Variant FCC Test Report

Report No.:	RF150401C19F
FCC ID:	ZQAT30
Test Model:	A0013
Received Date:	Jul. 01, 2016
Test Date:	Jul. 07, 2016 ~ Aug. 15, 2016
Issued Date:	Aug. 18, 2016
Applicant:	Nest Labs Inc
Address:	3400 Hillview Ave. Palo Alto California, United States 94304
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:	No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

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Release Control Record

Issue No.	Description	Date Issued
RF150401C19F	Reference No.: 160707C12	Aug. 18, 2016

1 Certificate of Conformity

Product:	Nest Learning Thermostat
Test Model:	A0013
Sample Status:	Production Unit
Applicant:	Nest Labs Inc
Test Date:	Jul. 07, 2016 ~ Aug. 15, 2016
Standards:	47 CFR FCC Part 15, Subpart E (Section 15.407) ANSI C63.10:2013

This report is issued as a supplementary report to BV ADT report no.: RF150401C19-2 R1. This report shall be used by combining with its original report.

Prepared by : Evonne Liu , **Date:** Aug. 18, 2016

Evonne Liu / Specialist

Approved by : Stanley Wu , **Date:** Aug. 18, 2016

Stanley Wu / Assistant Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	**Test Item**	**Result**	**Remarks**
15.407(b)(6)	AC Power Conducted Emissions	NA	Refer to Note
15.407(b) (1/2/3/4/6)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -2.48 dB at 5725 MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	NA	Refer to Note
15.407(a)(1/2/3)	Peak Power Spectral Density	NA	Refer to Note
15.407(e)	6 dB Bandwidth	NA	Refer to Note
15.407(g)	Frequency Stability	NA	Refer to Note
15.203	Antenna Requirement	NA	Refer to Note

Note: Only Radiated Emissions test was performed for this addendum. Refer to original report for other test data.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	**Frequency**	**Expended Uncertainty (k=2) (±)**
Radiated Emissions up to 1 GHz	30 MHz ~ 200 MHz	2.93 dB
	200 MHz ~1000 MHz	2.95 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Nest Learning Thermostat
Test Model	A0013
Status of EUT	Production Unit
Power Supply Rating	5.0Vac (Adapter)
Modulation Type	64QAM, 16QAM, QPSK, BPSK
Modulation Technology	OFDM
Transfer Rate	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0 Mbps 802.11n: up to MCS7
Operating Frequency	5180 ~ 5240 MHz, 5260 ~ 5320 MHz, 5500 ~ 5700 MHz, 5745 ~ 5825 MHz
Number of Channel	5180 ~ 5240 MHz: 4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 5260 ~ 5320 MHz: 4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 5500 ~ 5700 MHz: 11 for 802.11a, 802.11n (HT20) 5 for 802.11n (HT40) 5745 ~ 5825 MHz: 5 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40)
Antenna Type	Loop antenna with 1.9 dBi gain
Antenna Connector	N/A
Accessory Device	Refer to Note as below
Data Cable Supplied	Refer to Note as below

Note:

1. This report is issued as a supplementary report to BV ADT report no. RF150401C19-2 R1. The difference compared with original report is adding material of outer casing. Therefore, only Radiated Emissions was verified and recorded in this report.
2. The EUT contains following accessory devices.

Product	Brand	Model	Description
Adapter	Nest	A0017	I/P: 100-240Vac, 50/60Hz, 0.35A O/P: 5Vdc, 2.5A
USB Cable	Nest	NA	2.0m shielded cable w/o core
Stand	Nest	Stand	--

3. The device has 3 configurations as below.
   Main sample (A): Material of outer casing for DLC
   2nd sample (B): Material of outer casing for Copper
   3rd sample (C): Material of outer casing for Ceramic
4. 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

FOR 5180 ~ 5240 MHz

4 channels are provided for 802.11a, 802.11n (HT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220
40	5200	48	5240

2 channels are provided for 802.11n (HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	46	5230

FOR 5260 ~ 5320 MHz

4 channels are provided for 802.11a, 802.11n (HT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
52	5260	60	5300
56	5280	64	5320

2 channels are provided for 802.11n (HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
54	5270	62	5310

FOR 5500 ~ 5700 MHz

11 channels are provided for 802.11a, 802.11n (HT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
100	5500	116	5580
104	5520	132	5660
108	5540	136	5680
112	5560	140	5700

5 channels are provided for 802.11n (HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
102	5510	134	5670
110	5550		

FOR 5745 ~ 5825 MHz:

5 channels are provided for 802.11a, 802.11n (HT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	161	5805
153	5765	165	5825
157	5785		

2 channels are provided for 802.11n (HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	159	5795

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To		Description
	RE≥1G	RE<1G	
A	√	-	Sample A: DLC
B	√	-	Sample B: Copper
C	√	√	Sample C: Ceramic

Where **RE≥1G:** Radiated Emission above 1 GHz

NOTE:

1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane** for 5180-5320MHz and **Z-plane** for 5500-5825MHz.
2. "-" 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	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
A, B, C	5180-5240	802.11n (HT40)	38 to 46	38	OFDM	BPSK	MCS0
	5260-5320	802.11n (HT40)	54 to 62	62	OFDM	BPSK	MCS0
	5500-5700	802.11n (HT20)	100 to 140	140	OFDM	BPSK	MCS0
	5745-5825	802.11a	149 to 165	149	OFDM	BPSK	6.0

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	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
C	5180-5240	802.11n (HT40)	38 to 46	38	OFDM	BPSK	MCS0
	5260-5320	802.11n (HT40)	54 to 62	62	OFDM	BPSK	MCS0
	5500-5700	802.11n (HT20)	100 to 140	140	OFDM	BPSK	MCS0
	5745-5825	802.11a	149 to 165	149	OFDM	BPSK	6.0

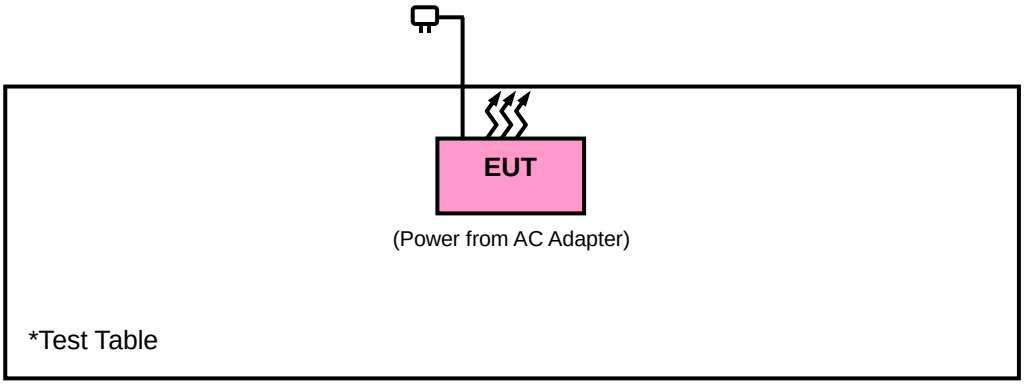
Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested by
RE≥1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Gavin Wu
RE<1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Gavin Wu

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 E (15.407)
789033 D02 General UNII Test Procedures New Rules v01r02
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 Limits of Unwanted Emission Out of the Restricted Bands

Applicable To	Limit	
789033 D02 General UNII Test Procedures New Rules v01r02	Field Strength at 3 m	
	PK: 74 (dBμV/m)	AV: 54 (dBμV/m)
Applicable To	**EIRP Limit**	**Equivalent Field Strength at 3 m**
15.407(b)(1)	PK: -27 (dBm/MHz)	PK: 68.2 (dBμV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)	PK: -27 (dBm/MHz) [*1] PK: -17 (dBm/MHz) [*2]	PK: 68.2 (dBμV/m) [*1] PK: 78.2 (dBμV/m) [*2]

NOTE: [*1] beyond 10 MHz of the band edge [*2] within 10 MHz of band edge

The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3}$$ μV/m, where P is the eirp (Watts).

4.1.3 Test Instruments

Description & Manaufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent	N9038A	MY51210203	Jan. 21, 2016	Jan. 20, 2017
Spectrum Analyzer Agilent	N9010A	MY52220314	Sep.03, 2015	Sep. 02, 2016
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Jan. 07, 2016	Jan. 06, 2017
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Jan. 04, 2016	Jan. 03, 2017
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Jan. 08, 2016	Jan. 07, 2017
Loop Antenna	LPA600	270	Aug. 20, 2015	Aug. 19, 2017
Agilent Communications Tester-Wireless	8960 Series 10	MY53201073	Jul. 03, 2015	Jul. 02, 2017
Preamplifier EMCI	EMC 012645	980115	Dec. 21, 2015	Dec. 20, 2016
Preamplifier EMCI	EMC 184045	980116	Dec. 21, 2015	Dec. 20, 2016
Preamplifier EMCI	EMC 330H	980112	Dec. 28, 2015	Dec. 27, 2016
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309219/4 2950114	Oct. 12, 2015	Oct. 11, 2016
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Oct. 12, 2015	Oct. 11, 2016
RF Coaxial Cable Worken	8D-FB	Cable-Ch10-01	Oct. 12, 2015	Oct. 11, 2016
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	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 / 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 10.
3. The horn antenna and preamplifier (model: EMC 184045) are used only for the measurement of emission frequency above 1 GHz if tested.
4. The FCC Site Registration No. is 690701.
5. The IC Site Registration No. is IC7450F-10.

4.1.4 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:

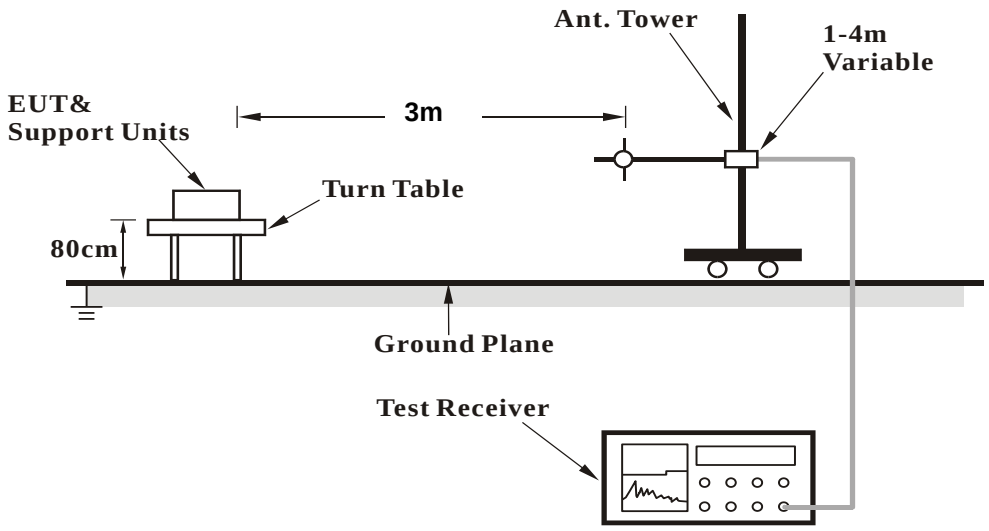
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 1/T for RMS Average (Duty cycle < 98 %) for Peak 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.

