FCC Test Report

Report No.:	RF190702C13-3
FCC ID:	QYL8265VB2
Test Model:	V110
Received Date:	Jul. 02, 2019
Test Date:	Jul. 10 ~ Jul. 27, 2019
Issued Date:	Aug. 15, 2019
Applicant:	Getac Technology Corporation.
Address:	5F., Building A, No. 209, Sec.1, Nangang Rd.,Nangang Dist., Taipei City 11568, Taiwan, R.O.C.
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):	B2F., No.215, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan, R.O.C
FCC Registration /	788550 / TW0003
Designation Number:	427177 / TW0011

Testing Laboratory
2021

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Release Control Record

Issue No.	Description	Date Issued
RF190702C13-3	Original Release	Aug. 15, 2019

1 Certificate of Conformity

Product:	Notebook
Brand:	Getac
Test Model:	V110
Sample Status:	Identical Prototype
Applicant:	Getac Technology Corporation.
Test Date:	Jul. 10 ~ Jul. 27, 2019
Standards:	47 CFR FCC Part 15, Subpart E (Section 15.407) 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 RF characteristics under the conditions specified in this report.

Prepared by : Lena Wang , **Date:** Aug. 15, 2019

Lena Wang / Specialist

Approved by : , **Date:** Aug. 15, 2019

Dylan Chiou / Project Engineer

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	Pass	Meet the requirement of limit. Minimum passing margin is -14.83 dB at 0.15391 MHz.
15.407(b) (1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -1.44 dB at 5350.55 MHz
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6 dB Bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	No antenna connector is used.

Note:

1. For U-NII-3 band compliance with rule part 15.407(b)(4)(i), the OOBE test plots were recorded in Annex A.
2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

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	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150 kHz ~ 30 MHz	2.44 dB
Radiated Emissions up to 1 GHz	9 kHz ~ 30 MHz	3.04 dB
	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	Notebook
Brand	Getac
Test Model	V110
Status of EUT	Identical Prototype
Power Supply Rating	19.0 Vdc (adapter) 11.1 Vdc (Li-ion battery)
Modulation Type	256QAM, 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 300.0 Mbps 802.11ac: up to 866.7 Mbps
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) 1 for 802.11ac (VHT80) 5260 ~ 5320 MHz: 4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80) 5500 ~ 5700 MHz: 11 for 802.11a, 802.11n (HT20) 5 for 802.11n (HT40) 2 for 802.11ac (VHT80) 5745 ~ 5825 MHz: 5 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80)
Output Power	56.501 mW for 5180 ~ 5240 MHz 84.932 mW for 5260 ~ 5320 MHz 87.155 mW for 5500 ~ 5700 MHz 84.14 mW for 5745 ~ 5825 MHz
Antenna Type	Refer to Note as below
Antenna Connector	N/A
Accessory Device	Refer to Note as below
Data Cable Supplied	N/A

Note:

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

Modulation Mode	Tx Function
802.11a	1TX
802.11n (HT20)	2TX
802.11n (HT40)	2TX
802.11ac (VHT80)	2TX

2. The antenna information is listed as below.

Antenna Type	Manuf.	Parts Number	Antenna Gain			
			BT / WLAN 2.4GHz	WLAN 5.15~5.35GHz	WLAN 5.47~5.725GHz	WLAN 5.725~5.85GHz
PIFA	Getac	Main Antenna: 421129000002	2.06	3.51	3.19	2.26
		Aux. Antenna: 421129000003	-0.14	1.67	1.62	1.35

3. The EUT contains following accessory devices.

Product	Brand	Model	Description
Adapter	Chicony	A12-065N2A	I/P: 100-240 Vac, 50/60 Hz, 1.7 A O/P: 19 Vdc, 3.42 A 1.8 m shielded cable with 1 core
Battery	Getac Technology Corporation.	BP3S1P2100-S	11.1 Vdc, 2100 mAh
Digitizer	Microchip	PIC32MX270	--
LCD Panel	AUO	B11XAN05.0	11.6 inch
GPS	GlobalSat	MC1010	--
Booster	Getac	B002	2.4G / 5G BT / WLAN booster

4. The above EUT information is declared by manufacturer and for more detailed features description, please refers 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

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
42	5210

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

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
58	5290

For 5500 ~ 5700 MHz

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

Channel	Frequency (MHz)	Channel	Frequency (MHz)
100	5500	124	5620
104	5520	128	5640
108	5540	132	5660
112	5560	136	5680
116	5580	140	5700
120	5600		

5 channels are provided for 802.11n (HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
102	5510	126	5630
110	5550	134	5670
118	5590		

2 channels are provided for 802.11ac (VHT80):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
106	5530	122	5610

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

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
155	5775

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To				Description
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

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

Note:
1. "-" 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)
-	5180-5240	802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6.0
-		802.11n (HT20)	36 to 48	36, 40, 48	OFDM	BPSK	6.5
-		802.11n (HT40)	38 to 46	38, 46	OFDM	BPSK	13.5
-		802.11ac (VHT80)	42	42	OFDM	BPSK	29.3
-	5260-5320	802.11a	52 to 64	52, 60, 64	OFDM	BPSK	6.0
-		802.11n (HT20)	52 to 64	52, 60, 64	OFDM	BPSK	6.5
-		802.11n (HT40)	54 to 62	54, 62	OFDM	BPSK	13.5
-		802.11ac (VHT80)	58	58	OFDM	BPSK	29.3
-	5500-5700	802.11a	100 to 140	100, 116, 140	OFDM	BPSK	6.0
-		802.11n (HT20)	100 to 140	100, 116, 140	OFDM	BPSK	6.5
-		802.11n (HT40)	102 to 134	102, 110, 134	OFDM	BPSK	13.5
-		802.11ac (VHT80)	106 to 122	106, 122	OFDM	BPSK	29.3
-	5745-5825	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-		802.11n (HT20)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
-		802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	13.5
-		802.11ac (VHT80)	155	155	OFDM	BPSK	29.3

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)
-	5260-5320	802.11ac (VHT80)	58	58	OFDM	BPSK	29.3

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	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5260-5320	802.11ac (VHT80)	58	58	OFDM	BPSK	29.3

Antenna Port Conducted Measurement:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

☒ 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)
-	5180-5240	802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6.0
-		802.11n (HT20)	36 to 48	36, 40, 48	OFDM	BPSK	6.5
-		802.11n (HT40)	38 to 46	38, 46	OFDM	BPSK	13.5
-		802.11ac (VHT80)	42	42	OFDM	BPSK	29.3
-	5260-5320	802.11a	52 to 64	52, 60, 64	OFDM	BPSK	6.0
-		802.11n (HT20)	52 to 64	52, 60, 64	OFDM	BPSK	6.5
-		802.11n (HT40)	54 to 62	54, 62	OFDM	BPSK	13.5
-		802.11ac (VHT80)	58	58	OFDM	BPSK	29.3
-	5500-5700	802.11a	100 to 140	100, 116, 140	OFDM	BPSK	6.0
-		802.11n (HT20)	100 to 140	100, 116, 140	OFDM	BPSK	6.5
-		802.11n (HT40)	102 to 134	102, 110, 134	OFDM	BPSK	13.5
-		802.11ac (VHT80)	106 to 122	106, 122	OFDM	BPSK	29.3
-	5745-5825	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-		802.11n (HT20)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
-		802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	13.5
-		802.11ac (VHT80)	155	155	OFDM	BPSK	29.3

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested by
RE≥1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Charles Hsiao, Karl Lee, Harry Hsueh
RE<1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Karl Lee
PLC	25 deg. C, 65 % RH	120 Vac, 60 Hz	Thomas Wei
APCM	25 deg. C, 65 % RH	11.1 Vdc	Wayne Lin

3.3 Duty Cycle of Test Signal

Duty cycle of test signal is ≥ 98 %, duty factor is not required.

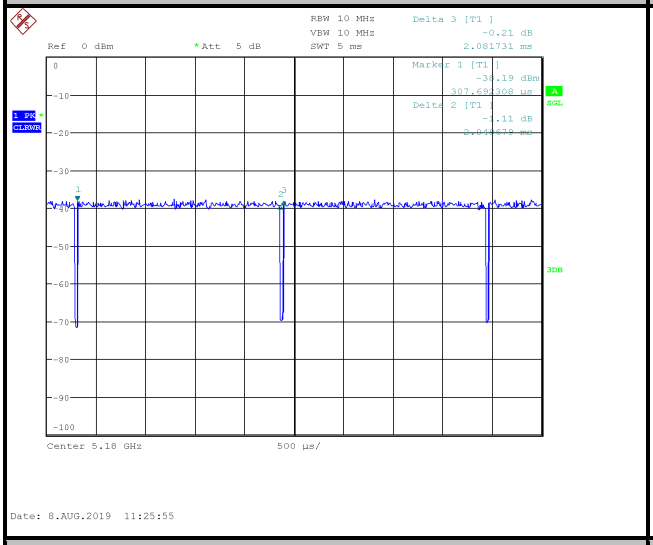
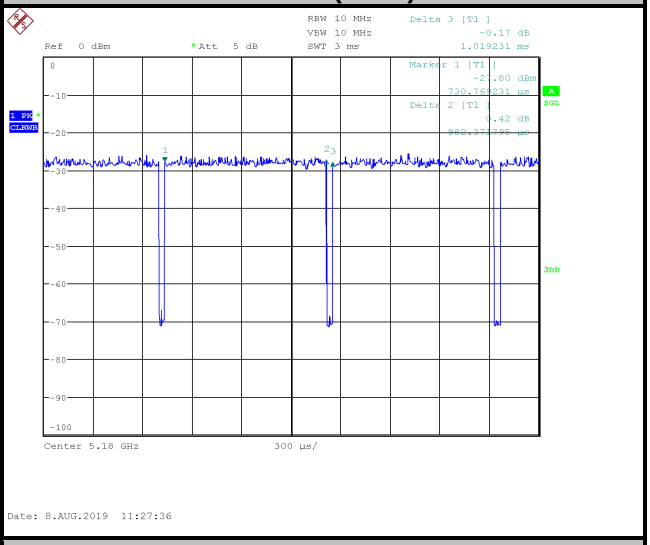
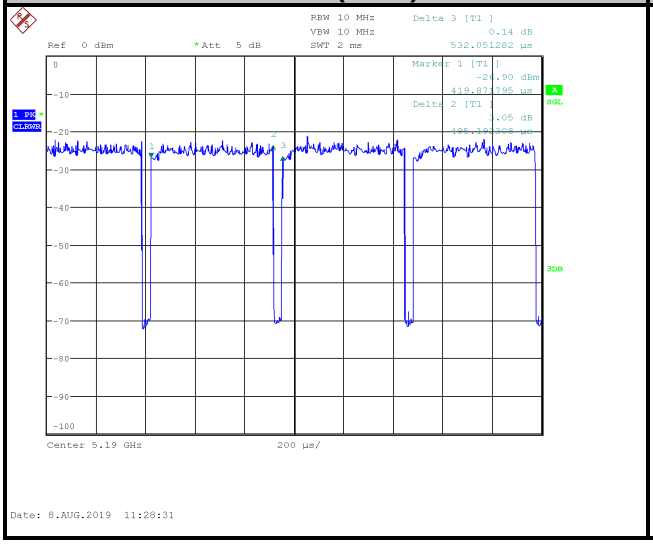
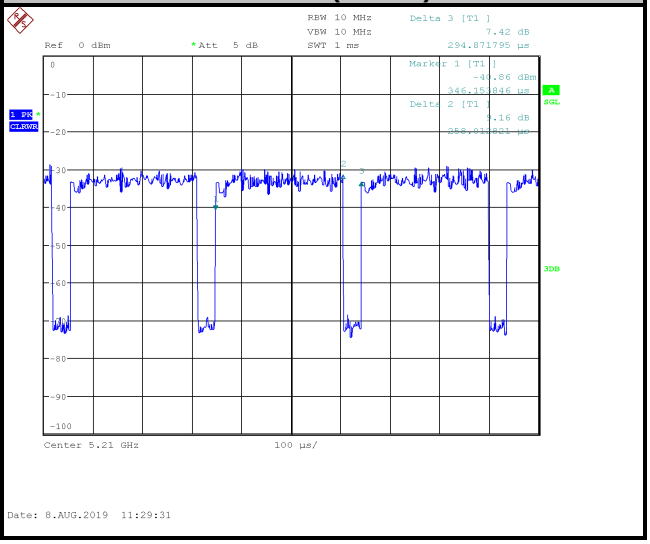
Duty cycle of test signal is < 98 %, duty factor is required.

802.11a: Duty cycle = 2.0497/2.0817 = 0.985

802.11n (HT20): Duty cycle = 0.9824/1.0192 = 0.964, Duty factor = 10 * log(1/0.964) = 0.16

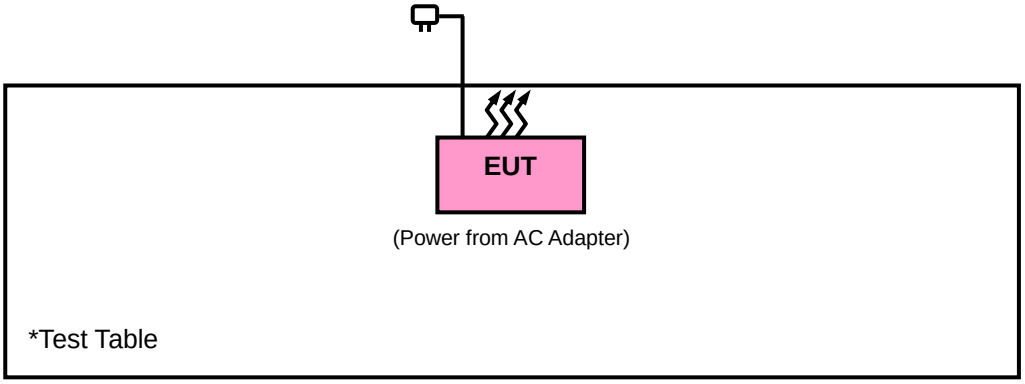
802.11n (HT40): Duty cycle = 0.4952/0.5321 = 0.931, Duty factor = 10 * log(1/0.931) = 0.31

802.11ac (VHT80): Duty cycle = 0.258/0.2949 = 0.875, Duty factor = 10 * log(1/0.875) = 0.58

802.11a	802.11n (HT20)
	
802.11n (HT40)	**802.11ac (VHT80)**
	

3.4 Description of Support Units

3.4.1 Configuration of System under Test



3.5 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)
KDB 789033 D02 General UNII Test Procedures New Rules v02r01
KDB 662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10-2013

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

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.

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

<table>
<tr><th colspan="3">Applicable To</th><th colspan="2">Limit</th></tr>
<tr><td colspan="3" rowspan="2">789033 D02 General UNII Test Procedures New Rules v02r01</td><td colspan="2">Field Strength at 3 m</td></tr>
<tr><td>PK: 74 (dBµV/m)</td><td>AV: 54 (dBµV/m)</td></tr>
<tr><th>Frequency Band</th><th colspan="2">Applicable To</th><th>EIRP Limit</th><th>Equivalent Field Strength at 3 m</th></tr>
<tr><td>5150~5250 MHz</td><td colspan="2">15.407(b)(1)</td><td rowspan="3">PK: -27 (dBm/MHz)</td><td rowspan="3">PK: 68.2 (dBµV/m)</td></tr>
<tr><td>5250~5350 MHz</td><td colspan="2">15.407(b)(2)</td></tr>
<tr><td>5470~5725 MHz</td><td colspan="2">15.407(b)(3)</td></tr>
<tr><td rowspan="2">5725~5850 MHz</td><td>☒</td><td>15.407(b)(4)(i)</td><td>PK:-27 (dBm/MHz) *1
PK:10 (dBm/MHz) *2
PK:15.6 (dBm/MHz) *3
PK:27 (dBm/MHz) *4</td><td>PK: 68.2 (dBµV/m) *1
PK:105.2 (dBµV/m) *2
PK: 110.8 (dBµV/m) *3
PK:122.2 (dBµV/m) *4</td></tr>
<tr><td>☐</td><td>15.407(b)(4)(ii)</td><td colspan="2">Emission limits in section 15.247(d)</td></tr>
<tr><td colspan="5">*1 beyond 75 MHz or more above of the band edge.
*2 below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.
*3 below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.
*4 from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.</td></tr>
</table>

Note:

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 & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent Technologies	N9038A	MY52260177	Aug. 20, 2018	Aug. 19, 2019
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Apr. 15, 2019	Apr. 14, 2020
Test Receiver Agilent Technologies	N9038A	MY52260177	Aug. 20, 2018	Aug. 19, 2019
BILOG Antenna SCHWARZBECK	VULB 9168	9168-616	Nov. 27, 2018	Nov. 26, 2019
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Nov. 25, 2018	Nov. 24, 2019
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 15, 2019	Apr. 14, 2020
Loop Antenna	EM-6879	269	Sep. 07, 2018	Sep. 06, 2019
Preamplifier Agilent	310N	187226	Jun. 18, 2019	Jun. 17, 2020
Preamplifier Agilent	83017A	MY39501357	Jun. 18, 2019	Jun. 17, 2020
Preamplifier EMCI	EMC 184045	980116	Oct. 12, 2018	Oct. 11, 2019
Power Meter Anritsu	ML2495A	1012010	Sep. 05, 2018	Sep. 04, 2019
Power Sensor Anritsu	MA2411B	1315050	Sep. 04, 2018	Sep. 03, 2019
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Nov. 25, 2018	Nov. 24, 2019
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 15, 2019	Apr. 14, 2020
Loop Antenna	EM-6879	269	Sep. 07, 2018	Sep. 06, 2019
Preamplifier Agilent	310N	187226	Jun. 18, 2019	Jun. 17, 2020
Preamplifier Agilent	83017A	MY39501357	Jun. 18, 2019	Jun. 17, 2020
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Nov. 25, 2018	Nov. 24, 2019
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 HsinTien Chamber 1.

