FCC Test Report

Report No.:	RF190107C14-4
FCC ID:	HFSQTA-QCNFA324A
Test Model:	Tx1
Received Date:	Jan. 07, 2019
Test Date:	Feb. 23, 2019 ~ Apr. 01, 2019
Issued Date:	Apr. 03, 2019
Applicant:	Quanta Computer Inc.
Address:	No.188, Wenhua 2nd Rd., Guishan Dist., Taoyuan City 33377, Taiwan
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

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Release Control Record

Issue No.	Description	Date Issued
RF190107C14-4	Original Release	Apr. 03, 2019

1 Certificate of Conformity

Product:	CTL Chromebook Tab Tx1
Brand:	Quanta
Test Model:	Tx1
Sample Status:	Engineering Sample
Applicant:	Quanta Computer Inc.
Test Date:	Feb. 23, 2019 ~ Apr. 01, 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. 03, 2019

Ivonne Wu / Supervisor

Approved by : _____ , **Date:** Apr. 03, 2019

Dylan Chiou / Project Engineer

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	**Test Item**	**Result**	**Remarks**
15.407(b)(6)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -14.01 dB at 0.15811 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 dB at 5458.32 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	CTL Chromebook Tab Tx1
Brand	Quanta
Test Model	Tx1
Status of EUT	Engineering Sample
Power Supply Rating	5 Vdc or 9 Vdc or 12 Vdc or 15 Vdc (adapter) 3.84 Vdc (battery)
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK
Modulation Technology	OFDM
Transfer Rate	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0 Mbps 802.11n: up to 300.0 Mbps 802.11ac: up to 867.0 Mbps
Operating Frequency	5180 ~ 5240 MHz, 5260 ~ 5320 MHz, 5500 ~ 5700 MHz, 5745 ~ 5825 MHz
Number of Channel	5180 ~ 5240 MHz: 4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80) 5260 ~ 5320 MHz: 4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80) 5500 ~ 5700 MHz: 11 for 802.11a, 802.11n (HT20) 5 for 802.11n (HT40) 2 for 802.11ac (VHT80) 5745 ~ 5825 MHz: 5 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80)
Output Power	37.260 mW for 5180 ~ 5240 MHz 37.573 mW for 5260 ~ 5320 MHz 62.702 mW for 5500 ~ 5700 MHz 45.217 mW for 5745 ~ 5825 MHz
Antenna Type	PIFA antenna with 1.01 dBi gain (Main) / 2.13 dBi (Aux.) (5180 ~ 5240 MHz) PIFA antenna with 1.01 dBi gain (Main) / 2.13 dBi (Aux.) (5260 ~ 5320 MHz) PIFA antenna with 1.10 dBi gain (Main) 2.59 dBi (Aux.) (5500 ~ 5700 MHz) PIFA antenna with 0.91 dBi gain (Main) / 1.10 dBi (Aux.) (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	2TX
802.11n (HT20)	2TX
802.11n (HT40)	2TX
802.11ac (VHT20)	2TX
802.11ac (VHT40)	2TX
802.11ac (VHT80)	2TX

   * The modulation and bandwidth are similar for 802.11n mode for HT20 / HT40 and 802.11ac mode for VHT20 / VHT40, therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

2. The EUT contains following accessory devices.

Product	Brand	Model	Description
Adapter	hp	TPN-AA07	I/P: 100-240 Vac, 50-60 Hz, 1.4 A O/P: 5 Vdc or 9 Vdc or 12 Vdc, 3 A Power Cord: 1.75 m / 0 core
Battery	SMP	SQU-1706	3.84 Vdc, 8860 mAh
BT/ WLAN Module	Qualcomm Atheros	QCNFA324A	--

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

3.2 Description of Test Modes

For 5180 ~ 5240 MHz

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

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

2 channels are provided for 802.11n (HT40):

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

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
42	5210

For 5260 ~ 5320 MHz

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

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

2 channels are provided for 802.11n (HT40):

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

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
58	5290

For 5500 ~ 5700 MHz

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

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

5 channels are provided for 802.11n (HT40):

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

2 channels are provided for 802.11ac (VHT80):

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

For 5745 ~ 5825 MHz:

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

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

2 channels are provided for 802.11n (HT40):

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

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
155	5775

3.2.1 Test Mode Applicability and Tested Channel Detail

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

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

Note:
1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-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)
-	5180-5240	802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6.0
-		802.11n (HT20)	36 to 48	36, 40, 48	OFDM	BPSK	6.5
-		802.11n (HT40)	38 to 46	38, 46	OFDM	BPSK	13.5
-		802.11ac (VHT80)	42	42	OFDM	BPSK	29.3
-	5260-5320	802.11a	52 to 64	52, 60, 64	OFDM	BPSK	6.0
-		802.11n (HT20)	52 to 64	52, 60, 64	OFDM	BPSK	6.5
-		802.11n (HT40)	54 to 62	54, 62	OFDM	BPSK	13.5
-		802.11ac (VHT80)	58	58	OFDM	BPSK	29.3
-	5500-5700	802.11a	100 to 140	100, 116, 140	OFDM	BPSK	6.0
-		802.11n (HT20)	100 to 140	100, 116, 140	OFDM	BPSK	6.5
-		802.11n (HT40)	102 to 134	102, 110, 134	OFDM	BPSK	13.5
-		802.11ac (VHT80)	106 to 122	106, 122	OFDM	BPSK	29.3
-	5745-5825	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-		802.11n (HT20)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
-		802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	13.5
-		802.11ac (VHT80)	155	155	OFDM	BPSK	29.3

Radiated Emission Test (Below 1 GHz):

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

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

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5500-5700	802.11ac (VHT80)	106 to 122	106	OFDM	BPSK	29.3

Power Line Conducted Emission Test:

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

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

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5500-5700	802.11ac (VHT80)	106 to 122	106	OFDM	BPSK	29.3

Antenna Port Conducted Measurement:

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

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

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

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5180-5240	802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6.0
-		802.11n (HT20)	36 to 48	36, 40, 48	OFDM	BPSK	6.5
-		802.11n (HT40)	38 to 46	38, 46	OFDM	BPSK	13.5
-		802.11ac (VHT80)	42	42	OFDM	BPSK	29.3
-	5260-5320	802.11a	52 to 64	52, 60, 64	OFDM	BPSK	6.0
-		802.11n (HT20)	52 to 64	52, 60, 64	OFDM	BPSK	6.5
-		802.11n (HT40)	54 to 62	54, 62	OFDM	BPSK	13.5
-		802.11ac (VHT80)	58	58	OFDM	BPSK	29.3
-	5500-5700	802.11a	100 to 140	100, 116, 140	OFDM	BPSK	6.0
-		802.11n (HT20)	100 to 140	100, 116, 140	OFDM	BPSK	6.5
-		802.11n (HT40)	102 to 134	102, 110, 134	OFDM	BPSK	13.5
-		802.11ac (VHT80)	106 to 122	106, 122	OFDM	BPSK	29.3
-	5745-5825	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-		802.11n (HT20)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
-		802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	13.5
-		802.11ac (VHT80)	155	155	OFDM	BPSK	29.3

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested by
RE≥1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Harry Hsueh
RE<1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Harry Hsueh
PLC	25 deg. C, 65 % RH	120 Vac, 60 Hz	Thomas Wei
APCM	25 deg. C, 65 % RH	3.84 Vdc	Gavin Wu

3.3 Duty Cycle of Test Signal

MODULATION TYPE: BPSK

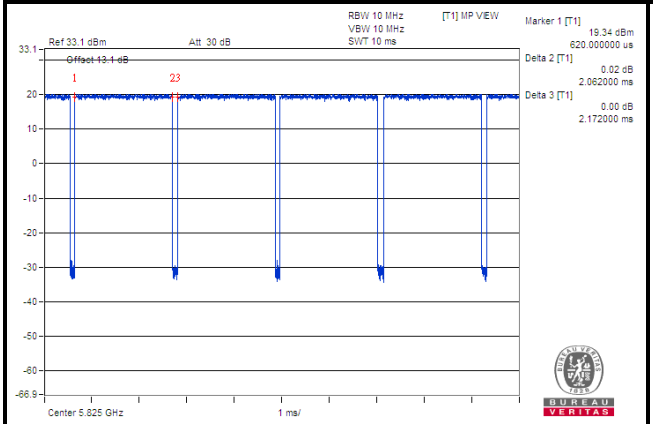
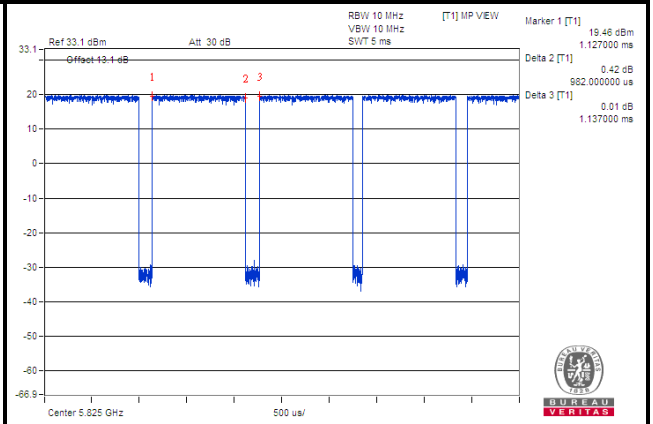
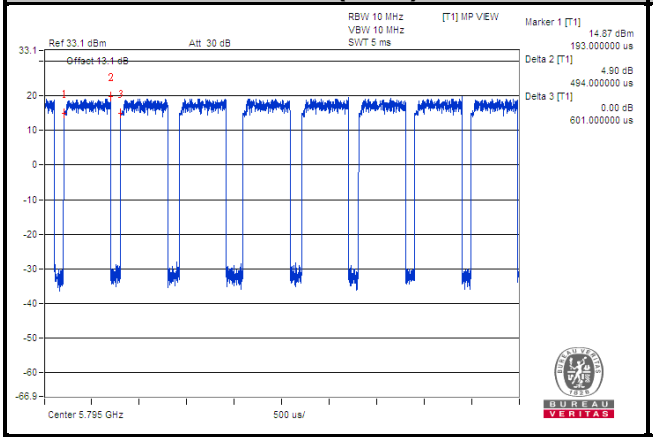
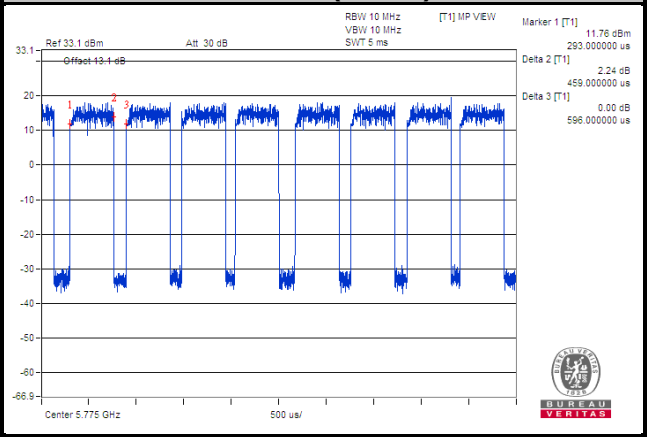
Duty cycle of test signal is < 98 %, duty factor is required.

802.11a: Duty cycle = 2.062/2.172 = 0.949, Duty factor = 10 * log(1/0.949) = 0.23

802.11n (HT20): Duty cycle = 0.982/1.137 = 0.864, Duty factor = 10 * log(1/0.864) = 0.63

802.11n (HT40): Duty cycle = 494/601 = 0.822, Duty factor = 10 * log(1/0.822) = 0.85

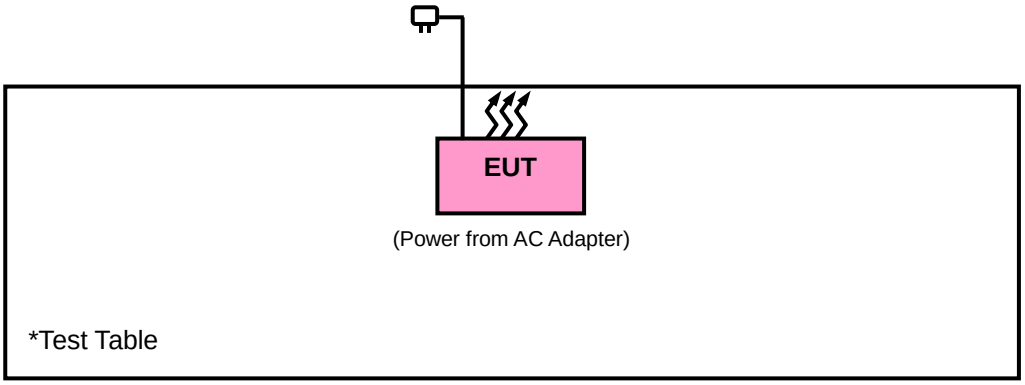
802.11ac (VHT80): Duty cycle = 459/596 = 0.770, Duty factor = 10 * log(1/0.770) = 1.14

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

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	MY52260177	Aug. 20, 2018	Aug. 19, 2019
Spectrum Analyzer ROHDE & SCHWARZ	FSV40	100980	Apr. 17, 2018	Apr. 16, 2019
HORN Antenna ETS-Lindgren	3117	00143293	Nov. 25, 2018	Nov. 24, 2019
BILOG Antenna SCHWARZBECK	VULB 9168	9168-616	Nov. 27, 2018	Nov. 26, 2019
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Nov. 25, 2018	Nov. 24, 2019
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 16, 2018	Apr. 15, 2019
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
Antenna Tower &Turn Table Controller MF	MF-7802	NA	NA	NA
Temperature & Humidity Chamber	GTH-120-40-CP-AR	MAA1306-019	Sep. 05, 2018	Sep. 04, 2019
DC Power Supply Topward	33010D	807748	NA	NA
Digital Multimeter Fluke	87-III	70360742	Jun. 29, 2018	Jun. 28, 2019

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:

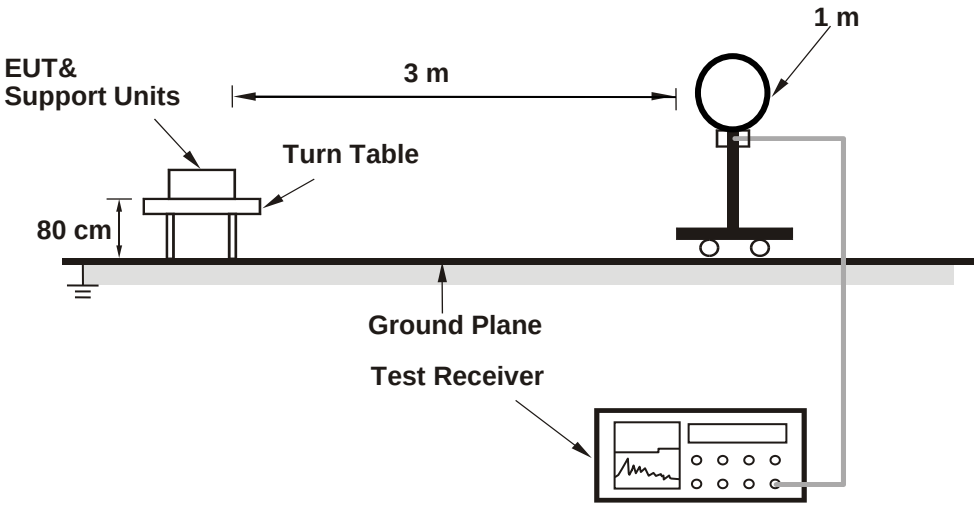
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) 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 = 3 kHz)
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.5 Deviation from Test Standard

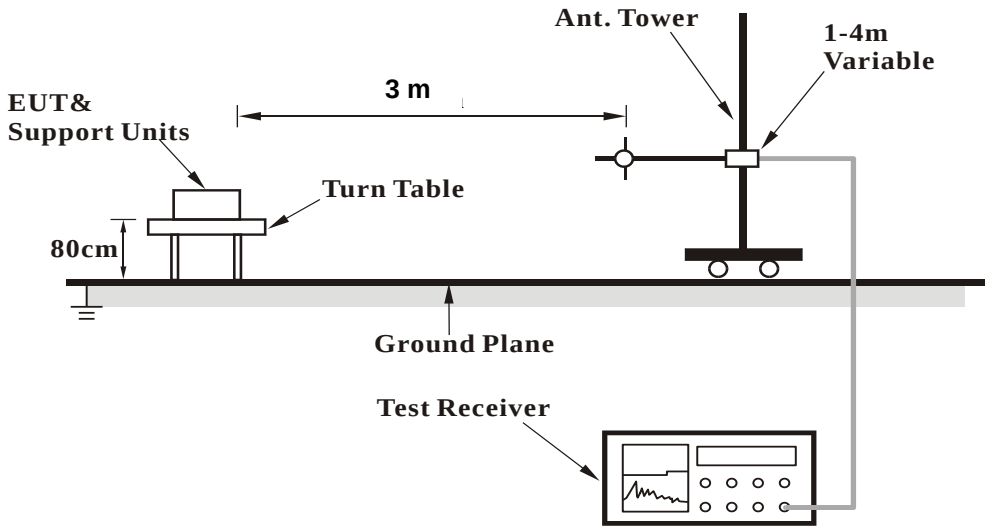
No deviation.