4.1.5 Deviation from Test Standard

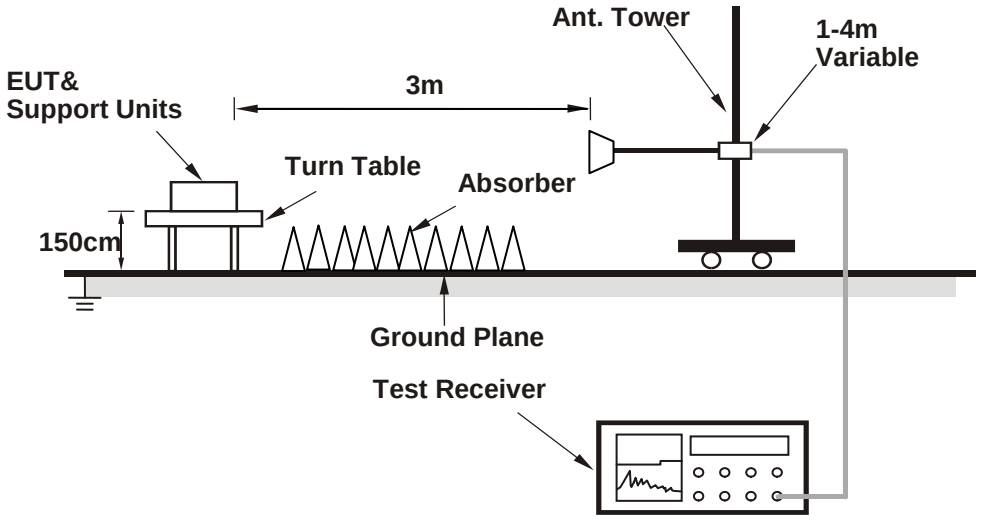
No deviation.

4.1.6 Test Set Up

<Frequency Range below 1 GHz>



<Frequency Range above 1 GHz>



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

4.1.7 EUT Operating Conditions

a. Placed the EUT on a testing table.

b. Use the software to control the EUT under transmission condition continuously at specific channel frequency.

4.1.8 Test Results

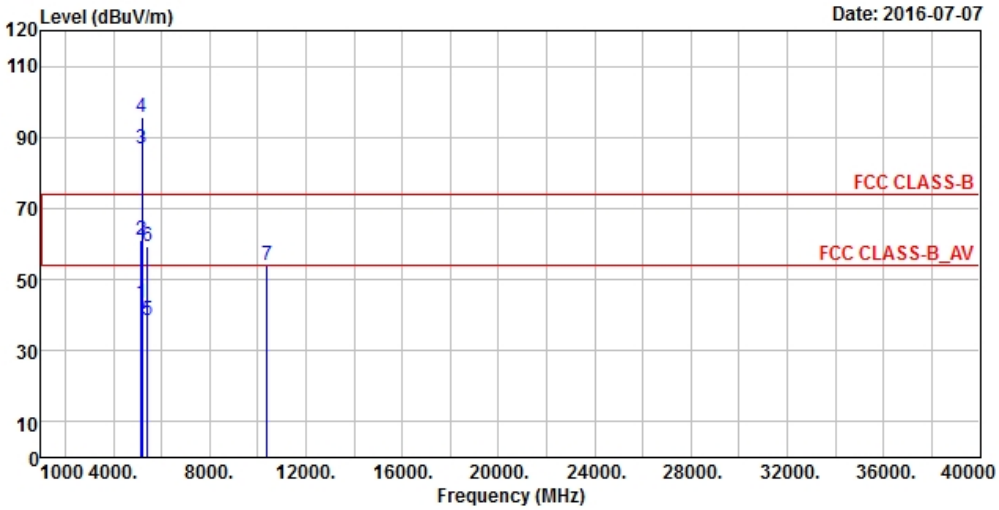
Above 1 GHz Data：

Mode A

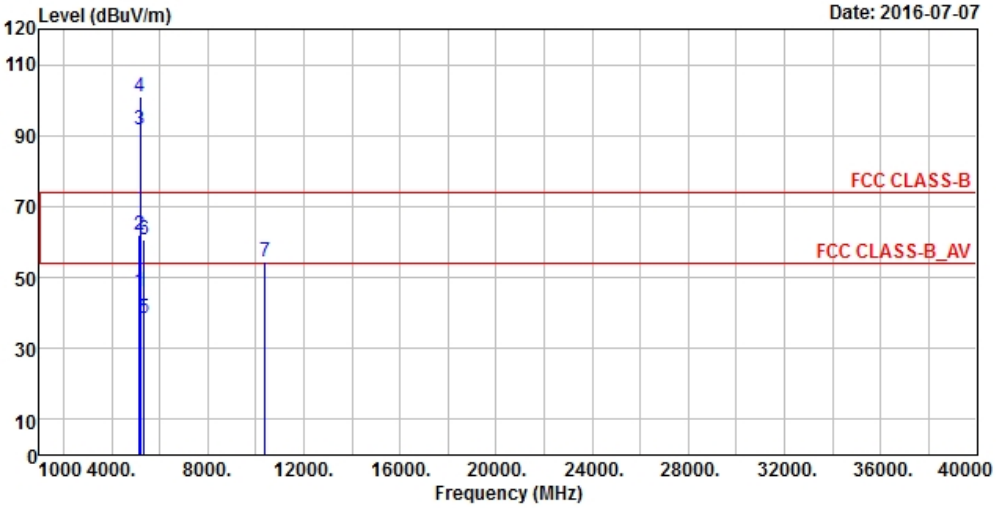
802.11n (HT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 38	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) RBW : 1MHz , VBW : 3MHz Average (AV) RBW : 1MHz , VBW : 3.9KHz
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Gavin Wu

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emissino 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
5146	43.55	43.35	54	-10.45	31.32	6.2	37.32	227	143	Average
5146	61.32	61.12	74	-12.68	31.32	6.2	37.32	227	143	Peak
5190	86.89	86.66			31.35	6.22	37.34	227	143	Average
5190	95.51	95.28			31.35	6.22	37.34	227	143	Peak
5408	38.41	37.75	54	-15.59	31.52	6.32	37.18	227	143	Average
5408	59.23	58.57	74	-14.77	31.52	6.32	37.18	227	143	Peak
10380	53.85	57.84	68.2	-14.35	39.21	9.05	52.25	191	2	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emissino 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
5144	45.89	45.69	54	-8.11	31.32	6.2	37.32	191	358	Average
5144	61.78	61.58	74	-12.22	31.32	6.2	37.32	191	358	Peak
5190	91.86	91.63			31.35	6.22	37.34	191	358	Average
5190	100.94	100.71			31.35	6.22	37.34	191	358	Peak
5366	38.7	38.08	54	-15.3	31.49	6.31	37.18	191	358	Average
5366	60.45	59.83	74	-13.55	31.49	6.31	37.18	191	358	Peak
10380	54.54	58.53	68.2	-13.66	39.21	9.05	52.25	201	127	Peak

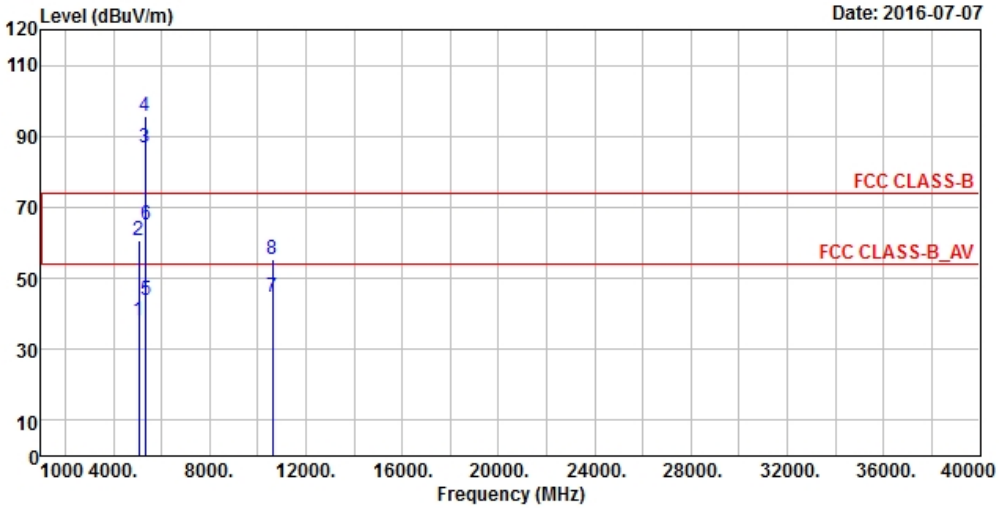
Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5190 MHz: Fundamental Frequency
3. 10380 MHz: Out of Restricted Band

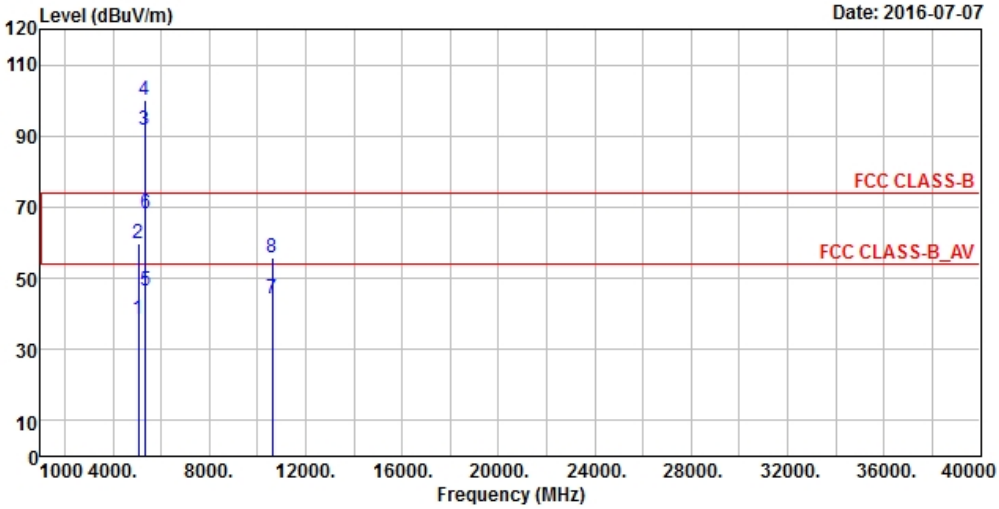
802.11n (HT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 62	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) RBW : 1MHz , VBW : 3MHz Average (AV) RBW : 1MHz , VBW : 3.9KHz
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Gavin Wu

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emissino 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
5062	38.29	38.12	54	-15.71	31.25	6.17	37.25	242	147	Average
5062	60.52	60.35	74	-13.48	31.25	6.17	37.25	242	147	Peak
5310	86.89	86.36			31.45	6.27	37.19	242	147	Average
5310	95.57	95.04			31.45	6.27	37.19	242	147	Peak
5350	43.89	43.3	54	-10.11	31.48	6.29	37.18	242	147	Average
5350	64.98	64.39	74	-9.02	31.48	6.29	37.18	242	147	Peak
10620	44.53	48.12	54	-9.47	39.59	9.16	52.34	100	292	Average
10620	55.39	58.98	74	-18.61	39.59	9.16	52.34	100	292	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emissino 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
5054	38.4	38.24	54	-15.6	31.24	6.17	37.25	216	68	Average
5054	59.58	59.42	74	-14.42	31.24	6.17	37.25	216	68	Peak
5310	91.49	90.96			31.45	6.27	37.19	216	68	Average
5310	100.16	99.63			31.45	6.27	37.19	216	68	Peak
5350	46.59	46	54	-7.41	31.48	6.29	37.18	216	68	Average
5350	68.15	67.56	74	-5.85	31.48	6.29	37.18	216	68	Peak
10620	44.07	47.66	54	-9.93	39.59	9.16	52.34	100	155	Average
10620	55.82	59.41	74	-18.18	39.59	9.16	52.34	100	155	Peak

