FCC Test Report

Report No.:	RF190110C19-3 R1
FCC ID:	HV4DTHW1621
Test Model:	DTH-W1621
Series Model:	DTHW1621*******; DTH-W1621******* (The"*" Can be 0-9, A-Z or blank) (refer to item 3.1 for more details)
Received Date:	Jan. 10, 2019
Test Date:	Jan. 17, 2019 ~ Apr. 16, 2019
Issued Date:	Apr. 17, 2019
Applicant:	Wacom Co., Ltd.
Address:	2-510-1, Toyonodai, Kazo-Shi, Saitama, 349-1148 Japan
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 / Designation Number:	427177 / TW0011

Testing Laboratory
2021

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
RF190110C19	Original Release	Feb. 13, 2019
RF190110C19-3 R1	Revised model No.	Apr. 17, 2019

1 Certificate of Conformity

Product:	GRAPHICS TABLET COMPUTER
Brand:	Wacom
Test Model:	DTH-W1621
Series Model:	DTHW1621*******; DTH-W1621******* (The"*" Can be 0-9, A-Z or blank) (refer to item 3.1 for more details)
Sample Status:	Engineering Sample
Applicant:	Wacom Co., Ltd.
Test Date:	Jan. 17, 2019 ~ Apr. 16, 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 : _____ , **Date:** Apr. 17, 2019

Gina Liu / Specialist

Approved by : _____ , **Date:** Apr. 17, 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 -25.16 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 -1.09 dB at 5469.84 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	Expended 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	GRAPHICS TABLET COMPUTER
Brand	Wacom
Test Model	DTH-W1621
Series Model	DTHW1621*******; DTH-W1621******* (The"*" Can be 0-9, A-Z or blank)
Status of EUT	Engineering Sample
Power Supply Rating	5.0 or 20 Vdc (adapter)
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 1733.6 Mbps
Operating Frequency	5180 ~ 5240 MHz, 5260 ~ 5320 MHz, 5500 ~ 5720 MHz, 5745 ~ 5825 MHz
Number of Channel	5180 ~ 5250 MHz: 4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80) 1 for 802.11ac (VHT160) 5260 ~ 5320 MHz: 4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80) 5500 ~ 5720 MHz: 11 for 802.11a 12 for 802.11n (HT20) 6 for 802.11n (HT40) 3 for 802.11ac (VHT80) 1 for 802.11ac (VHT160) 5745 ~ 5825 MHz: 5 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80)
Output Power	121.619 mW for 5180 ~ 5240 MHz 122.462 mW for 5260 ~ 5320 MHz 119.124 mW for 5500 ~ 5720 MHz 122.462 mW for 5745 ~ 5825 MHz
Antenna Type	PIFA antenna with 1.84 dBi gain (5180 ~ 5240 MHz) PIFA antenna with 1.84 dBi gain (5260 ~ 5320 MHz) PIFA antenna with 2.13 dBi gain (5500 ~ 5720 MHz) PIFA antenna with 1.38 dBi gain (5745 ~ 5825 MHz)
Antenna Connector	N/A
Accessory Device	Refer to Note as below
Data Cable Supplied	Refer to Note as below

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
802.11ac (VHT160)	2TX

2. All models are listed as below.

Brand	Model	Difference
Wacom	DTH-W1621	Main test
	DTHW1621*******	The"*" Can be 0-9, A-Z or blank for the new marketing
	DTH-W1621*******	

3. The EUT contains following accessory devices.

Product	Brand	Model	Description
Adapter	WACOM	ADP-100PB B	I/P: 100-240 Vac, 50-60 Hz, 1.5 A O/P: 5 Vdc, 3 A or 20 Vdc, 5 A 1.8m / 1 core
WLAN Module	Intel	9260NGW	--

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 ~ 5250 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

1 channel is provided for 802.11ac (VHT160):

Channel	Frequency (MHz)
50	5250

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 ~ 5720 MHz

11 channels are provided for 802.11a:

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		

12 channels are provided for 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	144	5720

6 channels are provided for 802.11n (HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
102	5510	126	5630
110	5550	134	5670
118	5590	142	5710

3 channels are provided for 802.11ac (VHT80):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
106	5530	138	5690
122	5610		

1 channel is provided for 802.11ac (VHT160):

Channel	Frequency (MHz)
114	5570

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. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-plane**.
2. "-" means no effect.

Radiated Emission Test (Above 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5180-5250	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
-		802.11ac (VHT160)	50	50	OFDM	BPSK	58.5
-	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
-	5500-5720	802.11a	100 to 140	100, 116, 140	OFDM	BPSK	6.0
-		802.11n (HT20)	100 to 144	100, 116, 140, 144	OFDM	BPSK	6.5
-		802.11n (HT40)	102 to 142	102, 110, 134, 142	OFDM	BPSK	13.5
-		802.11ac (VHT80)	106 to 138	106, 122, 138	OFDM	BPSK	29.3
-		802.11ac (VHT160)	114	114	OFDM	BPSK	58.5
-	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)
-	5500-5720	802.11n (HT20)	100 to 144	100	OFDM	BPSK	6.5

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)
-	5500-5720	802.11n (HT20)	100 to 144	100	OFDM	BPSK	6.5

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)
-	5180-5250	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
-		802.11ac (VHT160)	50	50	OFDM	BPSK	58.5
-	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
-	5500-5720	802.11a	100 to 140	100, 116, 140	OFDM	BPSK	6.0
-		802.11n (HT20)	100 to 144	100, 116, 140, 144	OFDM	BPSK	6.5
-		802.11n (HT40)	102 to 142	102, 110, 134, 142	OFDM	BPSK	13.5
-		802.11ac (VHT80)	106 to 138	106, 122, 138	OFDM	BPSK	29.3
-		802.11ac (VHT160)	114	114	OFDM	BPSK	58.5
-	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	Charles Hsiao
PLC	25 deg. C, 65 % RH	120 Vac, 60 Hz	Jisyong Wang
APCM	25 deg. C, 65 % RH	120 Vac, 60 Hz	Gavin Wu

3.3 Duty Cycle of Test Signal

MODULATION TYPE: BPSK

802.11a: Duty cycle = 2.042/2.09 = 0.977, Duty factor = 10 * log(1/0.977) = 0.10

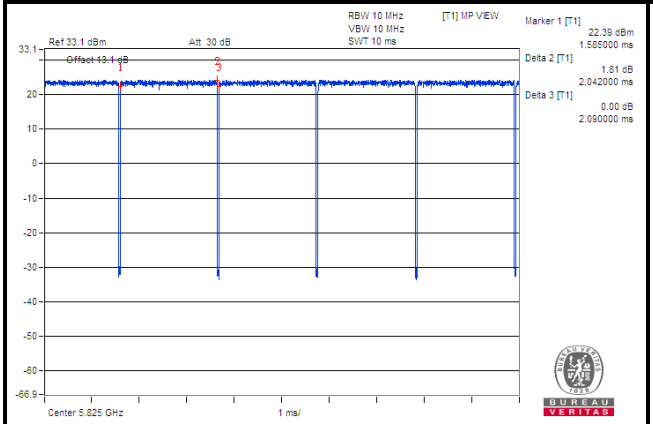
802.11n (HT20): Duty cycle = 0.962/1.035 = 0.929, Duty factor = 10 * log(1/0.929) = 0.32

802.11n (HT40): Duty cycle = 0.487/0.549 = 0.887, Duty factor = 10 * log(1/0.887) = 0.52

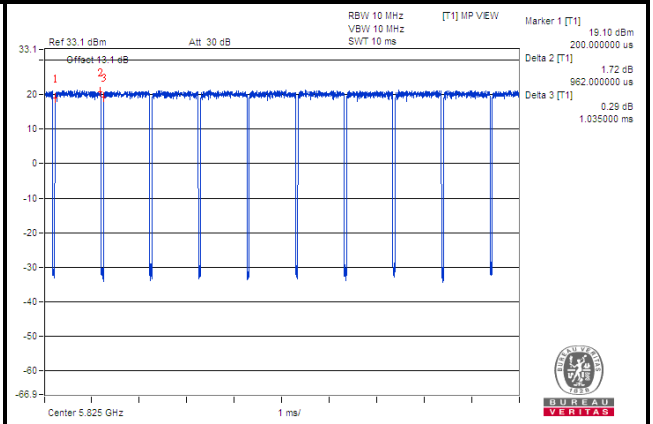
802.11ac (VHT80): Duty cycle = 0.252/0.313 = 0.805, Duty factor = 10 * log(1/0.805) = 0.94

802.11ac (VHT160): Duty cycle = 0.149/0.205 = 0.727, Duty factor = 10 * log(1/0.727) = 1.38

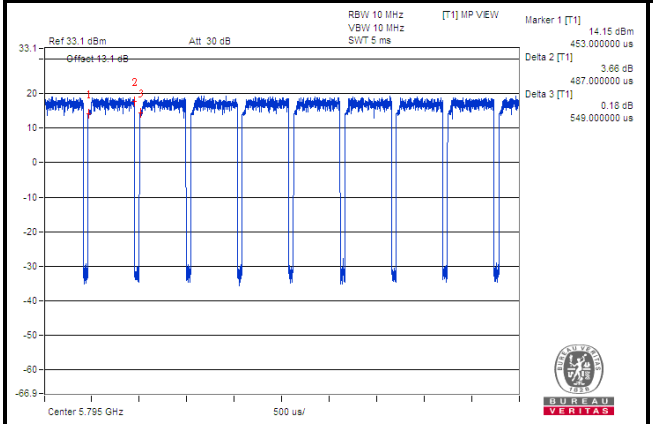
802.11a



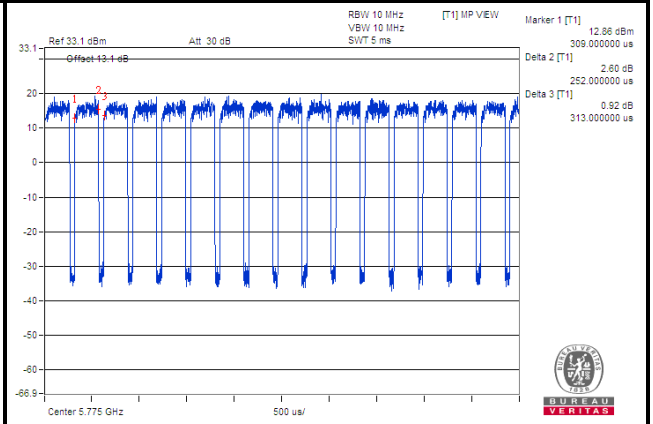
802.11n (HT20)



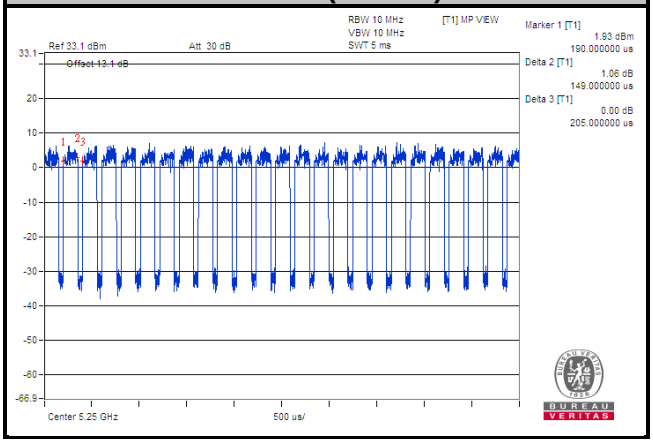
802.11n (HT40)



802.11ac (VHT80)



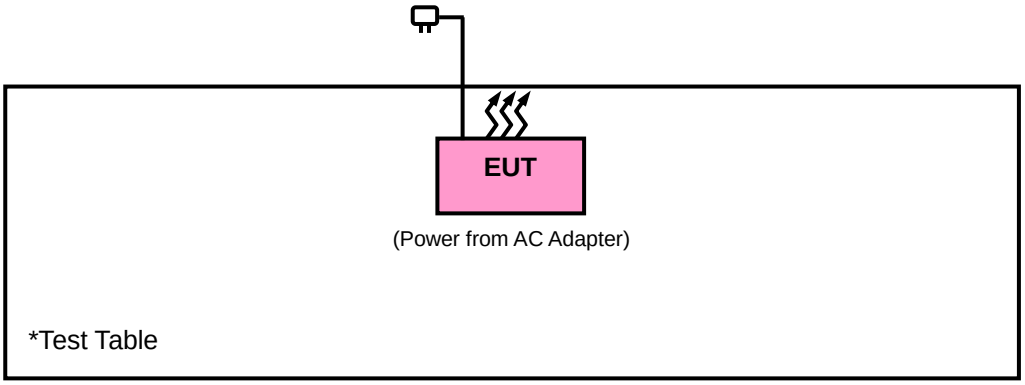
802.11ac (VHT160)



3.4 Description of Support Units

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

Applicable To		Limit	
789033 D02 General UNII Test Procedures New Rules v02r01		Field Strength at 3 m	
		PK: 74 (dBμV/m)	AV: 54 (dBμV/m)
Frequency Band	**Applicable To**	**EIRP Limit**	**Equivalent Field Strength at 3 m**
5150~5250 MHz	15.407(b)(1)	PK: -27 (dBm/MHz)	PK: 68.2 (dBμV/m)
5250~5350 MHz	15.407(b)(2)		
5470~5725 MHz	15.407(b)(3)		
5725~5850 MHz	15.407(b)(4)(i)	PK:-27 (dBm/MHz) *1 PK:10 (dBm/MHz) *2 PK:15.6 (dBm/MHz) *3 PK:27 (dBm/MHz) *4	PK: 68.2 (dBμV/m) *1 PK:105.2 (dBμV/m) *2 PK: 110.8 (dBμV/m) *3 PK:122.2 (dBμV/m) *4
	15.407(b)(4)(ii)	Emission limits in section 15.247(d)	

*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.

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	MY51210203	Mar. 16, 2018	Mar. 15, 2019
			Mar. 18, 2019	Mar. 17, 2020
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	100115	Jan. 21, 2019	Jan. 20, 2020
HORN Antenna ETS-Lindgren	3117	00143293	Nov. 25, 2018	Nov. 24, 2019
BILOG Antenna SCHWARZBECK	VULB9168	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. 16, 2018	Apr. 15, 2019
			Apr. 15, 2019	Apr. 14, 2020
Loop Antenna	EM-6879	269	Sep. 07, 2018	Sep. 06, 2019
Preamplifier Agilent	310N	187226	Jun. 19, 2018	Jun. 18, 2019
Preamplifier Agilent	83017A	MY39501357	Jun. 19, 2018	Jun. 18, 2019
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
RF signal cable ETS-LINDGREN	5D-FB	Cable-CH1-01(RFC-SMS-100-SMS-120+RFC-SMS-100-SMS-400)	Jun. 19, 2018	Jun. 18, 2019
RF signal cable ETS-LINDGREN	8D-FB	Cable-CH1-02(RFC-SMS-100-SMS-24)	Jun. 19, 2018	Jun. 18, 2019
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Software BV ADT	E3 8.130425b	NA	NA	NA
Antenna Tower MF	NA	NA	NA	NA
Turn Table MF	NA	NA	NA	NA
Antenna Tower &Turn Table Controller MF	MF-7802	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in HsinTien Chamber 1.

3. The horn antenna and preamplifier (model: 83017A) are used only for the measurement of emission frequency above 1 GHz if tested.

4. The IC Site Registration No. is 7450I-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:

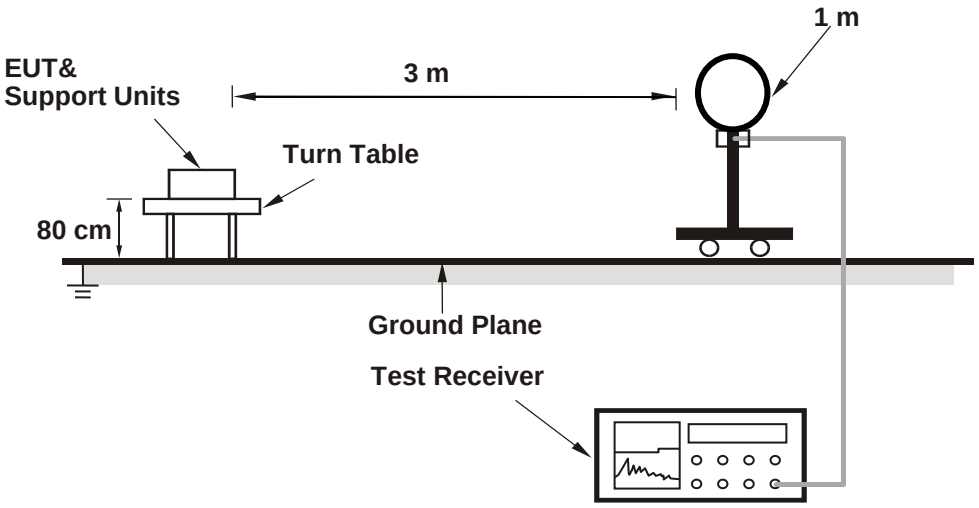
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) 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 = 3 kHz ; 11n (HT40): RBW = 1 MHz, VBW = 3 kHz ; 11ac (VHT80): RBW = 1 MHz, VBW = 10 kHz) ; 11ac (VHT160): RBW = 1 MHz, VBW = 10 kHz)
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.5 Deviation from Test Standard

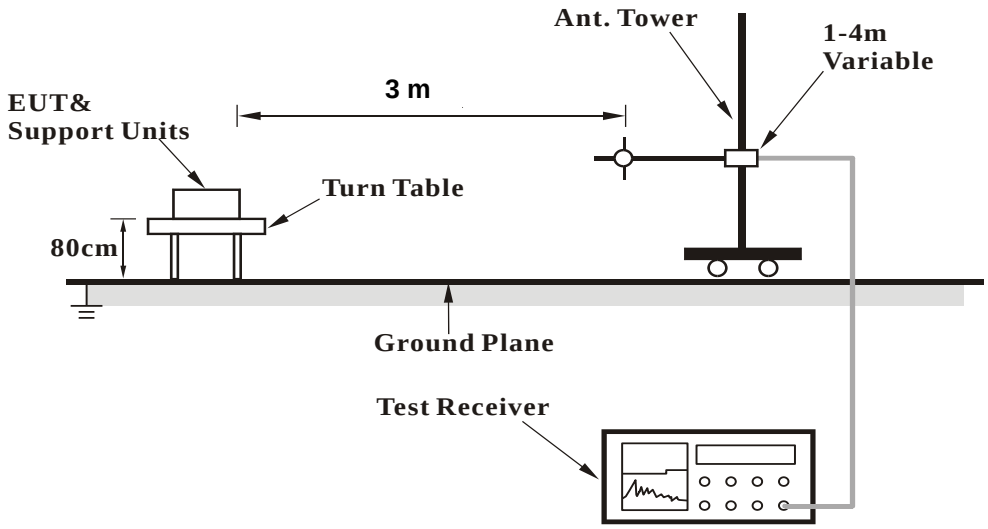
No deviation.

