

Partial FCC Test Report

Report No.: RF160526C28B

FCC ID: PPD-QCNFA324

Test Model: QCNFA324

Received Date: Oct. 20, 2017

Test Date: Nov. 07, 2017 ~ Nov. 21, 2017

Issued Date: Nov. 24, 2017

Applicant: Qualcomm Atheros, Inc.

Address: 1700 Technology Drive, San Jose, CA95110

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
(R.O.C)

Test Location (1): No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan
Hsien 333, Taiwan, R.O.C.

Test Location (2): No.215, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan,
R.O.C

FCC Registration / 788550 / TW0003

Designation Number: 427177 / TW0011



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification.

Table of Contents

Release Control Record	3
1 Certificate of Conformity	4
2 Summary of Test Results.....	5
2.1 Measurement Uncertainty.....	5
2.2 Modification Record	5
3 General Information	6
3.1 General Description of EUT	6
3.2 Description of Test Modes.....	8
3.2.1 Test Mode Applicability and Tested Channel Detail.....	9
3.3 Description of Support Units	10
3.3.1 Configuration of System under Test	10
3.4 General Description of Applied Standards.....	10
4 Test Types and Results	11
4.1 Radiated Emission and Bandedge Measurement	11
4.1.1 Limits of Radiated Emission and Bandedge Measurement	11
4.1.2 Test Instruments	12
4.1.3 Test Procedures.....	13
4.1.4 Deviation from Test Standard	13
4.1.5 Test Set Up	14
4.1.6 EUT Operating Conditions.....	15
4.1.7 Test Results	16
4.2 Conducted Emission Measurement.....	68
4.2.1 Limits of Conducted Emission Measurement	68
4.2.2 Test Instruments	68
4.2.3 Test Procedures.....	69
4.2.4 Deviation from Test Standard	69
4.2.5 Test Setup.....	69
4.2.6 EUT Operating Conditions.....	69
4.2.7 Test Results	70
5 Pictures of Test Arrangements.....	74
Appendix – Information on the Testing Laboratories	75

Release Control Record

Issue No.	Description	Date Issued
RF160526C28B	Original Release	Nov. 24, 2017

1 Certificate of Conformity

Product: 2x2 802.11A/B/G/N/AC WiFi + Bluetooth Module

Brand: Qualcomm Atheros

Test Model: QCNFA324

Sample Status: Identical Prototype

Applicant: Qualcomm Atheros, Inc.

Test Date: Nov. 07, 2017 ~ Nov. 21, 2017

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10:2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by : Rona Chen, **Date:** Nov. 24, 2017
Rona Chen / Specialist

Approved by : Dylan Chiou, **Date:** Nov. 24, 2017
Dylan Chiou / Project Engineer

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	Pass	Meet the requirement of limit. Minimum passing margin is -13.84 dB at 0.40285 MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -1.88 dB at 2483.52 MHz.
15.247(d)	Antenna Port Emission	N/A	Refer to Note
15.247(a)(2)	6 dB Bandwidth	N/A	Refer to Note
15.247(b)	Conducted power	N/A	Refer to Note
15.247(e)	Power Spectral Density	N/A	Refer to Note
15.203	Antenna Requirement	N/A	Refer to Note

Note: Only test item of Conducted Emission and Radiated Emissions were performed for this report. For other test data, please refer to BV Report No.: RF140808E04 for WLAN/BT module (Brand: Qualcomm Atheros, Model: QCNFA324)

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT:

The listed uncertainties are the worst case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150 kHz ~ 30 MHz	2.44 dB
Radiated Emissions up to 1 GHz	30 MHz ~ 200 MHz	2.0153 dB
	200 MHz ~1000 MHz	2.0224 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	1.0121 dB
	18 GHz ~ 40 GHz	1.1508 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	2x2 802.11A/B/G/N/AC WiFi + Bluetooth Module
Brand	Qualcomm Atheros
Test Model	QCNFA324
Status of EUT	Identical Prototype
Power Supply Rating	3.3 Vdc (Host equipment)
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: 11.0 / 5.5 / 2.0 / 1.0 Mbps 802.11g: 54.0 / 48.0 / 36.0 / 24.0 / 18.0 / 12.0 / 9.0 / 6.0 Mbps 802.11n: up to MCS7
Operating Frequency	2412 ~ 2462 MHz
Number of Channel	11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40)
Antenna Type	Refer to Note as below
Antenna Connector	N/A
Accessory Device	N/A
Data Cable Supplied	N/A

Note:

- The EUT is authorized for use in specific End-product. Please refer to below table for more details.

Item	Brand	Model
Industrial Computer	Dell	N01PC

- The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers.

Modulation Mode	Tx Function
802.11b	2TX
802.11g	2TX
802.11n (HT20)	2TX
802.11n (HT40)	2TX
802.11ac (VHT20)	2TX
802.11ac (VHT40)	2TX

* The modulation and bandwidth are similar for 802.11n mode for HT20 / HT40 and 802.11ac mode for HT20 / HT40, therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

- The antenna information is listed as below.

Antenna Type	Brand Name	Parts Number	Antenna Gain (dBi)		
			2.4GHz	5.15~5.725GHz	5.725~5.85GHz
Dipole	Laird	WLAN Main Antenna: PDV24515-DE1 WLAN Aux Antenna: PDV24515-DE1	Main: 2.9 Aux: 2.9	Main: 4.0 Aux: 4.0	Main: 3.9 Aux: 3.9
Monopole	Taoglas Antenna Solution Ltd.	WLAN Main Antenna: MA761.B.BICG.014 WLAN Aux Antenna: MA761.B.BICG.014	Main: 2.82 Aux: 2.79	Main: 4.11 Aux: 4.51	Main: 4.11 Aux: 4.51

* The EUT antenna is a specific antenna: Professional installation antenna. It complies with the standard requirement.

4. The End-product contains following accessory devices.

Product	Brand	Model	Description
Adapter	DELL	DA180PM111	I/P: 100-240 Vac, 50-60 Hz, 2.34 A O/P: 19.5 Vdc, 9.23 A

5. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Description of Test Modes

11 channels are provided for 802.11b, 802.11g and 802.11n (HT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	7	2442
2	2417	8	2447
3	2422	9	2452
4	2427	10	2457
5	2432	11	2462
6	2437		

7 channels are provided for 802.11n (HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
3	2422	7	2442
4	2427	8	2447
5	2432	9	2452
6	2437		

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To				Description
	RE $\geq$ 1G	RE<1G	PLC	APCM	
A	√	√	√	-	Dipole Antenna
B	√	√	√	-	Monopole Antenna

Where **RE $\geq$ 1G**: Radiated Emission above 1 GHz
RE<1G: Radiated Emission below 1 GHz
PLC: Power Line Conducted Emission
APCM: Antenna Port Conducted Measurement

NOTE:

- The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on X-plane for Mode A and Z-plan for Mode B.
- "-" means no effect.

Radiated Emission Test (Above 1 GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
A, B	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	MCS0
	802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	MCS0

Radiated Emission Test (Below 1 GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
A	802.11n (HT40)	3 to 9	6	OFDM	BPSK	MCS0
B	802.11n (HT40)	3 to 9	3	OFDM	BPSK	MCS0

Power Line Conducted Emission Test:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
A	802.11n (HT40)	3 to 9	6	OFDM	BPSK	MCS0
B	802.11n (HT40)	3 to 9	3	OFDM	BPSK	MCS0

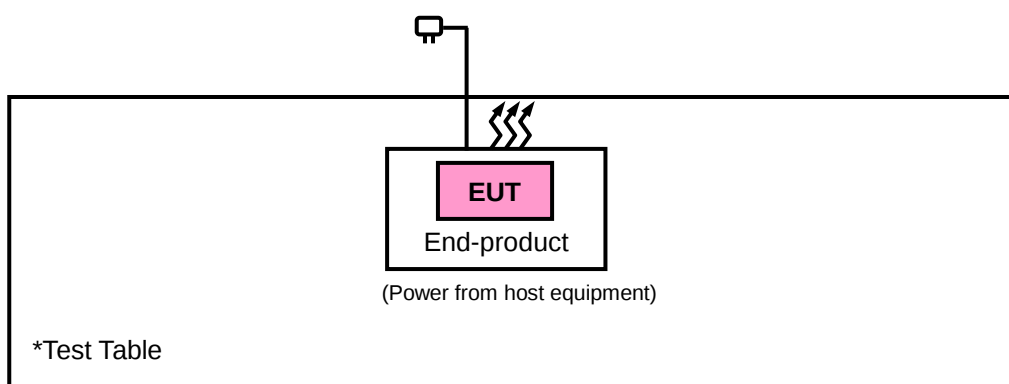
Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested by
RE $\geq$ 1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Charles Hsiao
RE<1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Charles Hsiao
PLC	25 deg. C, 65 % RH	120 Vac, 60 Hz	Getaz Yang

3.3 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units.

3.3.1 Configuration of System under Test



3.4 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C (15.247)

558074 D01 DTS Meas Guidance v04

662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10-2013

All test items have been performed and recorded as per the above standards.

NOTE: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC).
The test report has been issued separately.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20 dB below the highest level of the desired power:

Frequencies (MHz)	Field Strength (microvolts/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

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent Technologies	N9038A	MY52260177	Jul. 05, 2017	Jul. 04, 2018
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 13, 2016	Dec. 12, 2017
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Dec. 16, 2016	Dec. 15, 2017
HORN Antenna ETS-Lindgren	3117	00143293	Dec. 29, 2016	Dec. 28, 2017
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Dec. 14, 2016	Dec. 13, 2017
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 17, 2017	Apr. 16, 2018
Bluetooth Tester	CBT	100980	Jun. 28, 2017	Jun. 27, 2019
Loop Antenna	HLA 6121	45745	May 19, 2017	May 18, 2018
Preamplifier Agilent	310N	187226	Jun. 23, 2017	Jun. 22, 2018
Preamplifier Agilent	83017A	MY39501357	Jun. 23, 2017	Jun. 22, 2018
Power Meter Anritsu	ML2495A	1012010	Aug. 15, 2017	Aug. 14, 2018
Power Sensor Anritsu	MA2411B	1315050	Aug. 15, 2017	Aug. 14, 2018
RF signal cable ETS-LINDGREN	5D-FB	Cable-CH1-01(R FC-SMS-100-SM S-120+RFC-SMS -100-SMS-400)	Jun. 23, 2017	Jun. 22, 2018
RF signal cable ETS-LINDGREN	8D-FB	Cable-CH1-02(R FC-SMS-100-SM S-24)	Jun. 23, 2017	Jun. 22, 2018
Software BV ADT	E3 8.130425b	NA	NA	NA
Antenna Tower MF	NA	NA	NA	NA
Turn Table MF	NA	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA

- Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HsinTien Chamber 1.
3. The horn antenna and preamplifier (model: 83017A) are used only for the measurement of emission frequency above 1 GHz if tested.
4. The IC Site Registration No. is IC7450I-1.

4.1.3 Test Procedures

- a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1 GHz) / 1.5 meters (for above 1 GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

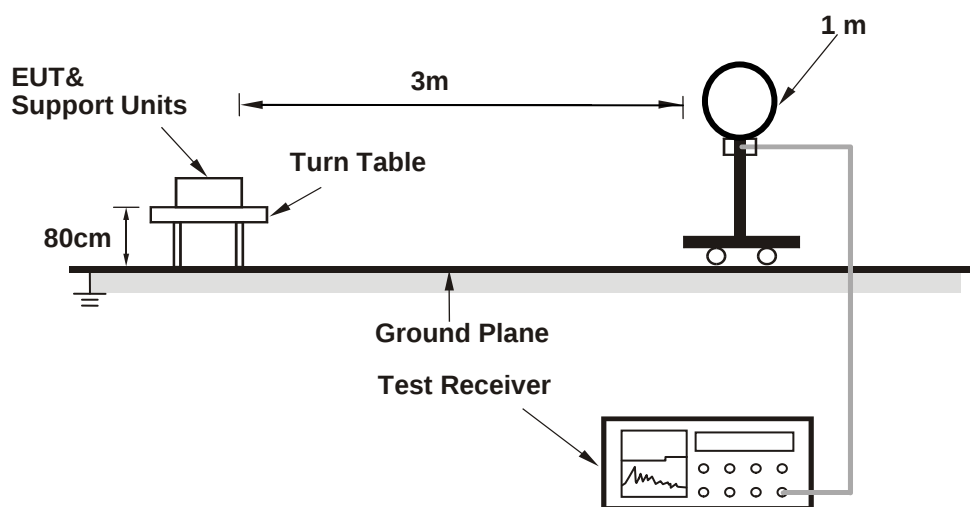
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz & 360 KHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 1/T for Average (Duty cycle < 98 %) detection at frequency above 1 GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz (Duty cycle ≥ 98 %) for Average detection (AV) at frequency above 1 GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

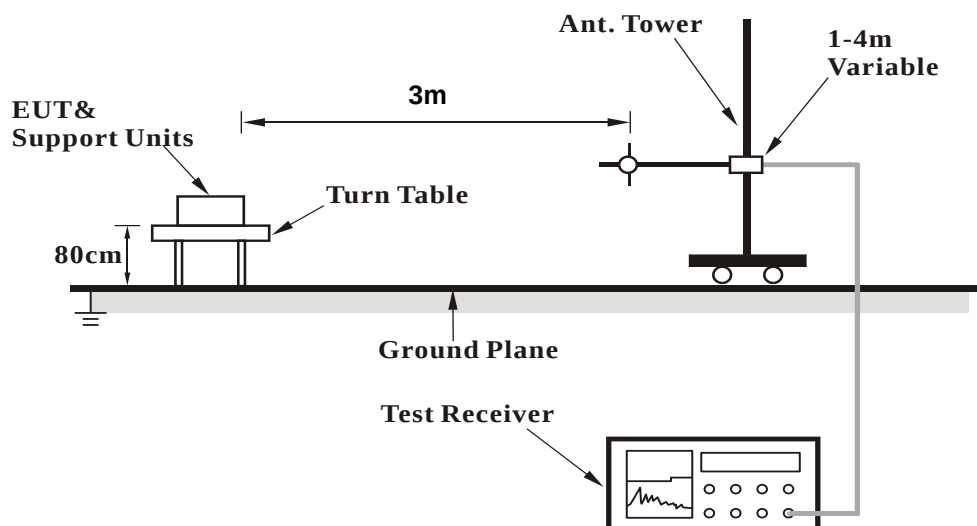
No deviation.

4.1.5 Test Set Up

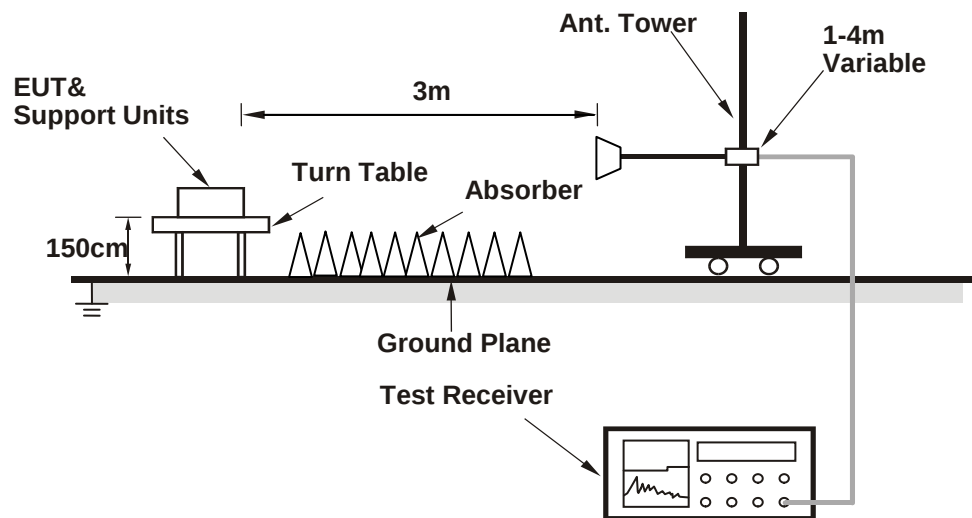
<Radiated emission below 30 MHz>



<Frequency Range below 1 GHz>



<Frequency Range above 1 GHz>



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT Operating Conditions

- Placed the EUT on a testing table.
- Use the software to control the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

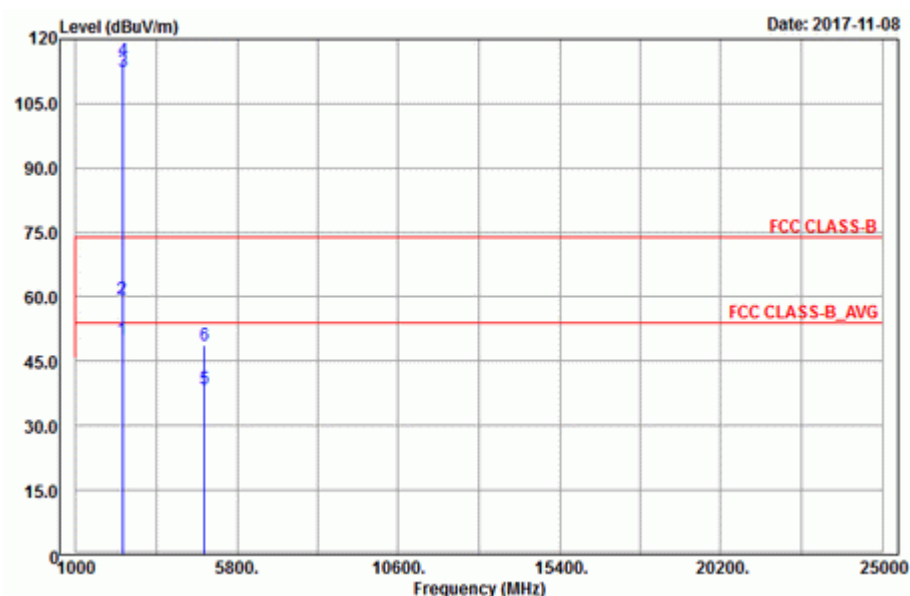
Above 1 GHz Data :

