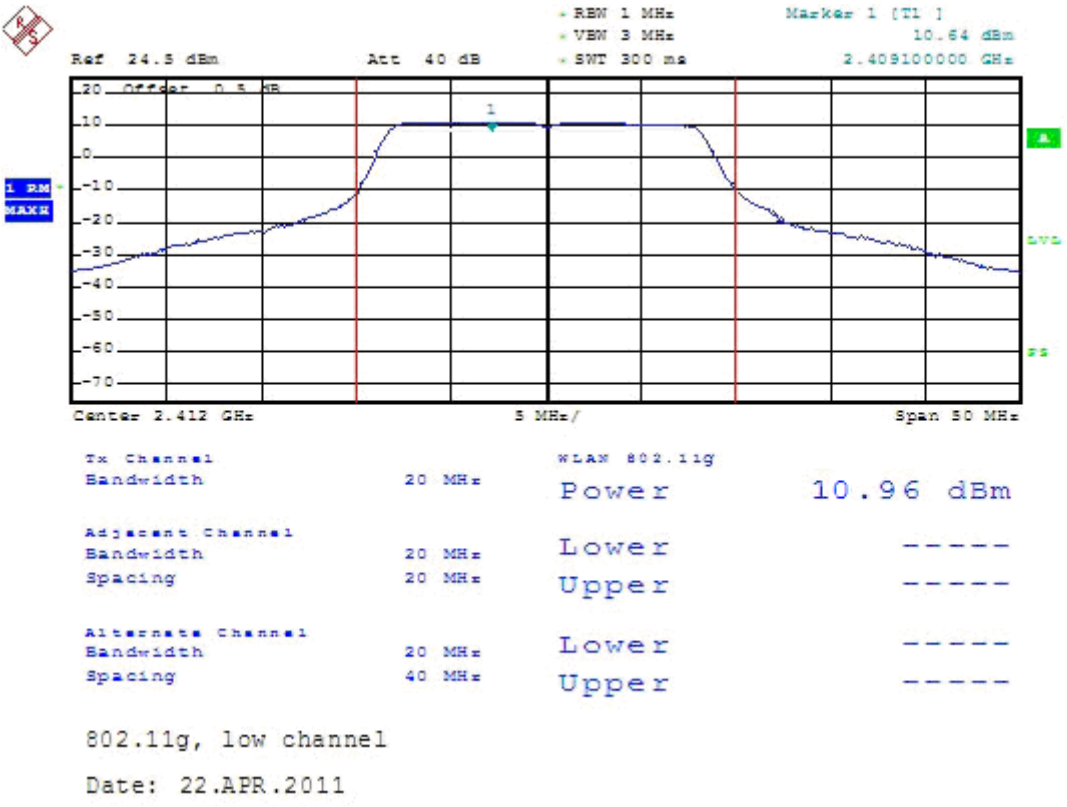
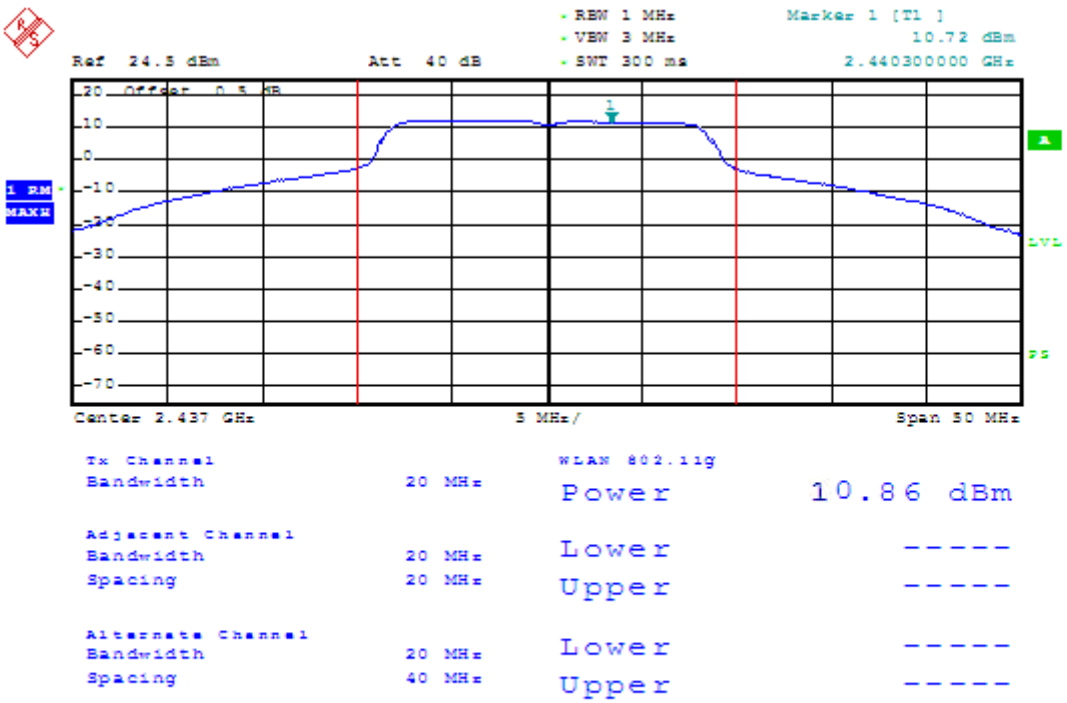


802.11g (CH 1)



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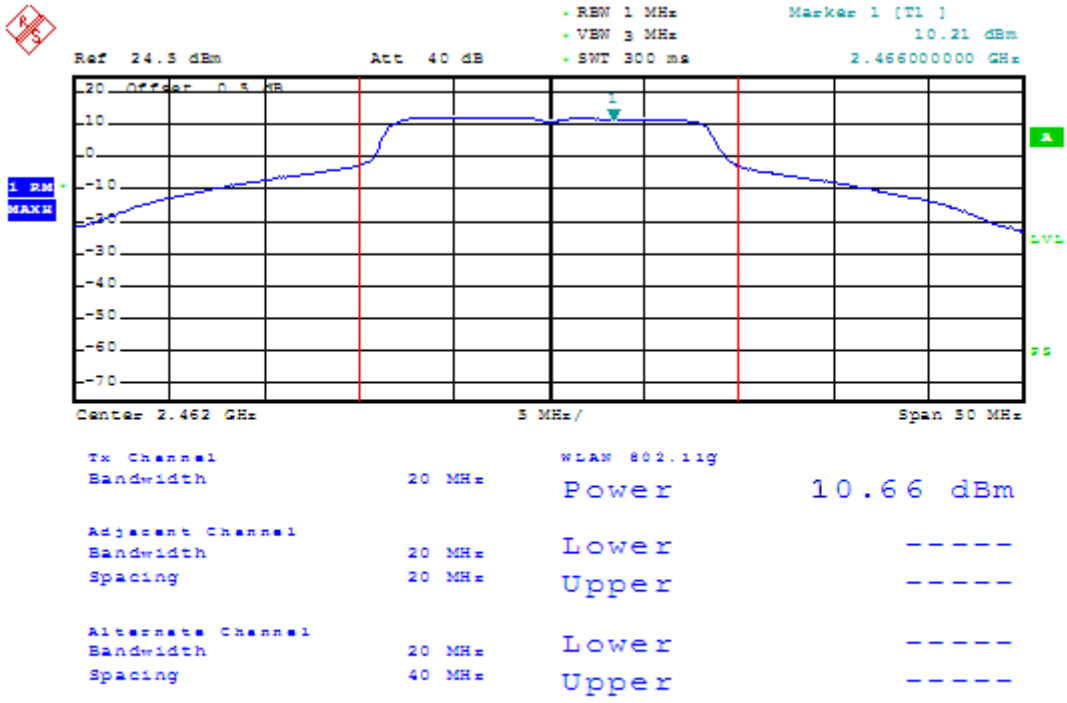

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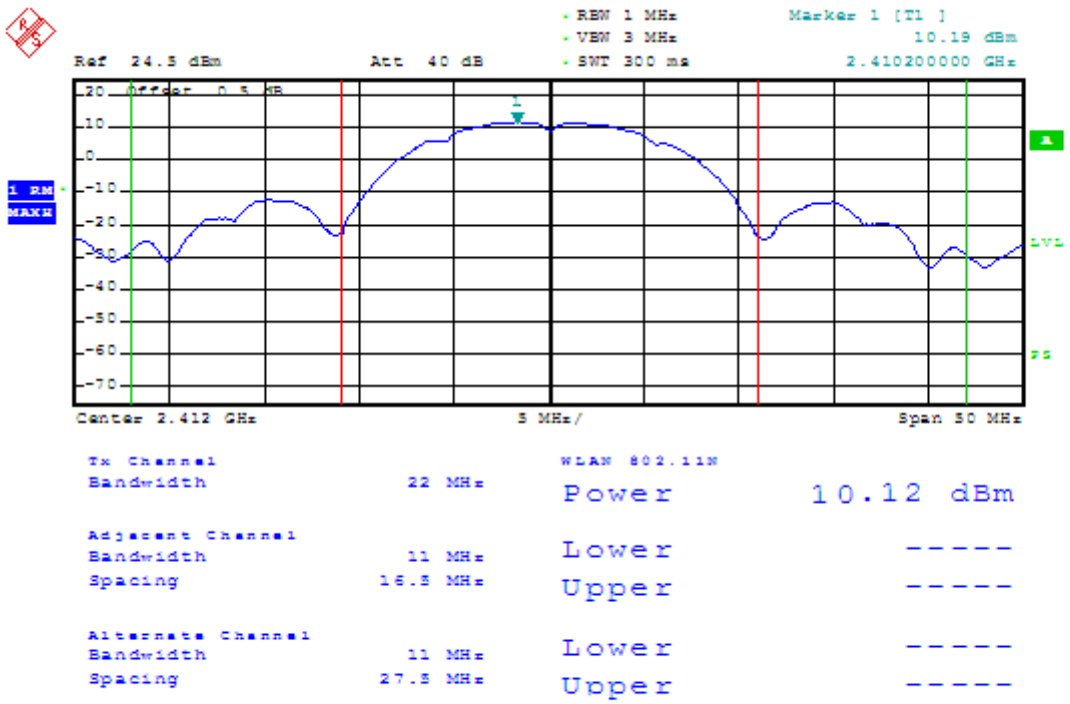
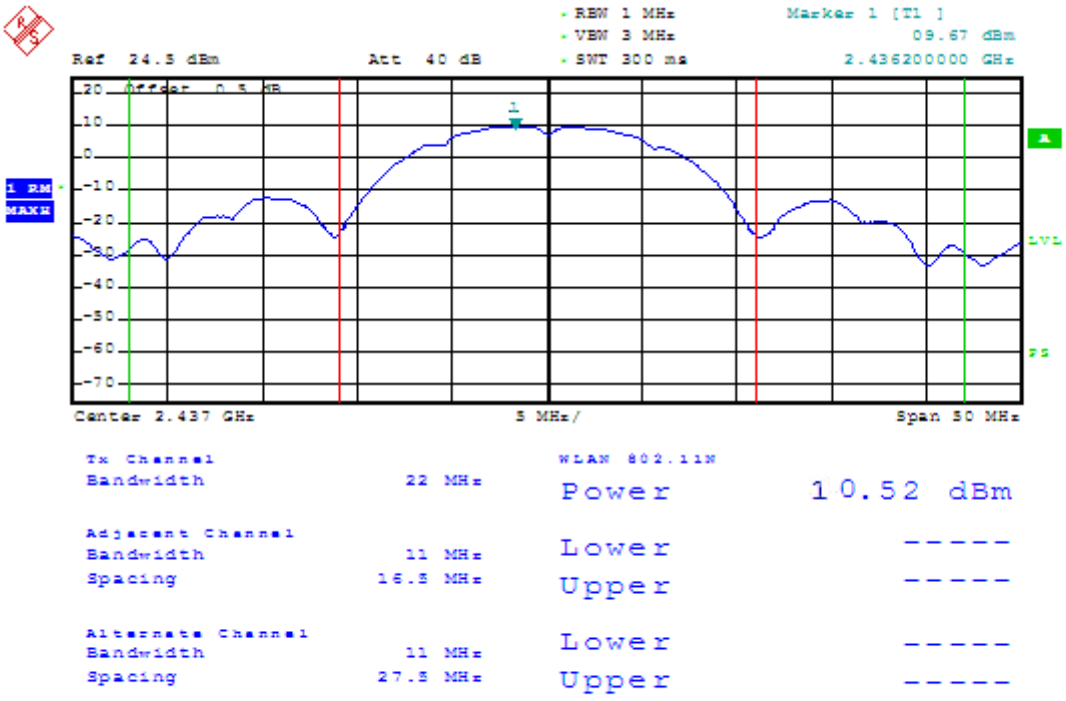
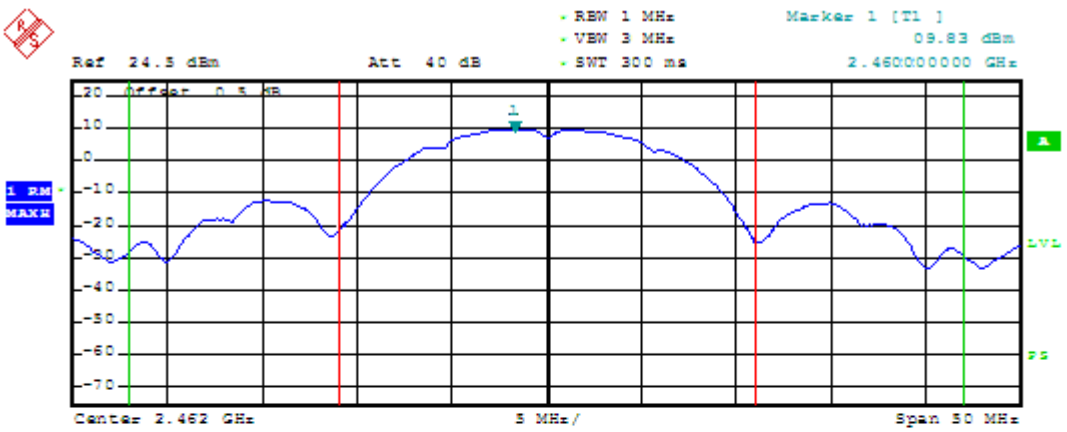