4.1.6 Test Setup

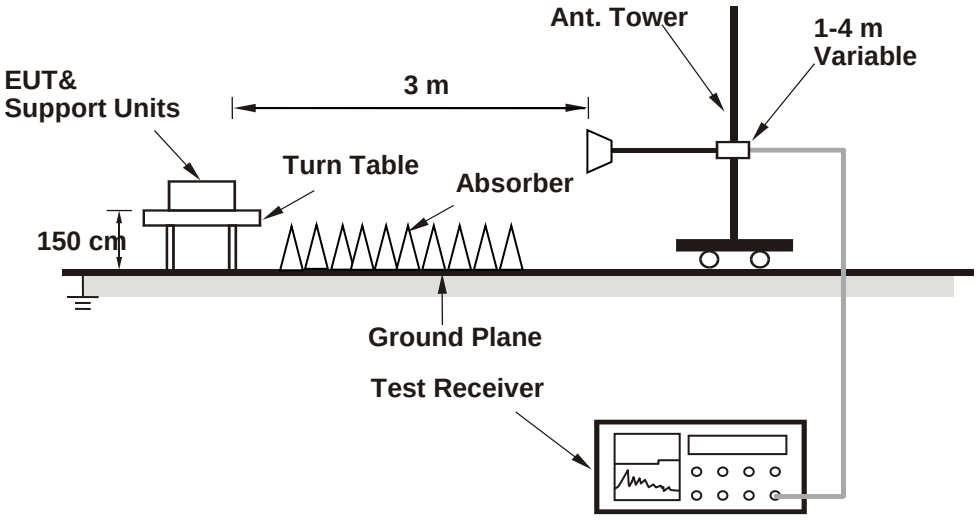
<Radiated Emission below 30 MHz>



<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)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5149.7	43.61	31.07	54	-10.39	34.12	8.13	29.71	100	218	Average
5149.7	54.52	41.98	74	-19.48	34.12	8.13	29.71	100	218	Peak
5180	92.57	79.98			34.15	8.16	29.72	100	218	Average
5180	99.64	87.05			34.15	8.16	29.72	100	218	Peak
*10360	55.54	38.27	68.2	-12.66	37.12	12.3	32.15	195	121	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5149.85	51.52	38.98	54	-2.48	34.12	8.13	29.71	148	191	Average
5149.85	64.1	51.56	74	-9.9	34.12	8.13	29.71	148	191	Peak
5180	101.05	88.46			34.15	8.16	29.72	148	191	Average
5180	108.69	96.1			34.15	8.16	29.72	148	191	Peak
*10360	54.67	37.4	68.2	-13.53	37.12	12.3	32.15	146	127	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp 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)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5149.25	45.08	32.54	54	-8.92	34.12	8.13	29.71	100	218	Average
5149.25	56.06	43.52	74	-17.94	34.12	8.13	29.71	100	218	Peak
5200	95.95	83.32			34.16	8.19	29.72	100	218	Average
5200	102.49	89.86			34.16	8.19	29.72	100	218	Peak
5354.51	42.51	29.59	54	-11.49	34.28	8.38	29.74	100	218	Average
5354.51	53.04	40.12	74	-20.96	34.28	8.38	29.74	100	218	Peak
*10400	55.52	38.21	68.2	-12.68	37.14	12.36	32.19	163	218	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5148.55	63.12	50.58	74	-10.88	34.12	8.13	29.71	148	191	Peak
5148.95	52.85	40.31	54	-1.15	34.12	8.13	29.71	148	191	Average
5200	104.47	91.84			34.16	8.19	29.72	148	191	Average
5200	111.38	98.75			34.16	8.19	29.72	148	191	Peak
5399.94	44.88	31.87	54	-9.12	34.32	8.44	29.75	148	191	Average
5399.94	53.65	40.64	74	-20.35	34.32	8.44	29.75	148	191	Peak
*10400	55.85	38.54	68.2	-12.35	37.14	12.36	32.19	145	74	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp 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)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5240	97.49	84.76			34.19	8.26	29.72	100	218	Average
5240	104.48	91.75			34.19	8.26	29.72	100	218	Peak
5392.35	42.45	29.48	54	-11.55	34.31	8.41	29.75	100	218	Average
5392.35	53.55	40.58	74	-20.45	34.31	8.41	29.75	100	218	Peak
*10480	55.44	37.97	68.2	-12.76	37.19	12.53	32.25	123	68	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5240	106.69	93.96			34.19	8.26	29.72	148	191	Average
5240	113.54	100.81			34.19	8.26	29.72	148	191	Peak
5399.94	46.32	33.31	54	-7.68	34.32	8.44	29.75	148	191	Average
5399.94	54.78	41.77	74	-19.22	34.32	8.44	29.75	148	191	Peak
*10480	54.41	36.94	68.2	-13.79	37.19	12.53	32.25	157	124	Peak

Remarks:

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5105.3	42.31	29.86	54	-11.69	34.08	8.07	29.7	100	322	Average
5105.3	52.7	40.25	74	-21.3	34.08	8.07	29.7	100	322	Peak
5260	98.57	85.83			34.21	8.26	29.73	100	322	Average
5260	105.49	92.75			34.21	8.26	29.73	100	322	Peak
*10520	50.86	36.27	68.2	-17.34	37.21	12.61	35.23	149	264	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5114.3	43.14	30.65	54	-10.86	34.09	8.1	29.7	100	194	Average
5114.3	53.9	41.41	74	-20.1	34.09	8.1	29.7	100	194	Peak
5260	105.58	92.84			34.21	8.26	29.73	100	194	Average
5260	112.58	99.84			34.21	8.26	29.73	100	194	Peak
*10520	51.57	36.98	68.2	-16.63	37.21	12.61	35.23	134	206	Peak

Remarks:

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5148.5	42.32	29.78	54	-11.68	34.12	8.13	29.71	100	322	Average
5148.5	53.91	41.37	74	-20.09	34.12	8.13	29.71	100	322	Peak
5300	95.22	82.39			34.24	8.32	29.73	100	322	Average
5300	102.45	89.62			34.24	8.32	29.73	100	322	Peak
5350.11	44.5	31.58	54	-9.5	34.28	8.38	29.74	100	322	Average
5350.11	55.33	42.41	74	-18.67	34.28	8.38	29.74	100	322	Peak
10600	41.27	26.59	54	-12.73	37.28	12.67	35.27	132	59	Average
10600	51.51	36.83	74	-22.49	37.28	12.67	35.27	132	59	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5148.5	43.06	30.52	54	-10.94	34.12	8.13	29.71	100	194	Average
5148.5	53.78	41.24	74	-20.22	34.12	8.13	29.71	100	194	Peak
5300	102.36	89.53			34.24	8.32	29.73	100	194	Average
5300	109.34	96.51			34.24	8.32	29.73	100	194	Peak
5350	52.53	39.61	54	-1.47	34.28	8.38	29.74	100	194	Average
5350	61.4	48.48	74	-12.6	34.28	8.38	29.74	100	194	Peak
10600	40.28	25.6	54	-13.72	37.28	12.67	35.27	167	121	Average
10600	50.24	35.56	74	-23.76	37.28	12.67	35.27	167	121	Peak

Remarks:

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5320	93.19	80.32			34.25	8.35	29.73	100	322	Average
5320	100.56	87.69			34.25	8.35	29.73	100	322	Peak
5350.22	43.72	30.8	54	-10.28	34.28	8.38	29.74	100	322	Average
5350.22	54.57	41.65	74	-19.43	34.28	8.38	29.74	100	322	Peak
10640	40.17	25.44	54	-13.83	37.31	12.71	35.29	168	240	Average
10640	50.3	35.57	74	-23.7	37.31	12.71	35.29	168	240	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5320	100.65	87.78			34.25	8.35	29.73	100	194	Average
5320	107.64	94.77			34.25	8.35	29.73	100	194	Peak
5350.11	49.47	36.55	54	-4.53	34.28	8.38	29.74	100	194	Average
5350.11	62	49.08	74	-12	34.28	8.38	29.74	100	194	Peak
10640	40.26	25.53	54	-13.74	37.31	12.71	35.29	127	144	Average
10640	50.45	35.72	74	-23.55	37.31	12.71	35.29	127	144	Peak

Remarks:

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5458.16	43.63	30.52	54	-10.37	34.36	8.51	29.76	215	266	Average
5458.16	54.46	41.35	74	-19.54	34.36	8.51	29.76	215	266	Peak
*5468.08	62.25	49.13	68.2	-5.95	34.37	8.51	29.76	215	266	Peak
5500	97.49	84.28			34.4	8.57	29.76	215	266	Average
5500	104.11	90.9			34.4	8.57	29.76	215	266	Peak
11000	51.74	36.66	54	-2.26	37.6	12.96	35.48	164	199	Average
11000	51.88	36.8	74	-22.12	37.6	12.96	35.48	164	199	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5459.44	45.29	32.18	54	-8.71	34.36	8.51	29.76	107	185	Average
5459.44	56.93	43.82	74	-17.07	34.36	8.51	29.76	107	185	Peak
*5470.48	67.09	53.97	68.2	-1.11	34.37	8.51	29.76	107	185	Peak
5500	100.58	87.37			34.4	8.57	29.76	107	185	Average
5500	107.61	94.4			34.4	8.57	29.76	107	185	Peak
11000	40.85	25.77	54	-13.15	37.6	12.96	35.48	145	274	Average
11000	51.08	36	74	-22.92	37.6	12.96	35.48	145	274	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp 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)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5458.96	43.32	30.21	54	-10.68	34.36	8.51	29.76	215	266	Average
5458.96	53.15	40.04	74	-20.85	34.36	8.51	29.76	215	266	Peak
*5470.8	53.55	40.4	68.2	-14.65	34.37	8.54	29.76	215	266	Peak
5580	100.65	87.39			34.47	8.6	29.81	215	266	Average
5580	108.49	95.23			34.47	8.6	29.81	215	266	Peak
*5725.56	55.14	41.73	68.2	-13.06	34.62	8.65	29.86	215	266	Peak
11160	44.94	29.86	54	-9.06	37.7	12.83	35.45	127	304	Average
11160	55.07	39.99	74	-18.93	37.7	12.83	35.45	127	304	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5458.8	43.11	30	54	-10.89	34.36	8.51	29.76	134	170	Average
5458.8	54.06	40.95	74	-19.94	34.36	8.51	29.76	134	170	Peak
*5470.64	54.12	41	68.2	-14.08	34.37	8.51	29.76	134	170	Peak
5580	103.3	90.04			34.47	8.6	29.81	134	170	Average
5580	111.89	98.63			34.47	8.6	29.81	134	170	Peak
*5725.16	53.4	39.99	68.2	-14.8	34.62	8.65	29.86	134	170	Peak
11160	45.57	30.49	54	-8.43	37.7	12.83	35.45	156	137	Average
11160	55.8	40.72	74	-18.2	37.7	12.83	35.45	156	137	Peak

Remarks:

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5700	96.69	83.31			34.59	8.64	29.85	215	266	Average
5700	103.53	90.15			34.59	8.64	29.85	215	266	Peak
*5725.24	65.51	52.1	68.2	-2.69	34.62	8.65	29.86	215	266	Peak
11400	43.57	28.47	54	-10.43	37.84	12.67	35.41	193	341	Average
11400	53.8	38.7	74	-20.2	37.84	12.67	35.41	193	341	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5700	99.65	86.27			34.59	8.64	29.85	134	170	Average
5700	106.75	93.37			34.59	8.64	29.85	134	170	Peak
*5724.36	65.32	51.91	68.2	-2.88	34.62	8.65	29.86	134	170	Peak
11400	44.11	29.01	54	-9.89	37.84	12.67	35.41	184	105	Average
11400	54.06	38.96	74	-19.94	37.84	12.67	35.41	184	105	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5700 MHz: Fundamental Frequency
3. *: 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**	Harry Hsueh

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5745	103.55	90.13			34.64	8.66	29.88	226	271	Average
5745	111.5	98.08			34.64	8.66	29.88	226	271	Peak
11490	43.34	28.22	54	-10.66	37.89	12.62	35.39	169	185	Average
11490	53.39	38.27	74	-20.61	37.89	12.62	35.39	169	185	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5745	102.87	89.45			34.64	8.66	29.88	219	175	Average
5745	110.7	97.28			34.64	8.66	29.88	219	175	Peak
11490	44.02	28.9	54	-9.98	37.89	12.62	35.39	137	145	Average
11490	53.57	38.45	74	-20.43	37.89	12.62	35.39	137	145	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5649.625	59.88	46.53	68.2	-8.32	34.56	8.62	29.83	226	271	Peak
5652.25	60.51	47.16	69.86	-9.35	34.56	8.62	29.83	226	271	Peak
5920.525	50.11	36.53	71.51	-21.4	34.81	8.73	29.96	226	271	Peak
*5996.125	52.13	38.46	68.2	-16.07	34.9	8.76	29.99	226	271	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5643.85	61.51	48.18	68.2	-6.69	34.54	8.62	29.83	219	175	Peak
5652.25	59.11	45.76	69.86	-10.75	34.56	8.62	29.83	219	175	Peak
5920	50.56	36.98	71.9	-21.34	34.81	8.73	29.96	219	175	Peak
*5956.225	51.98	38.34	68.2	-16.22	34.87	8.74	29.97	219	175	Peak

Remarks:

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5785	102.92	89.46			34.68	8.68	29.9	226	271	Average
5785	110.14	96.68			34.68	8.68	29.9	226	271	Peak
11570	43.58	28.27	54	-10.42	38	12.68	35.37	138	206	Average
11570	53.75	38.44	74	-20.25	38	12.68	35.37	138	206	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5785	103.92	90.46			34.68	8.68	29.9	219	175	Average
5785	111.81	98.35			34.68	8.68	29.9	219	175	Peak
11570	42.96	27.65	54	-11.04	38	12.68	35.37	134	168	Average
11570	52.84	37.53	74	-21.16	38	12.68	35.37	134	168	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5649.625	54.23	40.88	68.2	-13.97	34.56	8.62	29.83	226	271	Peak
5655.4	53.24	39.89	72.2	-18.96	34.56	8.63	29.84	226	271	Peak
5922.625	51.3	37.7	69.96	-18.66	34.83	8.73	29.96	226	271	Peak
*5954.65	52.66	39.04	68.2	-15.54	34.85	8.74	29.97	226	271	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5542	54.17	40.94	68.2	-14.03	34.43	8.58	29.78	219	175	Peak
5652.25	52.89	39.54	69.86	-16.97	34.56	8.62	29.83	219	175	Peak
5921.575	52.65	39.05	70.73	-18.08	34.83	8.73	29.96	219	175	Peak
*5938.375	55	41.4	68.2	-13.2	34.83	8.74	29.97	219	175	Peak

Remarks:

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5825	103.28	89.77			34.73	8.69	29.91	226	271	Average
5825	110.98	97.47			34.73	8.69	29.91	226	271	Peak
11650	44.12	28.59	54	-9.88	38.09	12.8	35.36	136	57	Average
11650	54.07	38.54	74	-19.93	38.09	12.8	35.36	136	57	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5825	102.98	89.47			34.73	8.69	29.91	219	175	Average
5825	110.81	97.3			34.73	8.69	29.91	219	175	Peak
11650	44.42	28.89	54	-9.58	38.09	12.8	35.36	146	229	Average
11650	54.53	39	74	-19.47	38.09	12.8	35.36	146	229	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5649.625	54.58	41.23	68.2	-13.62	34.56	8.62	29.83	226	271	Peak
5653.825	50.24	36.89	71.03	-20.79	34.56	8.63	29.84	226	271	Peak
5921.575	52.92	39.32	70.73	-17.81	34.83	8.73	29.96	226	271	Peak
*5926.825	52.96	39.36	68.2	-15.24	34.83	8.73	29.96	226	271	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5622.325	52.98	39.67	68.2	-15.22	34.52	8.61	29.82	219	175	Peak
5653.3	52.77	39.41	70.64	-17.87	34.56	8.63	29.83	219	175	Peak
5920.525	54.62	41.04	71.51	-16.89	34.81	8.73	29.96	219	175	Peak
*5927.35	56.72	43.12	68.2	-11.48	34.83	8.73	29.96	219	175	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp 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)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	52.1	39.56	54	-1.9	34.12	8.13	29.71	248	196	Average
5150	66.72	54.18	74	-7.28	34.12	8.13	29.71	248	196	Peak
5180	104.32	91.73			34.15	8.16	29.72	248	209	Average
5180	110.49	97.9			34.15	8.16	29.72	248	209	Peak
*10360	52.5	38.2	68.2	-15.7	37.12	12.3	35.12	135	260	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5149.85	45.24	32.7	54	-8.76	34.12	8.13	29.71	138	349	Average
5149.85	58.33	45.79	74	-15.67	34.12	8.13	29.71	138	349	Peak
5180	96.42	83.83			34.15	8.16	29.72	138	349	Average
5180	103.86	91.27			34.15	8.16	29.72	138	349	Peak
*10360	52.34	38.04	68.2	-15.86	37.12	12.3	35.12	114	159	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp 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)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5149.55	52.3	39.76	54	-1.7	34.12	8.13	29.71	238	221	Average
5149.55	62.04	49.5	74	-11.96	34.12	8.13	29.71	238	221	Peak
5200	106.58	93.95			34.16	8.19	29.72	248	209	Average
5200	111.83	99.2			34.16	8.19	29.72	248	209	Peak
5358.58	45.27	32.35	54	-8.73	34.28	8.38	29.74	248	209	Average
5358.58	54.44	41.52	74	-19.56	34.28	8.38	29.74	248	209	Peak
*10400	53.68	39.34	68.2	-14.52	37.14	12.36	35.16	169	66	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5149.7	45.73	33.19	54	-8.27	34.12	8.13	29.71	138	337	Average
5149.7	55.77	43.23	74	-18.23	34.12	8.13	29.71	138	337	Peak
5200	98.7	86.07			34.16	8.19	29.72	138	349	Average
5200	105.11	92.48			34.16	8.19	29.72	138	349	Peak
5357.7	42.27	29.35	54	-11.73	34.28	8.38	29.74	138	349	Average
5357.7	53.47	40.55	74	-20.53	34.28	8.38	29.74	138	349	Peak
*10400	52.6	38.26	68.2	-15.6	37.14	12.36	35.16	114	247	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp 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)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5240	107.6	94.87			34.19	8.26	29.72	248	209	Average
5240	112.39	99.66			34.19	8.26	29.72	248	209	Peak
5399.72	46.54	33.53	54	-7.46	34.32	8.44	29.75	251	196	Average
5399.72	54.6	41.59	74	-19.4	34.32	8.44	29.75	251	196	Peak
*10480	52.56	38.05	68.2	-15.64	37.19	12.53	35.21	159	55	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5240	97.96	85.23			34.19	8.26	29.72	138	349	Average
5240	104.69	91.96			34.19	8.26	29.72	138	349	Peak
5432.61	42.2	29.12	54	-11.8	34.35	8.48	29.75	138	349	Average
5432.61	52.92	39.84	74	-21.08	34.35	8.48	29.75	138	349	Peak
*10480	53.78	39.27	68.2	-14.42	37.19	12.53	35.21	105	359	Peak