4.1.4 Test Procedures

For Radiated Emission below 30 MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. 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. Both Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case 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.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz at frequency below 30 MHz.

For Radiated Emission above 30 MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 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:

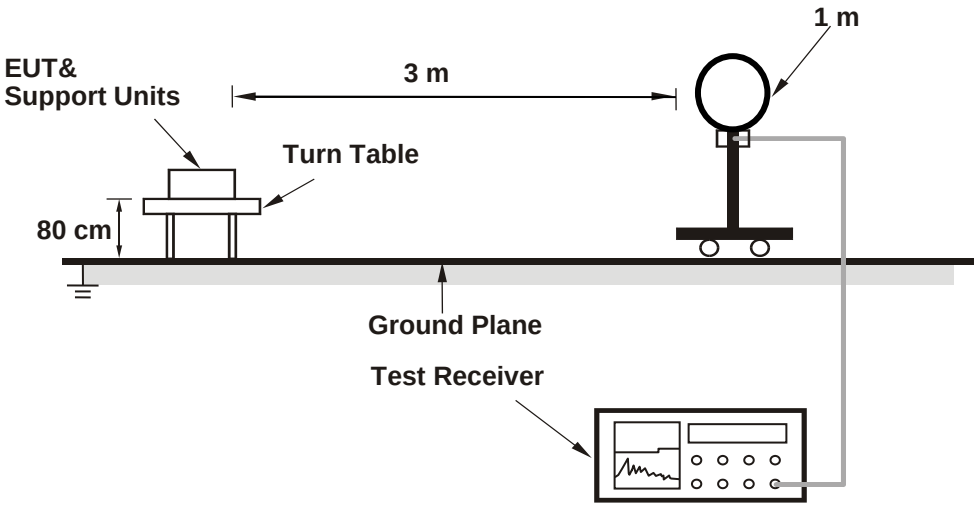
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98 %) or 10 Hz (Duty cycle ≥ 98 %) for Average detection (AV) at frequency above 1 GHz. (11a: RBW = 1 MHz, VBW = 1 kHz ; 11n (HT20): RBW = 1 MHz, VBW = 1 kHz ; 11n (HT40): RBW = 1 MHz, VBW = 2 kHz ; 11ac (VHT80): RBW = 1 MHz, VBW = 4 kHz)
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.5 Deviation from Test Standard

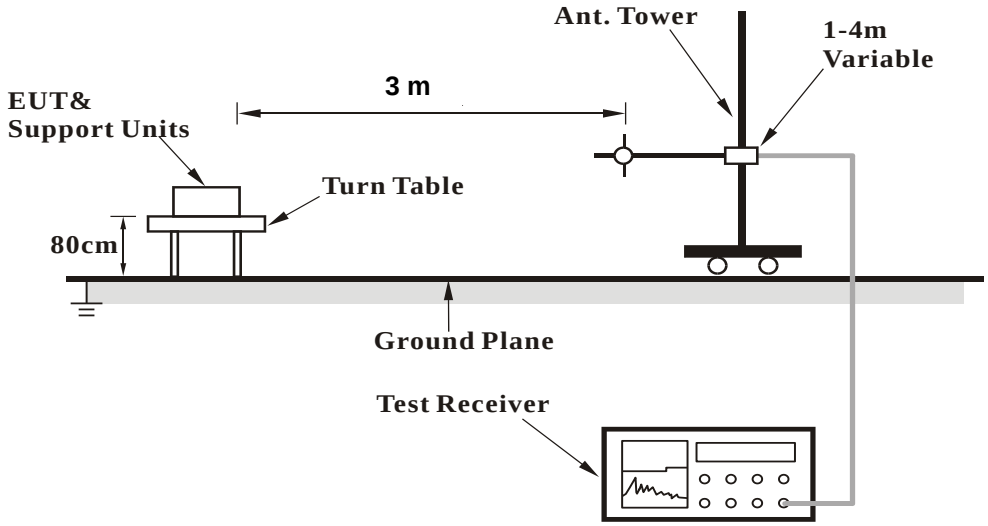
No deviation.

4.1.6 Test Setup

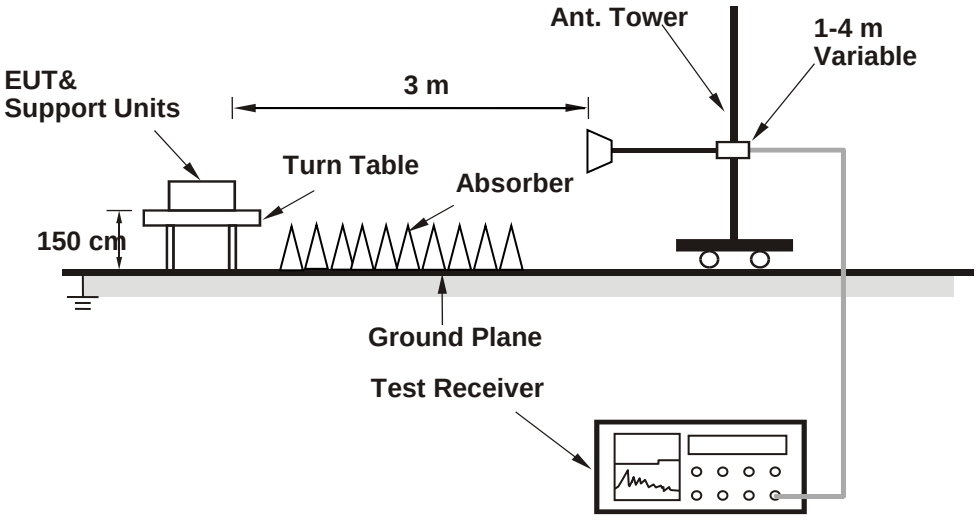
<Radiated Emission below 30 MHz>



<Radiated Emission 30 MHz to 1 GHz>



<Radiated Emission 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：

802.11a

EUT Test Condition		Measurement Detail	
Channel	Channel 36	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Charles Hsiao

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5146.4	42.28	32.23	10.05	54	-11.72	153	88	Average
5146.4	52.2	42.15	10.05	74	-21.8	153	88	Peak
5180	90.36	80.24	10.12			153	88	Average
5180	97.57	87.45	10.12			153	88	Peak
*10360	52.12	36.1	16.02	68.2	-16.08	177	85	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5149.55	42.87	32.82	10.05	54	-11.13	175	283	Average
5149.55	53.22	43.17	10.05	74	-20.78	175	283	Peak
5180	94.49	84.37	10.12			175	283	Average
5180	101.84	91.72	10.12			175	283	Peak
*10360	51.63	35.61	16.02	68.2	-16.57	112	351	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5180 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 40	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Charles Hsiao

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5148.5	42.08	32.03	10.05	54	-11.92	153	88	Average
5148.5	52.24	42.19	10.05	74	-21.76	153	88	Peak
5200	90.55	80.39	10.16			153	88	Average
5200	97.87	87.71	10.16			153	88	Peak
5450.65	41.9	31.39	10.51	54	-12.1	153	88	Average
5450.65	52.39	41.88	10.51	74	-21.61	153	88	Peak
*10400	54.42	38.24	16.18	68.2	-13.78	152	169	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5144	42.54	32.49	10.05	54	-11.46	175	283	Average
5144	52.9	42.85	10.05	74	-21.1	175	283	Peak
5200	94.77	84.61	10.16			175	283	Average
5200	101.82	91.66	10.16			175	283	Peak
5443.5	41.57	31.09	10.48	54	-12.43	175	283	Average
5443.5	52.37	41.89	10.48	74	-21.63	175	283	Peak
*10400	52.33	36.15	16.18	68.2	-15.87	141	114	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5200 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 48	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Charles Hsiao

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5240	90.8	80.66	10.14			153	88	Average
5240	97.48	87.34	10.14			153	88	Peak
5357.37	41.48	31.25	10.23	54	-12.52	153	88	Average
5357.37	52.77	42.54	10.23	74	-21.23	153	88	Peak
*10480	52.27	36.37	15.9	68.2	-15.93	162	3	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5240	94.34	84.2	10.14			175	283	Average
5240	101.02	90.88	10.14			175	283	Peak
5453.84	41.73	31.22	10.51	54	-12.27	175	283	Average
5453.84	52.18	41.67	10.51	74	-21.82	175	283	Peak
*10480	51.76	35.86	15.9	68.2	-16.44	119	278	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5240 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 52	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5133.35	42.25	32.25	10	54	-11.75	186	168	Average
5133.35	53.05	43.05	10	74	-20.95	186	168	Peak
5260	91	80.88	10.12			186	168	Average
5260	98.54	88.42	10.12			186	168	Peak
10520	51.21	35.33	15.88	68.2	-16.99	130	265	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5094.8	42.69	32.76	9.93	54	-11.31	164	287	Average
5094.8	53.01	43.08	9.93	74	-20.99	164	287	Peak
5260	95.91	85.79	10.12			164	287	Average
5260	102.85	92.73	10.12			164	287	Peak
10520	51.43	35.55	15.88	68.2	-16.77	187	112	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5260 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 60	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5136.2	42.19	32.19	10	54	-11.81	186	168	Average
5136.2	54.59	44.59	10	74	-19.41	186	168	Peak
5300	91.03	80.97	10.06			186	168	Average
5300	98.67	88.61	10.06			186	168	Peak
5374.86	42.35	32.06	10.29	54	-11.65	186	168	Average
5374.86	53.93	43.64	10.29	74	-20.07	186	168	Peak
10600	43.75	27.99	15.76	54	-10.25	165	294	Average
10600	53.36	37.6	15.76	74	-20.64	165	294	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5140.4	42.62	32.61	10.01	54	-11.38	164	287	Average
5140.4	53.41	43.4	10.01	74	-20.59	164	287	Peak
5300	94.17	84.11	10.06			164	287	Average
5300	102.29	92.23	10.06			164	287	Peak
5363.75	42.75	32.49	10.26	54	-11.25	164	287	Average
5363.75	53	42.74	10.26	74	-21	164	287	Peak
10600	42.66	26.9	15.76	54	-11.34	172	134	Average
10600	52.23	36.47	15.76	74	-21.77	172	134	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5300 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 64	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5320	90.49	80.4	10.09			186	168	Average
5320	97.53	87.44	10.09			186	168	Peak
5350.21	42.84	32.61	10.23	54	-11.16	186	168	Average
5350.21	53.1	42.87	10.23	74	-20.9	186	168	Peak
10640	42.46	26.47	15.99	54	-11.54	196	325	Average
10640	52.29	36.3	15.99	74	-21.71	196	325	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5320	94.29	84.2	10.09			164	287	Average
5320	102.8	92.71	10.09			164	287	Peak
5350.22	43.99	33.76	10.23	54	-10.01	164	287	Average
5350.22	53.93	43.7	10.23	74	-20.07	164	287	Peak
10640	42.58	26.59	15.99	54	-11.42	151	273	Average
10640	52.31	36.32	15.99	74	-21.69	151	273	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5320 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 100	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5455.6	42.67	32.16	10.51	54	-11.33	186	168	Average
5455.6	52.98	42.47	10.51	74	-21.02	186	168	Peak
*5469.36	51.67	41.14	10.53	68.2	-16.53	186	168	Peak
5500	91.79	81.19	10.6			186	168	Average
5500	98.1	87.5	10.6			186	168	Peak
11000	43.23	27.1	16.13	54	-10.77	176	151	Average
11000	52.78	36.65	16.13	74	-21.22	176	151	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5460	43.12	32.61	10.51	54	-10.88	164	287	Average
5460	52.94	42.43	10.51	74	-21.06	164	287	Peak
*5470	53.79	43.26	10.53	68.2	-14.41	164	287	Peak
5500	93.39	82.79	10.6			164	287	Average
5500	101.09	90.49	10.6			164	287	Peak
11000	43.86	27.73	16.13	54	-10.14	184	124	Average
11000	53.32	37.19	16.13	74	-20.68	184	124	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5500 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 116	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5446.8	42.02	31.53	10.49	54	-11.98	186	168	Average
5446.8	52.56	42.07	10.49	74	-21.44	186	168	Peak
*5469.2	53.07	42.54	10.53	68.2	-15.13	186	168	Peak
5580	90.98	80.27	10.71			186	168	Average
5580	97.94	87.23	10.71			186	168	Peak
*5725.72	52.09	41.17	10.92	68.2	-16.11	186	168	Peak
11160	46.62	30.26	16.36	54	-7.38	132	87	Average
11160	56.27	39.91	16.36	74	-17.73	132	87	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5421.68	42.26	31.84	10.42	54	-11.74	164	287	Average
5421.68	53.14	42.72	10.42	74	-20.86	164	287	Peak
*5469.52	51.68	41.15	10.53	68.2	-16.52	164	287	Peak
5580	93.98	83.27	10.71			164	287	Average
5580	101.64	90.93	10.71			164	287	Peak
*5725.1	52.47	41.55	10.92	68.2	-15.73	164	287	Peak
11160	48.47	32.11	16.36	54	-5.53	194	356	Average
11160	58.39	42.03	16.36	74	-15.61	194	356	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5580 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 140	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5700	89.31	78.36	10.95			186	168	Average
5700	96.57	85.62	10.95			186	168	Peak
*5725.64	53.89	42.97	10.92	68.2	-14.31	186	168	Peak
11400	46.17	29.98	16.19	54	-7.83	163	214	Average
11400	55.85	39.66	16.19	74	-18.15	163	214	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5700	92.97	82.02	10.95			164	287	Average
5700	101.06	90.11	10.95			164	287	Peak
*5725.8	54.64	43.72	10.92	68.2	-13.56	164	287	Peak
11400	45.63	29.44	16.19	54	-8.37	194	235	Average
11400	55.22	39.03	16.19	74	-18.78	194	235	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5700 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 149	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5745	90.34	79.46	10.88			186	168	Average
5745	97.62	86.74	10.88			186	168	Peak
11490	44.52	28.05	16.47	54	-9.48	192	117	Average
11490	54.23	37.76	16.47	74	-19.77	192	117	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5745	91.63	80.75	10.88			164	287	Average
5745	98.96	88.08	10.88			164	287	Peak
11490	45.13	28.66	16.47	54	-8.87	168	211	Average
11490	54.6	38.13	16.47	74	-19.4	168	211	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5627.575	52.94	42.15	10.79	68.2	-15.26	186	168	Peak
5652.25	49.35	38.48	10.87	69.86	-20.51	186	168	Peak
5922.1	50.48	39.37	11.11	70.35	-19.87	186	168	Peak
*5962.525	53.23	42	11.23	68.2	-14.97	186	168	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5650.15	53.43	42.56	10.87	68.31	-14.88	164	287	Peak
5654.35	51.76	40.89	10.87	71.42	-19.66	164	287	Peak
5923.675	53.19	42.08	11.11	69.18	-15.99	164	287	Peak
*5937.325	52.84	41.68	11.16	68.2	-15.36	164	287	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5745 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 157	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5785	90.4	79.59	10.81			186	168	Average
5785	97.33	86.52	10.81			186	168	Peak
11570	44.27	27.78	16.49	54	-9.73	196	134	Average
11570	53.98	37.49	16.49	74	-20.02	196	134	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5785	90.4	79.59	10.81			164	287	Average
5785	98.46	87.65	10.81			164	287	Peak
11570	45.02	28.53	16.49	54	-8.98	130	249	Average
11570	54.56	38.07	16.49	74	-19.44	130	249	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5529.4	53.23	42.6	10.63	68.2	-14.97	186	168	Peak
5652.775	50.89	40.02	10.87	70.25	-19.36	186	168	Peak
5923.675	50.38	39.27	11.11	69.18	-18.8	186	168	Peak
*6006.1	53.38	42.05	11.33	68.2	-14.82	186	168	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5567.2	53.19	42.49	10.7	68.2	-15.01	164	287	Peak
5655.4	50.82	39.95	10.87	72.2	-21.38	164	287	Peak
5923.15	50.27	39.16	11.11	69.57	-19.3	164	287	Peak
*5976.7	54.48	43.22	11.26	68.2	-13.72	164	287	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5785 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 165	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5825	90.77	79.89	10.88			186	168	Average
5825	97.63	86.75	10.88			186	168	Peak
11650	43.58	26.8	16.78	54	-10.42	143	177	Average
11650	53.21	36.43	16.78	74	-20.79	143	177	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5825	91.77	80.89	10.88			164	287	Average
5825	99.37	88.49	10.88			164	287	Peak
11650	44.63	27.85	16.78	54	-9.37	196	204	Average
11650	54.03	37.25	16.78	74	-19.97	196	204	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5634.4	52.87	42.04	10.83	68.2	-15.33	186	168	Peak
5652.775	49.61	38.74	10.87	70.25	-20.64	186	168	Peak
5923.675	49.56	38.45	11.11	69.18	-19.62	186	168	Peak
*5990.35	53.51	42.18	11.33	68.2	-14.69	186	168	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5598.175	52.52	41.77	10.75	68.2	-15.68	164	287	Peak
5653.3	52.19	41.32	10.87	70.64	-18.45	164	287	Peak
5923.15	49.87	38.76	11.11	69.57	-19.7	164	287	Peak
*5998.75	53.57	42.24	11.33	68.2	-14.63	164	287	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5825 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