802.11n (CH 1)



802.11n (CH 6)


RBW 1 MHz
VBW 3 MHz
SWT 300 ms
Marker 1 [T1]
09.83 dBm
2.460000000 GHz
Ref 24.5 dBm
Att 40 dB
Offset 0.5 dB
1 RM
MAXH
Center 2.462 GHz
5 MHz/
Span 50 MHz
Tx Channel
Bandwidth 22 MHz
WLAN 802.11N
Power 10.42 dBm
Adjacent Channel
Bandwidth 11 MHz
Spacing 16.5 MHz
Lower -----
Upper -----
Alternate Channel
Bandwidth 11 MHz
Spacing 27.5 MHz
Lower -----
Upper -----
802.11n, high channel,output power
Date: 22.APR.2011

802.11n (CH 11)

5.2. Power Spectral Density Measurement

5.2.1. Limit

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.

5.2.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	30MHz
RB	3 kHz
VB	30 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	10s

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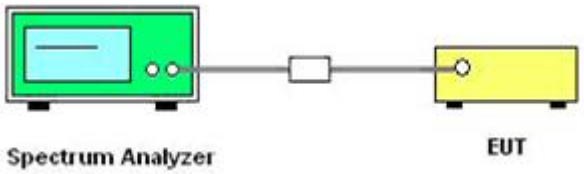
5.2.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyser.
2. Set RBW of spectrum analyzer to 3kHz and VBW to 30kHz. Set Detector to Peak, Trace to Max Hold.
3. Mark the frequency with maximum peak power as the center of the display of the spectrum.
4. Set the span to 1.5MHz and the sweep time to 500s and record the maximum peak value.

5.2.4. Test Setup Layout



5.2.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.2.6. Test Result of Power Spectral Density

Temperature	25℃	Humidity	60%
Test Engineer	Vito Cao	Configurations	802.11b,g,n

802.11b

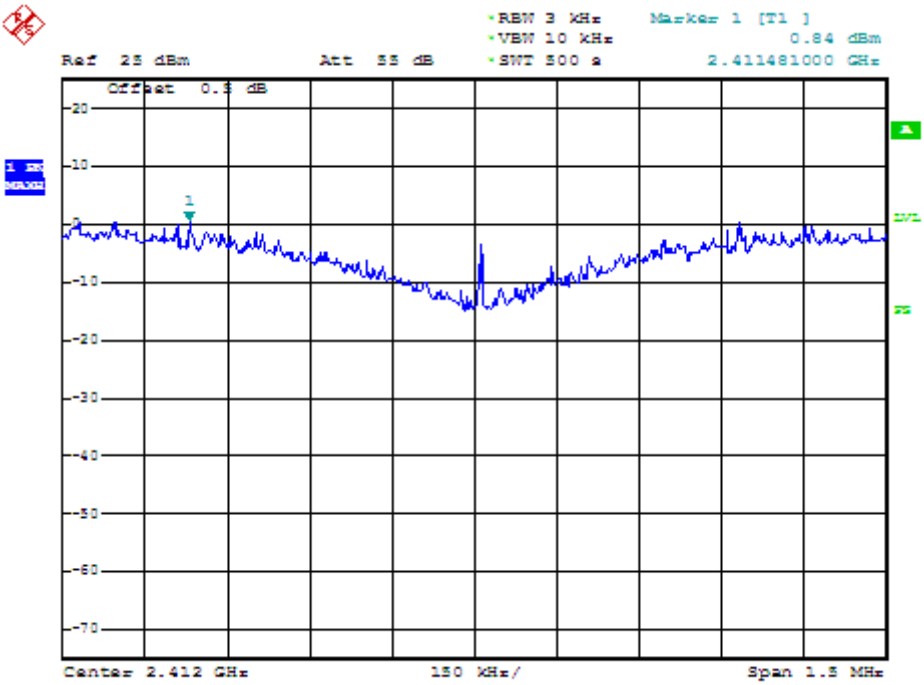
Channel	Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
1	2412	0.84	8	Complies
6	2437	-0.68	8	Complies
11	2462	2.37	8	Complies

802.11g

Channel	Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
1	2412	-3.58	8	Complies
6	2437	1.64	8	Complies
11	2462	1.63	8	Complies

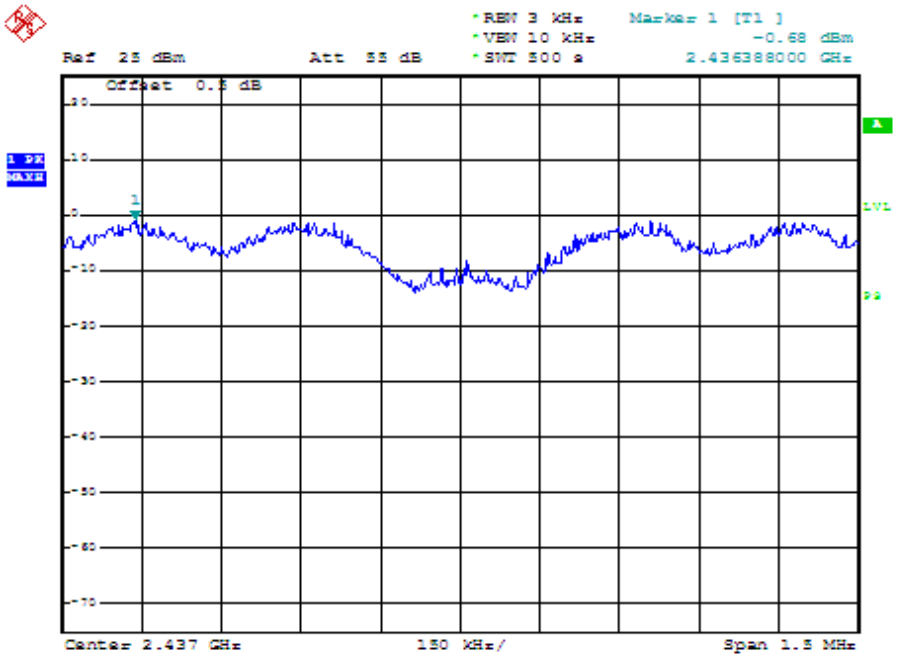
802.11n

Channel	Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
1	2412	-0.64	8	Complies
6	2437	1.65	8	Complies
11	2462	1.62	8	Complies



