FCC Test Report

Report No.:	RF190417C27-3
FCC ID:	POTWA02
Test Model:	WA02
Received Date:	Apr. 17, 2019
Test Date:	Jul. 20 ~ Sep. 02, 2019
Issued Date:	Sep. 12, 2019
Applicant:	Inventec Appliances Corp.
Address:	37 Wugong 5th road, New Taipei Industrial Park, Wugu District, New Taipei City, Taiwan 24890
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location:	No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan
FCC Registration / Designation Number:	788550 / TW0003

Testing Laboratory
2021

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
RF190417C27-3	Original Release	Sep. 12, 2019

1 Certificate of Conformity

Product:	Notebook
Brand:	Inventec Appliances Corp.
Test Model:	WA02
Sample Status:	Identical Prototype
Applicant:	Inventec Appliances Corp.
Test Date:	Jul. 20 ~ Sep. 02, 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:** Sep. 12, 2019

Ivonne Wu / Supervisor

Approved by : _____ , **Date:** Sep. 12, 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 -14.82 dB at 0.16569 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 -0.12 dB at 5470 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	Antenna connector is Ipex 4 not a standard connector.

Note:

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

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150 kHz ~ 30 MHz	2.44 dB
Radiated Emissions up to 1 GHz	9 kHz ~ 30 MHz	3.04 dB
	30 MHz ~ 200 MHz	2.93 dB
	200 MHz ~ 1000 MHz	2.95 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Notebook
Brand	Inventec Appliances Corp.
Test Model	WA02
Status of EUT	Identical Prototype
Power Supply Rating	5.0 Vdc / 12Vdc / 15Vdc / 20Vdc (adapter) 7.6 Vdc (Li-ion battery)
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK
Modulation Technology	OFDM
Transfer Rate	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0 Mbps 802.11n: up to 300 Mbps 802.11ac: up to 650 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: 12 for 802.11a, 802.11n (HT20) 6 for 802.11n (HT40) 3 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	39.607 mW for 5180 ~ 5240 MHz 39.633 mW for 5260 ~ 5320 MHz 39.526 mW for 5500 ~ 5700 MHz 39.063 mW for 5745 ~ 5825 MHz
Antenna Type	Monopole antenna with 1 dBi gain (Main) PIFA antenna with 1.5 dBi gain (Aux.)
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	DARFON	B230-201	I/P: 100-240 Vac, 50/60 Hz, 0.7 A Max. O/P: 5 Vdc, 3 A / 9 Vdc, 3 A / 12 Vdc, 2.5 A / 15 Vdc, 2 A / 20 Vdc, 1.5 A
Battery	GY	NA125S PL2983122	7.6 Vdc, 4200 mAh

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

12 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	144	5720

6 channels are provided for 802.11n (HT40):

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

3 channels are provided for 802.11ac (VHT80):

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

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: "-" 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 144	100, 116, 140, 144	OFDM	BPSK	6.0
-		802.11n (HT20)	100 to 144	100, 116, 140, 144	OFDM	BPSK	6.5
-		802.11n (HT40)	102 to 142	102, 110, 134, 142	OFDM	BPSK	13.5
-		802.11ac (VHT80)	106 to 138	106, 122, 138	OFDM	BPSK	29.3
-	5745-5825	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-		802.11n (HT20)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
-		802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	13.5
-		802.11ac (VHT80)	155	155	OFDM	BPSK	29.3

Radiated Emission Test (Below 1 GHz):

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

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

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5500-5720	802.11a	100 to 144	100	OFDM	BPSK	6.0

Power Line Conducted Emission Test:

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

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

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5500-5720	802.11a	100 to 144	100	OFDM	BPSK	6.0

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 144	100, 116, 140, 144	OFDM	BPSK	6.0
-		802.11n (HT20)	100 to 144	100, 116, 140, 144	OFDM	BPSK	6.5
-		802.11n (HT40)	102 to 142	102, 110, 134, 142	OFDM	BPSK	13.5
-		802.11ac (VHT80)	106 to 138	106, 122, 138	OFDM	BPSK	29.3
-	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	Thomas Wei
RE<1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Thomas Wei
PLC	25 deg. C, 65 % RH	120 Vac, 60 Hz	Thomas Wei
APCM	25 deg. C, 65 % RH	120 Vac, 60 Hz	Wayne Lin

3.3 Duty Cycle of Test Signal

MODULATION TYPE: BPSK

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

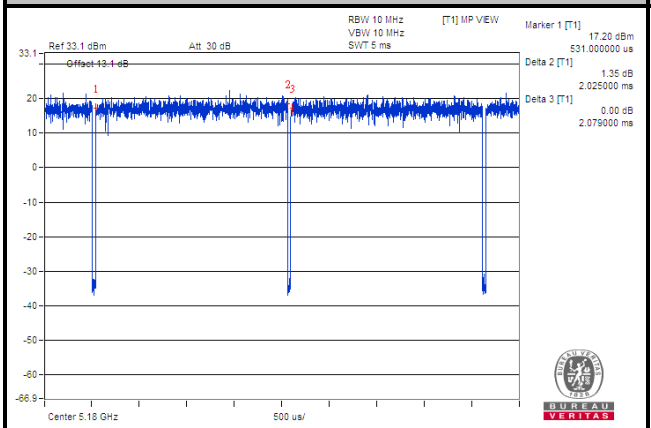
802.11a: Duty cycle = 2.025/2.079 = 0.974, Duty factor = 10 * log(1/0.974) = 0.11

802.11n (HT20): Duty cycle = 0.963/1.002 = 0.961, Duty factor = 10 * log(1/0.961) = 0.17

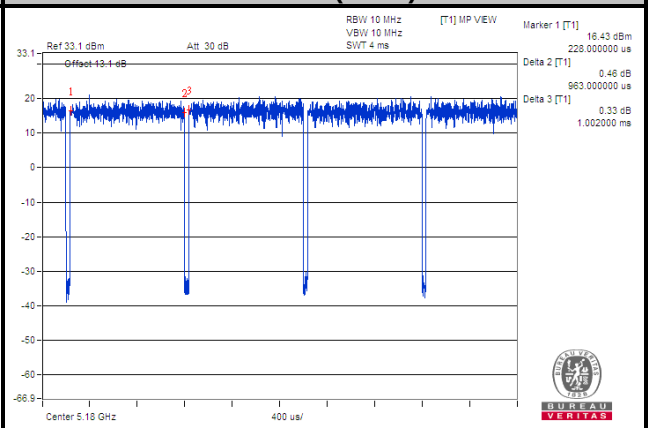
802.11n (HT40): Duty cycle = 0.484/0.538 = 0.900, Duty factor = 10 * log(1/0.900) = 0.46