802.11n (HT20)

EUT Test Condition		Measurement Detail	
Channel	Channel 36	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5149.25	44.62	34.57	10.05	54	-9.38	247	290	Average
5149.25	54.59	44.54	10.05	74	-19.41	247	290	Peak
5180	96.67	86.55	10.12			247	290	Average
5180	103.88	93.76	10.12			247	290	Peak
*10360	55.17	39.15	16.02	68.2	-13.03	106	223	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5149.55	44.54	34.49	10.05	54	-9.46	176	33	Average
5149.55	54.62	44.57	10.05	74	-19.38	176	33	Peak
5180	97.69	87.57	10.12			176	33	Average
5180	104.61	94.49	10.12			176	33	Peak
*10360	55.56	39.54	16.02	68.2	-12.64	162	167	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5180 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 40	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5145.8	43.57	33.52	10.05	54	-10.43	247	290	Average
5145.8	53.7	43.65	10.05	74	-20.3	247	290	Peak
5200	96.28	86.12	10.16			247	290	Average
5200	103.3	93.14	10.16			247	290	Peak
5438.33	42.85	32.37	10.48	54	-11.15	247	290	Average
5438.33	52.99	42.51	10.48	74	-21.01	247	290	Peak
*10400	56.17	39.99	16.18	68.2	-12.03	129	115	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5146.25	43.5	33.45	10.05	54	-10.5	176	33	Average
5146.25	54.25	44.2	10.05	74	-19.75	176	33	Peak
5200	97.47	87.31	10.16			176	33	Average
5200	104.61	94.45	10.16			176	33	Peak
5436.9	42.35	31.87	10.48	54	-11.65	176	33	Average
5436.9	52.92	42.44	10.48	74	-21.08	176	33	Peak
*10400	55.55	39.37	16.18	68.2	-12.65	156	257	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5200 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 48	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5240	94.7	84.56	10.14			247	290	Average
5240	102.34	92.2	10.14			247	290	Peak
5360.01	43.22	32.97	10.25	54	-10.78	247	290	Average
5360.01	53.71	43.46	10.25	74	-20.29	247	290	Peak
*10480	57.08	41.18	15.9	68.2	-11.12	187	253	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5240	96.44	86.3	10.14			176	33	Average
5240	104.41	94.27	10.14			176	33	Peak
5392.13	42.91	32.57	10.34	54	-11.09	176	33	Average
5392.13	53.01	42.67	10.34	74	-20.99	176	33	Peak
*10480	56.35	40.45	15.9	68.2	-11.85	192	112	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5240 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 52	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5104.1	42.73	32.8	9.93	54	-11.27	247	290	Average
5104.1	53.17	43.24	9.93	74	-20.83	247	290	Peak
5260	98.07	87.95	10.12			247	290	Average
5260	104.87	94.75	10.12			247	290	Peak
*10520	56.54	40.66	15.88	68.2	-11.66	156	178	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5099.15	43.23	33.3	9.93	54	-10.77	176	35	Average
5099.15	53.68	43.75	9.93	74	-20.32	176	35	Peak
5260	98.21	88.09	10.12			176	35	Average
5260	105.93	95.81	10.12			176	35	Peak
*10520	56.05	40.17	15.88	68.2	-12.15	137	242	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5260 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 60	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5136.5	42.61	32.61	10	54	-11.39	247	290	Average
5136.5	52.95	42.95	10	74	-21.05	247	290	Peak
5300	97.14	87.08	10.06			247	290	Average
5300	105.08	95.02	10.06			247	290	Peak
5351.87	43.66	33.43	10.23	54	-10.34	247	290	Average
5351.87	54.31	44.08	10.23	74	-19.69	247	290	Peak
10600	47.75	31.99	15.76	54	-6.25	130	67	Average
10600	56.4	40.64	15.76	74	-17.6	130	67	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5106.8	43.05	33.09	9.96	54	-10.95	176	35	Average
5106.8	52.96	43	9.96	74	-21.04	176	35	Peak
5300	98.14	88.08	10.06			176	35	Average
5300	106.26	96.2	10.06			176	35	Peak
5370.02	43.54	33.28	10.26	54	-10.46	176	35	Average
5370.02	53.85	43.59	10.26	74	-20.15	176	35	Peak
10600	45.94	30.18	15.76	54	-8.06	139	312	Average
10600	55.61	39.85	15.76	74	-18.39	139	312	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5300 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 64	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5320	98.07	87.98	10.09			247	290	Average
5320	105.13	95.04	10.09			247	290	Peak
5350.11	43.37	33.14	10.23	54	-10.63	247	290	Average
5350.11	55.21	44.98	10.23	74	-18.79	247	290	Peak
10640	46.32	30.33	15.99	54	-7.68	151	208	Average
10640	56.02	40.03	15.99	74	-17.98	151	208	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5320	98.61	88.52	10.09			176	35	Average
5320	106.1	96.01	10.09			176	35	Peak
5350.55	44.42	34.19	10.23	54	-9.58	176	31	Average
5350.55	56.69	46.46	10.23	74	-17.31	176	31	Peak
10640	46.37	30.38	15.99	54	-7.63	198	127	Average
10640	55.69	39.7	15.99	74	-18.31	198	127	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5320 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 100	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Harry Hsueh

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5459.92	45.49	34.98	10.51	54	-8.51	243	274	Average
5459.92	55.96	45.45	10.51	74	-18.04	243	274	Peak
*5469.2	55.22	44.69	10.53	68.2	-12.98	243	274	Peak
5500	99.12	56.85	42.27			242	260	Average
5500	105.9	63.63	42.27			242	260	Peak
11000	47.6	31.47	16.13	54	-6.4	141	274	Average
11000	57.1	40.97	16.13	74	-16.9	141	274	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5452.88	44.24	33.73	10.51	54	-9.76	174	36	Average
5452.88	54.8	44.29	10.51	74	-19.2	174	36	Peak
*5469.68	54.82	44.29	10.53	68.2	-13.38	174	36	Peak
5500	98.89	56.62	42.27			174	42	Average
5500	106.53	64.26	42.27			174	42	Peak
11000	45.89	29.76	16.13	54	-8.11	162	130	Average

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5500 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 116	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Harry Hsueh

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5418.32	44.35	33.93	10.42	54	-9.65	242	260	Average
5418.32	54.19	43.77	10.42	74	-19.81	242	260	Peak
*5469.84	52.8	42.27	10.53	68.2	-15.4	242	260	Peak
5580	98.58	87.87	10.71			242	260	Average
5580	106.15	95.44	10.71			242	260	Peak
*5725.08	52.66	41.74	10.92	68.2	-15.54	242	260	Peak
11160	46.65	30.29	16.36	54	-7.35	126	342	Average
11160	56.2	39.84	16.36	74	-17.8	126	342	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5424.72	43.5	33.05	10.45	54	-10.5	174	89	Average
5424.72	53.85	43.4	10.45	74	-20.15	174	89	Peak
*5470	52.02	41.49	10.53	68.2	-16.18	174	89	Peak
5580	98.74	88.03	10.71			174	89	Average
5580	106.42	95.71	10.71			174	89	Peak
*5725.48	52.47	41.55	10.92	68.2	-15.73	174	89	Peak
11160	47.13	30.77	16.36	54	-6.87	103	69	Average
11160	56.82	40.46	16.36	74	-17.18	103	69	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5580 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 140	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Harry Hsueh

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5700	98.21	87.26	10.95			230	260	Average
5700	106.07	95.12	10.95			230	260	Peak
*5725	56.4	45.48	10.92	68.2	-11.8	230	260	Peak
11400	46.69	30.5	16.19	54	-7.31	167	152	Average
11400	56.18	39.99	16.19	74	-17.82	167	152	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5700	97.18	86.23	10.95			174	87	Average
5700	105.33	94.38	10.95			174	87	Peak
*5725.16	55.99	45.07	10.92	68.2	-12.21	174	87	Peak
11400	47.14	30.95	16.19	54	-6.86	130	269	Average
11400	56.88	40.69	16.19	74	-17.12	130	269	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5700 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 149	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5745	98.58	87.7	10.88			230	260	Average
5745	105.65	94.77	10.88			230	260	Peak
11490	49.11	32.64	16.47	54	-4.89	136	221	Average
11490	58.66	42.19	16.47	74	-15.34	136	221	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5745	96.08	85.2	10.88			174	87	Average
5745	104.28	93.4	10.88			174	87	Peak
11490	46.77	30.3	16.47	54	-7.23	125	210	Average
11490	56.38	39.91	16.47	74	-17.62	125	210	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5647	54.66	43.81	10.85	68.2	-13.54	230	260	Peak
5656.45	53.07	42.2	10.87	72.97	-19.9	230	260	Peak
5919.475	52.09	41	11.09	72.29	-20.2	230	260	Peak
*5967.25	52.8	41.57	11.23	68.2	-15.4	230	260	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5639.65	53.41	42.58	10.83	68.2	-14.79	174	87	Peak
5654.35	52.97	42.1	10.87	71.42	-18.45	174	87	Peak
5917.9	52.69	41.6	11.09	73.45	-20.76	174	87	Peak
*5935.75	52.84	41.68	11.16	68.2	-15.36	174	87	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5745 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 157	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5785	97.58	86.77	10.81			230	260	5785
5785	105.29	94.48	10.81			230	260	5785
11570	47.53	31.04	16.49	54	-6.47	126	184	11570
11570	56.87	40.38	16.49	74	-17.13	126	184	11570
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5785	96.85	86.04	10.81			174	87	Average
5785	104.37	93.56	10.81			174	87	Peak
11570	48.25	31.76	16.49	54	-5.75	120	124	Average
11570	57.91	41.42	16.49	74	-16.09	120	124	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5621.275	54.73	43.94	10.79	68.2	-13.47	230	260	Peak
5652.775	52.6	41.73	10.87	70.25	-17.65	230	260	Peak
5922.625	51.73	40.62	11.11	69.96	-18.23	230	260	Peak
*6016.6	53.34	41.99	11.35	68.2	-14.86	230	260	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5643.325	53.23	42.4	10.83	68.2	-14.97	174	87	Peak
5659.075	52.21	41.34	10.87	74.92	-22.71	174	87	Peak
5923.15	50.6	39.49	11.11	69.57	-18.97	174	87	Peak
*5950.45	54.14	42.96	11.18	68.2	-14.06	174	87	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5785 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 165	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5825	97.32	86.44	10.88			230	260	Average
5825	105.48	94.6	10.88			230	260	Peak
11650	46.81	30.03	16.78	54	-7.19	129	341	Average
11650	56.41	39.63	16.78	74	-17.59	129	341	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5825	97.69	86.81	10.88			174	87	Average
5825	104.52	93.64	10.88			174	87	Peak
11650	48.35	31.57	16.78	54	-5.65	194	157	Average
11650	57.91	41.13	16.78	74	-16.09	194	157	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5588.2	53.3	42.57	10.73	68.2	-14.9	230	260	Peak
5658.55	53.98	43.11	10.87	74.53	-20.55	230	260	Peak
5922.625	53.58	42.47	11.11	69.96	-16.38	230	260	Peak
*6015.55	54.25	42.9	11.35	68.2	-13.95	230	260	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5644.9	53.92	43.09	10.83	68.2	-14.28	174	87	Peak
5654.35	52.03	41.16	10.87	71.42	-19.39	174	87	Peak
5921.575	51.58	40.47	11.11	70.73	-19.15	174	87	Peak
*5974.6	52.48	41.22	11.26	68.2	-15.72	174	87	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5825 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5149.7	44.14	34.09	10.05	54	-9.86	247	264	Average
5149.7	53.85	43.8	10.05	74	-20.15	247	264	Peak
5190	90.32	80.2	10.12			247	290	Average
5190	98.86	88.74	10.12			247	290	Peak
5437.12	42.12	31.64	10.48	54	-11.88	247	290	Average
5437.12	52.7	42.22	10.48	74	-21.3	247	290	Peak
*10380	56.07	39.97	16.1	68.2	-12.13	142	135	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5149.25	45.17	35.12	10.05	54	-8.83	177	39	Average
5149.25	54.69	44.64	10.05	74	-19.31	177	39	Peak
5190	91.57	81.45	10.12			164	33	Average
5190	99.79	89.67	10.12			164	33	Peak
5439.98	41.99	31.51	10.48	54	-12.01	164	33	Average
5439.98	52.3	41.82	10.48	74	-21.7	164	33	Peak
*10380	55.75	39.65	16.1	68.2	-12.45	168	36	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5190 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 46	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5136.5	42.91	32.91	10	54	-11.09	247	290	Average
5136.5	53.27	43.27	10	74	-20.73	247	290	Peak
5230	90.35	80.21	10.14			247	290	Average
5230	98.58	88.44	10.14			247	290	Peak
5364.52	42.7	32.44	10.26	54	-11.3	247	290	Average
5364.52	52.47	42.21	10.26	74	-21.53	247	290	Peak
*10460	56.18	40.18	16	68.2	-12.02	190	265	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5149.1	43.2	33.15	10.05	54	-10.8	164	33	Average
5149.1	54.26	44.21	10.05	74	-19.74	164	33	Peak
5230	91.46	81.32	10.14			164	33	Average
5230	99.78	89.64	10.14			164	33	Peak
5365.73	42.67	32.41	10.26	54	-11.33	164	33	Average
5365.73	52.29	42.03	10.26	74	-21.71	164	33	Peak
*10460	56.06	40.06	16	68.2	-12.14	172	225	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5230 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 54	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5142.05	43.02	33.01	10.01	54	-10.98	247	290	Average
5142.05	52.82	42.81	10.01	74	-21.18	247	290	Peak
5270	94.31	84.19	10.12			247	290	Average
5270	102.12	92	10.12			247	290	Peak
5394	44.14	33.8	10.34	54	-9.86	247	290	Average
5394	54.16	43.82	10.34	74	-19.84	247	290	Peak
*10540	55.35	39.52	15.83	68.2	-12.85	103	239	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5120.75	43.15	33.18	9.97	54	-10.85	181	40	Average
5120.75	53.12	43.15	9.97	74	-20.88	181	40	Peak
5270	96.48	86.36	10.12			181	40	Average
5270	103.65	93.53	10.12			181	40	Peak
5350.88	43.39	33.16	10.23	54	-10.61	181	40	Average
5350.88	53.24	43.01	10.23	74	-20.76	181	40	Peak
*10540	55.94	40.11	15.83	68.2	-12.26	167	112	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5270 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 62	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5138.15	42.48	32.48	10	54	-11.52	256	283	Average
5138.15	52.95	42.95	10	74	-21.05	256	283	Peak
5310	95.07	84.98	10.09			247	290	Average
5310	102.44	92.35	10.09			247	290	Peak
5350.11	51.37	41.14	10.23	54	-2.63	256	283	Average
5350.11	62.22	51.99	10.23	74	-11.78	256	283	Peak
10620	46.69	30.81	15.88	54	-7.31	161	257	Average
10620	56.18	40.3	15.88	74	-17.82	161	257	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5115.05	42.86	32.9	9.96	54	-11.14	196	29	Average
5115.05	52.8	42.84	9.96	74	-21.2	196	29	Peak
5310	96.14	86.05	10.09			181	40	Average
5310	103.8	93.71	10.09			181	40	Peak
5350.66	52.51	42.28	10.23	54	-1.49	196	29	Average
5350.66	61.43	51.2	10.23	74	-12.57	196	29	Peak
10620	46.84	30.96	15.88	54	-7.16	134	94	Average
10620	56.44	40.56	15.88	74	-17.56	134	94	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5310 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 102	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5458.64	46.82	36.31	10.51	54	-7.18	241	253	Average
5458.64	56.2	45.69	10.51	74	-17.8	241	253	Peak
*5470	57.49	46.96	10.53	68.2	-10.71	241	253	Peak
5510	95.63	85.03	10.6			242	260	Average
5510	103.08	92.48	10.6			242	260	Peak
*5725.48	52.91	41.99	10.92	68.2	-15.29	242	260	Peak
11020	46.69	30.53	16.16	54	-7.31	185	274	Average
11020	56.22	40.06	16.16	74	-17.78	185	274	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5459.92	46.03	35.52	10.51	54	-7.97	174	52	Average
5459.92	55.8	45.29	10.51	74	-18.2	174	52	Peak
*5469.04	57.75	47.22	10.53	68.2	-10.45	174	52	Peak
5510	95.67	85.07	10.6			174	42	Average
5510	103.28	92.68	10.6			174	42	Peak
*5725.08	51.36	40.44	10.92	68.2	-16.84	174	42	Peak
11020	46.37	30.21	16.16	54	-7.63	130	164	Average
11020	55.95	39.79	16.16	74	-18.05	130	164	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5510 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 110	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5460	45.03	34.52	10.51	54	-8.97	242	260	Average
5460	54.85	44.34	10.51	74	-19.15	242	260	Peak
*5469.36	53.19	42.66	10.53	68.2	-15.01	242	260	Peak
5550	96.07	85.39	10.68			242	260	Average
5550	103.48	92.8	10.68			242	260	Peak
*5725.32	52.36	41.44	10.92	68.2	-15.84	242	260	Peak
11100	46.96	30.69	16.27	54	-7.04	123	190	Average
11100	56.63	40.36	16.27	74	-17.37	123	190	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5458	43.55	33.04	10.51	54	-10.45	174	42	Average
5458	53.3	42.79	10.51	74	-20.7	174	42	Peak
*5469.36	51.06	40.53	10.53	68.2	-17.14	174	42	Peak
5550	95.07	84.39	10.68			174	42	Average
5550	102.7	92.02	10.68			174	42	Peak
*5726.04	51.82	40.9	10.92	68.2	-16.38	174	42	Peak
11100	45.84	29.57	16.27	54	-8.16	142	180	Average
11100	55.44	39.17	16.27	74	-18.56	142	180	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5550 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 134	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5443.12	43.43	32.95	10.48	54	-10.57	230	260	Average
5443.12	53.05	42.57	10.48	74	-20.95	230	260	Peak
*5469.52	51.04	40.51	10.53	68.2	-17.16	230	260	Peak
5670	95.72	84.82	10.9			230	260	Average
5670	103.19	92.29	10.9			230	260	Peak
*5725.8	53.05	42.13	10.92	68.2	-15.15	230	260	Peak
11340	46.83	30.41	16.42	54	-7.17	125	219	Average
11340	56.5	40.08	16.42	74	-17.5	125	219	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5439.92	42.98	32.5	10.48	54	-11.02	174	87	Average
5439.92	52.84	42.36	10.48	74	-21.16	174	87	Peak
*5469.04	50.86	40.33	10.53	68.2	-17.34	174	87	Peak
5670	93.94	83.04	10.9			174	87	Average
5670	102.48	91.58	10.9			174	87	Peak
*5725.8	52.89	41.97	10.92	68.2	-15.31	174	87	Peak
11340	46.72	30.3	16.42	54	-7.28	128	163	Average
11340	56.14	39.72	16.42	74	-17.86	128	163	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5670 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 151	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5755	95.28	84.38	10.9			230	260	Average
5755	103.78	92.88	10.9			230	260	Peak
11510	47.14	30.63	16.51	54	-6.86	135	108	Average
11510	56.88	40.37	16.51	74	-17.12	135	108	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5755	94.57	83.67	10.9			174	87	Average
5755	102.95	92.05	10.9			174	87	Peak
11510	48.36	31.85	16.51	54	-5.64	165	286	Average
11510	57.92	41.41	16.51	74	-16.08	165	286	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5607.1	55.42	44.67	10.75	68.2	-12.78	230	260	Peak
5653.3	52.69	41.82	10.87	70.64	-17.95	230	260	Peak
5917.9	54.38	43.29	11.09	73.45	-19.07	230	260	Peak
*5959.9	53.03	41.8	11.23	68.2	-15.17	230	260	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5634.925	53.27	42.44	10.83	68.2	-14.93	174	87	Peak
5658.55	53.26	42.39	10.87	74.53	-21.27	174	87	Peak
5922.625	51.03	39.92	11.11	69.96	-18.93	174	87	Peak
*5986.15	52.58	41.29	11.29	68.2	-15.62	174	87	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5755 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 159	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5795	95.7	84.88	10.82			230	260	Average
5795	103.45	92.63	10.82			230	260	Peak
11590	46.91	30.4	16.51	54	-7.09	197	335	Average
11590	56.69	40.18	16.51	74	-17.31	197	335	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5795	94.84	84.02	10.82			174	87	Average
5795	102.17	91.35	10.82			174	87	Peak
11590	47.83	31.32	16.51	54	-6.17	153	257	Average
11590	57.57	41.06	16.51	74	-16.43	153	257	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5518.375	53.5	42.88	10.62	68.2	-14.7	230	260	Peak
5651.725	53.6	42.73	10.87	69.48	-15.88	230	260	Peak
5920.525	51.55	40.46	11.09	71.51	-19.96	230	260	Peak
*5950.45	53.87	42.69	11.18	68.2	-14.33	230	260	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5563.525	53.15	42.47	10.68	68.2	-15.05	174	87	Peak
5652.25	52.53	41.66	10.87	69.86	-17.33	174	87	Peak
5919.475	51.91	40.82	11.09	72.29	-20.38	174	87	Peak
*5957.275	53.01	41.8	11.21	68.2	-15.19	174	87	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5795 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