Mode A

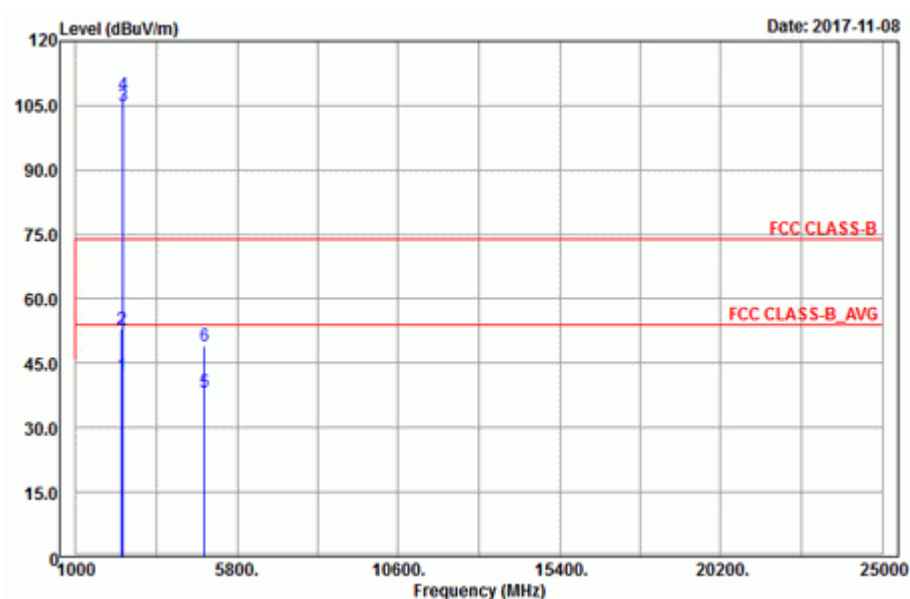
802.11b

EUT Test Condition		Measurement Detail	
Channel	Channel 1	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Horizontal



Vertical



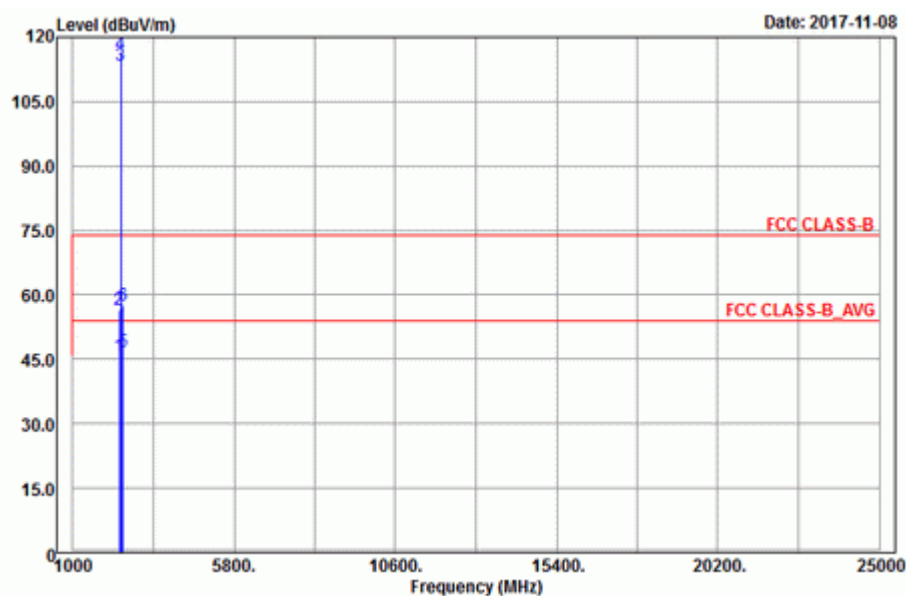
Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2387.94	50.04	48.33	54	-3.96	31.8	5.4	35.49	237	108	Average
2387.94	59.61	57.9	74	-14.39	31.8	5.4	35.49	237	108	Peak
2412	112.55	110.78			31.81	5.43	35.47	260	126	Average
2412	115.17	113.4			31.81	5.43	35.47	260	126	Peak
4824	38.61	30.48	54	-15.39	33.97	8.26	34.1	125	187	Average
4824	48.8	40.67	74	-25.2	33.97	8.26	34.1	125	187	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2364	42.11	40.48	54	-11.89	31.76	5.37	35.5	265	357	Average
2364	52.84	51.21	74	-21.16	31.76	5.37	35.5	265	357	Peak
2412	104.93	103.16			31.81	5.43	35.47	265	357	Average
2412	107.72	105.95			31.81	5.43	35.47	265	357	Peak
4824	38.27	30.14	54	-15.73	33.97	8.26	34.1	129	136	Average
4824	49.09	40.96	74	-24.91	33.97	8.26	34.1	129	136	Peak

Remarks:

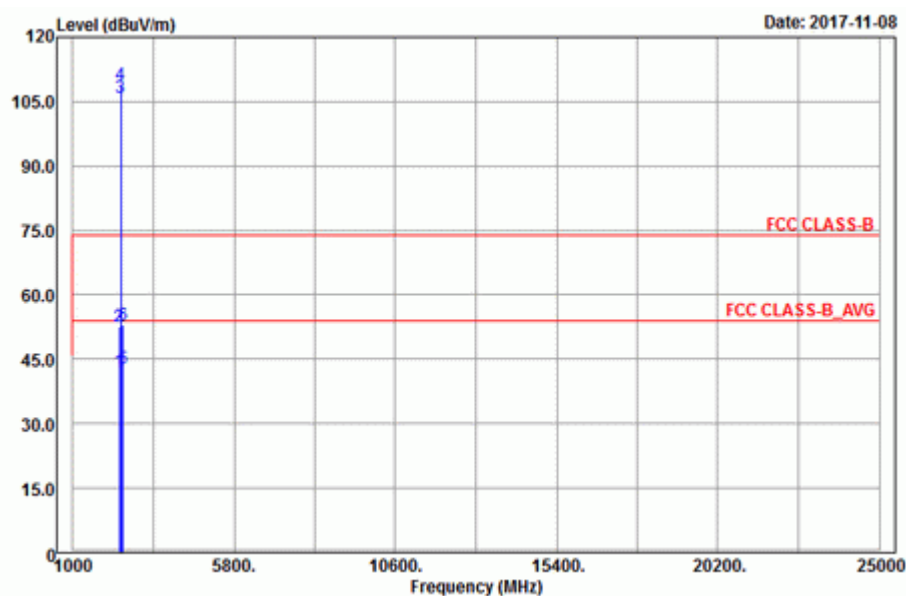
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2412 MHz: Fundamental frequency.

EUT Test Condition		Measurement Detail	
Channel	Channel 6	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Horizontal



Vertical



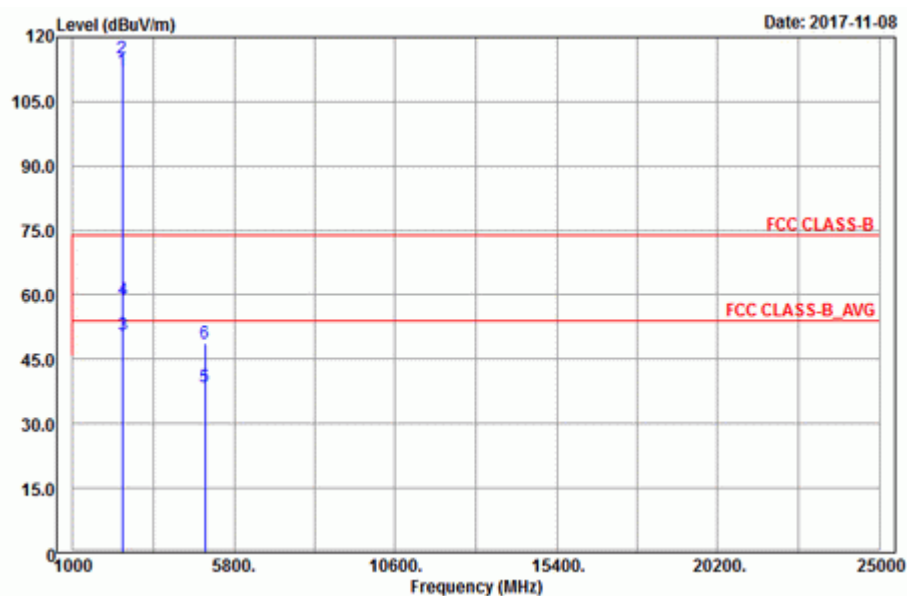
Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.29	45.93	44.22	54	-8.07	31.8	5.4	35.49	261	126	Average
2389.29	56.61	54.9	74	-17.39	31.8	5.4	35.49	261	126	Peak
2437	113.45	111.6			31.85	5.46	35.46	261	126	Average
2437	116.11	114.26			31.85	5.46	35.46	261	126	Peak
2484.76	46.87	44.88	54	-7.13	31.88	5.53	35.42	261	126	Average
2484.76	57.71	55.72	74	-16.29	31.88	5.53	35.42	261	126	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.29	42.02	40.31	54	-11.98	31.8	5.4	35.49	265	357	Average
2389.29	52.6	50.89	74	-21.4	31.8	5.4	35.49	265	357	Peak
2437	105.95	104.1			31.85	5.46	35.46	265	357	Average
2437	108.79	106.94			31.85	5.46	35.46	265	357	Peak
2487.2	42.77	40.78	54	-11.23	31.88	5.53	35.42	265	357	Average
2487.2	52.98	50.99	74	-21.02	31.88	5.53	35.42	265	357	Peak

Remarks:

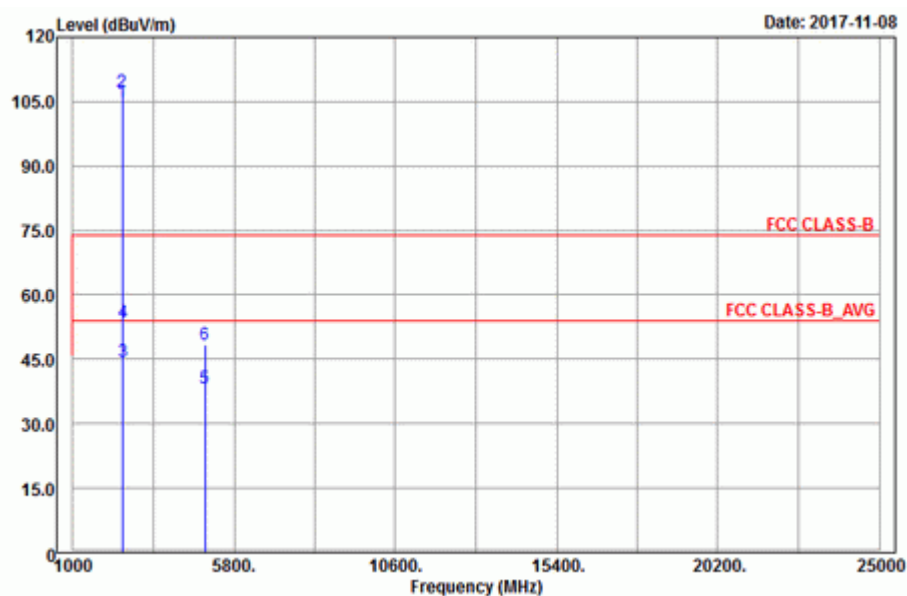
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2437 MHz: Fundamental frequency.

EUT Test Condition		Measurement Detail	
Channel	Channel 11	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Horizontal



Vertical



Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	111.99	110.06			31.87	5.5	35.44	225	107	Average
2462	115.04	113.11			31.87	5.5	35.44	225	107	Peak
2487.24	50.68	48.69	54	-3.32	31.88	5.53	35.42	233	107	Average
2487.24	58.92	56.93	74	-15.08	31.88	5.53	35.42	233	107	Peak
4924	38.57	30.32	54	-15.43	33.99	8.28	34.02	129	347	Average
4924	48.73	40.48	74	-25.27	33.99	8.28	34.02	129	347	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	104.82	102.89			31.87	5.5	35.44	292	357	Average
2462	107.34	105.41			31.87	5.5	35.44	292	357	Peak
2486.8	44.32	42.33	54	-9.68	31.88	5.53	35.42	292	357	Average
2486.8	53.53	51.54	74	-20.47	31.88	5.53	35.42	292	357	Peak
4924	38.15	29.9	54	-15.85	33.99	8.28	34.02	107	155	Average
4924	48.33	40.08	74	-25.67	33.99	8.28	34.02	107	155	Peak

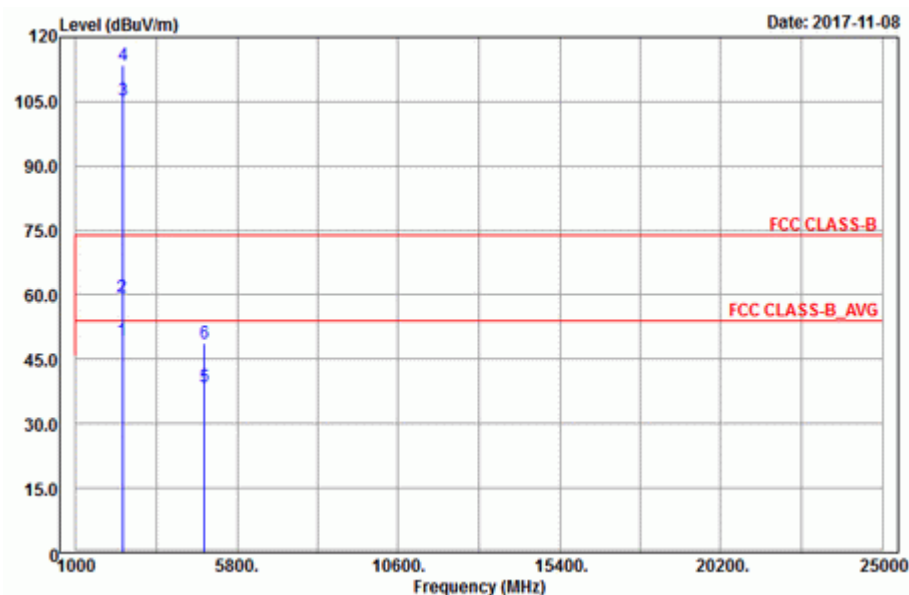
Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2462 MHz: Fundamental frequency.

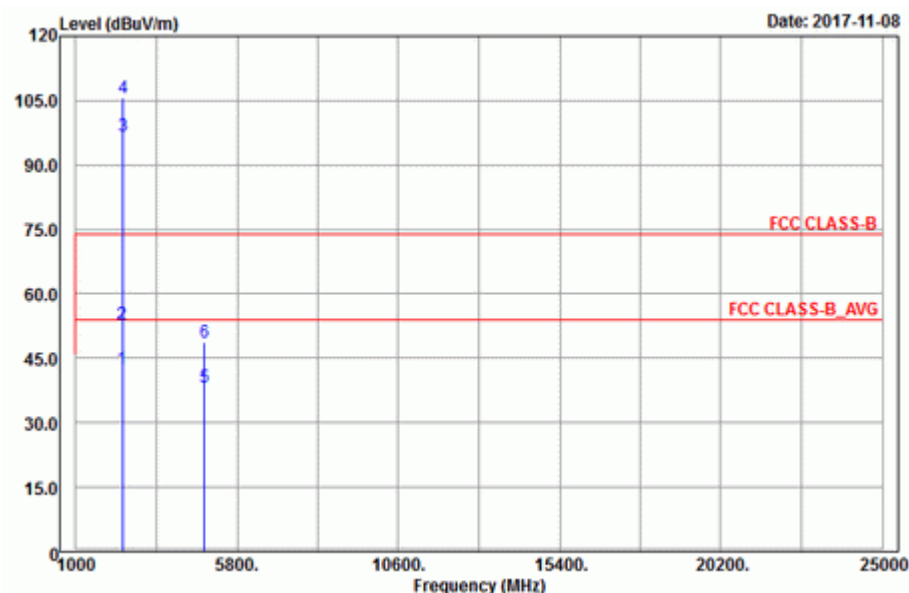
802.11g

EUT Test Condition		Measurement Detail	
Channel	Channel 1	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Horizontal



Vertical



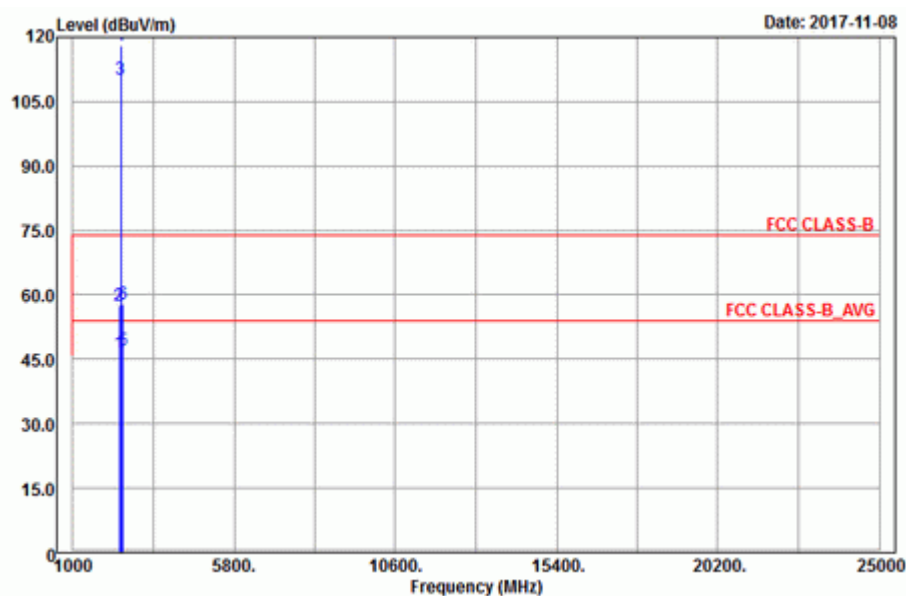
Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.92	49.3	47.57	54	-4.7	31.8	5.4	35.47	260	126	Average
2389.92	59.57	57.84	74	-14.43	31.8	5.4	35.47	260	126	Peak
2412	105.31	103.54			31.81	5.43	35.47	260	126	Average
2412	113.31	111.54			31.81	5.43	35.47	260	126	Peak
4824	38.42	30.29	54	-15.58	33.97	8.26	34.1	146	117	Average
4824	48.64	40.51	74	-25.36	33.97	8.26	34.1	146	117	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.38	42.52	40.81	54	-11.48	31.8	5.4	35.49	265	357	Average
2389.38	53.13	51.42	74	-20.87	31.8	5.4	35.49	265	357	Peak
2412	96.92	95.15			31.81	5.43	35.47	265	357	Average
2412	105.73	103.96			31.81	5.43	35.47	265	357	Peak
4824	38.39	30.26	54	-15.61	33.97	8.26	34.1	157	64	Average
4824	48.65	40.52	74	-25.35	33.97	8.26	34.1	157	64	Peak

Remarks:

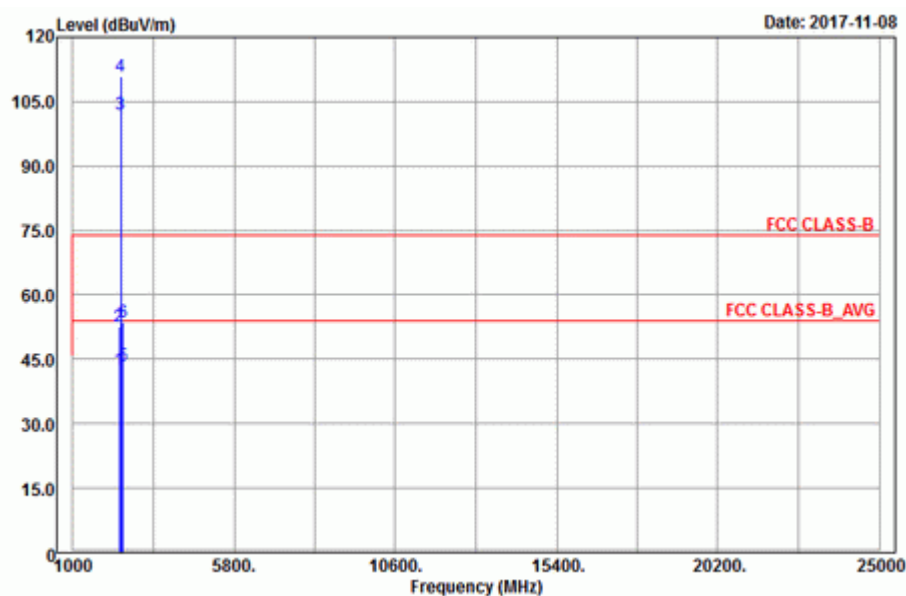
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2412 MHz: Fundamental frequency.