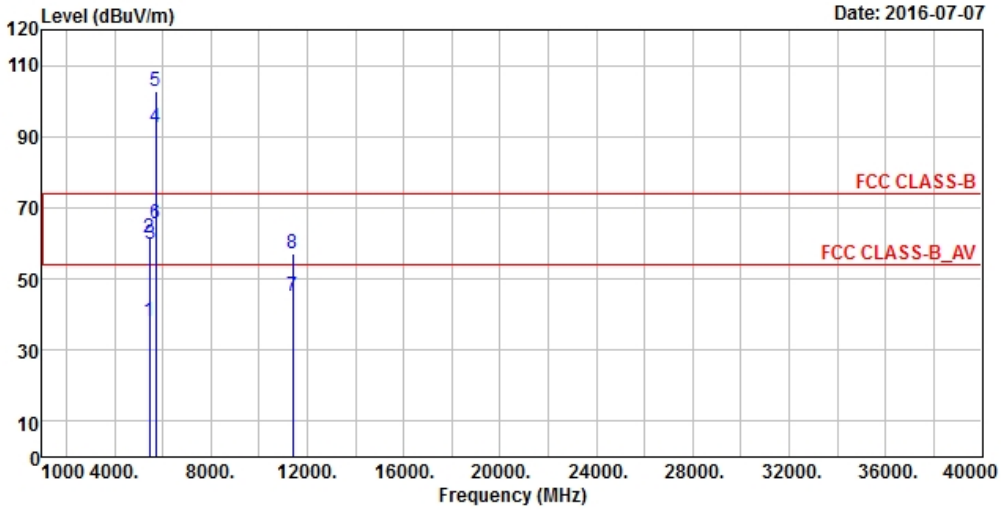
Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5310 MHz: Fundamental Frequency

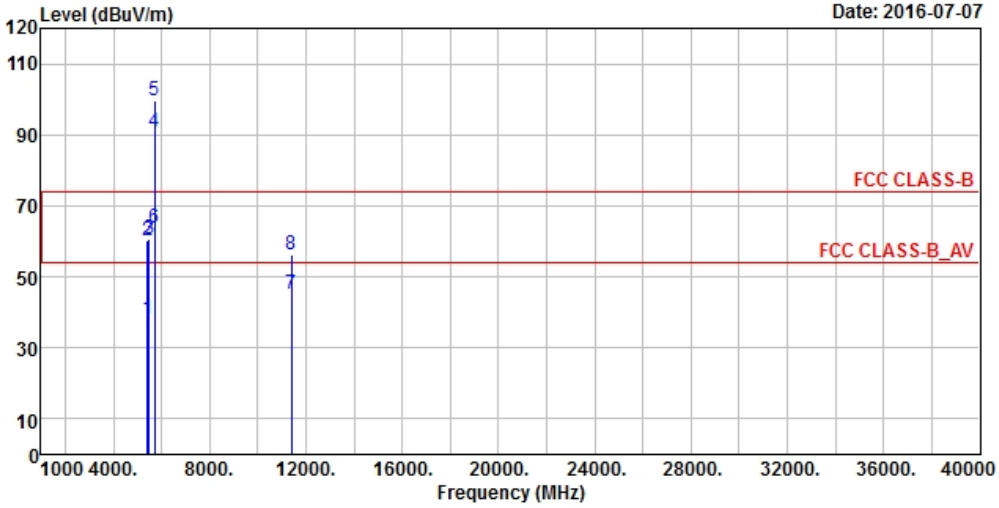
802.11n (HT20)

EUT Test Condition		Measurement Detail	
Channel	Channel 140	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) RBW : 1MHz , VBW : 3MHz Average (AV) RBW : 1MHz , VBW : 2KHz
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Gavin Wu

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emissino 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
5448	38.15	37.38	54	-15.85	31.56	6.34	37.13	192	65	Average
5448	61.53	60.76	74	-12.47	31.56	6.34	37.13	192	65	Peak
5470	59.94	59.11	68.2	-8.26	31.57	6.34	37.08	192	65	Peak
5700	92.67	91.48			31.9	6.69	37.4	192	65	Average
5700	102.63	101.44			31.9	6.69	37.4	192	65	Peak
5725	65.62	64.4	68.2	-2.58	31.96	6.69	37.43	192	65	Peak
11400	45.33	47.59	54	-8.67	39.96	9.91	52.13	100	188	Average
11400	57.33	59.59	74	-16.67	39.96	9.91	52.13	100	188	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emissino 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
5412	38.23	37.56	54	-15.77	31.53	6.32	37.18	200	332	Average
5412	60.03	59.36	74	-13.97	31.53	6.32	37.18	200	332	Peak
5470	60.51	59.68	68.2	-7.69	31.57	6.34	37.08	200	332	Peak
5700	90.82	89.63			31.9	6.69	37.4	200	332	Average
5700	99.69	98.5			31.9	6.69	37.4	200	332	Peak
5725	63.7	62.42	68.2	-4.5	31.96	6.75	37.43	200	332	Peak
11400	45.3	47.56	54	-8.7	39.96	9.91	52.13	100	159	Average
11400	56.36	58.62	74	-17.64	39.96	9.91	52.13	100	159	Peak

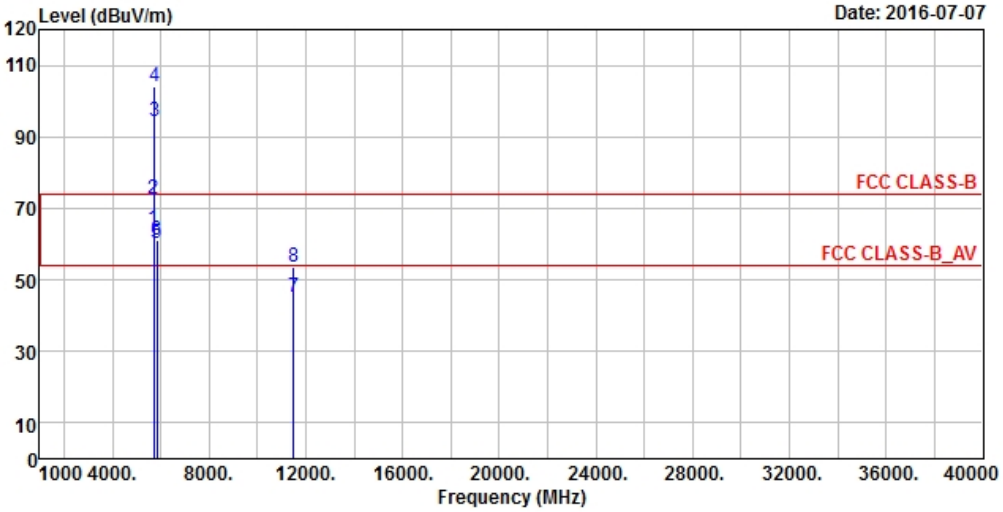
Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5700 MHz: Fundamental Frequency
3. 5470 & 5725 MHz: Out of Restricted Band

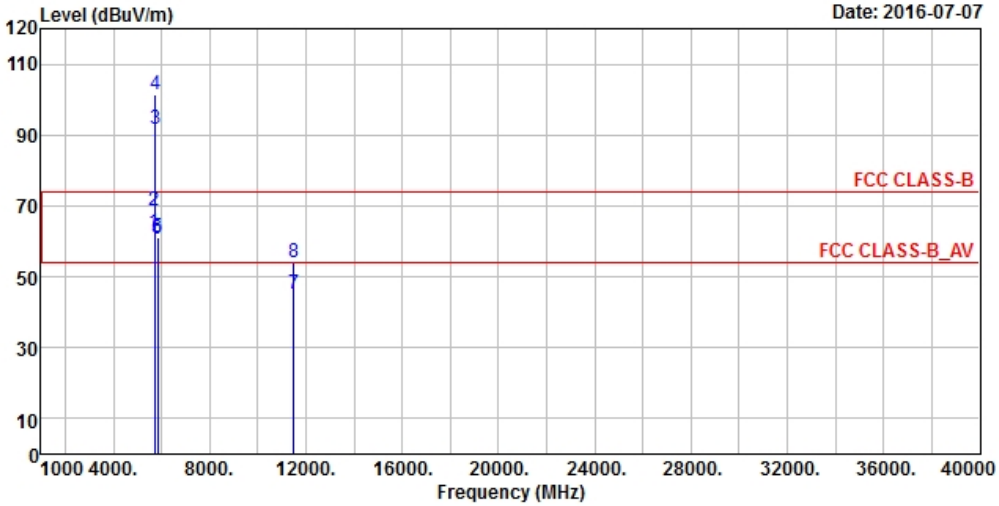
802.11a

EUT Test Condition		Measurement Detail	
Channel	Channel 149	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) RBW : 1MHz , VBW : 3MHz Average (AV) RBW : 1MHz , VBW : 2KHz
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Gavin Wu

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emissino 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
*5714	64.34	63.15	68.2	-3.86	31.93	6.69	37.43	201	65	Peak
*5725	72.47	71.19	78.2	-5.73	31.96	6.75	37.43	201	65	Peak
5745	94.28	93.01			31.99	6.75	37.47	201	65	Average
5745	104.17	102.9			31.99	6.75	37.47	201	65	Peak
*5850	60.32	58.8	78.2	-17.88	32.15	6.88	37.51	201	65	Peak
*5861	61.21	59.58	68.2	-6.99	32.18	6.95	37.5	201	65	Peak
11490	45.33	48.22	54	-8.67	39.91	10.03	52.83	100	26	Average
11490	53.68	56.57	74	-20.32	39.91	10.03	52.83	100	26	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emissino 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
*5714	62.6	61.41	68.2	-5.6	31.93	6.69	37.43	167	343	Peak
*5725	68.44	67.16	78.2	-9.76	31.96	6.75	37.43	167	343	Peak
5745	91.67	90.4			31.99	6.75	37.47	167	343	Average
5745	101.27	100			31.99	6.75	37.47	167	343	Peak
*5850	61.3	59.78	78.2	-16.9	32.15	6.88	37.51	167	343	Peak
*5861	60.51	58.88	68.2	-7.69	32.18	6.95	37.5	167	343	Peak
11490	45.07	47.96	54	-8.93	39.91	10.03	52.83	100	330	Average
11490	53.8	56.69	74	-20.2	39.91	10.03	52.83	100	330	Peak

Remarks:

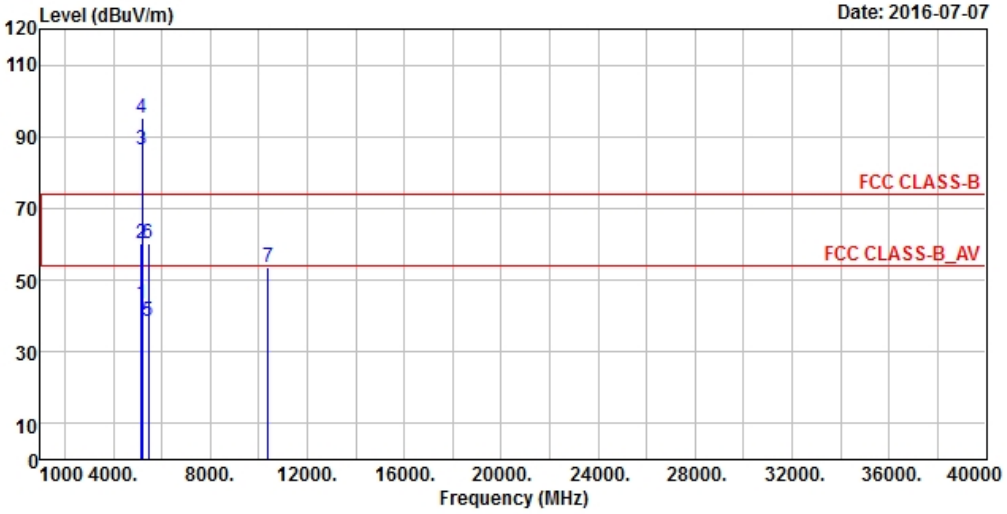
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5745 MHz: Fundamental Frequency
3. *: Out of Restricted Band