802.11ac (VHT80)

EUT Test Condition		Measurement Detail	
Channel	Channel 42	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5142.95	47.23	37.2	10.03	54	-6.77	253	282	Average
5142.95	56.73	46.7	10.03	74	-17.27	253	282	Peak
5210	88.87	78.7	10.17			247	290	Average
5210	97.21	87.04	10.17			247	290	Peak
5443.61	42.53	32.05	10.48	54	-11.47	247	290	Average
5443.61	52.85	42.37	10.48	74	-21.15	247	290	Peak
*10420	56.17	40.01	16.16	68.2	-12.03	190	267	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5147	48.24	38.19	10.05	54	-5.76	150	49	Average
5147	57.26	47.21	10.05	74	-16.74	150	49	Peak
5210	91.23	81.06	10.17			150	49	Average
5210	98.82	88.65	10.17			150	49	Peak
5358.69	42.37	32.12	10.25	54	-11.63	150	49	Average
5358.69	52.69	42.44	10.25	74	-21.31	150	49	Peak
*10420	55.55	39.39	16.16	68.2	-12.65	152	226	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5210 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 58	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5142.5	43.54	33.51	10.03	54	-10.46	247	290	Average
5142.5	53.75	43.72	10.03	74	-20.25	247	290	Peak
5290	89.95	79.85	10.1			247	290	Average
5290	98.47	88.37	10.1			247	290	Peak
5350	51.33	41.1	10.23	54	-2.67	247	290	Average
5350	59.79	49.56	10.23	74	-14.21	247	290	Peak
*10580	55.68	39.97	15.71	68.2	-12.52	147	115	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5108.75	43.11	33.15	9.96	54	-10.89	179	43	Average
5108.75	53.71	43.75	9.96	74	-20.29	179	43	Peak
5290	91.12	81.02	10.1			179	43	Average
5290	99.82	89.72	10.1			179	43	Peak
5350.55	52.56	42.33	10.23	54	-1.44	187	36	Average
5350.55	60.92	50.69	10.23	74	-13.08	187	36	Peak
*10580	56.16	40.45	15.71	68.2	-12.04	196	146	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5290 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 106	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5459.76	52.56	42.05	10.51	54	-1.44	242	256	Average
5459.76	61.54	51.03	10.51	74	-12.46	242	256	Peak
*5469.84	61.71	51.18	10.53	68.2	-6.49	242	256	Peak
5530	92.16	81.53	10.63			242	260	Average
5530	101.29	90.66	10.63			242	260	Peak
*5725	52.05	41.13	10.92	68.2	-16.15	242	260	Peak
11060	47.24	31.01	16.23	54	-6.76	135	194	Average
11060	57.07	40.84	16.23	74	-16.93	135	194	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5457.36	50.15	39.64	10.51	54	-3.85	184	75	Average
5457.36	60.28	49.77	10.51	74	-13.72	184	75	Peak
*5469.04	60.15	49.62	10.53	68.2	-8.05	184	75	Peak
5530	91.65	81.02	10.63			174	89	Average
5530	100.24	89.61	10.63			174	89	Peak
*5725.64	52.35	41.43	10.92	68.2	-15.85	174	89	Peak
11060	46.61	30.38	16.23	54	-7.39	138	164	Average
11060	56.01	39.78	16.23	74	-17.99	138	164	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5530 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 122	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5456.4	44.38	33.87	10.51	54	-9.62	242	260	Average
5456.4	54.17	43.66	10.51	74	-19.83	242	260	Peak
85469.84	52.96	42.43	10.53	68.2	-15.24	242	260	Peak
5610	93.86	83.09	10.77			242	260	Average
5610	102.74	91.97	10.77			242	260	Peak
*5725.48	52.73	41.81	10.92	68.2	-15.47	242	260	Peak
11220	47.45	31.03	16.42	54	-6.55	165	326	Average
11220	56.98	40.56	16.42	74	-17.02	165	326	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5453.52	43.46	32.95	10.51	54	-10.54	174	42	Average
5453.52	52.51	42	10.51	74	-21.49	174	42	Peak
*5470	52.17	41.64	10.53	68.2	-16.03	174	42	Peak
5610	92.8	82.03	10.77			174	42	Average
5610	101.68	90.91	10.77			174	42	Peak
*5725.32	52.08	41.16	10.92	68.2	-16.12	174	42	Peak
11220	47.78	31.36	16.42	54	-6.22	136	259	Average
11220	57.43	41.01	16.42	74	-16.57	136	259	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5610 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 155	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5775	93.07	82.2	10.87			230	260	Average
5775	100.57	89.7	10.87			230	260	Peak
11550	47.59	31.09	16.5	54	-6.41	131	54	Average
11550	57.39	40.89	16.5	74	-16.61	131	54	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5775	90.82	79.95	10.87			174	87	Average
5775	99.17	88.3	10.87			174	87	Peak
11550	47.42	30.92	16.5	54	-6.58	184	216	Average
11550	57.06	40.56	16.5	74	-16.94	184	216	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5530.975	52.97	42.33	10.64	68.2	-15.23	230	260	Peak
5655.925	53.29	42.42	10.87	72.58	-19.29	230	260	Peak
5920.525	51.25	40.16	11.09	71.51	-20.26	230	260	Peak
*6004.525	52.58	41.25	11.33	68.2	-15.62	230	260	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5535.175	52.78	42.14	10.64	68.2	-15.42	174	87	Peak
5653.825	51.47	40.6	10.87	71.03	-19.56	174	87	Peak
5918.95	52.17	41.08	11.09	72.68	-20.51	174	87	Peak
*6006.1	52.5	41.17	11.33	68.2	-15.7	174	87	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5775 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

9 kHz ~ 30 MHz Data:

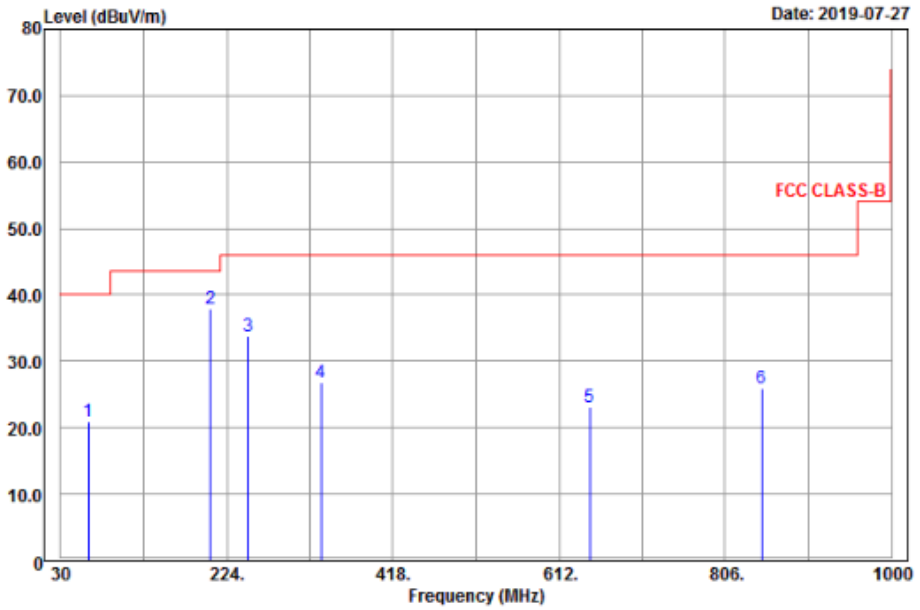
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Worst-Case Data:

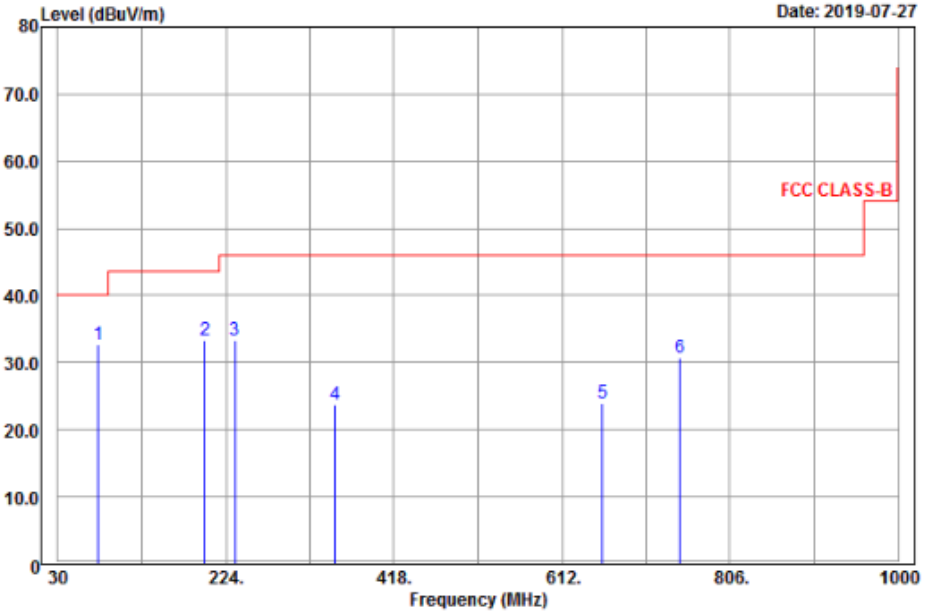
802.11ac (VHT80)

EUT Test Condition		Measurement Detail	
Channel	Channel 58	**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**	Karl Lee

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
62.67	20.85	37.82	-16.97	40	-19.15	182	225	Peak
204.96	37.95	56.13	-18.18	43.5	-5.55	172	115	Peak
248.7	33.79	50.66	-16.87	46	-12.21	153	296	Peak
334.3	26.7	41.84	-15.14	46	-19.3	156	128	Peak
647.9	23.03	33.16	-10.13	46	-22.97	150	136	Peak
848.8	26	32.83	-6.83	46	-20	169	121	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
76.44	32.79	54.04	-21.25	40	-7.21	193	326	Peak
199.56	33.4	51.65	-18.25	43.5	-10.1	130	128	Peak
234.39	33.28	50.54	-17.26	46	-12.72	189	124	Peak
349.7	23.82	38.54	-14.72	46	-22.18	120	148	Peak
658.4	23.95	33.86	-9.91	46	-22.05	168	122	Peak
748	30.65	39.19	-8.54	46	-15.35	150	134	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. The emission levels of other frequencies were very low against the limit

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	ESCI	100613	Dec. 10, 2018	Dec. 09, 2019
RF signal cable Woken	5D-FB	Cable-cond1-01	Sep. 05, 2018	Sep. 04, 2019
LISN ROHDE & SCHWARZ (EUT)	ENV216	101826	Feb. 21, 2019	Feb. 20, 2020
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 19, 2018	Aug. 18, 2019
Software ADT	BV ADT_Cond_ V7.3.7.4	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-12040.