Remarks:

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5149.55	43.22	30.68	54	-10.78	34.12	8.13	29.71	199	135	Average
5149.55	53.15	40.61	74	-20.85	34.12	8.13	29.71	199	135	Peak
5260	105.68	92.94			34.21	8.26	29.73	199	135	Average
5260	112.69	99.95			34.21	8.26	29.73	199	135	Peak
*10520	53.51	38.92	68.2	-14.69	37.21	12.61	35.23	154	199	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5124.35	42.59	30.09	54	-11.41	34.11	8.1	29.71	104	127	Average
5124.35	52.99	40.49	74	-21.01	34.11	8.1	29.71	104	127	Peak
5260	98.59	85.85			34.21	8.26	29.73	104	127	Average
5260	105.82	93.08			34.21	8.26	29.73	104	127	Peak
*10520	54.68	40.09	68.2	-13.52	37.21	12.61	35.23	154	105	Peak

Remarks:

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5149.25	42.8	30.26	54	-11.2	34.12	8.13	29.71	199	135	Average
5149.25	53.08	40.54	74	-20.92	34.12	8.13	29.71	199	135	Peak
5300	103.65	90.82			34.24	8.32	29.73	199	135	Average
5300	110.94	98.11			34.24	8.32	29.73	199	135	Peak
5350.11	52.77	39.85	54	-1.23	34.28	8.38	29.74	199	135	Average
5350.11	65.51	52.59	74	-8.49	34.28	8.38	29.74	199	135	Peak
10600	43.67	28.99	54	-10.33	37.28	12.67	35.27	118	117	Average
10600	52.95	38.27	74	-21.05	37.28	12.67	35.27	118	117	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5126.75	42.28	29.78	54	-11.72	34.11	8.1	29.71	104	127	Average
5126.75	52.61	40.11	74	-21.39	34.11	8.1	29.71	104	127	Peak
5300	96.65	83.82			34.24	8.32	29.73	104	127	Average
5300	103.12	90.29			34.24	8.32	29.73	104	127	Peak
5350	46.11	33.19	54	-7.89	34.28	8.38	29.74	104	127	Average
5350	56.82	43.9	74	-17.18	34.28	8.38	29.74	104	127	Peak
10600	43.25	28.57	54	-10.75	37.28	12.67	35.27	135	28	Average
10600	53.64	38.96	74	-20.36	37.28	12.67	35.27	135	28	Peak

Remarks:

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5320	103.65	90.78			34.25	8.35	29.73	199	135	Average
5320	110.63	97.76			34.25	8.35	29.73	199	135	Peak
5350.11	52.78	39.86	54	-1.22	34.28	8.38	29.74	199	134	Average
5350.11	65.73	52.81	74	-8.27	34.28	8.38	29.74	199	134	Peak
10640	43.61	28.88	54	-10.39	37.31	12.71	35.29	115	322	Average
10640	52.93	38.2	74	-21.07	37.31	12.71	35.29	115	322	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5320	95.57	82.7			34.25	8.35	29.73	104	127	Average
5320	102.87	90			34.25	8.35	29.73	104	127	Peak
5350	46.6	33.68	54	-7.4	34.28	8.38	29.74	104	127	Average
5350	56.48	43.56	74	-17.52	34.28	8.38	29.74	104	127	Peak
10640	43.37	28.64	54	-10.63	37.31	12.71	35.29	134	310	Average
10640	53.67	38.94	74	-20.33	37.31	12.71	35.29	134	310	Peak

Remarks:

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5459.6	47.41	34.3	54	-6.59	34.36	8.51	29.76	200	48	Average
5459.6	57.93	44.82	74	-16.07	34.36	8.51	29.76	200	48	Peak
*5469.84	67.11	53.99	68.2	-1.09	34.37	8.51	29.76	200	48	Peak
5500	103.69	90.48			34.4	8.57	29.76	200	48	Average
5500	110.67	97.46			34.4	8.57	29.76	200	48	Peak
11000	43.96	28.88	54	-10.04	37.6	12.96	35.48	147	7	Average
11000	55.4	40.32	74	-18.6	37.6	12.96	35.48	147	7	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5457.04	43.13	30.02	54	-10.87	34.36	8.51	29.76	100	329	Average
5457.04	53.54	40.43	74	-20.46	34.36	8.51	29.76	100	329	Peak
*5469.68	59.85	46.73	68.2	-8.35	34.37	8.51	29.76	100	329	Peak
5500	96.58	83.37			34.4	8.57	29.76	100	329	Average
5500	103.9	90.69			34.4	8.57	29.76	100	329	Peak
11000	44.03	28.95	54	-9.97	37.6	12.96	35.48	110	102	Average
11000	54.61	39.53	74	-19.39	37.6	12.96	35.48	110	102	Peak

Remarks:

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5400.08	45.17	32.16	54	-8.83	34.32	8.44	29.75	200	48	Average
5400.08	55.19	42.18	74	-18.81	34.32	8.44	29.75	200	48	Peak
*5468.56	53.7	40.58	68.2	-14.5	34.37	8.51	29.76	200	48	Peak
5580	106.67	93.41			34.47	8.6	29.81	200	48	Average
5580	113.22	99.96			34.47	8.6	29.81	200	48	Peak
*5724.92	53.75	40.34	68.2	-14.45	34.62	8.65	29.86	200	48	Peak
11160	44.1	29.02	54	-9.9	37.7	12.83	35.45	135	322	Average
11160	55.81	40.73	74	-18.19	37.7	12.83	35.45	135	322	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5399.92	42.58	29.57	54	-11.42	34.32	8.44	29.75	100	329	Average
5399.92	52.9	39.89	74	-21.1	34.32	8.44	29.75	100	329	Peak
*5468.72	52.06	38.94	68.2	-16.14	34.37	8.51	29.76	100	329	Peak
5580	99.85	86.59			34.47	8.6	29.81	100	329	Average
5580	106.75	93.49			34.47	8.6	29.81	100	329	Peak
*5724.04	53	39.59	68.2	-15.2	34.62	8.65	29.86	100	329	Peak
11160	43.64	28.56	54	-10.36	37.7	12.83	35.45	125	95	Average
11160	55.7	40.62	74	-18.3	37.7	12.83	35.45	125	95	Peak

Remarks:

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5700	102.36	88.98			34.59	8.64	29.85	242	4	Average
5700	109.43	96.05			34.59	8.64	29.85	242	4	Peak
*5724.12	66.79	53.38	68.2	-1.41	34.62	8.65	29.86	242	4	Peak
11400	43.68	28.58	54	-10.32	37.84	12.67	35.41	142	77	Average
11400	55.81	40.71	74	-18.19	37.84	12.67	35.41	142	77	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5700	96.87	83.49			34.59	8.64	29.85	100	329	Average
5700	103	89.62			34.59	8.64	29.85	100	329	Peak
*5724.36	57.75	44.34	68.2	-10.45	34.62	8.65	29.86	100	329	Peak
11400	44.36	29.26	54	-9.64	37.84	12.67	35.41	158	88	Average
11400	56.22	41.12	74	-17.78	37.84	12.67	35.41	158	88	Peak

Remarks:

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

EUT Test Condition		Measurement Detail	
Channel	Channel 144	**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)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5399.92	45.18	32.17	54	-8.82	34.32	8.44	29.75	242	4	Average
5399.92	53.33	40.32	74	-20.67	34.32	8.44	29.75	242	4	Peak
*5469.2	51.81	38.69	68.2	-16.39	34.37	8.51	29.76	242	4	Peak
5720	103.85	90.44			34.62	8.65	29.86	242	4	Average
5720	110.01	96.6			34.62	8.65	29.86	242	4	Peak
11440	45.34	30.23	54	-8.66	37.86	12.65	35.4	225	222	Average
11440	54.97	39.86	74	-19.03	37.86	12.65	35.4	225	222	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5459.6	42.34	29.23	54	-11.66	34.36	8.51	29.76	100	329	Average
5459.6	52.99	39.88	74	-21.01	34.36	8.51	29.76	100	329	Peak
*5468.24	52.49	39.37	68.2	-15.71	34.37	8.51	29.76	100	329	Peak
5720	97.85	84.44			34.62	8.65	29.86	100	329	Average
5720	104.06	90.65			34.62	8.65	29.86	100	329	Peak
11440	45.31	30.2	54	-8.69	37.86	12.65	35.4	105	2	Average
11440	54.97	39.86	74	-19.03	37.86	12.65	35.4	105	2	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5720 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**	Harry Hsueh

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5745	100.83	87.41			34.64	8.66	29.88	218	331	Average
5745	108.14	94.72			34.64	8.66	29.88	218	331	Peak
11490	44.74	29.62	54	-9.26	37.89	12.62	35.39	196	237	Average
11490	54.87	39.75	74	-19.13	37.89	12.62	35.39	196	237	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5745	105.54	92.12			34.64	8.66	29.88	147	335	Average
5745	113.53	100.11			34.64	8.66	29.88	147	335	Peak
11490	44.37	29.25	54	-9.63	37.89	12.62	35.39	164	127	Average
11490	54.52	39.4	74	-19.48	37.89	12.62	35.39	164	127	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5645.425	59.05	49.98	68.2	-9.15	34.54	8.62	34.09	218	331	Peak
5652.25	60.83	51.74	69.86	-9.03	34.56	8.62	34.09	218	331	Peak
5922.625	51.93	42.53	69.96	-18.03	34.83	8.73	34.16	218	331	Peak
*5962.525	53.89	44.45	68.2	-14.31	34.87	8.74	34.17	218	331	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5648.575	60.4	51.33	68.2	-7.8	34.54	8.62	34.09	147	335	Peak
5653.3	56.19	47.09	70.64	-14.45	34.56	8.63	34.09	147	335	Peak
5920.525	50.09	40.71	71.51	-21.42	34.81	8.73	34.16	147	335	Peak
*5977.75	53.39	43.93	68.2	-14.81	34.88	8.75	34.17	147	335	Peak

Remarks:

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5785	101.94	92.71			34.68	8.68	34.13	112	295	Average
5785	109.2	99.97			34.68	8.68	34.13	112	295	Peak
11570	44.27	28.96	54	-9.73	38	12.68	35.37	156	206	Average
11570	54.46	39.15	74	-19.54	38	12.68	35.37	156	206	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5785	106.59	93.13			34.68	8.68	29.9	218	331	Average
5785	113.48	100.02			34.68	8.68	29.9	218	331	Peak
11570	44.46	29.15	54	-9.54	38	12.68	35.37	143	129	Average
11570	54.69	39.38	74	-19.31	38	12.68	35.37	143	129	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5634.925	53.9	44.83	68.2	-14.3	34.54	8.62	34.09	112	295	Peak
5655.925	50.64	41.55	72.58	-21.94	34.56	8.63	34.1	112	295	Peak
5922.625	50.23	40.83	69.96	-19.73	34.83	8.73	34.16	112	295	Peak
*5928.4	52.55	43.15	68.2	-15.65	34.83	8.73	34.16	112	295	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5633.35	56.11	47.04	68.2	-12.09	34.54	8.62	34.09	218	331	Peak
5654.875	53.64	44.55	71.81	-18.17	34.56	8.63	34.1	218	331	Peak
5923.675	50.98	41.58	69.18	-18.2	34.83	8.73	34.16	218	331	Peak
*5944.15	54.31	44.88	68.2	-13.89	34.85	8.74	34.16	218	331	Peak

Remarks:

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5825	101.94	92.65			34.73	8.69	34.13	112	295	Average
5825	109.63	100.34			34.73	8.69	34.13	112	295	Peak
11650	48.43	29.57	54	-5.57	38.09	12.8	32.03	156	48	Average
11650	58.62	39.76	74	-15.38	38.09	12.8	32.03	156	48	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5825	105.65	96.36			34.73	8.69	34.13	150	335	Average
5825	112.47	103.18			34.73	8.69	34.13	150	335	Peak
11650	47.85	28.99	54	-6.15	38.09	12.8	32.03	152	131	Average
11650	58.28	39.42	74	-15.72	38.09	12.8	32.03	152	131	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5533.075	53.35	44.41	68.2	-14.85	34.43	8.58	34.07	112	295	Peak
5654.35	50.79	41.7	71.42	-20.63	34.56	8.63	34.1	112	295	Peak
5922.625	50.39	40.99	69.96	-19.57	34.83	8.73	34.16	112	295	Peak
*6005.575	52.99	43.5	68.2	-15.21	34.9	8.76	34.17	112	295	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5635.45	54.63	45.56	68.2	-13.57	34.54	8.62	34.09	150	335	Peak
5653.3	53.25	44.15	70.64	-17.39	34.56	8.63	34.09	150	335	Peak
5921.575	52.68	43.28	70.73	-18.05	34.83	8.73	34.16	150	335	Peak
*5938.375	54.72	45.31	68.2	-13.48	34.83	8.74	34.16	150	335	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp 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)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	47.63	35.09	54	-6.37	34.12	8.13	29.71	249	194	Average
5150	57.8	45.26	74	-16.2	34.12	8.13	29.71	249	194	Peak
5190	98.35	85.73			34.15	8.19	29.72	249	190	Average
5190	105.09	92.47			34.15	8.19	29.72	249	190	Peak
5400.05	44.29	31.28	54	-9.71	34.32	8.44	29.75	249	190	Average
5400.05	53.85	40.84	74	-20.15	34.32	8.44	29.75	249	190	Peak
*10380	53.24	38.89	68.2	-14.96	37.13	12.36	35.14	158	299	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5149.55	43.31	30.77	54	-10.69	34.12	8.13	29.71	133	342	Average
5149.55	53.15	40.61	74	-20.85	34.12	8.13	29.71	133	342	Peak
5190	89.89	77.27			34.15	8.19	29.72	138	348	Average
5190	99.22	86.6			34.15	8.19	29.72	138	348	Peak
5353.85	42.18	29.26	54	-11.82	34.28	8.38	29.74	138	348	Average
5353.85	52.57	39.65	74	-21.43	34.28	8.38	29.74	138	348	Peak
*10380	51.87	37.52	68.2	-16.33	37.13	12.36	35.14	151	205	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5190 MHz: Fundamental Frequency
3. *: 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)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5148.8	51.62	39.08	54	-2.38	34.12	8.13	29.71	301	185	Average
5148.8	63.31	50.77	74	-10.69	34.12	8.13	29.71	301	185	Peak
5230	101.6	88.91			34.19	8.22	29.72	299	190	Average
5230	108.67	95.98			34.19	8.22	29.72	299	190	Peak
5352.42	50.44	37.52	54	-3.56	34.28	8.38	29.74	317	185	Average
5352.42	60.74	47.82	74	-13.26	34.28	8.38	29.74	317	185	Peak
*10460	52.73	38.22	68.2	-15.47	37.17	12.53	35.19	105	118	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5148.5	46.25	33.71	54	-7.75	34.12	8.13	29.71	133	326	Average
5148.5	56.92	44.38	74	-17.08	34.12	8.13	29.71	133	326	Peak
5230	92.85	80.16			34.19	8.22	29.72	138	348	Average
5230	101.69	89			34.19	8.22	29.72	138	348	Peak
5350.22	43.46	30.54	54	-10.54	34.28	8.38	29.74	138	348	Average
5350.22	53.65	40.73	74	-20.35	34.28	8.38	29.74	138	348	Peak
*10460	51.87	37.36	68.2	-16.33	37.17	12.53	35.19	112	344	Peak

Remarks:

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5148.5	43.02	30.48	54	-10.98	34.12	8.13	29.71	199	135	Average
5148.5	52.74	40.2	74	-21.26	34.12	8.13	29.71	199	135	Peak
5270	100.52	87.75			34.21	8.29	29.73	199	135	Average
5270	107.26	94.49			34.21	8.29	29.73	199	135	Peak
5350	52.08	39.16	54	-1.92	34.28	8.38	29.74	199	135	Average
5350	61.81	48.89	74	-12.19	34.28	8.38	29.74	199	135	Peak
*10540	54.81	40.19	68.2	-13.39	37.23	12.63	35.24	116	36	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5147.6	42.71	30.17	54	-11.29	34.12	8.13	29.71	104	127	Average
5147.6	53.25	40.71	74	-20.75	34.12	8.13	29.71	104	127	Peak
5270	93.65	80.88			34.21	8.29	29.73	104	127	Average
5270	100.94	88.17			34.21	8.29	29.73	104	127	Peak
5350.77	45.94	33.02	54	-8.06	34.28	8.38	29.74	104	127	Average
5350.77	56.6	43.68	74	-17.4	34.28	8.38	29.74	104	127	Peak
*10540	52.88	38.26	68.2	-15.32	37.23	12.63	35.24	127	177	Peak