Mode B

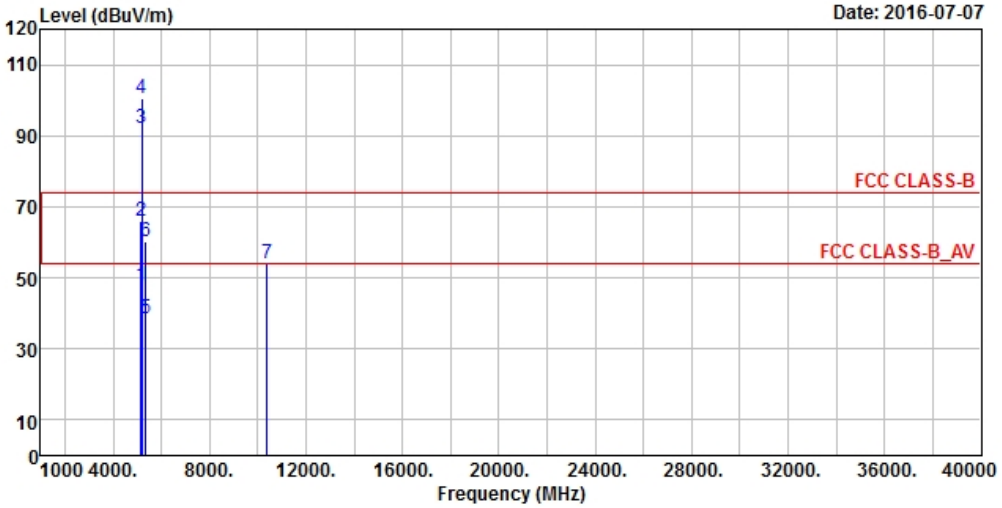
802.11n (HT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 38	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) RBW : 1MHz , VBW : 3MHz Average (AV) RBW : 1MHz , VBW : 3.9KHz
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Gavin Wu

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emissino 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
5148	43.47	43.27	54	-10.53	31.32	6.2	37.32	205	201	Average
5148	60.06	59.86	74	-13.94	31.32	6.2	37.32	205	201	Peak
5190	86.3	86.07			31.35	6.22	37.34	205	201	Average
5190	95.25	95.02			31.35	6.22	37.34	205	201	Peak
5454	38.58	37.76	54	-15.42	31.56	6.34	37.08	205	201	Average
5454	60.16	59.34	74	-13.84	31.56	6.34	37.08	205	201	Peak
10380	53.58	57.57	68.2	-14.62	39.21	9.05	52.25	215	276	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emissino 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
5146	47.66	47.46	54	-6.34	31.32	6.2	37.32	190	353	Average
5146	66.06	65.86	74	-7.94	31.32	6.2	37.32	190	353	Peak
5190	92.11	91.88			31.35	6.22	37.34	190	353	Average
5190	100.4	100.17			31.35	6.22	37.34	190	353	Peak
5350	38.7	38.11	54	-15.3	31.48	6.29	37.18	190	353	Average
5350	60.3	59.71	74	-13.7	31.48	6.29	37.18	190	353	Peak
10380	54.09	58.08	68.2	-14.11	39.21	9.05	52.25	183	222	Peak

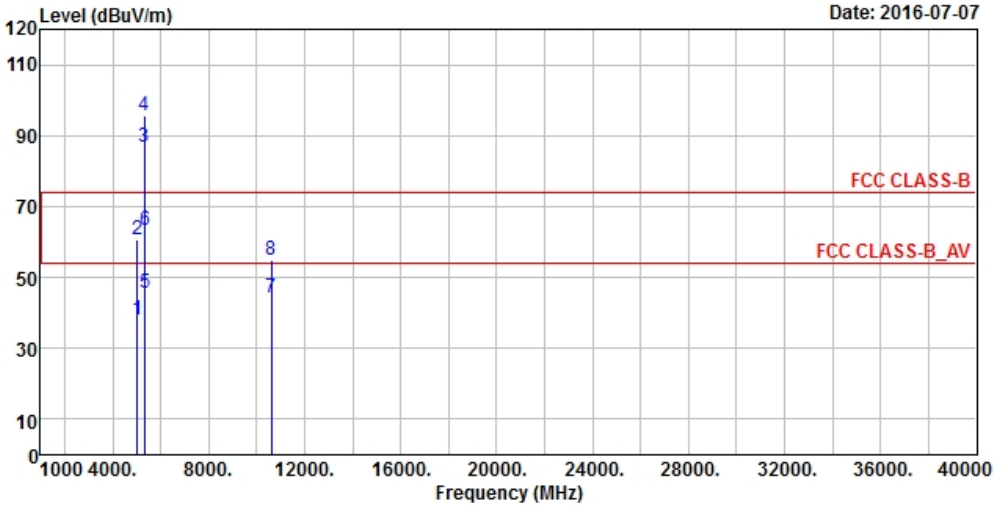
Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5190 MHz: Fundamental Frequency
3. 10380 MHz: Out of Restricted Band

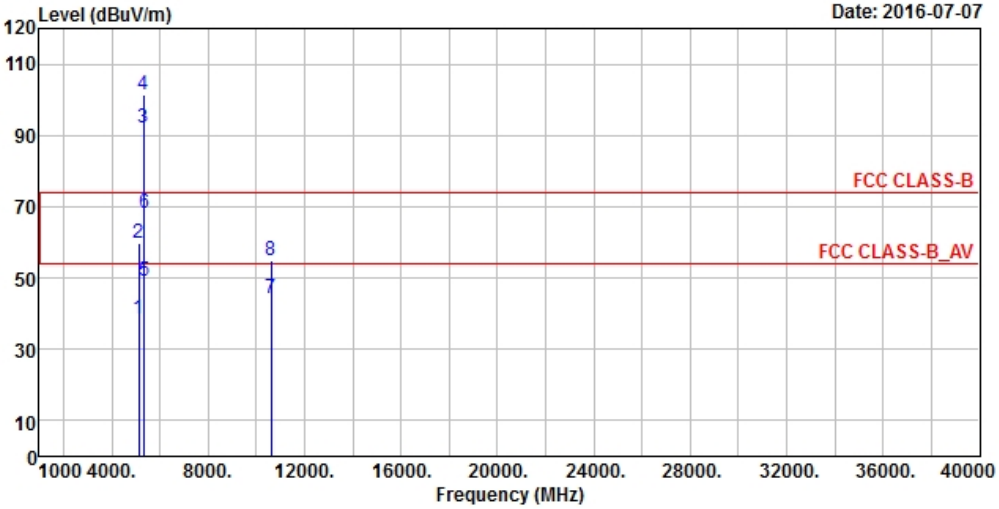
802.11n (HT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 62	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) RBW : 1MHz , VBW : 3MHz Average (AV) RBW : 1MHz , VBW : 3.9KHz
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Gavin Wu

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emissino 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
5016	38.23	38.1	54	-15.77	31.21	6.15	37.23	190	150	Average
5016	60.47	60.34	74	-13.53	31.21	6.15	37.23	190	150	Peak
5310	86.75	86.22			31.45	6.27	37.19	190	150	Average
5310	95.73	95.2			31.45	6.27	37.19	190	150	Peak
5350	45.59	45	54	-8.41	31.48	6.29	37.18	190	150	Average
5350	63.11	62.52	74	-10.89	31.48	6.29	37.18	190	150	Peak
10620	44.14	47.73	54	-9.86	39.59	9.16	52.34	102	115	Average
10620	54.81	58.4	74	-19.19	39.59	9.16	52.34	102	115	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emissino 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
5114	38.5	38.3	54	-15.5	31.29	6.19	37.28	180	127	Average
5114	59.68	59.48	74	-14.32	31.29	6.19	37.28	180	127	Peak
5310	92.27	91.74			31.45	6.27	37.19	180	127	Average
5310	101.21	100.68			31.45	6.27	37.19	180	127	Peak
5350	48.98	48.39	54	-5.02	31.48	6.29	37.18	180	127	Average
5350	68.2	67.61	74	-5.8	31.48	6.29	37.18	180	127	Peak
10620	44.24	47.83	54	-9.76	39.59	9.16	52.34	100	153	Average
10620	55.03	58.62	74	-18.97	39.59	9.16	52.34	100	153	Peak

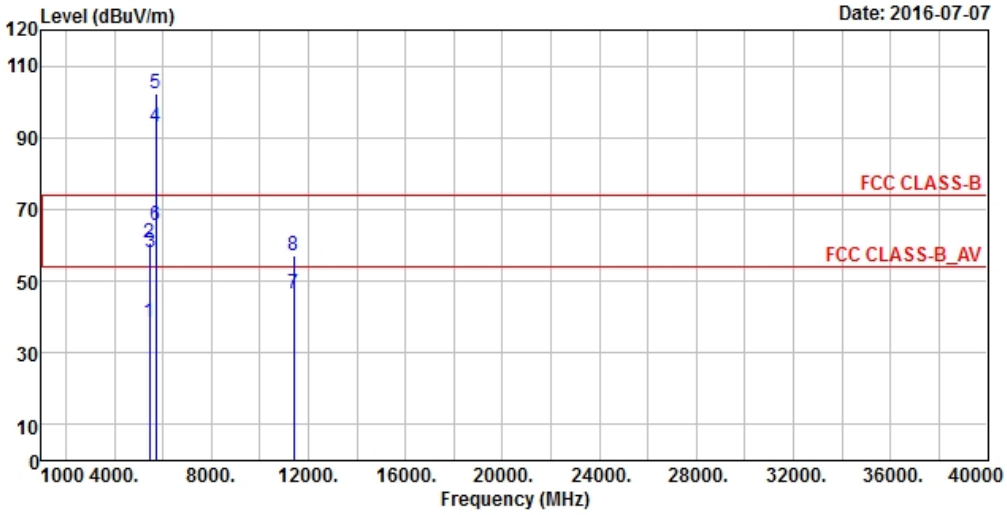
Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5310 MHz: Fundamental Frequency

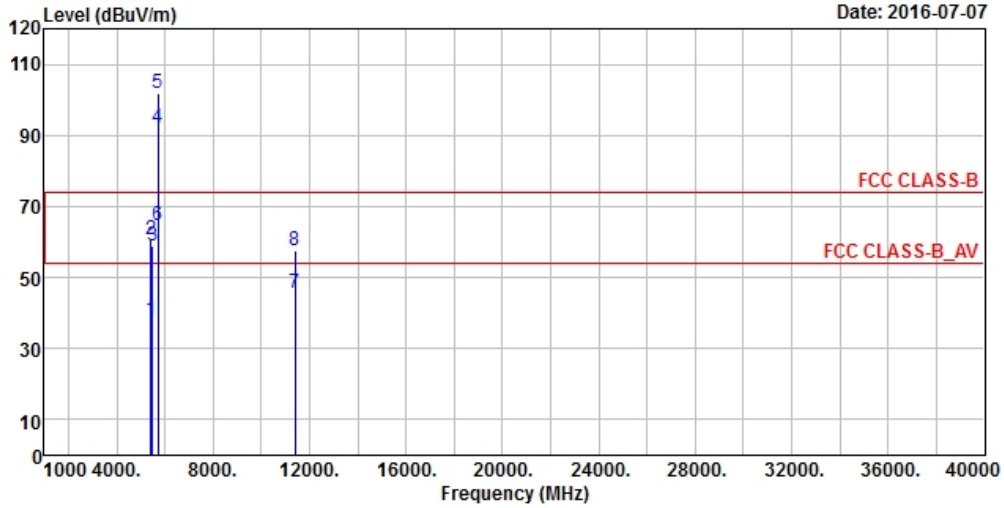
802.11n (HT20)