4.1.6 Test Setup

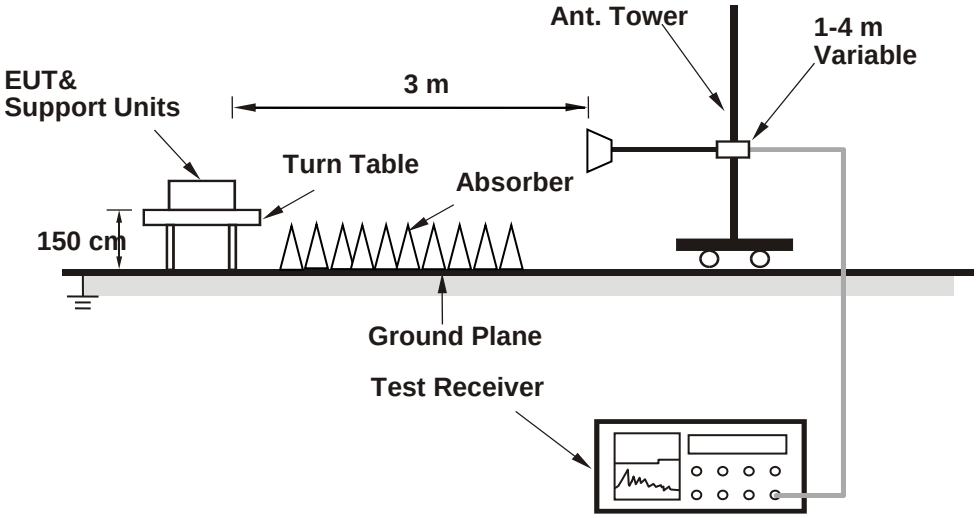
<Radiated Emission below 30 MHz>



<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**	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**
5149.55	52.95	44.7	54	-1.05	34.12	8.13	34	180	193	Average
5149.55	63.25	55	74	-10.75	34.12	8.13	34	180	193	Peak
5180	100.46	92.15			34.15	8.16	34	180	193	Average
5180	107.9	99.59			34.15	8.16	34	180	193	Peak
*10360	53.01	38.71	68.2	-15.19	37.12	12.3	35.12	124	300	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**
5149.25	45.44	37.19	54	-8.56	34.12	8.13	34	100	138	Average
5149.25	56.41	48.16	74	-17.59	34.12	8.13	34	100	138	Peak
5180	96.67	88.36			34.15	8.16	34	100	138	Average
5180	103.04	94.73			34.15	8.16	34	100	138	Peak
*10360	53.81	39.51	68.2	-14.39	37.12	12.3	35.12	124	155	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**	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**
5149.7	52.21	43.96	54	-1.79	34.12	8.13	34	188	193	Average
5149.7	62.74	54.49	74	-11.26	34.12	8.13	34	188	193	Peak
5200	103.66	95.31			34.16	8.19	34	180	193	Average
5200	110.01	101.66			34.16	8.19	34	180	193	Peak
5454.5	42.67	33.85	54	-11.33	34.36	8.51	34.05	180	193	Average
5454.5	53.4	44.58	74	-20.6	34.36	8.51	34.05	180	193	Peak
*10400	52.72	38.38	68.2	-15.48	37.14	12.36	35.16	105	32	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	46.14	37.89	54	-7.86	34.12	8.13	34	100	138	Average
5149.85	56.4	48.15	74	-17.6	34.12	8.13	34	100	138	Peak
5200	99.87	91.52			34.16	8.19	34	100	138	Average
5200	106.82	98.47			34.16	8.19	34	100	138	Peak
5459.67	42.71	33.89	54	-11.29	34.36	8.51	34.05	100	138	Average
5459.67	53.59	44.77	74	-20.41	34.36	8.51	34.05	100	138	Peak
*10400	53.39	39.05	68.2	-14.81	37.14	12.36	35.16	155	245	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**	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**
5240	105.27	96.83			34.19	8.26	34.01	180	193	Average
5240	112.42	103.98			34.19	8.26	34.01	180	193	Peak
5393.01	42.48	33.77	54	-11.52	34.31	8.44	34.04	180	193	Average
5393.01	53.16	44.45	74	-20.84	34.31	8.44	34.04	180	193	Peak
*10480	55.46	40.95	68.2	-12.74	37.19	12.53	35.21	124	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**
5240	100.13	91.69			34.19	8.26	34.01	100	138	Average
5240	108.45	100.01			34.19	8.26	34.01	100	138	Peak
5395.87	42.56	33.84	54	-11.44	34.32	8.44	34.04	100	138	Average
5395.87	53.85	45.13	74	-20.15	34.32	8.44	34.04	100	138	Peak
*10480	55.56	41.05	68.2	-12.64	37.19	12.53	35.21	154	55	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**	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**
5136.35	42.72	34.47	54	-11.28	34.11	8.13	33.99	200	203	Average
5136.35	52.98	44.73	74	-21.02	34.11	8.13	33.99	200	203	Peak
5260	104.43	95.97			34.21	8.26	34.01	200	203	Average
5260	111.17	102.71			34.21	8.26	34.01	200	203	Peak
*10520	56.42	41.83	68.2	-11.78	37.21	12.61	35.23	133	46	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**
5133.35	42.53	34.28	54	-11.47	34.11	8.13	33.99	251	359	Average
5133.35	52.85	44.6	74	-21.15	34.11	8.13	33.99	251	359	Peak
5260	100.94	92.48			34.21	8.26	34.01	251	359	Average
5260	108.12	99.66			34.21	8.26	34.01	251	359	Peak
*10520	56.17	41.58	68.2	-12.03	37.21	12.61	35.23	174	156	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**	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**
5146.1	42.57	34.32	54	-11.43	34.12	8.13	34	200	203	Average
5146.1	53.95	45.7	74	-20.05	34.12	8.13	34	200	203	Peak
5300	104.3	95.76			34.24	8.32	34.02	200	203	Average
5300	110.64	102.1			34.24	8.32	34.02	200	203	Peak
5351.1	48.99	40.36	54	-5.01	34.28	8.38	34.03	200	203	Average
5351.1	64.03	55.4	74	-9.97	34.28	8.38	34.03	200	203	Peak
10600	45.01	30.33	54	-8.99	37.28	12.67	35.27	121	198	Average
10600	55.1	40.42	74	-18.9	37.28	12.67	35.27	121	198	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	42.64	34.42	54	-11.36	34.11	8.1	33.99	267	359	Average
5129	53.28	45.06	74	-20.72	34.11	8.1	33.99	267	359	Peak
5300	99.02	90.48			34.24	8.32	34.02	267	359	Average
5300	107.7	99.16			34.24	8.32	34.02	267	359	Peak
5350.11	45.1	36.47	54	-8.9	34.28	8.38	34.03	267	359	Average
5350.11	57.43	48.8	74	-16.57	34.28	8.38	34.03	267	359	Peak
10600	45.57	30.89	54	-8.43	37.28	12.67	35.27	156	213	Average
10600	55.71	41.03	74	-18.29	37.28	12.67	35.27	156	213	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. 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**	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**
5320	102.7	94.12			34.25	8.35	34.02	198	203	Average
5320	109.96	101.38			34.25	8.35	34.02	198	203	Peak
5350.77	52.07	43.44	54	-1.93	34.28	8.38	34.03	198	203	Average
5350.77	65.57	56.94	74	-8.43	34.28	8.38	34.03	198	203	Peak
10640	45.17	30.44	54	-8.83	37.31	12.71	35.29	196	213	Average
10640	55.07	40.34	74	-18.93	37.31	12.71	35.29	196	213	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	99.48	90.9			34.25	8.35	34.02	251	359	Average
5320	107.09	98.51			34.25	8.35	34.02	251	359	Peak
5350	49.16	40.53	54	-4.84	34.28	8.38	34.03	251	359	Average
5350	61.3	52.67	74	-12.7	34.28	8.38	34.03	251	359	Peak
10640	44.68	29.95	54	-9.32	37.31	12.71	35.29	154	207	Average
10640	54.42	39.69	74	-19.58	37.31	12.71	35.29	154	207	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. The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5459.6	44.99	36.17	54	-9.01	34.36	8.51	34.05	181	192	Average
5459.6	63.63	54.81	74	-10.37	34.36	8.51	34.05	181	192	Peak
*5469.36	66.68	57.85	68.2	-1.52	34.37	8.51	34.05	181	192	Peak
5500	99.68	90.76			34.4	8.57	34.05	154	202	Average
5500	106.61	97.69			34.4	8.57	34.05	154	202	Peak
11000	47.63	32.55	74	-26.37	37.6	12.96	35.48	157	44	Average
11000	56.09	41.01	74	-17.91	37.6	12.96	35.48	157	44	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**
5452.08	44.08	35.26	54	-9.92	34.36	8.51	34.05	118	49	Average
5452.08	57.99	49.17	74	-16.01	34.36	8.51	34.05	118	49	Peak
*5469.2	64.98	56.15	68.2	-3.22	34.37	8.51	34.05	118	49	Peak
5500	97.48	88.56			34.4	8.57	34.05	118	49	Average
5500	104	95.08			34.4	8.57	34.05	118	49	Peak
11000	47.73	32.65	74	-26.27	37.6	12.96	35.48	129	326	Average
11000	56.05	40.97	74	-17.95	37.6	12.96	35.48	129	326	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**
5436.56	42.9	34.11	54	-11.1	34.35	8.48	34.04	154	202	Average
5436.56	53.12	44.33	74	-20.88	34.35	8.48	34.04	154	202	Peak
*5469.36	52.68	43.85	68.2	-15.52	34.37	8.51	34.05	154	202	Peak
5580	103.65	94.66			34.47	8.6	34.08	154	202	Average
5580	110.39	101.4			34.47	8.6	34.08	154	202	Peak
*5725.8	52.91	43.75	68.2	-15.29	34.62	8.65	34.11	154	202	Peak
11160	47.49	32.41	74	-26.51	37.7	12.83	35.45	124	177	Average
11160	57.17	42.09	74	-16.83	37.7	12.83	35.45	124	177	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**
5444.88	42.69	33.87	54	-11.31	34.35	8.51	34.04	118	49	Average
5444.88	53.16	44.34	74	-20.84	34.35	8.51	34.04	118	49	Peak
*5470	53.64	44.81	68.2	-14.56	34.37	8.51	34.05	118	49	Peak
5580	101.36	92.37			34.47	8.6	34.08	118	49	Average
5580	108.53	99.54			34.47	8.6	34.08	118	49	Peak
*5724.2	52.7	43.54	68.2	-15.5	34.62	8.65	34.11	118	49	Peak
11160	47.6	32.52	74	-26.4	37.7	12.83	35.45	125	355	Average
11160	57.27	42.19	74	-16.73	37.7	12.83	35.45	125	355	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**	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**
5700	96.68	87.55			34.59	8.64	34.1	154	202	Average
5700	103.82	94.69			34.59	8.64	34.1	154	202	Peak
5724.12	67.19	58.03	68.2	-1.01	34.62	8.65	34.11	108	195	Peak
11400	47.47	32.37	74	-26.53	37.84	12.67	35.41	147	199	Average
11400	56.64	41.54	74	-17.36	37.84	12.67	35.41	147	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**
5700	94.74	85.61			34.59	8.64	34.1	118	49	Average
5700	101.76	92.63			34.59	8.64	34.1	118	49	Peak
5723.96	64.18	55.02	68.2	-4.02	34.62	8.65	34.11	118	49	Peak
11400	47.37	32.27	74	-26.63	37.84	12.67	35.41	156	255	Average
11400	56.8	41.7	74	-17.2	37.84	12.67	35.41	156	255	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	103.54	94.35			34.64	8.66	34.11	226	202	Average
5745	111.68	102.49			34.64	8.66	34.11	226	202	Peak
11490	46.21	31.09	54	-7.79	37.89	12.62	35.39	156	209	Average
11490	56.31	41.19	74	-17.69	37.89	12.62	35.39	156	209	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	100.16	90.97			34.64	8.66	34.11	102	183	Average
5745	108.09	98.9			34.64	8.66	34.11	102	183	Peak
11490	47.65	32.53	54	-6.35	37.89	12.62	35.39	137	126	Average
11490	57.72	42.6	74	-16.28	37.89	12.62	35.39	137	126	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**
*5647.525	54.21	45.14	68.2	-13.99	34.54	8.62	34.09	226	202	Peak
5652.25	53.39	44.3	69.86	-16.47	34.56	8.62	34.09	226	202	Peak
5923.675	51.11	41.71	69.18	-18.07	34.83	8.73	34.16	226	202	Peak
*5986.675	54.04	44.58	68.2	-14.16	34.88	8.75	34.17	226	202	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**
*5608.675	54.01	44.98	68.2	-14.19	34.5	8.61	34.08	102	183	Peak
5652.25	51.21	42.12	69.86	-18.65	34.56	8.62	34.09	102	183	Peak
5921.575	52.01	42.61	70.73	-18.72	34.83	8.73	34.16	102	183	Peak
*5983	53.96	44.5	68.2	-14.24	34.88	8.75	34.17	102	183	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	102.9	93.67			34.68	8.68	34.13	226	202	Average
5785	110.19	100.96			34.68	8.68	34.13	226	202	Peak
11570	46.75	31.44	54	-7.25	38	12.68	35.37	149	213	Average
11570	56.61	41.3	74	-17.39	38	12.68	35.37	149	213	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	101.21	91.98			34.68	8.68	34.13	102	183	Average
5785	108.32	99.09			34.68	8.68	34.13	102	183	Peak
11570	45.17	29.86	54	-8.83	38	12.68	35.37	125	163	Average
11570	55.03	39.72	74	-18.97	38	12.68	35.37	125	163	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**
*5595.55	53.55	44.54	68.2	-14.65	34.49	8.6	34.08	226	202	Peak
5653.3	50.66	41.56	70.64	-19.98	34.56	8.63	34.09	226	202	Peak
5922.625	51.32	41.92	69.96	-18.64	34.83	8.73	34.16	226	202	Peak
*5992.45	54.19	44.7	68.2	-14.01	34.9	8.76	34.17	226	202	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**
*5619.175	53.22	44.17	68.2	-14.98	34.52	8.61	34.08	102	183	Peak
5653.825	52.04	42.95	71.03	-18.99	34.56	8.63	34.1	102	183	Peak
5921.575	50.86	41.46	70.73	-19.87	34.83	8.73	34.16	102	183	Peak
*5979.325	53.34	43.88	68.2	-14.86	34.88	8.75	34.17	102	183	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	102.28	92.99			34.73	8.69	34.13	222	202	Average
5825	110.02	100.73			34.73	8.69	34.13	222	202	Peak
11650	45.33	29.8	54	-8.67	38.09	12.8	35.36	174	253	Average
11650	55.42	39.89	74	-18.58	38.09	12.8	35.36	174	253	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	100.28	90.99			34.73	8.69	34.13	102	183	Average
5825	107.76	98.47			34.73	8.69	34.13	102	183	Peak
11650	46.25	30.72	54	-7.75	38.09	12.8	35.36	135	68	Average
11650	56.31	40.78	74	-17.69	38.09	12.8	35.36	135	68	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**
*5547.25	53.74	44.8	68.2	-14.46	34.43	8.58	34.07	226	202	Peak
5652.25	50.62	41.53	69.86	-19.24	34.56	8.62	34.09	226	202	Peak
5922.1	51.25	41.85	70.35	-19.1	34.83	8.73	34.16	226	202	Peak
*5939.425	53.81	44.38	68.2	-14.39	34.85	8.74	34.16	226	202	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**
*5566.15	52.95	43.96	68.2	-15.25	34.47	8.59	34.07	102	183	Peak
5652.25	49.82	40.73	69.86	-20.04	34.56	8.62	34.09	102	183	Peak
5922.1	51.7	42.3	70.35	-18.65	34.83	8.73	34.16	102	183	Peak
*5936.275	54.76	45.36	68.2	-13.44	34.83	8.73	34.16	102	183	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**	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**
5150	52.89	44.64	54	-1.11	34.12	8.13	34	180	193	Average
5150	70.72	62.47	74	-3.28	34.12	8.13	34	180	193	Peak
5180	101.35	93.04			34.15	8.16	34	180	193	Average
5180	108.14	99.83			34.15	8.16	34	180	193	Peak
*10360	53.6	39.3	68.2	-14.6	37.12	12.3	35.12	129	43	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	45.52	37.27	54	-8.48	34.12	8.13	34	100	138	Average
5149.85	64.01	55.76	74	-9.99	34.12	8.13	34	100	138	Peak
5180	96.7	88.39			34.15	8.16	34	100	138	Average
5180	104.61	96.3			34.15	8.16	34	100	138	Peak
*10360	53.1	38.8	68.2	-15.1	37.12	12.3	35.12	214	112	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**	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**
5149.85	52.92	44.67	54	-1.08	34.12	8.13	34	180	203	Average
5149.85	67.32	59.07	74	-6.68	34.12	8.13	34	180	203	Peak
5200	102.57	94.22			34.16	8.19	34	180	193	Average
5200	109.16	100.81			34.16	8.19	34	180	193	Peak
5458.46	42.64	33.82	54	-11.36	34.36	8.51	34.05	180	193	Average
5458.46	53.51	44.69	74	-20.49	34.36	8.51	34.05	180	193	Peak