Remarks:

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5138.15	42.75	30.22	54	-11.25	34.11	8.13	29.71	199	135	Average
5138.15	52.88	40.35	74	-21.12	34.11	8.13	29.71	199	135	Peak
5310	99.58	86.74			34.25	8.32	29.73	199	135	Average
5310	106.21	93.37			34.25	8.32	29.73	199	135	Peak
5350.11	52.79	39.87	54	-1.21	34.28	8.38	29.74	199	135	Average
5350.11	64.51	51.59	74	-9.49	34.28	8.38	29.74	199	135	Peak
10620	43.65	28.94	54	-10.35	37.3	12.69	35.28	147	7	Average
10620	53.4	38.69	74	-20.6	37.3	12.69	35.28	147	7	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5129.15	42.63	30.13	54	-11.37	34.11	8.1	29.71	104	127	Average
5129.15	53.11	40.61	74	-20.89	34.11	8.1	29.71	104	127	Peak
5310	92.55	79.71			34.25	8.32	29.73	104	127	Average
5310	99.85	87.01			34.25	8.32	29.73	104	127	Peak
5350	48.34	35.42	54	-5.66	34.28	8.38	29.74	104	127	Average
5350	58.43	45.51	74	-15.57	34.28	8.38	29.74	104	127	Peak
10620	43.29	28.58	54	-10.71	37.3	12.69	35.28	159	66	Average
10620	52.52	37.81	74	-21.48	37.3	12.69	35.28	159	66	Peak

Remarks:

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5456.08	51.13	38.02	54	-2.87	34.36	8.51	29.76	200	48	Average
5456.08	64.16	51.05	74	-9.84	34.36	8.51	29.76	200	48	Peak
*5470	67.05	53.93	68.2	-1.15	34.37	8.51	29.76	200	48	Peak
5510	100.54	87.34			34.4	8.57	29.77	200	48	Average
5510	107.2	94			34.4	8.57	29.77	200	48	Peak
*5724.44	52.24	38.83	68.2	-15.96	34.62	8.65	29.86	200	48	Peak
11020	44.74	29.67	54	-9.26	37.61	12.94	35.48	147	77	Average
11020	54.24	39.17	74	-19.76	37.61	12.94	35.48	147	77	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5458.64	44.61	31.5	54	-9.39	34.36	8.51	29.76	100	329	Average
5458.64	55.08	41.97	74	-18.92	34.36	8.51	29.76	100	329	Peak
*5468.56	56.67	43.55	68.2	-11.53	34.37	8.51	29.76	100	329	Peak
5510	93.36	80.16			34.4	8.57	29.77	100	329	Average
5510	100.02	86.82			34.4	8.57	29.77	100	329	Peak
*5724.04	51.81	38.4	68.2	-16.39	34.62	8.65	29.86	100	329	Peak
11020	44.62	29.55	54	-9.38	37.61	12.94	35.48	137	61	Average
11020	53.81	38.74	74	-20.19	37.61	12.94	35.48	137	61	Peak

Remarks:

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5459.92	50.87	37.76	54	-3.13	34.36	8.51	29.76	200	48	Average
5459.92	62.35	49.24	74	-11.65	34.36	8.51	29.76	200	48	Peak
*5469.36	66.77	53.65	68.2	-1.43	34.37	8.51	29.76	200	48	Peak
5550	101.47	88.21			34.45	8.59	29.78	200	48	Average
5550	108.56	95.3			34.45	8.59	29.78	200	48	Peak
*5724.52	53.91	40.5	68.2	-14.29	34.62	8.65	29.86	200	48	Peak
11100	44.59	29.5	54	-9.41	37.66	12.89	35.46	158	55	Average
11100	53.48	38.39	74	-20.52	37.66	12.89	35.46	158	55	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5453.52	44.71	31.6	54	-9.29	34.36	8.51	29.76	100	329	Average
5453.52	54.16	41.05	74	-19.84	34.36	8.51	29.76	100	329	Peak
*5469.84	56.93	43.81	68.2	-11.27	34.37	8.51	29.76	100	329	Peak
5550	94.57	81.31			34.45	8.59	29.78	100	329	Average
5550	101.88	88.62			34.45	8.59	29.78	100	329	Peak
*5725.72	52.3	38.89	68.2	-15.9	34.62	8.65	29.86	100	329	Peak
11100	44.45	29.36	54	-9.55	37.66	12.89	35.46	154	225	Average
11100	53.81	38.72	74	-20.19	37.66	12.89	35.46	154	225	Peak

Remarks:

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5399.92	44.83	31.82	54	-9.17	34.32	8.44	29.75	242	4	Average
5399.92	53.85	40.84	74	-20.15	34.32	8.44	29.75	242	4	Peak
*5470.64	52.65	39.53	68.2	-15.55	34.37	8.51	29.76	242	4	Peak
5670	100.25	86.89			34.57	8.63	29.84	242	4	Average
5670	107.23	93.87			34.57	8.63	29.84	242	4	Peak
*5724.6	60.57	47.16	68.2	-7.63	34.62	8.65	29.86	242	4	Peak
11340	43.96	28.87	54	-10.04	37.8	12.71	35.42	124	4	Average
11340	55.93	40.84	74	-18.07	37.8	12.71	35.42	124	4	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5443.28	42.98	29.9	54	-11.02	34.35	8.48	29.75	100	329	Average
5443.28	53.51	40.43	74	-20.49	34.35	8.48	29.75	100	329	Peak
*5470.64	52.33	39.21	68.2	-15.87	34.37	8.51	29.76	100	329	Peak
5670	93.56	80.2			34.57	8.63	29.84	100	329	Average
5670	100.36	87			34.57	8.63	29.84	100	329	Peak
*5725.8	54.07	40.66	68.2	-14.13	34.62	8.65	29.86	100	329	Peak
11340	43.97	28.88	54	-10.03	37.8	12.71	35.42	141	305	Average
11340	55.46	40.37	74	-18.54	37.8	12.71	35.42	141	305	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp 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 142	**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)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5400.08	45.92	32.91	54	-8.08	34.32	8.44	29.75	242	4	Average
5400.08	53.73	40.72	74	-20.27	34.32	8.44	29.75	242	4	Peak
*5470.96	52.68	39.53	68.2	-15.52	34.37	8.54	29.76	242	4	Peak
5710	99.68	86.28			34.61	8.65	29.86	242	4	Average
5710	106.78	93.38			34.61	8.65	29.86	242	4	Peak
11420	45.65	30.55	54	-8.35	37.85	12.65	35.4	100	204	Average
11420	55.2	40.1	74	-18.8	37.85	12.65	35.4	100	204	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5442.32	42.81	29.73	54	-11.19	34.35	8.48	29.75	100	329	Average
5442.32	52.94	39.86	74	-21.06	34.35	8.48	29.75	100	329	Peak
*5469.04	51.77	38.65	68.2	-16.43	34.37	8.51	29.76	100	329	Peak
5710	93.65	80.25			34.61	8.65	29.86	100	329	Average
5710	100	86.6			34.61	8.65	29.86	100	329	Peak
11420	45.67	30.57	54	-8.33	37.85	12.65	35.4	185	29	Average
11420	55.63	40.53	74	-18.37	37.85	12.65	35.4	185	29	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5710 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**	Harry Hsueh

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5755	99.18	89.97			34.66	8.66	34.11	112	295	Average
5755	106.69	97.48			34.66	8.66	34.11	112	295	Peak
11510	48.74	30.3	54	-5.26	37.9	12.6	32.06	168	252	Average
11510	59.01	40.57	74	-14.99	37.9	12.6	32.06	168	252	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5755	101.88	92.67			34.66	8.66	34.11	150	335	Average
5755	109.35	100.14			34.66	8.66	34.11	150	335	Peak
11510	48.12	29.68	54	-5.88	37.9	12.6	32.06	174	121	Average
11510	58.36	39.92	74	-15.64	37.9	12.6	32.06	174	121	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5650.15	61.46	52.37	68.31	-6.85	34.56	8.62	34.09	112	295	Peak
5654.35	60.41	51.32	71.42	-11.01	34.56	8.63	34.1	112	295	Peak
5921.575	50.07	40.67	70.73	-20.66	34.83	8.73	34.16	112	295	Peak
*5950.45	53.06	43.63	68.2	-15.14	34.85	8.74	34.16	112	295	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5649.625	66.3	57.21	68.2	-1.9	34.56	8.62	34.09	150	335	Peak
5653.825	67.84	58.75	71.03	-3.19	34.56	8.63	34.1	150	335	Peak
5922.625	56.43	47.03	69.96	-13.53	34.83	8.73	34.16	150	335	Peak
*5946.25	56.96	47.53	68.2	-11.24	34.85	8.74	34.16	150	335	Peak

Remarks:

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5795	99.23	89.99			34.69	8.68	34.13	112	295	Average
5795	106.41	97.17			34.69	8.68	34.13	112	295	Peak
11590	48.47	29.78	54	-5.53	38.02	12.72	32.05	132	196	Average
11590	57.58	38.89	74	-16.42	38.02	12.72	32.05	132	196	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5795	103.23	93.99			34.69	8.68	34.13	150	335	Average
5795	110.6	101.36			34.69	8.68	34.13	150	335	Peak
11590	48.07	29.38	54	-5.93	38.02	12.72	32.05	145	162	Average
11590	58.32	39.63	74	-15.68	38.02	12.72	32.05	145	162	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5631.25	53.47	44.42	68.2	-14.73	34.52	8.62	34.09	112	295	Peak
5654.875	53.09	44	71.81	-18.72	34.56	8.63	34.1	112	295	Peak
5918.425	54.38	45	73.07	-18.69	34.81	8.73	34.16	112	295	Peak
*5952.025	53.76	44.33	68.2	-14.44	34.85	8.74	34.16	112	295	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5643.325	58.37	49.3	68.2	-9.83	34.54	8.62	34.09	150	335	Peak
5653.3	55.11	46.01	70.64	-15.53	34.56	8.63	34.09	150	335	Peak
5921.05	59.08	49.7	71.12	-12.04	34.81	8.73	34.16	150	335	Peak
*5926.825	60.74	51.34	68.2	-7.46	34.83	8.73	34.16	150	335	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp 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)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5149.4	48.99	36.45	54	-5.01	34.12	8.13	29.71	247	175	Average
5149.4	59.14	46.6	74	-14.86	34.12	8.13	29.71	247	175	Peak
5210	95.8	83.16			34.17	8.19	29.72	247	190	Average
5210	103.39	90.75			34.17	8.19	29.72	247	190	Peak
5399.94	44.8	31.79	54	-9.2	34.32	8.44	29.75	249	184	Average
5399.94	54.67	41.66	74	-19.33	34.32	8.44	29.75	249	184	Peak
*10420	51.86	37.45	68.2	-16.34	37.15	12.42	35.16	151	22	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5148.95	43.3	30.76	54	-10.7	34.12	8.13	29.71	138	349	Average
5148.95	53.88	41.34	74	-20.12	34.12	8.13	29.71	138	349	Peak
5210	87.5	74.86			34.17	8.19	29.72	138	349	Average
5210	94.71	82.07			34.17	8.19	29.72	138	349	Peak
5373.65	42.72	29.77	54	-11.28	34.29	8.41	29.75	138	349	Average
5373.65	53.34	40.39	74	-20.66	34.29	8.41	29.75	138	349	Peak
*10420	52.55	38.14	68.2	-15.65	37.15	12.42	35.16	115	245	Peak

Remarks:

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5147.3	43.69	31.15	54	-10.31	34.12	8.13	29.71	199	135	Average
5147.3	55.6	43.06	74	-18.4	34.12	8.13	29.71	199	135	Peak
5290	98.85	86.03			34.23	8.32	29.73	199	135	Average
5290	105.2	92.38			34.23	8.32	29.73	199	135	Peak
5350.33	51.07	38.15	54	-2.93	34.28	8.38	29.74	199	134	Average
5350.33	60.99	48.07	74	-13.01	34.28	8.38	29.74	199	134	Peak
*10580	53.77	39.12	68.2	-14.43	37.27	12.65	35.27	123	165	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5115.95	43.33	30.84	54	-10.67	34.09	8.1	29.7	104	127	Average
5115.95	53.35	40.86	74	-20.65	34.09	8.1	29.7	104	127	Peak
5290	91.85	79.03			34.23	8.32	29.73	104	127	Average
5290	98.59	85.77			34.23	8.32	29.73	104	127	Peak
5358.69	45.18	32.26	54	-8.82	34.28	8.38	29.74	104	127	Average
5358.69	54.28	41.36	74	-19.72	34.28	8.38	29.74	104	127	Peak
*10580	52.8	38.15	68.2	-15.4	37.27	12.65	35.27	121	180	Peak

Remarks:

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5458.8	50.37	37.26	54	-3.63	34.36	8.51	29.76	200	48	Average
5458.8	60.87	47.76	74	-13.13	34.36	8.51	29.76	200	48	Peak
*5470.64	59.54	46.42	68.2	-8.66	34.37	8.51	29.76	200	48	Peak
5530	97.74	84.52			34.42	8.58	29.78	200	48	Average
5530	104.25	91.03			34.42	8.58	29.78	200	48	Peak
*5726.04	53.61	40.2	68.2	-14.59	34.62	8.65	29.86	200	48	Peak
11060	44.44	29.36	54	-9.56	37.64	12.91	35.47	114	7	Average
11060	53.6	38.52	74	-20.4	37.64	12.91	35.47	114	7	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5452.72	44.89	31.78	54	-9.11	34.36	8.51	29.76	100	329	Average
5452.72	54.77	41.66	74	-19.23	34.36	8.51	29.76	100	329	Peak
*5469.84	55.35	42.23	68.2	-12.85	34.37	8.51	29.76	100	329	Peak
5530	90.58	77.36			34.42	8.58	29.78	100	329	Average
5530	97.82	84.6			34.42	8.58	29.78	100	329	Peak
*5726.04	51.95	38.54	68.2	-16.25	34.62	8.65	29.86	100	329	Peak
11060	44.73	29.65	54	-9.27	37.64	12.91	35.47	125	129	Average
11060	54.54	39.46	74	-19.46	37.64	12.91	35.47	125	129	Peak

Remarks:

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5459.92	52.79	9.92	54	-1.21	34.36	8.51	0	198	48	Average
5459.92	62.84	49.73	74	-11.16	34.36	8.51	29.76	198	48	Peak
*5470	62.48	49.36	68.2	-5.72	34.37	8.51	29.76	198	48	Peak
5610	100.57	87.28			34.5	8.61	29.82	200	48	Average
5610	107.81	94.52			34.5	8.61	29.82	200	48	Peak
*5725.24	63.38	49.97	68.2	-4.82	34.62	8.65	29.86	200	48	Peak
11220	45.29	30.2	54	-8.71	37.73	12.8	35.44	124	141	Average
11220	55.86	40.77	74	-18.14	37.73	12.8	35.44	124	141	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5454.48	46.53	33.42	54	-7.47	34.36	8.51	29.76	100	329	Average
5454.48	56.72	43.61	74	-17.28	34.36	8.51	29.76	100	329	Peak
*5469.2	54.45	41.33	68.2	-13.75	34.37	8.51	29.76	100	329	Peak
5610	93.68	80.39			34.5	8.61	29.82	100	329	Average
5610	100.2	86.91			34.5	8.61	29.82	100	329	Peak
*5725.64	61.46	48.05	68.2	-6.74	34.62	8.65	29.86	100	329	Peak
11220	44.67	29.58	54	-9.33	37.73	12.8	35.44	173	288	Average
11220	56.17	41.08	74	-17.83	37.73	12.8	35.44	173	288	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp 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 138	**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)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5449.52	43.21	30.09	54	-10.79	34.36	8.51	29.75	242	321	Average
5449.52	53.41	40.29	74	-20.59	34.36	8.51	29.75	242	321	Peak
*5468.4	53.33	40.21	68.2	-14.87	34.37	8.51	29.76	242	321	Peak
5690	96.85	83.47			34.59	8.64	29.85	242	321	Average
5690	103.17	89.79			34.59	8.64	29.85	242	321	Peak
11380	46.51	31.4	54	-7.49	37.83	12.69	35.41	183	326	Average
11380	55.61	40.5	74	-18.39	37.83	12.69	35.41	183	326	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5400.08	42.93	29.92	54	-11.07	34.32	8.44	29.75	100	329	Average
5400.08	53.61	40.6	74	-20.39	34.32	8.44	29.75	100	329	Peak
*5468.08	52.26	39.14	68.2	-15.94	34.37	8.51	29.76	100	329	Peak
5690	90.52	77.14			34.59	8.64	29.85	100	329	Average
5690	97.12	83.74			34.59	8.64	29.85	100	329	Peak
11380	46.33	31.22	54	-7.67	37.83	12.69	35.41	118	114	Average
11380	56.41	41.3	74	-17.59	37.83	12.69	35.41	118	114	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5690 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**	Harry Hsueh

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5775	95.87	86.64			34.68	8.67	34.12	112	295	Average
5775	104.27	95.04			34.68	8.67	34.12	112	295	Peak
11550	44.52	29.25	54	-9.48	37.97	12.68	35.38	163	84	Average
11550	54.73	39.46	74	-19.27	37.97	12.68	35.38	163	84	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5775	100.87	91.64			34.68	8.67	34.12	150	335	Average
5775	108.09	98.86			34.68	8.67	34.12	150	335	Peak
11550	45.02	29.75	54	-8.98	37.97	12.68	35.38	142	127	Average
11550	55.19	39.92	74	-18.81	37.97	12.68	35.38	142	127	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5649.1	60.63	51.56	68.2	-7.57	34.54	8.62	34.09	112	295	Peak
5653.825	61.58	52.49	71.03	-9.45	34.56	8.63	34.1	112	295	Peak
5921.575	54.56	45.16	70.73	-16.17	34.83	8.73	34.16	112	295	Peak
*5936.8	53.71	44.31	68.2	-14.49	34.83	8.73	34.16	112	295	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5645.425	66.8	57.73	68.2	-1.4	34.54	8.62	34.09	150	335	Peak
5652.775	65.39	56.29	70.25	-4.86	34.56	8.63	34.09	150	335	Peak
5921.575	55.9	46.5	70.73	-14.83	34.83	8.73	34.16	150	335	Peak
*5927.35	58.55	49.15	68.2	-9.65	34.83	8.73	34.16	150	335	Peak