EUT Test Condition		Measurement Detail	
Channel	Channel 140	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) RBW : 1MHz , VBW : 3MHz Average (AV) RBW : 1MHz , VBW : 2KHz
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Gavin Wu

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emissino 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
5458	38.51	37.69	54	-15.49	31.56	6.34	37.08	214	59	Average
5458	60.86	60.04	74	-13.14	31.56	6.34	37.08	214	59	Peak
5470	57.98	57.15	68.2	-10.22	31.57	6.34	37.08	214	59	Peak
5700	92.83	91.64			31.9	6.69	37.4	214	59	Average
5700	102.3	101.11			31.9	6.69	37.4	214	59	Peak
5725	65.72	64.44	68.2	-2.48	31.96	6.75	37.43	214	59	Peak
11400	46.28	48.54	54	-7.72	39.96	9.91	52.13	100	281	Average
11400	57.14	59.4	74	-16.86	39.96	9.91	52.13	100	281	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emissino 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
5424	38.1	37.43	54	-15.9	31.53	6.32	37.18	200	340	Average
5424	60.64	59.97	74	-13.36	31.53	6.32	37.18	200	340	Peak
5470	59.06	58.23	68.2	-9.14	31.57	6.34	37.08	200	340	Peak
5700	92.12	90.93			31.9	6.69	37.4	200	340	Average
5700	102.03	100.84			31.9	6.69	37.4	200	340	Peak
5725	64.82	63.54	68.2	-3.38	31.96	6.75	37.43	200	340	Peak
11400	45.62	47.88	54	-8.38	39.96	9.91	52.13	100	297	Average
11400	57.47	59.73	74	-16.53	39.96	9.91	52.13	100	297	Peak

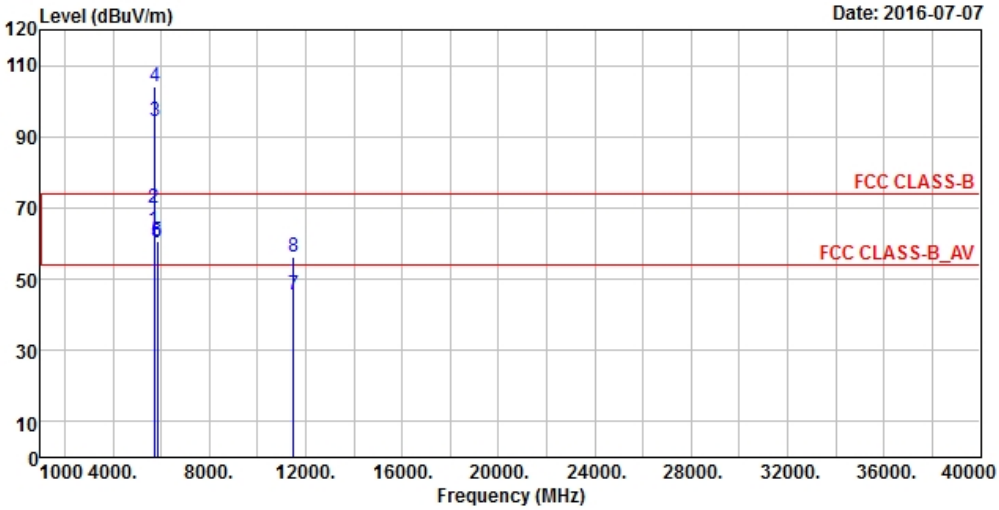
Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5700 MHz: Fundamental Frequency
3. 5470 & 5725 MHz: Out of Restricted Band

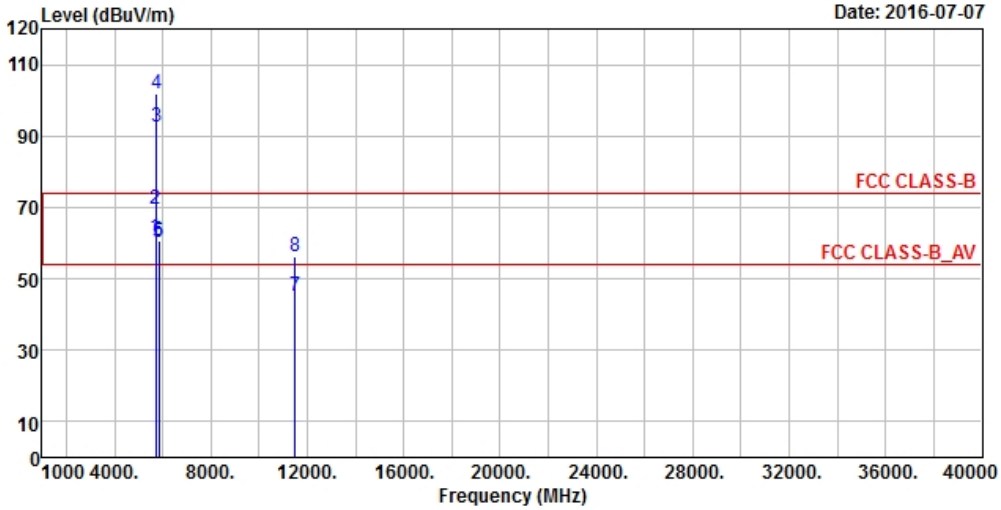
802.11a

EUT Test Condition		Measurement Detail	
Channel	Channel 149	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) RBW : 1MHz , VBW : 3MHz Average (AV) RBW : 1MHz , VBW : 2KHz
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Gavin Wu

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emissino 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
*5714	63.75	62.56	68.2	-4.45	31.93	6.69	37.43	197	64	Peak
*5725	69.86	68.58	78.2	-8.34	31.96	6.75	37.43	197	64	Peak
5745	94.35	93.08			31.99	6.75	37.47	197	64	Average
5745	103.94	102.67			31.99	6.75	37.47	197	64	Peak
*5850	60.63	59.11	78.2	-17.57	32.15	6.88	37.51	197	64	Peak
*5861	60.21	58.58	68.2	-7.99	32.18	6.95	37.5	197	64	Peak
11490	45.44	48.33	54	-8.56	39.91	10.03	52.83	100	351	Average
11490	56.2	59.09	74	-17.8	39.91	10.03	52.83	100	351	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emissino 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
*5714	61.75	60.56	68.2	-6.45	31.93	6.69	37.43	198	345	Peak
*5725	69.5	68.22	78.2	-8.7	31.96	6.75	37.43	198	345	Peak
5745	92.53	91.26			31.99	6.75	37.47	198	345	Average
5745	101.86	100.59			31.99	6.75	37.47	198	345	Peak
*5850	60.14	58.62	78.2	-18.06	32.15	6.88	37.51	198	345	Peak
*5861	60.47	58.84	68.2	-7.73	32.18	6.95	37.5	198	345	Peak
11490	45.16	48.05	54	-8.84	39.91	10.03	52.83	102	117	Average
11490	56.13	59.02	74	-17.87	39.91	10.03	52.83	102	117	Peak

Remarks:

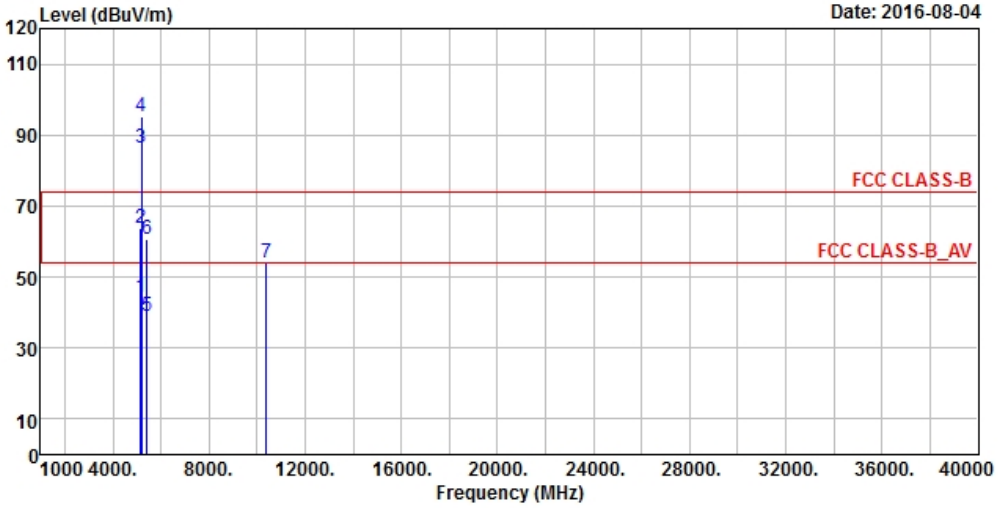
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5745 MHz: Fundamental Frequency
3. *: Out of Restricted Band

Mode C

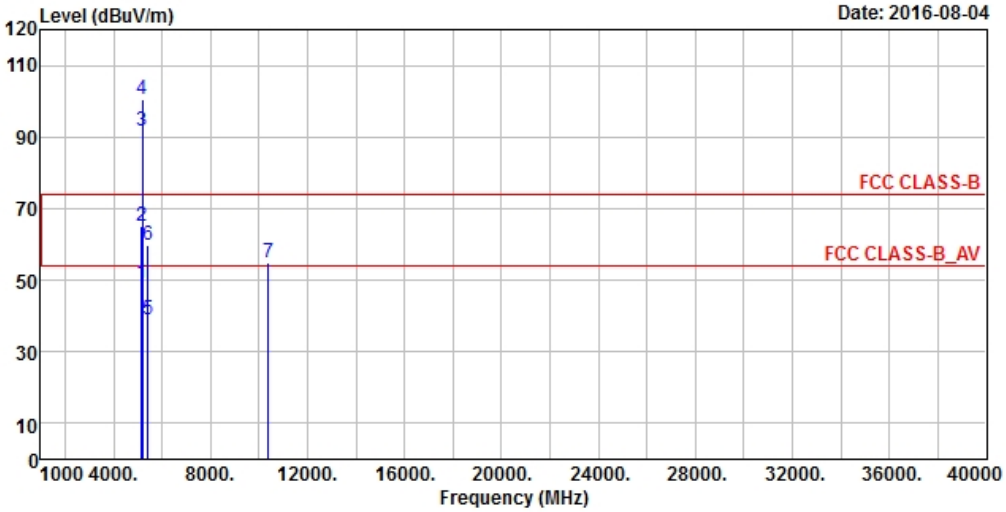
802.11n (HT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 38	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) RBW : 1MHz , VBW : 3MHz Average (AV) RBW : 1MHz , VBW : 3.9KHz
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Gavin Wu

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emissino 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
5148	44.45	44.25	54	-9.55	31.32	6.2	37.32	200	158	Average
5148	63.76	63.56	74	-10.24	31.32	6.2	37.32	200	158	Peak
5190	86.36	86.13			31.35	6.22	37.34	200	158	Average
5190	95.35	95.12			31.35	6.22	37.34	200	158	Peak
5408	38.75	38.09	54	-15.25	31.52	6.32	37.18	200	158	Average
5408	60.5	59.84	74	-13.5	31.52	6.32	37.18	200	158	Peak
10380	53.81	57.8	68.2	-14.39	39.21	9.05	52.25	110	161	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emissino 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
5144	48.99	48.79	54	-5.01	31.32	6.2	37.32	198	204	Average
5144	64.97	64.77	74	-9.03	31.32	6.2	37.32	198	204	Peak
5190	91.63	91.4			31.35	6.22	37.34	198	204	Average
5190	100.35	100.12			31.35	6.22	37.34	198	204	Peak
5430	39.09	38.35	54	-14.91	31.55	6.32	37.13	198	204	Average
5430	59.9	59.16	74	-14.1	31.55	6.32	37.13	198	204	Peak
10380	54.85	58.84	68.2	-13.35	39.21	9.05	52.25	100	18	Peak