4.2.3 Test Procedures

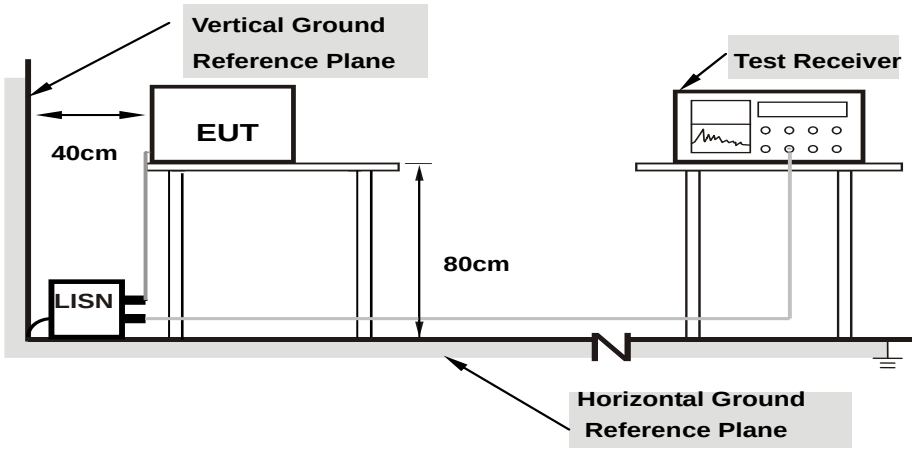
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
c. 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.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80
from other units and other metal planes

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

4.2.6 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.

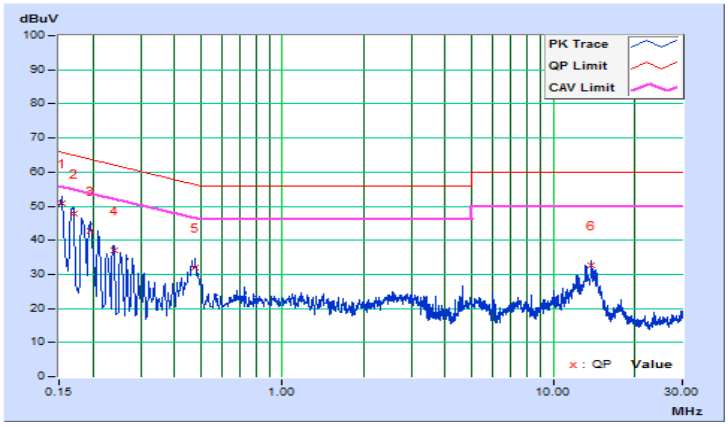
4.2.7 Test Results

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25℃, 65%RH
Tested by	Thomas Wei	Test Date	2019/7/12

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	**0.15391**	**9.84**	**41.12**	**20.31**	**50.96**	**30.15**	**65.79**	**55.79**	**-14.83**	**-25.64**
2	0.16955	9.84	37.84	24.20	47.68	34.04	64.98	54.98	-17.30	-20.94
3	0.19665	9.85	32.91	22.67	42.76	32.52	63.75	53.75	-20.99	-21.23
4	0.23898	9.86	27.03	18.15	36.89	28.01	62.13	52.13	-25.24	-24.12
5	0.47844	9.89	22.12	14.12	32.01	24.01	56.37	46.37	-24.36	-22.36
6	13.82327	10.20	22.33	12.20	32.53	22.40	60.00	50.00	-27.47	-27.60

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

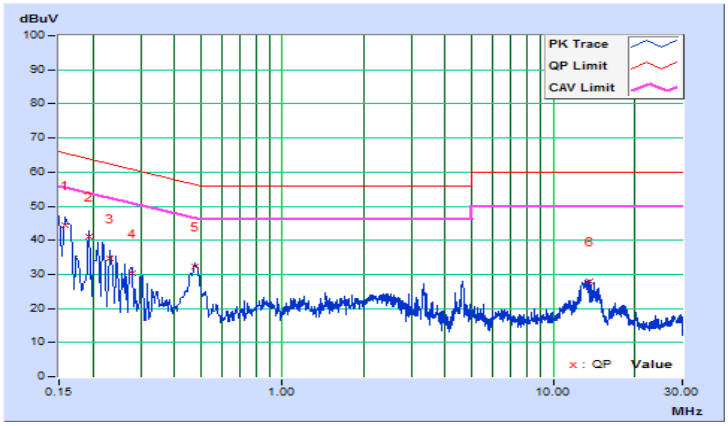


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25℃, 65%RH
Tested by	Thomas Wei	Test Date	2019/7/12

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	0.15782	9.82	34.56	24.26	44.38	34.08	65.58	55.58	-21.20	-21.50
2	0.19301	9.84	31.28	23.04	41.12	32.88	63.91	53.91	-22.79	-21.03
3	0.23216	9.84	24.96	12.70	34.80	22.54	62.37	52.37	-27.57	-29.83
4	0.27844	9.85	20.60	17.15	30.45	27.00	60.86	50.86	-30.41	-23.86
5	0.47844	9.87	22.49	14.88	32.36	24.75	56.37	46.37	-24.01	-21.62
6	13.57694	10.22	17.57	9.01	27.79	19.23	60.00	50.00	-32.21	-30.77

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



4.3 Transmit Power Measurement

4.3.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p ≦ 125 mW (21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
		Indoor Access Point	1 Watt (30 dBm)
	√	Mobile and Portable client device	250 mW (24 dBm)
U-NII-2A	√		250 mW (24 dBm) or 11 dBm + 10 log B*
U-NII-2C	√		250 mW (24 dBm) or 11 dBm + 10 log B*
U-NII-3	√		1 Watt (30 dBm)

*B is the 26 dB emission bandwidth in megahertz

Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

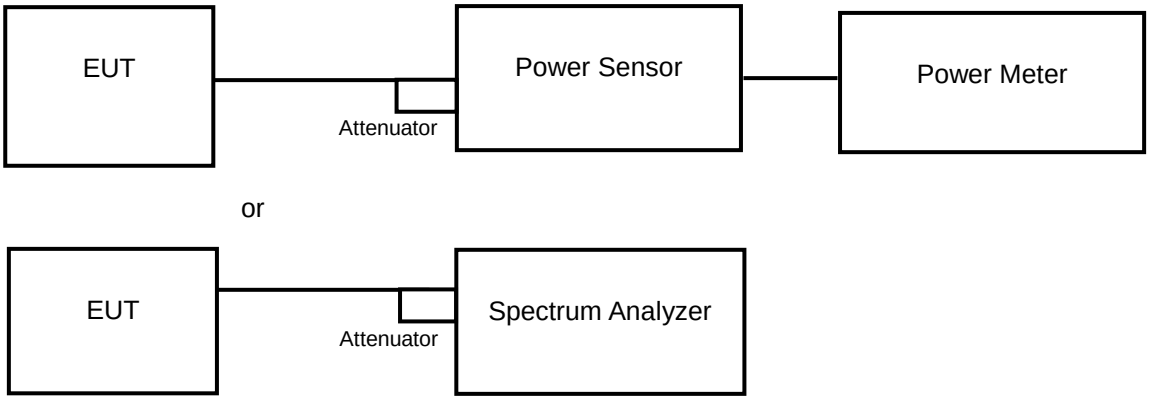
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};

Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20 MHz channel widths with $N_{ANT} \geq 5$.

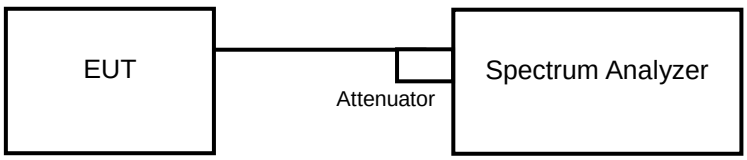
For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

4.3.2 Test Setup

<Power Output Measurement>



<26 dB Bandwidth>



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

Average Power Measurement

<802.11a, 802.11n (HT20), 802.11n (HT40)>

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

<802.11ac (VHT80)>

a. Set span to encompass the entire 26 dB EBW (or, alternatively, the entire 99 % occupied bandwidth) of the signal.
b. Set sweep trigger to “free run”.
c. Set RBW = 1 MHz.
d. Set VBW ≥ 3 MHz
e. Number of points in sweep ≥ 2 Span / RBW.
f. Sweep time ≤ (number of points in sweep) * T
g. Using emission bandwidth to determine the frequency span for integration the channel bandwidth.
h. Detector = RMS.
i. Trace mode = max hold.
j. Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.

26 dB Bandwidth

a. Set RBW = approximately 1 % of the emission bandwidth.
b. Set the VBW > RBW.
c. Detector = Peak.
d. Trace mode = max hold.
e. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1 %.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 Test Results

Power Output:

802.11a

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	49.888	16.98	24	Pass
40	5200	49.659	16.96	24	Pass
48	5240	53.827	17.31	24	Pass
52	5260	83.753	19.23	24	Pass
60	5300	80.353	19.05	24	Pass
64	5320	80.168	19.04	24	Pass
100	5500	82.604	19.17	24	Pass
116	5580	81.658	19.12	24	Pass
140	5700	83.176	19.20	24	Pass
149	5745	82.035	19.14	30	Pass
157	5785	84.14	19.25	30	Pass
165	5825	81.283	19.10	30	Pass

Note:

For U-NII-2A, U-NII-2C Band:

1. 11 dBm + 10log (25.45) = 25.06 dBm > 24 dBm.
2. 11 dBm + 10log (24.48) = 24.89 dBm > 24 dBm.
3. 11 dBm + 10log (23.31) = 24.68 dBm > 24 dBm.
4. 11 dBm + 10log (23.86) = 24.78 dBm > 24 dBm.
5. 11 dBm + 10log (24.49) = 24.89 dBm > 24 dBm.
6. 11 dBm + 10log (23.70) = 24.75 dBm > 24 dBm.

802.11n (HT20)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	14.56	14.46	56.501	17.52	24	Pass
40	5200	14.50	14.43	55.917	17.48	24	Pass
48	5240	14.40	14.58	56.25	17.50	24	Pass
52	5260	15.93	16.03	79.261	18.99	24	Pass
60	5300	16.30	15.99	82.377	19.16	24	Pass
64	5320	16.89	15.40	83.539	19.22	24	Pass
100	5500	16.54	16.24	87.155	19.40	24	Pass
116	5580	16.07	16.28	82.92	19.19	24	Pass
140	5700	16.81	15.38	82.487	19.16	24	Pass
149	5745	16.96	15.11	82.093	19.14	30	Pass
157	5785	17.02	15.08	82.561	19.17	30	Pass
165	5825	17.00	14.83	80.528	19.06	30	Pass

Note:

For U-NII-2A, U-NII-2C Band:

Chain 0

1. 11 dBm + 10log (25.29) = 25.03 dBm > 24 dBm.
2. 11 dBm + 10log (25.02) = 24.98 dBm > 24 dBm.
3. 11 dBm + 10log (24.84) = 24.95 dBm > 24 dBm.
4. 11 dBm + 10log (23.89) = 24.78 dBm > 24 dBm.
5. 11 dBm + 10log (23.85) = 24.78 dBm > 24 dBm.
6. 11 dBm + 10log (24.32) = 24.86 dBm > 24 dBm.

Chain 1

1. 11 dBm + 10log (23.99) = 24.80 dBm > 24 dBm.
2. 11 dBm + 10log (24.30) = 24.86 dBm > 24 dBm.
3. 11 dBm + 10log (24.28) = 24.85 dBm > 24 dBm.
4. 11 dBm + 10log (24.04) = 24.81 dBm > 24 dBm.
5. 11 dBm + 10log (23.59) = 24.78 dBm > 24 dBm.
6. 11 dBm + 10log (23.41) = 24.69 dBm > 24 dBm.

802.11n (HT40)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	12.24	11.77	31.78	15.02	24	Pass
46	5230	12.25	12.10	33.006	15.19	24	Pass
54	5270	16.18	16.00	81.306	19.10	24	Pass
62	5310	16.34	16.22	84.932	19.29	24	Pass
102	5510	15.99	16.00	79.53	19.01	24	Pass
110	5550	16.24	16.00	81.884	19.13	24	Pass
134	5670	16.68	15.58	82.7	19.18	24	Pass
151	5755	17.14	14.78	81.822	19.13	30	Pass
159	5795	17.10	14.55	79.796	19.02	30	Pass

Note:

For U-NII-2A, U-NII-2C Band:

Chain 0

1. 11 dBm + 10log (46.53) = 27.68 dBm > 24 dBm.
2. 11 dBm + 10log (45.42) = 27.57 dBm > 24 dBm.
3. 11 dBm + 10log (45.26) = 27.56 dBm > 24 dBm.
4. 11 dBm + 10log (45.09) = 27.54 dBm > 24 dBm.
5. 11 dBm + 10log (44.64) = 27.50 dBm > 24 dBm.

Chain 1

1. 11 dBm + 10log (43.70) = 27.41 dBm > 24 dBm.
2. 11 dBm + 10log (44.26) = 27.46 dBm > 24 dBm.
3. 11 dBm + 10log (43.29) = 27.36 dBm > 24 dBm.
4. 11 dBm + 10log (44.11) = 27.45 dBm > 24 dBm.
5. 11 dBm + 10log (43.73) = 27.41 dBm > 24 dBm.

802.11ac (VHT80)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	12.43	12.25	34.286	15.35	24	Pass
58	5290	14.15	14.12	51.825	17.15	24	Pass
106	5530	14.95	14.72	60.909	17.85	24	Pass
122	5610	16.54	16.02	85.076	19.30	24	Pass
155	5775	13.83	12.69	42.733	16.31	30	Pass

Note:

For U-NII-2A, U-NII-2C Band:

Chain 0

1. 11 dBm + 10log (87.92) = 30.44 dBm > 24 dBm.
2. 11 dBm + 10log (86.31) = 30.36 dBm > 24 dBm.
3. 11 dBm + 10log (83.17) = 30.20 dBm > 24 dBm.

Chain 1

1. 11 dBm + 10log (82.88) = 30.19 dBm > 24 dBm.
2. 11 dBm + 10log (84.36) = 30.26 dBm > 24 dBm.
3. 11 dBm + 10log (84.88) = 30.29 dBm > 24 dBm.