Remarks:

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

802.11ac (VHT160)

EUT Test Condition		Measurement Detail	
Channel	Channel 50	**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)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5147.6	43.71	31.17	54	-10.29	34.12	8.13	29.71	212	317	Average
5147.6	54.34	41.8	74	-19.66	34.12	8.13	29.71	212	317	Peak
5250	90.21	77.48			34.2	8.26	29.73	212	317	Average
5250	96.59	83.86			34.2	8.26	29.73	212	317	Peak
5373.76	46.69	33.74	54	-7.31	34.29	8.41	29.75	206	312	Average
5373.76	59.42	46.47	74	-14.58	34.29	8.41	29.75	206	312	Peak
*10500	53.43	38.87	68.2	-14.77	37.2	12.59	35.23	169	302	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5123	41.9	29.4	54	-12.1	34.11	8.1	29.71	104	127	Average
5123	52.08	39.58	74	-21.92	34.11	8.1	29.71	104	127	Peak
5250	82.87	70.14			34.2	8.26	29.73	104	127	Average
5250	88.8	76.07			34.2	8.26	29.73	104	127	Peak
5386.08	42.22	29.25	54	-11.78	34.31	8.41	29.75	104	127	Average
5386.08	53.89	40.92	74	-20.11	34.31	8.41	29.75	104	127	Peak
*10500	53.85	39.29	68.2	-14.35	37.2	12.59	35.23	137	164	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5250 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 114	**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)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5458.8	47.63	34.52	54	-6.37	34.36	8.51	29.76	213	292	Average
5458.8	60.37	47.26	74	-13.63	34.36	8.51	29.76	213	292	Peak
*5468.4	61.34	48.22	68.2	-6.86	34.37	8.51	29.76	213	292	Peak
5570	93.26	79.99			34.47	8.59	29.79	208	292	Average
5570	99.32	86.05			34.47	8.59	29.79	208	292	Peak
*5723.96	63.09	49.68	68.2	-5.11	34.62	8.65	29.86	199	291	Peak
11140	47.23	32.15	54	-6.77	37.68	12.85	35.45	195	237	Average
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5454.32	42.47	29.36	54	-11.53	34.36	8.51	29.76	104	127	Average
5454.32	53.04	39.93	74	-20.96	34.36	8.51	29.76	104	127	Peak
*5470.96	53.04	39.89	68.2	-15.16	34.37	8.54	29.76	104	127	Peak
5570	77.61	64.34			34.47	8.59	29.79	104	127	Average
5570	84.76	71.49			34.47	8.59	29.79	104	127	Peak
*5725.8	52.84	39.43	68.2	-15.36	34.62	8.65	29.86	104	127	Peak
11140	46.18	31.1	54	-7.82	37.68	12.85	35.45	153	108	Average

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5570 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:

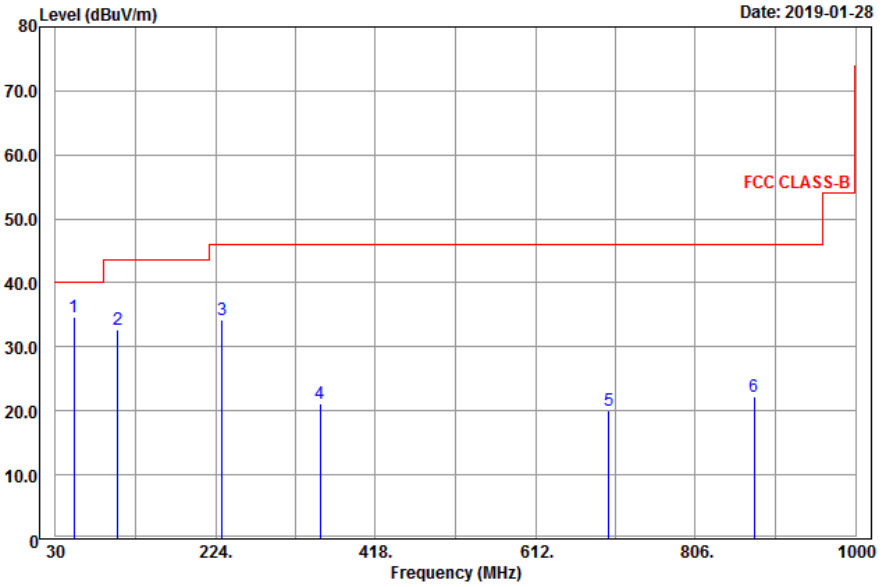
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Worst-Case Data:

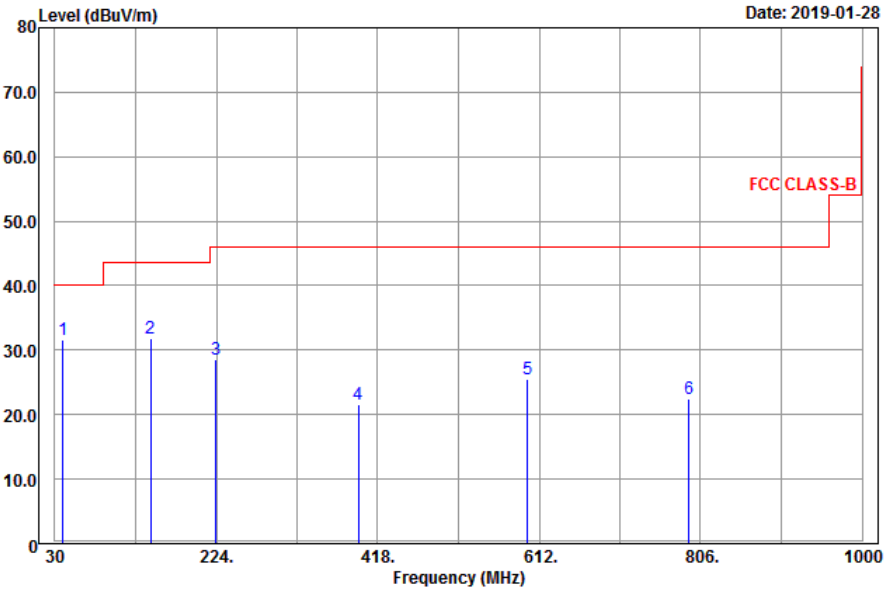
802.11n (HT20)

EUT Test Condition		Measurement Detail	
Channel	Channel 100	**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)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
52.14	34.73	51.68	40	-5.27	14.38	0.9	32.23	140	213	Peak
105.87	32.61	51.25	43.5	-10.89	12.34	1.28	32.26	199	147	Peak
231.69	34.19	52.69	46	-11.81	11.82	1.85	32.17	135	206	Peak
351.1	21.2	36.85	46	-24.8	14.23	2.19	32.07	124	137	Peak
701.1	20.04	29.77	46	-25.96	19.25	3.11	32.09	199	258	Peak
877.5	22.3	29.12	46	-23.7	21.31	3.49	31.62	165	137	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
39.72	31.55	49.63	40	-8.45	13.41	0.74	32.23	173	105	Peak
145.02	31.85	54.37	43.5	-11.65	8.37	1.38	32.27	145	105	Peak
223.59	28.51	47.55	46	-17.49	11.51	1.65	32.2	195	233	Peak
394.5	21.63	36.61	46	-24.37	14.89	2.34	32.21	116	180	Peak
598.2	25.44	36.86	46	-20.56	17.9	2.87	32.19	175	133	Peak
792.1	22.43	30.98	46	-23.57	20.25	3.27	32.07	168	291	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp 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	ESCS 30	100288	Jan. 03, 2019	Jan. 02, 2020
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

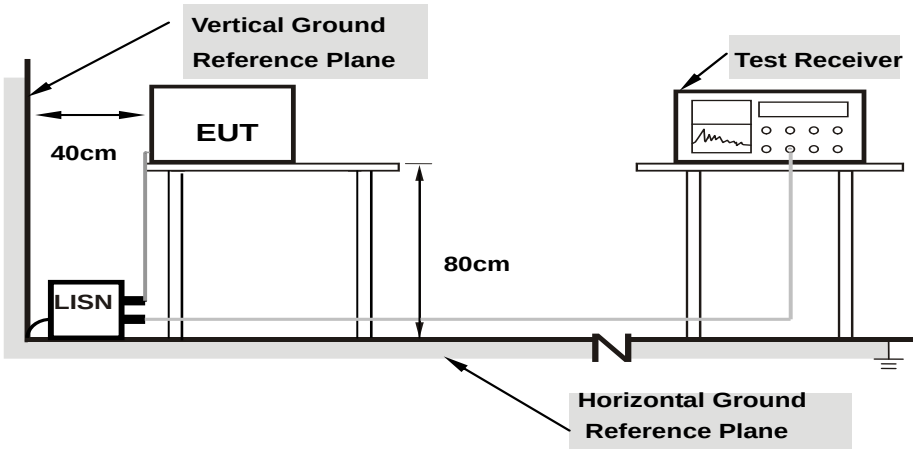
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling 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.

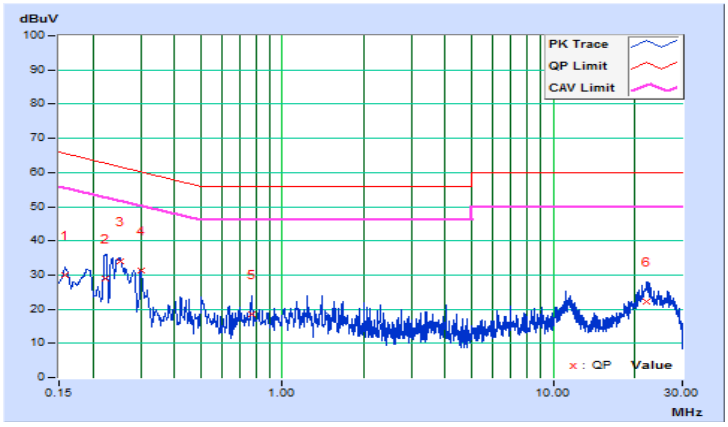
4.2.7 Test Results

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	Jisyong Wang	Test Date	2019/4/16

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	0.15802	0.10	29.87	5.33	29.97	5.43	65.57	55.57	-35.60	-50.14
2	0.22257	0.10	28.70	15.50	28.80	15.60	62.72	52.72	-33.92	-37.12
3	0.25125	0.10	33.90	5.90	34.00	6.00	61.72	51.72	-27.72	-45.72
4	0.30249	0.11	31.16	16.58	31.27	16.69	60.17	50.17	-28.90	-33.48
5	0.77169	0.11	18.27	3.68	18.38	3.79	56.00	46.00	-37.62	-42.21
6	22.19849	1.19	21.04	5.43	22.23	6.62	60.00	50.00	-37.77	-43.38

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

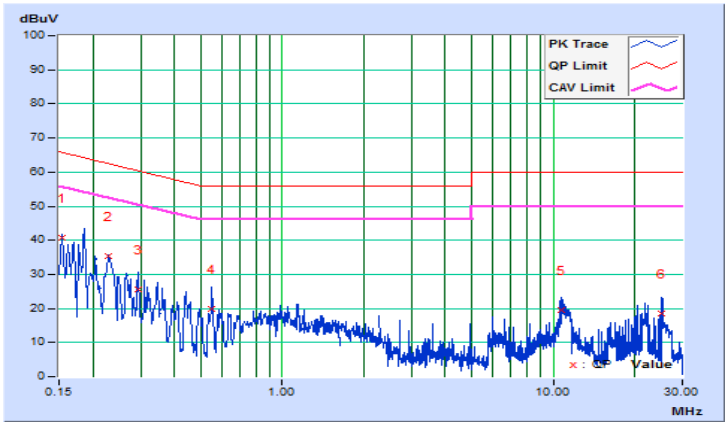


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25℃, 65%RH
Tested by	Jisyong Wang	Test Date	2019/4/16

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	**0.15391**	**0.09**	**40.54**	**20.24**	**40.63**	**20.33**	**65.79**	**55.79**	**-25.16**	**-35.46**
2	0.22851	0.09	35.42	4.60	35.51	4.69	62.50	52.50	-26.99	-47.81
3	0.29467	0.09	25.45	9.83	25.54	9.92	60.39	50.39	-34.85	-40.47
4	0.54951	0.10	19.84	5.35	19.94	5.45	56.00	46.00	-36.06	-40.55
5	10.70309	0.51	19.13	5.07	19.64	5.58	60.00	50.00	-40.36	-44.42
6	25.26393	0.96	17.64	1.96	18.60	2.92	60.00	50.00	-41.40	-47.08

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 $N_{ANT} \leq 4$;

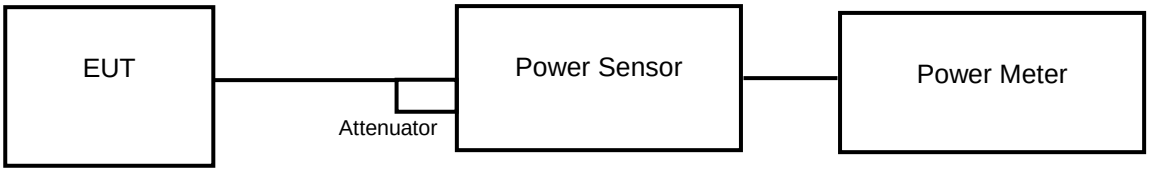
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};

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

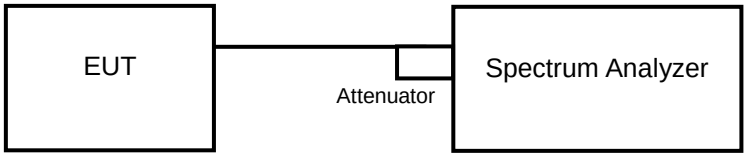
For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

4.3.2 Test Setup

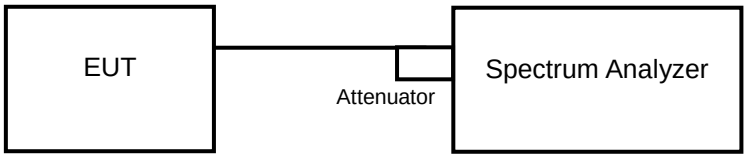
<Power Output Measurement>



or



<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), 802.11ac (VHT160)>

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	40.926	16.12	24	Pass
40	5200	84.528	19.27	24	Pass
48	5240	121.619	20.85	24	Pass
52	5260	122.462	20.88	24	Pass
60	5300	67.764	18.31	24	Pass
64	5320	48.865	16.89	24	Pass
100	5500	46.989	16.72	24	Pass
116	5580	119.124	20.76	24	Pass
140	5700	41.687	16.20	24	Pass
149	5745	122.462	20.88	30	Pass
157	5785	121.899	20.86	30	Pass
165	5825	121.899	20.86	30	Pass

Note:

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

1. 11 dBm + 10log (35.93) = 26.55 dBm > 24 dBm.
2. 11 dBm + 10log (24.33) = 24.86 dBm > 24 dBm.
3. 11 dBm + 10log (24.75) = 24.94 dBm > 24 dBm.
4. 11 dBm + 10log (23.92) = 24.79 dBm > 24 dBm.
5. 11 dBm + 10log (28.93) = 25.61 dBm > 24 dBm.
6. 11 dBm + 10log (24.12) = 24.82 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	15.42	15.66	71.647	18.55	24	Pass
40	5200	15.66	15.77	74.57	18.73	24	Pass
48	5240	15.76	15.92	76.754	18.85	24	Pass
52	5260	15.88	15.97	78.263	18.94	24	Pass
60	5300	15.66	15.58	72.954	18.63	24	Pass
64	5320	15.41	15.53	70.481	18.48	24	Pass
100	5500	14.18	14.43	53.915	17.32	24	Pass
116	5580	14.64	14.81	59.376	17.74	24	Pass
140	5700	14.35	14.89	58.059	17.64	24	Pass
144	5720 (U-NII-2C)	13.04	12.86	39.457	15.96	23.30	Pass
144	5720 (U-NII-3)	9.24	9.06	16.449	12.16	30	Pass
149	5745	14.11	14.22	52.187	17.18	30	Pass
157	5785	14.26	14.08	52.255	17.18	30	Pass
165	5825	14.21	14.01	51.54	17.12	30	Pass

Note:

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

Chain 0

1. 11 dBm + 10log (24.30) = 24.86 dBm > 24 dBm.
2. 11 dBm + 10log (24.46) = 24.88 dBm > 24 dBm.
3. 11 dBm + 10log (24.50) = 24.89 dBm > 24 dBm.
4. 11 dBm + 10log (24.35) = 24.86 dBm > 24 dBm.
5. 11 dBm + 10log (24.11) = 24.82 dBm > 24 dBm.
6. 11 dBm + 10log (24.50) = 24.89 dBm > 24 dBm.
7. 11 dBm + 10log (17.62) = 23.46 dBm < 24 dBm.

Chain 1

1. 11 dBm + 10log (24.23) = 24.84 dBm > 24 dBm.
2. 11 dBm + 10log (23.96) = 24.79 dBm > 24 dBm.
3. 11 dBm + 10log (24.16) = 24.83 dBm > 24 dBm.
4. 11 dBm + 10log (23.93) = 24.79 dBm > 24 dBm.
5. 11 dBm + 10log (24.09) = 24.82 dBm > 24 dBm.
6. 11 dBm + 10log (24.26) = 24.85 dBm > 24 dBm.
7. 11 dBm + 10log (16.98) = 23.30 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	13.87	14.17	50.5	17.03	24	Pass
46	5230	15.58	15.52	71.786	18.56	24	Pass
54	5270	15.15	16.22	74.613	18.73	24	Pass
62	5310	14.65	14.49	57.293	17.58	24	Pass
102	5510	14.21	14.70	55.875	17.47	24	Pass
110	5550	14.20	14.37	53.656	17.30	24	Pass
134	5670	14.60	14.41	56.446	17.52	24	Pass
142	5710 (U-NII-2C)	13.84	13.56	46.909	16.71	24	Pass
142	5710 (U-NII-3)	6.73	6.23	8.908	9.50	30	Pass
151	5755	13.98	14.03	50.296	17.02	30	Pass
159	5795	14.12	14.27	52.553	17.21	30	Pass

Note:

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

Chain 0

1. 11 dBm + 10log (43.03) = 27.34 dBm > 24 dBm.
2. 11 dBm + 10log (42.67) = 27.30 dBm > 24 dBm.
3. 11 dBm + 10log (44.89) = 27.52 dBm > 24 dBm.
4. 11 dBm + 10log (42.98) = 27.33 dBm > 24 dBm.
5. 11 dBm + 10log (45.21) = 27.55 dBm > 24 dBm.
6. 11 dBm + 10log (37.17) = 26.70 dBm > 24 dBm.