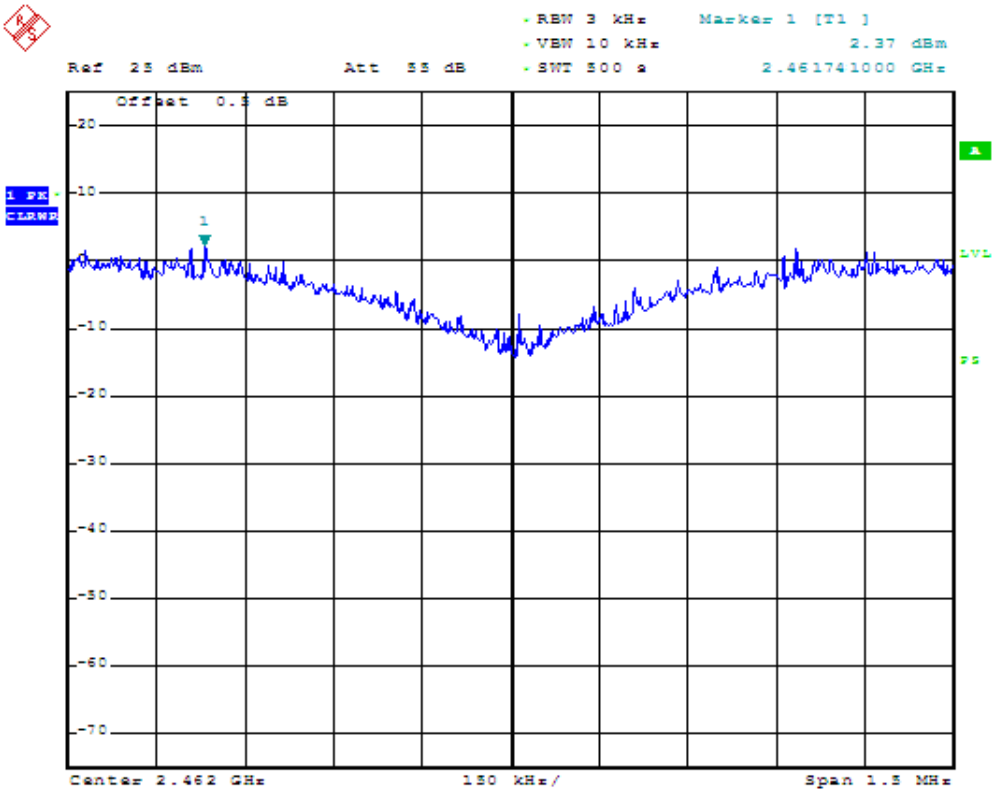
802.11b, low channel power density

Date: 22.APR.2011



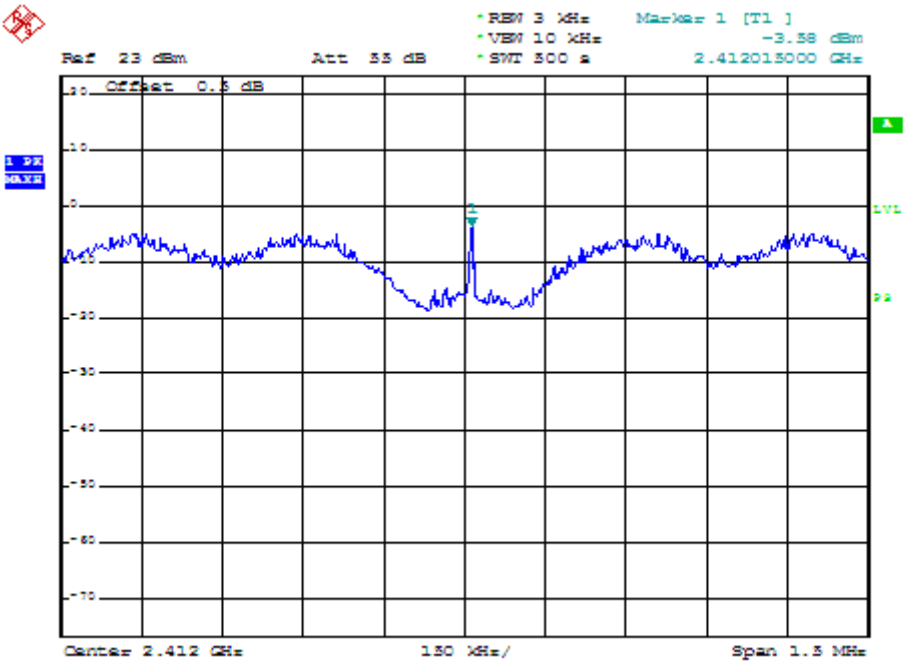
802.11g, middle channel power density

Date: 22.APR.2011



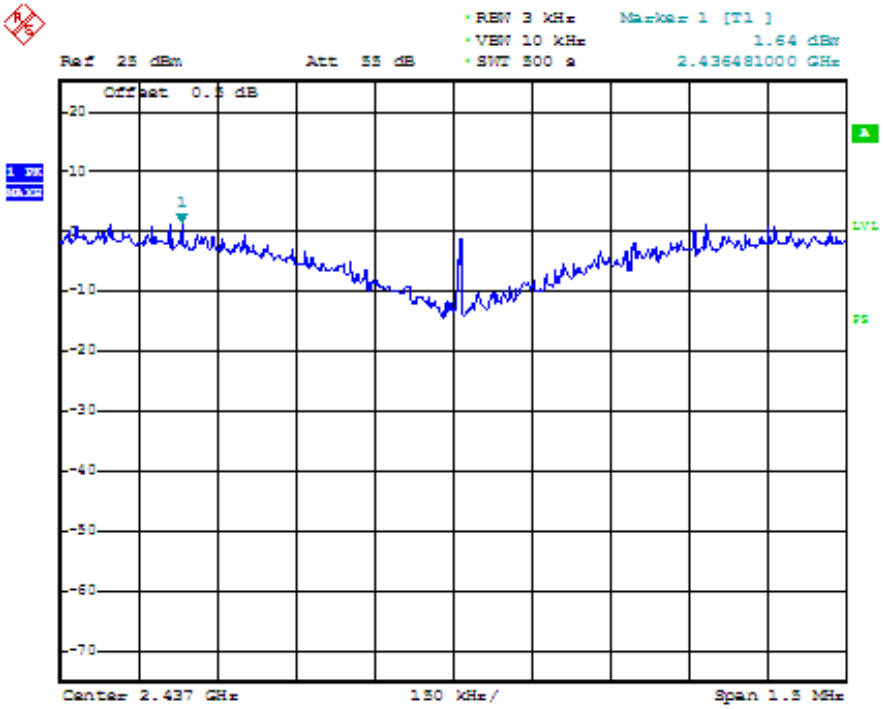
802.11b, high channel power density

Date: 22.ARP.2011



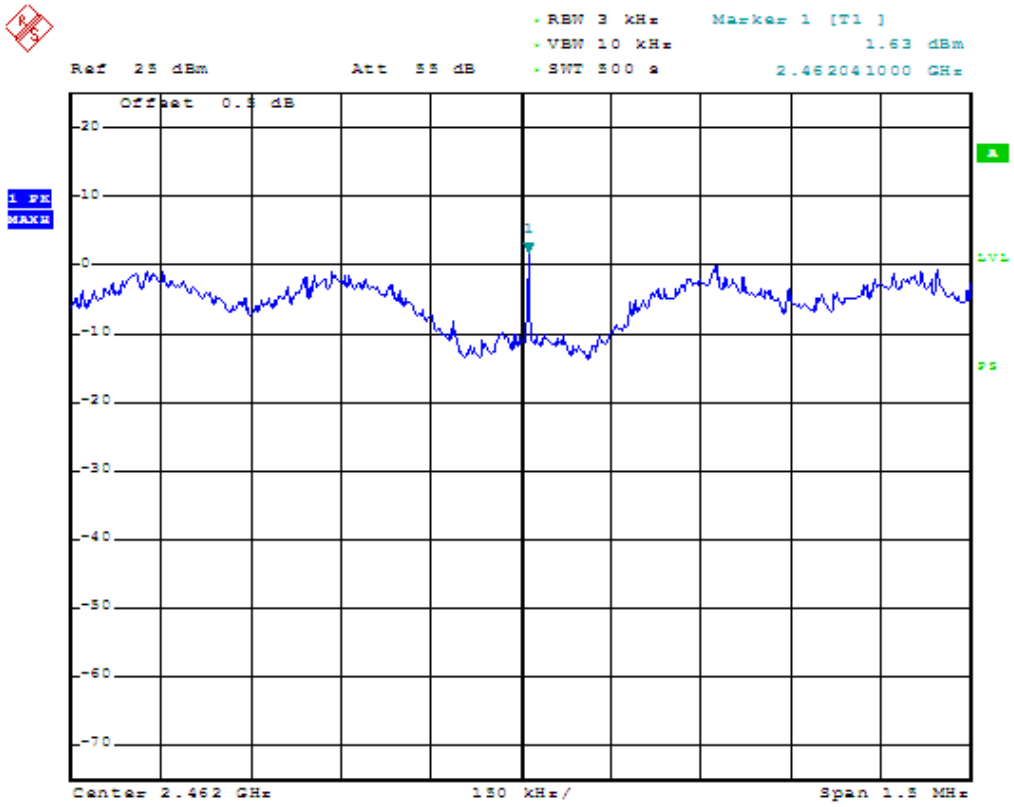
802.11g, low channel power density

Date: 22.ARP.2011



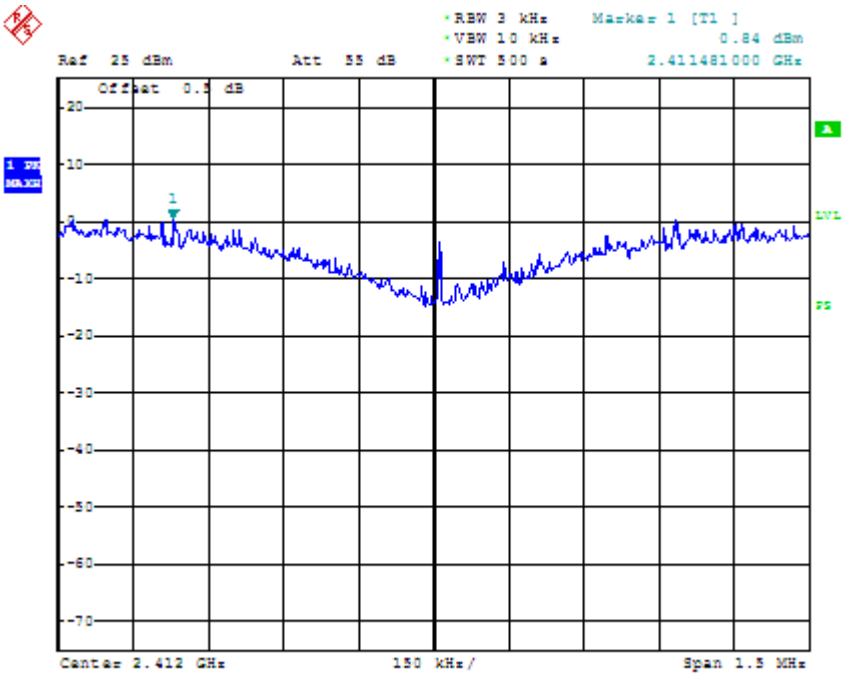
802.11g, middle channel power density

Date: 22.ARP.2011



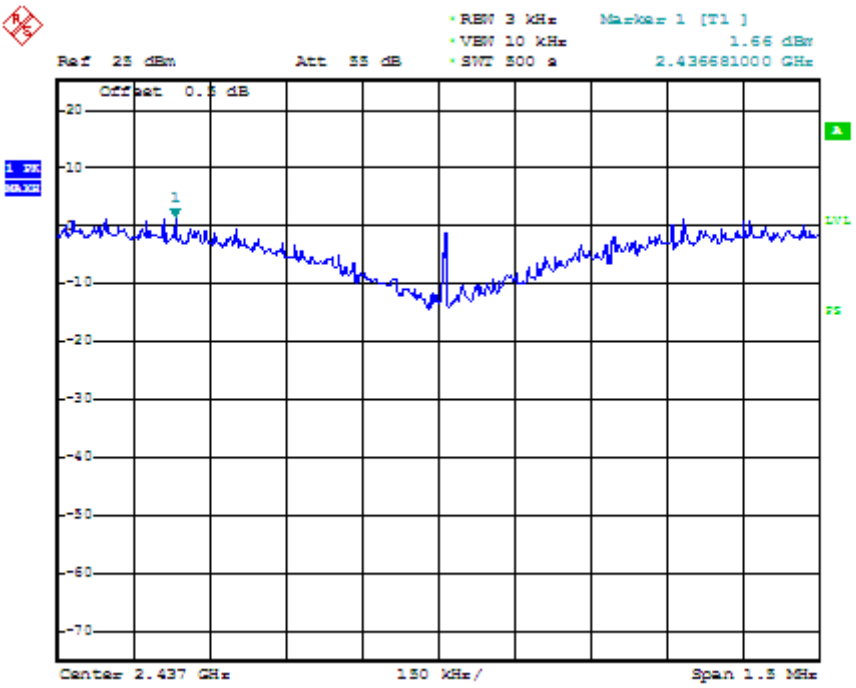
802.11g, high channel power density

Date: 22.ARP.2011



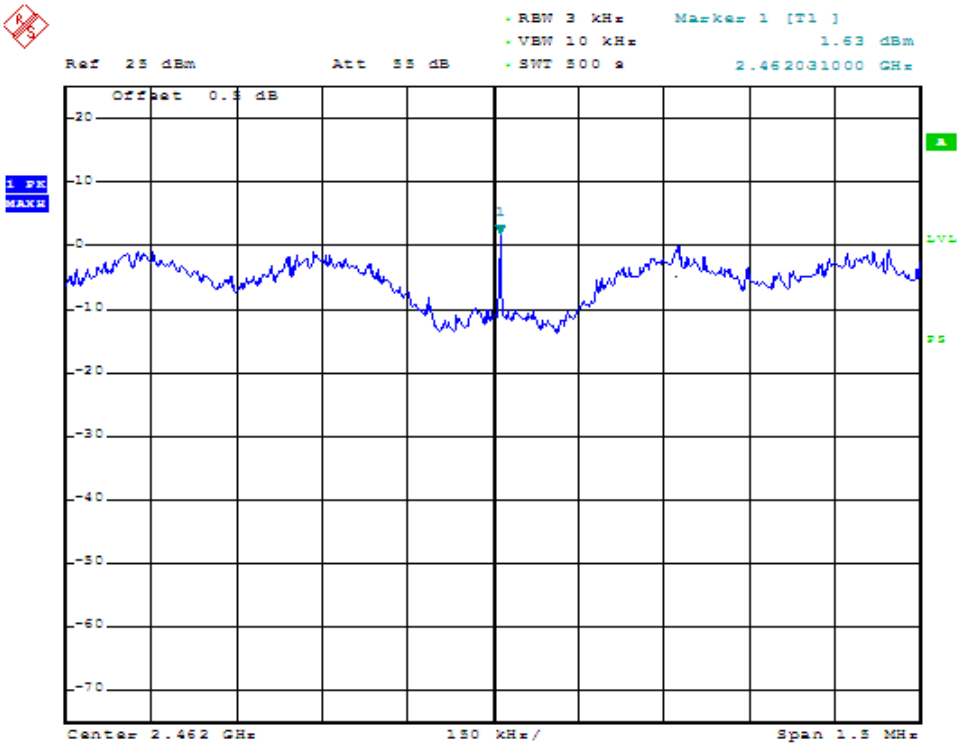
802.11n, low channel power density

Date: 22.ARP.2011



802.11n, middle channel power density

Date: 22.ARP.2011



802.11n, high channel power density

Date: 22.ARP.2011

5.3. 6 dB Spectrum Bandwidth Measurement

5.3.1. Limit

For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

5.3.2. Measuring Instruments and Setting

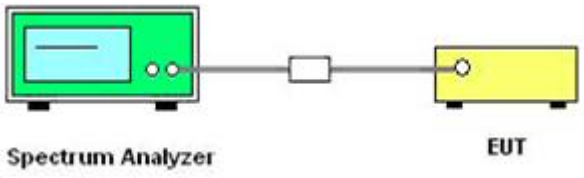
Please refer to section 5 of equipments list in this report. The following table is the setting of the Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> 6dB Bandwidth
RB	100kHz
VB	100kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

5
.3.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
2. The resolution bandwidth of 100 kHz and the video bandwidth of 100 kHz were used.
3. Measured the spectrum width with power higher than 6dB below carrier.