26 dB Bandwidth:

802.11a

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
36	5180	26.03
40	5200	25.20
48	5240	24.97
52	5260	25.45
60	5300	24.48
64	5320	23.31
100	5500	23.86
116	5580	24.49
140	5700	23.70

802.11n (HT20)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	24.69	23.59
40	5200	25.49	24.02
48	5240	24.87	23.58
52	5260	25.29	23.99
60	5300	25.02	24.30
64	5320	24.84	24.28
100	5500	23.89	24.04
116	5580	23.85	23.59
140	5700	24.32	23.41

802.11n (HT40)

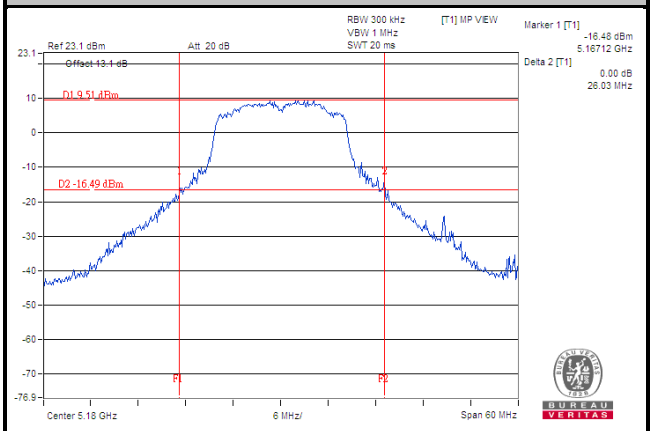
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	45.12	44.49
46	5230	46.05	44.41
54	5270	46.53	43.70
62	5310	45.42	44.26
102	5510	45.26	43.29
110	5550	45.09	44.11
134	5670	44.64	43.73

802.11ac (VHT80)

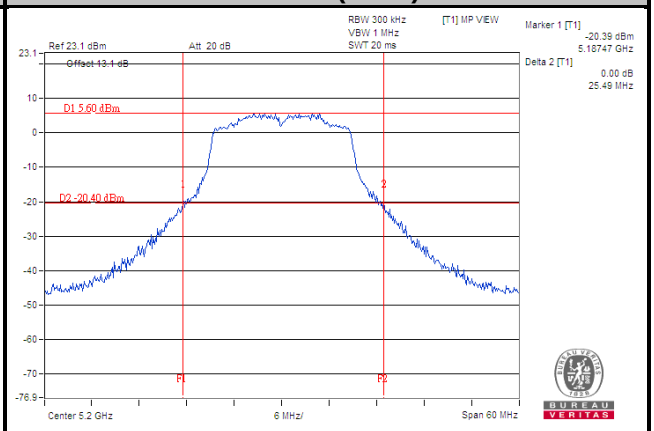
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	85.30	85.21
58	5290	87.92	82.88
106	5530	86.31	84.36
122	5610	83.17	84.88

Spectrum Plot of Worst Value

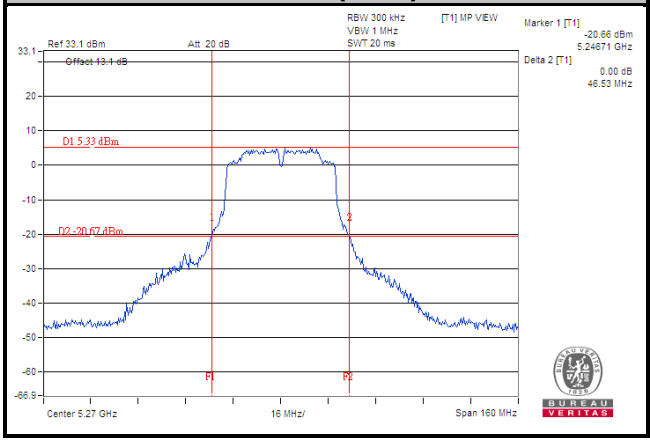
802.11a



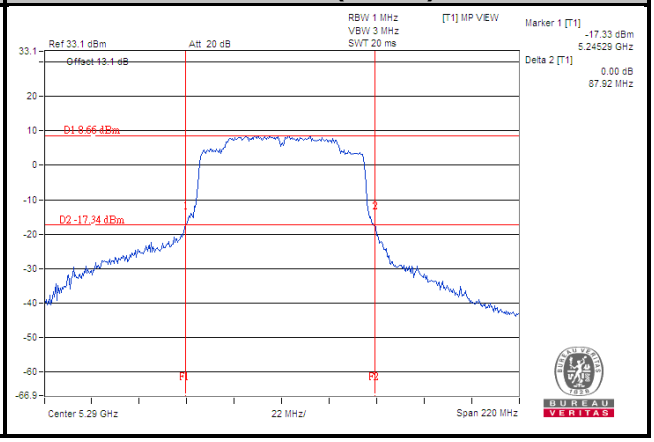
802.11n (HT20)



802.11n (HT40)

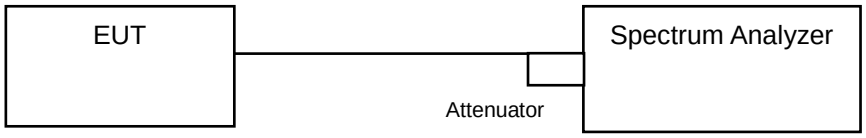


802.11ac (VHT80)



4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1 % to 5 % of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to SAMPLE. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

4.4.4 Test Results

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
36	5180	16.68
40	5200	16.80
48	5240	16.68
52	5260	16.80
60	5300	16.80
64	5320	16.80
100	5500	16.56
116	5580	16.44
140	5700	16.56
149	5745	16.64
157	5785	16.73
165	5825	16.73

802.11n (HT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	17.76	17.76
40	5200	17.76	17.76
48	5240	17.88	17.76
52	5260	17.88	17.76
60	5300	17.88	17.76
64	5320	17.76	17.76
100	5500	17.64	17.64
116	5580	17.76	17.64
140	5700	17.76	17.76
149	5745	17.79	17.79
157	5785	17.79	17.69
165	5825	17.79	17.69

802.11n (HT40)

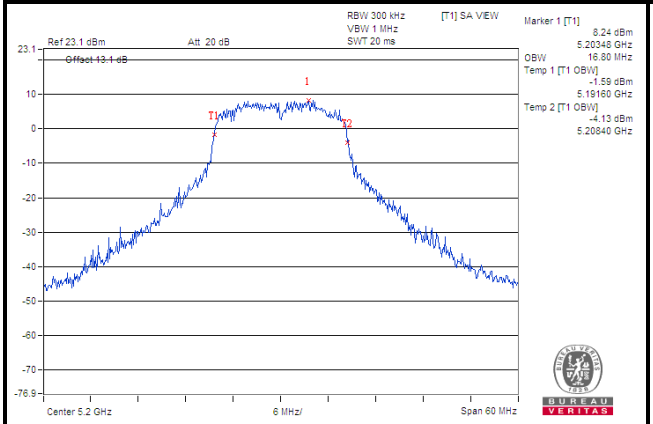
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	36.36	36.36
46	5230	36.36	36.48
54	5270	36.48	36.48
62	5310	36.48	36.36
102	5510	36.48	36.24
110	5550	36.48	36.36
134	5670	36.36	36.48
151	5755	36.36	36.36
159	5795	36.24	36.24

802.11ac (VHT80)

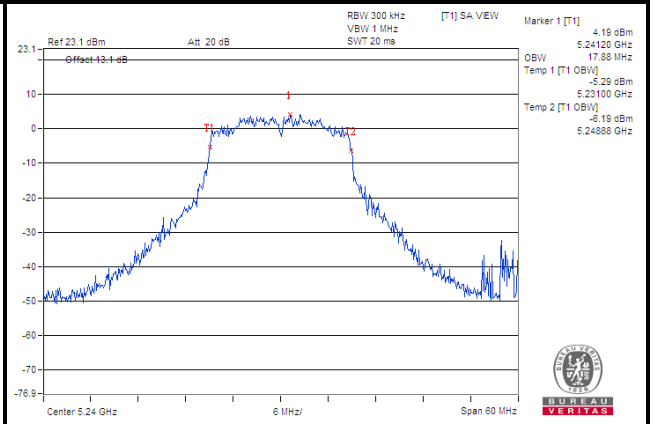
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	75.12	75.12
58	5290	75.36	75.36
106	5530	75.36	75.12
122	5610	75.12	74.88
155	5775	75.00	75.00

Spectrum Plot of Worst Value

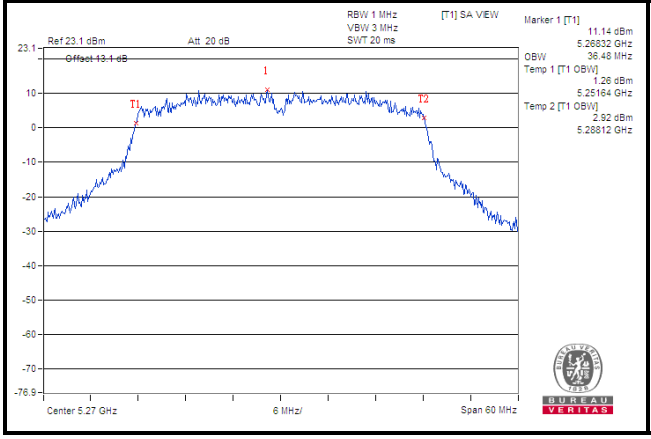
802.11a



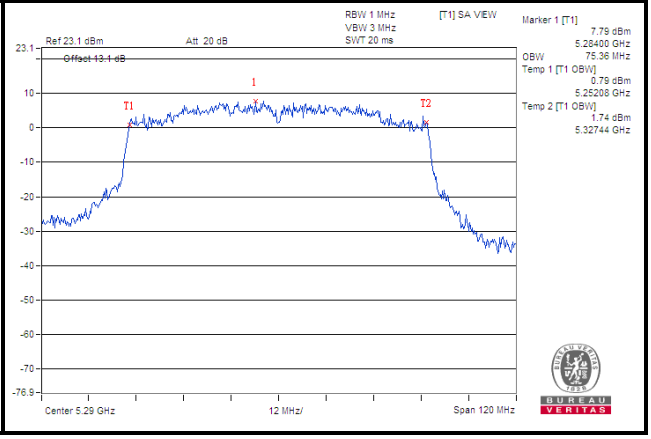
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

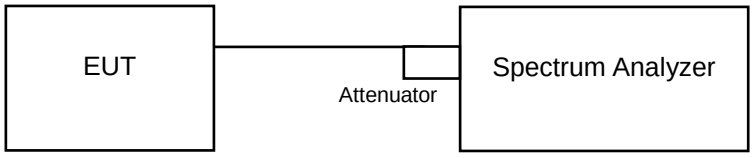


4.5 Peak Power Spectral Density Measurement

4.5.1 Limits of Peak Power Spectral Density Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	17 dBm/MHz
		Fixed point-to-point Access Point	
		Indoor Access Point	
	√	Mobile and Portable client device	11 dBm/MHz
U-NII-2A	√		11 dBm/MHz
U-NII-2C	√		11 dBm/MHz
U-NII-3	√		30 dBm/500 kHz

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.5.4 Test Procedures

For U-NII-1, U-NII-2A, U-NII-2C band:

Using method SA-1

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW ≥ 3 RBW, Detector = RMS
3. Sweep time = auto, trigger set to “free run”.
4. Trace average at least 100 traces in power averaging mode.
5. Record the max value

Using method SA-2

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW ≥ 3 RBW, Detector = RMS
3. Sweep time = auto, trigger set to “free run”.
4. Trace average at least 100 traces in power averaging mode.
5. Record the max value and add 10 log (1/duty cycle)

※For U-NII-3: without duty cycle &

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 300 kHz, Set VBW ≥ 1 RBW, Detector = RMS
3. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.
4. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log(500 kHz / 300 kHz).
5. Sweep time = auto, trigger set to “free run”.
6. Trace average at least 100 traces in power averaging mode.
7. Record the max value

※For U-NII-3: with duty cycle &

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 300 kHz, Set VBW ≥ 1 RBW, Detector = RMS
3. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.
4. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log(500 kHz / 300 kHz).
5. Sweep time = auto, trigger set to “free run”.
6. Trace average at least 100 traces in power averaging mode.
7. Record the max value and add 10 log (1/duty cycle)

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.5.7 Test Results

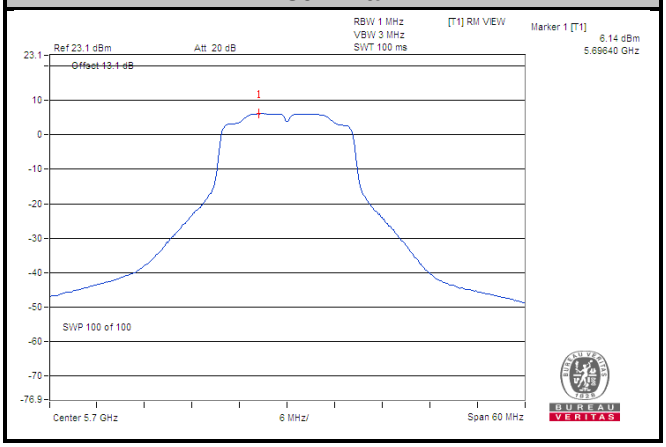
For U-NII-1, U-NII-2A, U-NII-2C Band

802.11a

Channel	Frequency (MHz)	PSD (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
36	5180	3.46	11	Pass
40	5200	3.68	11	Pass
48	5240	4.12	11	Pass
52	5260	4.24	11	Pass
60	5300	6.04	11	Pass
64	5320	6.02	11	Pass
100	5500	6.11	11	Pass
116	5580	6.10	11	Pass
140	5700	6.14	11	Pass

Spectrum Plot of Worst Value

802.11a

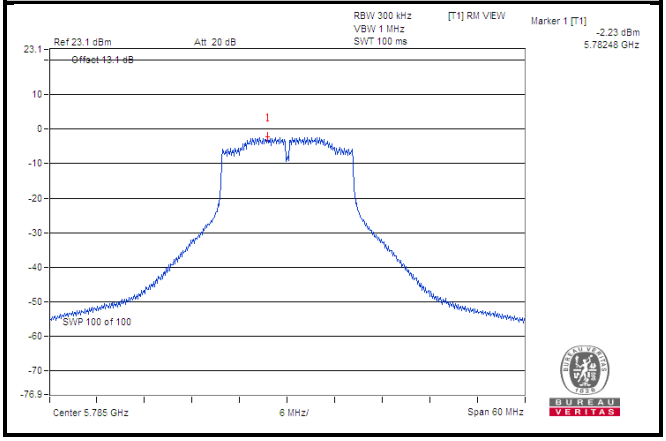


For U-NII-3 Band

802.11a

Channel	Freq. (MHz)	PSD (dBm/300 kHz)	PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
149	5745	-2.49	-0.27	30	Pass
157	5785	-2.23	-0.01	30	Pass
165	5825	-2.37	-0.15	30	Pass

Spectrum Plot of Worst Value
802.11a



802.11n (HT20)

Channel	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
36	5180	-0.56	0.12	0.16	2.96	16.48	Pass
40	5200	-0.44	-0.12	0.16	2.89	16.48	Pass
48	5240	-0.61	-0.04	0.16	2.85	16.48	Pass
52	5260	0.81	1.51	0.16	4.34	16.48	Pass
60	5300	1.16	1.31	0.16	4.41	16.48	Pass
64	5320	1.86	1.69	0.16	4.95	16.48	Pass
100	5500	1.63	1.62	0.16	4.80	10.8	Pass
116	5580	1.17	1.67	0.16	4.60	10.8	Pass
140	5700	1.84	1.29	0.16	4.74	10.8	Pass

Note:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1 Band:**
   Directional gain = 3.51 dBi + 10log(2) = 6.52 dBi > 6 dBi , so the power density limit shall be reduced to 17-(6.52-6) = 16.48 dBm.
   For U-NII-2A Band:
   Directional gain = 3.51 dBi + 10log(2) = 6.52 dBi > 6 dBi , so the power density limit shall be reduced to 11-(6.52-6) =16.48 dBm.
   For U-NII-2C Band:
   Directional gain = 3.19 dBi + 10log(2) = 6.20 dBi > 6 dBi , so the power density limit shall be reduced to 11-(6.2-6) = 10.8 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

Channel	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
38	5190	-4.46	-4.77	0.31	-1.29	16.48	Pass
46	5230	-3.93	-4.37	0.31	-0.82	16.48	Pass
54	5270	-0.11	-0.84	0.31	2.86	16.48	Pass
62	5310	0.13	-0.78	0.31	3.02	16.48	Pass
102	5510	-1.05	-0.80	0.31	2.40	10.8	Pass
110	5550	-0.14	-1.15	0.31	2.71	10.8	Pass
134	5670	0.40	-1.49	0.31	2.88	10.8	Pass

Note:

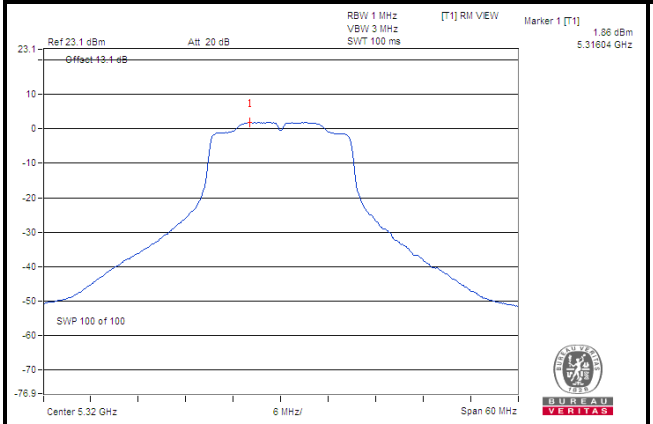
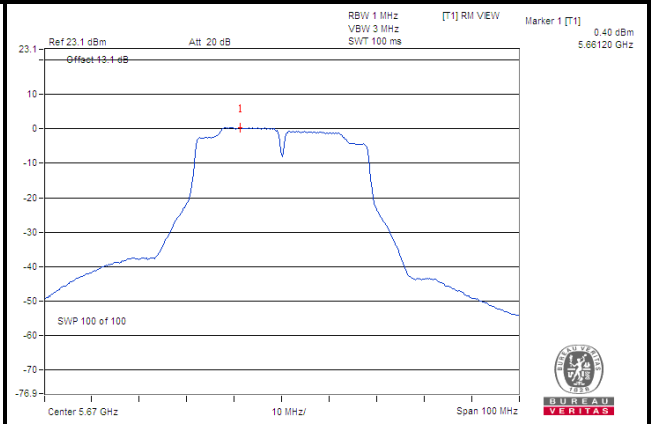
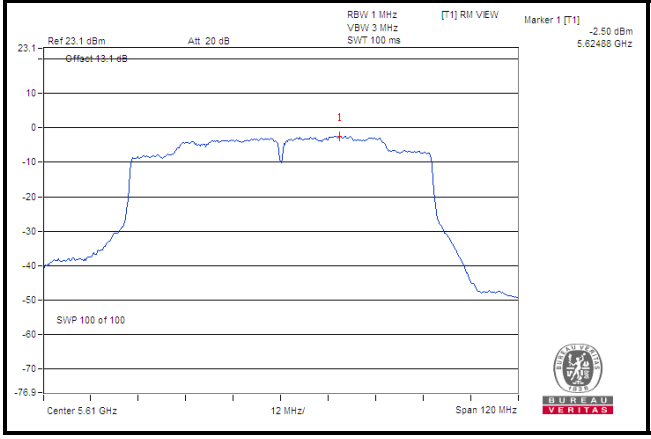
1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1 Band:**
   Directional gain = 3.51 dBi + 10log(2) = 6.52 dBi > 6 dBi , so the power density limit shall be reduced to 17-(6.52-6) = 16.48 dBm.
   For U-NII-2A Band:
   Directional gain = 3.51 dBi + 10log(2) = 6.52 dBi > 6 dBi , so the power density limit shall be reduced to 11-(6.52-6) =16.48 dBm.
   For U-NII-2C Band:
   Directional gain = 3.19 dBi + 10log(2) = 6.20 dBi > 6 dBi , so the power density limit shall be reduced to 11-(6.2-6) = 10.8 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