EUT Test Condition		Measurement Detail	
Channel	Channel 6	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Horizontal



Vertical



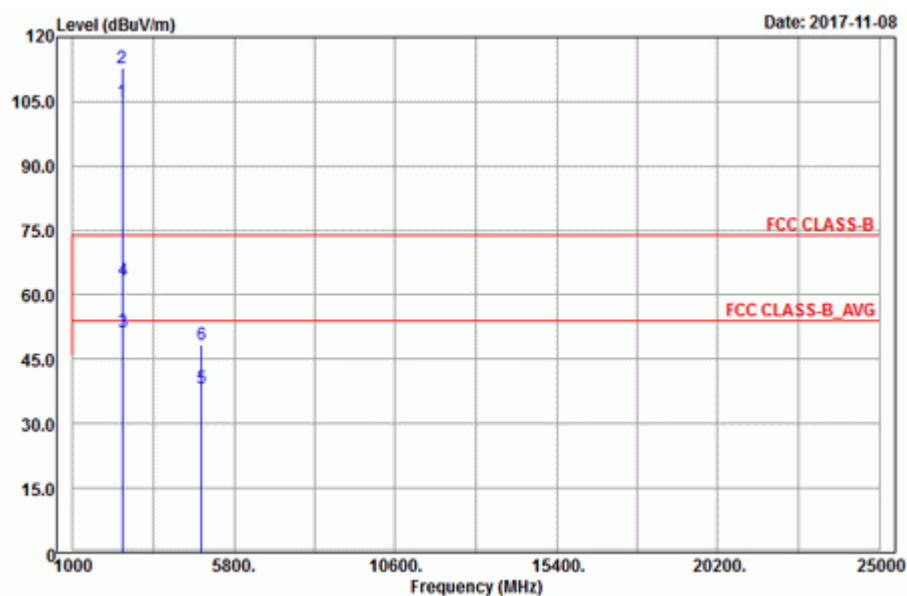
Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.74	46.34	44.63	54	-7.66	31.8	5.4	35.49	260	126	Average
2389.74	57.59	55.88	74	-16.41	31.8	5.4	35.49	260	126	Peak
2437	110.33	108.48			31.85	5.46	35.46	260	126	Average
2437	118	116.15			31.85	5.46	35.46	260	126	Peak
2483.64	47.01	45.05	54	-6.99	31.88	5.5	35.42	260	126	Average
2483.64	57.86	55.9	74	-16.14	31.88	5.5	35.42	260	126	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.2	42.66	40.95	54	-11.34	31.8	5.4	35.49	265	357	Average
2389.2	52.5	50.79	74	-21.5	31.8	5.4	35.49	265	357	Peak
2437	102.14	100.29			31.85	5.46	35.46	265	357	Average
2437	110.98	109.13			31.85	5.46	35.46	265	357	Peak
2485.12	43.39	41.4	54	-10.61	31.88	5.53	35.42	265	357	Average
2485.12	53.7	51.71	74	-20.3	31.88	5.53	35.42	265	357	Peak

Remarks:

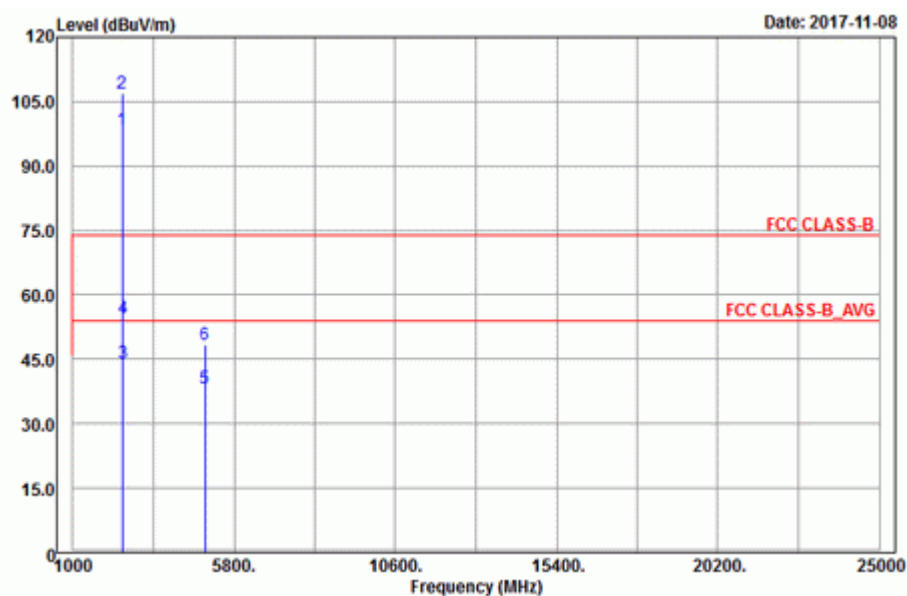
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2437 MHz: Fundamental frequency.

EUT Test Condition		Measurement Detail	
Channel	Channel 11	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Horizontal



Vertical



Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	105.02	103.09			31.87	5.5	35.44	225	107	Average
2462	112.89	110.96			31.87	5.5	35.44	225	107	Peak
2483.52	51.44	49.48	54	-2.56	31.88	5.5	35.42	209	97	Average
2483.52	63.36	61.4	74	-10.64	31.88	5.5	35.42	209	97	Peak
4824	38.2	30.07	54	-15.8	33.97	8.26	34.1	154	208	Average
4824	48.51	40.38	74	-25.49	33.97	8.26	34.1	154	208	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	98.26	96.33			31.87	5.5	35.44	292	357	Average
2462	106.85	104.92			31.87	5.5	35.44	292	357	Peak
2483.6	44.28	42.32	54	-9.72	31.88	5.5	35.42	292	357	Average
2483.6	54.58	52.62	74	-19.42	31.88	5.5	35.42	292	357	Peak
4924	38.14	29.89	54	-15.86	33.99	8.28	34.02	124	109	Average
4924	48.49	40.24	74	-25.51	33.99	8.28	34.02	124	109	Peak

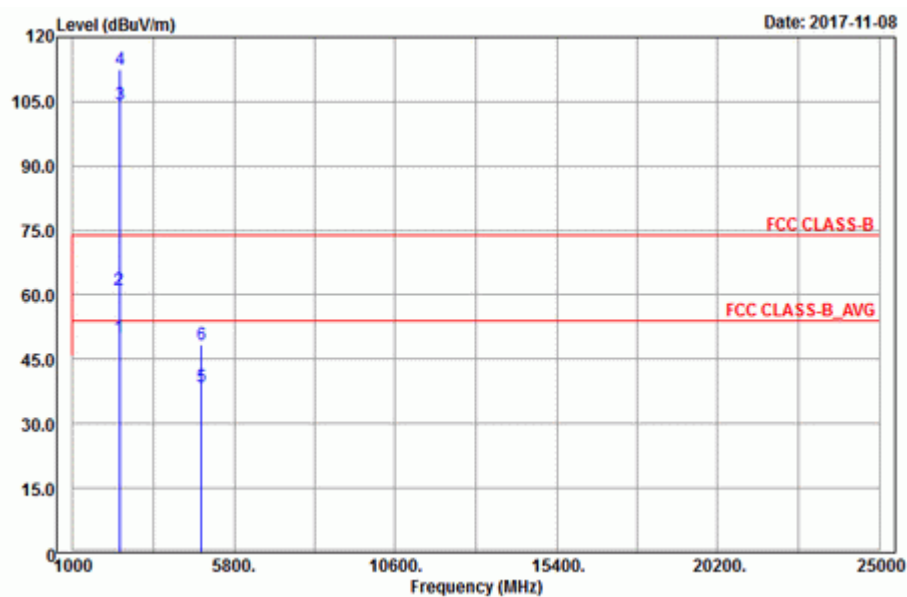
Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2462 MHz: Fundamental frequency.

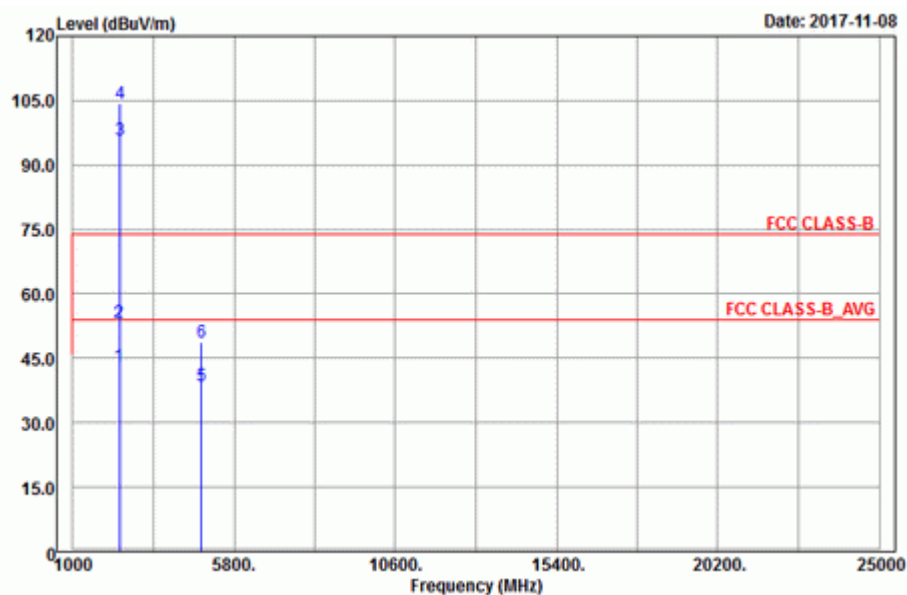
802.11n (HT20)

EUT Test Condition		Measurement Detail	
Channel	Channel 1	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Horizontal



Vertical



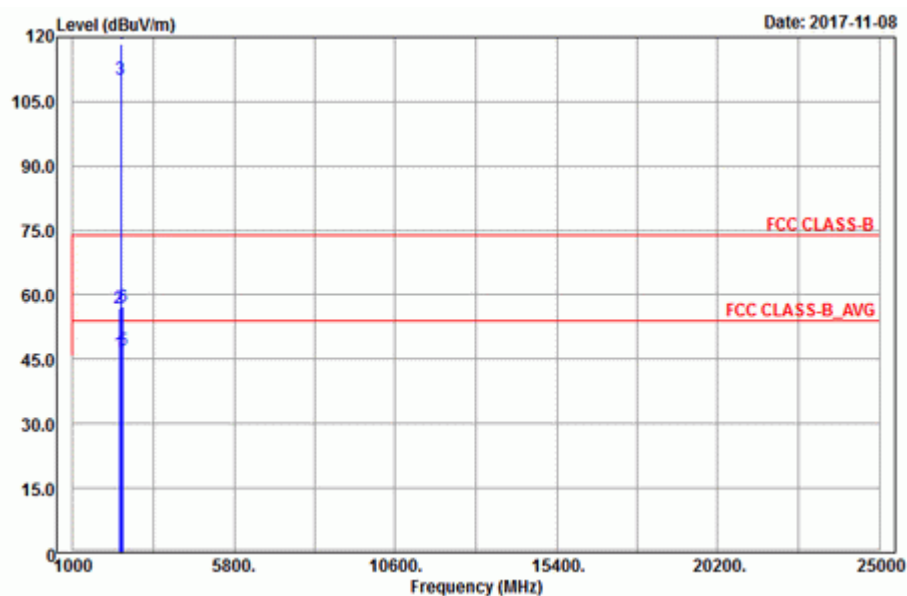
Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.47	50.12	48.41	54	-3.88	31.8	5.4	35.49	260	126	Average
2389.47	61.03	59.32	74	-12.97	31.8	5.4	35.49	260	126	Peak
2412	104.38	102.61			31.81	5.43	35.47	260	126	Average
2412	112.47	110.7			31.81	5.43	35.47	260	126	Peak
4824	38.43	30.3	54	-15.57	33.97	8.26	34.1	192	355	Average
4824	48.46	40.33	74	-25.54	33.97	8.26	34.1	192	355	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.92	43.16	41.43	54	-10.84	31.8	5.4	35.47	265	357	Average
2389.92	53.33	51.6	74	-20.67	31.8	5.4	35.47	265	357	Peak
2412	95.82	94.05			31.81	5.43	35.47	265	357	Average
2412	104.2	102.43			31.81	5.43	35.47	265	357	Peak
4824	38.63	30.5	54	-15.37	33.97	8.26	34.1	131	239	Average
4824	48.71	40.58	74	-25.29	33.97	8.26	34.1	131	239	Peak

Remarks:

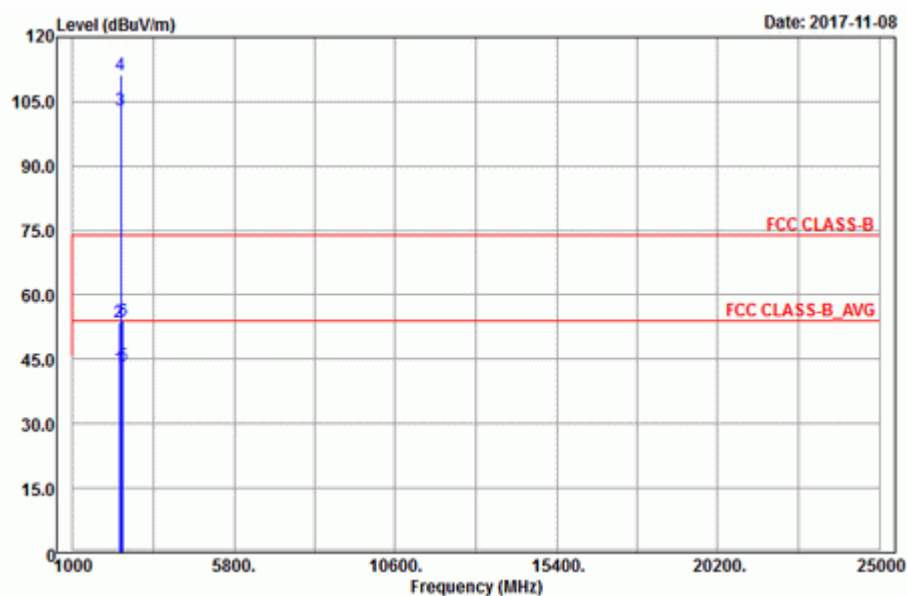
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2412 MHz: Fundamental frequency.

EUT Test Condition		Measurement Detail	
Channel	Channel 6	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Horizontal



Vertical



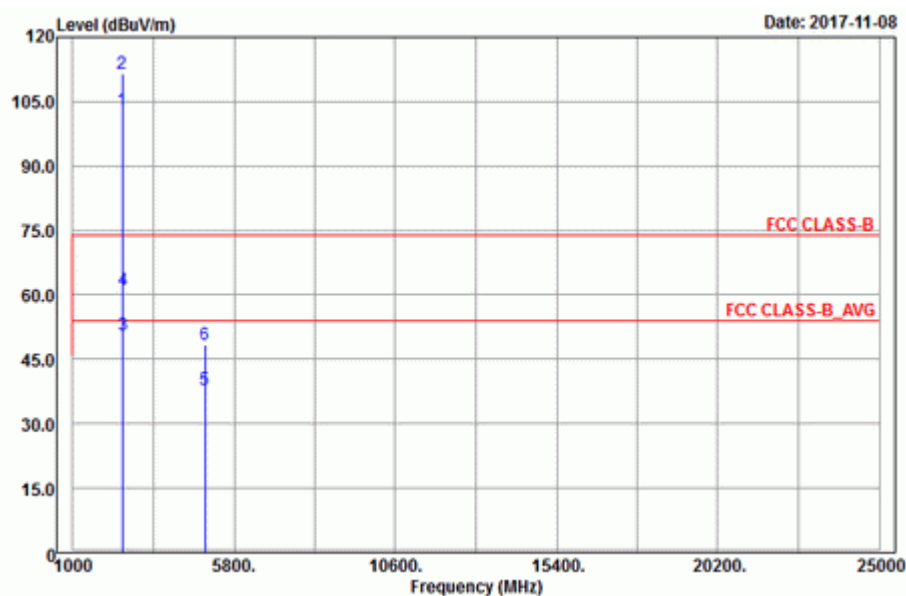
Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.29	46.29	44.58	54	-7.71	31.8	5.4	35.49	260	126	Average
2389.29	56.91	55.2	74	-17.09	31.8	5.4	35.49	260	126	Peak
2437	110.16	108.31			31.85	5.46	35.46	260	126	Average
2437	118.28	116.43			31.85	5.46	35.46	260	126	Peak
2484.68	47.02	45.03	54	-6.98	31.88	5.53	35.42	260	126	Average
2484.68	57.24	55.25	74	-16.76	31.88	5.53	35.42	260	126	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.02	42.71	41	54	-11.29	31.8	5.4	35.49	265	357	Average
2389.02	53.69	51.98	74	-20.31	31.8	5.4	35.49	265	357	Peak
2437	102.92	101.07			31.85	5.46	35.46	265	357	Average
2437	111.28	109.43			31.85	5.46	35.46	265	357	Peak
2484.84	43.65	41.66	54	-10.35	31.88	5.53	35.42	265	357	Average
2484.84	53.94	51.95	74	-20.06	31.88	5.53	35.42	265	357	Peak

Remarks:

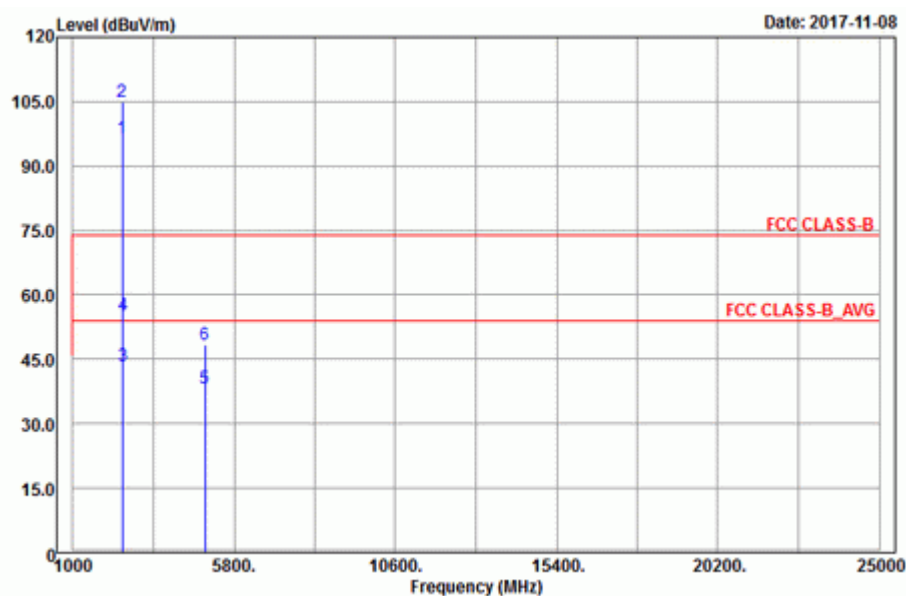
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2437 MHz: Fundamental frequency.