*10400	52.8	38.46	68.2	-15.4	37.14	12.36	35.16	174	5	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**
5148.65	44.08	35.83	54	-9.92	34.12	8.13	34	100	138	Average
5148.65	55.91	47.66	74	-18.09	34.12	8.13	34	100	138	Peak
5200	98.85	90.5			34.16	8.19	34	100	138	Average
5200	105.16	96.81			34.16	8.19	34	100	138	Peak
5429.2	42.43	33.64	54	-11.57	34.35	8.48	34.04	100	138	Average
5429.2	53.14	44.35	74	-20.86	34.35	8.48	34.04	100	138	Peak
*10400	53.22	38.88	68.2	-14.98	37.14	12.36	35.16	114	216	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**	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**
5240	104.47	96.03			34.19	8.26	34.01	180	193	Average
5240	111.04	102.6			34.19	8.26	34.01	180	193	Peak
5452.41	42.72	33.9	54	-11.28	34.36	8.51	34.05	180	193	Average
5452.41	53.17	44.35	74	-20.83	34.36	8.51	34.05	180	193	Peak
*10480	54.24	39.73	68.2	-13.96	37.19	12.53	35.21	214	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**
5240	100.36	91.92			34.19	8.26	34.01	100	138	Average
5240	107.76	99.32			34.19	8.26	34.01	100	138	Peak
5450.21	42.59	33.77	54	-11.41	34.36	8.51	34.05	100	138	Average
5450.21	53.17	44.35	74	-20.83	34.36	8.51	34.05	100	138	Peak
*10480	53.99	39.48	68.2	-14.21	37.19	12.53	35.21	124	119	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**	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**
5129.15	42.62	34.4	54	-11.38	34.11	8.1	33.99	200	203	Average
5129.15	53.09	44.87	74	-20.91	34.11	8.1	33.99	200	203	Peak
5260	104.31	95.85			34.21	8.26	34.01	200	203	Average
5260	110.44	101.98			34.21	8.26	34.01	200	203	Peak
*10520	55.1	40.51	68.2	-13.1	37.21	12.61	35.23	196	332	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**
5148.2	42.63	34.38	54	-11.37	34.12	8.13	34	251	359	Average
5148.2	53.55	45.3	74	-20.45	34.12	8.13	34	251	359	Peak
5260	99.68	91.22			34.21	8.26	34.01	251	359	Average
5260	107.87	99.41			34.21	8.26	34.01	251	359	Peak
*10520	56.45	41.86	68.2	-11.75	37.21	12.61	35.23	146	219	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**	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**
5126.45	42.78	34.56	54	-11.22	34.11	8.1	33.99	200	203	Average
5126.45	53.44	45.22	74	-20.56	34.11	8.1	33.99	200	203	Peak
5300	104.07	95.53			34.24	8.32	34.02	200	203	Average
5300	110.14	101.6			34.24	8.32	34.02	200	203	Peak
5350.22	47.39	38.76	54	-6.61	34.28	8.38	34.03	200	203	Average
5350.22	60.32	51.69	74	-13.68	34.28	8.38	34.03	200	203	Peak
10600	44.57	29.89	54	-9.43	37.28	12.67	35.27	163	237	Average
10600	54.38	39.7	74	-19.62	37.28	12.67	35.27	163	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**
5106.5	42.58	34.41	54	-11.42	34.09	8.07	33.99	251	359	Average
5106.5	53.55	45.38	74	-20.45	34.09	8.07	33.99	251	359	Peak
5300	99.21	90.67			34.24	8.32	34.02	251	359	Average
5300	106.82	98.28			34.24	8.32	34.02	251	359	Peak
5351.32	44.35	35.72	54	-9.65	34.28	8.38	34.03	251	359	Average
5351.32	58.42	49.79	74	-15.58	34.28	8.38	34.03	251	359	Peak
10600	45.02	30.34	54	-8.98	37.28	12.67	35.27	195	124	Average
10600	54.89	40.21	74	-19.11	37.28	12.67	35.27	195	124	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. 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**	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**
5320	102.75	94.17			34.25	8.35	34.02	198	203	Average
5320	109.48	100.9			34.25	8.35	34.02	198	203	Peak
5350	52.82	44.19	54	-1.18	34.28	8.38	34.03	198	203	Average
5350	64.97	56.34	74	-9.03	34.28	8.38	34.03	198	203	Peak
10640	44.81	30.08	54	-9.19	37.31	12.71	35.29	185	113	Average
10640	54.77	40.04	74	-19.23	37.31	12.71	35.29	185	113	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	98.77	90.19			34.25	8.35	34.02	251	359	Average
5320	106.31	97.73			34.25	8.35	34.02	251	359	Peak
5350	47.09	38.46	54	-6.91	34.28	8.38	34.03	251	359	Average
5350	62.63	54	74	-11.37	34.28	8.38	34.03	251	359	Peak
10640	44.74	30.01	54	-9.26	37.31	12.71	35.29	187	145	Average
10640	54.56	39.83	74	-19.44	37.31	12.71	35.29	187	145	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. The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5459.28	44.79	35.97	54	-9.21	34.36	8.51	34.05	181	192	Average
5459.28	64.28	55.46	74	-9.72	34.36	8.51	34.05	181	192	Peak
*5470.96	67.08	58.22	68.2	-1.12	34.37	8.54	34.05	181	192	Peak
5500	98.52	89.6			34.4	8.57	34.05	154	202	Average
5500	105.02	96.1			34.4	8.57	34.05	154	202	Peak
11000	47.67	32.59	54	-6.33	37.6	12.96	35.48	136	297	Average
11000	56.65	41.57	74	-17.35	37.6	12.96	35.48	136	297	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**
5452.08	44.82	36	54	-9.18	34.36	8.51	34.05	118	49	Average
5452.08	54.53	45.71	74	-19.47	34.36	8.51	34.05	118	49	Peak
*5470.48	56.54	47.71	68.2	-11.66	34.37	8.51	34.05	118	49	Peak
5500	96.47	87.55			34.4	8.57	34.05	118	49	Average
5500	103.89	94.97			34.4	8.57	34.05	118	49	Peak
11000	47.65	32.57	54	-6.35	37.6	12.96	35.48	136	299	Average
11000	55.81	40.73	74	-18.19	37.6	12.96	35.48	136	299	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**
5457.2	42.75	33.93	54	-11.25	34.36	8.51	34.05	154	202	Average
5457.2	53.25	44.43	74	-20.75	34.36	8.51	34.05	154	202	Peak
*5468.4	53.03	44.2	68.2	-15.17	34.37	8.51	34.05	154	202	Peak
5580	103.55	94.56			34.47	8.6	34.08	154	202	Average
5580	110.51	101.52			34.47	8.6	34.08	154	202	Peak
*5724.28	52.47	43.31	68.2	-15.73	34.62	8.65	34.11	154	202	Peak
11160	47.34	32.26	54	-6.66	37.7	12.83	35.45	159	2	Average
11160	57.1	42.02	74	-16.9	37.7	12.83	35.45	159	2	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	42.95	34.13	54	-11.05	34.36	8.51	34.05	118	49	Average
5452.72	53.3	44.48	74	-20.7	34.36	8.51	34.05	118	49	Peak
*5468.08	51.56	42.73	68.2	-16.64	34.37	8.51	34.05	118	49	Peak
5580	101.22	92.23			34.47	8.6	34.08	118	49	Average
5580	108.22	99.23			34.47	8.6	34.08	118	49	Peak
*5724.84	52.78	43.62	68.2	-15.42	34.62	8.65	34.11	118	49	Peak
11160	47.35	32.27	54	-6.65	37.7	12.83	35.45	135	255	Average
11160	56.3	41.22	74	-17.7	37.7	12.83	35.45	135	255	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**	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**
5700	95.55	86.42			34.59	8.64	34.1	154	202	Average
5700	102.92	93.79			34.59	8.64	34.1	154	202	Peak
*5724.2	67.13	57.97	68.2	-1.07	34.62	8.65	34.11	108	195	Peak
11400	47.27	32.17	54	-6.73	37.84	12.67	35.41	147	78	Average
11400	56.83	41.73	74	-17.17	37.84	12.67	35.41	147	78	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	93.57	84.44			34.59	8.64	34.1	118	49	Average
5700	100.62	91.49			34.59	8.64	34.1	118	49	Peak
*5725.96	62.17	53.01	68.2	-6.03	34.62	8.65	34.11	118	49	Peak
11400	47.76	32.66	54	-6.24	37.84	12.67	35.41	135	255	Average
11400	56.06	40.96	74	-17.94	37.84	12.67	35.41	135	255	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	102.87	93.68			34.64	8.66	34.11	226	202	Average
5745	110.04	100.85			34.64	8.66	34.11	226	202	Peak
11490	45.23	30.11	54	-8.77	37.89	12.62	35.39	164	170	Average
11490	55.02	39.9	74	-18.98	37.89	12.62	35.39	164	170	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	100.89	91.7			34.64	8.66	34.11	102	183	Average
5745	108.21	99.02			34.64	8.66	34.11	102	183	Peak
11490	45.95	30.83	54	-8.05	37.89	12.62	35.39	151	73	Average
11490	56.07	40.95	74	-17.93	37.89	12.62	35.39	151	73	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**
*5600.8	53.54	44.51	68.2	-14.66	34.5	8.61	34.08	226	202	Peak
5652.25	50.66	41.57	69.86	-19.2	34.56	8.62	34.09	226	202	Peak
5921.575	50.74	41.34	70.73	-19.99	34.83	8.73	34.16	226	202	Peak
*6008.2	54.06	44.55	68.2	-14.14	34.92	8.76	34.17	226	202	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**
*5618.125	53.48	44.43	68.2	-14.72	34.52	8.61	34.08	102	183	Peak
5652.25	51.52	42.43	69.86	-18.34	34.56	8.62	34.09	102	183	Peak
5921.575	50.91	41.51	70.73	-19.82	34.83	8.73	34.16	102	183	Peak
*5968.825	53.17	43.72	68.2	-15.03	34.87	8.75	34.17	102	183	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	103.57	94.34			34.68	8.68	34.13	226	202	Average
5785	110.79	101.56			34.68	8.68	34.13	226	202	Peak
11570	46.08	30.77	54	-7.92	38	12.68	35.37	147	106	Average
11570	56.18	40.87	74	-17.82	38	12.68	35.37	147	106	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	100.21	90.98			34.68	8.68	34.13	102	183	Average
5785	108.27	99.04			34.68	8.68	34.13	102	183	Peak
11570	45.03	29.72	54	-8.97	38	12.68	35.37	163	309	Average
11570	54.9	39.59	74	-19.1	38	12.68	35.37	163	309	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**
*5637.55	53.61	44.54	68.2	-14.59	34.54	8.62	34.09	226	202	Peak
5653.3	50.43	41.33	70.64	-20.21	34.56	8.63	34.09	226	202	Peak
5923.675	49.87	40.47	69.18	-19.31	34.83	8.73	34.16	226	202	Peak
*5960.425	53.24	43.8	68.2	-14.96	34.87	8.74	34.17	226	202	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**
*5534.125	53.66	44.72	68.2	-14.54	34.43	8.58	34.07	102	183	Peak
5653.3	51.12	42.02	70.64	-19.52	34.56	8.63	34.09	102	183	Peak
5922.625	50.11	40.71	69.96	-19.85	34.83	8.73	34.16	102	183	Peak
*5928.4	53.58	44.18	68.2	-14.62	34.83	8.73	34.16	102	183	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	102.99	93.7			34.73	8.69	34.13	179	194	Average
5825	110.12	100.83			34.73	8.69	34.13	179	194	Peak
11650	45.91	30.38	54	-8.09	38.09	12.8	35.36	186	211	Average
11650	55.82	40.29	74	-18.18	38.09	12.8	35.36	186	211	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	99.94	90.65			34.73	8.69	34.13	102	183	Average
5825	107.24	97.95			34.73	8.69	34.13	102	183	Peak
11650	45.26	29.73	54	-8.74	38.09	12.8	35.36	137	155	Average
11650	55.52	39.99	74	-18.48	38.09	12.8	35.36	137	155	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**
*5590.825	54.36	45.35	68.2	-13.84	34.49	8.6	34.08	179	194	Peak
5653.3	50.23	41.13	70.64	-20.41	34.56	8.63	34.09	179	194	Peak
5921.575	51.22	41.82	70.73	-19.51	34.83	8.73	34.16	179	194	Peak
*5956.225	54.18	44.73	68.2	-14.02	34.87	8.74	34.16	179	194	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**
*5615.5	53.97	44.92	68.2	-14.23	34.52	8.61	34.08	102	183	Peak
5652.25	51.86	42.77	69.86	-18	34.56	8.62	34.09	102	183	Peak
5922.625	51.79	42.39	69.96	-18.17	34.83	8.73	34.16	102	183	Peak
*6016.075	54.17	44.67	68.2	-14.03	34.92	8.76	34.18	102	183	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**	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**
5148.35	44.72	36.47	54	-9.28	34.12	8.13	34	100	138	Average
5148.35	60.38	52.13	74	-13.62	34.12	8.13	34	100	138	Peak
5190	90.57	82.23			34.15	8.19	34	100	138	Average
5190	97.19	88.85			34.15	8.19	34	100	138	Peak
5390.37	43.12	34.44	54	-10.88	34.31	8.41	34.04	100	138	Average
5390.37	53.93	45.25	74	-20.07	34.31	8.41	34.04	100	138	Peak
*10380	53.64	39.29	68.2	-14.56	37.13	12.36	35.14	113	320	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**
5150	52.97	44.72	54	-1.03	34.12	8.13	34	180	203	Average
5150	68.25	60	74	-5.75	34.12	8.13	34	180	203	Peak
5190	94.68	86.34			34.15	8.19	34	180	193	Average
5190	101.83	93.49			34.15	8.19	34	180	193	Peak
5449	43.17	34.34	54	-10.83	34.36	8.51	34.04	180	193	Average
5449	53.44	44.61	74	-20.56	34.36	8.51	34.04	180	193	Peak
*10380	54.06	39.71	68.2	-14.14	37.13	12.36	35.14	124	7	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**	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**
5149.7	52.48	44.23	54	-1.52	34.12	8.13	34	204	204	Average
5149.7	63	54.75	74	-11	34.12	8.13	34	204	204	Peak
5230	99.85	91.45			34.19	8.22	34.01	180	193	Average
5230	106.54	98.14			34.19	8.22	34.01	180	193	Peak
5352.64	43.32	34.69	54	-10.68	34.28	8.38	34.03	180	193	Average
5361.55	56.95	48.31	74	-17.05	34.29	8.38	34.03	180	193	Peak
*10460	53.37	38.86	68.2	-14.83	37.17	12.53	35.19	105	298	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**
5149.4	45.56	37.31	54	-8.44	34.12	8.13	34	100	138	Average
5149.4	58.15	49.9	74	-15.85	34.12	8.13	34	100	138	Peak
5230	95.87	87.47			34.19	8.22	34.01	100	138	Average
5230	102.29	93.89			34.19	8.22	34.01	100	138	Peak
5430.19	43.03	34.24	54	-10.97	34.35	8.48	34.04	100	138	Average
5430.19	54.9	46.11	74	-19.1	34.35	8.48	34.04	100	138	Peak
*10460	53.82	39.31	68.2	-14.38	37.17	12.53	35.19	154	22	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**	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**
5150	45.81	37.56	54	-8.19	34.12	8.13	34	200	203	Average
5150	56.54	48.29	74	-17.46	34.12	8.13	34	200	203	Peak
5270	101.42	92.93			34.21	8.29	34.01	200	203	Average
5270	109.04	100.55			34.21	8.29	34.01	200	203	Peak
5350	51.78	43.15	54	-2.22	34.28	8.38	34.03	200	203	Average
5350	61.21	52.58	74	-12.79	34.28	8.38	34.03	200	203	Peak
*10540	54.86	40.24	68.2	-13.34	37.23	12.63	35.24	174	155	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**