Remarks:

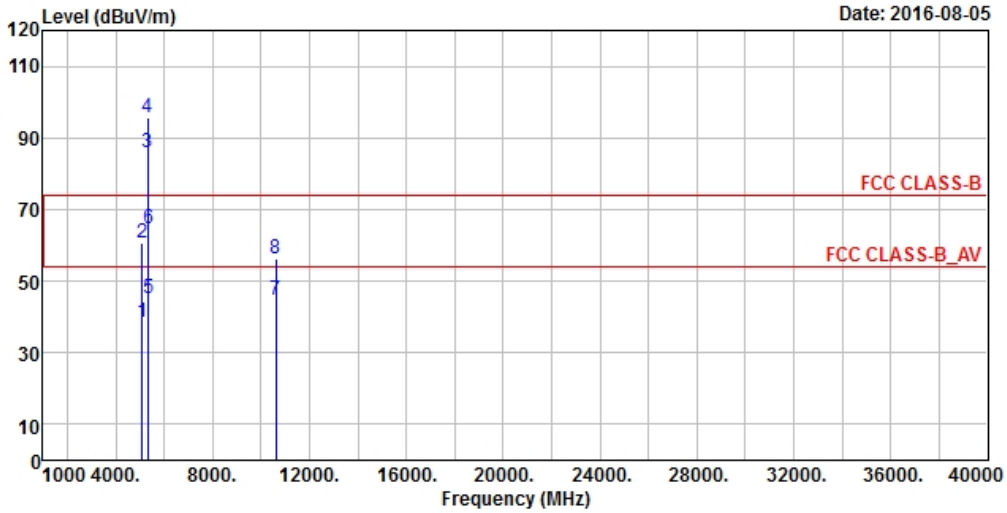
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor

   Margin value = Emission level – Limit value
2. 5190 MHz: Fundamental Frequency
3. 10380 MHz: Out of Restricted Band

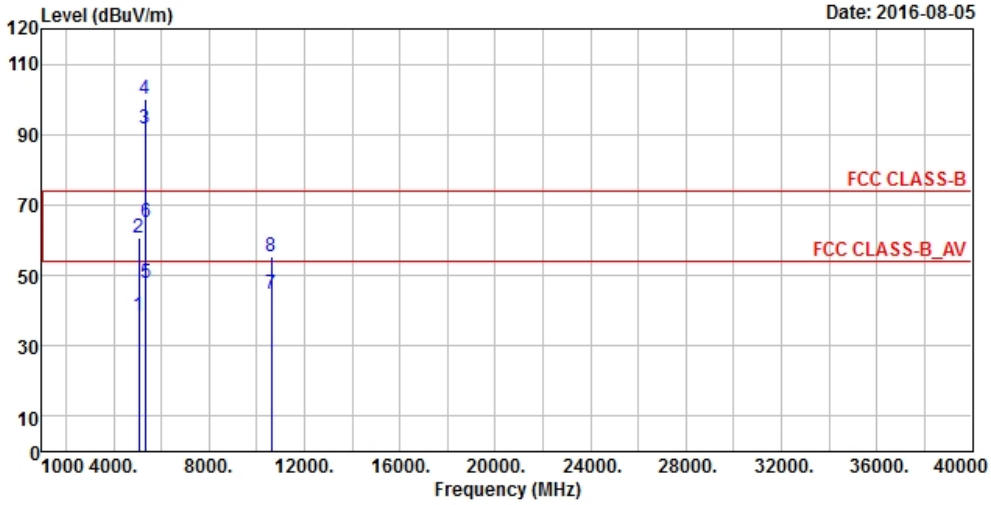
802.11n (HT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 62	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) RBW : 1MHz , VBW : 3MHz Average (AV) RBW : 1MHz , VBW : 3.9KHz
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Gavin Wu

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emissino 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
5086	38.41	38.24	54	-15.59	31.27	6.17	37.27	192	149	Average
5086	60.66	60.49	74	-13.34	31.27	6.17	37.27	192	149	Peak
5310	85.9	85.37			31.45	6.27	37.19	192	149	Average
5310	95.54	95.01			31.45	6.27	37.19	192	149	Peak
5350	45.08	44.49	54	-8.92	31.48	6.29	37.18	192	149	Average
5350	64.56	63.97	74	-9.44	31.48	6.29	37.18	192	149	Peak
10620	44.83	48.42	54	-9.17	39.59	9.16	52.34	100	152	Average
10620	56.1	59.69	74	-17.9	39.59	9.16	52.34	100	152	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emissino 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
5068	38.5	38.35	54	-15.5	31.25	6.17	37.27	191	199	Average
5068	60.57	60.42	74	-13.43	31.25	6.17	37.27	191	199	Peak
5310	91.72	91.19			31.45	6.27	37.19	191	199	Average
5310	99.89	99.36			31.45	6.27	37.19	191	199	Peak
5350	47.71	47.12	54	-6.29	31.48	6.29	37.18	191	199	Average
5350	65.23	64.64	74	-8.77	31.48	6.29	37.18	191	199	Peak
10620	44.6	48.19	54	-9.4	39.59	9.16	52.34	100	114	Average
10620	55.5	59.09	74	-18.5	39.59	9.16	52.34	100	114	Peak

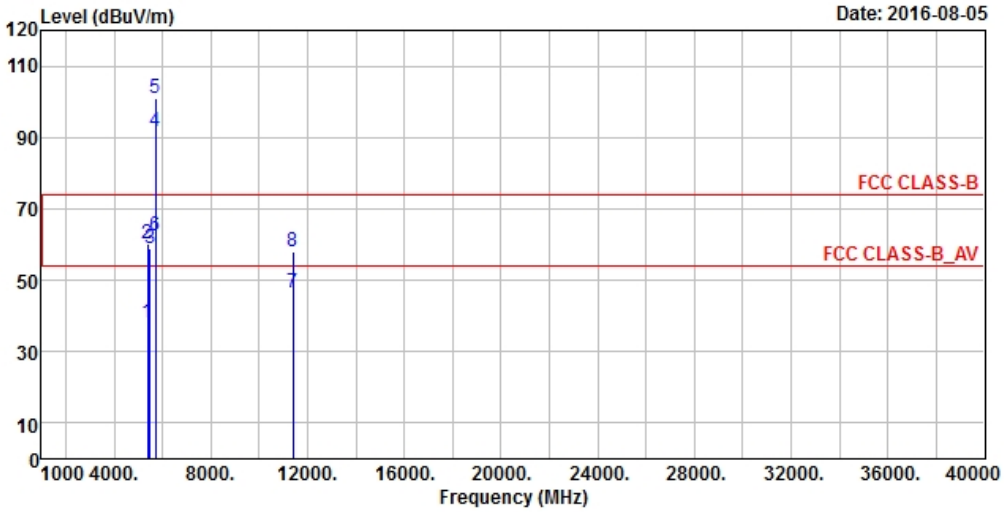
Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5310 MHz: Fundamental Frequency

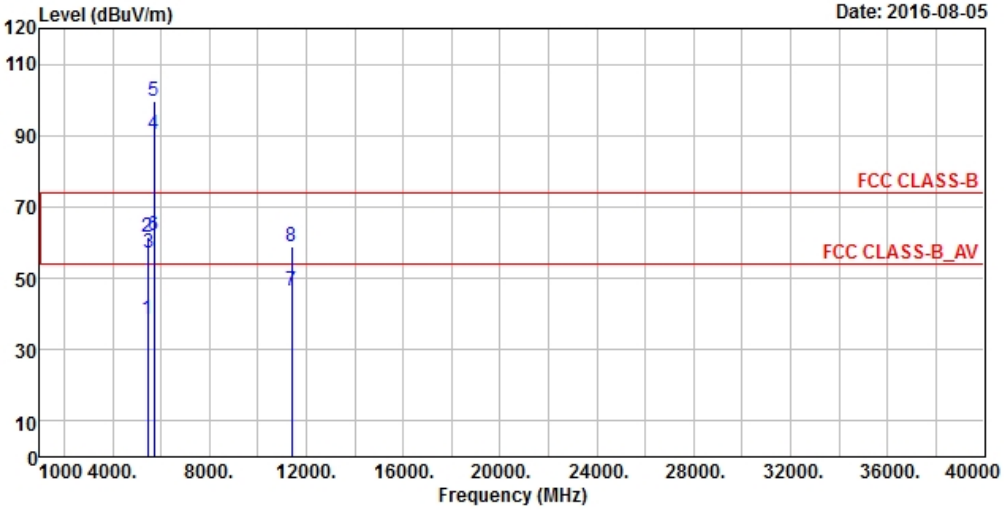
802.11n (HT20)

EUT Test Condition		Measurement Detail	
Channel	Channel 140	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) RBW : 1MHz , VBW : 3MHz Average (AV) RBW : 1MHz , VBW : 2KHz
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Gavin Wu

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emissino 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
5384	38.29	37.65	54	-15.71	31.51	6.31	37.18	200	60	Average
5384	60.01	59.37	74	-13.99	31.51	6.31	37.18	200	60	Peak
5470	58.95	58.12	68.2	-9.25	31.57	6.34	37.08	200	60	Peak
5700	91.77	90.58			31.9	6.69	37.4	200	60	Average
5700	101	99.81			31.9	6.69	37.4	200	60	Peak
5725	62.63	61.35	68.2	-5.57	31.96	6.75	37.43	200	60	Peak
11400	46.6	48.86	54	-7.4	39.96	9.91	52.13	193	246	Average
11400	57.99	60.25	74	-16.01	39.96	9.91	52.13	193	246	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emissino 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
5438	38.34	37.58	54	-15.66	31.55	6.34	37.13	182	344	Average
5438	61.45	60.69	74	-12.55	31.55	6.34	37.13	182	344	Peak
5470	57.13	56.3	68.2	-11.07	31.57	6.34	37.08	182	344	Peak
5700	90.45	89.26			31.9	6.69	37.4	182	344	Average
5700	99.61	98.42			31.9	6.69	37.4	182	344	Peak
5725	61.84	60.56	68.2	-6.36	31.96	6.75	37.43	182	344	Peak
11400	46.39	48.65	54	-7.61	39.96	9.91	52.13	198	54	Average
11400	58.73	60.99	74	-15.27	39.96	9.91	52.13	198	54	Peak

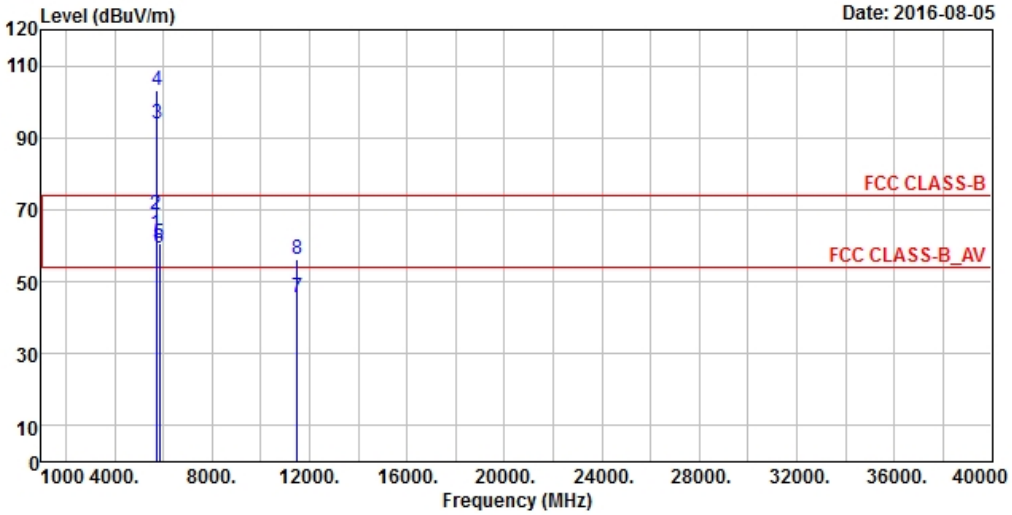
Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5700 MHz: Fundamental Frequency
3. 5470 & 5725 MHz: Out of Restricted Band