EUT Test Condition		Measurement Detail	
Channel	Channel 11	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Horizontal



Vertical



Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	102.84	100.91			31.87	5.5	35.44	225	107	Average
2462	111.48	109.55			31.87	5.5	35.44	225	107	Peak
2483.88	50.58	48.62	54	-3.42	31.88	5.5	35.42	249	102	Average
2483.88	61.22	59.26	74	-12.78	31.88	5.5	35.42	249	102	Peak
4924	37.96	29.71	54	-16.04	33.99	8.28	34.02	195	264	Average
4924	48.28	40.03	74	-25.72	33.99	8.28	34.02	195	264	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	96.54	94.61			31.87	5.5	35.44	292	357	Average
2462	104.84	102.91			31.87	5.5	35.44	292	357	Peak
2483.52	43.5	41.54	54	-10.5	31.88	5.5	35.42	292	357	Average
2483.52	55.13	53.17	74	-18.87	31.88	5.5	35.42	292	357	Peak
4924	38.32	30.07	54	-15.68	33.99	8.28	34.02	165	82	Average
4924	48.5	40.25	74	-25.5	33.99	8.28	34.02	165	82	Peak

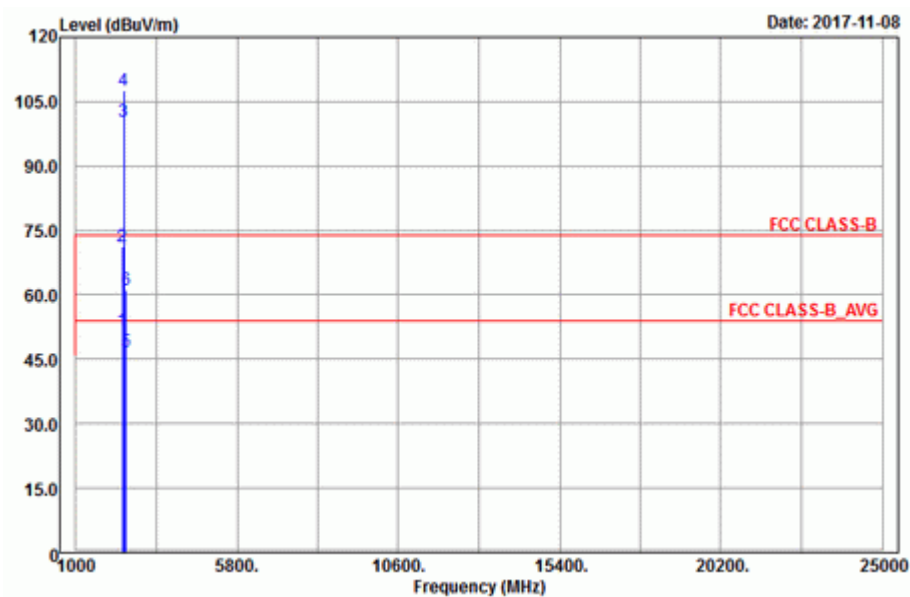
Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2462 MHz: Fundamental frequency.

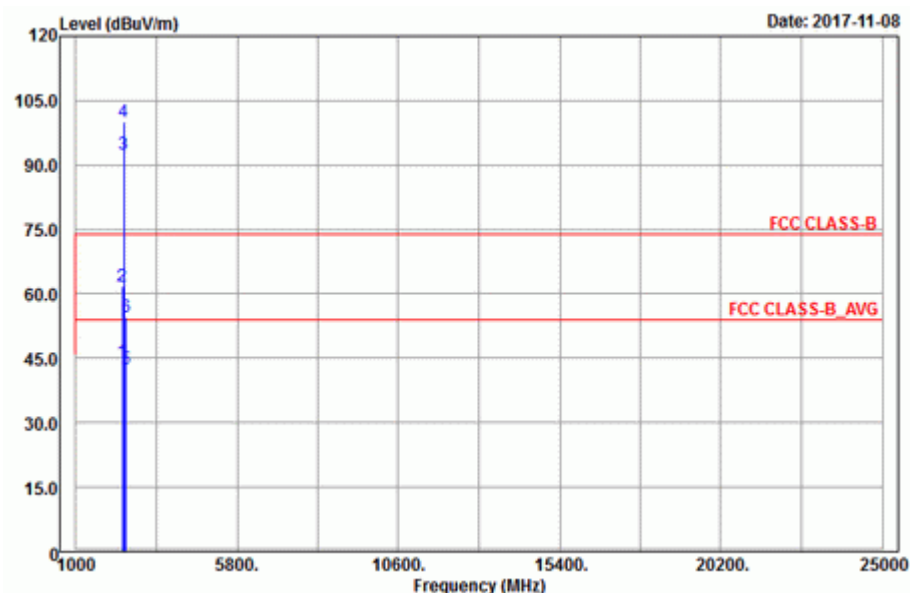
802.11n (HT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 3	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Horizontal



Vertical



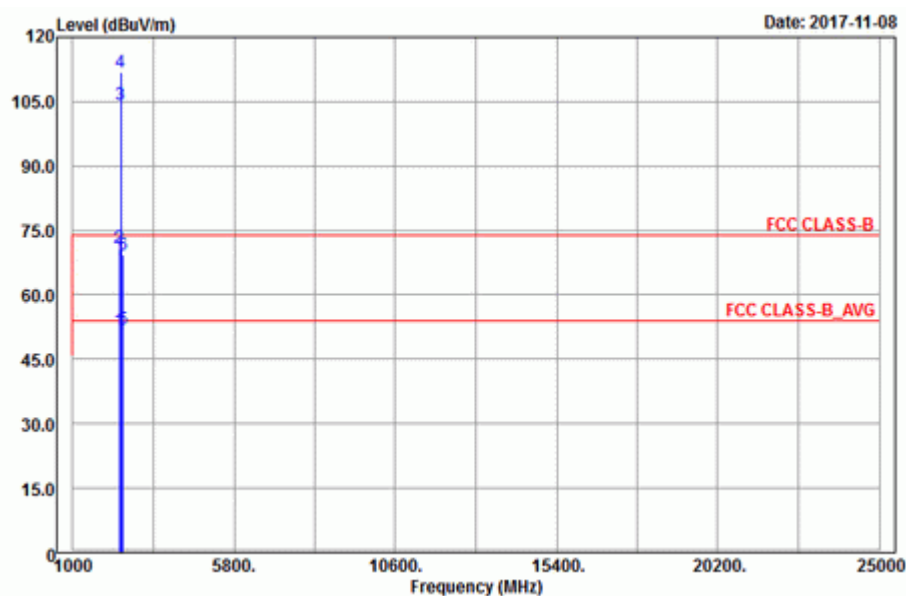
Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.74	51.55	49.84	54	-2.45	31.8	5.4	35.49	249	115	Average
2389.74	71.35	69.64	74	-2.65	31.8	5.4	35.49	249	115	Peak
2422	100.23	98.43			31.83	5.43	35.46	261	126	Average
2422	107.58	105.78			31.83	5.43	35.46	261	126	Peak
2483.72	46.87	44.91	54	-7.13	31.88	5.5	35.42	249	115	Average
2483.72	61.26	59.3	74	-12.74	31.88	5.5	35.42	249	115	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.11	44.27	42.56	54	-9.73	31.8	5.4	35.49	263	341	Average
2389.11	61.85	60.14	74	-12.15	31.8	5.4	35.49	263	341	Peak
2422	92.69	90.89			31.83	5.43	35.46	259	357	Average
2422	100.04	98.24			31.83	5.43	35.46	259	357	Peak
2483.72	42.38	40.42	54	-11.62	31.88	5.5	35.42	263	341	Average
2483.72	54.51	52.55	74	-19.49	31.88	5.5	35.42	263	341	Peak

Remarks:

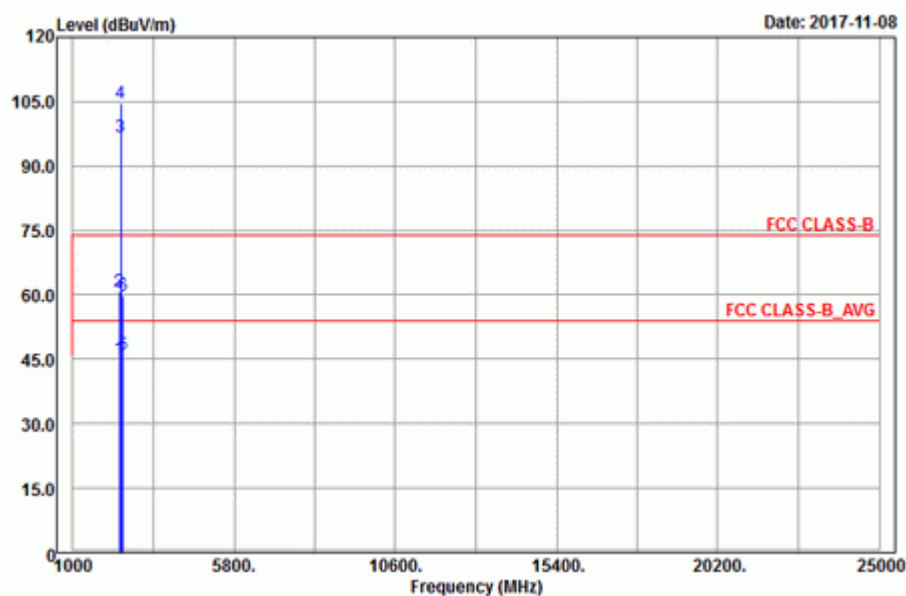
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2422 MHz: Fundamental frequency.

EUT Test Condition		Measurement Detail	
Channel	Channel 6	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Horizontal



Vertical



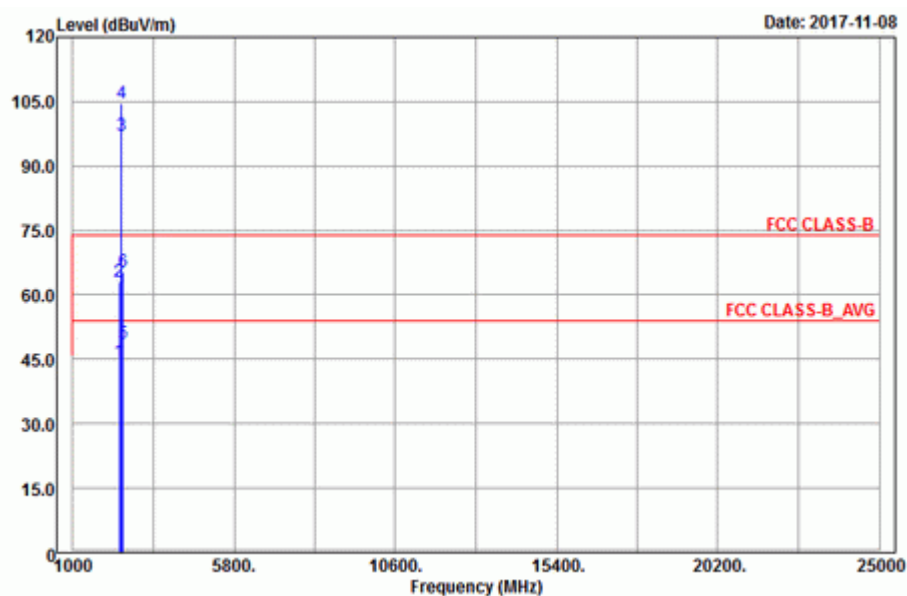
Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.38	51.73	50.02	54	-2.27	31.8	5.4	35.49	216	109	Average
2389.38	71	69.29	74	-3	31.8	5.4	35.49	216	109	Peak
2437	104.26	102.41			31.85	5.46	35.46	260	126	Average
2437	111.67	109.82			31.85	5.46	35.46	260	126	Peak
2483.52	52.12	50.16	54	-1.88	31.88	5.5	35.42	216	109	Average
2483.52	69.45	67.49	74	-4.55	31.88	5.5	35.42	216	109	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.2	45.17	43.46	54	-8.83	31.8	5.4	35.49	265	357	Average
2389.2	60.76	59.05	74	-13.24	31.8	5.4	35.49	265	357	Peak
2437	96.75	94.9			31.85	5.46	35.46	265	357	Average
2437	104.61	102.76			31.85	5.46	35.46	265	357	Peak
2483.88	46.21	44.25	54	-7.79	31.88	5.5	35.42	265	357	Average
2483.88	59.99	58.03	74	-14.01	31.88	5.5	35.42	265	357	Peak

Remarks:

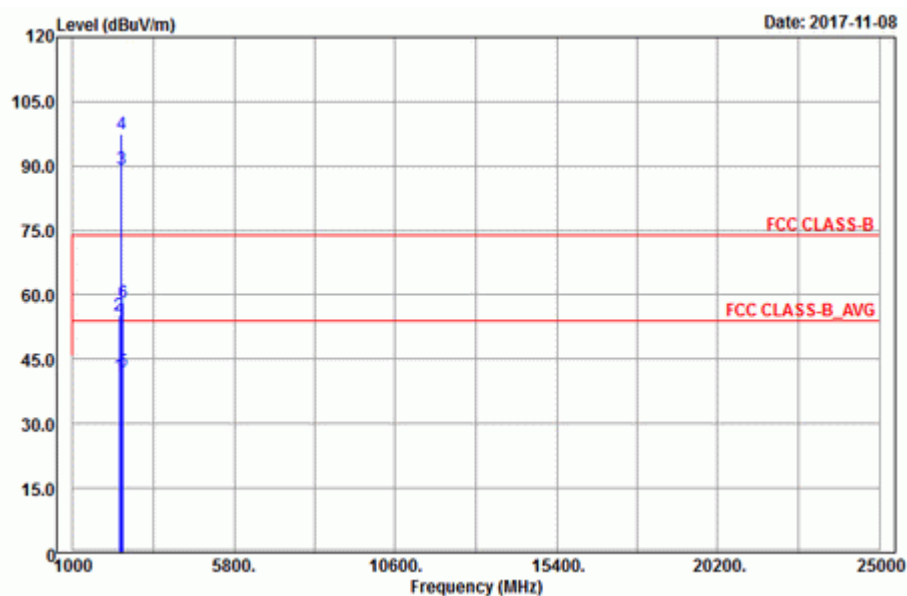
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2437 MHz: Fundamental frequency.

EUT Test Condition		Measurement Detail	
Channel	Channel 9	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Horizontal



Vertical



Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.65	44.41	42.7	54	-9.59	31.8	5.4	35.49	216	108	Average
2389.65	63.13	61.42	74	-10.87	31.8	5.4	35.49	216	108	Peak
2452	97.21	95.34			31.85	5.46	35.44	228	108	Average
2452	104.77	102.9			31.85	5.46	35.44	228	108	Peak
2483.64	48.62	46.66	54	-5.38	31.88	5.5	35.42	216	108	Average
2483.64	65.46	63.5	74	-8.54	31.88	5.5	35.42	216	108	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2377.77	41.07	39.41	54	-12.93	31.78	5.37	35.49	292	357	Average
2377.77	55.15	53.49	74	-18.85	31.78	5.37	35.49	292	357	Peak
2452	89.23	87.36			31.85	5.46	35.44	292	357	Average
2452	97.39	95.52			31.85	5.46	35.44	292	357	Peak
2483.96	42.33	40.37	54	-11.67	31.88	5.5	35.42	292	357	Average
2483.96	58.17	56.21	74	-15.83	31.88	5.5	35.42	292	357	Peak

Remarks:

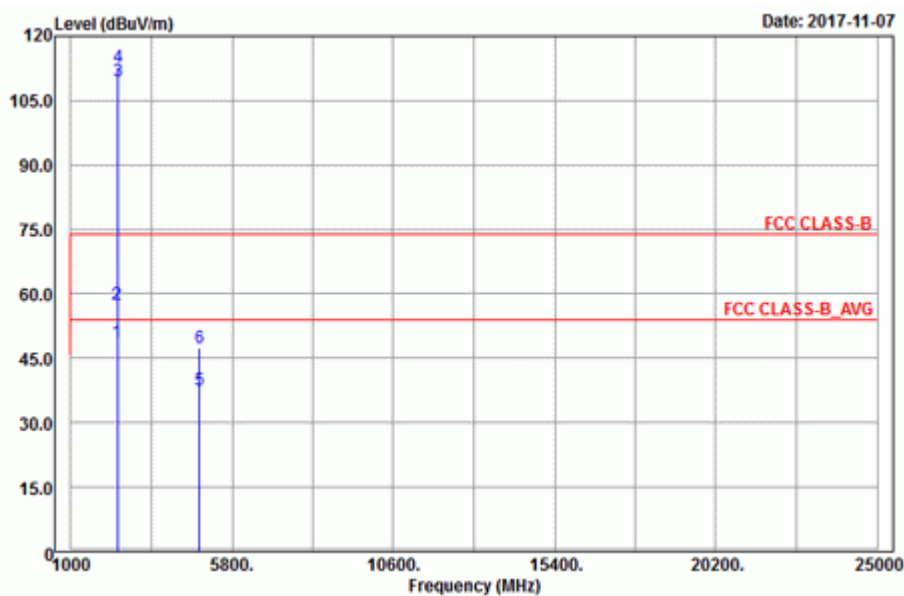
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2452 MHz: Fundamental frequency.