5.3.4. Test Setup Layout



5.3.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.3.6. Test Result of 6dB Spectrum Bandwidth

Temperature	25℃	Humidity	60%
Test Engineer	Vito Cao	Configurations	802.11b,g,n

802.11b

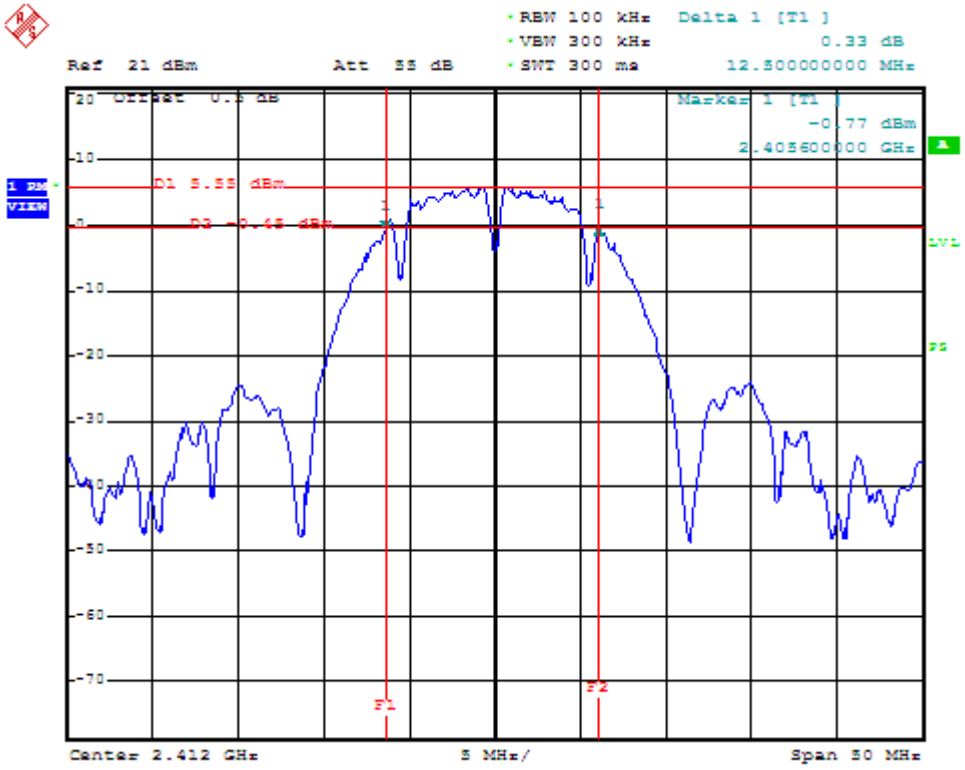
Channel	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Result
1	2412	12.5	500	Complies
6	2437	12.3	500	Complies
11	2462	12.2	500	Complies

802.11g

Channel	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Result
1	2412	16.6	500	Complies
6	2437	16.6	500	Complies
11	2462	16.6	500	Complies

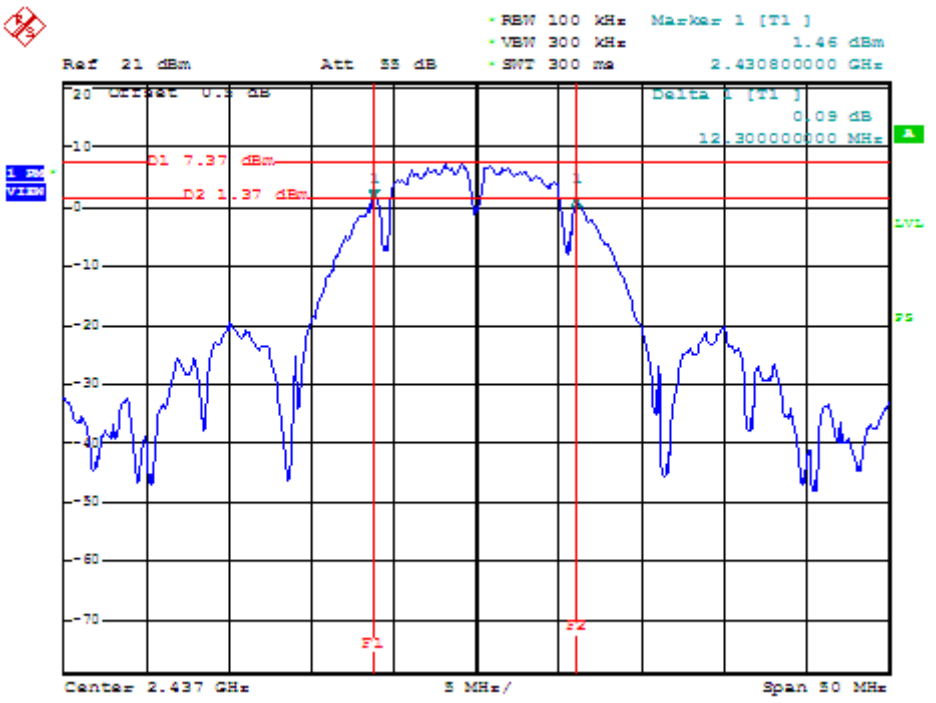
802.11n

Channel	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Result
1	2412	16.9	500	Complies
6	2437	16.9	500	Complies
11	2462	16.9	500	Complies