802.11ac (VHT80): Duty cycle = 0.454/0.507 = 0.895, Duty factor = 10 * log(1/0.895) = 0.48

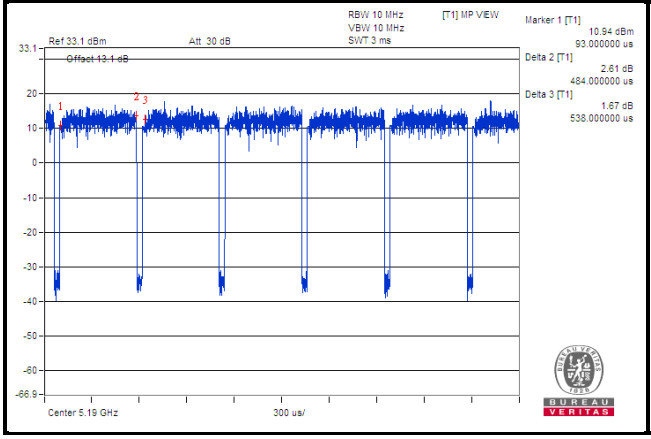
802.11a



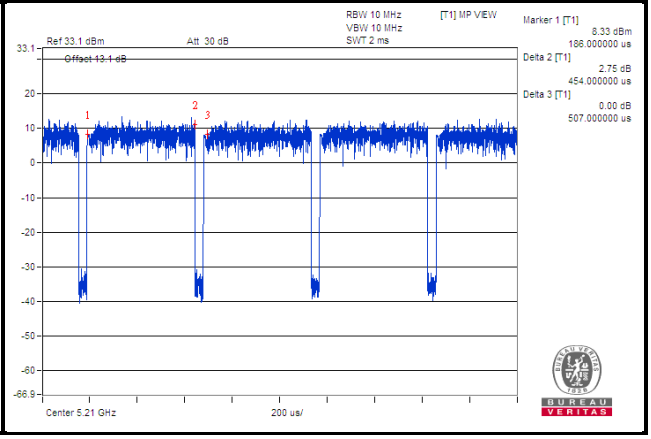
802.11n (HT20)



802.11n (HT40)



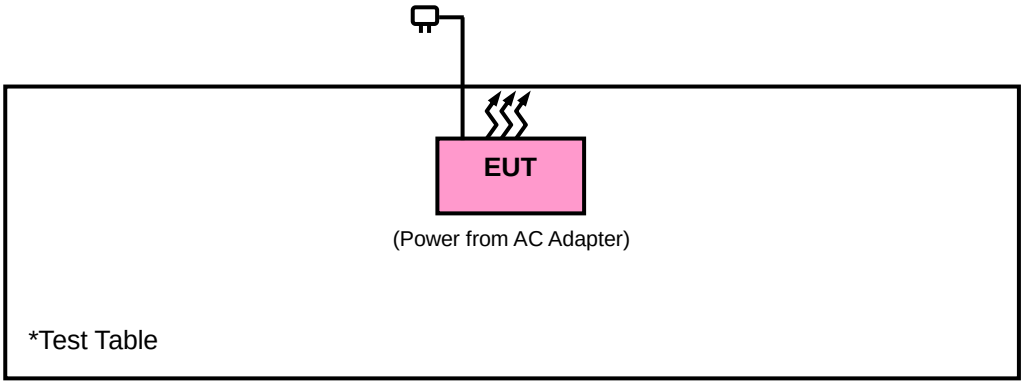
802.11ac (VHT80)



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

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

Note:

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

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

4.1.3 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent	N9038A	MY51210203	Mar. 18, 2019	Mar. 17, 2020
Spectrum Analyzer Agilent	N9010A	MY52220314	Dec. 13, 2018	Dec. 12, 2019
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Apr. 15, 2019	Apr. 14, 2020
Spectrum Analyzer ROHDE & SCHWARZ	FSW26	102023	Oct. 11, 2018	Oct. 10, 2019
HORN Antenna SCHWARZBECK	BBHA 9170	148	Nov. 25, 2018	Nov. 24, 2019
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-969	Nov. 25, 2018	Nov. 24, 2019
BILOG Antenna SCHWARZBECK	VULB 9168	9168-472	Nov. 23, 2018	Nov. 22, 2019
BILOG Antenna SCHWARZBECK	VULB 9168	9168-153	Nov. 23, 2018	Nov. 22, 2019
Double Ridge Guide Horn Antenna EMCO	3115	5619	Nov. 25, 2018	Nov. 24, 2019
Fixed Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	Apr. 15, 2019	Apr. 14, 2020
Loop Antenna	EM-6879	269	Sep. 07, 2018	Sep. 06, 2019
Preamplifier EMCI	EMC 012645	980115	Oct. 12, 2018	Oct. 11, 2019
Preamplifier EMCI	EMC 330H	980112	Oct. 12, 2018	Oct. 11, 2019
Preamplifier EMCI	EMC 184045	980116	Oct. 12, 2018	Oct. 11, 2019
RF Coaxial Cable HUBER+SUHNNER	EMC104-SM-SM-8000&3000	140811+170717	Oct. 12, 2018	Oct. 11, 2019
RF Coaxial Cable HUBER+SUHNNER	SUCOFLEX 104	EMC104-SM-SM-1000(140807)	Oct. 12, 2018	Oct. 11, 2019
RF Coaxial Cable WOKEN	8D-FB	Cable-Ch10-01	Oct. 12, 2018	Oct. 11, 2019
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower &Turn Table Controller MF	MF-7802	NA	NA	NA
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. 27, 2019	Jun. 26, 2020

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 Chamber 10.

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:

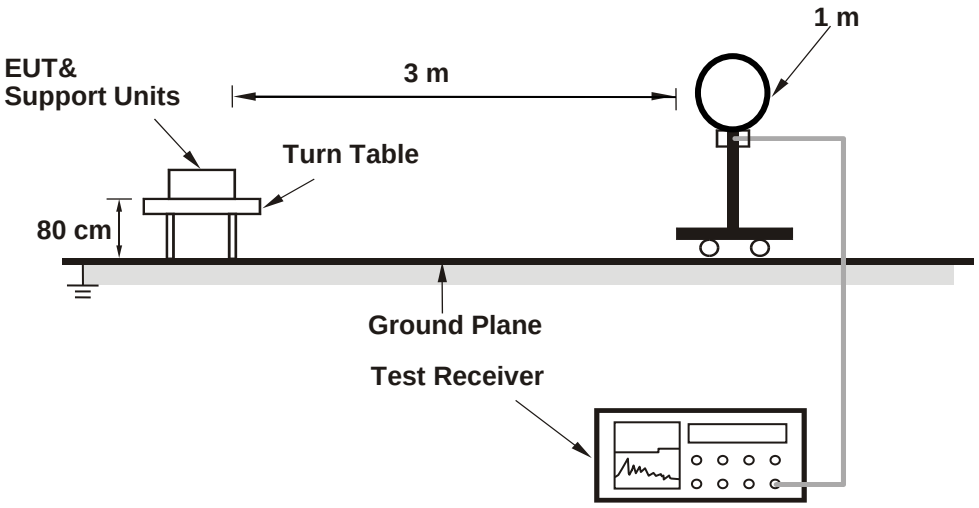
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) 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