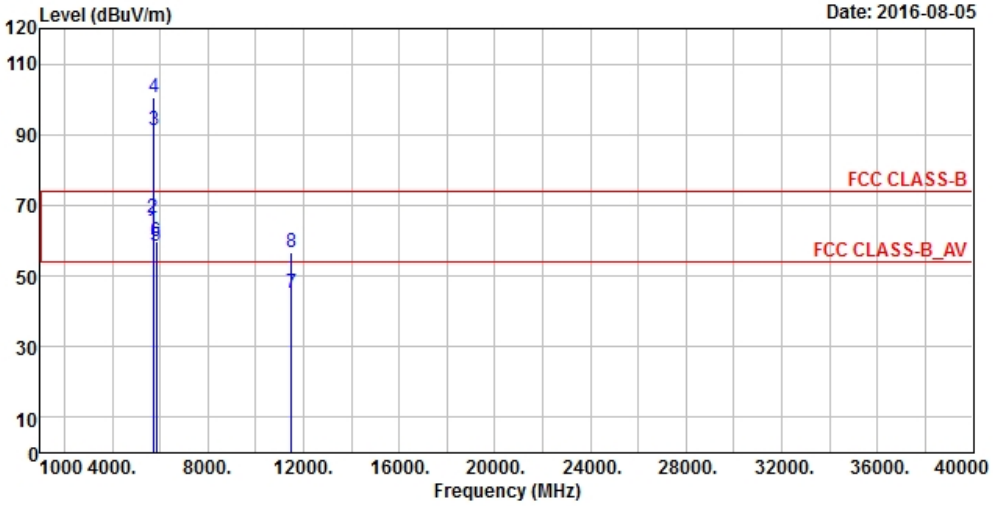
802.11a

EUT Test Condition		Measurement Detail	
Channel	Channel 149	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) RBW : 1MHz , VBW : 3MHz Average (AV) RBW : 1MHz , VBW : 2KHz
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Gavin Wu

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emissino 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
*5714	63.17	61.98	68.2	-5.03	31.93	6.69	37.43	191	58	Peak
*5725	68.45	67.17	78.2	-9.75	31.96	6.75	37.43	191	58	Peak
5745	93.79	92.52			31.99	6.75	37.47	191	58	Average
5745	103	101.73			31.99	6.75	37.47	191	58	Peak
*5850	60.55	59.03	78.2	-17.65	32.15	6.88	37.51	191	58	Peak
*5861	59.48	57.85	68.2	-8.72	32.18	6.95	37.5	191	58	Peak
11490	45.48	48.37	54	-8.52	39.91	10.03	52.83	138	292	Average
11490	56.45	59.34	74	-17.55	39.91	10.03	52.83	138	292	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emissino 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
*5714	62.93	61.74	68.2	-5.27	31.93	6.69	37.43	173	342	Peak
*5725	66.48	65.2	78.2	-11.72	31.96	6.75	37.43	173	342	Peak
5745	91.19	89.92			31.99	6.75	37.47	173	342	Average
5745	100.42	99.15			31.99	6.75	37.47	173	342	Peak
*5850	58.66	57.14	78.2	-19.54	32.15	6.88	37.51	173	342	Peak
*5861	59.61	57.98	68.2	-8.59	32.18	6.95	37.5	173	342	Peak
11490	45.12	48.01	54	-8.88	39.91	10.03	52.83	195	11	Average
11490	56.7	59.59	74	-17.3	39.91	10.03	52.83	195	11	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5745 MHz: Fundamental Frequency
3. *: Out of Restricted Band

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.

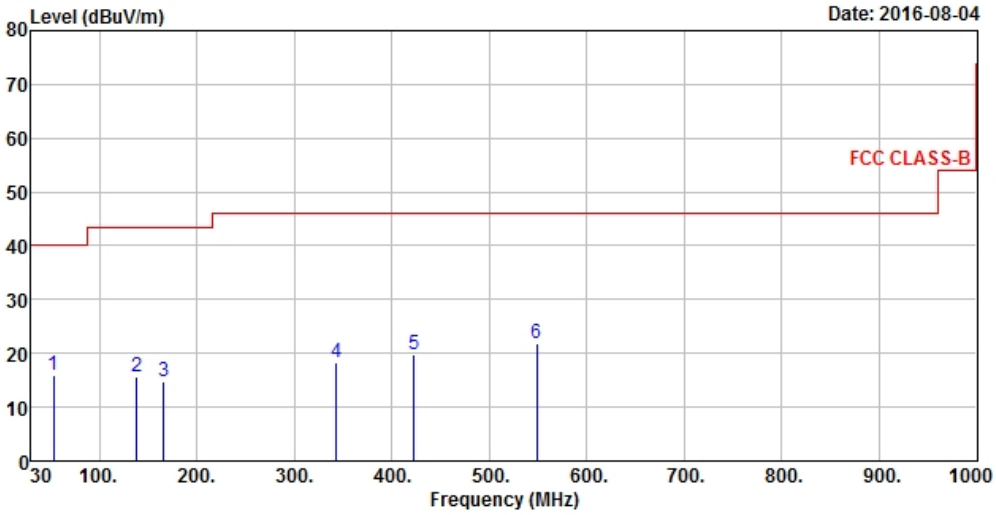
30 MHz ~ 1 GHz WORST-CASE DATA:

Mode C

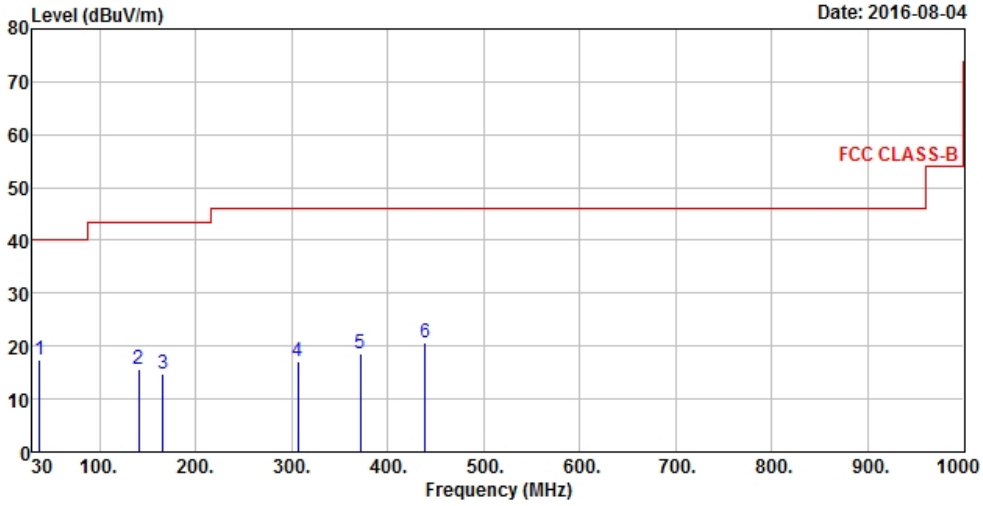
802.11n (HT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 38	**Frequency Range**	30 MHz ~ 1 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) RBW : 120KHz , VBW : 360KHz Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Gavin Wu

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emissino 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
53.28	16.07	34.01	40	-23.93	12.66	0.73	31.33	133	46	Peak
138.64	15.66	33.9	43.5	-27.84	12.27	1.15	31.66	131	237	Peak
165.8	14.9	33.42	43.5	-28.6	12.15	1.12	31.79	134	316	Peak
343.31	18.42	34.52	46	-27.58	13.98	1.75	31.83	104	9	Peak
422.85	19.66	33.97	46	-26.34	15.79	1.94	32.04	117	219	Peak
548.95	21.9	33.21	46	-24.1	18.44	2.18	31.93	120	270	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emissino 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
37.76	17.34	34.49	40	-22.66	13.24	0.63	31.02	137	266	Peak
140.58	15.59	33.7	43.5	-27.91	12.37	1.16	31.64	104	65	Peak
165.8	14.75	33.27	43.5	-28.75	12.15	1.12	31.79	101	243	Peak
306.45	16.99	34.15	46	-29.01	13.1	1.65	31.91	108	17	Peak
371.44	18.47	33.9	46	-27.53	14.66	1.83	31.92	123	148	Peak
439.34	20.75	34.66	46	-25.25	16.12	1.97	32	121	306	Peak

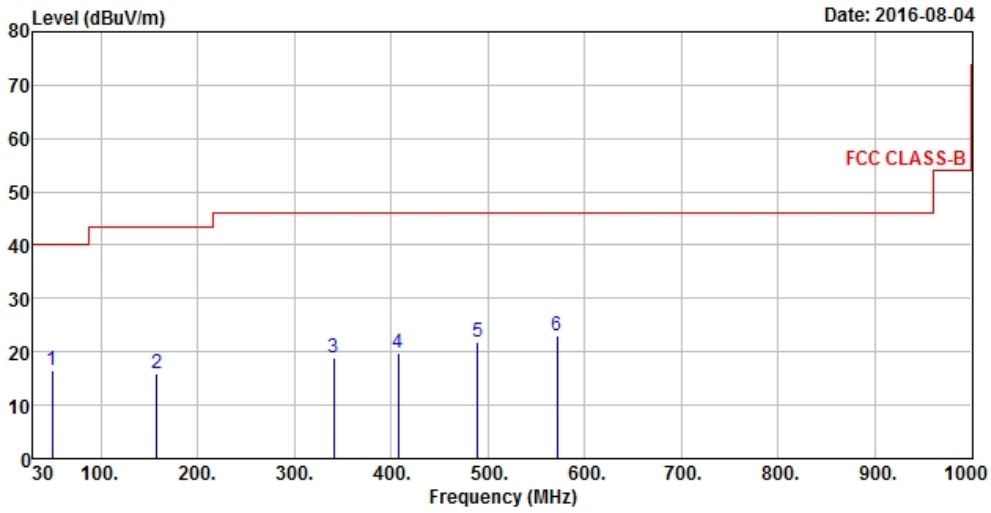
Remarks:

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

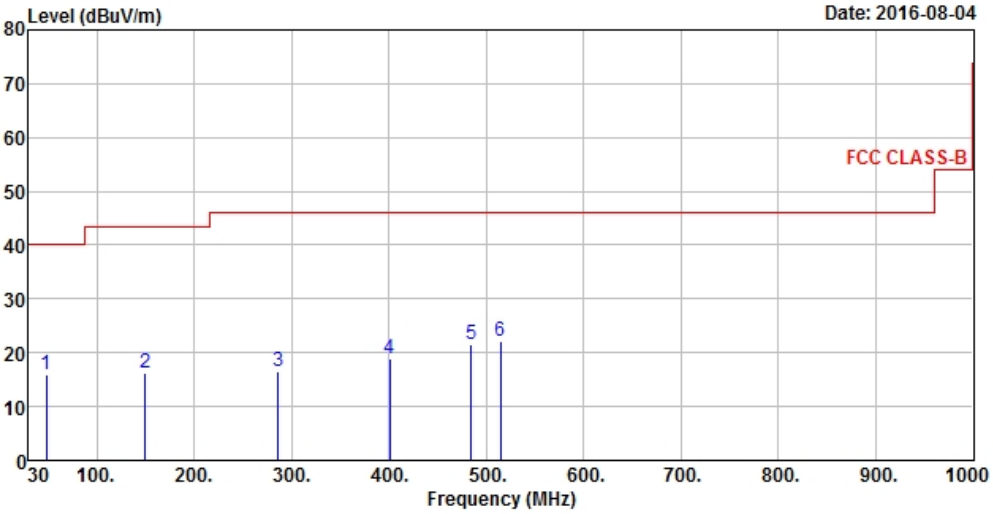
802.11n (HT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 62	**Frequency Range**	30 MHz ~ 1 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) RBW : 120KHz , VBW : 360KHz Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Gavin Wu