Chain 1

1. 11 dBm + 10log (41.91) = 27.22 dBm > 24 dBm.
2. 11 dBm + 10log (42.02) = 27.23 dBm > 24 dBm.
3. 11 dBm + 10log (43.79) = 27.41 dBm > 24 dBm.
4. 11 dBm + 10log (42.83) = 27.32 dBm > 24 dBm.
5. 11 dBm + 10log (44.47) = 27.48 dBm > 24 dBm.
6. 11 dBm + 10log (37.04) = 26.69 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	13.86	12.78	43.289	16.36	24	Pass
58	5290	13.82	12.73	42.849	16.32	24	Pass
106	5530	14.53	14.42	56.048	17.49	24	Pass
122	5610	14.01	14.77	55.169	17.42	24	Pass
138	5690 (U-NII-2C)	13.73	14.90	54.508	17.36	24	Pass
138	5690 (U-NII-3)	3.33	4.62	5.05	7.03	30	Pass
155	5775	14.04	14.28	52.143	17.17	30	Pass

Note:

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

Chain 0

1. 11 dBm + 10log (88.69) = 30.48 dBm > 24 dBm.
2. 11 dBm + 10log (86.15) = 30.35 dBm > 24 dBm.
3. 11 dBm + 10log (88.05) = 30.45 dBm > 24 dBm.
4. 11 dBm + 10log (80.10) = 30.04 dBm > 24 dBm.

Chain 1

1. 11 dBm + 10log (85.39) = 30.31 dBm > 24 dBm.
2. 11 dBm + 10log (86.86) = 30.39 dBm > 24 dBm.
3. 11 dBm + 10log (85.07) = 30.30 dBm > 24 dBm.
4. 11 dBm + 10log (78.77) = 29.96 dBm > 24 dBm.

802.11ac (VHT160)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
50	5250	9.70	8.96	17.203	12.36	17	Pass
114	5570	12.27	11.53	31.089	14.93	24	Pass

Note:

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

Chain 0

1. 11 dBm + 10log (163.96) = 33.15 dBm > 24 dBm.

Chain 1

1. 11 dBm + 10log (164.08) = 33.15 dBm > 24 dBm.

26 dB Bandwidth:

802.11a

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
36	5180	24.19
40	5200	25.97
48	5240	35.51
52	5260	35.93
60	5300	24.33
64	5320	24.75
100	5500	23.92
116	5580	28.93
140	5700	24.12
144	5720 (U-NII-2C)	26.94
144	5720 (U-NII-3)	31.01

802.11n (HT20)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	24.30	24.01
40	5200	24.89	24.28
48	5240	25.05	24.08
52	5260	24.30	24.23
60	5300	24.46	23.96
64	5320	24.50	24.16
100	5500	24.35	23.93
116	5580	24.11	24.09
140	5700	24.50	24.26
144	5720 (U-NII-2C)	17.62	16.98
144	5720 (U-NII-3)	7.35	7.08

802.11n (HT40)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	44.31	43.57
46	5230	44.08	41.70
54	5270	43.03	41.91
62	5310	42.67	42.02
102	5510	44.89	43.79
110	5550	42.98	42.83
134	5670	45.21	44.47
142	5710 (U-NII-2C)	37.17	37.04
142	5710 (U-NII-3)	7.24	6.84

802.11ac (VHT80)

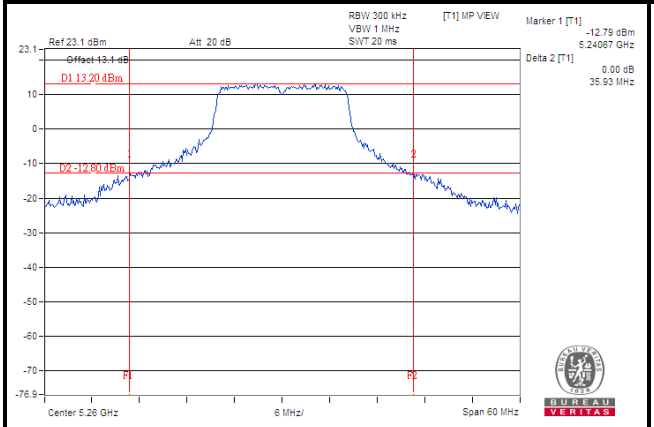
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	85.25	83.57
58	5290	88.69	85.39
106	5530	86.15	86.86
122	5610	88.05	85.07
138	5690 (U-NII-2C)	80.10	78.77
138	5690 (U-NII-3)	7.30	7.39

802.11ac (VHT160)

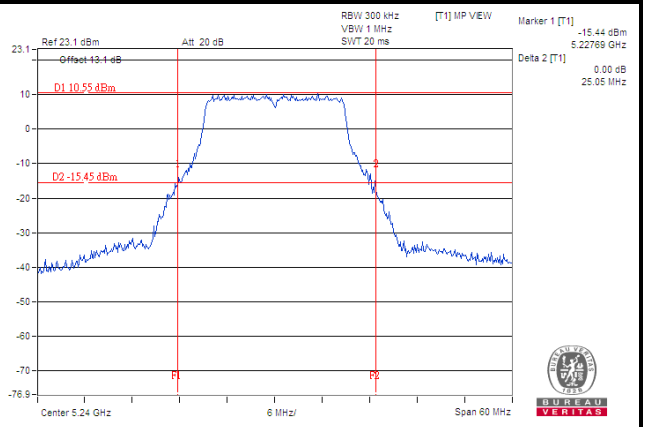
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
50	5250	163.93	163.45
114	5570	163.96	164.08

Spectrum Plot of Worst Value

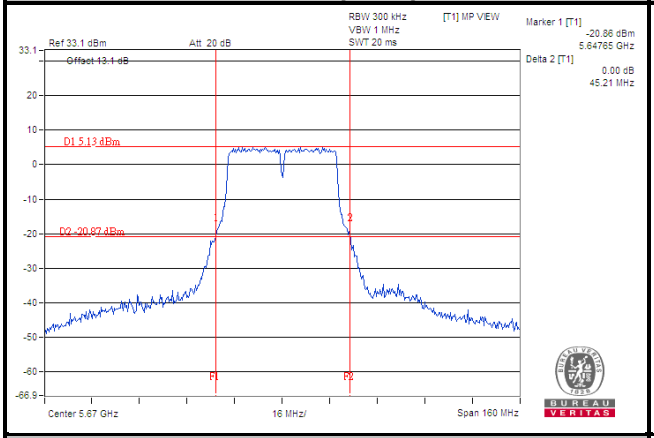
802.11a



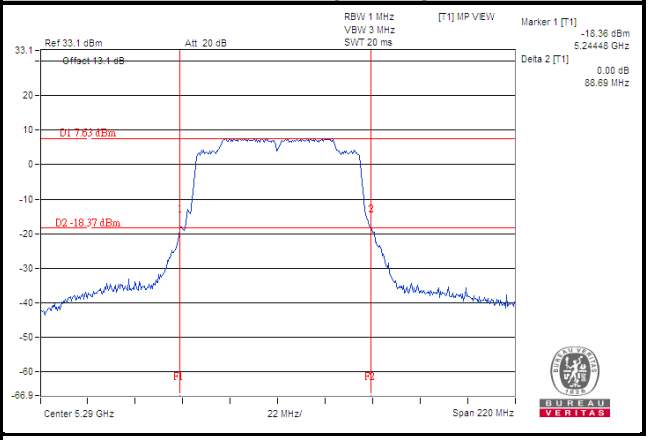
802.11n (HT20)



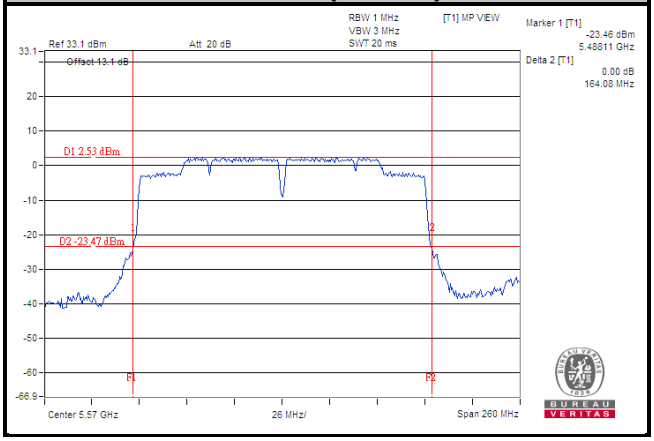
802.11n (HT40)



802.11ac (VHT80)

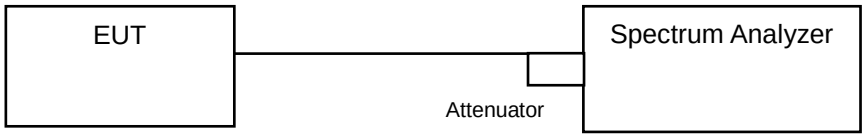


802.11ac (VHT160)



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	16.92
40	5200	17.16
48	5240	19.44
52	5260	19.08
60	5300	17.04
64	5320	16.92
100	5500	16.92
116	5580	18.24
140	5700	17.04
149	5745	17.40
157	5785	18.60
165	5825	17.64

802.11n (HT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	18.12	18.00
40	5200	18.12	18.00
48	5240	18.00	17.88
52	5260	18.12	17.88
60	5300	18.12	17.88
64	5320	18.12	17.88
100	5500	18.12	17.88
116	5580	18.12	18.00
140	5700	18.12	17.88
144	5720 (U-NII-2C)	14.00	14.00
144	5720 (U-NII-3)	3.76	3.76
149	5745	18.12	17.88
157	5785	18.12	17.88
165	5825	18.12	18.00

802.11n (HT40)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	36.84	36.72
46	5230	36.84	36.60
54	5270	36.84	36.72
62	5310	36.84	36.84
102	5510	36.84	36.84
110	5550	36.84	36.72
134	5670	36.72	36.84
142	5710 (U-NII-2C)	33.48	33.48
142	5710 (U-NII-3)	3.36	3.24
151	5755	36.72	36.84
159	5795	36.84	36.72

802.11ac (VHT80)

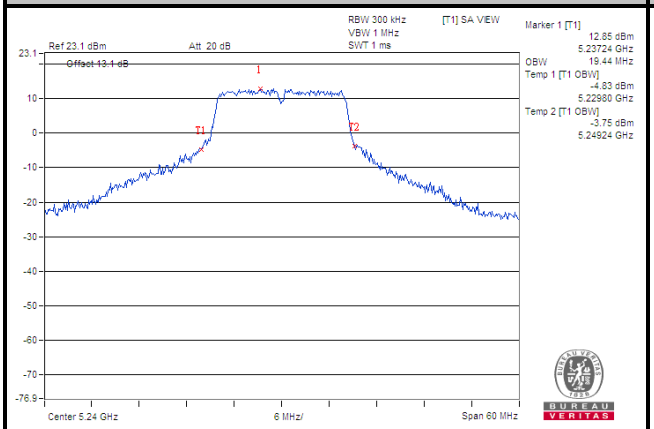
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	75.36	75.12
58	5290	75.36	75.36
106	5530	75.12	75.36
122	5610	75.36	75.12
138	5690 (U-NII-2C)	72.68	72.92
138	5690 (U-NII-3)	2.44	2.44
155	5775	76.80	75.12

802.11ac (VHT160)

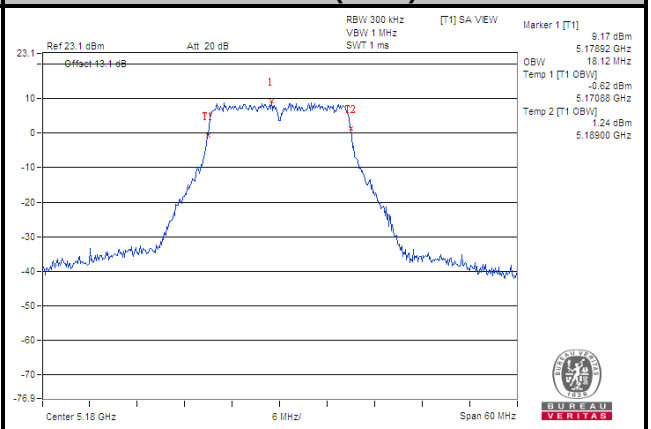
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
50	5250	153.20	152.80
114	5570	153.60	153.20

Spectrum Plot of Worst Value

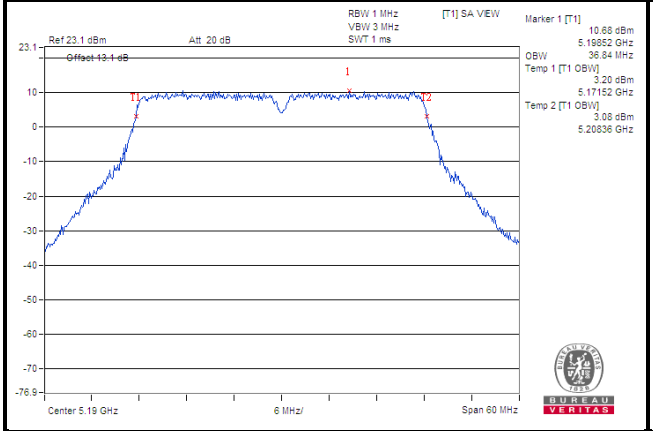
802.11a



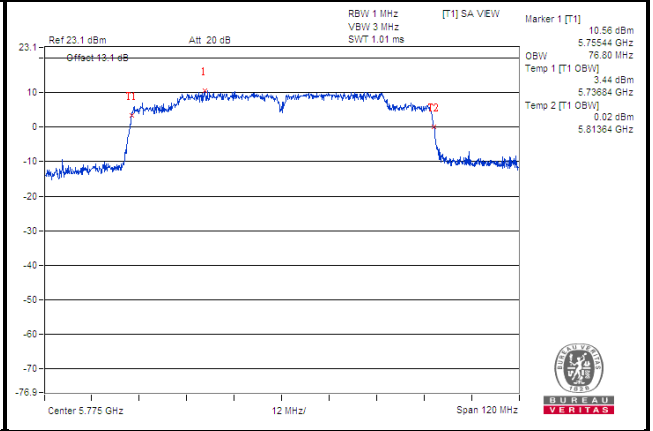
802.11n (HT20)



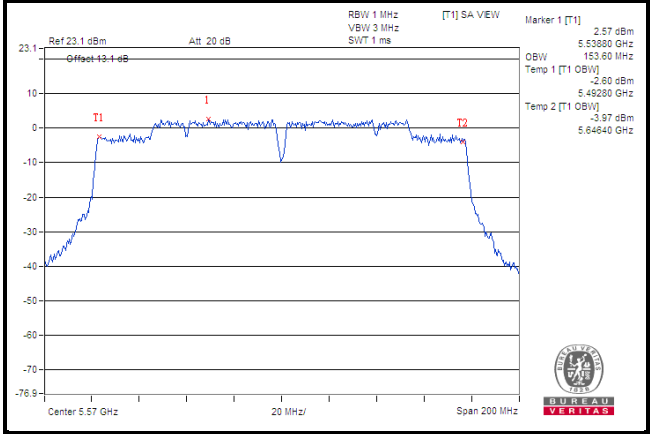
802.11n (HT40)



802.11ac (VHT80)



802.11ac (VHT160)

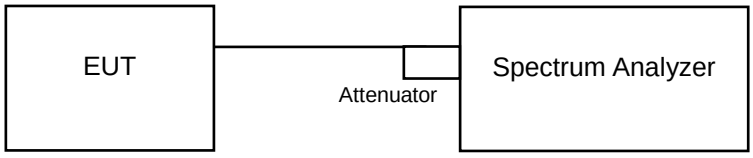


4.5 Peak Power Spectral Density Measurement

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-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:

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

802.11a

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD with Duty Factor (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
36	5180	5.12	0.10	5.22	11	Pass
40	5200	8.26	0.10	8.36	11	Pass
48	5240	9.55	0.10	9.65	11	Pass
52	5260	9.24	0.10	9.34	11	Pass
60	5300	6.88	0.10	6.98	11	Pass
64	5320	4.90	0.10	5.00	11	Pass
100	5500	5.15	0.10	5.25	11	Pass
116	5580	9.24	0.10	9.34	11	Pass
140	5700	5.07	0.10	5.17	11	Pass

Note: Refer to section 3.3 for duty cycle spectrum plot.