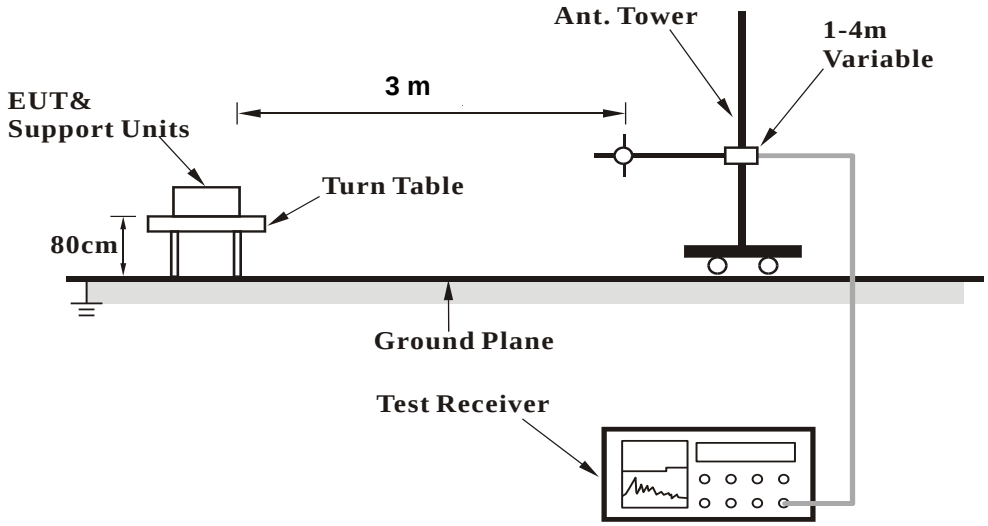
No deviation.

4.1.6 Test Setup

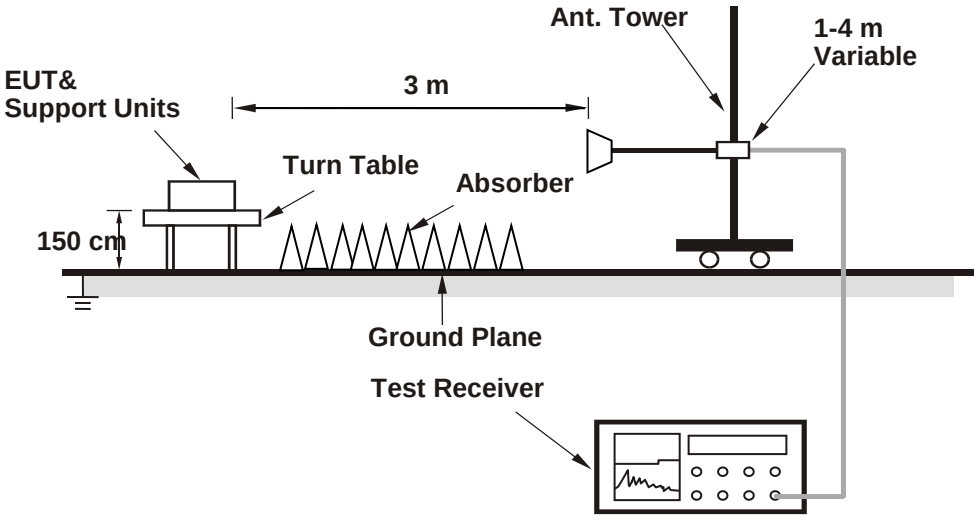
<Radiated Emission below 30 MHz>



<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**	Thomas Wei

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	52.48	50.95	1.53	54	-1.52	142	77	Average
5150	67.25	65.72	1.53	74	-6.75	142	77	Peak
5180	102.15	100.62	1.53			142	77	Average
5180	108.5	106.97	1.53			142	77	Peak
*10360	54.6	57.44	-2.84	68.2	-13.6	203	146	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	52.81	51.28	1.53	54	-1.19	249	17	Average
5150	65.7	64.17	1.53	74	-8.3	249	17	Peak
5180	102.57	101.04	1.53			249	17	Average
5180	110.67	109.14	1.53			249	17	Peak
*10360	55.71	58.55	-2.84	68.2	-12.49	123	336	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	45.32	43.79	1.53	54	-8.68	143	78	Average
5150	59.13	57.6	1.53	74	-14.87	143	78	Peak
5200	102.32	100.79	1.53			143	78	Average
5200	111.1	109.57	1.53			143	78	Peak
5350	40.11	38.65	1.46	54	-13.89	143	78	Average
5350	50.35	48.89	1.46	74	-23.65	143	78	Peak
*10400	55.2	58.09	-2.89	68.2	-13	188	234	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	46.47	44.94	1.53	54	-7.53	166	16	Average
5150	57.97	56.44	1.53	74	-16.03	166	16	Peak
5200	103.17	101.64	1.53			166	16	Average
5200	111.99	110.46	1.53			166	16	Peak
5350	40.51	39.05	1.46	54	-13.49	166	16	Average
5350	50.46	49	1.46	74	-23.54	166	16	Peak
*10400	59.33	62.22	-2.89	68.2	-8.87	116	204	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	39.52	37.99	1.53	54	-14.48	134	80	Average
5150	50.45	48.92	1.53	74	-23.55	134	80	Peak
5240	101.85	100.47	1.38			134	80	Average
5240	110.03	108.65	1.38			134	80	Peak
5350	39.85	38.39	1.46	54	-14.15	134	80	Average
5350	50.25	48.79	1.46	74	-23.75	134	80	Peak
*10480	54.11	56.84	-2.73	68.2	-14.09	196	213	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	40.12	38.59	1.53	54	-13.88	242	17	Average
5150	50.85	49.32	1.53	74	-23.15	242	17	Peak
5240	102.75	101.37	1.38			242	17	Average
5240	109.75	108.37	1.38			242	17	Peak
5350	39.11	37.65	1.46	54	-14.89	242	17	Average
5350	49.75	48.29	1.46	74	-24.25	242	17	Peak
*10480	59.85	62.58	-2.73	68.2	-8.35	128	303	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	41.08	39.55	1.53	54	-12.92	135	75	Average
5150	50.72	49.19	1.53	74	-23.28	135	75	Peak
5260	103.17	101.86	1.31			135	75	Average
5260	110.57	109.26	1.31			135	75	Peak
5350	41.3	39.84	1.46	54	-12.7	135	75	Average
5350	50.75	49.29	1.46	74	-23.25	135	75	Peak
*10520	55.29	58.01	-2.72	68.2	-12.91	202	107	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	40.96	39.43	1.53	54	-13.04	100	275	Average
5150	50.42	48.89	1.53	74	-23.58	100	275	Peak
5260	104.07	102.76	1.31			100	275	Average
5260	110.9	109.59	1.31			100	275	Peak
5350	41.64	40.18	1.46	54	-12.36	100	275	Average
5350	51.17	49.71	1.46	74	-22.83	100	275	Peak
*10520	60.51	63.23	-2.72	68.2	-7.69	108	211	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	40.97	39.44	1.53	54	-13.03	169	30	Average
5150	50.29	48.76	1.53	74	-23.71	169	30	Peak
5300	99.44	98.13	1.31			169	30	Average
5300	106.55	105.24	1.31			169	30	Peak
5350	43.04	41.58	1.46	54	-10.96	169	30	Average
5350	51.39	49.93	1.46	74	-22.61	169	30	Peak
10600	46.33	49.24	-2.91	54	-7.67	124	109	Average
10600	57.6	60.51	-2.91	74	-16.4	124	109	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	40.88	39.35	1.53	54	-13.12	126	269	Average
5150	52.02	50.49	1.53	74	-21.98	126	269	Peak
5300	103.07	101.76	1.31			126	269	Average
5300	110.9	109.59	1.31			126	269	Peak
5350	46.38	44.92	1.46	54	-7.62	126	269	Average
5350	56.28	54.82	1.46	74	-17.72	126	269	Peak
10600	53.4	56.31	-2.91	54	-0.6	100	189	Average
10600	61.05	63.96	-2.91	74	-12.95	100	189	Peak