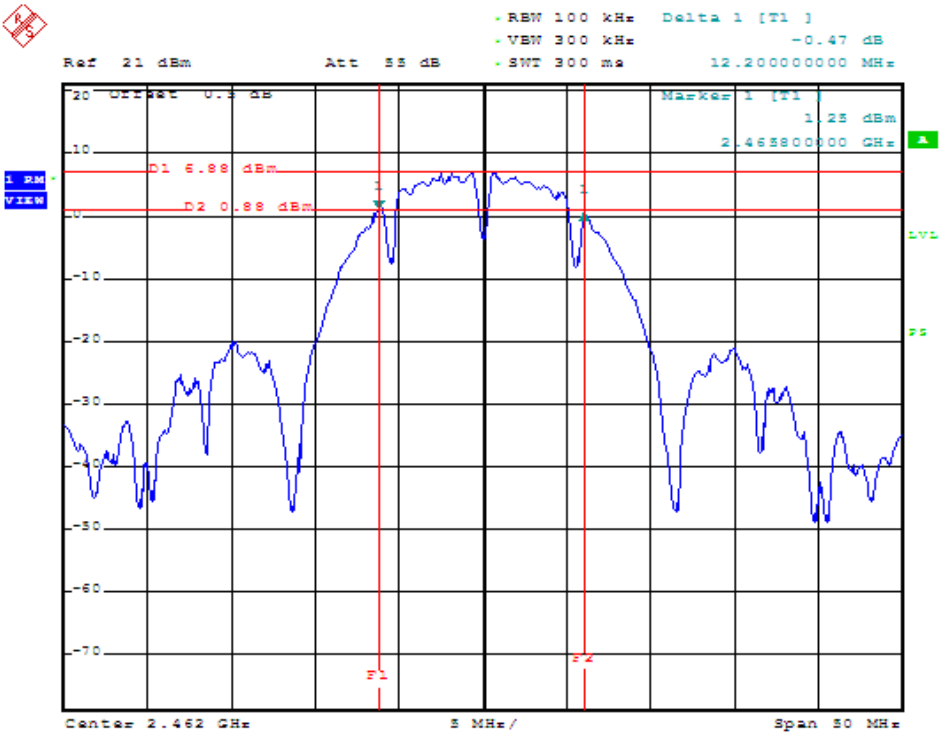
802.11b, low channel, 6dB bandwidth

Date: 22.ARP.2011



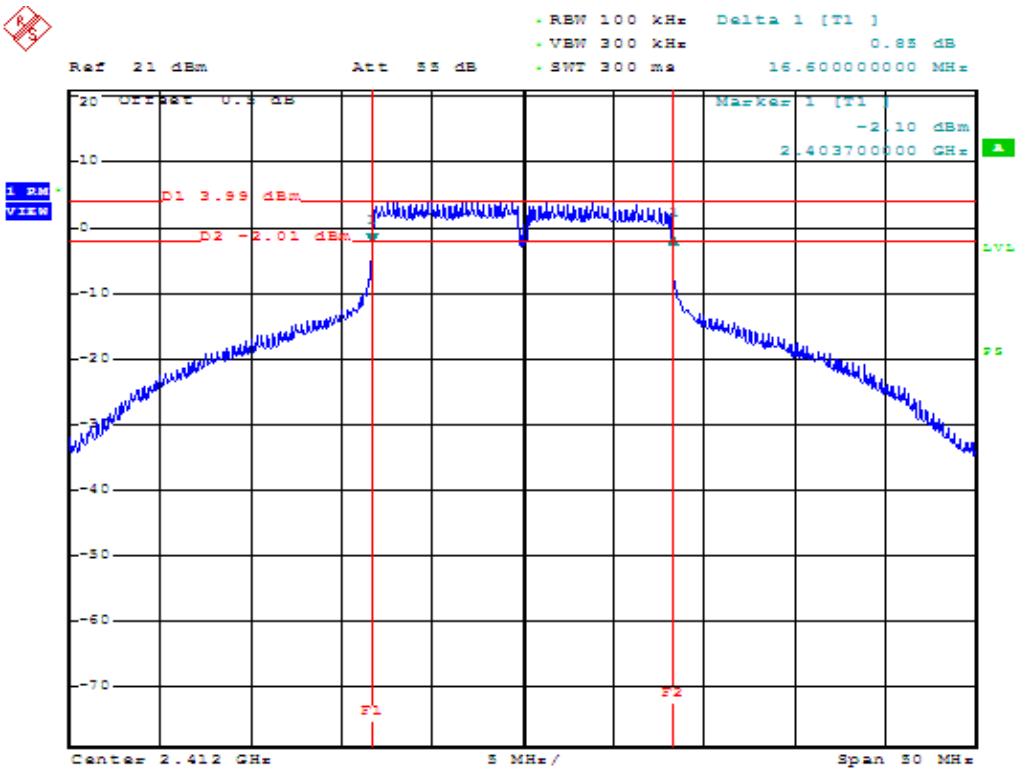
802.11b, middle channel, 6dB bandwidth

Date: 22.ARP.2011



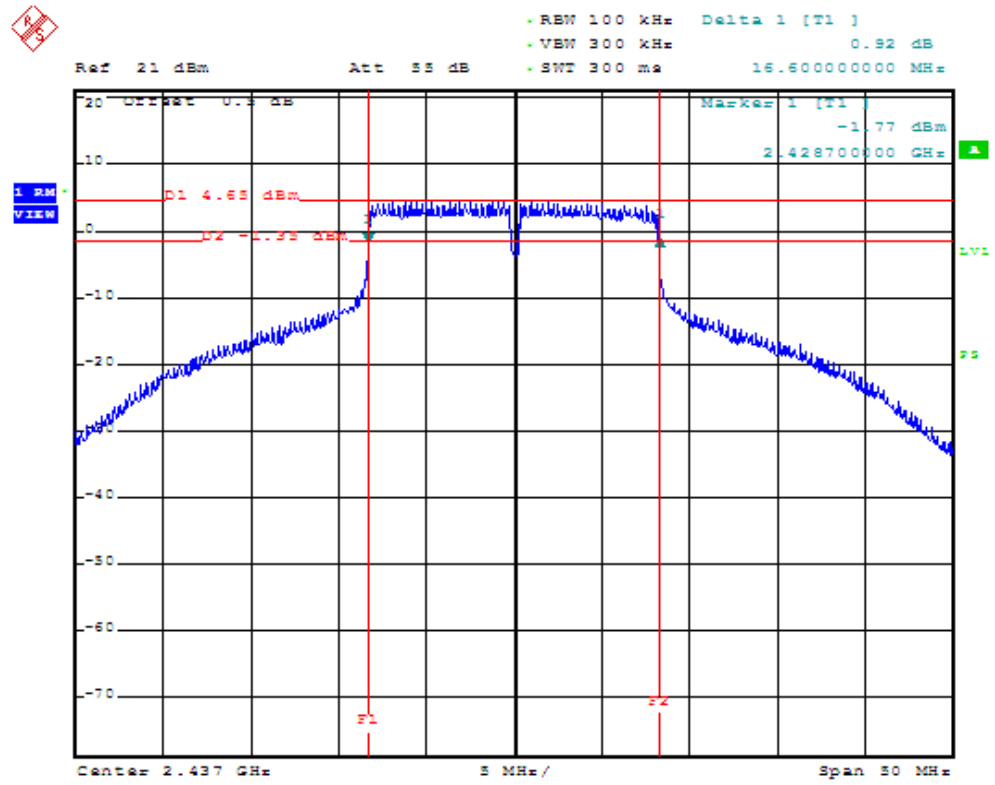
802.11b, high channel, 6dB bandwidth

Date: 22.ARP.2011



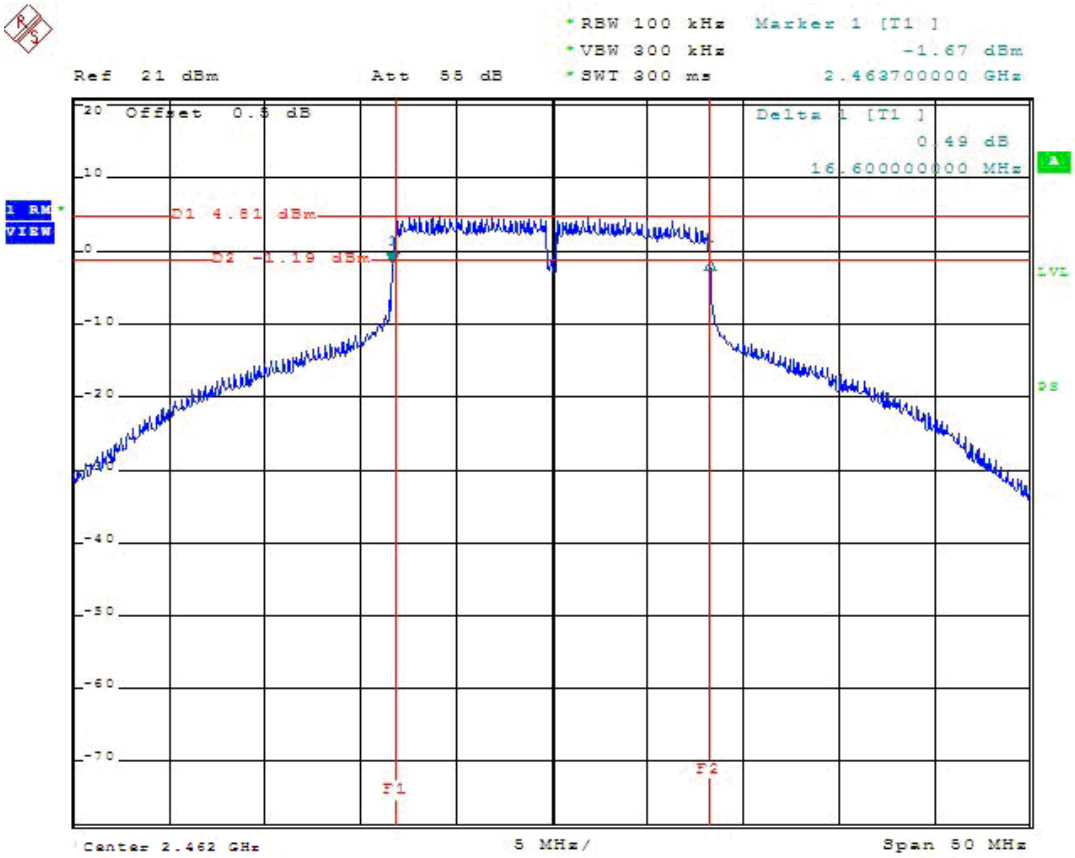
802.11g, low channel, 6dB bandwidth

Date: 22.ARP.2011



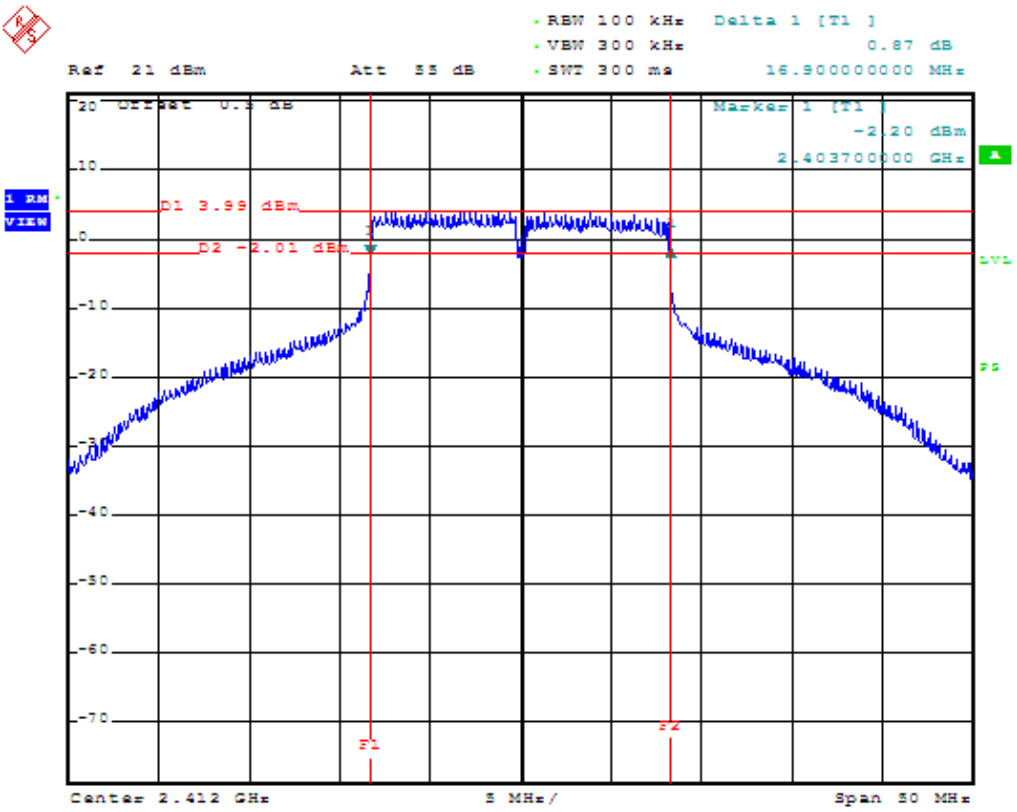
802.11g, middle channel, 6dB bandwidth

Date: 22.ARP.2011



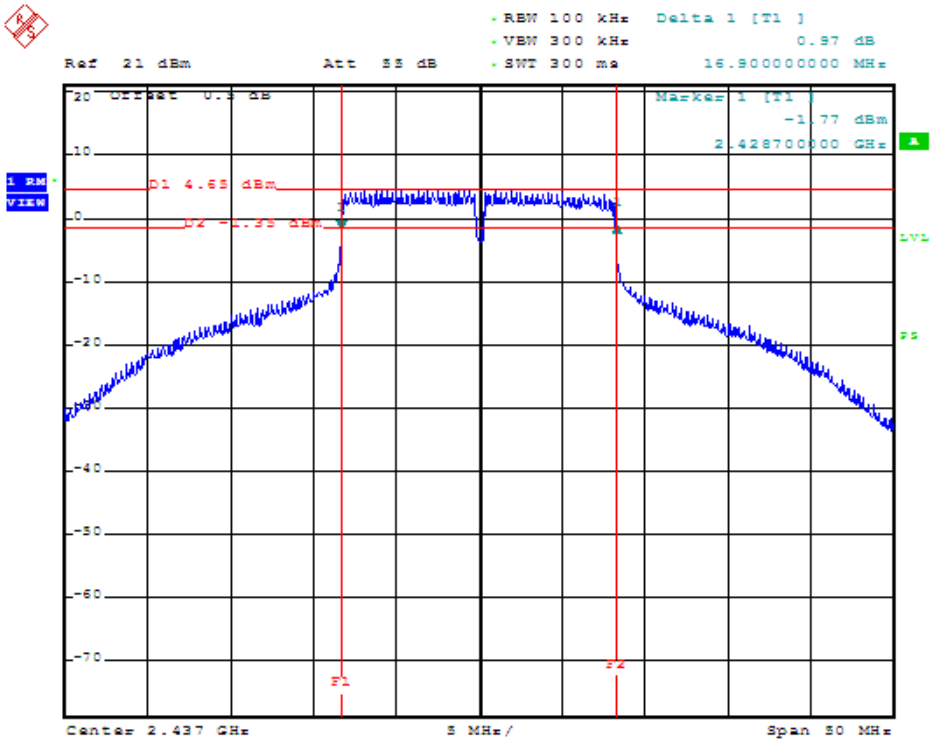
802.11g, high channel, 6dB bandwidth

Date: 22.ARP.2011



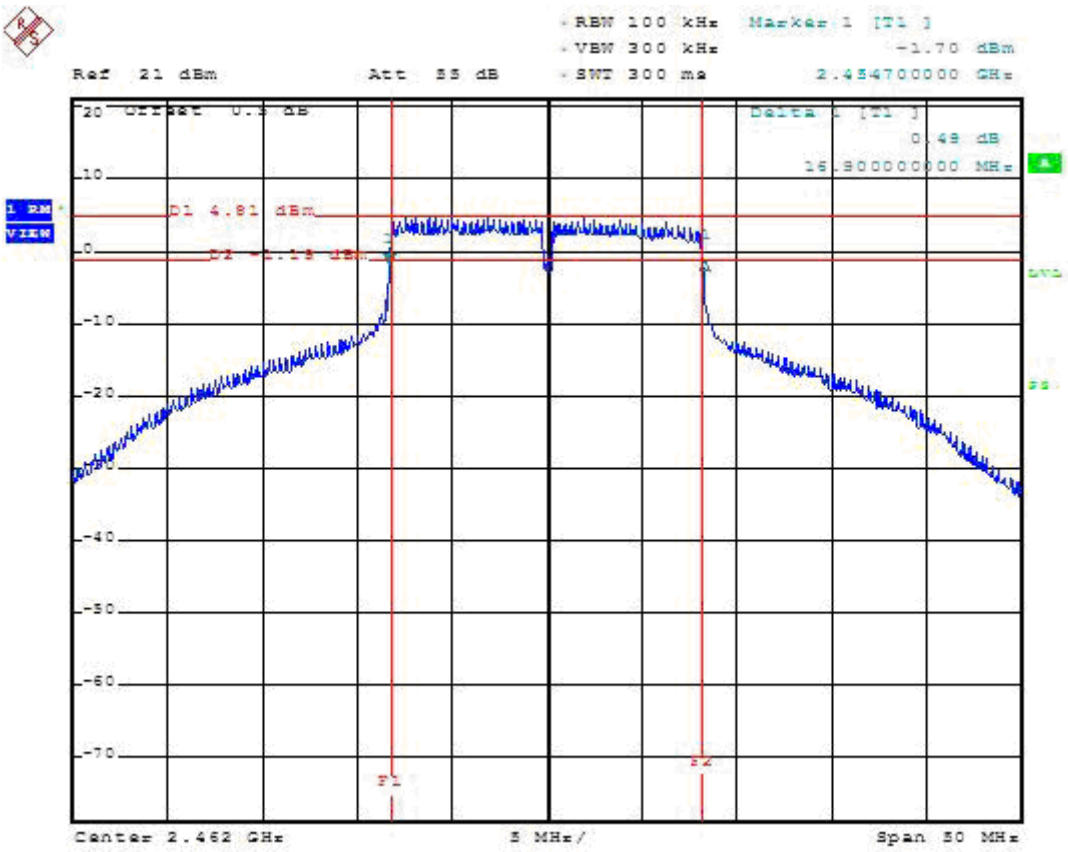
802.11n, low channel, 6dB bandwidth

Date: 22.ARP.2011



802.11n, middle channel, 6dB bandwidth

Date: 22.ARP.2011



802.11n, high channel, 6dB bandwidth

Date: 22.ARP.2011 11:32:21

5.4. Radiated Emissions Measurement

5.4.1. Limit

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies(MHz)	Field Strength(micorvolts/meter)	Measurement Distance(meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

5.4.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	1000KHz / 1000KHz for peak

Spectrum Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

5.4.3. Test Procedures

1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.

2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to

determine the position of the highest radiation.

3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.

4. For each suspected emissions, the antenna tower was scan (from 1 m to 4 m) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading
.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.

6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.

7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.

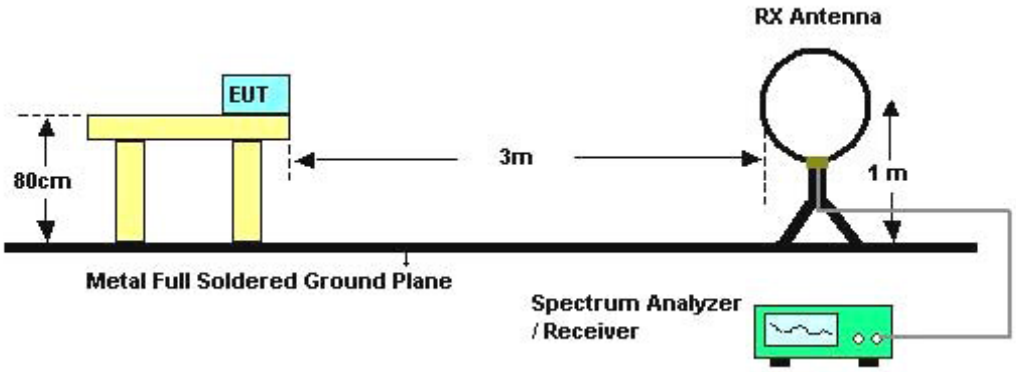
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.