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	5.20	5.85	0.32	8.87	11	Pass
40	5200	5.48	6.16	0.32	9.16	11	Pass
48	5240	5.84	5.85	0.32	9.17	11	Pass
52	5260	5.52	5.85	0.32	9.02	11	Pass
60	5300	5.65	5.56	0.32	8.93	11	Pass
64	5320	5.36	4.95	0.32	8.49	11	Pass
100	5500	4.04	4.16	0.32	7.43	11	Pass
116	5580	4.45	4.68	0.32	7.89	11	Pass
140	5700	4.27	4.64	0.32	7.79	11	Pass
144	5720 (U-NII-2C)	5.05	3.71	0.32	7.76	11	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, U-NII-2A Band:**
   Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2 / N_{ANT}$]= 4.73 < 6 dBi, so the limit does not need to reduced.
   For U-NII-2C Band:
   Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2 / N_{ANT}$]= 4.51 < 6 dBi, so the limit does not need to reduced.
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	1.07	1.22	0.52	4.68	11	Pass
46	5230	2.89	2.62	0.52	6.29	11	Pass
54	5270	1.49	1.86	0.52	5.21	11	Pass
62	5310	0.30	0.29	0.52	3.83	11	Pass
102	5510	0.58	0.68	0.52	4.16	11	Pass
110	5550	0.75	0.84	0.52	4.33	11	Pass
134	5670	0.96	0.51	0.52	4.27	11	Pass
142	5710 (U-NII-2C)	0.90	0.71	0.52	4.34	11	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, U-NII-2A Band:**
   Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2 / N_{ANT}$]= 4.73 < 6 dBi, so the limit does not need to reduced.
   For U-NII-2C Band:
   Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2 / N_{ANT}$]= 4.51 < 6 dBi, so the limit does not need to reduced.
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	-1.75	-1.44	0.94	2.36	11	Pass
58	5290	-1.77	-2.10	0.94	2.02	11	Pass
106	5530	-1.65	-1.40	0.94	2.43	11	Pass
122	5610	-1.86	-1.78	0.94	2.13	11	Pass
138	5690 (U-NII-2C)	-1.97	-1.53	0.94	2.21	11	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, U-NII-2A Band:**
   Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2 / N_{ANT}$]= 4.73 < 6 dBi, so the limit does not need to reduced.
   For U-NII-2C Band:
   Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2 / N_{ANT}$]= 4.51 < 6 dBi, so the limit does not need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT160)

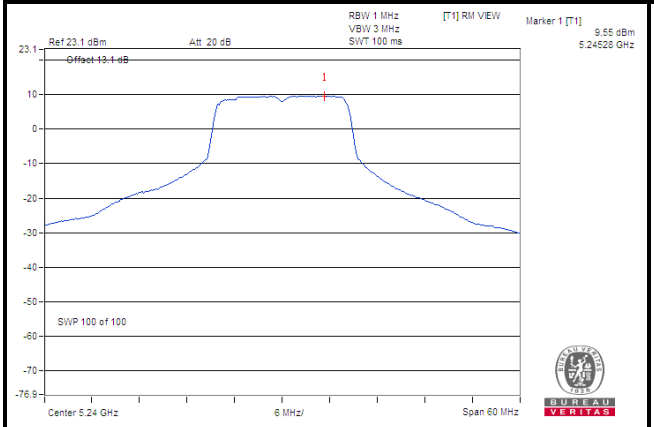
Channel	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
50	5250	-9.99	-10.77	0.94	-6.41	11	Pass
114	5570	-7.53	-8.60	0.94	-4.08	11	Pass

Note:

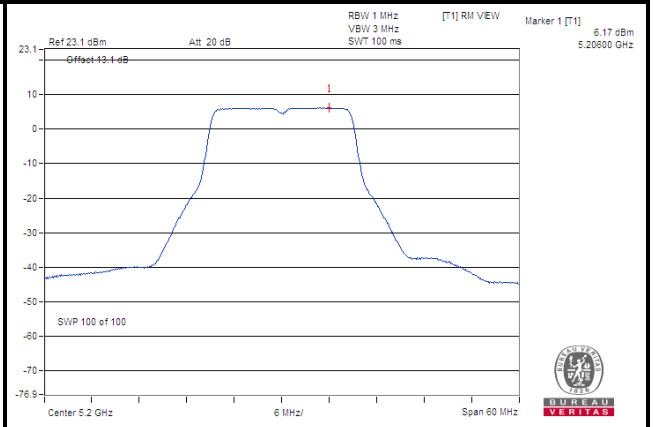
1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1, U-NII-2A Band:**
   Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2 / N_{ANT}$]= 4.73 < 6 dBi, so the limit does not need to reduced.
   For U-NII-2C Band:
   Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2 / N_{ANT}$]= 4.51 < 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

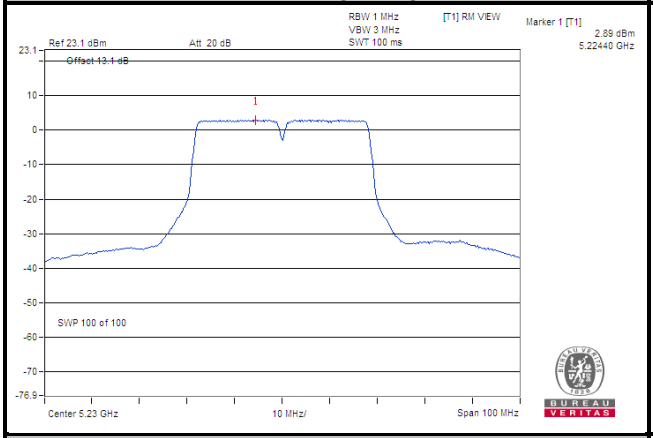
802.11a



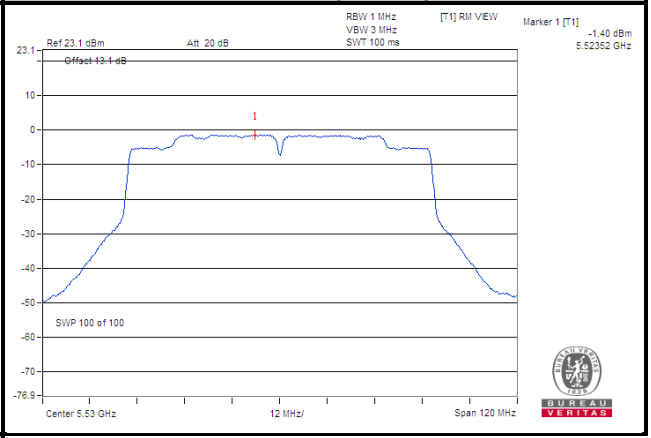
802.11n (HT20)



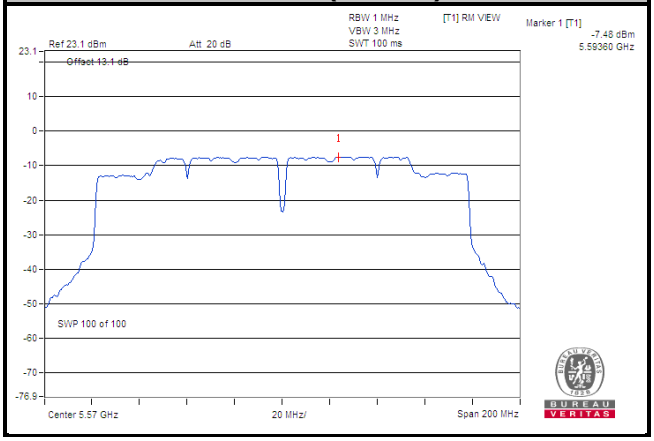
802.11n (HT40)



802.11ac (VHT80)



802.11ac (VHT160)



For U-NII-3 Band

802.11a

Channel	Frequency (MHz)	PSD w/o Duty Factor		Duty Factor (dB)	PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
		(dBm/300 kHz)	(dBm/500 kHz)				
149	5745	3.25	5.47	0.10	5.57	30	Pass
157	5785	4.03	6.25	0.10	6.35	30	Pass
165	5825	3.70	5.92	0.10	6.02	30	Pass

Note: Refer to section 3.3 for duty cycle spectrum plot.

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	144	5720 (U-NII-3)	-0.90	1.32	3.01	0.32	4.65	30	Pass
	149	5745	-0.42	1.80	3.01	0.32	5.13	30	Pass
	157	5785	-0.14	2.08	3.01	0.32	5.41	30	Pass
	165	5825	-0.17	2.05	3.01	0.32	5.38	30	Pass
1	144	5720 (U-NII-3)	-1.64	0.58	3.01	0.32	3.91	30	Pass
	149	5745	-0.19	2.03	3.01	0.32	5.36	30	Pass
	157	5785	-0.41	1.81	3.01	0.32	5.14	30	Pass
	165	5825	-0.18	2.04	3.01	0.32	5.37	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 = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2 / N_{ANT}$]= 3.06 < 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	142	5710 (U-NII-3)	-4.31	-2.09	3.01	0.52	1.44	30	Pass
	151	5755	-2.30	-0.08	3.01	0.52	3.45	30	Pass
	159	5795	-2.75	-0.53	3.01	0.52	3.00	30	Pass
1	142	5710 (U-NII-3)	-4.61	-2.39	3.01	0.52	1.14	30	Pass
	151	5755	-2.06	0.16	3.01	0.52	3.69	30	Pass
	159	5795	-2.59	-0.37	3.01	0.52	3.16	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 = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2 / N_{ANT}$]= 3.06 < 6 dBi, so the limit does not need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

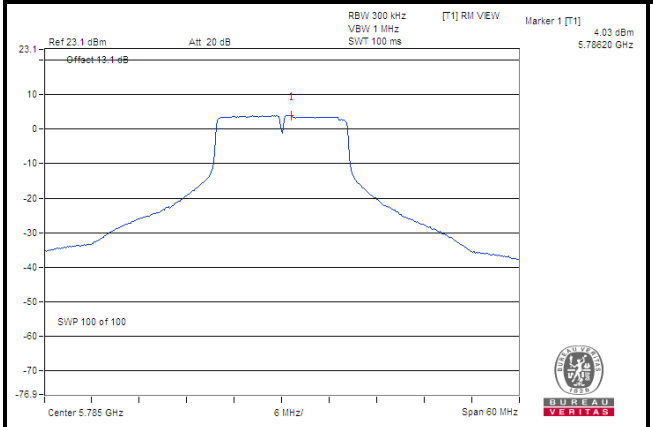
802.11ac (VHT80)

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	138	5690 (U-NII-3)	-10.87	-8.65	3.01	0.94	-4.70	30	Pass
	155	5775	-4.31	-2.09	3.01	0.94	1.86	30	Pass
1	138	5690 (U-NII-3)	-11.20	-8.98	3.01	0.94	-5.03	30	Pass
	155	5775	-3.86	-1.64	3.01	0.94	2.31	30	Pass

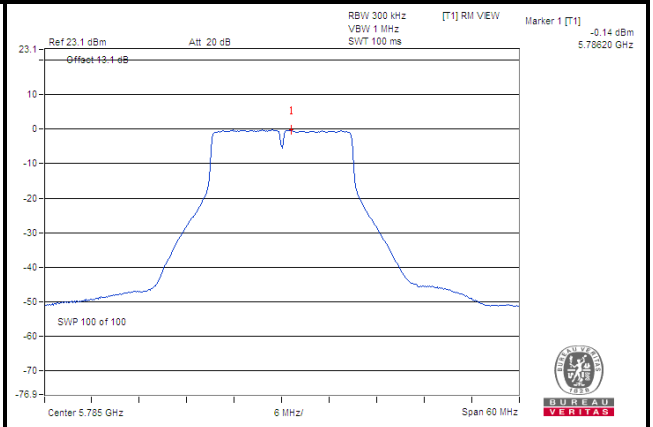
Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2 / N_{ANT}$]= 3.06 < 6 dBi, so the limit does not need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

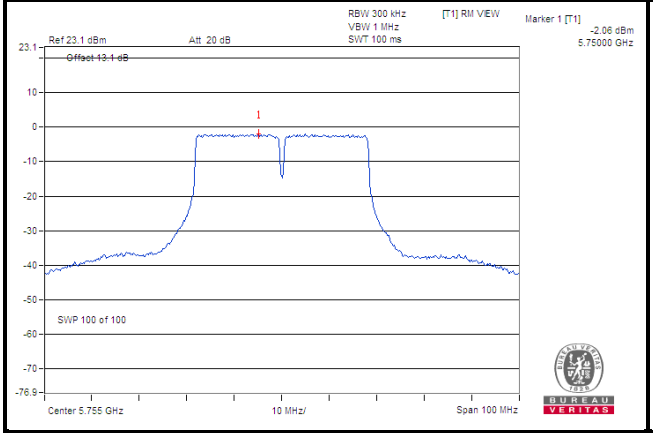
802.11a



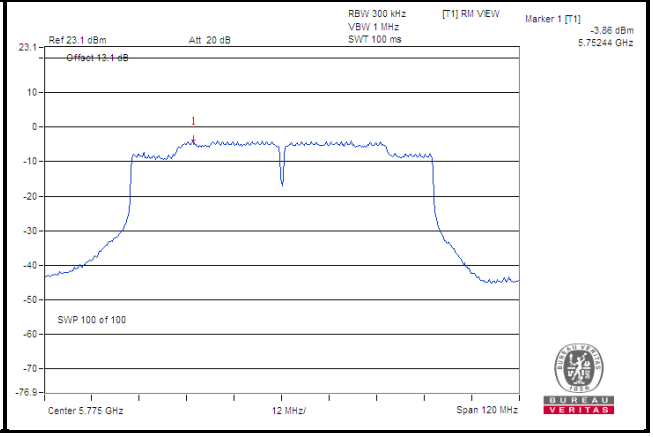
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

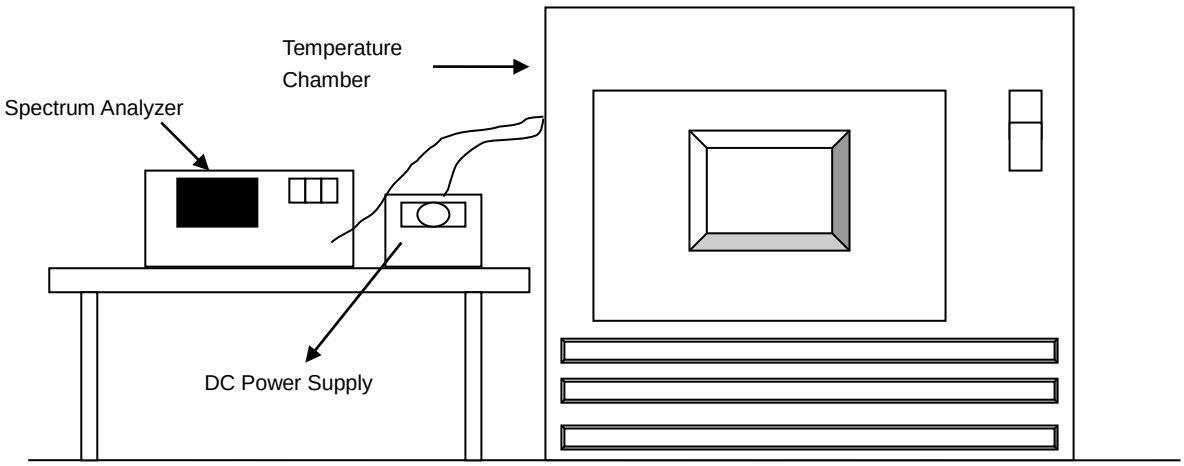


4.6 Frequency Stability

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. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
b. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10 dB lower than the measured peak value.
c. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

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 (Vac)	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	120	5179.9795	PASS	5179.983	PASS	5179.9835	PASS	5179.9787	PASS
40	120	5180.0059	PASS	5180.007	PASS	5180.0067	PASS	5180.0039	PASS
30	120	5179.9862	PASS	5179.9863	PASS	5179.9889	PASS	5179.9893	PASS
20	120	5179.9784	PASS	5179.9803	PASS	5179.9784	PASS	5179.9805	PASS
10	120	5180.0223	PASS	5180.0203	PASS	5180.0245	PASS	5180.0208	PASS
0	120	5179.9768	PASS	5179.975	PASS	5179.9747	PASS	5179.9763	PASS
-10	120	5179.9959	PASS	5179.9949	PASS	5179.9976	PASS	5179.9967	PASS
-20	120	5180.0005	PASS	5179.9994	PASS	5179.9993	PASS	5180.0014	PASS
-30	120	5179.9861	PASS	5179.9837	PASS	5179.984	PASS	5179.9873	PASS

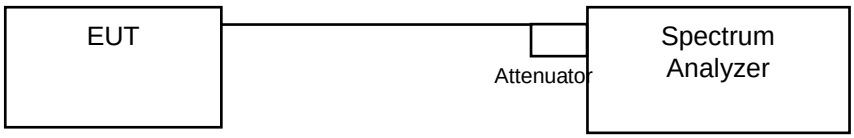
Frequency Stability Versus Voltage									
Operating Frequency: 5180 MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
20	138	5179.978	PASS	5179.9807	PASS	5179.9775	PASS	5179.9807	PASS
	120	5179.9784	PASS	5179.9803	PASS	5179.9784	PASS	5179.9805	PASS
	102	5179.9786	PASS	5179.9798	PASS	5179.9781	PASS	5179.9802	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	16.39	0.5	Pass
157	5785	16.40	0.5	Pass
165	5825	16.40	0.5	Pass

802.11n (HT20)