Remarks:

1. Emission Level = Read Level + 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**	Thomas Wei

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5320	99.09	97.73	1.36			137	27	Average
5320	105.94	104.58	1.36			137	27	Peak
5350	48.59	47.13	1.46	54	-5.41	137	27	Average
5350	62.5	61.04	1.46	74	-11.5	137	27	Peak
10640	47.12	50.01	-2.89	54	-6.88	211	104	Average
10640	55.14	58.03	-2.89	74	-18.86	211	104	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5320	101.51	100.15	1.36			125	270	Average
5320	108.51	107.15	1.36			125	270	Peak
5350	51.38	49.92	1.46	54	-2.62	125	270	Average
5350	65.09	63.63	1.46	74	-8.91	125	270	Peak
10640	50.75	53.64	-2.89	54	-3.25	102	191	Average
10640	59.79	62.68	-2.89	74	-14.21	102	191	Peak

Remarks:

1. Emission Level = Read Level + 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**	Thomas Wei

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5454.16	48.38	46.51	1.87	54	-5.62	120	251	Average
5454.16	57	55.13	1.87	74	-17	120	251	Peak
*5470	62.07	60.21	1.86	68.2	-6.13	120	251	Peak
5500	99.98	98.11	1.87			120	251	Average
5500	106.73	104.86	1.87			120	251	Peak
*5725	49.44	47.68	1.76	68.2	-18.76	120	251	Peak
11000	48.45	50.76	-2.31	54	-5.55	118	131	Average
11000	56.47	58.78	-2.31	74	-17.53	118	131	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5460	49.78	47.91	1.87	54	-4.22	100	281	Average
5460	62.28	60.41	1.87	74	-11.72	100	281	Peak
*5470	68.08	66.22	1.86	68.2	-0.12	100	281	Peak
5500	102.7	100.83	1.87			100	281	Average
5500	108.95	107.08	1.87			100	281	Peak
*5725	50.38	48.62	1.76	68.2	-17.82	100	281	Peak
11000	48.86	51.17	-2.31	54	-5.14	100	122	Average
11000	56.73	59.04	-2.31	74	-17.27	100	122	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5453.36	40.6	38.73	1.87	54	-13.4	135	121	Average
5453.36	51.16	49.29	1.87	74	-22.84	135	121	Peak
*5470	49.3	47.44	1.86	68.2	-18.9	135	121	Peak
5580	101.78	99.96	1.82			135	121	Average
5580	108.45	106.63	1.82			135	121	Peak
*5725	50.28	48.52	1.76	68.2	-17.92	135	121	Peak
11160	48.45	51	-2.55	54	-5.55	112	128	Average
11160	56.29	58.84	-2.55	74	-17.71	112	128	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5453.04	40.97	39.1	1.87	54	-13.03	105	280	Average
5453.04	50.18	48.31	1.87	74	-23.82	105	280	Peak
*5470	51.15	49.29	1.86	68.2	-17.05	105	280	Peak
5580	105.05	103.23	1.82			105	280	Average
5580	111.36	109.54	1.82			105	280	Peak
*5725	50.38	48.62	1.76	68.2	-17.82	105	280	Peak
11160	48.76	51.31	-2.55	54	-5.24	100	119	Average
11160	56.19	58.74	-2.55	74	-17.81	100	119	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5444.4	40.62	38.84	1.78	54	-13.38	138	126	Average
5444.4	50.17	48.39	1.78	74	-23.83	138	126	Peak
*5470	50.01	48.15	1.86	68.2	-18.19	138	126	Peak
5700	98.85	97.26	1.59			138	126	Average
5700	104.95	103.36	1.59			138	126	Peak
*5725	64.68	62.92	1.76	68.2	-3.52	138	126	Peak
11400	48.23	50.46	-2.23	54	-5.77	119	132	Average
11400	56.22	58.45	-2.23	74	-17.78	119	132	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5452.88	40.91	39.04	1.87	54	-13.09	119	271	Average
5452.88	50.81	48.94	1.87	74	-23.19	119	271	Peak
*5470	49.93	48.07	1.86	68.2	-18.27	119	271	Peak
5700	100.46	98.87	1.59			119	271	Average
5700	106.35	104.76	1.59			119	271	Peak
*5725	67.63	65.87	1.76	68.2	-0.57	119	271	Peak
11400	48.62	50.85	-2.23	54	-5.38	100	124	Average
11400	56.18	58.41	-2.23	74	-17.82	100	124	Peak

Remarks:

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

EUT Test Condition		Measurement Detail	
Channel	Channel 144	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5394.64	40.01	38.34	1.67	54	-13.99	129	247	Average
5394.64	49.85	48.18	1.67	74	-24.15	129	247	Peak
*5470	49.12	47.26	1.86	68.2	-19.08	129	247	Peak
5720	100.25	98.49	1.76			129	247	Average
5720	106.12	104.36	1.76			129	247	Peak
11440	47.02	49.24	-2.22	54	-6.98	100	129	Average
11440	55.52	57.74	-2.22	74	-18.48	100	129	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5399.92	40.85	39.18	1.67	54	-13.15	157	348	Average
5399.92	51.11	49.44	1.67	74	-22.89	157	348	Peak
*5470	48.52	46.66	1.86	68.2	-19.68	157	348	Peak
5720	102.23	100.47	1.76			157	348	Average
5720	107.11	105.35	1.76			157	348	Peak
11440	48.13	50.35	-2.22	54	-5.87	100	129	Average
11440	56.25	58.47	-2.22	74	-17.75	100	129	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5720 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5745	100.99	99.17	1.82			126	248	Average
5745	107.63	105.81	1.82			126	248	Peak
11490	47.2	49.4	-2.2	54	-6.8	104	132	Average
11490	55.48	57.68	-2.2	74	-18.52	104	132	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5745	103.49	101.67	1.82			130	270	Average
5745	111.14	109.32	1.82			130	270	Peak
11490	47.7	49.9	-2.2	54	-6.3	100	128	Average
11490	55.48	57.68	-2.2	74	-18.52	100	128	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5639.775	50.5	48.62	1.88	68.2	-17.7	126	248	Peak
5654.975	50.05	48.2	1.85	71.9	-21.85	126	248	Peak
5919.075	51.02	48.71	2.31	72.57	-21.55	126	248	Peak
*6021.2	51.44	49.04	2.4	68.2	-16.76	126	248	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5635.025	51.18	49.3	1.88	68.2	-17.02	130	270	Peak
5652.125	51.74	49.83	1.91	69.78	-18.04	130	270	Peak
5917.175	51.16	48.85	2.31	73.97	-22.81	130	270	Peak
*5940.45	51.81	49.52	2.29	68.2	-16.39	130	270	Peak

Remarks:

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

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5785	99.96	98.04	1.92			100	203	Average
5785	106.81	104.89	1.92			100	203	Peak
11570	46.84	49.04	-2.2	54	-7.16	126	147	Average
11570	55.56	57.76	-2.2	74	-18.44	126	147	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5785	104.06	102.14	1.92			127	268	Average
5785	111.27	109.35	1.92			127	268	Peak
11570	47.2	49.4	-2.2	54	-6.8	100	129	Average
11570	55.85	58.05	-2.2	74	-18.15	100	129	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5613.175	50.7	48.83	1.87	68.2	-17.5	100	203	Peak
5653.075	50.9	48.99	1.91	70.49	-19.59	100	203	Peak
5923.825	50.25	47.95	2.3	69.07	-18.82	100	203	Peak
*5941.4	51.28	48.99	2.29	68.2	-16.92	100	203	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5580.875	51.1	49.28	1.82	68.2	-17.1	127	268	Peak
5660.2	50.62	48.77	1.85	75.77	-25.15	127	268	Peak
5923.825	51.7	49.4	2.3	69.07	-17.37	127	268	Peak
*5936.65	51.21	48.91	2.3	68.2	-16.99	127	268	Peak

Remarks:

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

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5825	99.42	97.34	2.08			123	203	Average
5825	106.01	103.93	2.08			123	203	Peak
11650	46.72	49.11	-2.39	54	-7.28	133	157	Average
11650	55.58	57.97	-2.39	74	-18.42	133	157	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5825	104.06	101.98	2.08			125	272	Average
5825	110.69	108.61	2.08			125	272	Peak
11650	47.19	49.58	-2.39	54	-6.81	100	132	Average
11650	56.24	58.63	-2.39	74	-17.76	100	132	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5562.825	50.62	48.82	1.8	68.2	-17.58	123	203	Peak
5655.925	50.44	48.59	1.85	72.6	-22.16	123	203	Peak
5918.6	51.01	48.7	2.31	72.92	-21.91	123	203	Peak
*5930.475	51.56	49.26	2.3	68.2	-16.64	123	203	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5599.875	51.7	49.77	1.93	68.2	-16.5	125	272	Peak
5657.825	49.53	47.68	1.85	74.01	-24.48	125	272	Peak
5921.45	52.01	49.7	2.31	70.82	-18.81	125	272	Peak
*5988.9	52.23	49.9	2.33	68.2	-15.97	125	272	Peak

Remarks:

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

802.11n (HT20)