Channel	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
42	5210	-6.85	-6.63	0.58	-3.15	16.48	Pass
58	5290	-3.92	-3.25	0.58	0.02	16.48	Pass
106	5530	-3.19	-3.73	0.58	0.14	10.8	Pass
122	5610	-3.07	-3.58	0.58	0.27	10.8	Pass

Note:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1 Band:**
   Directional gain = 3.51 dBi + 10log(2) = 6.52 dBi > 6 dBi , so the power density limit shall be reduced to 17-(6.52-6) = 16.48 dBm.
   For U-NII-2A Band:
   Directional gain = 3.51 dBi + 10log(2) = 6.52 dBi > 6 dBi , so the power density limit shall be reduced to 11-(6.52-6) =16.48 dBm.
   For U-NII-2C Band:
   Directional gain = 3.19 dBi + 10log(2) = 6.20 dBi > 6 dBi , so the power density limit shall be reduced to 11-(6.2-6) = 10.8 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value	
802.11n (HT20)	802.11n (HT40)
	
802.11ac (VHT80)	
	

For U-NII-3 Band

802.11n (HT20)

TX Chain	Channel	Frequency (MHz)	PSD		10 log (N=2) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300 kHz)	(dBm/500 kHz)					
0	149	5745	-6.34	-4.12	3.01	0.16	-0.95	30	Pass
	157	5785	-6.10	-3.88	3.01	0.16	-0.71	30	Pass
	165	5825	-6.23	-4.01	3.01	0.16	-0.84	30	Pass
1	149	5745	-7.31	-5.09	3.01	0.16	-1.92	30	Pass
	157	5785	-7.21	-4.99	3.01	0.16	-1.82	30	Pass
	165	5825	-7.94	-5.72	3.01	0.16	-2.55	30	Pass

Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 2.26 dBi + 10log(2) = 5.27 dBi < 6 dBi, so the limit does not need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

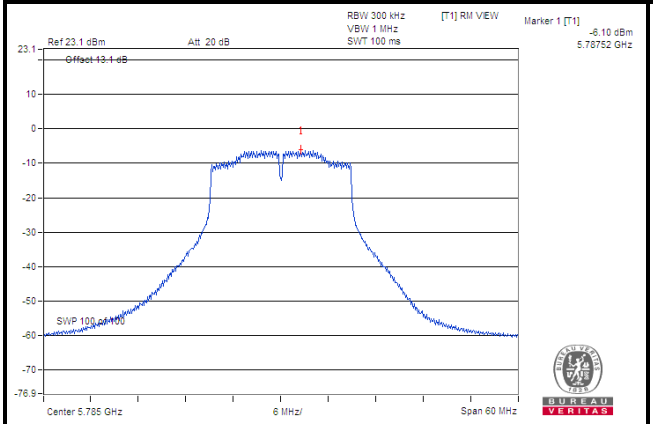
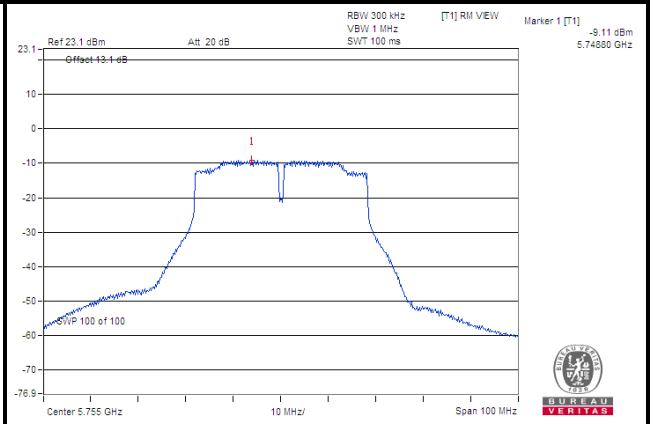
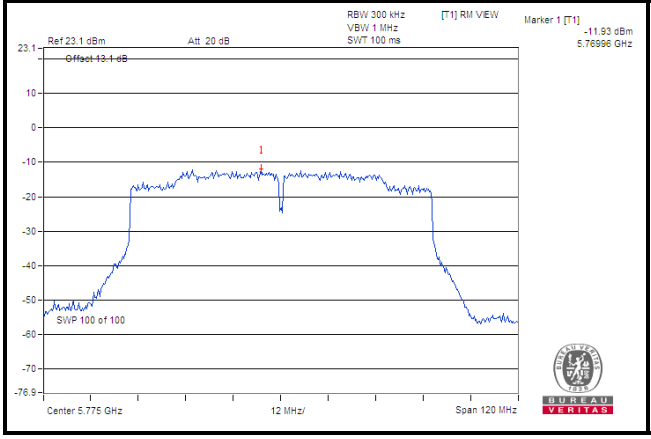
TX Chain	Channel	Frequency (MHz)	PSD		10 log (N=2) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300 kHz)	(dBm/500 kHz)					
0	151	5755	-9.11	-6.89	3.01	0.31	-3.57	30	Pass
	159	5795	-9.27	-7.05	3.01	0.31	-3.73	30	Pass
1	151	5755	-11.38	-9.16	3.01	0.31	-5.84	30	Pass
	159	5795	-11.33	-9.11	3.01	0.31	-5.79	30	Pass

Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 2.26 dBi + 10log(2) = 5.27 dBi < 6 dBi, so the limit does not need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

TX Chain	Channel	Frequency (MHz)	PSD		10 log (N=2) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300 kHz)	(dBm/500 kHz)					
0	155	5775	-11.93	-9.71	3.01	0.58	-6.12	30	Pass
1	155	5775	-13.12	-10.90	3.01	0.58	-7.31	30	Pass

Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 2.26 dBi + 10log(2) = 5.27 dBi < 6 dBi, so the limit does not need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

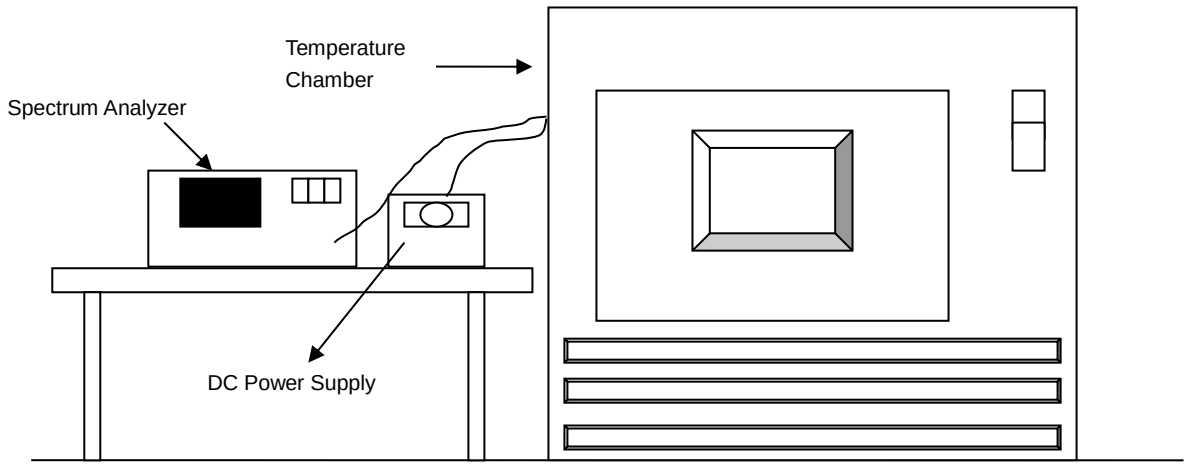
Spectrum Plot of Worst Value	
802.11n (HT20)	802.11n (HT40)
	
802.11ac (VHT80)	
	

4.6 Frequency Stability

4.6.1 Limit of Frequency Stability Measurement

The frequency of the carrier signal shall be maintained within band of operation.

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.6.4 Test Procedure

a. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
b. Turn the EUT on and couple its output to a spectrum analyzer.
c. Turn the EUT off and set the chamber to the highest temperature specified.
d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 Minutes.
e. Repeat step c and d with every 10 degrees reduction until the lowest temperature achieved.
f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 Minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

Set the EUT transmit at un-modulation mode to test frequency stability.

4.6.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5180 MHz									
Temp. (℃)	Power Supply (Vdc)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
50	19	5180.002	PASS	5179.9992	PASS	5180.0015	PASS	5180.0005	PASS
40	19	5179.9954	PASS	5179.9938	PASS	5179.9948	PASS	5179.9923	PASS
30	19	5180.0002	PASS	5180.0024	PASS	5180.0025	PASS	5179.9988	PASS
20	19	5180.0159	PASS	5180.012	PASS	5180.0156	PASS	5180.0157	PASS
10	19	5179.9855	PASS	5179.989	PASS	5179.9858	PASS	5179.9877	PASS
0	19	5180.0163	PASS	5180.0141	PASS	5180.0139	PASS	5180.0138	PASS
-10	19	5180.0137	PASS	5180.0161	PASS	5180.0127	PASS	5180.0132	PASS
-20	19	5179.984	PASS	5179.9876	PASS	5179.9878	PASS	5179.9878	PASS
-30	19	5179.9949	PASS	5179.9925	PASS	5179.9965	PASS	5179.9927	PASS

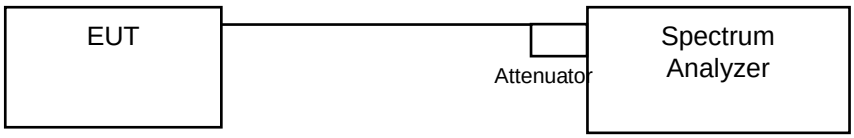
Frequency Stability Versus Voltage									
Operating Frequency: 5180 MHz									
Temp. (℃)	Power Supply (Vdc)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
20	21.85	5180.0161	PASS	5180.0118	PASS	5180.0157	PASS	5180.0163	PASS
	19	5180.0159	PASS	5180.012	PASS	5180.0156	PASS	5180.0157	PASS
	16.15	5180.015	PASS	5180.0129	PASS	5180.0152	PASS	5180.0159	PASS

4.7 6 dB Bandwidth Measurement

4.7.1 Limits of 6 dB Bandwidth Measurement

The minimum of 6 dB Bandwidth Measurement is 0.5 MHz.

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.7.4 Test Procedure

MEASUREMENT PROCEDURE REF

a. Set resolution bandwidth (RBW) = 100 kHz
b. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
c. Trace mode = max hold.
d. Sweep = auto couple.
e. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.7.7 Test Results

802.11a

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	15.18	0.5	Pass
157	5785	15.17	0.5	Pass
165	5825	15.16	0.5	Pass

802.11n (HT20)

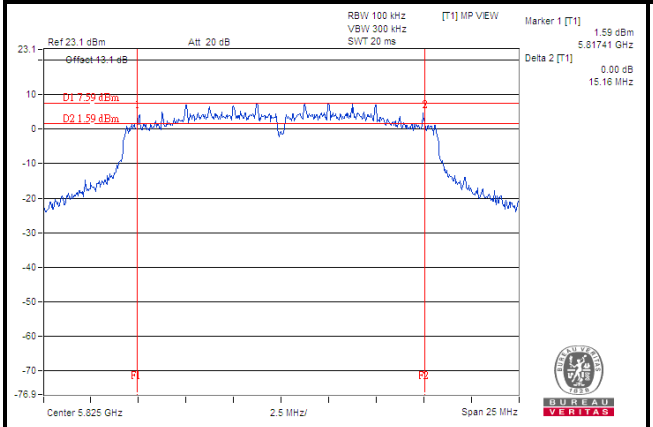
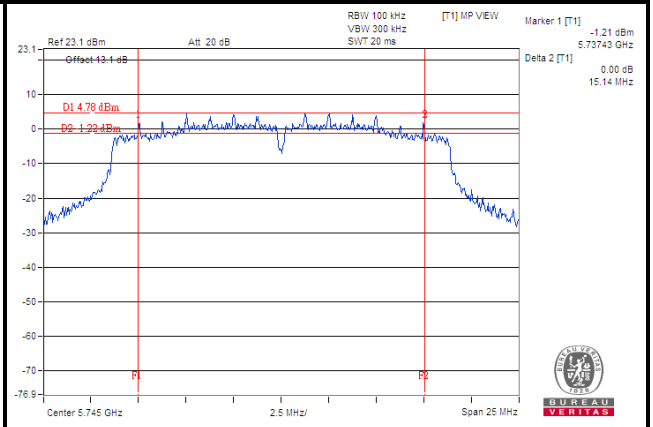
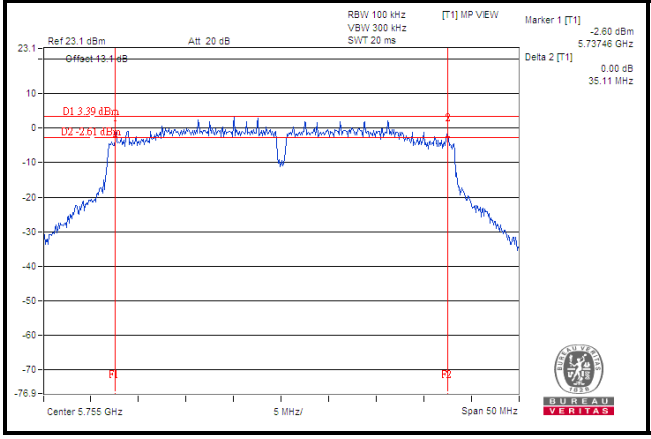
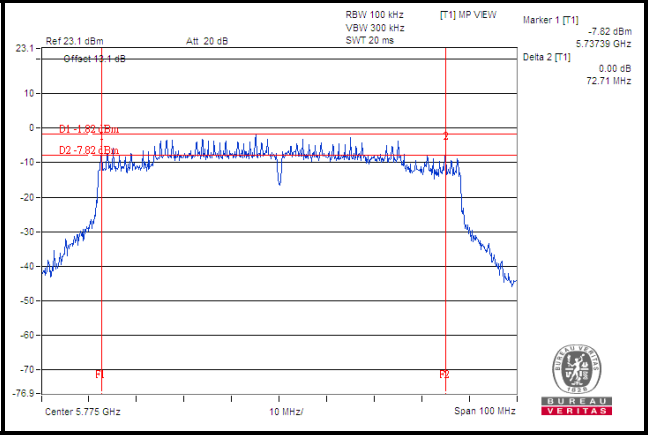
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	15.14	16.31	0.5	Pass
157	5785	15.15	16.10	0.5	Pass
165	5825	15.34	16.50	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
151	5755	35.11	35.22	0.5	Pass
159	5795	35.23	35.23	0.5	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
155	5775	75.21	72.71	0.5	Pass