5145.65	43.01	34.76	54	-10.99	34.12	8.13	34	251	359	Average
5145.65	53.22	44.97	74	-20.78	34.12	8.13	34	251	359	Peak
5270	98.54	90.05			34.21	8.29	34.01	251	359	Average
5270	105.83	97.34			34.21	8.29	34.01	251	359	Peak
5350.11	47.37	38.74	54	-6.63	34.28	8.38	34.03	251	359	Average
5350.11	59.41	50.78	74	-14.59	34.28	8.38	34.03	251	359	Peak
*10540	54.31	39.69	68.2	-13.89	37.23	12.63	35.24	165	127	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**	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**
5127.65	42.66	34.44	54	-11.34	34.11	8.1	33.99	198	202	Average
5127.65	55.51	47.29	74	-18.49	34.11	8.1	33.99	198	202	Peak
5310	96.97	88.42			34.25	8.32	34.02	198	202	Average
5310	103.95	95.4			34.25	8.32	34.02	198	202	Peak
5350.11	52.03	43.4	54	-1.97	34.28	8.38	34.03	198	202	Average
5350.11	64.14	55.51	74	-9.86	34.28	8.38	34.03	198	202	Peak
10620	45.23	30.52	54	-8.77	37.3	12.69	35.28	148	122	Average
10620	54.96	40.25	74	-19.04	37.3	12.69	35.28	148	122	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**
5140.25	42.55	34.29	54	-11.45	34.12	8.13	33.99	251	359	Average
5140.25	53.21	44.95	74	-20.79	34.12	8.13	33.99	251	359	Peak
5310	93.28	84.73			34.25	8.32	34.02	251	359	Average
5310	100.62	92.07			34.25	8.32	34.02	251	359	Peak
5350	47.54	38.91	54	-6.46	34.28	8.38	34.03	251	359	Average
5350	64.06	55.43	74	-9.94	34.28	8.38	34.03	251	359	Peak
10620	45.1	30.39	54	-8.9	37.3	12.69	35.28	133	249	Average
10620	55.04	40.33	74	-18.96	37.3	12.69	35.28	133	249	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. 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**	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**
5460	46.32	37.5	54	-7.68	34.36	8.51	34.05	220	192	Average
5460	64.53	55.71	74	-9.47	34.36	8.51	34.05	220	192	Peak
*5470.16	66.86	58.03	68.2	-1.34	34.37	8.51	34.05	220	192	Peak
5510	93.16	84.25			34.4	8.57	34.06	154	202	Average
5510	100.17	91.26			34.4	8.57	34.06	154	202	Peak
*5725.8	53.21	44.05	68.2	-14.99	34.62	8.65	34.11	154	202	Peak
11020	47.78	32.71	54	-6.22	37.61	12.94	35.48	155	195	Average
11020	56.07	41	74	-17.93	37.61	12.94	35.48	155	195	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**
5459.28	45.02	36.2	54	-8.98	34.36	8.51	34.05	118	49	Average
5459.28	61.63	52.81	74	-12.37	34.36	8.51	34.05	118	49	Peak
*5468.88	65.65	56.82	68.2	-2.55	34.37	8.51	34.05	118	49	Peak
5510	91.47	82.56			34.4	8.57	34.06	118	49	Average
5510	98.59	89.68			34.4	8.57	34.06	118	49	Peak
*5724.68	52.69	43.53	68.2	-15.51	34.62	8.65	34.11	118	49	Peak
11020	47.97	32.9	54	-6.03	37.61	12.94	35.48	129	326	Average
11020	55.58	40.51	74	-18.42	37.61	12.94	35.48	129	326	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**	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**
5458.8	45.25	36.43	54	-8.75	34.36	8.51	34.05	154	202	Average
5458.8	59.6	50.78	74	-14.4	34.36	8.51	34.05	154	202	Peak
*5469.52	58.95	50.12	68.2	-9.25	34.37	8.51	34.05	154	202	Peak
5550	99.87	90.9			34.45	8.59	34.07	154	202	Average
5550	106.51	97.54			34.45	8.59	34.07	154	202	Peak
*5724.76	53.2	44.04	68.2	-15	34.62	8.65	34.11	154	202	Peak
11100	47.65	32.56	54	-6.35	37.66	12.89	35.46	131	111	Average
11100	56.02	40.93	74	-17.98	37.66	12.89	35.46	131	111	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**
5460	44.04	35.22	54	-9.96	34.36	8.51	34.05	118	49	Average
5460	55.59	46.77	74	-18.41	34.36	8.51	34.05	118	49	Peak
*5469.2	54.05	45.22	68.2	-14.15	34.37	8.51	34.05	118	49	Peak
5550	97.64	88.67			34.45	8.59	34.07	118	49	Average
5550	104.01	95.04			34.45	8.59	34.07	118	49	Peak
*5724.68	53.4	44.24	68.2	-14.8	34.62	8.65	34.11	118	49	Peak
11100	47.76	32.67	54	-6.24	37.66	12.89	35.46	152	195	Average
11100	55.95	40.86	74	-18.05	37.66	12.89	35.46	152	195	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**	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**
5452.88	43.45	34.63	54	-10.55	34.36	8.51	34.05	154	202	Average
5452.88	54.22	45.4	74	-19.78	34.36	8.51	34.05	154	202	Peak
*5469.2	53.22	44.39	68.2	-14.98	34.37	8.51	34.05	154	202	Peak
5670	96.46	87.36			34.57	8.63	34.1	154	202	Average
5670	103.67	94.57			34.57	8.63	34.1	154	202	Peak
*5724.28	67.11	57.95	68.2	-1.09	34.62	8.65	34.11	154	199	Peak
11340	47.63	32.54	54	-6.37	37.8	12.71	35.42	137	77	Average
11340	55.98	40.89	74	-18.02	37.8	12.71	35.42	137	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**
5457.68	43.43	34.61	54	-10.57	34.36	8.51	34.05	118	49	Average
5457.68	53.2	44.38	74	-20.8	34.36	8.51	34.05	118	49	Peak
*5468.88	52.41	43.58	68.2	-15.79	34.37	8.51	34.05	118	49	Peak
5670	94.55	85.45			34.57	8.63	34.1	118	49	Average
5670	101	91.9			34.57	8.63	34.1	118	49	Peak
*5725.24	57.36	48.2	68.2	-10.84	34.62	8.65	34.11	118	49	Peak
11340	47.94	32.85	54	-6.06	37.8	12.71	35.42	140	17	Average
11340	56.12	41.03	74	-17.88	37.8	12.71	35.42	140	17	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 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	100.41	91.2			34.66	8.66	34.11	216	202	Average
5755	108.46	99.25			34.66	8.66	34.11	216	202	Peak
11510	45.92	30.81	54	-8.08	37.9	12.6	35.39	135	207	Average
11510	55.76	40.65	74	-18.24	37.9	12.6	35.39	135	207	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	97.87	88.66			34.66	8.66	34.11	102	183	Average
5755	105.75	96.54			34.66	8.66	34.11	102	183	Peak
11510	47.34	32.23	54	-6.66	37.9	12.6	35.39	105	68	Average
11510	57.23	42.12	74	-16.77	37.9	12.6	35.39	105	68	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**
*5604.475	55.24	46.21	68.2	-12.96	34.5	8.61	34.08	216	202	Peak
5651.725	58.37	49.28	69.48	-11.11	34.56	8.62	34.09	216	202	Peak
5922.625	50.37	40.97	69.96	-19.59	34.83	8.73	34.16	216	202	Peak
*6017.65	53.19	43.68	68.2	-15.01	34.92	8.77	34.18	216	202	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**
*5578.75	55.05	46.06	68.2	-13.15	34.47	8.6	34.08	102	183	Peak
5653.3	52.88	43.78	70.64	-17.76	34.56	8.63	34.09	102	183	Peak
5923.15	51.54	42.14	69.57	-18.03	34.83	8.73	34.16	102	183	Peak
*5980.375	53.44	43.98	68.2	-14.76	34.88	8.75	34.17	102	183	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	101.23	91.99			34.69	8.68	34.13	216	202	Average
5795	108.68	99.44			34.69	8.68	34.13	216	202	Peak
11590	45.61	30.24	54	-8.39	38.02	12.72	35.37	107	54	Average
11590	55.53	40.16	74	-18.47	38.02	12.72	35.37	107	54	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	98.89	89.65			34.69	8.68	34.13	102	183	Average
5795	105.73	96.49			34.69	8.68	34.13	102	183	Peak
11590	45.53	30.16	54	-8.47	38.02	12.72	35.37	130	127	Average
11590	55.13	39.76	74	-18.87	38.02	12.72	35.37	130	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**
*5549.875	53.56	44.59	68.2	-14.64	34.45	8.59	34.07	216	202	Peak
5655.4	49.53	40.44	72.2	-22.67	34.56	8.63	34.1	216	202	Peak
5921.05	53.09	43.71	71.12	-18.03	34.81	8.73	34.16	216	202	Peak
*6016.075	54.39	44.89	68.2	-13.81	34.92	8.76	34.18	216	202	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**
*5518.375	53.54	44.61	68.2	-14.66	34.42	8.57	34.06	102	183	Peak
5651.725	49.82	40.73	69.48	-19.66	34.56	8.62	34.09	102	183	Peak
5921.575	54.8	45.4	70.73	-15.93	34.83	8.73	34.16	102	183	Peak
*5955.175	53.93	44.5	68.2	-14.27	34.85	8.74	34.16	102	183	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**	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**
5144.6	52.83	44.58	54	-1.17	34.12	8.13	34	166	193	Average
5144.6	60.78	52.53	74	-13.22	34.12	8.13	34	166	193	Peak
5210	92.47	84.11			34.17	8.19	34	180	193	Average
5210	99.81	91.45			34.17	8.19	34	180	193	Peak
5350	43.84	35.21	54	-10.16	34.28	8.38	34.03	180	193	Average
5350	54.62	45.99	74	-19.38	34.28	8.38	34.03	180	193	Peak
*10420	53.37	38.96	68.2	-14.83	37.15	12.42	35.16	136	3	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**
5149.1	46.82	38.57	54	-7.18	34.12	8.13	34	100	138	Average
5149.1	56.92	48.67	74	-17.08	34.12	8.13	34	100	138	Peak
5210	88.65	80.29			34.17	8.19	34	100	138	Average
5210	95.01	86.65			34.17	8.19	34	100	138	Peak
5359.79	43.58	34.95	54	-10.42	34.28	8.38	34.03	100	138	Average
5359.79	53.67	45.04	74	-20.33	34.28	8.38	34.03	100	138	Peak
*10420	53.52	39.11	68.2	-14.68	37.15	12.42	35.16	114	154	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**	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**
5144	43.99	35.74	54	-10.01	34.12	8.13	34	199	202	Peak
5144	55.79	47.54	74	-18.21	34.12	8.13	34	199	202	Peak
5290	94.4	85.87			34.23	8.32	34.02	199	202	Average
5290	102.73	94.2			34.23	8.32	34.02	199	202	Peak
5350.11	52.64	44.01	54	-1.36	34.28	8.38	34.03	199	202	Average
5350.11	63.78	55.15	74	-10.22	34.28	8.38	34.03	199	202	Peak
*10580	55.3	40.65	68.2	-12.9	37.27	12.65	35.27	106	39	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	42.89	34.64	54	-11.11	34.12	8.13	34	251	359	Average
5148.95	53.94	45.69	74	-20.06	34.12	8.13	34	251	359	Peak
5290	91.61	83.08			34.23	8.32	34.02	251	359	Average
5290	98.72	90.19			34.23	8.32	34.02	251	359	Peak
5350.33	48.41	39.78	54	-5.59	34.28	8.38	34.03	251	359	Average
5350.33	60.59	51.96	74	-13.41	34.28	8.38	34.03	251	359	Peak
*10580	55.52	40.87	68.2	-12.68	37.27	12.65	35.27	145	137	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**	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**
5458.32	53	44.18	54	-1	34.36	8.51	34.05	145	195	Average
5458.32	63.67	54.85	74	-10.33	34.36	8.51	34.05	145	195	Peak
*5470.96	65.42	56.56	68.2	-2.78	34.37	8.54	34.05	145	195	Peak
5530	90.57	81.64			34.42	8.58	34.07	154	202	Average
5530	97.38	88.45			34.42	8.58	34.07	154	202	Peak
*5724.36	52.94	43.78	68.2	-15.26	34.62	8.65	34.11	154	202	Peak
11060	48.1	33.02	74	-25.9	37.64	12.91	35.47	147	199	Average
11060	57.09	42.01	74	-16.91	37.64	12.91	35.47	147	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**
5457.68	48.29	39.47	54	-5.71	34.36	8.51	34.05	118	49	Average
5457.68	58.5	49.68	74	-15.5	34.36	8.51	34.05	118	49	Peak
*5469.68	63.09	54.26	68.2	-5.11	34.37	8.51	34.05	118	49	Peak
5530	88.25	79.32			34.42	8.58	34.07	118	49	Average
5530	95.23	86.3			34.42	8.58	34.07	118	49	Peak
*5724.2	53.3	44.14	68.2	-14.9	34.62	8.65	34.11	118	49	Peak
11060	48.42	33.34	74	-25.58	37.64	12.91	35.47	102	266	Average
11060	56.1	41.02	74	-17.9	37.64	12.91	35.47	102	266	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**	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**
5456.4	50.25	41.43	54	-3.75	34.36	8.51	34.05	222	197	Average
5456.4	60.76	51.94	74	-13.24	34.36	8.51	34.05	222	197	Peak
*5469.84	61.59	52.76	68.2	-6.61	34.37	8.51	34.05	222	197	Peak
5610	96.44	87.41			34.5	8.61	34.08	154	202	Average
5610	103.91	94.88			34.5	8.61	34.08	154	202	Peak
*5725.96	67.17	58.01	68.2	-1.03	34.62	8.65	34.11	160	192	Peak
11220	48.54	33.45	74	-25.46	37.73	12.8	35.44	173	59	Average
11220	56.87	41.78	74	-17.13	37.73	12.8	35.44	173	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**
5460	45.87	37.05	54	-8.13	34.36	8.51	34.05	118	49	Average
5460	56.62	47.8	74	-17.38	34.36	8.51	34.05	118	49	Peak
*5469.36	55.48	46.65	68.2	-12.72	34.37	8.51	34.05	118	49	Peak
5610	94.47	85.44			34.5	8.61	34.08	118	49	Average
5610	101.85	92.82			34.5	8.61	34.08	118	49	Peak
*5725.56	56.87	47.71	68.2	-11.33	34.62	8.65	34.11	118	49	Peak
11220	48.44	33.35	74	-25.56	37.73	12.8	35.44	173	326	Average
11220	56.56	41.47	74	-17.44	37.73	12.8	35.44	173	326	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 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	96.87	87.64			34.68	8.67	34.12	226	202	Average
5775	104.22	94.99			34.68	8.67	34.12	226	202	Peak
11550	45.47	30.2	54	-8.53	37.97	12.68	35.38	167	121	Average
11550	55.38	40.11	74	-18.62	37.97	12.68	35.38	167	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**
5775	95.47	86.24			34.68	8.67	34.12	102	183	Average
5775	102.54	93.31			34.68	8.67	34.12	102	183	Peak
11550	45.41	30.14	54	-8.59	37.97	12.68	35.38	146	157	Average
11550	55.3	40.03	74	-18.7	37.97	12.68	35.38	146	157	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**
*5641.225	63.13	54.06	68.2	-5.07	34.54	8.62	34.09	226	202	Peak
5652.775	66.16	57.06	70.25	-4.09	34.56	8.63	34.09	226	202	Peak
5921.05	56.09	46.71	71.12	-15.03	34.81	8.73	34.16	226	202	Peak
*5928.4	56.06	46.66	68.2	-12.14	34.83	8.73	34.16	226	202	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**
*5644.375	62.65	53.58	68.2	-5.55	34.54	8.62	34.09	102	183	Peak
5652.25	61.06	51.97	69.86	-8.8	34.56	8.62	34.09	102	183	Peak
5922.625	55.67	46.27	69.96	-14.29	34.83	8.73	34.16	102	183	Peak
*5931.025	56.37	46.97	68.2	-11.83	34.83	8.73	34.16	102	183	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