Mode B

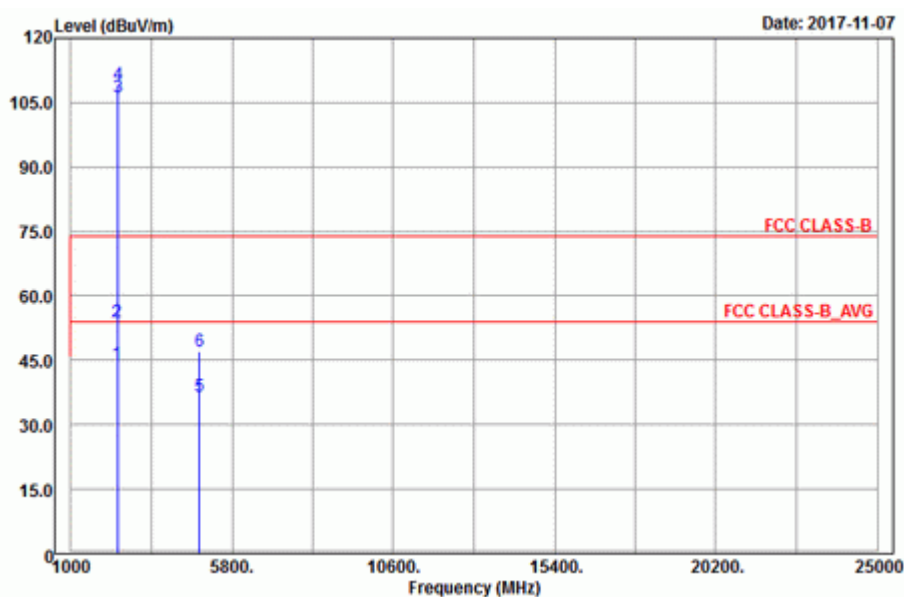
802.11b

EUT Test Condition		Measurement Detail	
Channel	Channel 1	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Horizontal



Vertical



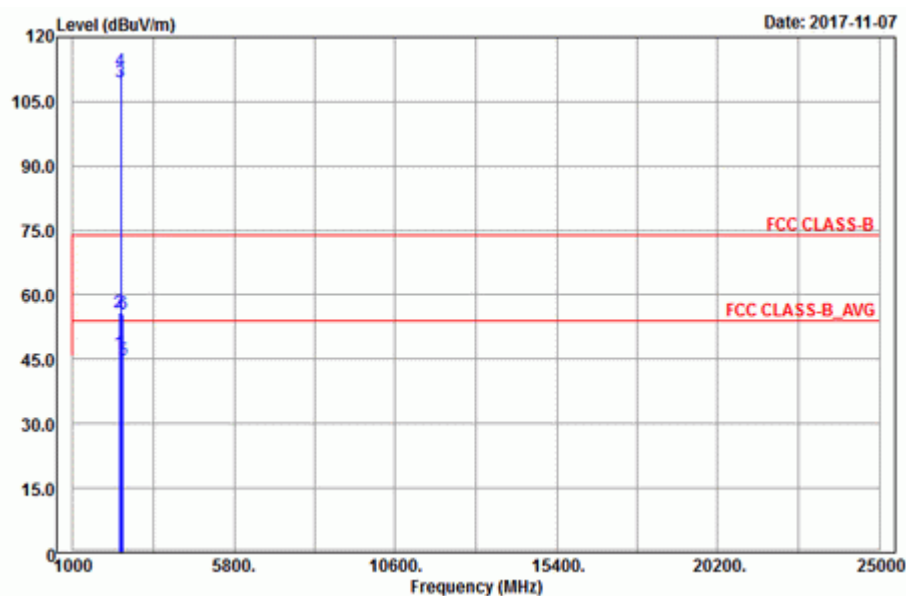
Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2387.49	48.88	47.17	54	-5.12	31.8	5.4	35.49	216	119	Average
2387.49	57.54	55.83	74	-16.46	31.8	5.4	35.49	216	119	Peak
2412	109.65	107.88			31.81	5.43	35.47	220	100	Average
2412	112.92	111.15			31.81	5.43	35.47	220	100	Peak
4824	37.59	29.46	54	-16.41	33.97	8.26	34.1	136	117	Average
4824	47.56	39.43	74	-26.44	33.97	8.26	34.1	136	117	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2383.8	44.2	42.51	54	-9.8	31.78	5.4	35.49	200	136	Average
2383.8	54.11	52.42	74	-19.89	31.78	5.4	35.49	200	136	Peak
2412	106.41	104.64			31.81	5.43	35.47	200	136	Average
2412	109.17	107.4			31.81	5.43	35.47	200	136	Peak
4824	36.78	28.65	54	-17.22	33.97	8.26	34.1	149	342	Average
4824	46.97	38.84	74	-27.03	33.97	8.26	34.1	149	342	Peak

Remarks:

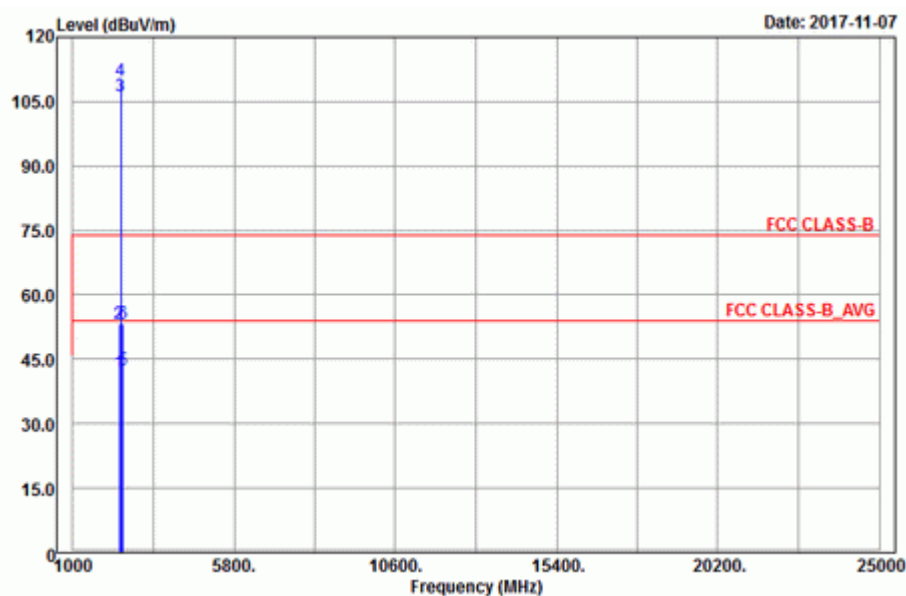
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2412 MHz: Fundamental frequency.

EUT Test Condition		Measurement Detail	
Channel	Channel 6	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Horizontal



Vertical



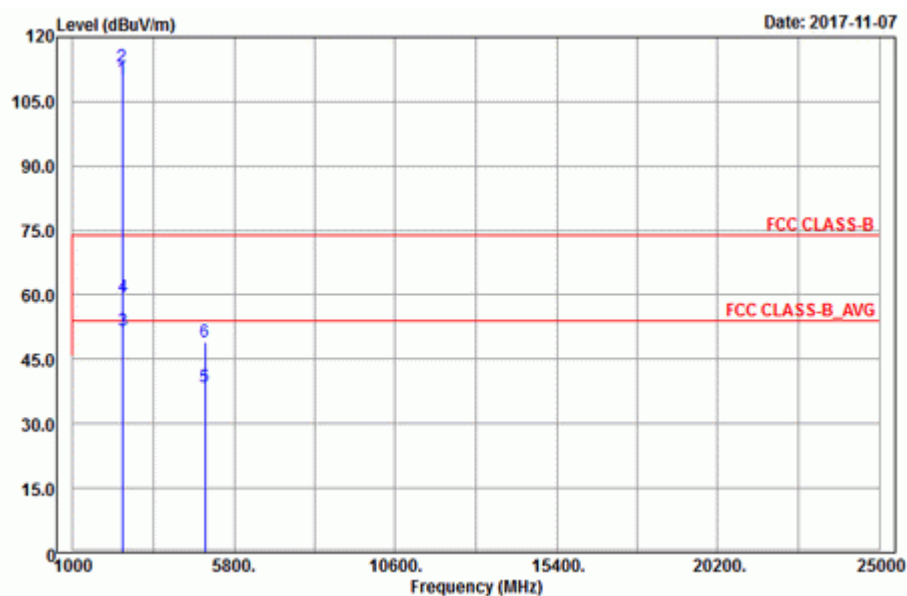
Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.11	46.31	44.6	54	-7.69	31.8	5.4	35.49	220	100	Average
2389.11	55.89	54.18	74	-18.11	31.8	5.4	35.49	220	100	Peak
2437	109.44	107.59			31.85	5.46	35.46	220	100	Average
2437	112.16	110.31			31.85	5.46	35.46	220	100	Peak
2484.92	44.89	42.9	54	-9.11	31.88	5.53	35.42	220	100	Average
2484.92	55.7	53.71	74	-18.3	31.88	5.53	35.42	220	100	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2388.93	41.95	40.24	54	-12.05	31.8	5.4	35.49	200	136	Average
2388.93	53.31	51.6	74	-20.69	31.8	5.4	35.49	200	136	Peak
2437	106.37	104.52			31.85	5.46	35.46	200	136	Average
2437	109.91	108.06			31.85	5.46	35.46	200	136	Peak
2485.48	42.46	40.47	54	-11.54	31.88	5.53	35.42	200	136	Average
2485.48	53.23	51.24	74	-20.77	31.88	5.53	35.42	200	136	Peak

Remarks:

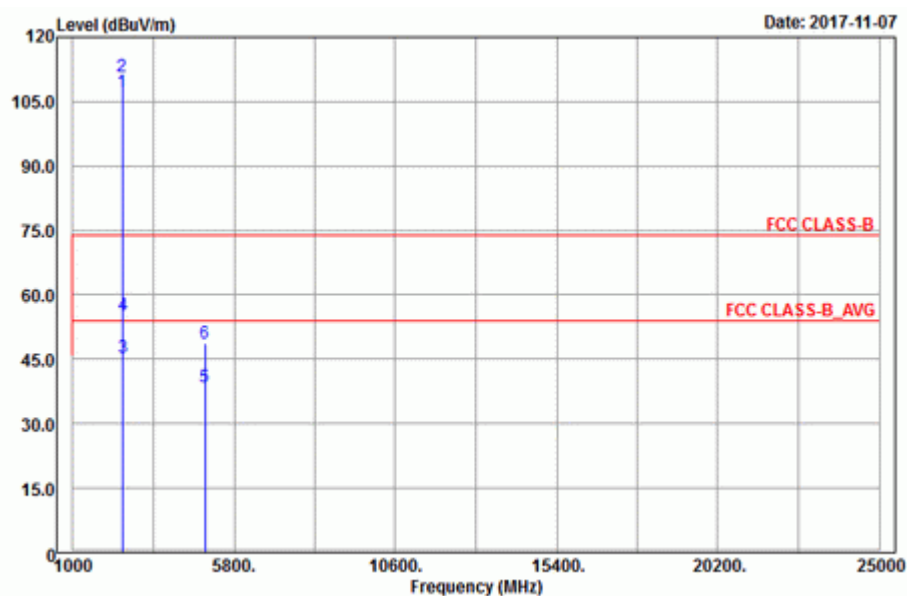
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2437 MHz: Fundamental frequency.

EUT Test Condition		Measurement Detail	
Channel	Channel 11	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Horizontal



Vertical



Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	110.1	108.17			31.87	5.5	35.44	220	100	Average
2462	113.15	111.22			31.87	5.5	35.44	220	100	Peak
2486.88	51.54	49.55	54	-2.46	31.88	5.53	35.42	248	140	Average
2486.88	59.46	57.47	74	-14.54	31.88	5.53	35.42	248	140	Peak
4924	38.49	30.24	54	-15.51	33.99	8.28	34.02	102	195	Average
4924	49.1	40.85	74	-24.9	33.99	8.28	34.02	102	195	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	107.41	105.48			31.87	5.5	35.44	200	136	Average
2462	110.79	108.86			31.87	5.5	35.44	200	136	Peak
2487.56	45.4	43.39	54	-8.6	31.9	5.53	35.42	200	136	Average
2487.56	55.2	53.19	74	-18.8	31.9	5.53	35.42	200	136	Peak
4924	38.62	30.37	54	-15.38	33.99	8.28	34.02	177	248	Average
4924	48.81	40.56	74	-25.19	33.99	8.28	34.02	177	248	Peak

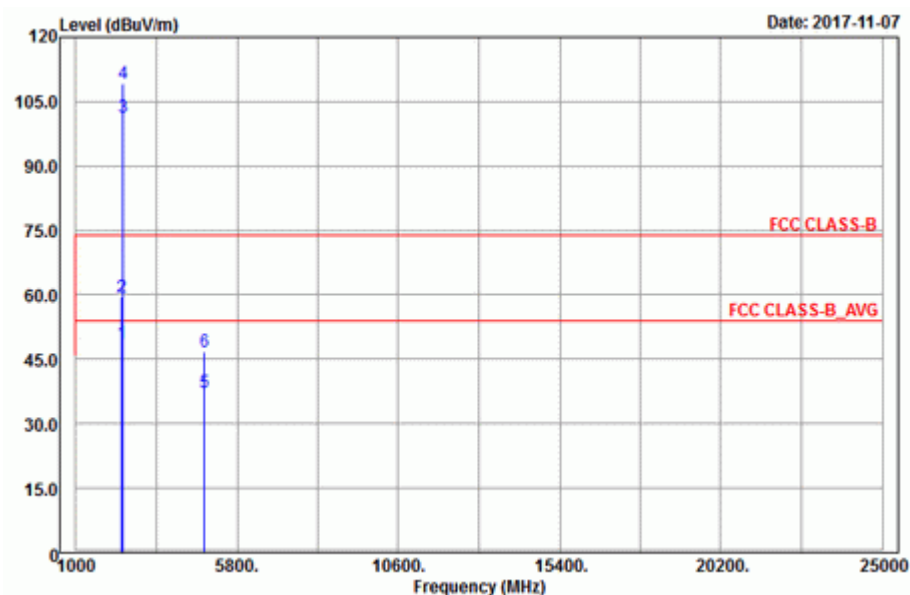
Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2462 MHz: Fundamental frequency.

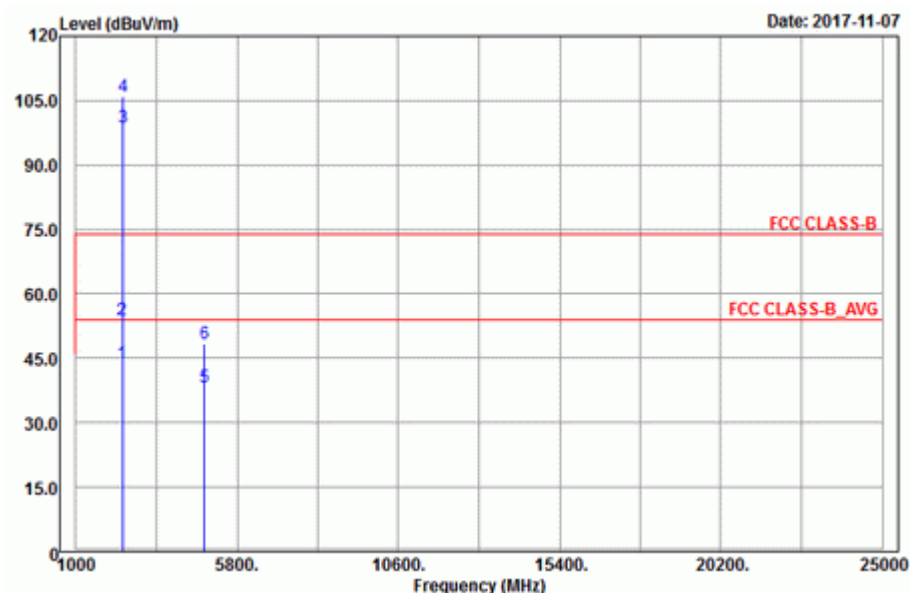
802.11g

EUT Test Condition		Measurement Detail	
Channel	Channel 1	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Horizontal



Vertical



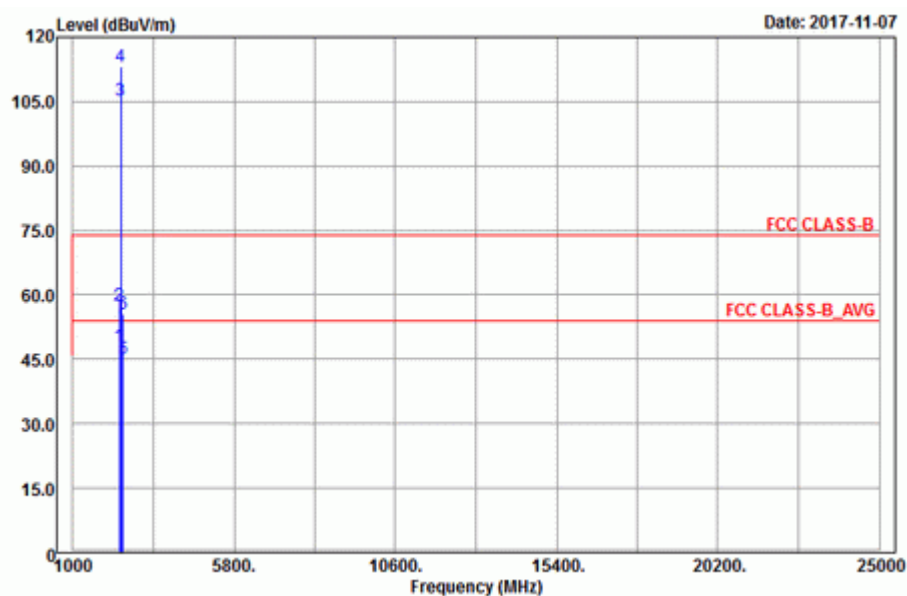
Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2375.79	48.87	47.21	54	-5.13	31.78	5.37	35.49	215	120	Average
2375.79	59.49	57.83	74	-14.51	31.78	5.37	35.49	215	120	Peak
2412	101.25	99.48			31.81	5.43	35.47	220	100	Average
2412	109.17	107.4			31.81	5.43	35.47	220	100	Peak
4824	37.14	29.01	54	-16.86	33.97	8.26	34.1	149	222	Average
4824	46.61	38.48	74	-27.39	33.97	8.26	34.1	149	222	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2381.73	43.72	42.03	54	-10.28	31.78	5.4	35.49	200	136	Average
2381.73	54.01	52.32	74	-19.99	31.78	5.4	35.49	200	136	Peak
2412	98.65	96.88			31.81	5.43	35.47	200	136	Average
2412	106.02	104.25			31.81	5.43	35.47	200	136	Peak
4824	38.1	29.97	54	-15.9	33.97	8.26	34.1	163	95	Average
4824	48.32	40.19	74	-25.68	33.97	8.26	34.1	163	95	Peak