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5141.66	49.04	47.49	1.55	54	-4.96	144	77	Average
5141.66	54.33	52.78	1.55	74	-19.67	144	77	Peak
5180	95.54	94.01	1.53			144	77	Average
5180	104.96	103.43	1.53			144	77	Peak
*10360	53.95	56.79	-2.84	68.2	-14.25	211	306	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5141.66	53.7	52.15	1.55	54	-0.3	250	2	Average
5141.66	59.87	58.32	1.55	74	-14.13	250	2	Peak
5180	98.37	96.84	1.53			250	2	Average
5180	107.66	106.13	1.53			250	2	Peak
*10360	55.65	58.49	-2.84	68.2	-12.55	118	109	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	44.94	43.41	1.53	54	-9.06	145	76	Average
5150	58.53	57	1.53	74	-15.47	145	76	Peak
5200	99.59	98.06	1.53			145	76	Average
5200	109.1	107.57	1.53			145	76	Peak
5350	39.96	38.5	1.46	54	-14.04	145	76	Average
5350	51.36	49.9	1.46	74	-22.64	145	76	Peak
*10400	54.53	57.42	-2.89	68.2	-13.67	196	204	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	49.3	47.77	1.53	54	-4.7	244	3	Average
5150	59.76	58.23	1.53	74	-14.24	244	3	Peak
5200	102.67	101.14	1.53			244	3	Average
5200	111.99	110.46	1.53			244	3	Peak
5350	40.55	39.09	1.46	54	-13.45	244	3	Average
5350	50.88	49.42	1.46	74	-23.12	244	3	Peak
*10400	56.71	59.6	-2.89	68.2	-11.49	108	99	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	39.85	38.32	1.53	54	-14.15	142	76	Average
5150	49.85	48.32	1.53	74	-24.15	142	76	Peak
5240	99.11	97.73	1.38			142	76	Average
5240	109.25	107.87	1.38			142	76	Peak
5350	39.85	38.39	1.46	54	-14.15	142	76	Average
5350	50.85	49.39	1.46	74	-23.15	142	76	Peak
*10480	55.11	57.84	-2.73	68.2	-13.09	174	217	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	40.11	38.58	1.53	54	-13.89	218	14	Average
5150	50.58	49.05	1.53	74	-23.42	218	14	Peak
5240	100.01	98.63	1.38			218	14	Average
5240	109.12	107.74	1.38			218	14	Peak
5350	39.85	38.39	1.46	54	-14.15	218	14	Average
5350	49.78	48.32	1.46	74	-24.22	218	14	Peak
*10480	59.01	61.74	-2.73	68.2	-9.19	129	144	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	41.27	39.74	1.53	54	-12.73	149	76	Average
5150	51	49.47	1.53	74	-23	149	76	Peak
5260	100.96	99.65	1.31			149	76	Average
5260	108.78	107.47	1.31			149	76	Peak
5350	41.28	39.82	1.46	54	-12.72	149	76	Average
5350	50.82	49.36	1.46	74	-23.18	149	76	Peak
*10520	57.02	59.74	-2.72	68.2	-11.18	173	108	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	41.01	39.48	1.53	54	-12.99	100	271	Average
5150	51.06	49.53	1.53	74	-22.94	100	271	Peak
5260	101.48	100.17	1.31			100	271	Average
5260	108.92	107.61	1.31			100	271	Peak
5350	41.67	40.21	1.46	54	-12.33	100	271	Average
5350	51.47	50.01	1.46	74	-22.53	100	271	Peak
*10520	60.21	62.93	-2.72	68.2	-7.99	102	193	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	40.93	39.4	1.53	54	-13.07	138	28	Average
5150	50.75	49.22	1.53	74	-23.25	138	28	Peak
5300	99.31	98	1.31			138	28	Average
5300	107.63	106.32	1.31			138	28	Peak
5350	48.89	47.43	1.46	54	-5.11	138	28	Average
5350	60.86	59.4	1.46	74	-13.14	138	28	Peak
10597	48.33	51.24	-2.91	54	-5.67	197	277	Average
10597	56.04	58.95	-2.91	74	-17.96	197	277	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	40.97	39.44	1.53	54	-13.03	101	269	Average
5150	50.58	49.05	1.53	74	-23.42	101	269	Peak
5300	102.32	101.01	1.31			101	269	Average
5300	109.7	108.39	1.31			101	269	Peak
5350	50.59	49.13	1.46	54	-3.41	101	269	Average
5350	60.61	59.15	1.46	74	-13.39	101	269	Peak
10600	53.35	56.26	-2.91	54	-0.65	103	192	Average
10600	62.02	64.93	-2.91	74	-11.98	103	192	Peak

Remarks:

1. Emission Level = Read Level + 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**	Thomas Wei

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5320	97.6	96.24	1.36			150	27	Average
5320	105.38	104.02	1.36			150	27	Peak
5350	51.14	49.68	1.46	54	-2.86	150	27	Average
5350	62.36	60.9	1.46	74	-11.64	150	27	Peak
10640	48.28	51.17	-2.89	54	-5.72	183	114	Average
10640	57.27	60.16	-2.89	74	-16.73	183	114	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5320	99.59	98.23	1.36			100	272	Average
5320	108.78	107.42	1.36			100	272	Peak
5350	52.67	51.21	1.46	54	-1.33	100	272	Average
5350	66.92	65.46	1.46	74	-7.08	100	272	Peak
10640	50.36	53.25	-2.89	54	-3.64	103	199	Average
10640	59.96	62.85	-2.89	74	-14.04	103	199	Peak

Remarks:

1. Emission Level = Read Level + 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**	Thomas Wei

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5460	47.06	45.19	1.87	54	-6.94	100	251	Average
5460	57.57	55.7	1.87	74	-16.43	100	251	Peak
*5470	63.37	61.51	1.86	68.2	-4.83	100	251	Peak
5500	98.11	96.24	1.87			100	251	Average
5500	104.34	102.47	1.87			100	251	Peak
*5725	50.36	48.6	1.76	68.2	-17.84	100	251	Peak
11000	47.96	50.27	-2.31	54	-6.04	100	126	Average
11000	56.7	59.01	-2.31	74	-17.3	100	126	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5460	49.88	48.01	1.87	54	-4.12	121	273	Average
5460	59.33	57.46	1.87	74	-14.67	121	273	Peak
*5470	67.99	66.13	1.86	68.2	-0.21	121	273	Peak
5500	100.87	99	1.87			121	273	Average
5500	107.9	106.03	1.87			121	273	Peak
*5725	51.01	49.25	1.76	68.2	-17.19	121	273	Peak
11000	49.14	51.45	-2.31	54	-4.86	100	304	Average
11000	56.31	58.62	-2.31	74	-17.69	100	304	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5447.44	40.85	39.03	1.82	54	-13.15	135	122	Average
5447.44	50.78	48.96	1.82	74	-23.22	135	122	Peak
*5470	48.52	46.66	1.86	68.2	-19.68	135	122	Peak
5580	100.87	99.05	1.82			135	122	Average
5580	106.05	104.23	1.82			135	122	Peak
*5725	49.65	47.89	1.76	68.2	-18.55	135	122	Peak
11160	47.75	50.3	-2.55	54	-6.25	100	130	Average
11160	55.75	58.3	-2.55	74	-18.25	100	130	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5452.24	40.75	38.88	1.87	54	-13.25	120	268	Average
5452.24	50.01	48.14	1.87	74	-23.99	120	268	Peak
*5470	49.52	47.66	1.86	68.2	-18.68	120	268	Peak
5580	102.52	100.7	1.82			120	268	Average
5580	109.02	107.2	1.82			120	268	Peak
*5725	49.85	48.09	1.76	68.2	-18.35	120	268	Peak
11160	49.01	51.56	-2.55	54	-4.99	100	310	Average
11160	56.48	59.03	-2.55	74	-17.52	100	310	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5452.72	41.04	39.17	1.87	54	-12.96	146	242	Average
5452.72	50.13	48.26	1.87	74	-23.87	146	242	Peak
*5470	49.19	47.33	1.86	68.2	-19.01	146	242	Peak
5700	95.5	93.91	1.59			146	242	Average
5700	102.86	101.27	1.59			146	242	Peak
*5725	62.35	60.59	1.76	68.2	-5.85	146	242	Peak
11400	47.65	49.88	-2.23	54	-6.35	100	138	Average
11400	56.31	58.54	-2.23	74	-17.69	100	138	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5452.56	41.22	39.35	1.87	54	-12.78	116	270	Average
5452.56	49.95	48.08	1.87	74	-24.05	116	270	Peak
*5470	49.64	47.78	1.86	68.2	-18.56	116	270	Peak
5700	97.82	96.23	1.59			116	270	Average
5700	103.72	102.13	1.59			116	270	Peak
*5725	67.26	65.5	1.76	68.2	-0.94	116	270	Peak
11400	48.65	50.88	-2.23	54	-5.35	100	286	Average
11400	56.13	58.36	-2.23	74	-17.87	100	286	Peak