9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

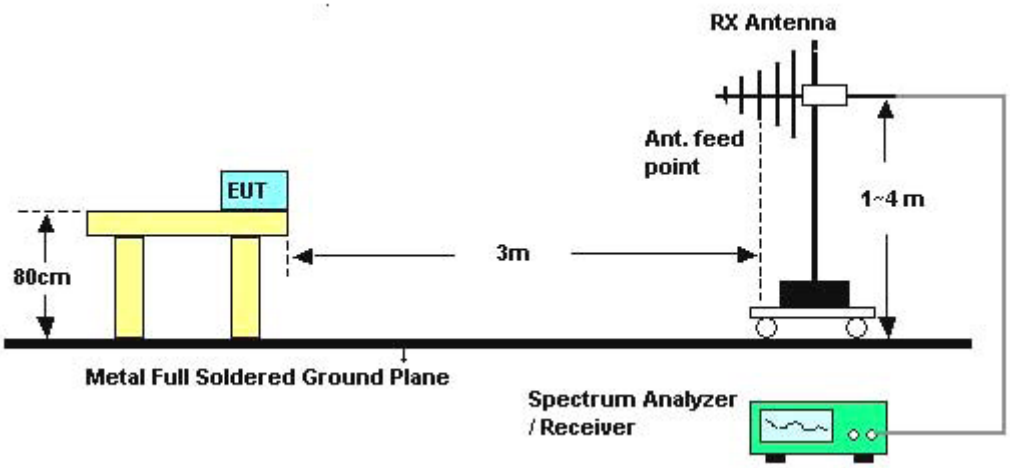
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

5.4.4. Test Setup Layout

For radiated emissions below 30MHz



For radiated emissions above 30MHz



Above 10 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade form 3m to 1.5m.
Distance extrapolation factor = 20 log (specific distanc [3m] / test distance [1.5m]) (dB);
Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

5.4.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.4.6. Results of Radiated Emissions (9kHz~30MHz)

Temperature	25℃	Humidity	60%
Test Engineer	Vito Cao	Configurations	802.11b,g,n

Freq. (MHz)	Level (dBuV)	Over Limit (dB)	Over Limit (dBuV)	Remark
-	-	-	-	See Note

Note:

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

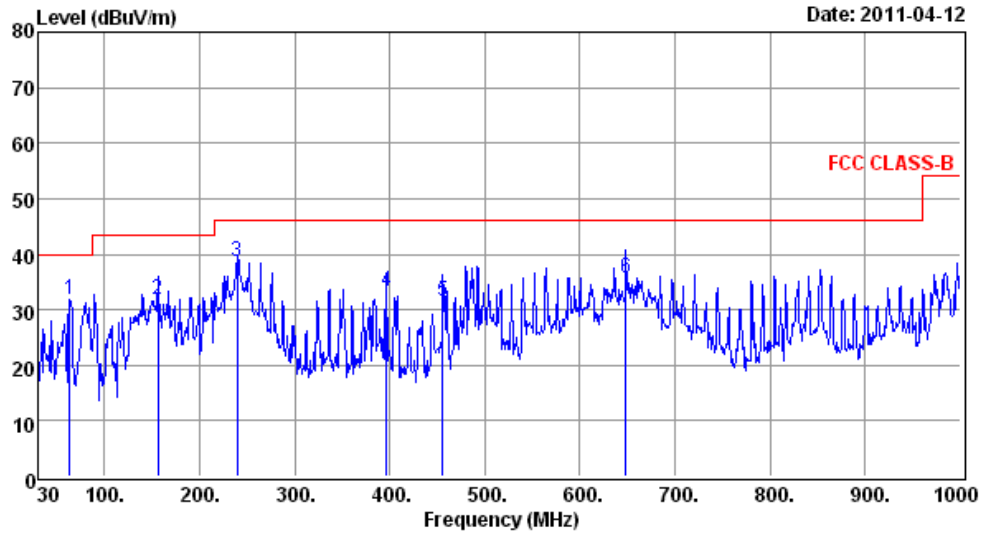
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

5.4.7. Results of Radiated Emissions (30MHz~1GHz)

Temperature	25℃	Humidity	60%
Test Engineer	Vito Cao	Configurations	802.11b,g,n

Shenzhen LCS Certification Services Inc.
Add: Xingyuan Industrial Park,Tongda Road,Bao'an Blvd.,
Bao'an District,Shenzhen, Guangdong, China
Tel: 0755-82591330 E-mail: webmaster@LCS-cert.com
Fax: 0755-82591332 Http: www.LCS-cert.com

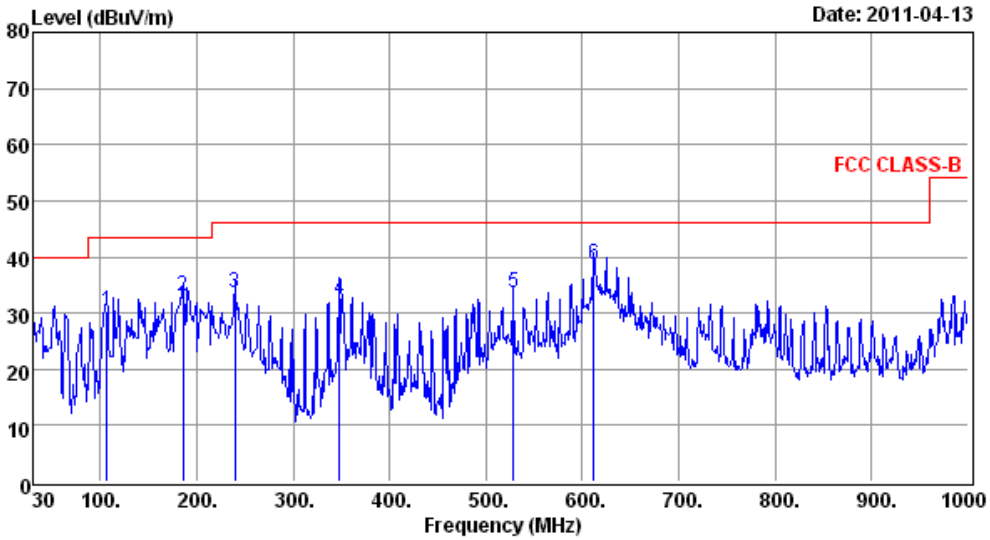


Env. /Ins: 24℃/56%
EUT: Wireless N Adapter
M/N: RNX-MININI
Power Rating: DC 5V
Test Mode: ON
Operator: Vito Cao
Pol: HORIZONTAL

	Freq.	AntFac	CabLos	Reading	PreFac	Measured	Limit	Over	Remark
	MHz	dB/m	dB	dBuV	dB	dBuV/m	dBuV/m	dBuV/m	
1	62.98	11.51	1.41	57.57	38.76	31.73	40.00	-8.27	QP
2	156.10	8.51	2.27	59.88	38.80	31.86	43.50	-11.64	QP
3	239.52	12.07	2.80	62.45	38.72	38.60	46.00	-7.40	QP
4	396.66	14.98	3.76	52.94	38.41	33.27	46.00	-12.73	QP
5	455.83	15.58	4.08	50.01	38.29	31.38	46.00	-14.62	QP
6	647.89	18.62	4.98	50.04	38.02	35.62	46.00	-10.38	QP

Note: 1. All readings are Quasi-peak values.
2. Emission Level= Antenna Factor + Cable Loss + Meter Reading

Shenzhen LCS Certification Services Inc.
Add: Xingyuan Industrial Park,Tongda Road,Bao'an Blvd.,
Bao'an District,Shenzhen, Guangdong, China
Tel: 0755-82591330 E-mail: webmaster@LCS-cert.com
Fax: 0755-82591332 Http: www.LCS-cert.com



Env. /Ins: 24℃/56%
EUT: Wireless N Adapter
M/N: RNX-MININI
Power Rating: DC 5V
Test Mode: ON
Operator: Vito Cao
Pol: VERTICAL

	Freq.	AntFac	CabLos	Reading	PreFac	Measured	Limit	Over	Remark
	MHz	dB/m	dB	dBuV	dB	dBuV/m	dBuV/m	dBuV/m	
1	106.63	12.56	1.88	54.63	38.80	30.27	43.50	-13.23	QP
2	186.17	10.22	2.44	59.05	38.80	32.91	43.50	-10.59	QP
3	239.52	12.07	2.80	57.51	38.72	33.66	46.00	-12.34	QP
4	348.16	14.25	3.49	53.17	38.50	32.41	46.00	-13.59	QP
5	528.58	17.11	4.37	50.31	38.14	33.65	46.00	-12.35	QP
6	612.00	18.49	4.83	53.31	38.01	38.62	46.00	-7.38	QP

Note: 1. All readings are Quasi-peak values.
2. Emission Level= Antenna Factor + Cable Loss + Meter Reading

Note:

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

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

5.4.8. Results for Radiated Emissions (1GHz~10th Harmonic)

802.11b

Channel 1

	Freq	Level	Over Limit	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Ant Pos	Table Pos	Remark	Pol/Phase
	MHz	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	4824.120	47.33	-26.67	45.37	33.06	35.04	3.94	181	169	PEAK	HORIZONTAL
2 @	4824.230	38.67	-15.33	36.71	33.06	35.04	3.94	181	169	AVERAGE	HORIZONTAL

	Freq	Level	Over Limit	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Ant Pos	Table Pos	Remark	Pol/Phase
	MHz	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	4824.150	47.89	-26.11	45.94	33.06	35.04	3.94	100	173	PEAK	VERTICAL
2 @	4824.250	44.66	-9.34	42.70	33.06	35.04	3.94	100	173	AVERAGE	VERTICAL

Channel 6

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	
1	4874.240	34.35	-19.65	54.00	32.39	33.16	3.96	35.15	AVERAGE	150	HORIZONTAL
2	4874.540	44.32	-29.68	74.00	42.35	33.16	3.96	35.15	PEAK	150	HORIZONTAL

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	
1	4874.100	46.24	-27.76	74.00	44.27	33.16	3.96	35.15	PEAK	100	VERTICAL
2	4874.220	40.11	-13.89	54.00	38.14	33.16	3.96	35.15	AVERAGE	100	VERTICAL

Channel 11

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	
1	4924.240	32.82	-21.18	54.00	30.71	33.26	3.98	35.14	AVERAGE	148	HORIZONTAL
2	4924.480	40.82	-33.18	74.00	38.71	33.26	3.98	35.14	PEAK	148	HORIZONTAL

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	
1	4924.920	43.76	-30.24	74.00	41.66	33.26	3.98	35.14	PEAK	100	VERTICAL
2	4924.220	38.79	-15.21	54.00	36.68	33.26	3.98	35.14	AVERAGE	100	VERTICAL

802.11g

Channel 1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Ant Pos	Table Pos	Remark	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg		
1	4827.750	45.01	-28.99	43.05	33.06	35.04	3.94	100	361	PEAK		HORIZONTAL
2	4827.960	31.34	-22.66	29.38	33.06	35.04	3.94	100	361	AVERAGE		HORIZONTAL

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Ant Pos	Table Pos	Remark	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg		
1 @	4826.850	33.07	-20.93	31.11	33.06	35.04	3.94	100	173	AVERAGE		VERTICAL
2	4829.900	47.48	-26.52	45.51	33.06	35.04	3.95	100	173	PEAK		VERTICAL

Channel 6

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	
1	4869.180	29.72	-24.28	54.00	27.79	33.12	3.96	35.15	AVERAGE	100	HORIZONTAL
2	4872.000	38.81	-35.19	74.00	36.84	33.16	3.96	35.15	PEAK	100	HORIZONTAL

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	
1	4870.960	29.66	-24.34	54.00	27.69	33.16	3.96	35.15	AVERAGE	100	VERTICAL
2	4871.480	43.62	-30.38	74.00	41.65	33.16	3.96	35.15	PEAK	100	VERTICAL

Channel 11

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	
1	4924.060	42.78	-31.22	74.00	40.67	33.26	3.98	35.14	PEAK	100	HORIZONTAL
2	4924.760	29.64	-24.36	54.00	27.53	33.26	3.98	35.14	AVERAGE	100	HORIZONTAL

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	
1	4925.340	43.23	-30.77	74.00	41.12	33.26	3.98	35.14	PEAK	100	VERTICAL
2	4925.000	29.53	-24.47	54.00	27.43	33.26	3.98	35.14	AVERAGE	100	VERTICAL

802.11n

Channel 1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	
1	4825.200	42.85	-31.15	74.00	41.02	33.06	3.94	35.16	PEAK	100	HORIZONTAL
2	4825.950	29.86	-24.14	54.00	28.04	33.06	3.94	35.16	AVERAGE	100	HORIZONTAL

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	
1	4826.360	29.64	-24.36	54.00	27.82	33.06	3.94	35.16	AVERAGE	100	VERTICAL
2	4826.380	44.09	-29.91	74.00	42.26	33.06	3.94	35.16	PEAK	100	VERTICAL

Channel 6

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	
1	4872.390	29.57	-24.43	54.00	27.60	33.16	3.96	35.15	AVERAGE	100	HORIZONTAL
2	4873.620	43.46	-30.54	74.00	41.49	33.16	3.96	35.15	PEAK	100	HORIZONTAL

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	
1	4872.070	43.41	-30.59	74.00	41.45	33.16	3.96	35.15	PEAK	100	VERTICAL
2	4873.220	30.26	-23.74	54.00	28.29	33.16	3.96	35.15	AVERAGE	100	VERTICAL

Channel 11

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	
1	4924.220	42.96	-31.04	74.00	40.85	33.26	3.98	35.14	PEAK	100	HORIZONTAL
2	4924.820	29.50	-24.50	54.00	27.40	33.26	3.98	35.14	AVERAGE	100	HORIZONTAL

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	
1	4924.860	43.68	-30.32	74.00	41.57	33.26	3.98	35.14	PEAK	100	VERTICAL
2	4924.740	29.43	-24.57	54.00	27.33	33.26	3.98	35.14	AVERAGE	100	VERTICAL

5.5. Band Edge Emissions Measurement

5.5.1. Limit

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies(MHz)	Field Strength(micorvolts/meter)	Measurement Distance(meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

5.5.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	100 KHz /100 KHz for Peak

5.5.3. Test Procedures

1. The test procedure is the same as section 5.4.3, only the freqeuncy range investigated is limited to 100MHz around bandedges.
2. In case the emission is fail due to the used RB/VB is too wide, marker-delta method of FCC Public Notice DA00-705 will be followed.