Remarks:

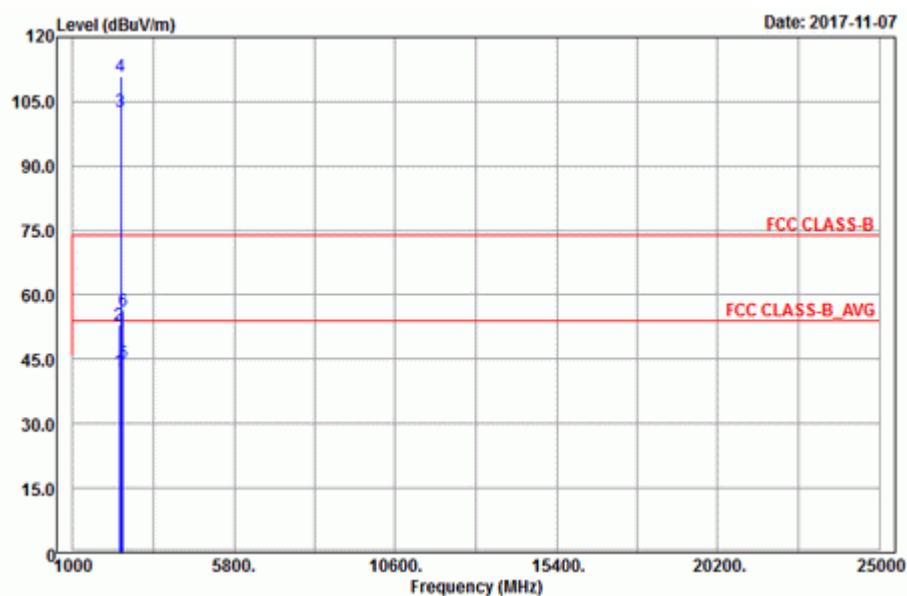
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2412 MHz: Fundamental frequency.

EUT Test Condition		Measurement Detail	
Channel	Channel 6	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Horizontal



Vertical



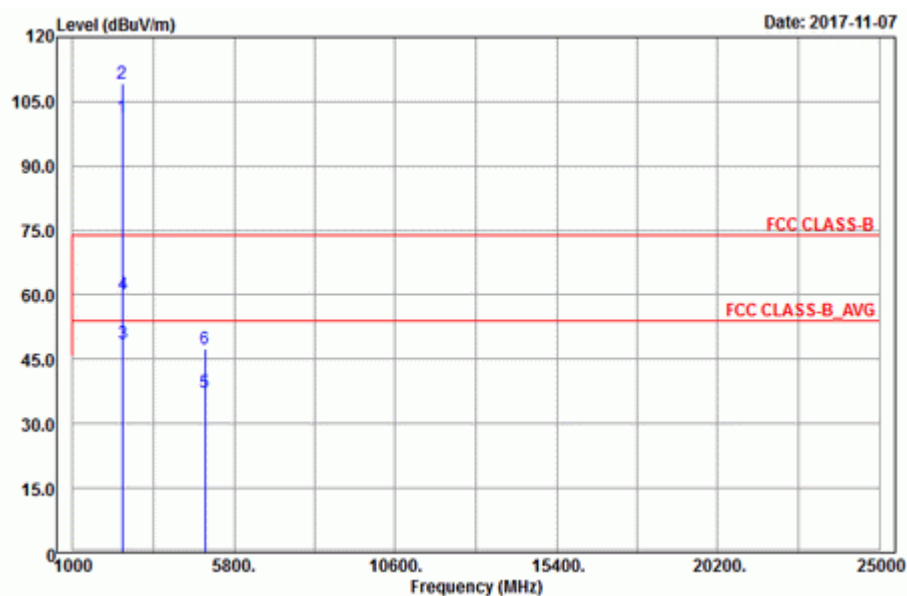
Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2388.93	48.12	46.41	54	-5.88	31.8	5.4	35.49	250	102	Average
2388.93	57.6	55.89	74	-16.4	31.8	5.4	35.49	250	102	Peak
2437	105.36	103.51			31.85	5.46	35.46	220	100	Average
2437	113.03	111.18			31.85	5.46	35.46	220	100	Peak
2485.04	45.09	43.1	54	-8.91	31.88	5.53	35.42	220	100	Average
2485.04	55.57	53.58	74	-18.43	31.88	5.53	35.42	220	100	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.02	42.3	40.59	54	-11.7	31.8	5.4	35.49	200	136	Average
2389.02	52.96	51.25	74	-21.04	31.8	5.4	35.49	200	136	Peak
2437	102.77	100.92			31.85	5.46	35.46	200	136	Average
2437	110.95	109.1			31.85	5.46	35.46	200	136	Peak
2485.2	44.13	42.14	54	-9.87	31.88	5.53	35.42	200	136	Average
2485.2	56.1	54.11	74	-17.9	31.88	5.53	35.42	200	136	Peak

Remarks:

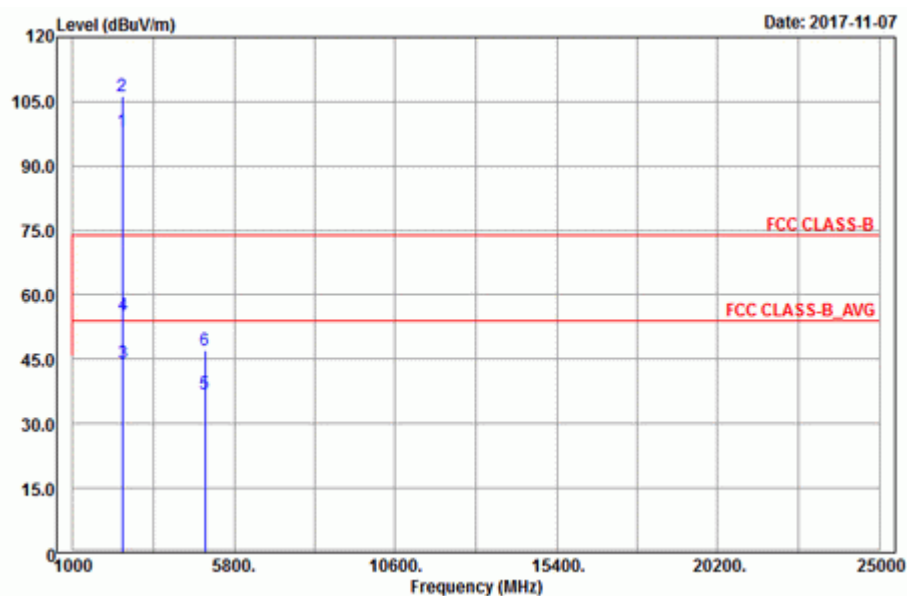
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2437 MHz: Fundamental frequency.

EUT Test Condition		Measurement Detail	
Channel	Channel 11	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Horizontal



Vertical



Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	101.47	99.54			31.87	5.5	35.44	220	100	Average
2462	109.17	107.24			31.87	5.5	35.44	220	100	Peak
2485	48.64	46.65	54	-5.36	31.88	5.53	35.42	261	137	Average
2485	60.19	58.2	74	-13.81	31.88	5.53	35.42	261	137	Peak
4924	37.32	29.07	54	-16.68	33.99	8.28	34.02	121	139	Average
4925	47.39	39.14	74	-26.61	33.99	8.28	34.02	121	139	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	98.24	96.31			31.87	5.5	35.44	200	136	Average
2462	106.41	104.48			31.87	5.5	35.44	200	136	Peak
2483.56	44.3	42.34	54	-9.7	31.88	5.5	35.42	200	136	Average
2483.56	55.41	53.45	74	-18.59	31.88	5.5	35.42	200	136	Peak
4924	37.06	28.81	54	-16.94	33.99	8.28	34.02	153	326	Average
4924	47.24	38.99	74	-26.76	33.99	8.28	34.02	153	326	Peak

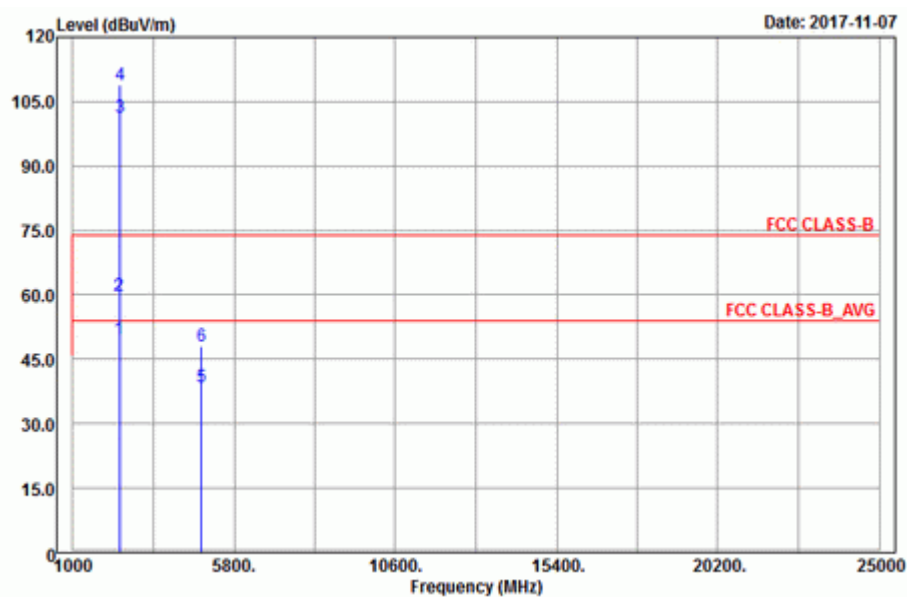
Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2462 MHz: Fundamental frequency.

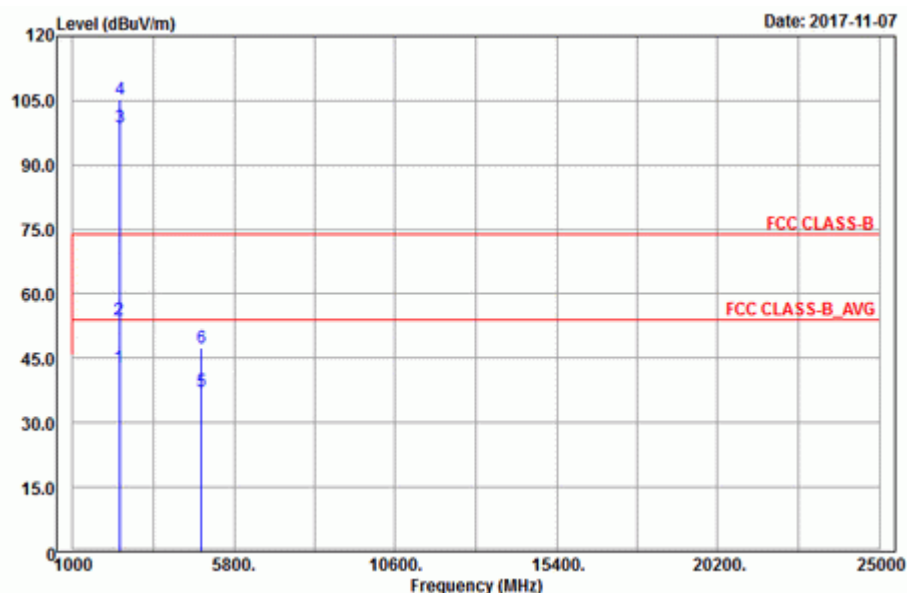
802.11n (HT20)

EUT Test Condition		Measurement Detail	
Channel	Channel 1	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Horizontal



Vertical



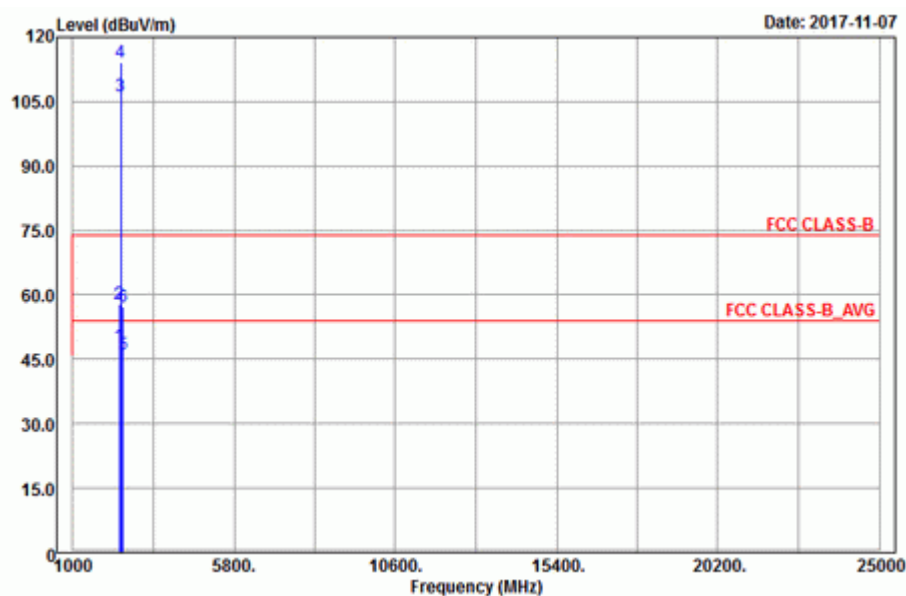
Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.92	49.58	47.85	54	-4.42	31.8	5.4	35.47	246	119	Average
2389.92	59.81	58.08	74	-14.19	31.8	5.4	35.47	246	119	Peak
2412	101.25	99.48			31.81	5.43	35.47	220	100	Average
2412	108.91	107.14			31.81	5.43	35.47	220	100	Peak
4824	38.63	30.5	54	-15.37	33.97	8.26	34.1	120	355	Average
4824	48.02	39.89	74	-25.98	33.97	8.26	34.1	120	355	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2380.65	42.89	41.2	54	-11.11	31.78	5.4	35.49	200	136	Average
2380.65	53.86	52.17	74	-20.14	31.78	5.4	35.49	200	136	Peak
2412	98.62	96.85			31.81	5.43	35.47	200	136	Average
2412	105.17	103.4			31.81	5.43	35.47	200	136	Peak
4824	37.16	29.03	54	-16.84	33.97	8.26	34.1	161	28	Average
4824	47.36	39.23	74	-26.64	33.97	8.26	34.1	161	28	Peak

Remarks:

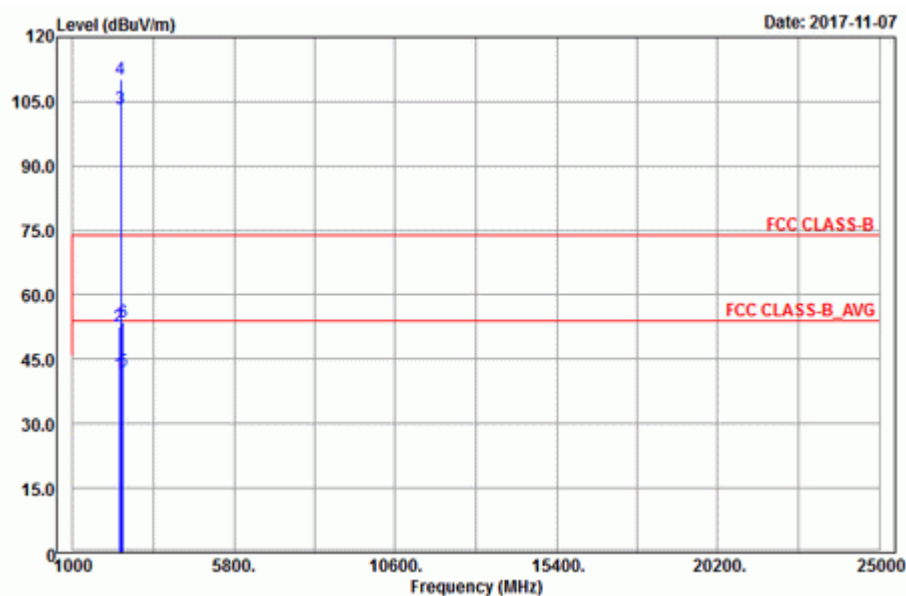
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2412 MHz: Fundamental frequency.