9 kHz ~ 30 MHz Data:

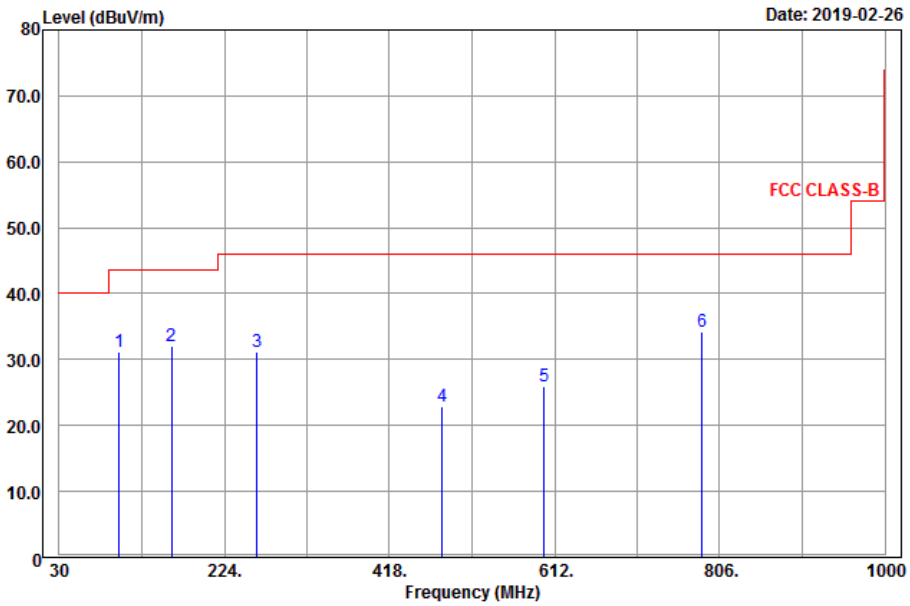
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Worst-Case Data:

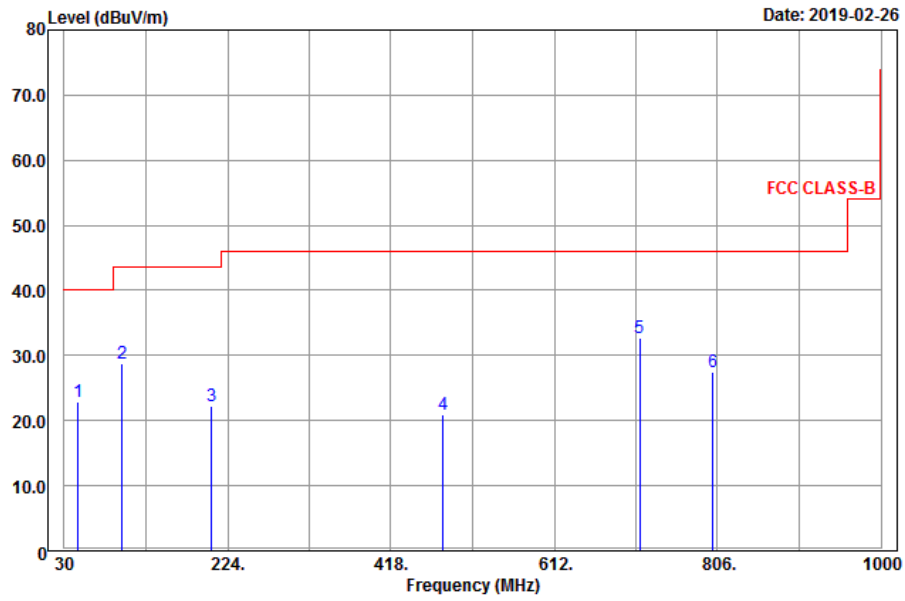
802.11ac (VHT80)

EUT Test Condition		Measurement Detail	
Channel	Channel 106	**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**	Harry Hsueh

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
100.47	31.13	49.8	43.5	-12.37	12.31	1.28	32.26	132	114	Peak
161.76	31.95	53.87	43.5	-11.55	8.82	1.52	32.26	184	127	Peak
262.47	31.22	48.86	46	-14.78	12.53	1.94	32.11	160	312	Peak
479.9	22.98	36.47	46	-23.02	16.07	2.56	32.12	152	113	Peak
599.6	26.01	37.41	46	-19.99	17.92	2.87	32.19	168	127	Peak
785.1	34.17	42.8	46	-11.83	20.18	3.27	32.08	134	294	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
46.47	22.86	39.72	40	-17.14	14.46	0.9	32.22	163	213	Peak
98.85	28.81	47.59	43.5	-14.69	12.15	1.28	32.21	178	125	Peak
204.69	22.24	41.75	43.5	-21.26	11.12	1.65	32.28	130	219	Peak
479.9	20.88	34.37	46	-25.12	16.07	2.56	32.12	105	137	Peak
713.7	32.76	42.32	46	-13.24	19.43	3.11	32.1	164	117	Peak
800.5	27.51	35.92	46	-18.49	20.33	3.32	32.06	195	246	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/AMN ROHDE & SCHWARZ (EUT)	ENV216	101826	Feb. 21, 2019	Feb. 20, 2020
LISN/AMN 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-2040.

4.2.3 Test Procedures

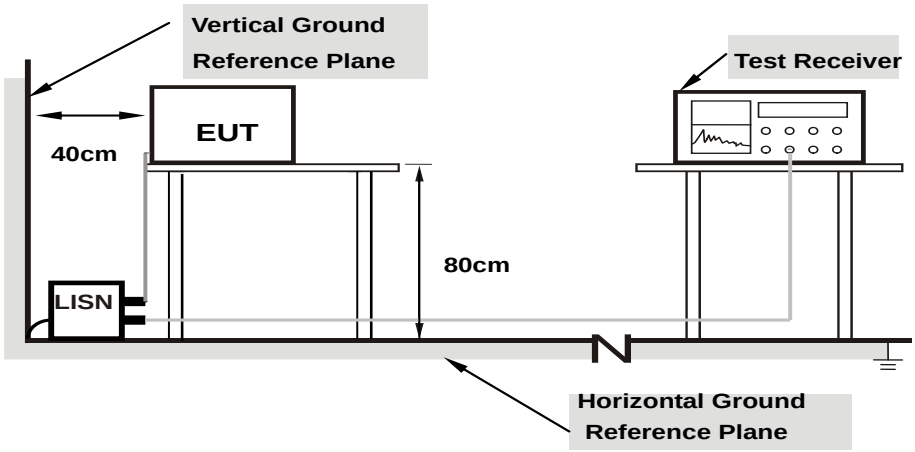
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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

4.2.6 EUT Operating Conditions

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

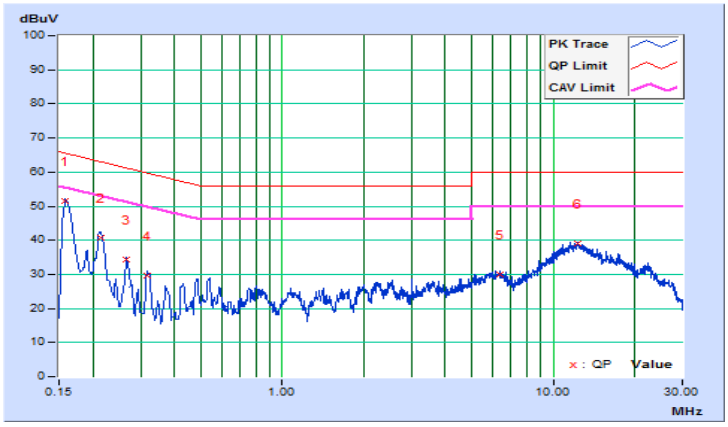
4.2.7 Test Results

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25℃, 65%RH
Tested by	Thomas Wei	Test Date	2019/3/27

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	0.15811	9.84	41.71	26.96	51.55	36.80	65.56	55.56	-14.01	-18.76
2	0.21294	9.85	31.02	16.64	40.87	26.49	63.09	53.09	-22.22	-26.60
3	0.26639	9.86	24.63	10.55	34.49	20.41	61.23	51.23	-26.74	-30.82
4	0.31781	9.87	19.87	6.69	29.74	16.56	59.76	49.76	-30.02	-33.20
5	6.34200	10.07	19.89	5.06	29.96	15.13	60.00	50.00	-30.04	-34.87
6	12.38600	10.18	28.94	14.99	39.12	25.17	60.00	50.00	-20.88	-24.83

Remarks:

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

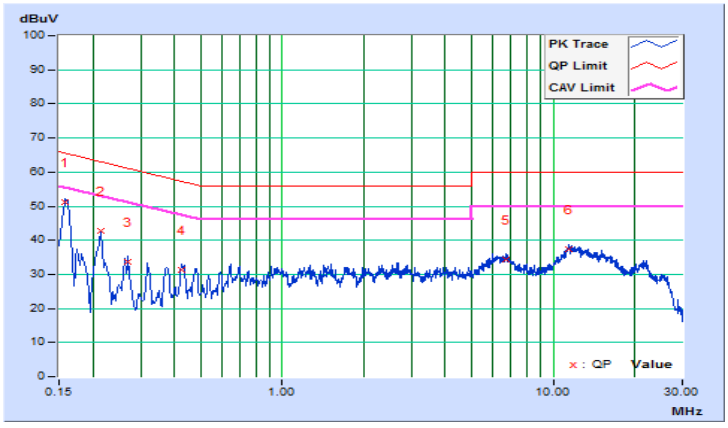


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25℃, 65%RH
Tested by	Thomas Wei	Test Date	2019/3/27

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	0.15811	9.82	41.28	26.87	51.10	36.69	65.56	55.56	-14.46	-18.87
2	0.21406	9.84	32.80	18.50	42.64	28.34	63.05	53.05	-20.41	-24.71
3	0.27000	9.85	23.89	9.91	33.74	19.76	61.12	51.12	-27.38	-31.36
4	0.42577	9.87	21.53	8.15	31.40	18.02	57.33	47.33	-25.93	-29.31
5	6.73000	10.07	24.23	10.30	34.30	20.37	60.00	50.00	-25.70	-29.63
6	11.47000	10.18	27.33	13.44	37.51	23.62	60.00	50.00	-22.49	-26.38

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



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 $N_{ANT} \leq 4$;

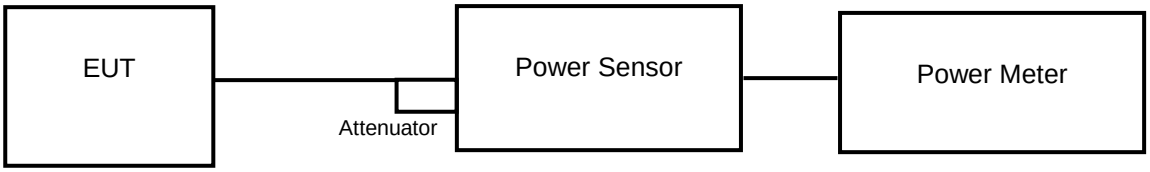
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};

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

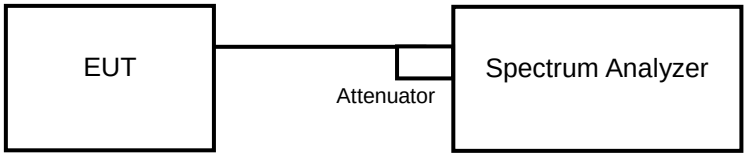
For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

4.3.2 Test Setup

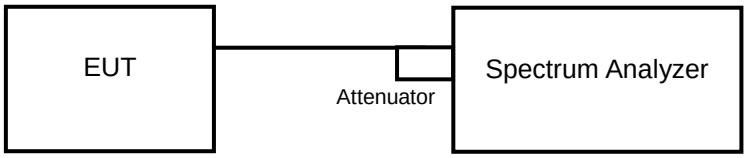
<Power Output Measurement>



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)>

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 (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	13.40	11.87	37.260	15.71	24	Pass
40	5200	13.12	12.18	37.032	15.69	24	Pass
48	5240	13.10	12.11	36.672	15.64	24	Pass
52	5260	12.91	12.02	35.465	15.50	24	Pass
60	5300	13.00	12.33	37.053	15.69	24	Pass
64	5320	13.05	12.27	37.050	15.69	24	Pass
100	5500	14.65	14.07	54.701	17.38	23.88	Pass
116	5580	15.28	14.62	62.702	17.97	24	Pass
140	5700	12.53	11.65	32.528	15.12	23.81	Pass
149	5745	14.22	12.74	45.217	16.55	30	Pass
157	5785	13.72	13.17	44.299	16.46	30	Pass
165	5825	13.78	12.89	43.332	16.37	30	Pass

Note:

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

Chain 0

1. 11 dBm + 10log (34.29) = 26.35 dBm > 24 dBm.
2. 11 dBm + 10log (34.04) = 26.31 dBm > 24 dBm.
3. 11 dBm + 10log (22.76) = 24.57 dBm > 24 dBm.
4. 11 dBm + 10log (19.42) = 23.88 dBm < 24 dBm.
5. 11 dBm + 10log (36.46) = 26.61 dBm > 24 dBm.
6. 11 dBm + 10log (19.62) = 23.92 dBm < 24 dBm.

Chain 1

1. 11 dBm + 10log (34.50) = 26.37 dBm > 24 dBm.
2. 11 dBm + 10log (35.43) = 26.49 dBm > 24 dBm.
3. 11 dBm + 10log (20.60) = 24.13 dBm > 24 dBm.
4. 11 dBm + 10log (19.62) = 23.92 dBm < 24 dBm.
5. 11 dBm + 10log (35.06) = 26.44 dBm > 24 dBm.
6. 11 dBm + 10log (19.11) = 23.81 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	13.18	11.72	35.656	15.52	24	Pass
40	5200	13.03	12.00	35.940	15.56	24	Pass
48	5240	12.99	12.22	36.579	15.63	24	Pass
52	5260	12.91	12.01	35.428	15.49	24	Pass
60	5300	13.05	12.07	36.290	15.60	24	Pass
64	5320	13.22	12.15	37.395	15.73	24	Pass
100	5500	14.45	13.72	51.411	17.11	24	Pass
116	5580	15.16	14.72	62.458	17.96	24	Pass
140	5700	12.13	11.44	30.263	14.81	23.99	Pass
149	5745	13.34	12.67	40.070	16.03	30	Pass
157	5785	13.90	12.30	41.529	16.18	30	Pass
165	5825	13.72	12.42	41.008	16.13	30	Pass

Note:

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

Chain 0

1. 11 dBm + 10log (34.45) = 26.37 dBm > 24 dBm.
2. 11 dBm + 10log (35.56) = 26.50 dBm > 24 dBm.
3. 11 dBm + 10log (27.15) = 25.33 dBm > 24 dBm.
4. 11 dBm + 10log (20.98) = 24.21 dBm > 24 dBm.
5. 11 dBm + 10log (38.55) = 26.86 dBm > 24 dBm.
6. 11 dBm + 10log (20.63) = 24.14 dBm > 24 dBm.

Chain 1

1. 11 dBm + 10log (35.52) = 26.50 dBm > 24 dBm.
2. 11 dBm + 10log (33.69) = 26.27 dBm > 24 dBm.
3. 11 dBm + 10log (20.98) = 24.21 dBm > 24 dBm.
4. 11 dBm + 10log (20.76) = 24.17 dBm > 24 dBm.
5. 11 dBm + 10log (30.18) = 25.79 dBm > 24 dBm.
6. 11 dBm + 10log (19.93) = 23.99 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	11.35	9.55	22.662	13.55	24	Pass
46	5230	13.10	12.12	36.710	15.65	24	Pass
54	5270	13.31	12.08	37.573	15.75	24	Pass
62	5310	13.18	12.04	36.793	15.66	24	Pass
102	5510	12.44	11.83	32.780	15.16	24	Pass
110	5550	15.12	14.24	59.055	17.71	24	Pass
134	5670	15.25	14.07	59.024	17.71	24	Pass
151	5755	13.44	12.74	40.873	16.11	30	Pass
159	5795	13.52	12.70	41.112	16.14	30	Pass

Note:

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

Chain 0

1. 11 dBm + 10log (82.37) = 30.15 dBm > 24 dBm.
2. 11 dBm + 10log (43.14) = 27.34 dBm > 24 dBm.
3. 11 dBm + 10log (40.45) = 27.06 dBm > 24 dBm.
4. 11 dBm + 10log (80.34) = 30.04 dBm > 24 dBm.
5. 11 dBm + 10log (53.48) = 28.28 dBm > 24 dBm.

Chain 1

1. 11 dBm + 10log (78.07) = 29.92 dBm > 24 dBm.
2. 11 dBm + 10log (40.45) = 27.06 dBm > 24 dBm.
3. 11 dBm + 10log (39.64) = 26.98 dBm > 24 dBm.
4. 11 dBm + 10log (65.46) = 29.15 dBm > 24 dBm.
5. 11 dBm + 10log (42.05) = 27.23 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	10.91	9.59	21.430	13.31	24	Pass
58	5290	12.88	11.82	34.614	15.39	24	Pass
106	5530	11.52	10.62	25.726	14.10	24	Pass
122	5610	15.01	14.46	59.621	17.75	24	Pass
155	5775	13.80	12.58	42.101	16.24	30	Pass

Note:

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

Chain 0

1. 11 dBm + 10log (86.09) = 30.34 dBm > 24 dBm.
2. 11 dBm + 10log (82.44) = 30.16 dBm > 24 dBm.
3. 11 dBm + 10log (161.74) = 33.08 dBm > 24 dBm.

Chain 1

1. 11 dBm + 10log (80.62) = 30.06 dBm > 24 dBm.
2. 11 dBm + 10log (84.07) = 30.24 dBm > 24 dBm.
3. 11 dBm + 10log (118.15) = 31.72 dBm > 24 dBm.