5.5.4. Test Setup Layout

This test setup layout is the same as that shown in section 5.4.4.

5.5.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.5.6. Test Result of Band Edge and Fundamental Emissions

Temperature	25℃	Humidity	60%
Test Engineer	Vito Cao	Configurations	802.11b

Channel 1

	Freq	Level	Over Limit	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Ant Pos	Table Pos	Remark	Pol/Phase
	MHz	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1 @	2385.800	48.63	-5.37	17.74	28.17	0.00	2.71	128	153	AVERAGE	HORIZONTAL
2 @	2386.000	59.32	-14.68	28.44	28.17	0.00	2.71	128	153	PEAK	HORIZONTAL
3 @	2409.400	101.64	47.64	70.70	28.21	0.00	2.73	128	153	AVERAGE	HORIZONTAL
4 @	2413.600	106.22	32.22	75.28	28.21	0.00	2.73	128	153	PEAK	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2412 MHz.

Channel 6

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	
1	2381.600	55.44	-18.56	74.00	24.59	28.13	2.71	0.00	PEAK	100	VERTICAL
2	2381.600	44.32	-9.68	54.00	13.47	28.13	2.71	0.00	AVERAGE	100	VERTICAL
3 over	2438.600	103.12	29.12	74.00	72.09	28.29	2.74	0.00	PEAK	100	VERTICAL
4 @	2439.800	98.56	44.56	54.00	67.53	28.29	2.74	0.00	AVERAGE	100	VERTICAL
5	2492.700	47.23	-6.77	54.00	16.05	28.41	2.77	0.00	AVERAGE	100	VERTICAL
6	2493.100	58.66	-15.34	74.00	27.47	28.41	2.77	0.00	PEAK	100	VERTICAL

Item 3, 4 are the fundamental frequency at 2437MHz.

Channel 11

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	
1 over	2463.800	101.33	27.33	74.00	70.24	28.33	2.76	0.00	PEAK	103	VERTICAL
2 @	2464.800	97.01	43.01	54.00	65.93	28.33	2.76	0.00	AVERAGE	103	VERTICAL
3	2487.900	60.82	-13.18	74.00	29.63	28.41	2.77	0.00	PEAK	103	VERTICAL
4 *	2488.300	52.62	-1.38	54.00	21.44	28.41	2.77	0.00	AVERAGE	103	VERTICAL

Item 1, 2 are the fundamental frequency at 2462 MHz.

Temperature	25℃	Humidity	60%
Test Engineer	Vito Cao	Configurations	802.11g

Channel 1

	Freq	Level	Over Limit	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Ant Pos	Table Pos	Remark	Pol/Phase
	MHz	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1 @	2390.000	63.13	-10.87	32.25	28.17	0.00	2.71	128	153	PEAK	HORIZONTAL
2 @	2390.000	48.58	-5.42	17.70	28.17	0.00	2.71	128	153	AVERAGE	HORIZONTAL
3 @	2408.800	95.43	41.43	64.50	28.21	0.00	2.73	128	153	AVERAGE	HORIZONTAL
4 @	2413.800	104.41	30.41	73.47	28.21	0.00	2.73	128	153	PEAK	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2412 MHz

Channel 6

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	
1	2384.200	55.14	-18.86	74.00	24.25	28.17	2.71	0.00	PEAK	101	VERTICAL
2	2384.200	44.60	-9.40	54.00	13.72	28.17	2.71	0.00	AVERAGE	101	VERTICAL
3 over	2435.800	91.12	37.12	54.00	60.09	28.29	2.74	0.00	AVERAGE	101	VERTICAL
4 over	2441.000	101.10	27.10	74.00	70.07	28.29	2.74	0.00	PEAK	101	VERTICAL
5	2489.800	59.22	-14.78	74.00	28.04	28.41	2.77	0.00	PEAK	101	VERTICAL
6	2489.900	47.99	-6.01	54.00	16.81	28.41	2.77	0.00	AVERAGE	101	VERTICAL

Item 3, 4 are the fundamental frequency at 2437MHz.

Channel 11

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	
1 over	2468.800	99.49	25.49	74.00	68.36	28.37	2.76	0.00	PEAK	101	VERTICAL
2 over	2469.400	92.56	38.56	54.00	61.43	28.37	2.76	0.00	AVERAGE	101	VERTICAL
3	2483.500	47.89	-6.11	54.00	16.74	28.37	2.77	0.00	AVERAGE	101	VERTICAL
4	2483.700	65.91	-8.09	74.00	34.77	28.37	2.77	0.00	PEAK	101	VERTICAL

Item 1, 2 are the fundamental frequency at 2462 MHz.

Temperature	25℃	Humidity	60%
Test Engineer	Vito Cao	Configurations	802.11n

Channel 1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	
1 *	2389.800	69.85	-4.15	74.00	38.97	28.17	2.71	0.00	PEAK	100	HORIZONTAL
2 *	2390.000	48.04	-5.96	54.00	17.16	28.17	2.71	0.00	AVERAGE	100	HORIZONTAL
3 over	2410.000	101.37	27.37	74.00	70.43	28.21	2.73	0.00	PEAK	100	HORIZONTAL
4 over	2413.800	90.64	36.64	54.00	59.70	28.21	2.73	0.00	AVERAGE	100	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2412 MHz

Channel 6

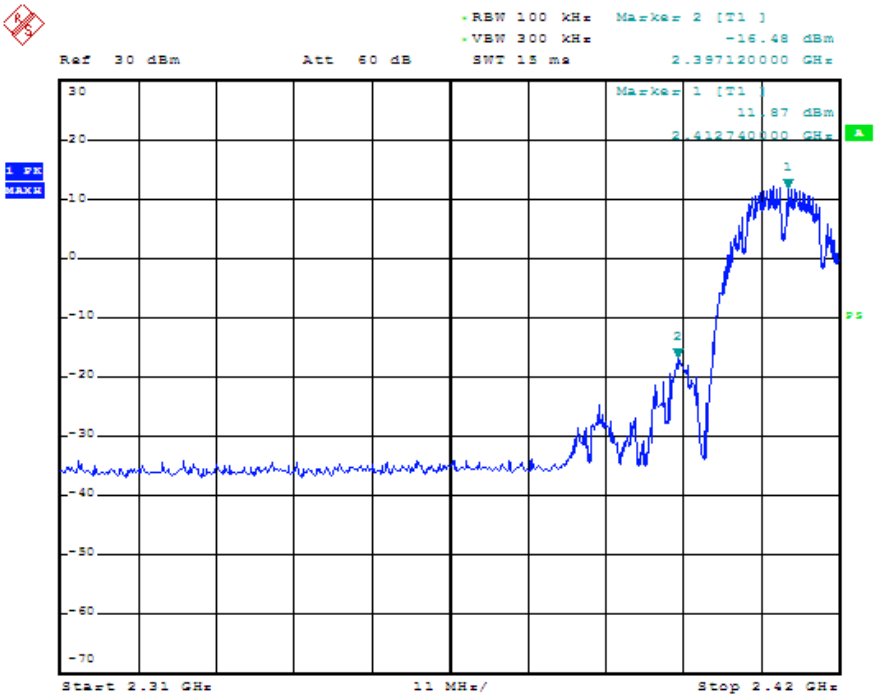
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	
1	2380.200	55.61	-18.39	74.00	24.77	28.13	2.71	0.00	PEAK	100	VERTICAL
2	2385.000	42.94	-11.06	54.00	12.06	28.17	2.71	0.00	AVERAGE	100	VERTICAL
3 over	2440.200	89.42	35.42	54.00	58.39	28.29	2.74	0.00	AVERAGE	100	VERTICAL
4 over	2440.200	100.27	26.27	74.00	69.24	28.29	2.74	0.00	PEAK	100	VERTICAL
5 *	2489.100	48.21	-5.79	54.00	17.02	28.41	2.77	0.00	AVERAGE	100	VERTICAL
6	2489.400	59.61	-14.39	74.00	28.42	28.41	2.77	0.00	PEAK	100	VERTICAL

Item 3, 4 are the fundamental frequency at 2437MHz.

Channel 11

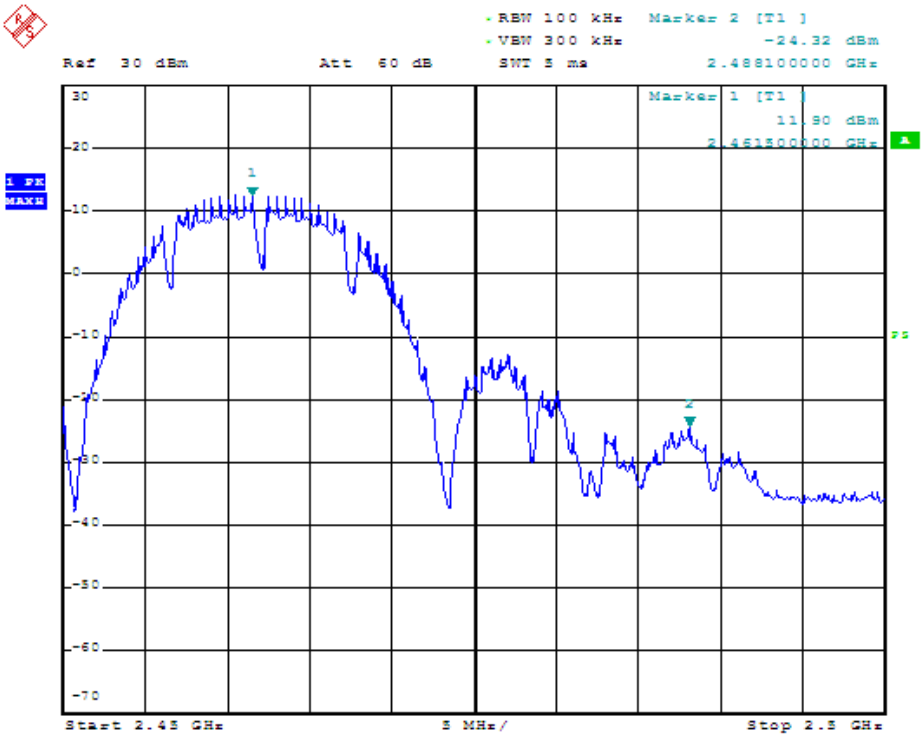
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	
1 @	2465.200	93.10	39.10	54.00	62.02	28.33	2.76	0.00	AVERAGE	100	VERTICAL
2 over	2465.400	104.20	30.20	74.00	73.12	28.33	2.76	0.00	PEAK	100	VERTICAL
3	2483.900	47.15	-6.85	54.00	16.01	28.37	2.77	0.00	AVERAGE	100	VERTICAL
4	2485.700	65.76	-8.24	74.00	34.58	28.41	2.77	0.00	PEAK	100	VERTICAL

Item 1, 2 are the fundamental frequency at 2462 MHz.