EUT Test Condition		Measurement Detail	
Channel	Channel 6	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Horizontal



Vertical



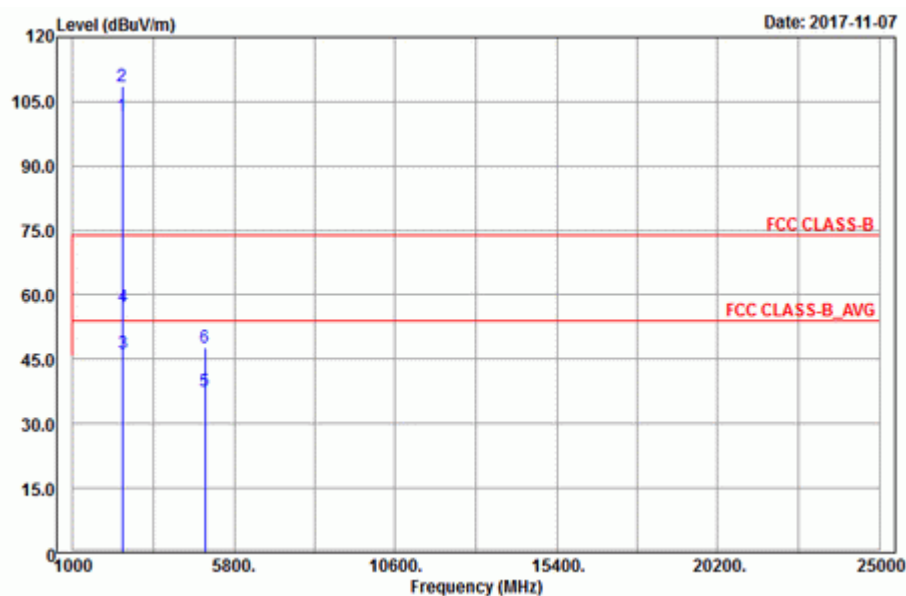
Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.2	48.02	46.31	54	-5.98	31.8	5.4	35.49	246	119	Average
2389.2	57.99	56.28	74	-16.01	31.8	5.4	35.49	246	119	Peak
2437	106.35	104.5			31.85	5.46	35.46	220	100	Average
2437	113.97	112.12			31.85	5.46	35.46	220	100	Peak
2484.96	46.2	44.21	54	-7.8	31.88	5.53	35.42	220	100	Average
2484.96	57.26	55.27	74	-16.74	31.88	5.53	35.42	220	100	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.2	41.68	39.97	54	-12.32	31.8	5.4	35.49	200	136	Average
2389.2	52.62	50.91	74	-21.38	31.8	5.4	35.49	200	136	Peak
2437	103.24	101.39			31.85	5.46	35.46	200	136	Average
2437	110.11	108.26			31.85	5.46	35.46	200	136	Peak
2484	42.09	40.13	54	-11.91	31.88	5.5	35.42	200	136	Average
2484	53.68	51.72	74	-20.32	31.88	5.5	35.42	200	136	Peak

Remarks:

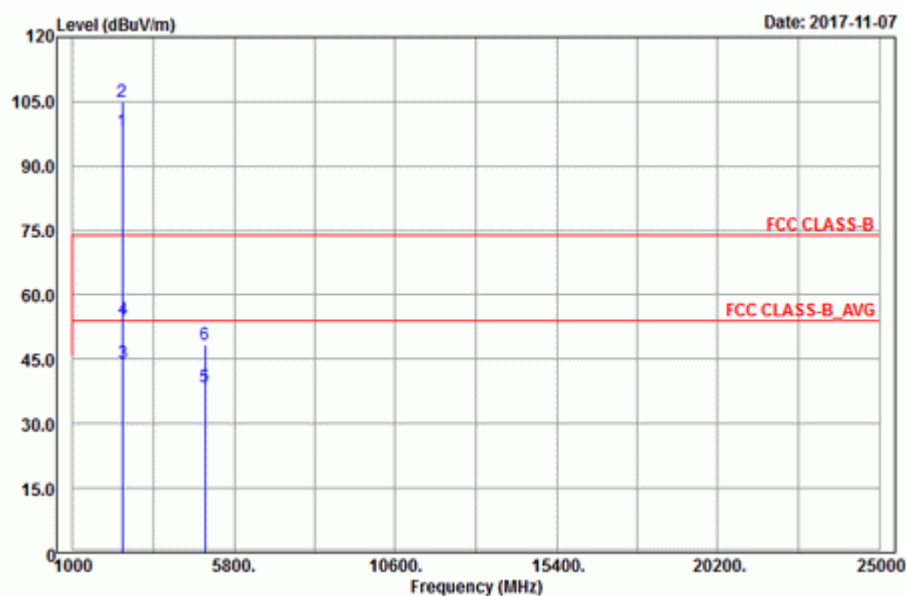
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2437 MHz: Fundamental frequency.

EUT Test Condition		Measurement Detail	
Channel	Channel 11	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Horizontal



Vertical



Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	101.74	99.81			31.87	5.5	35.44	220	100	Average
2462	108.55	106.62			31.87	5.5	35.44	220	100	Peak
2483.52	46.56	44.6	54	-7.44	31.88	5.5	35.42	220	100	Average
2483.52	57.13	55.17	74	-16.87	31.88	5.5	35.42	220	100	Peak
4924	37.52	29.27	54	-16.48	33.99	8.28	34.02	180	231	Average
4924	47.63	39.38	74	-26.37	33.99	8.28	34.02	180	231	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	98.05	60.68			31.87	5.5	35.44	200	136	Average
2462	105.01	67.64			31.87	5.5	35.44	200	136	Peak
2483.72	44	42.04	54	-10	31.88	5.5	35.42	200	136	Average
2483.72	54.41	52.45	74	-19.59	31.88	5.5	35.42	200	136	Peak
4924	38.46	30.21	54	-15.54	33.99	8.28	34.02	175	166	Average
4924	48.38	40.13	74	-25.62	33.99	8.28	34.02	175	166	Peak

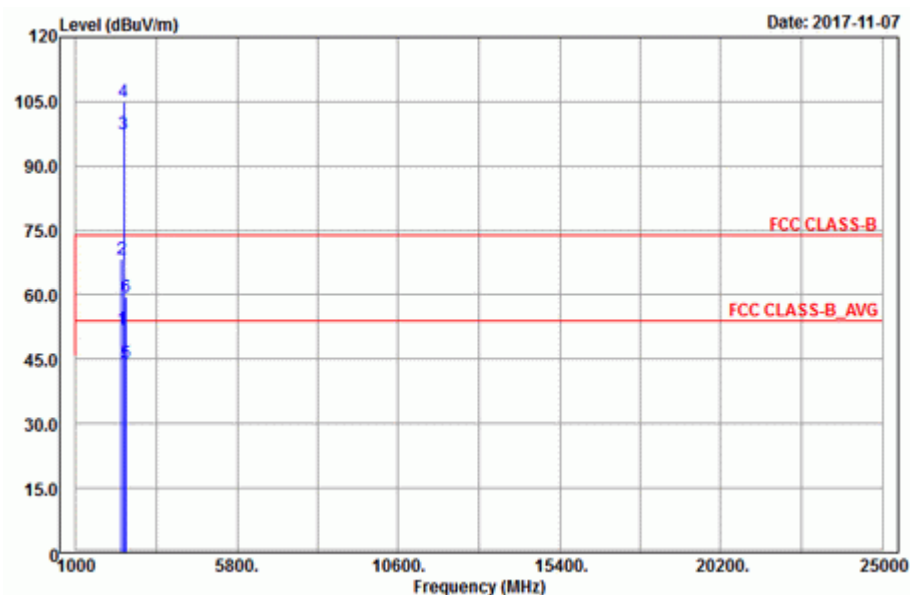
Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2462 MHz: Fundamental frequency.

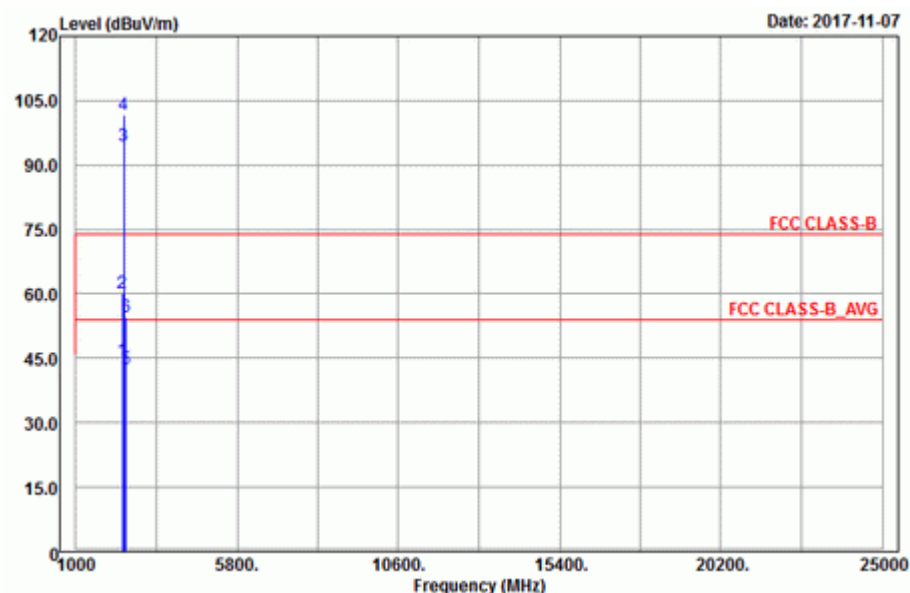
802.11n (HT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 3	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Horizontal



Vertical



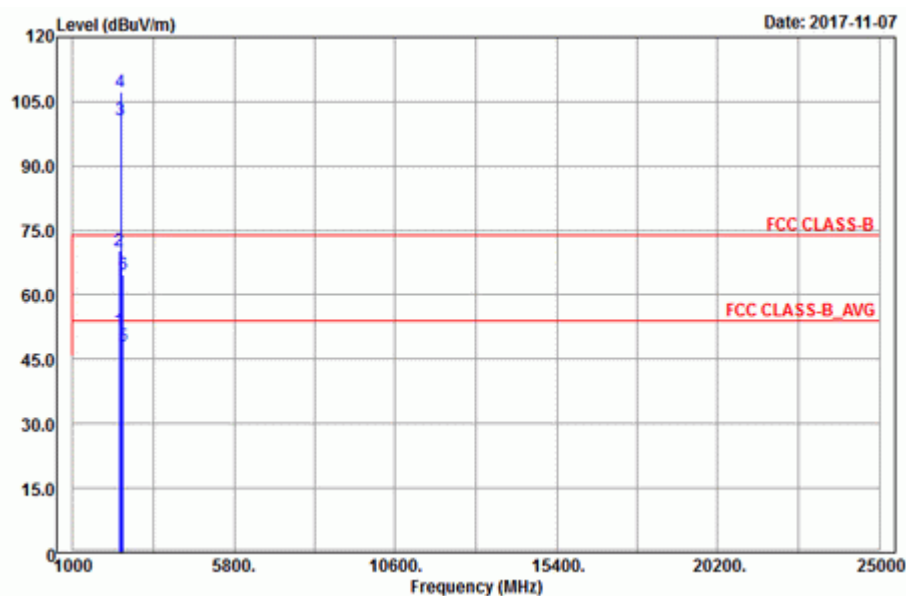
Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2374.08	51.98	50.32	54	-2.02	31.78	5.37	35.49	219	118	Average
2374.08	68.43	66.77	74	-5.57	31.78	5.37	35.49	219	118	Peak
2422	97.48	95.68			31.83	5.43	35.46	220	100	Average
2422	104.83	103.03			31.83	5.43	35.46	220	100	Peak
2484.6	44.13	42.14	54	-9.87	31.88	5.53	35.42	220	100	Average
2484.6	59.59	57.6	74	-14.41	31.88	5.53	35.42	220	100	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2385.06	44.43	42.74	54	-9.57	31.78	5.4	35.49	200	136	Average
2385.06	60.27	58.58	74	-13.73	31.78	5.4	35.49	200	136	Peak
2422	94.63	92.83			31.83	5.43	35.46	200	136	Average
2422	101.66	99.86			31.83	5.43	35.46	200	136	Peak
2485	42.47	40.48	54	-11.53	31.88	5.53	35.42	200	136	Average
2485	54.7	52.71	74	-19.3	31.88	5.53	35.42	200	136	Peak

Remarks:

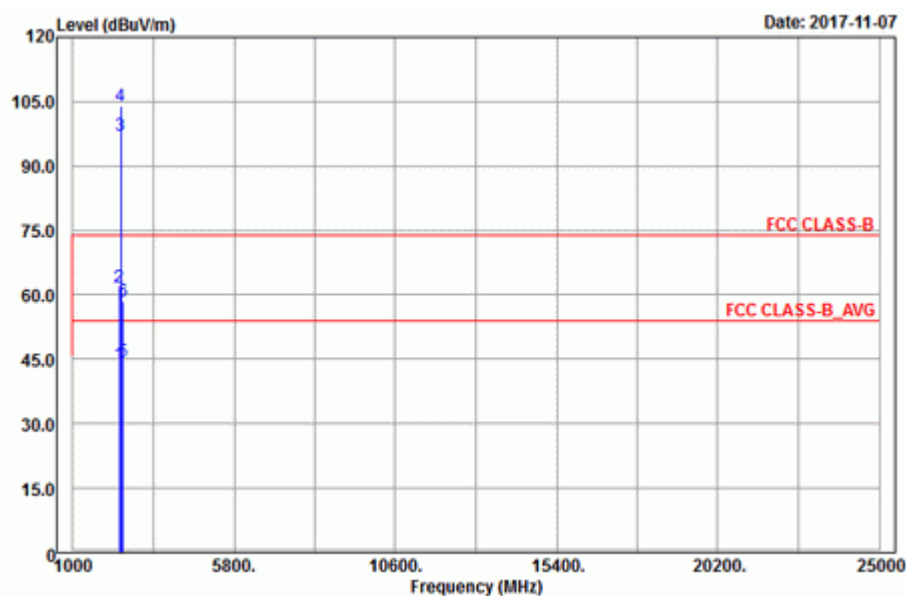
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2422 MHz: Fundamental frequency.

EUT Test Condition		Measurement Detail	
Channel	Channel 6	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Horizontal



Vertical



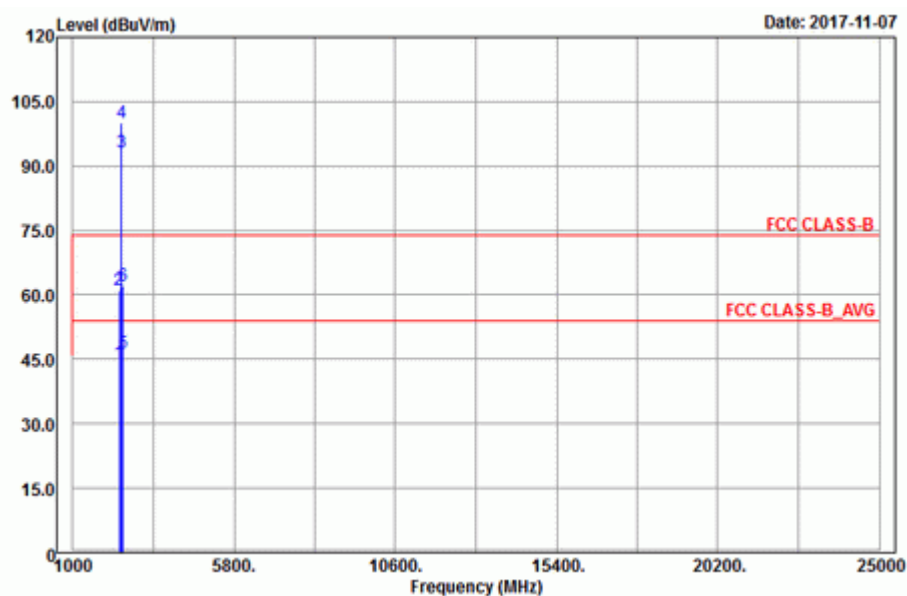
Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.02	51.72	50.01	54	-2.28	31.8	5.4	35.49	240	118	Average
2389.02	70.32	68.61	74	-3.68	31.8	5.4	35.49	240	118	Peak
2437	100.74	98.89			31.85	5.46	35.46	220	100	Average
2437	107.38	105.53			31.85	5.46	35.46	220	100	Peak
2483.6	47.99	46.03	54	-6.01	31.88	5.5	35.42	220	100	Average
2483.6	64.84	62.88	74	-9.16	31.88	5.5	35.42	220	100	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2388.84	43.98	42.27	54	-10.02	31.8	5.4	35.49	200	136	Average
2388.84	61.91	60.2	74	-12.09	31.8	5.4	35.49	200	136	Peak
2437	97.19	95.34			31.85	5.46	35.46	200	136	Average
2437	104.09	102.24			31.85	5.46	35.46	200	136	Peak
2485.04	44.41	42.42	54	-9.59	31.88	5.53	35.42	200	136	Average
2485.04	58.6	56.61	74	-15.4	31.88	5.53	35.42	200	136	Peak

Remarks:

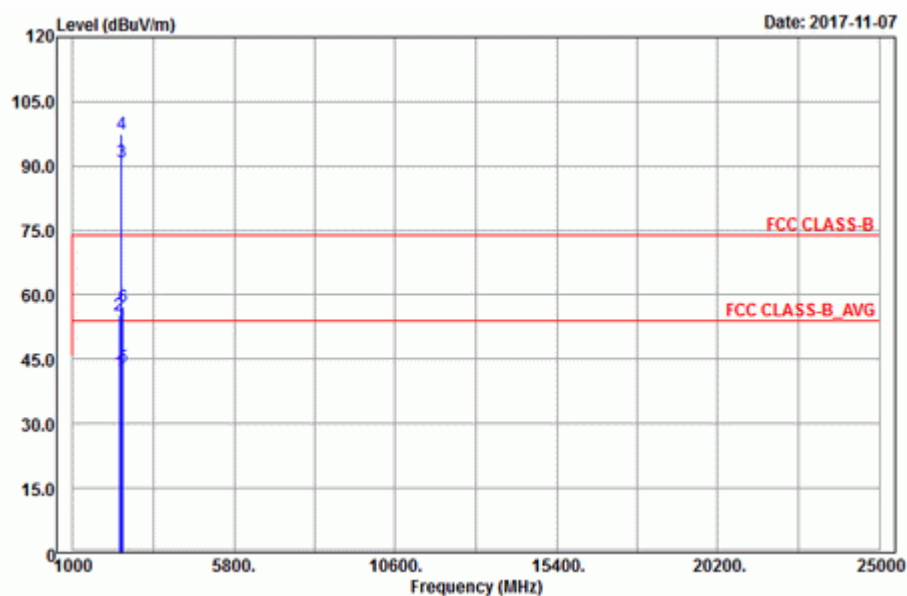
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2437 MHz: Fundamental frequency.

EUT Test Condition		Measurement Detail	
Channel	Channel 9	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Horizontal



Vertical



Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2385.87	44.22	42.51	54	-9.78	31.8	5.4	35.49	220	100	Average
2385.87	61.19	59.48	74	-12.81	31.8	5.4	35.49	220	100	Peak
2452	93.17	91.3			31.85	5.46	35.44	220	100	Average
2452	100.13	98.26			31.85	5.46	35.44	220	100	Peak
2500	46.43	44.41	54	-7.57	31.9	5.53	35.41	220	100	Average
2500	62.03	60.01	74	-11.97	31.9	5.53	35.41	220	100	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2385.6	41.73	40.02	54	-12.27	31.8	5.4	35.49	200	136	Average
2385.6	55.23	53.52	74	-18.77	31.8	5.4	35.49	200	136	Peak
2452	90.84	88.97			31.85	5.46	35.44	200	136	Average
2452	97.31	95.44			31.85	5.46	35.44	200	136	Peak
2499.92	43.18	41.16	54	-10.82	31.9	5.53	35.41	200	136	Average
2499.92	57.27	55.25	74	-16.73	31.9	5.53	35.41	200	136	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2452 MHz: Fundamental frequency.