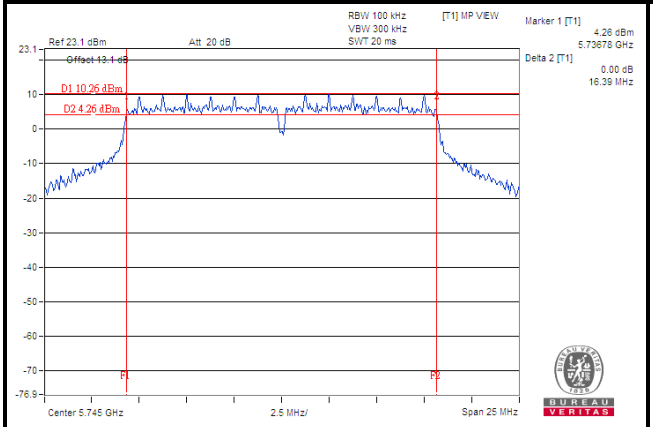
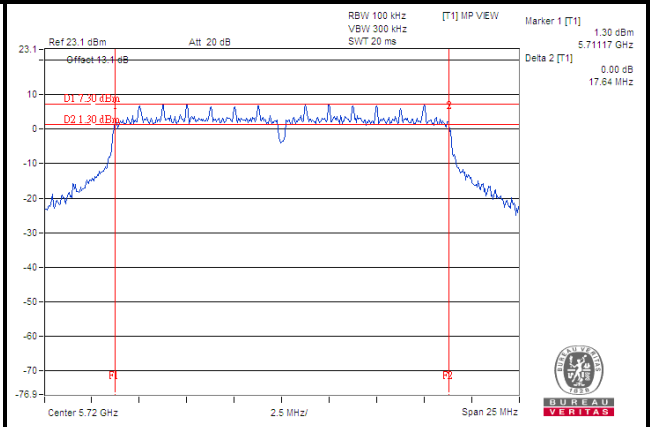
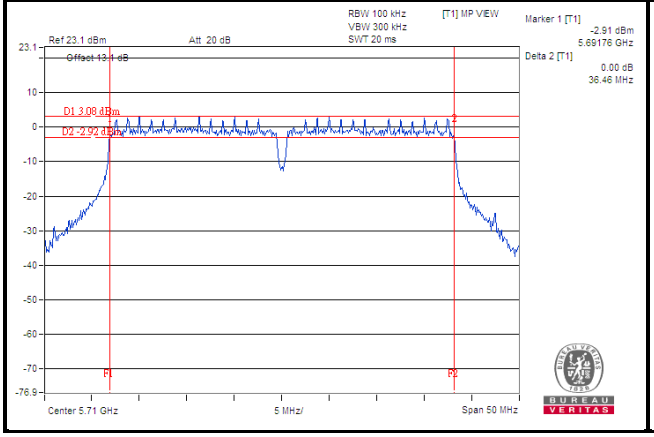
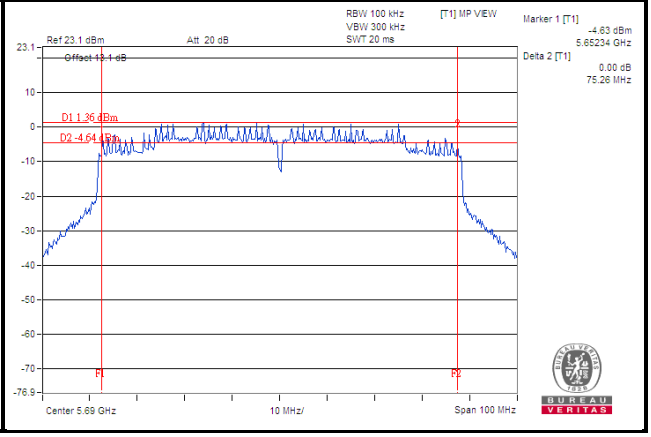
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
144	5720 (U-NII-3)	3.81	3.82	0.5	Pass
149	5745	17.64	17.66	0.5	Pass
157	5785	17.62	17.66	0.5	Pass
165	5825	17.63	17.64	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
142	5710 (U-NII-3)	3.22	3.23	0.5	Pass
151	5755	36.44	36.49	0.5	Pass
159	5795	36.45	36.49	0.5	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
138	5690 (U-NII-3)	2.60	2.60	0.5	Pass
155	5775	75.25	75.36	0.5	Pass

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

Note:

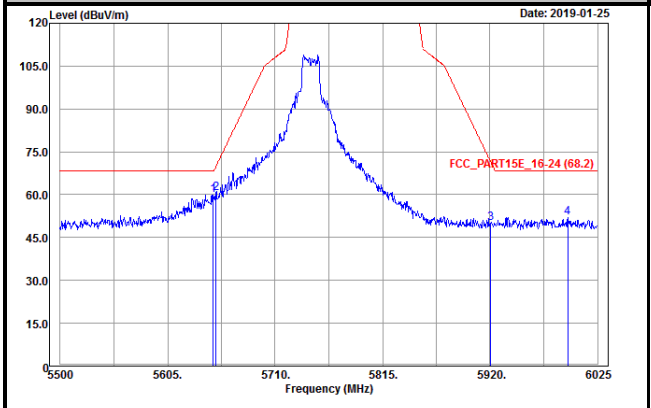
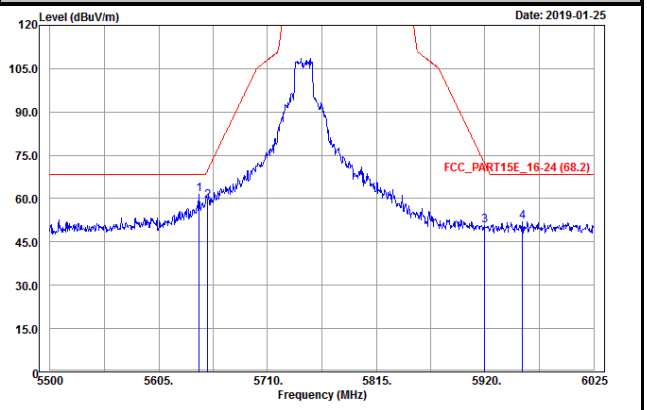
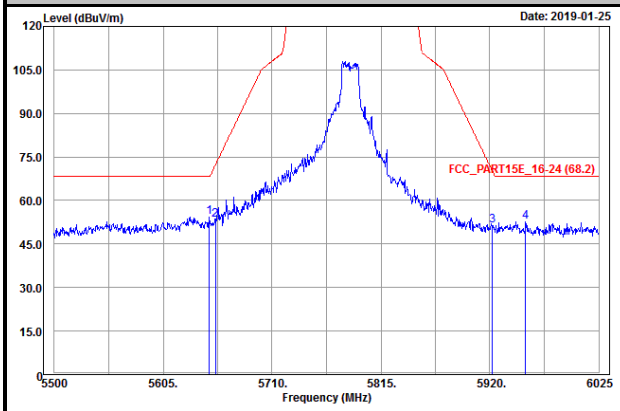
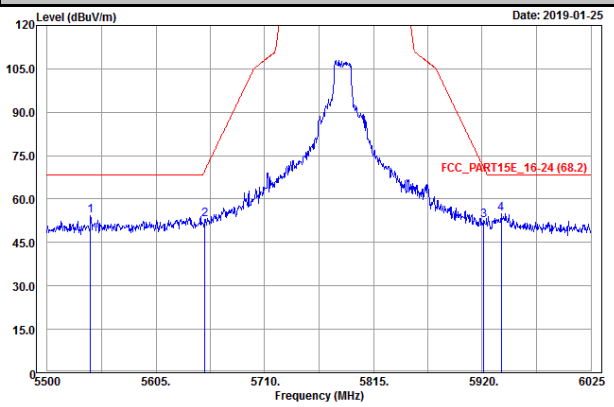
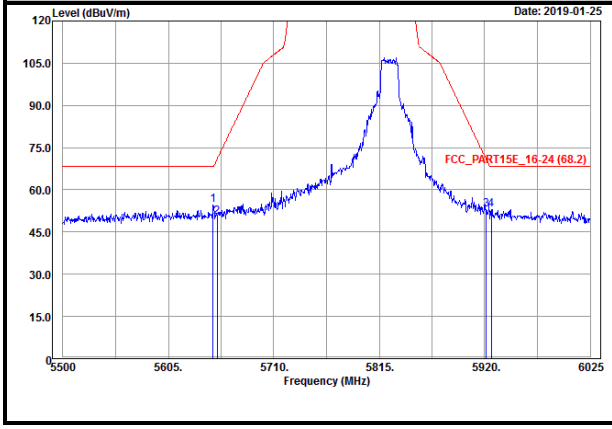
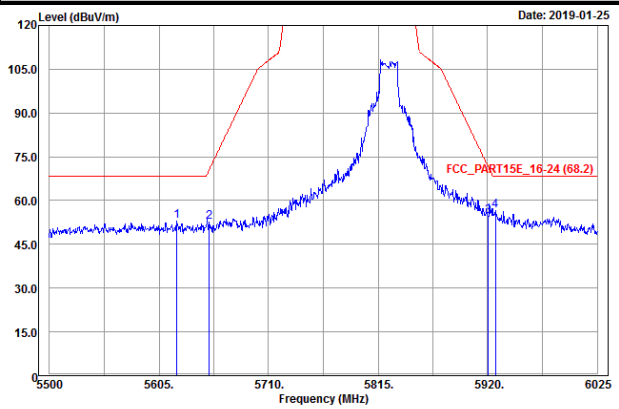
For Ch144 (UNII-3 Band): The 6 dB bandwidth above 5725 MHz = Marker 1 + Delta 2 – 5725 MHz
For Ch142 (UNII-3 Band): The 6 dB bandwidth above 5725 MHz = Marker 1 + Delta 2 – 5725 MHz
For Ch138 (UNII-3 Band): The 6 dB bandwidth above 5725 MHz = Marker 1 + Delta 2 – 5725 MHz

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)

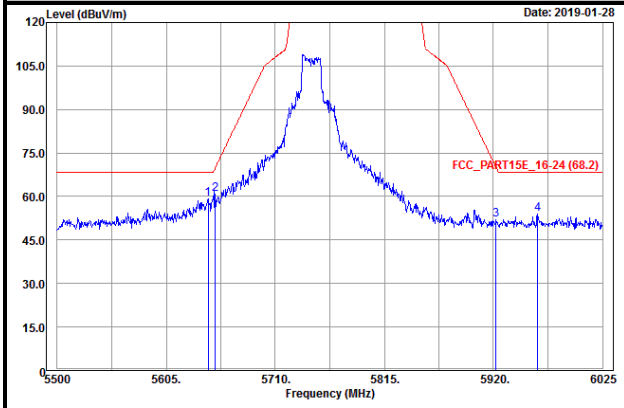
802.11a

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

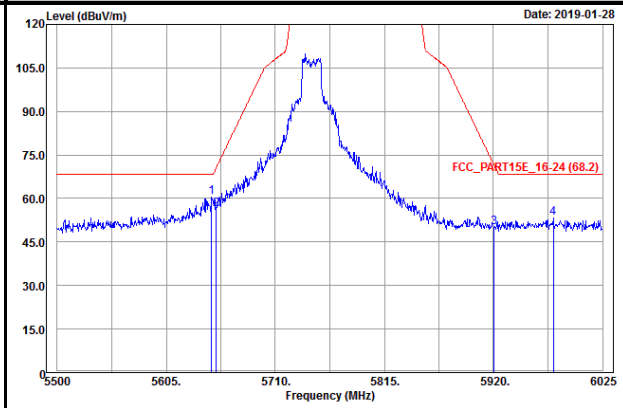
802.11n (HT20)

Ch 149

Horizontal

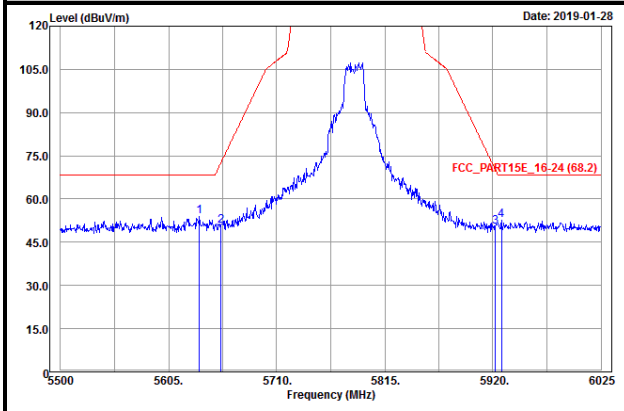


Vertical

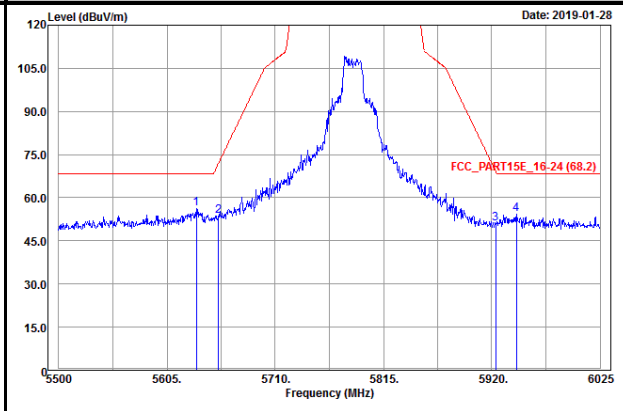


Ch 157

Horizontal

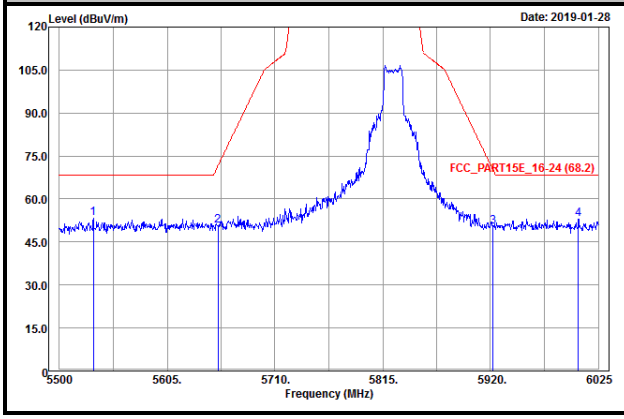


Vertical

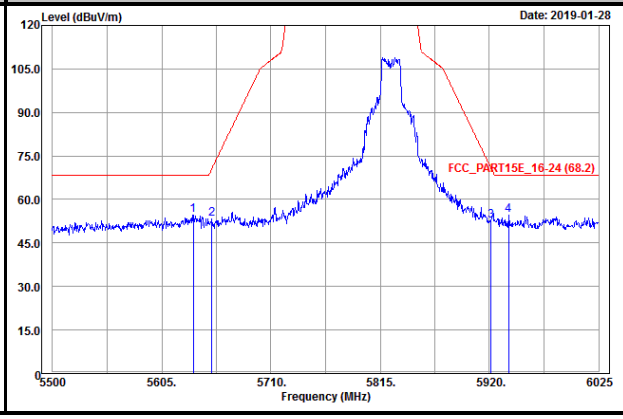


Ch 165

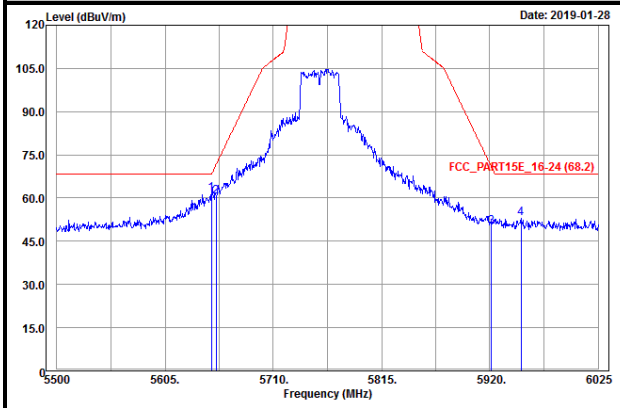
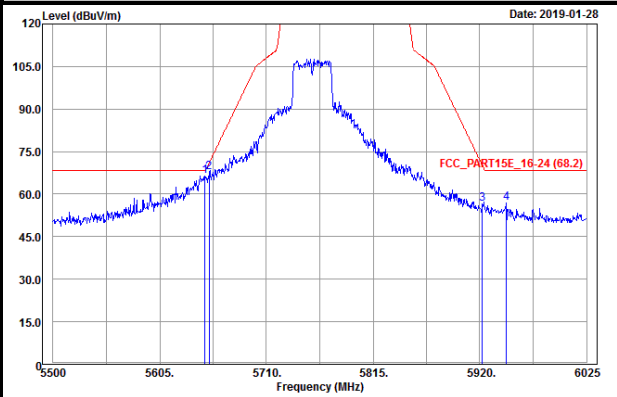
Horizontal

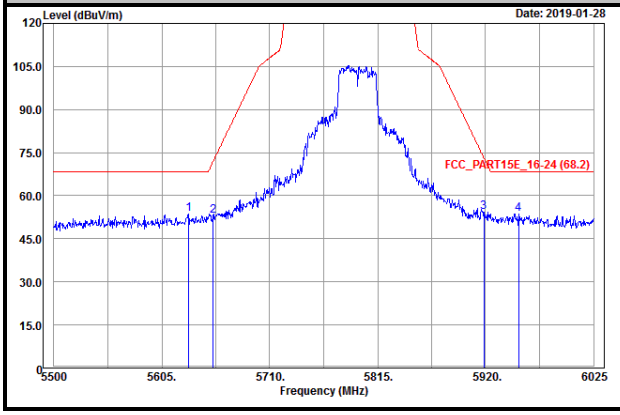
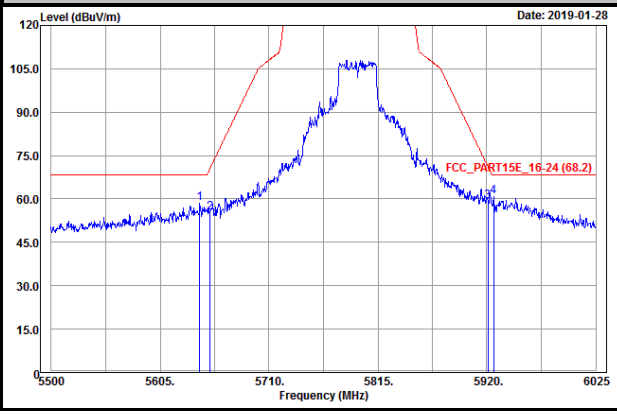


Vertical

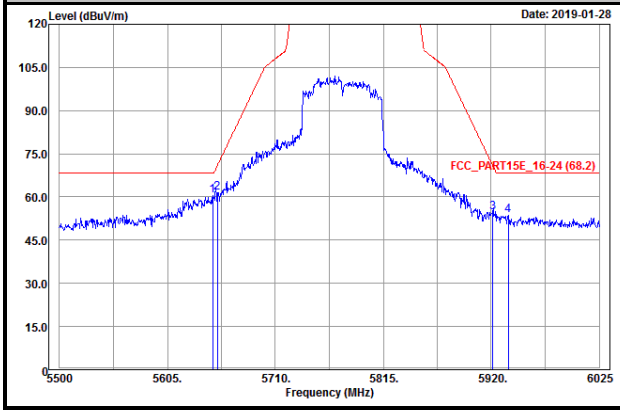
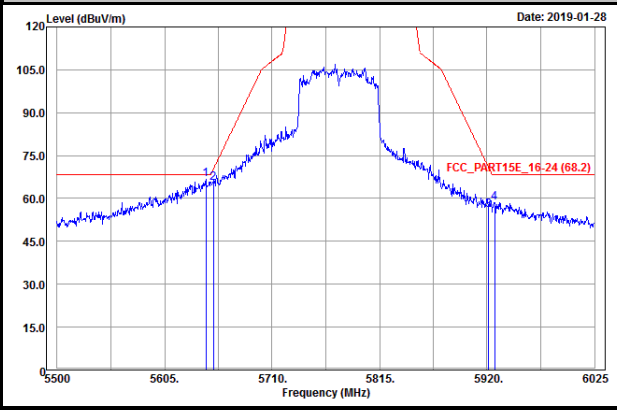


802.11n (HT40)

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.

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

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Web Site: www.bureauveritas-adt.com

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

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