26 dB Bandwidth:

802.11a

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	19.63	19.48
40	5200	34.28	23.67
48	5240	34.11	34.37
52	5260	34.29	34.50
60	5300	34.04	35.43
64	5320	22.76	20.60
100	5500	19.42	19.62
116	5580	36.46	35.06
140	5700	19.62	19.11

802.11n (HT20)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	21.09	20.83
40	5200	28.60	25.81
48	5240	34.41	35.28
52	5260	34.45	35.52
60	5300	35.56	33.69
64	5320	27.15	20.98
100	5500	20.98	20.76
116	5580	38.55	30.18
140	5700	20.63	19.93

802.11n (HT40)

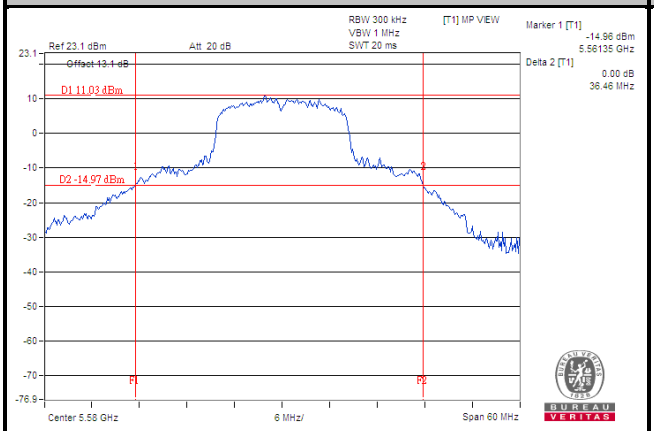
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	40.35	39.73
46	5230	68.02	51.88
54	5270	82.37	78.07
62	5310	43.14	40.45
102	5510	40.45	39.64
110	5550	80.34	65.46
134	5670	53.48	42.05

802.11ac (VHT80)

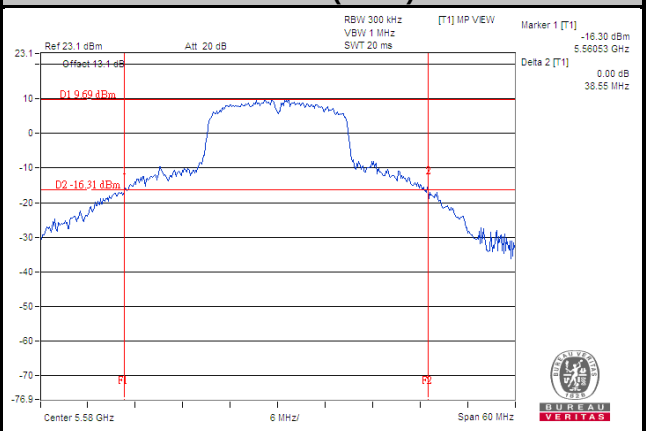
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	81.57	80.82
58	5290	86.09	80.62
106	5530	82.44	84.07
122	5610	161.74	118.15

Spectrum Plot of Worst Value

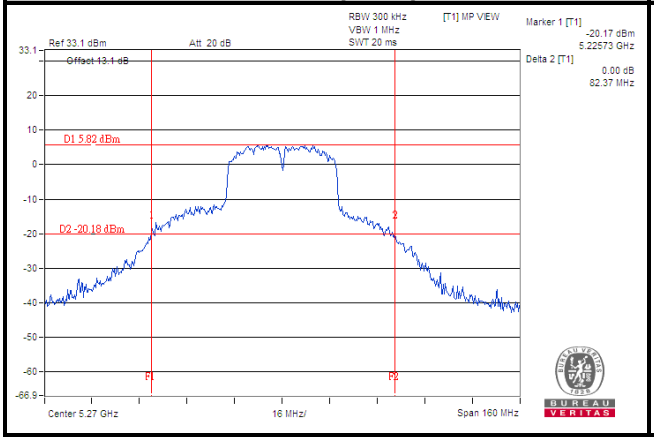
802.11a



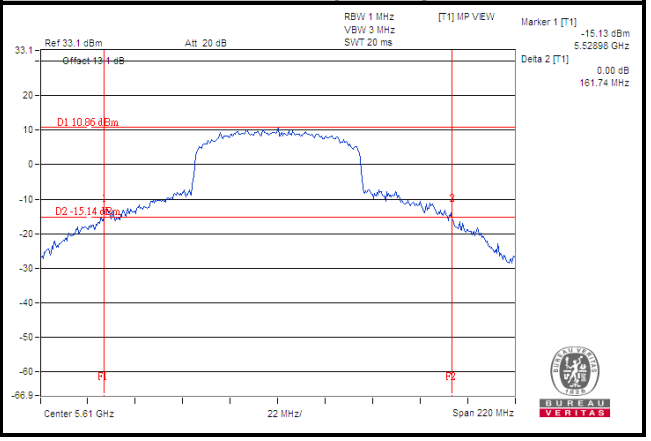
802.11n (HT20)



802.11n (HT40)

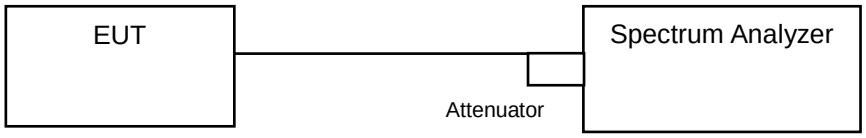


802.11ac (VHT80)



4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

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

4.4.4 Test Results

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	16.32	16.32
40	5200	18.24	16.56
48	5240	17.64	17.52
52	5260	17.52	19.44
60	5300	18.72	18.00
64	5320	16.56	16.44
100	5500	16.32	16.32
116	5580	23.28	17.52
140	5700	16.32	16.32
149	5745	33.96	17.40
157	5785	27.24	18.24
165	5825	28.20	21.00

802.11n (HT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	17.52	17.40
40	5200	17.64	17.64
48	5240	18.12	18.60
52	5260	18.12	19.08
60	5300	18.24	18.00
64	5320	17.52	17.40
100	5500	17.52	17.40
116	5580	21.60	17.76
140	5700	17.52	17.40
149	5745	32.40	17.76
157	5785	25.80	18.48
165	5825	28.92	19.44

802.11n (HT40)

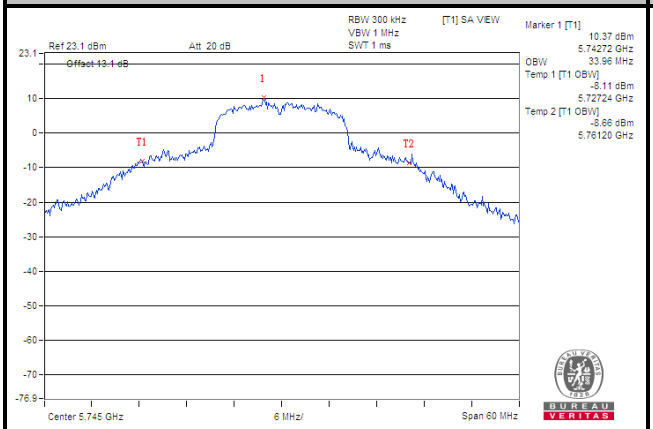
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	36.00	36.00
46	5230	36.36	36.12
54	5270	37.68	37.32
62	5310	36.00	36.00
102	5510	36.00	36.00
110	5550	37.44	36.36
134	5670	36.24	36.12
151	5755	41.40	36.48
159	5795	43.32	36.96

802.11ac (VHT80)

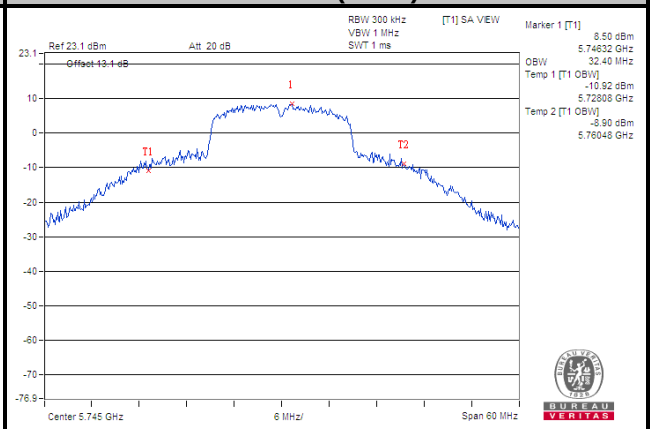
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	74.88	74.88
58	5290	75.12	74.88
106	5530	74.88	74.88
122	5610	78.72	75.60
155	5775	86.40	76.08

Spectrum Plot of Worst Value

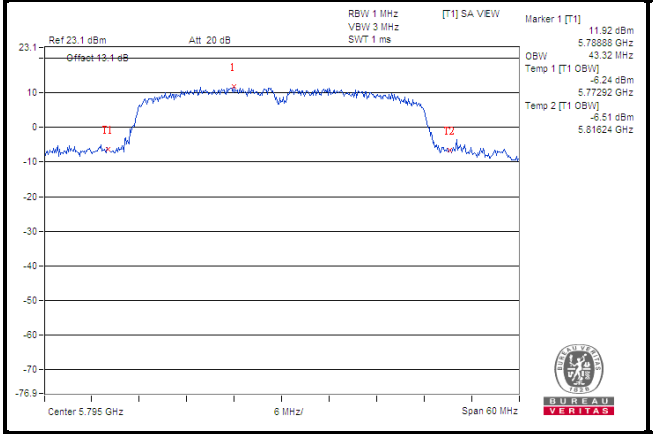
802.11a



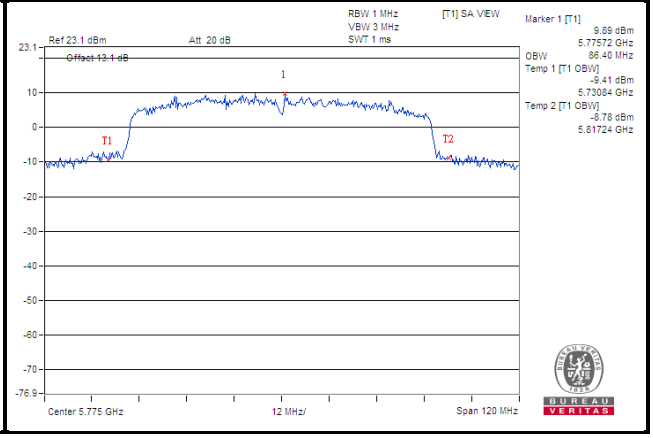
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

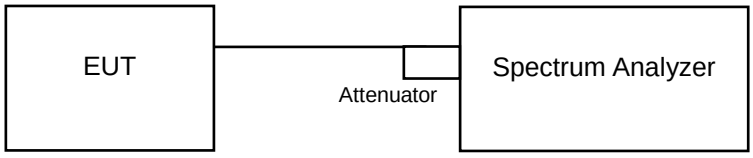


4.5 Peak Power Spectral Density Measurement

4.5.1 Limits of Peak Power Spectral Density Measurement

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

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.5.4 Test Procedures

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

Using method SA-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 (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
36	5180	3.28	1.64	0.23	5.77	11	Pass
40	5200	6.10	5.67	0.23	9.13	11	Pass
48	5240	6.09	5.84	0.23	9.20	11	Pass
52	5260	6.16	5.85	0.23	9.25	11	Pass
60	5300	6.29	5.28	0.23	9.05	11	Pass
64	5320	4.99	4.05	0.23	7.78	11	Pass
100	5500	3.47	3.12	0.23	6.54	11	Pass
116	5580	6.74	6.04	0.23	9.64	11	Pass
140	5700	1.40	0.57	0.23	4.24	11	Pass

Note:

1. Method 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1 Band, U-NII-2A:**
   Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}$] = 10 log[$(10^{1.01/20} + 10^{2.13/20})^2 / 2$] = 4.60 dBi < 6 dBi, so the limit no need to be reduced.
   For U-NII-2C Band:
   Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}$] = 10 log[$(10^{1.10/20} + 10^{2.59/20})^2 / 2$] = 4.89 dBi < 6 dBi, so the limit no need to be reduced.
3. 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	3.83	2.19	0.63	6.73	11	Pass
40	5200	5.52	4.19	0.63	8.55	11	Pass
48	5240	5.92	5.23	0.63	9.23	11	Pass
52	5260	5.51	5.00	0.63	8.90	11	Pass
60	5300	5.57	4.68	0.63	8.79	11	Pass
64	5320	3.95	2.77	0.63	7.04	11	Pass
100	5500	2.81	2.10	0.63	6.11	11	Pass
116	5580	6.21	5.15	0.63	9.35	11	Pass
140	5700	0.84	-0.51	0.63	3.86	11	Pass

Note:

1. Method 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1 Band, U-NII-2A:**
   Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}$] = 10 log[$(10^{1.01/20} + 10^{2.13/20})^2 / 2$] = 4.60 dBi < 6 dBi, so the limit no need to be reduced.
   For U-NII-2C Band:
   Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}$] = 10 log[$(10^{1.10/20} + 10^{2.59/20})^2 / 2$] = 4.89 dBi < 6 dBi, so the limit no need to be 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	-3.46	-5.34	0.85	-0.44	11	Pass
46	5230	1.52	0.58	0.85	4.94	11	Pass
54	5270	2.00	1.26	0.85	5.51	11	Pass
62	5310	-2.83	-3.78	0.85	0.58	11	Pass
102	5510	-2.75	-3.52	0.85	0.74	11	Pass
110	5550	2.29	1.63	0.85	5.83	11	Pass
134	5670	0.64	-0.21	0.85	4.10	11	Pass

Note:

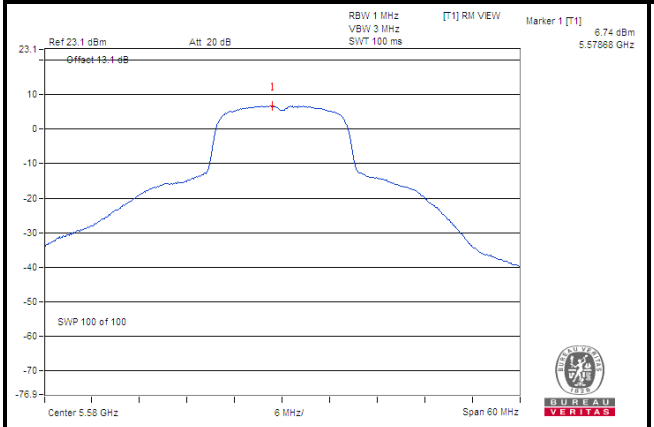
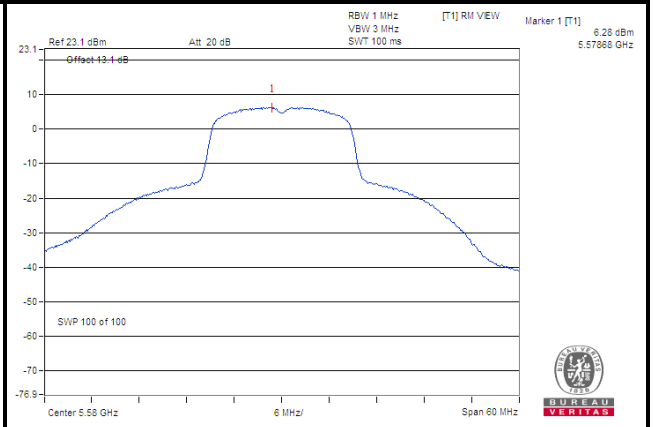
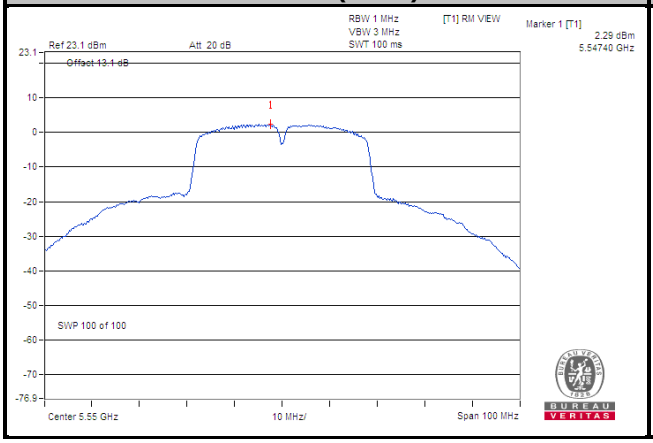
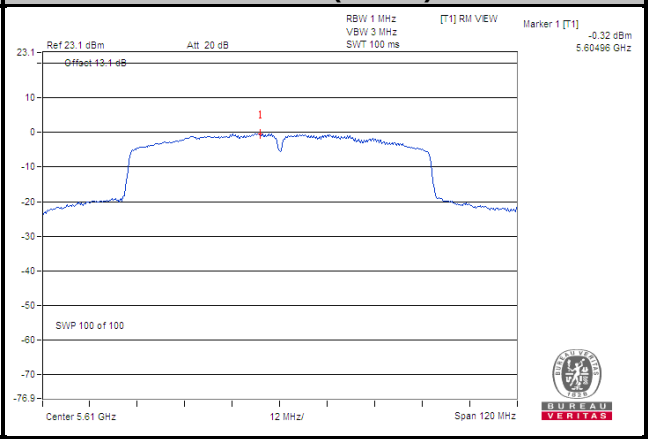
1. Method 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1 Band, U-NII-2A:**
   Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2$ / N_{ANT}] = 10 log[$(10^{1.01/20} + 10^{2.13/20})^2$ / 2] = 4.60 dBi < 6 dBi, so the limit no need to be reduced.
   For U-NII-2C Band:
   Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2$ / N_{ANT}] = 10 log[$(10^{1.10/20} + 10^{2.59/20})^2$ / 2] = 4.89 dBi < 6 dBi, so the limit no need to be 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	-7.49	-8.36	1.14	-3.75	11	Pass
58	5290	-5.11	-6.15	1.14	-1.45	11	Pass
106	5530	-6.63	-7.35	1.14	-2.82	11	Pass
122	5610	-0.32	-1.68	1.14	3.20	11	Pass