9 kHz ~ 30 MHz Data:

The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

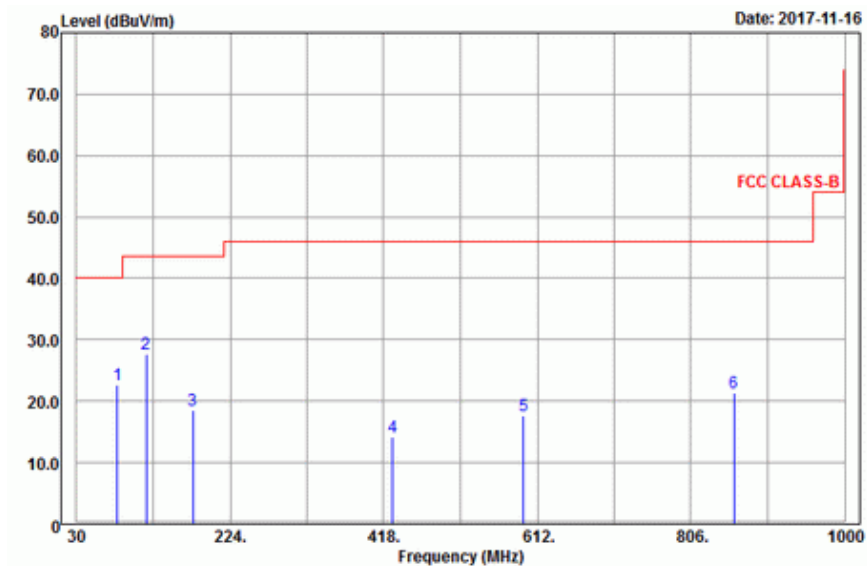
30 MHz ~ 1 GHz Worst-Case Data:

Mode A

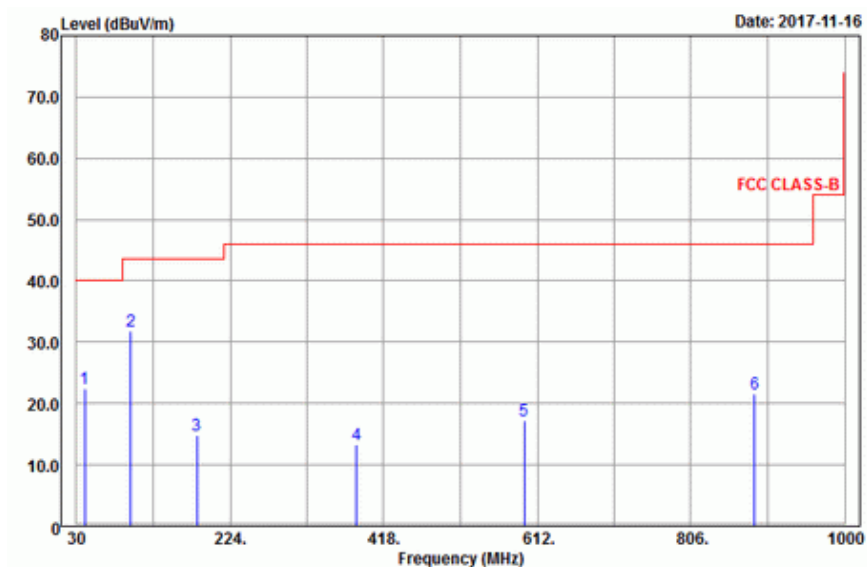
802.11n (HT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 6	Frequency Range	30 MHz ~ 1 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Horizontal



Vertical



Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
81.84	22.7	45.34	40	-17.3	8.41	1.11	32.16	160	187	Peak
118.02	27.65	48	43.5	-15.85	10.62	1.28	32.25	174	342	Peak
177.42	18.62	39.69	43.5	-24.88	9.56	1.61	32.24	129	253	Peak
429.5	14.07	28.52	46	-31.93	15.32	2.41	32.18	178	231	Peak
594.7	17.62	29.09	46	-28.38	17.85	2.87	32.19	168	119	Peak
860	21.41	28.54	46	-24.59	21.16	3.44	31.73	150	224	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
40.26	22.45	40.35	40	-17.55	13.59	0.74	32.23	134	228	Peak
98.58	31.82	50.6	43.5	-11.68	12.15	1.28	32.21	190	326	Peak
182.01	14.9	35.61	43.5	-28.6	9.92	1.61	32.24	177	248	Peak
384	13.22	28.39	46	-32.78	14.67	2.34	32.18	195	63	Peak
595.4	17.15	28.61	46	-28.85	17.86	2.87	32.19	187	124	Peak
886.6	21.62	28.33	46	-24.38	21.37	3.49	31.57	135	211	Peak

Remarks:

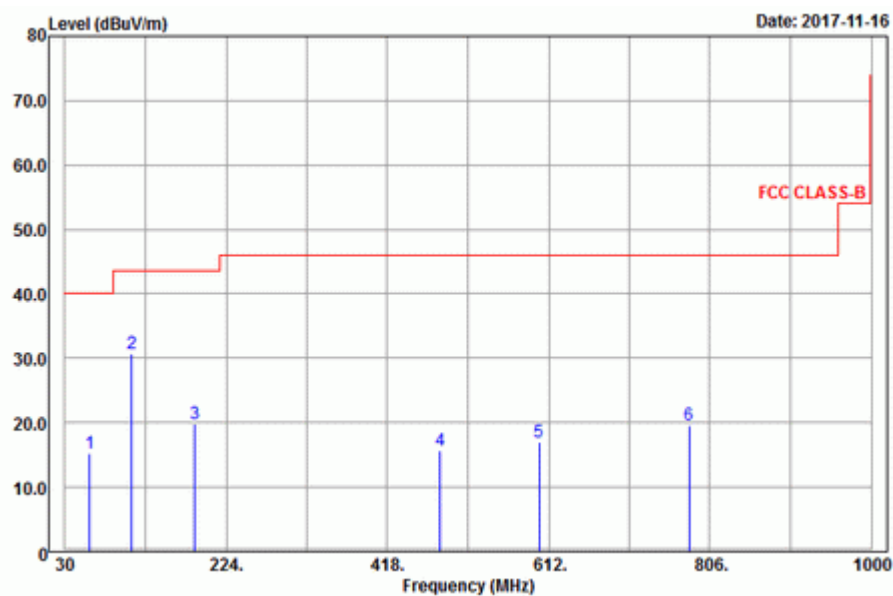
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value

Mode B

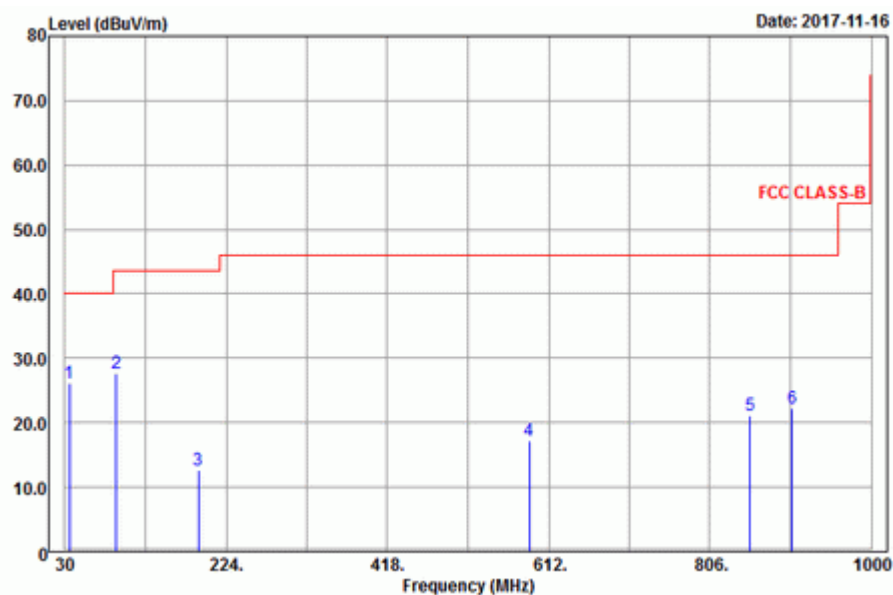
802.11n (HT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 6	Frequency Range	30 MHz ~ 1 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Charles Hsiao

Horizontal



Vertical



Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
59.7	15.18	33.14	40	-24.82	13.37	0.9	32.23	164	38	Peak
110.46	30.74	49.8	43.5	-12.76	11.91	1.28	32.25	192	286	Peak
186.06	19.74	40.1	43.5	-23.76	10.28	1.61	32.25	148	221	Peak
481.3	15.68	29.15	46	-30.32	16.08	2.56	32.11	168	127	Peak
601	17.06	28.44	46	-28.94	17.94	2.87	32.19	139	152	Peak
780.9	19.58	28.26	46	-26.42	20.14	3.27	32.09	135	188	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
35.67	26.15	45.29	40	-13.85	12.35	0.74	32.23	193	332	Peak
91.83	27.78	47.57	43.5	-15.72	10.92	1.11	31.82	200	166	Peak
190.38	12.62	32.64	43.5	-30.88	10.62	1.61	32.25	157	128	Peak
589.1	17.13	28.69	46	-28.87	17.76	2.87	32.19	196	131	Peak
854.4	21.24	28.48	46	-24.76	21.08	3.44	31.76	176	41	Peak
905.5	22.15	28.57	46	-23.85	21.49	3.53	31.44	145	210	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies.
 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver ROHDE & SCHWARZ	ESCS 30	100288	Aug. 17, 2017	Aug. 16, 2018
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond1-01	Sep. 05, 2017	Sep. 04, 2018
LISN/AMN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Mar. 10, 2017	Mar. 09, 2018
LISN/AMN ROHDE & SCHWARZ (Peripheral)	ENV216	101196	Apr. 20, 2017	Apr. 19, 2018
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Shielded Room 1.
 3. The VCCI Site Registration No. is C-2040.

4.2.3 Test Procedures

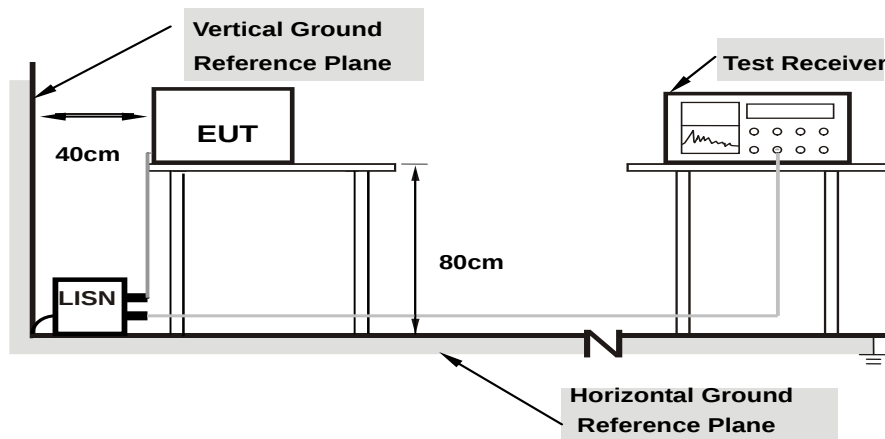
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/50 uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

NOTE: All modes of operation were investigated and the worst-case emissions are reported.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



Note: 1.Support units were connected to second LISN.

For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.2.6 EUT Operating Conditions

- Placed the EUT on a testing table.
- Use the software to control the EUT under transmission condition continuously at specific channel frequency.

4.2.7 Test Results

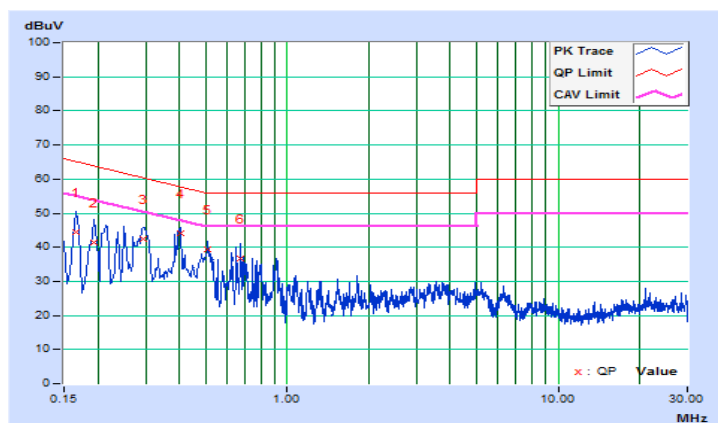
Mode A

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25°C, 65%RH
Tested by	Getaz Yang	Test Date	2017/11/21

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16600	10.39	34.10	17.18	44.49	27.57	65.16	55.16	-20.67	-27.59
2	0.19400	10.39	30.91	18.80	41.30	29.19	63.86	53.86	-22.56	-24.67
3	0.29289	10.40	32.16	19.33	42.56	29.73	60.44	50.44	-17.88	-20.71
4	0.40285	10.41	33.54	21.61	43.95	32.02	57.79	47.79	-13.84	-15.77
5	0.51000	10.41	28.99	19.10	39.40	29.51	56.00	46.00	-16.60	-16.49
6	0.67000	10.41	26.17	8.63	36.58	19.04	56.00	46.00	-19.42	-26.96

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

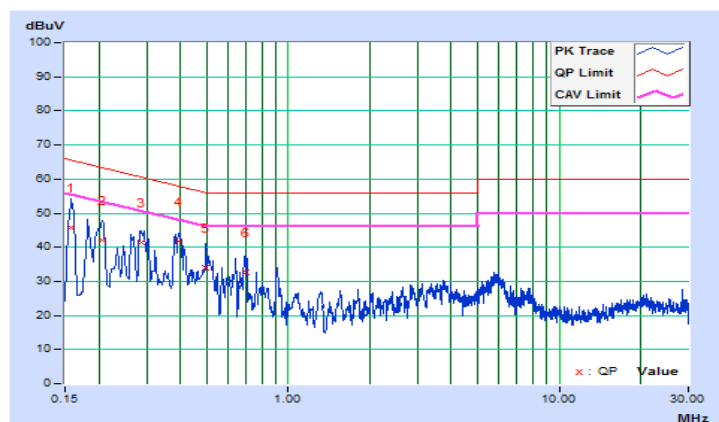


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25°C, 65%RH
Tested by	Getaz Yang	Test Date	2017/11/21

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15800	10.16	35.47	17.54	45.63	27.70	65.57	55.57	-19.94	-27.87
2	0.20577	10.16	32.05	19.43	42.21	29.59	63.37	53.37	-21.16	-23.78
3	0.28527	10.16	31.15	17.45	41.31	27.61	60.66	50.66	-19.35	-23.05
4	0.39549	10.17	31.52	18.88	41.69	29.05	57.95	47.95	-16.26	-18.90
5	0.49800	10.17	24.00	13.92	34.17	24.09	56.03	46.03	-21.86	-21.94
6	0.69400	10.18	22.43	7.07	32.61	17.25	56.00	46.00	-23.39	-28.75

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



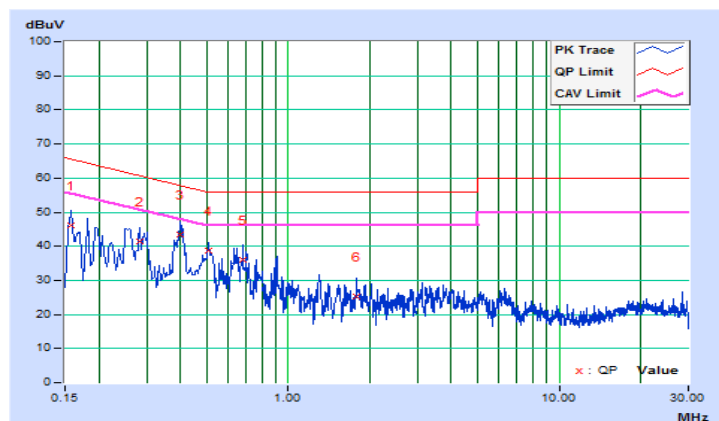
Mode B

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25°C, 65%RH
Tested by	Getaz Yang	Test Date	2017/11/21

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15770	10.39	35.65	18.33	46.04	28.72	65.58	55.58	-19.54	-26.86
2	0.28200	10.40	30.92	18.20	41.32	28.60	60.76	50.76	-19.44	-22.16
3	0.39758	10.41	32.90	21.45	43.31	31.86	57.90	47.90	-14.59	-16.04
4	0.51000	10.41	28.24	18.41	38.65	28.82	56.00	46.00	-17.35	-17.18
5	0.67800	10.41	25.46	9.02	35.87	19.43	56.00	46.00	-20.13	-26.57
6	1.78600	10.46	14.78	7.21	25.24	17.67	56.00	46.00	-30.76	-28.33

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

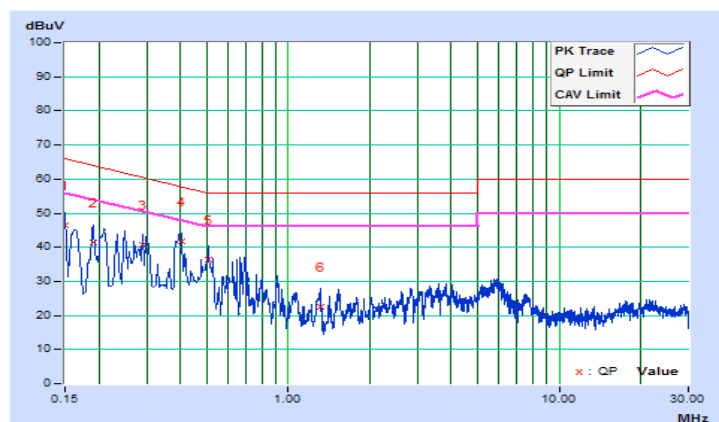


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25°C, 65%RH
Tested by	Getaz Yang	Test Date	2017/11/21

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.15	36.21	18.31	46.36	28.46	66.00	56.00	-19.64	-27.54
2	0.19000	10.16	31.29	16.50	41.45	26.66	64.04	54.04	-22.59	-27.38
3	0.29000	10.16	30.47	17.75	40.63	27.91	60.52	50.52	-19.89	-22.61
4	0.40179	10.17	31.61	19.91	41.78	30.08	57.82	47.82	-16.04	-17.74
5	0.50600	10.17	26.08	16.14	36.25	26.31	56.00	46.00	-19.75	-19.69
6	1.31400	10.21	12.32	5.33	22.53	15.54	56.00	46.00	-33.47	-30.46

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.

--- END ---