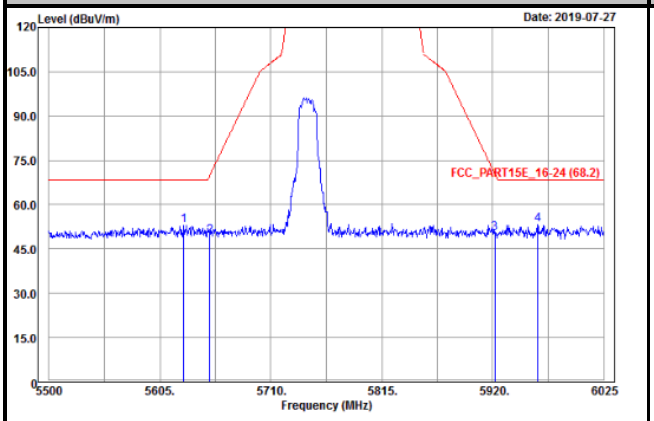
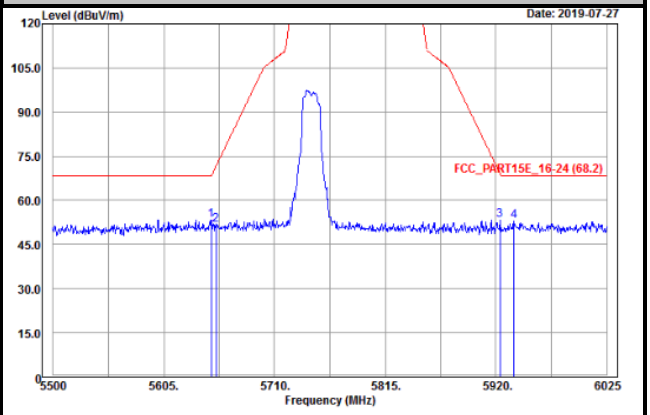
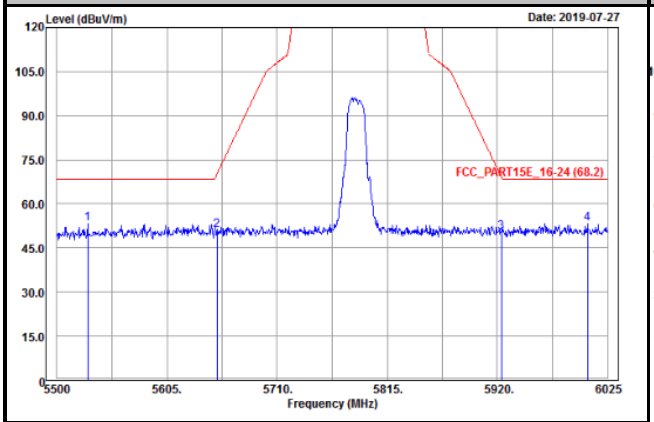
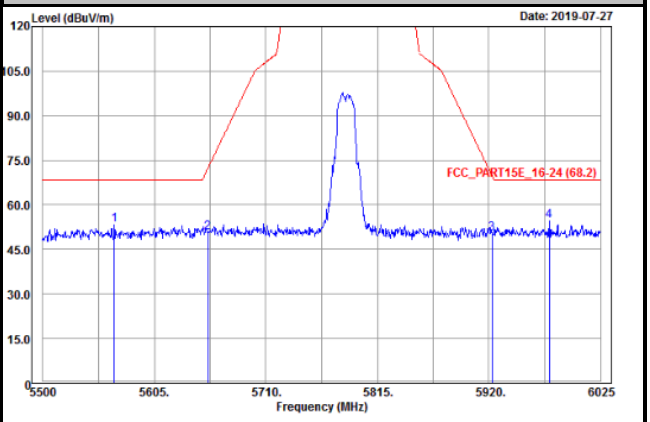
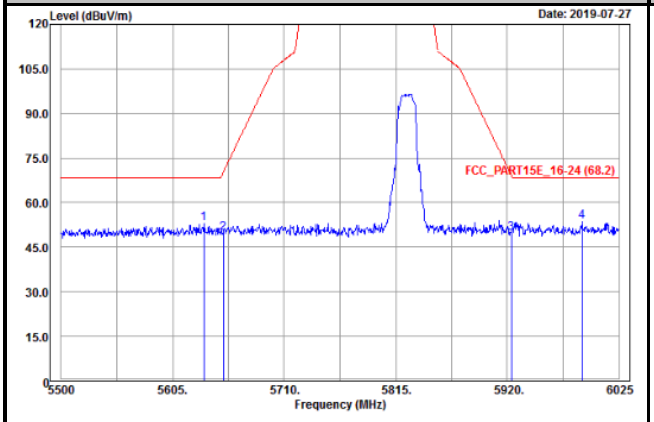
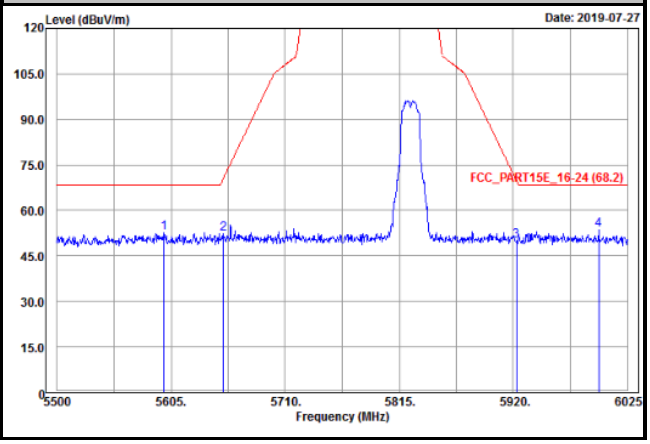
Spectrum Plot of Worst Value	
802.11a	802.11n (HT20)
	
802.11n (HT40)	802.11ac (VHT80)
	

5 Pictures of Test Arrangements

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

Annex A- Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band)

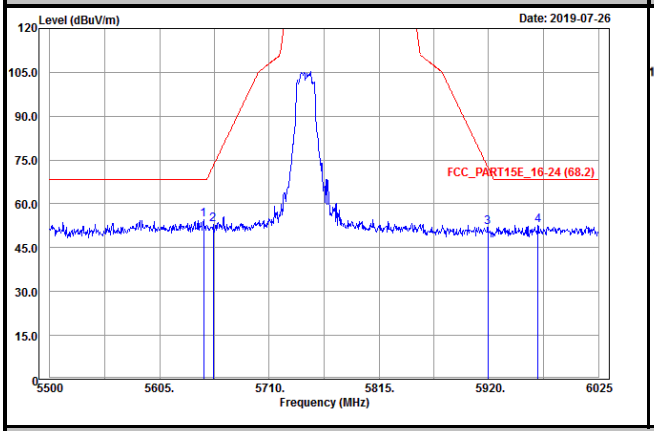
802.11a

Ch 149	
Horizontal	Vertical
	
Ch 157	
Horizontal	Vertical
	
Ch 165	
Horizontal	Vertical
	

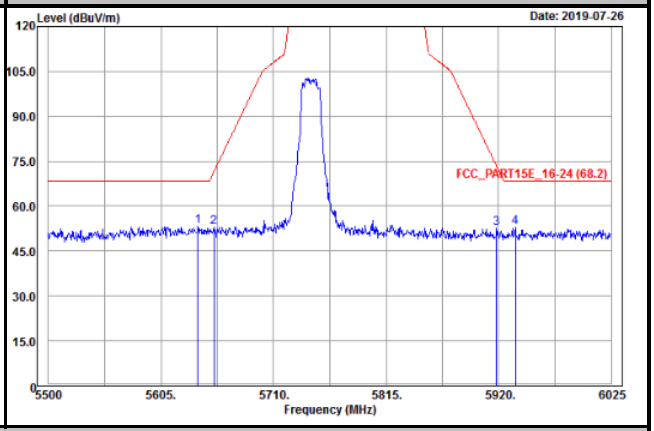
802.11n (HT20)

Ch 149

Horizontal

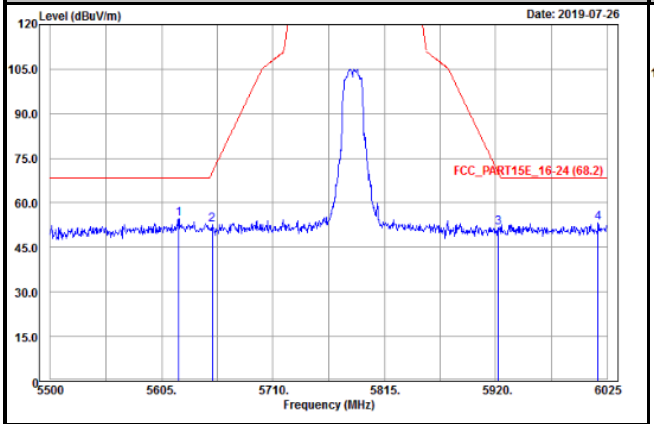


Vertical

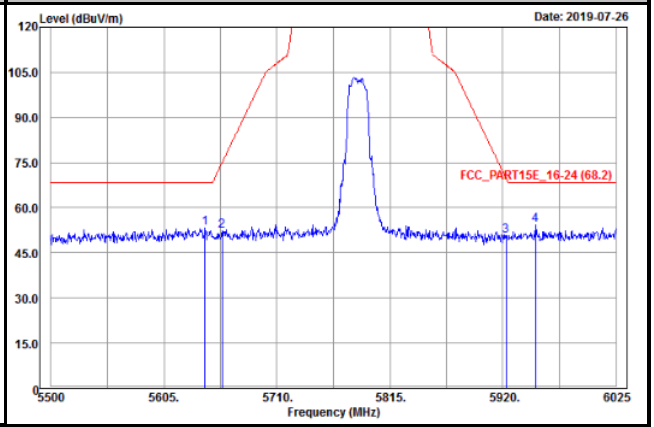


Ch 157

Horizontal

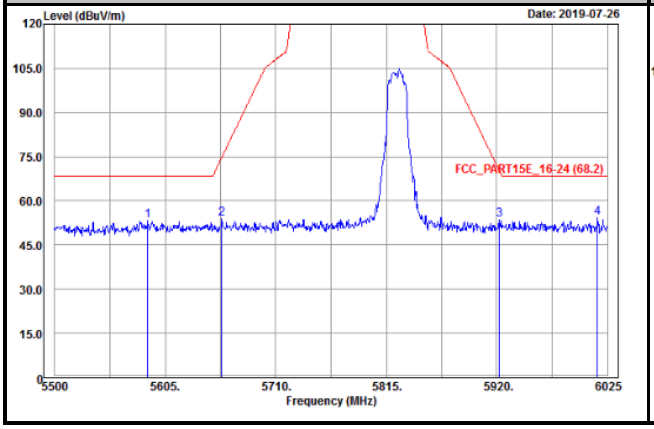


Vertical

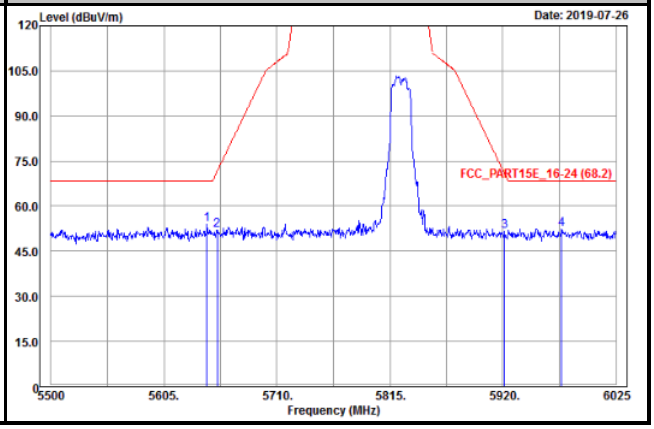


Ch 165

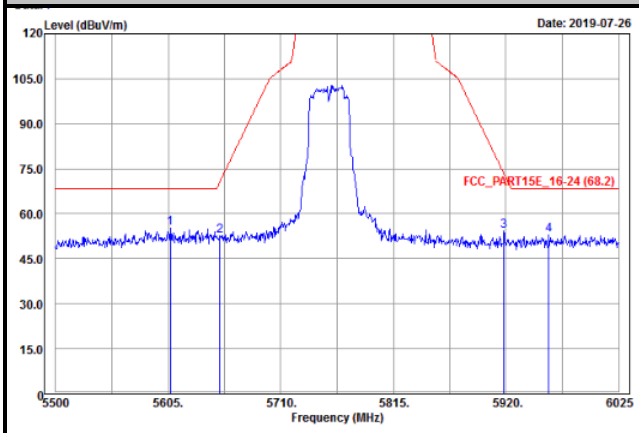
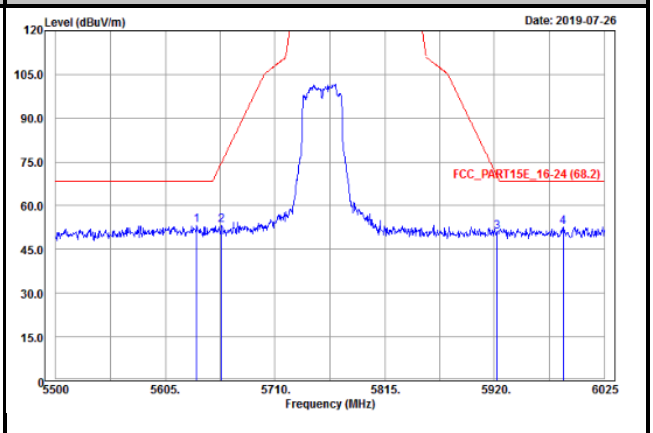
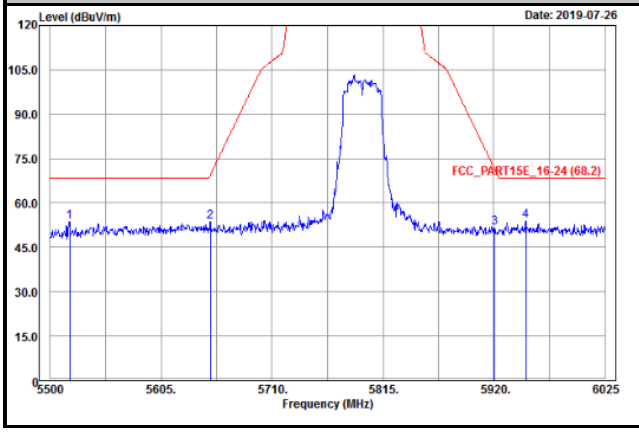
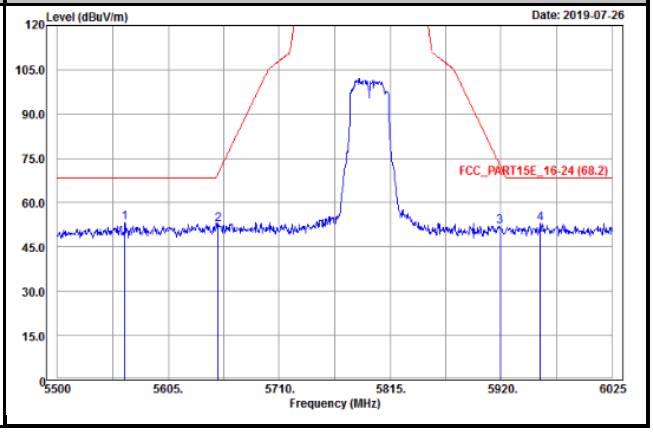
Horizontal



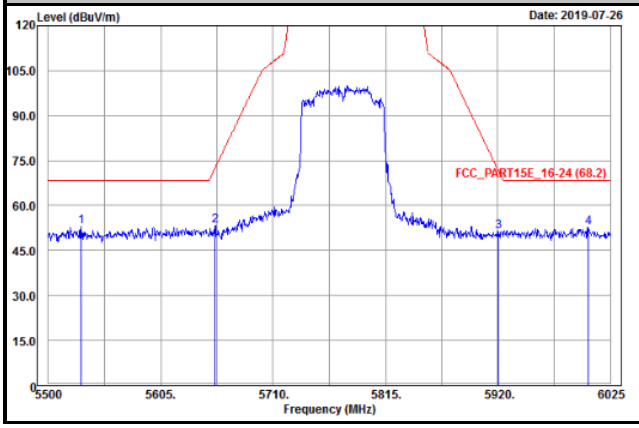
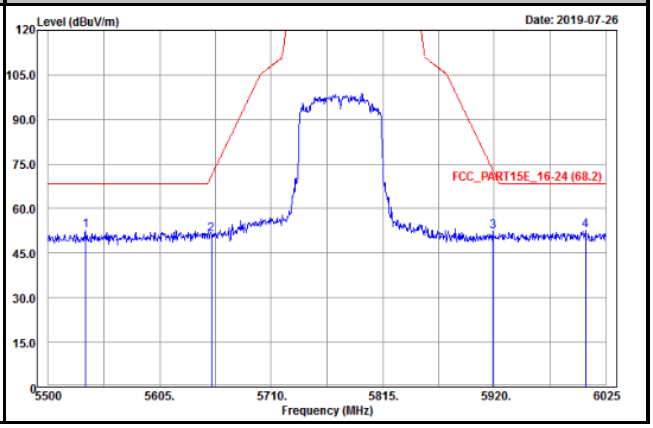
Vertical



802.11n (HT40)

Ch 151	
Horizontal	Vertical
	
Ch 159	
Horizontal	Vertical
	

802.11ac (VHT80)

Ch 155	
Horizontal	Vertical
	

Appendix – Information of 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.

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

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