Note:

1. Method 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1 Band, U-NII-2A:**
   Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2$ / N_{ANT}] = 10 log[$(10^{1.01/20} + 10^{2.13/20})^2$ / 2] = 4.60 dBi < 6 dBi, so the limit no need to be reduced.
   For U-NII-2C Band:
   Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2$ / N_{ANT}] = 10 log[$(10^{1.10/20} + 10^{2.59/20})^2$ / 2] = 4.89 dBi < 6 dBi, so the limit no need to be 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)
	

For U-NII-3 Band

802.11a

TX Chain	Channel	Frequency (MHz)	PSD w/o Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300 kHz)	(dBm/500 kHz)					
0	149	5745	1.14	3.36	3.01	0.23	6.60	30	Pass
	157	5785	1.42	3.64	3.01	0.23	6.88	30	Pass
	165	5825	1.40	3.62	3.01	0.23	6.86	30	Pass
1	149	5745	0.86	3.08	3.01	0.23	6.32	30	Pass
	157	5785	0.97	3.19	3.01	0.23	6.43	30	Pass
	165	5825	1.16	3.38	3.01	0.23	6.62	30	Pass

Note:
1. Method 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 1.1 dBi + 10log(2) = 4.11 dBi < 6 dBi, so the limit no need to be reduced.
3. 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	149	5745	0.52	2.74	3.01	0.63	6.38	30	Pass
	157	5785	0.70	2.92	3.01	0.63	6.56	30	Pass
	165	5825	0.85	3.07	3.01	0.63	6.71	30	Pass
1	149	5745	-0.05	2.17	3.01	0.63	5.81	30	Pass
	157	5785	-0.18	2.04	3.01	0.63	5.68	30	Pass
	165	5825	0.24	2.46	3.01	0.63	6.10	30	Pass

Note:
1. Method 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 1.1 dBi + 10log(2) = 4.11 dBi < 6 dBi, so the limit no need to be reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

TX Chain	Channel	Frequency (MHz)	PSD		10 log (N=2) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300 kHz)	(dBm/500 kHz)					
0	151	5755	-2.87	-0.65	3.01	0.85	3.21	30	Pass
	159	5795	-3.08	-0.86	3.01	0.85	3.00	30	Pass
1	151	5755	-3.64	-1.42	3.01	0.85	2.44	30	Pass
	159	5795	-3.09	-0.87	3.01	0.85	2.99	30	Pass

Note:
1. Method 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 1.1 dBi + 10log(2) = 4.11 dBi < 6 dBi, so the limit no need to be reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

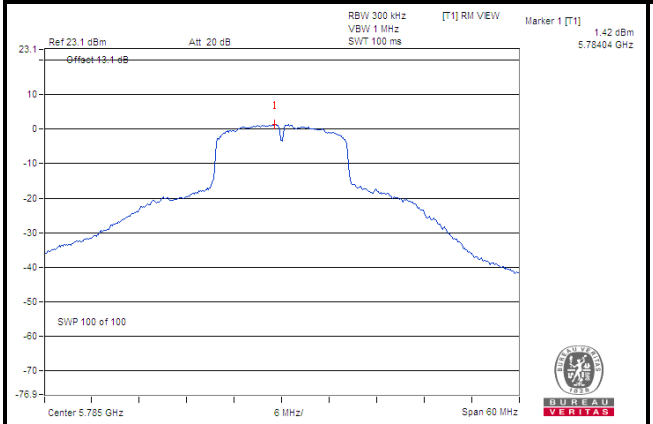
802.11ac (VHT80)

TX Chain	Channel	Frequency (MHz)	PSD		10 log (N=2) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300 kHz)	(dBm/500 kHz)					
0	155	5775	-5.59	-3.37	3.01	1.14	0.78	30	Pass
1	155	5775	-6.73	-4.51	3.01	1.14	-0.36	30	Pass

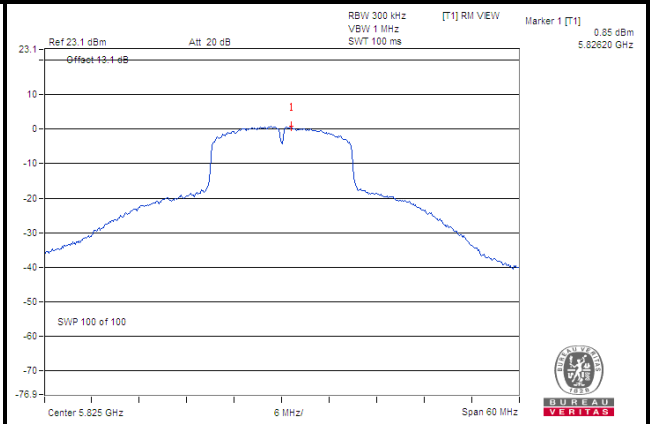
Note:
1. Method 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 1.1 dBi + 10log(2) = 4.11 dBi < 6 dBi, so the limit no need to be reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

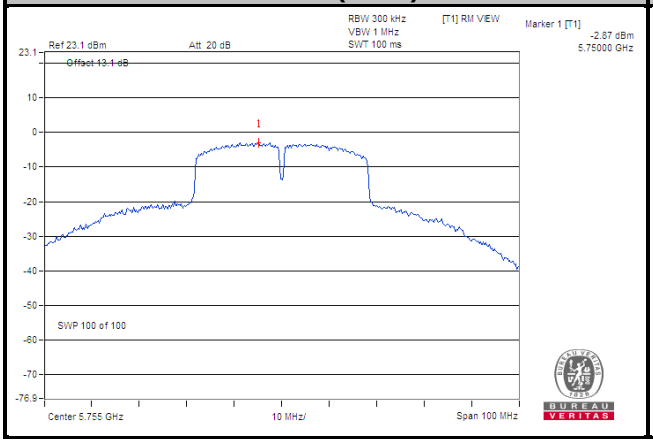
802.11a



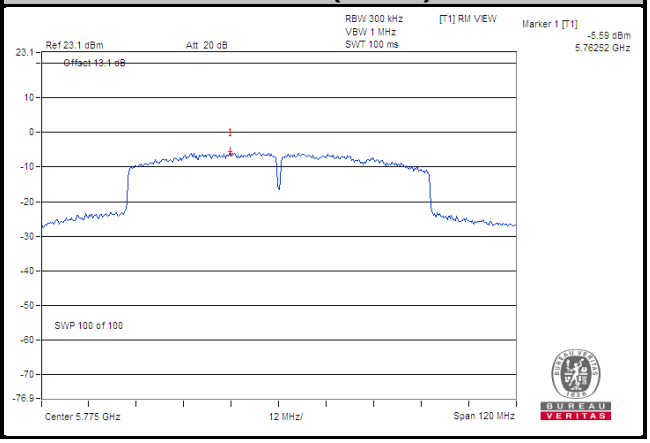
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

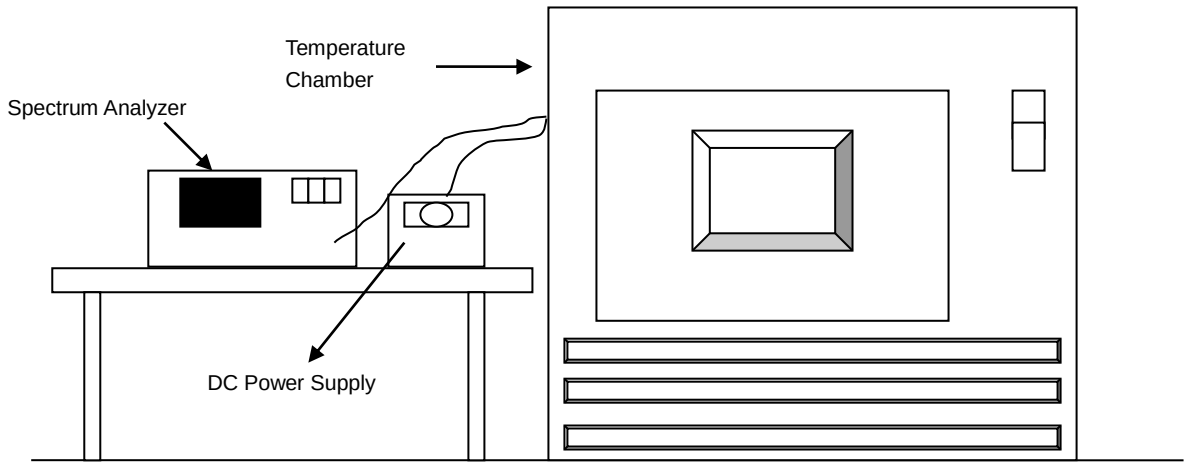


4.6 Frequency Stability

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 (Vdc)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
50	3.84	5180.0224	4.32000	5180.022	4.25000	5180.0246	4.75000	5180.0261	5.04000
40	3.84	5180.0027	0.52000	5180.0013	0.25000	5180.0002	0.04000	5180.0035	0.68000
30	3.84	5179.9801	-3.84000	5179.9788	-4.09000	5179.9785	-4.15000	5179.9771	-4.42000
20	3.84	5180.0213	4.11000	5180.0208	4.02000	5180.0204	3.94000	5180.019	3.67000
10	3.84	5179.9789	-4.07000	5179.9774	-4.36000	5179.9759	-4.65000	5179.9762	-4.59000
0	3.84	5180.0062	1.20000	5180.0028	0.54000	5180.0044	0.85000	5180.0037	0.71000
-10	3.84	5180.0063	1.22000	5180.0054	1.04000	5180.0061	1.18000	5180.0055	1.06000
-20	3.84	5180.0207	4.00000	5180.0211	4.07000	5180.0214	4.13000	5180.0234	4.52000
-30	3.84	5180.021	4.05000	5180.0184	3.55000	5180.0199	3.84000	5180.022	4.25000

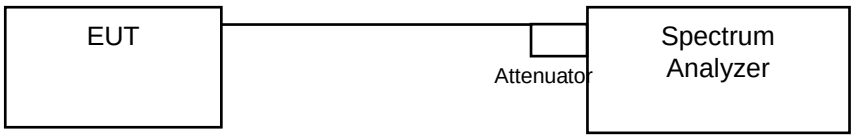
Frequency Stability Versus Voltage									
Operating Frequency: 5180 MHz									
Temp. (℃)	Power Supply (Vdc)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
20	4.416	5180.0218	4.21000	5180.0201	3.88000	5180.0195	3.76000	5180.0191	3.69000
	3.84	5180.0213	4.11000	5180.0208	4.02000	5180.0204	3.94000	5180.019	3.67000
	3.264	5180.0215	4.15000	5180.0214	4.13000	5180.0213	4.11000	5180.0191	3.69000

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
		Chain 0	Chain 1		
149	5745	15.19	15.16	0.5	Pass
157	5785	15.20	15.17	0.5	Pass
165	5825	15.19	15.17	0.5	Pass

802.11n (HT20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	15.38	15.75	0.5	Pass
157	5785	15.36	15.18	0.5	Pass
165	5825	15.37	15.72	0.5	Pass

802.11n (HT40)

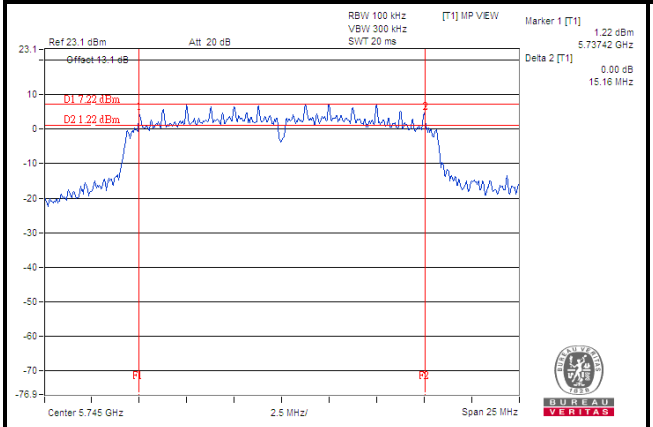
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
151	5755	35.11	35.19	0.5	Pass
159	5795	35.12	35.14	0.5	Pass

802.11ac (VHT80)

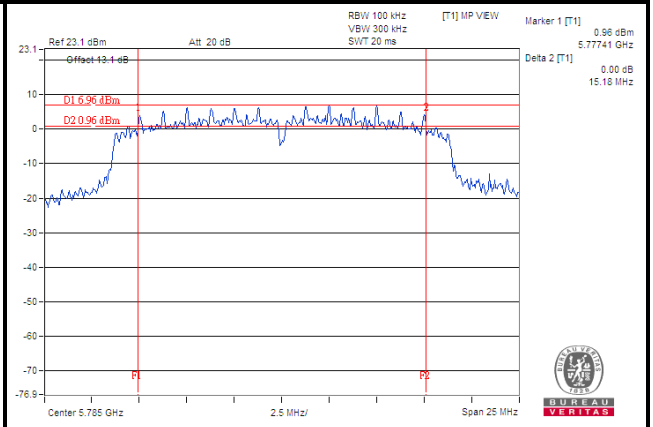
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
155	5775	72.63	72.71	0.5	Pass

Spectrum Plot of Worst Value

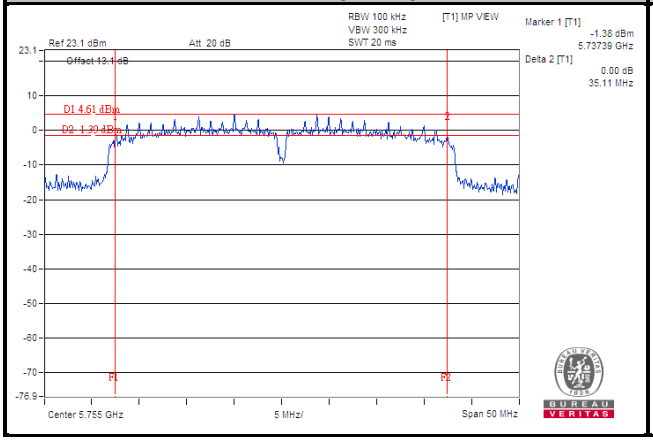
802.11a



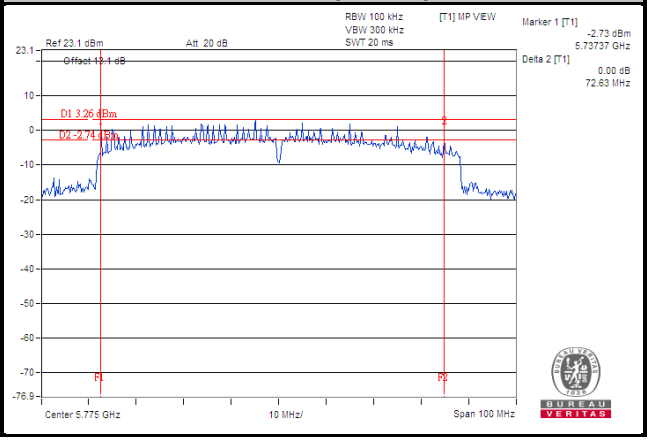
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)



5 Pictures of Test Arrangements

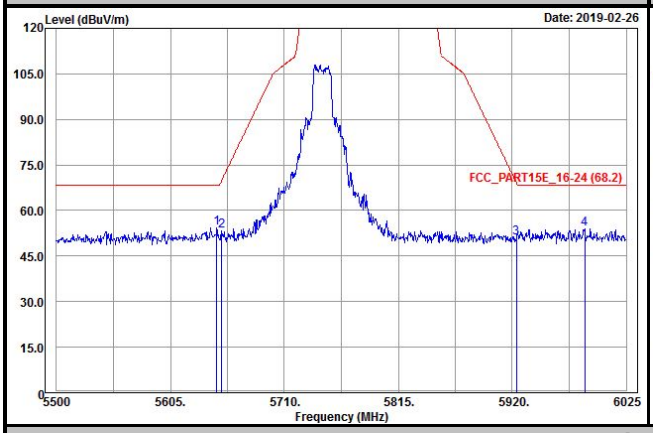
Please refer to the attached file (Test Setup Photo).