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emissino 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
49.4	16.5	34	40	-23.5	13.08	0.7	31.28	132	261	Peak
158.04	15.83	33.8	43.5	-27.67	12.73	1.13	31.83	140	230	Peak
340.4	18.76	34.93	46	-27.24	13.91	1.74	31.82	138	173	Peak
407.33	19.83	34.46	46	-26.17	15.48	1.92	32.03	138	297	Peak
489.78	21.86	34.44	46	-24.14	17.12	2.07	31.77	104	84	Peak
571.26	23.04	33.96	46	-22.96	18.95	2.21	32.08	102	166	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emissino 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
48.43	16.06	33.44	40	-23.94	13.18	0.69	31.25	107	167	Peak
149.31	16.22	34.02	43.5	-27.28	12.68	1.13	31.61	110	156	Peak
286.08	16.66	34.26	46	-29.34	12.54	1.59	31.73	138	15	Peak
400.54	18.95	33.81	46	-27.05	15.35	1.91	32.12	103	156	Peak
484.93	21.47	34.2	46	-24.53	17.02	2.06	31.81	140	85	Peak
515	22.16	33.96	46	-23.84	17.66	2.12	31.58	135	123	Peak

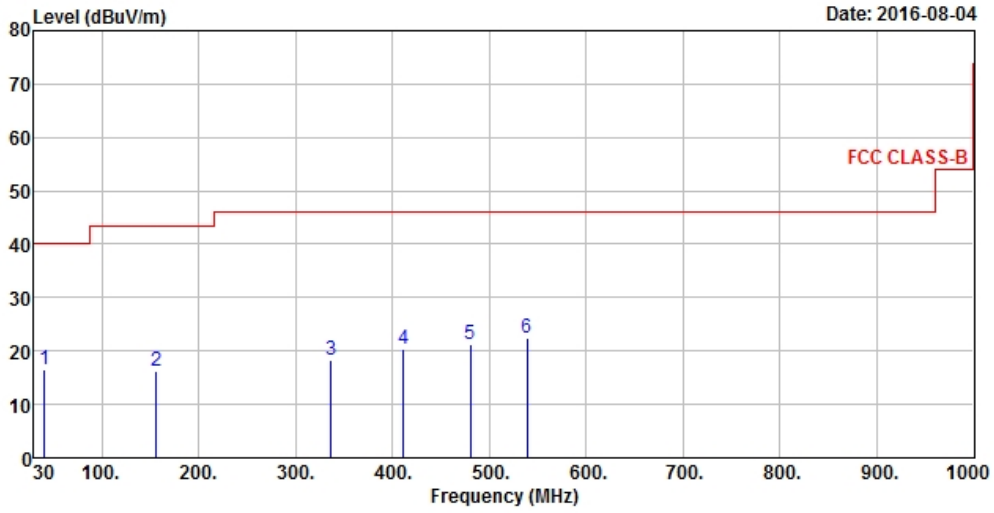
Remarks:

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

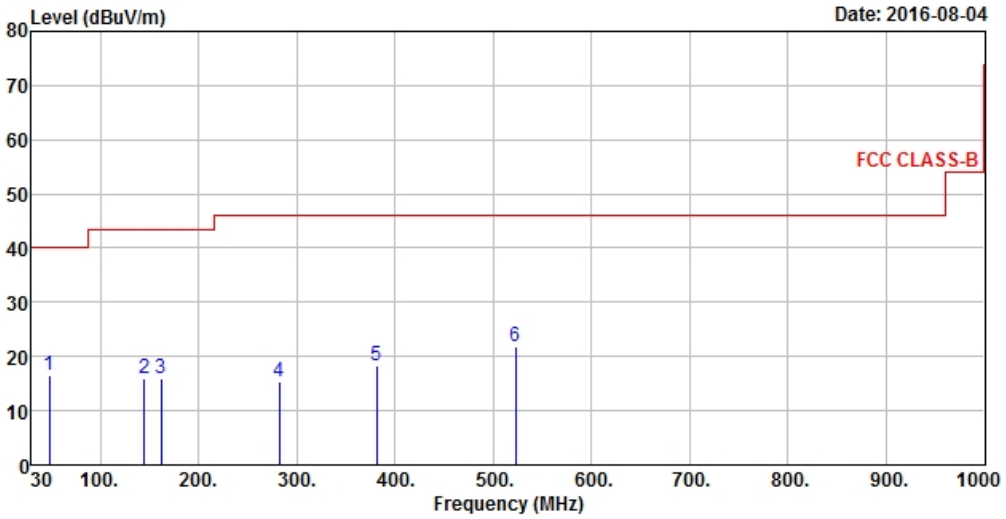
802.11n (HT20)

EUT Test Condition		Measurement Detail	
Channel	Channel 140	**Frequency Range**	30 MHz ~ 1 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) RBW : 120KHz , VBW : 360KHz Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Gavin Wu

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emissino 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
40.67	16.43	33.25	40	-23.57	13.55	0.65	31.02	138	173	Peak
156.1	16.34	34.27	43.5	-27.16	12.72	1.12	31.77	119	158	Peak
336.52	18.42	34.69	46	-27.58	13.82	1.73	31.82	123	309	Peak
411.21	20.49	35	46	-25.51	15.56	1.93	32	128	199	Peak
480.08	21.21	34.08	46	-24.79	16.93	2.05	31.85	124	350	Peak
539.25	22.36	33.71	46	-23.64	18.22	2.16	31.73	102	160	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emissino 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
48.43	16.51	33.89	40	-23.49	13.18	0.69	31.25	133	30	Peak
144.46	15.8	33.76	43.5	-27.7	12.51	1.16	31.63	107	333	Peak
161.92	15.86	34.03	43.5	-27.64	12.54	1.14	31.85	137	292	Peak
282.2	15.38	33.16	46	-30.62	12.42	1.59	31.79	108	65	Peak
381.14	18.4	33.61	46	-27.6	14.89	1.86	31.96	136	4	Peak
522.76	21.87	33.51	46	-24.13	17.84	2.13	31.61	104	100	Peak

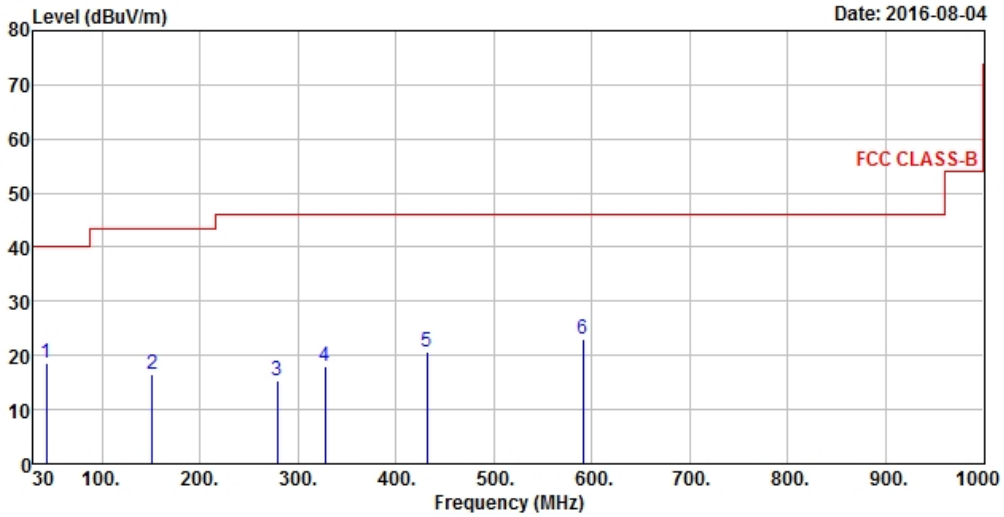
Remarks:

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

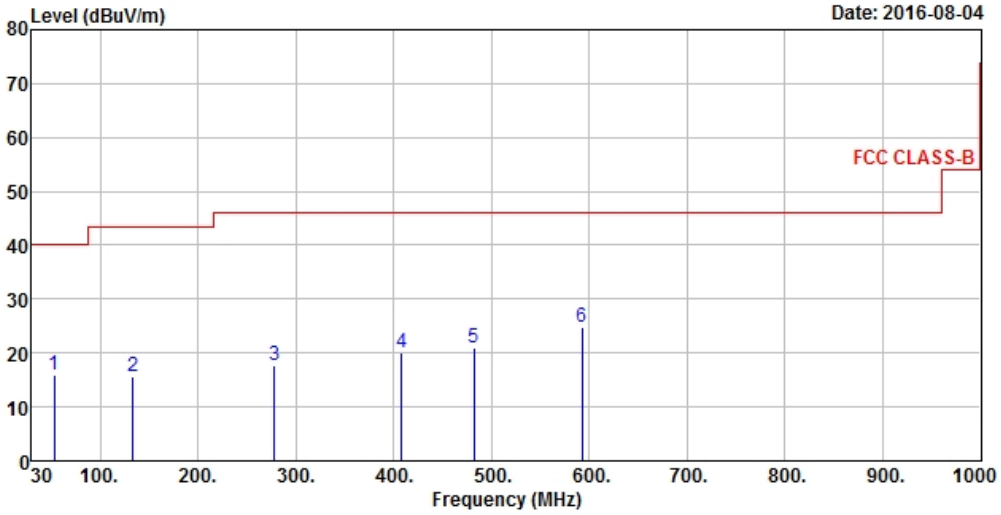
802.11a

EUT Test Condition		Measurement Detail	
Channel	Channel 149	**Frequency Range**	30 MHz ~ 1 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) RBW : 120KHz , VBW : 360KHz Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Gavin Wu

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emissino 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
43.58	18.57	35.42	40	-21.43	13.59	0.67	31.11	131	262	Peak
151.25	16.43	34.24	43.5	-27.07	12.71	1.12	31.64	119	168	Peak
279.29	15.4	33.32	46	-30.6	12.34	1.58	31.84	126	220	Peak
327.79	18.02	34.53	46	-27.98	13.61	1.71	31.83	125	88	Peak
431.58	20.59	34.68	46	-25.41	15.96	1.96	32.01	123	71	Peak
590.66	23.11	33.63	46	-22.89	19.39	2.24	32.15	126	279	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emissino 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
53.28	15.84	33.78	40	-24.16	12.66	0.73	31.33	118	39	Peak
133.79	15.78	34.48	43.5	-27.72	11.94	1.14	31.78	107	333	Peak
278.32	17.82	35.79	46	-28.18	12.31	1.58	31.86	132	80	Peak
408.3	19.96	34.55	46	-26.04	15.5	1.93	32.02	112	17	Peak
482.02	21.01	33.83	46	-24.99	16.96	2.05	31.83	121	50	Peak
592.6	24.93	35.43	46	-21.07	19.43	2.24	32.17	114	28	Peak

Remarks:

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

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