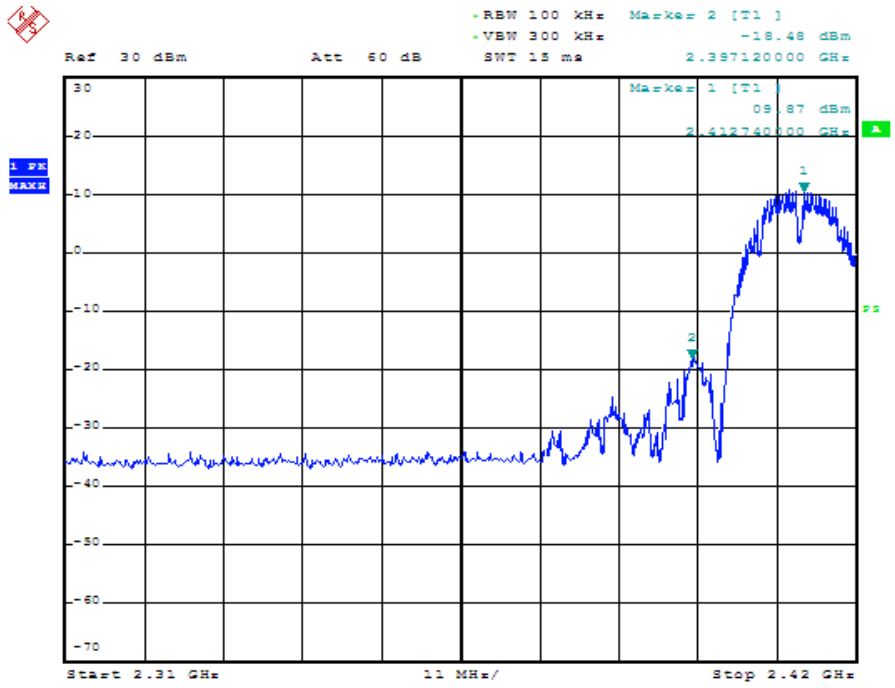
802.11b out of bandedge, left

Date: 23.APR.2011



802.11b out of bandedge, right

Date: 23.APR.2011



802.11g, out of bandedge, left

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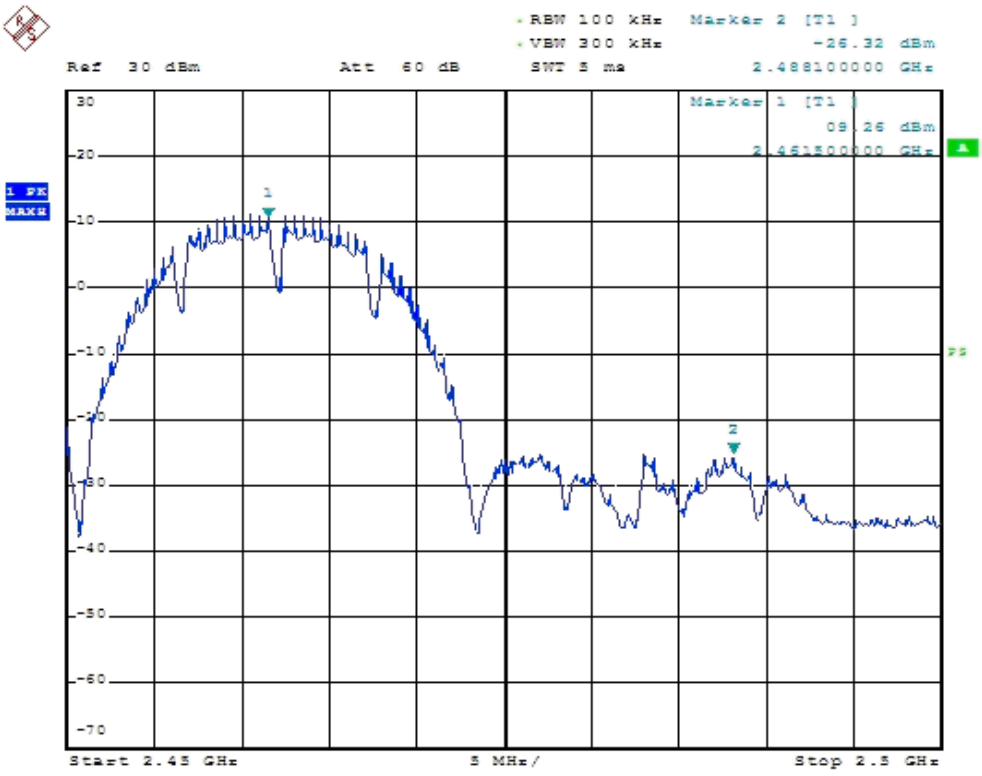

802.11g, out of bandedge, right

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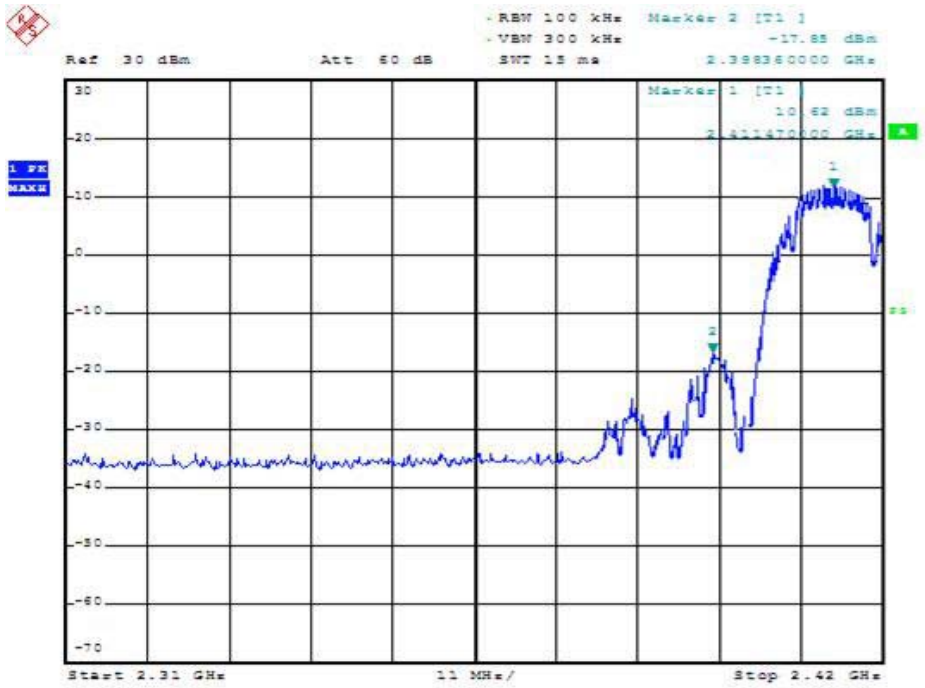
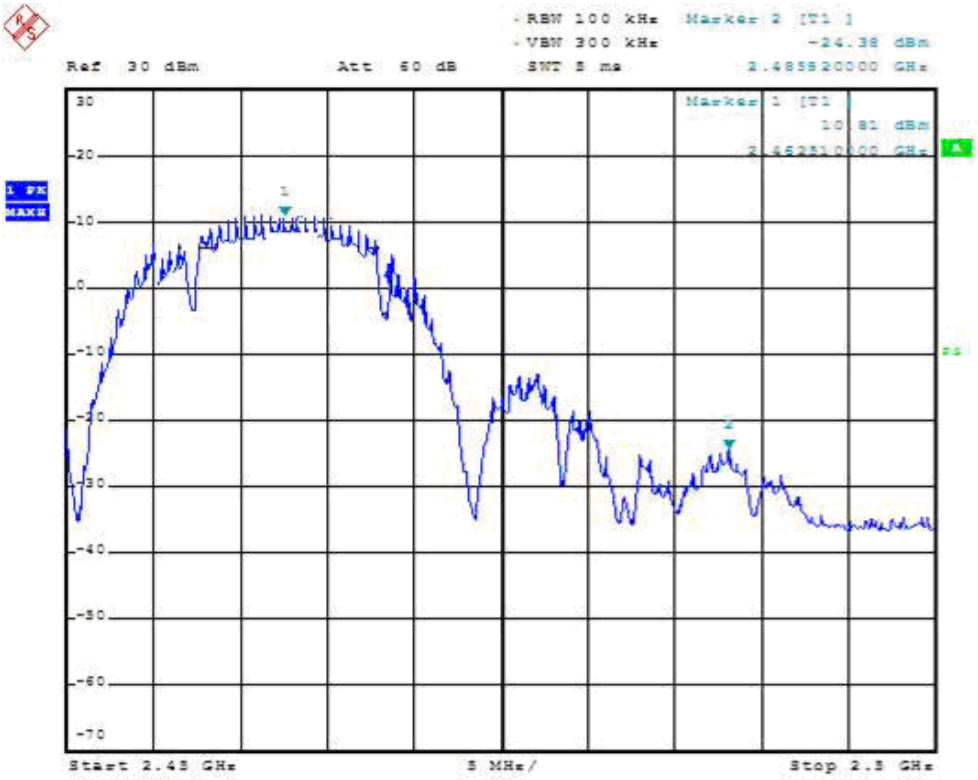


802.11n out of bandedge, left

Date: 23.APR.2011



802.11n out of bandedge, right

Date: 23.APR.2011

Band edge:

Frequency (MHz)	Data Rate (Mbps)	Delta Value (dBc)	Limit (dBc)	Ref Plot	Result
802.11b					
2397.12	11	28.35	20	PLOT1	PASS
2488.10	11	36.22	20	PLOT2	PASS
802.11g					
2399.68	54	28.25	20	PLOT3	PASS
2484.00	54	35.58	20	PLOT4	PASS
802.11n					
2398.36	150	27.47	20	PLOT5	PASS
2485.92	150	35.29	20	PLOT6	PASS

5.6. Antenna Requirements

5.6.1. 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.

5.6.2. Antenna Connector Construction

The EUT has a component antenna, which, in accordance to the above sections, is considered sufficient to comply with the provisions of these sections. Please see EUT photo for details.

5.6.3. Result: Compliance.

6. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver	R&S	ESCS 30	100174	9kHz – 2.75GHz	May 23,2011	Conduction (CO04-HY)
LISN	MESS Tec	NNB-2/16Z	99079	9KHz-30MHz	May 23,2011	Conduction (CO04-HY)
LISN (Support Unit)	EMCO	3819/2NM	9703-1839	9KHz-30MHz	May 23,2011	Conduction (CO04-HY)
RF Cable-CON	UTIFLEX	3102-26886-4	CB049	9KHz-30MHz	May 23,2011	Conduction (CO04-HY)
ISN	SCHAFFNER	ISN ST08	21653	9KHz-30MHz	May 23,2011	Conduction (CO04-HY)
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30M-1GHz 3m	May 23,2011	Radiation (03CH03-HY)
Amplifier	SCHAFFNER	COA9231A	18667	9kHz-2GHzz	May 23,2011	Radiation (03CH03-HY)
Amplifier	Agilent	8449B	3008A02120	1GHz-26.5GHz	May 23,2011	Radiation (03CH03-HY)
Amplifier	MITEQ	AMF-6F-260400	9121372	26.5GHz-40GHz	May 23,2011	Radiation (03CH03-HY)
Spectrum Analyzer	R&S	FSP30	100023	9k-30GHz	May 23,2011	Radiation (03CH03-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9k-30MHz	May 23,2011	Radiation (03CH03-HY)
By-log Antenna	SCHAFFNER	CBL 6112D	22237	30MHz-1GHz	May 23,2011	Radiation (03CH03-HY)
Horn Antenna	EMCO	3115	6741	1GHz-18GHz	May 23,2011	Radiation (03CH03-HY)
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15GHz-40GHz	May 23,2011	Radiation (03CH03-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	30MHz-1GHz	May 23,2011	Radiation (03CH03-HY)
RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	1GHz-40GHz	May 23,2011	Radiation (03CH03-HY)
Spectrum Meter	R&S	FSP 30	100023	9kHz-30GHz	May 23,2011	Conducted (TH01-HY)
Power Meter	R&S	NRVS	100444	DC-40GHz	May 23,2011	Conducted (TH01-HY)
Power Sensor	R&S	NRV-Z51	100458	DC-30GHz	May 23,2011	Conducted (TH01-HY)
Power Sensor	R&S	NRV-Z32	10057	30MHz-6GHz	May 23,2011	Conducted (TH01-HY)
AC Power Source	HPC	HPA-500E	HPA-9100024	AC 0~300V	May 23,2011	Conducted (TH01-HY)
DC power Soure	GW	GPC-6030D	C671845	DC 1V-60V	May 23,2011	Conducted (TH01-HY)
Temp. and Humidigy Chamber	Giant Force	GTH-225-20-S	MAB0103-00	N/A	May 23,2011	Conducted (TH01-HY)
RF CABLE-1m	JYE Bao	RG142	CB034-1m	20MHz-7GHz	May 23,2011	Conducted (TH01-HY)
RF CABLE-2m	JYE Bao	RG142	CB)35-2m	20MHz-1GHz	May 23,2011	Conducted (TH01-HY)
Vector signal Generator	R&S	SMU200A	102098	100kHz~6GHz	May 23,2011	Conducted (TH01-HY)
Signal Generator	R&S	SMR40	10016	10MHz~4oGHa	May 23,2011	Conducted (TH01-HY)
Oscilloscope	Tektonix	TDS380	B016197	400MHz/2GRS	May 23,2011	Conducted (TH01-HY)

----------THE END OF REPORT----------