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

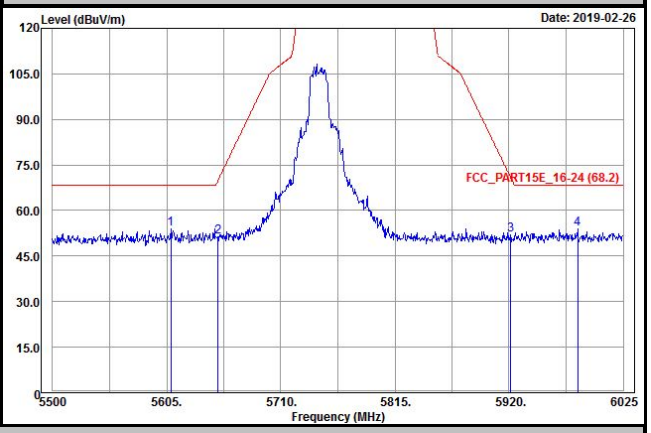
802.11a

Ch 149

Horizontal

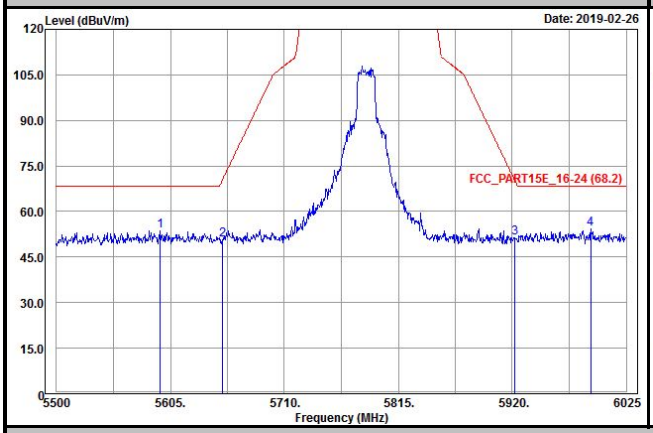


Vertical

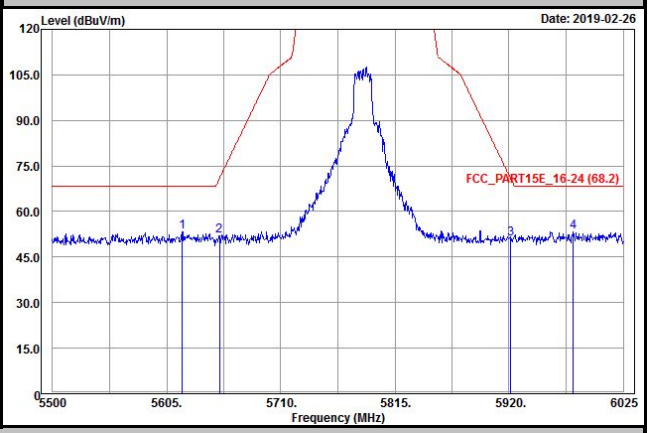


Ch 157

Horizontal

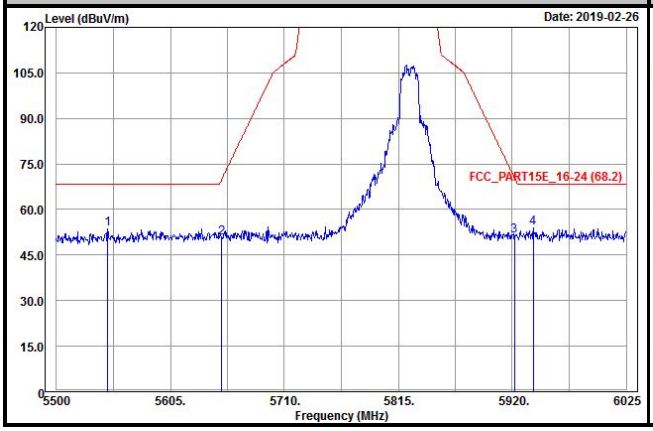


Vertical

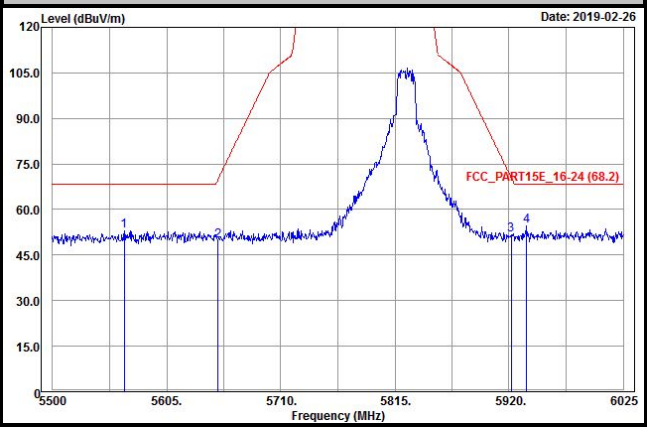


Ch 165

Horizontal



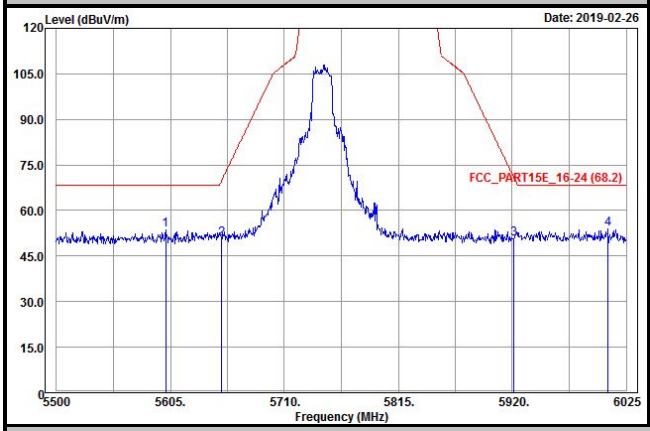
Vertical



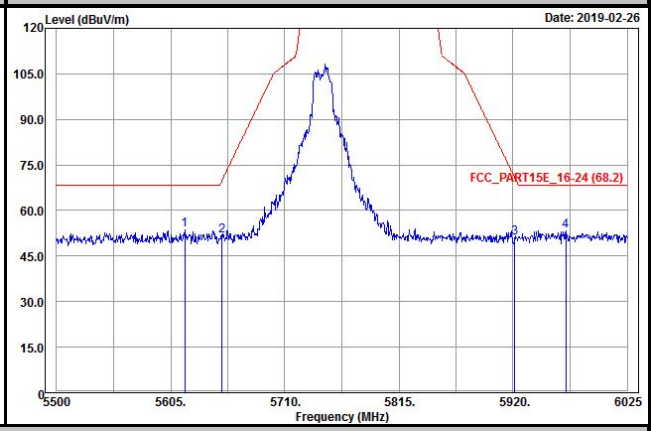
802.11n (HT20)

Ch 149

Horizontal

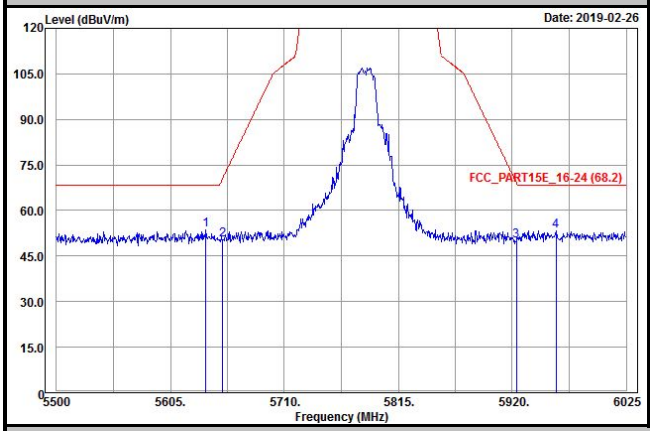


Vertical

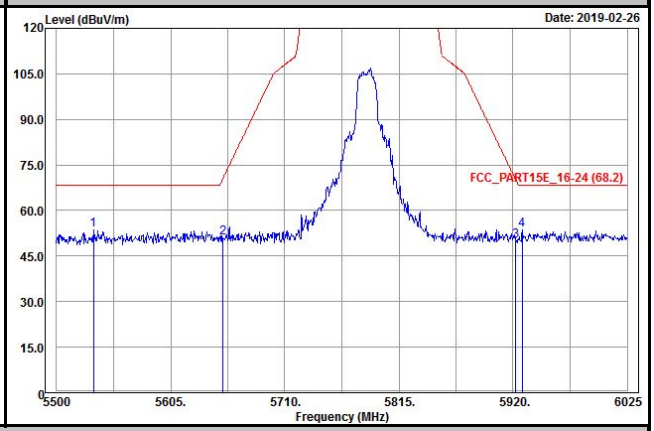


Ch 157

Horizontal

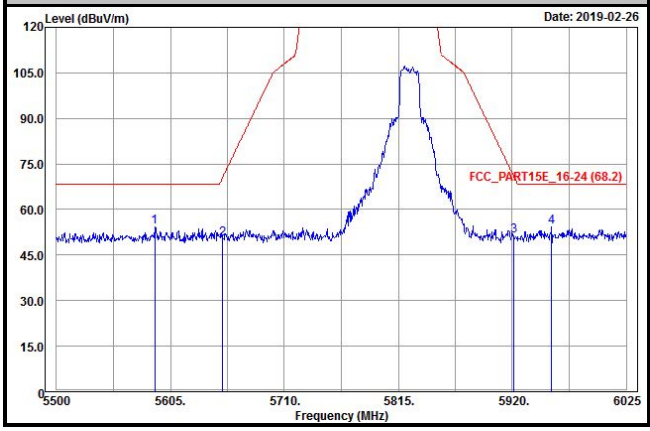


Vertical



Ch 165

Horizontal



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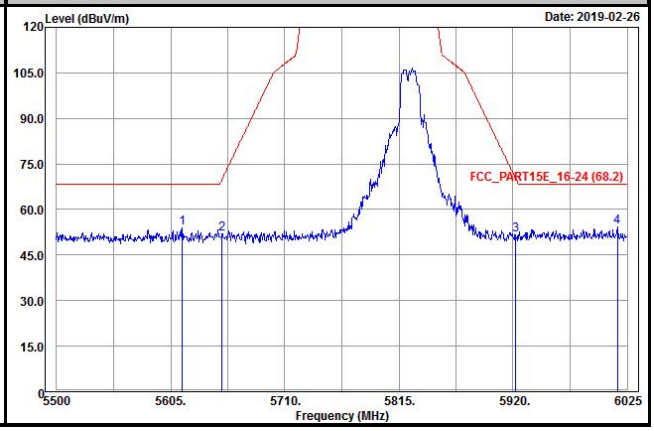
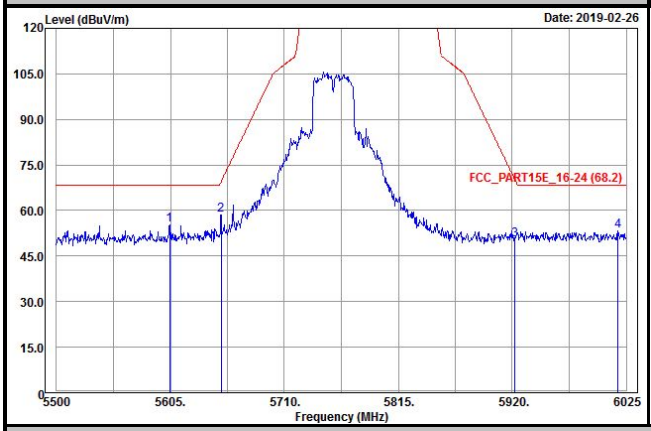
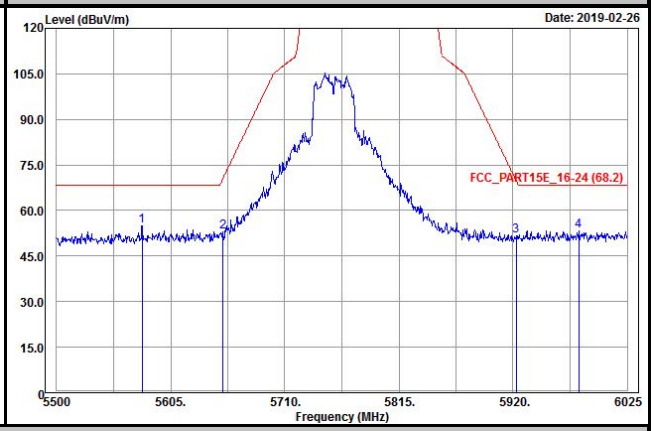
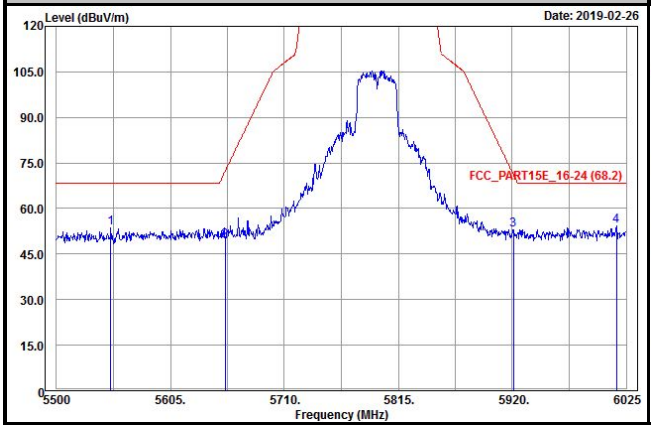
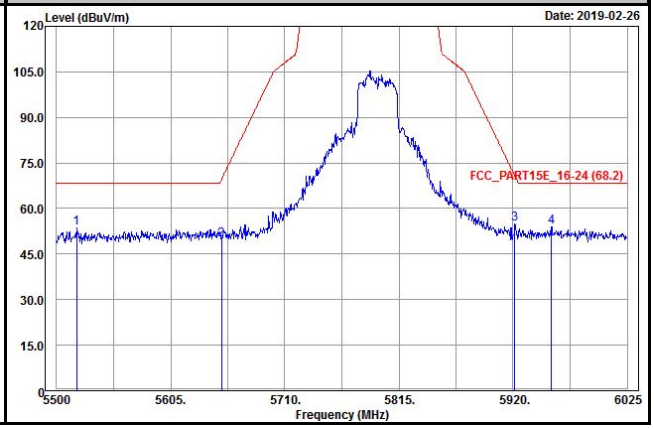
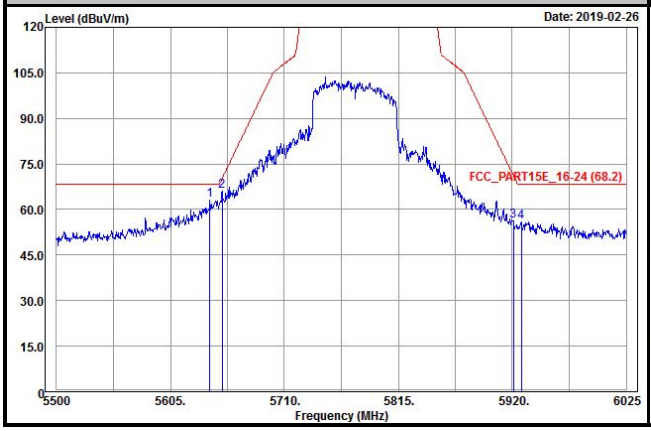
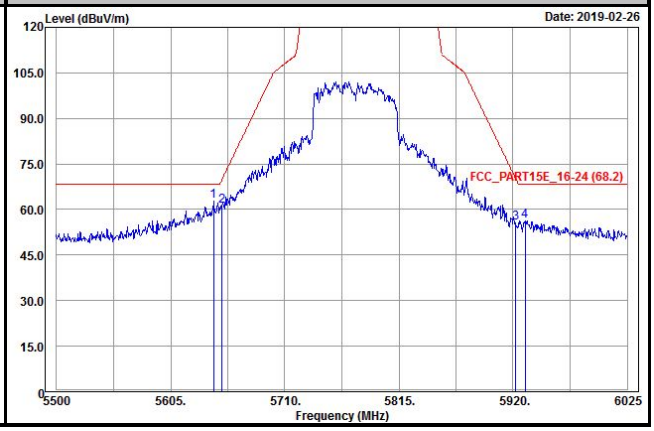


802.11n (HT40)

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:

Lin Kou EMC/RF Lab
Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab
Tel: 886-3-6668565
Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety
Tel: 886-3-3183232
Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

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

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