Remarks:

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

EUT Test Condition		Measurement Detail	
Channel	Channel 144	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5410.48	40.25	38.58	1.67	54	-13.75	128	247	Average
5410.48	50.01	48.34	1.67	74	-23.99	128	247	Peak
*5470	49.85	47.99	1.86	68.2	-18.35	128	247	Peak
5720	99.02	97.26	1.76			128	247	Average
5720	106.25	104.49	1.76			128	247	Peak
11440	47.01	49.23	-2.22	54	-6.99	126	148	Average
11440	55.25	57.47	-2.22	74	-18.75	126	148	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5432.24	41.05	39.27	1.78	54	-12.95	133	257	Average
5432.24	51.03	49.25	1.78	74	-22.97	133	257	Peak
*5470	49.05	47.19	1.86	68.2	-19.15	133	257	Peak
5720	100.58	98.82	1.76			133	257	Average
5720	106.78	105.02	1.76			133	257	Peak
11440	48.02	50.24	-2.22	54	-5.98	104	138	Average
11440	55.11	57.33	-2.22	74	-18.89	104	138	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5720 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5745	100.59	98.77	1.82			140	336	Average
5745	107.25	105.43	1.82			140	336	Peak
11490	47.82	50.02	-2.2	54	-6.18	106	213	Average
11490	56.47	58.67	-2.2	74	-17.53	106	213	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5745	102.89	101.07	1.82			129	269	Average
5745	109.41	107.59	1.82			129	269	Peak
11490	48.97	51.17	-2.2	54	-5.03	103	130	Average
11490	55.36	57.56	-2.2	74	-18.64	103	130	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5624.575	51.73	49.83	1.9	68.2	-16.47	140	336	Peak
5652.6	50.8	48.89	1.91	70.13	-19.33	140	336	Peak
5922.875	50.78	48.48	2.3	69.77	-18.99	140	336	Peak
*5978.45	51.78	49.45	2.33	68.2	-16.42	140	336	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5645.475	50.71	48.83	1.88	68.2	-17.49	129	269	Peak
5652.125	50.6	48.69	1.91	69.78	-19.18	129	269	Peak
5916.225	50.36	48.05	2.31	74.67	-24.31	129	269	Peak
*5960.4	51.17	48.87	2.3	68.2	-17.03	129	269	Peak

Remarks:

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

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5785	101.28	99.36	1.92			193	336	Average
5785	107.86	105.94	1.92			193	336	Peak
11570	47.69	49.89	-2.2	54	-6.31	142	105	Average
11570	56.56	58.76	-2.2	74	-17.44	142	105	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5785	102.68	100.76	1.92			123	345	Average
5785	109.52	107.6	1.92			123	345	Peak
11570	49.14	51.34	-2.2	54	-4.86	108	132	Average
11570	55.76	57.96	-2.2	74	-18.24	108	132	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5632.65	50.72	48.84	1.88	68.2	-17.48	193	336	Peak
5659.25	51.01	49.16	1.85	75.07	-24.06	193	336	Peak
5920.5	50.4	48.09	2.31	71.52	-21.12	193	336	Peak
*5993.65	50.9	48.54	2.36	68.2	-17.3	193	336	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5598.925	50.09	48.16	1.93	68.2	-18.11	123	345	Peak
5652.6	49.99	48.08	1.91	70.13	-20.14	123	345	Peak
5915.75	50.68	48.37	2.31	75.02	-24.34	123	345	Peak
*6003.15	51.45	49.09	2.36	68.2	-16.75	123	345	Peak

Remarks:

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

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5825	98.89	96.81	2.08			176	334	Average
5825	107.46	105.38	2.08			176	334	Peak
11650	47.32	49.71	-2.39	54	-6.68	138	162	Average
11650	55.27	57.66	-2.39	74	-18.73	138	162	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5825	104.01	101.93	2.08			139	347	Average
5825	110.89	108.81	2.08			139	347	Peak
11650	48.8	51.19	-2.39	54	-5.2	110	137	Average
11650	56.79	59.18	-2.39	74	-17.21	110	137	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5599.4	51.27	49.34	1.93	68.2	-16.93	176	334	Peak
5655.45	49.64	47.79	1.85	72.25	-22.61	176	334	Peak
5919.55	52.64	50.33	2.31	72.22	-19.58	176	334	Peak
*5984.625	51.2	48.87	2.33	68.2	-17	176	334	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5607.95	50.12	48.25	1.87	68.2	-18.08	139	347	Peak
5650.7	49.29	47.38	1.91	68.72	-19.43	139	347	Peak
5915.275	53.29	50.98	2.31	75.37	-22.08	139	347	Peak
*5945.2	51.62	49.33	2.29	68.2	-16.58	139	347	Peak

Remarks:

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

802.11n (HT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 38	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	51.16	49.63	1.53	54	-2.84	400	29	Average
5150	63.15	61.62	1.53	74	-10.85	400	29	Peak
5190	92.47	90.94	1.53			400	29	Average
5190	100.59	99.06	1.53			400	29	Peak
5412.92	45.92	44.21	1.71	54	-8.08	400	29	Average
5412.92	53.28	51.57	1.71	74	-20.72	400	29	Peak
*10380	55.84	58.71	-2.87	68.2	-12.36	192	103	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	52.89	51.36	1.53	54	-1.11	100	82	Average
5150	63.69	62.16	1.53	74	-10.31	100	82	Peak
5190	93.61	92.08	1.53			100	82	Average
5190	101.79	100.26	1.53			100	82	Peak
5412.37	44.27	42.56	1.71	54	-9.73	100	82	Average
5412.37	52.26	50.55	1.71	74	-21.74	100	82	Peak
*10380	55.05	57.92	-2.87	68.2	-13.15	109	155	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	50.12	48.59	1.53	54	-3.88	145	20	Average
5150	63.11	61.58	1.53	74	-10.89	145	20	Peak
5230	97.25	95.87	1.38			145	20	Average
5230	105.25	103.87	1.38			145	20	Peak
5452.3	44.01	42.14	1.87	54	-9.99	145	20	Average
5452.3	56.02	54.15	1.87	74	-17.98	145	20	Peak
*10460	54.75	57.54	-2.79	68.2	-13.45	194	103	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	50.58	49.05	1.53	54	-3.42	105	84	Average
5150	60.01	58.48	1.53	74	-13.99	105	84	Peak
5230	98.25	96.87	1.38			105	84	Average
5230	104.85	103.47	1.38			105	84	Peak
5452.85	47.11	45.24	1.87	54	-6.89	105	84	Average
5452.85	56.75	54.88	1.87	74	-17.25	105	84	Peak
*10460	56.85	59.64	-2.79	68.2	-11.35	133	241	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5142.2	41.64	40.09	1.55	54	-12.36	123	246	Average
5142.2	50.68	49.13	1.55	74	-23.32	123	246	Peak
5270	94.38	93.07	1.31			123	246	Average
5270	101.14	99.83	1.31			123	246	Peak
5354.73	48.49	47.03	1.46	54	-5.51	123	246	Average
5354.73	59.95	58.49	1.46	74	-14.05	123	246	Peak
*10540	56.72	59.49	-2.77	68.2	-11.48	149	255	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5047.34	45	43.46	1.54	54	-9	221	4	Average
5047.34	55.5	53.96	1.54	74	-18.5	221	4	Peak
5270	99.38	98.07	1.31			221	4	Average
5270	106.34	105.03	1.31			221	4	Peak
5354.62	52.5	51.04	1.46	54	-1.5	221	4	Average
5354.62	63.66	62.2	1.46	74	-10.34	221	4	Peak
*10540	61.97	64.74	-2.77	68.2	-6.23	100	8	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5104.4	41.53	40.12	1.41	54	-12.47	114	120	Average
5104.4	50.02	48.61	1.41	74	-23.98	114	120	Peak
5310	88.4	87.04	1.36			114	120	Average
5310	95.36	94	1.36			114	120	Peak
5350.33	49.52	48.06	1.46	54	-4.48	114	120	Average
5350.33	62.1	60.64	1.46	74	-11.9	114	120	Peak
10620	46.72	49.61	-2.89	54	-7.28	152	263	Average
10620	54.42	57.31	-2.89	74	-19.58	152	263	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5114.12	41.26	39.79	1.47	54	-12.74	113	273	Average
5114.12	50.48	49.01	1.47	74	-23.52	113	273	Peak
5310	93.85	92.49	1.36			113	273	Average
5310	101.48	100.12	1.36			113	273	Peak
5350.55	53.64	52.18	1.46	54	-0.36	113	273	Average
5350.55	68.44	66.98	1.46	74	-5.56	113	273	Peak
10620	48.71	51.6	-2.89	54	-5.29	100	12	Average
10620	55.97	58.86	-2.89	74	-18.03	100	12	Peak

Remarks:

1. Emission Level = Read Level + 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**	Thomas Wei

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5459.6	45.27	43.4	1.87	54	-8.73	119	251	Average
5459.6	55.08	53.21	1.87	74	-18.92	119	251	Peak
*5470	62.6	60.74	1.86	68.2	-5.6	119	251	Peak
5510	90.9	89.06	1.84			119	251	Average
5510	97.88	96.04	1.84			119	251	Peak
*5725	49.1	47.34	1.76	68.2	-19.1	119	251	Peak
11020	47.04	49.38	-2.34	54	-6.96	155	102	Average
11020	56.84	59.18	-2.34	74	-17.16	155	102	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5459.76	48.9	47.03	1.87	54	-5.1	100	280	Average
5459.76	58.3	56.43	1.87	74	-15.7	100	280	Peak
*5470	67.8	65.94	1.86	68.2	-0.4	100	280	Peak
5510	95.18	93.34	1.84			100	280	Average
5510	101.68	99.84	1.84			100	280	Peak
*5725	51.08	49.32	1.76	68.2	-17.12	100	280	Peak
11015	47.39	49.73	-2.34	54	-6.61	136	115	Average
11015	56.06	58.4	-2.34	74	-17.94	136	115	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5455.76	47.11	45.24	1.87	54	-6.89	121	252	Average
5455.76	56.02	54.15	1.87	74	-17.98	121	252	Peak
*5470	59.85	57.99	1.86	68.2	-8.35	121	252	Peak
5550	95.01	93.18	1.83			121	252	Average
5550	101.52	99.69	1.83			121	252	Peak
*5725	48.52	46.76	1.76	68.2	-19.68	121	252	Peak
11100	46.85	49.31	-2.46	54	-7.15	104	215	Average
11100	55.47	57.93	-2.46	74	-18.53	104	215	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5458.8	51.01	49.14	1.87	54	-2.99	100	280	Average
5458.8	61.25	59.38	1.87	74	-12.75	100	280	Peak
*5470	59.85	57.99	1.86	68.2	-8.35	100	280	Peak
5550	98.75	96.92	1.83			100	280	Average
5550	104.25	102.42	1.83			100	280	Peak
*5725	49.11	47.35	1.76	68.2	-19.09	100	280	Peak
11100	47.02	49.48	-2.46	54	-6.98	100	255	Average
11100	55.75	58.21	-2.46	74	-18.25	100	255	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5444.88	41.64	39.86	1.78	54	-12.36	129	246	Average
5444.88	50.87	49.09	1.78	74	-23.13	129	246	Peak
*5470	49.84	47.98	1.86	68.2	-18.36	129	246	Peak
5670	94.26	92.5	1.76			129	246	Average
5670	101.03	99.27	1.76			129	246	Peak
*5725	63.99	62.23	1.76	68.2	-4.21	129	246	Peak
11340	46.74	49.1	-2.36	54	-7.26	152	104	Average
11340	56.85	59.21	-2.36	74	-17.15	152	104	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5447.6	42.99	41.17	1.82	54	-11.01	120	271	Average
5447.6	51.81	49.99	1.82	74	-22.19	120	271	Peak
*5470	48.98	47.12	1.86	68.2	-19.22	120	271	Peak
5670	96.23	94.47	1.76			120	271	Average
5670	102.88	101.12	1.76			120	271	Peak
*5725	67.88	66.12	1.76	68.2	-0.32	120	271	Peak
11340	47.21	49.57	-2.36	54	-6.79	142	166	Average
11340	55.94	58.3	-2.36	74	-18.06	142	166	Peak

Remarks:

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

EUT Test Condition		Measurement Detail	
Channel	Channel 142	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5453.2	41.6	39.73	1.87	54	-12.4	128	247	Average
5453.2	50.62	48.75	1.87	74	-23.38	128	247	Peak
5470	50.61	48.75	1.86	74	-23.39	128	247	Peak
5710	96.05	94.39	1.66			128	247	Average
5710	103.76	102.1	1.66			128	247	Peak
11420	47.18	49.42	-2.24	54	-6.82	152	138	Average
11420	55.32	57.56	-2.24	74	-18.68	152	138	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5454.16	42.23	40.36	1.87	54	-11.77	127	264	Average
5454.16	51.39	49.52	1.87	74	-22.61	127	264	Peak
5470	49.61	47.75	1.86	74	-24.39	127	264	Peak
5710	98.33	96.67	1.66			127	264	Average
5710	105.66	104	1.66			127	264	Peak
11420	47.62	49.86	-2.24	54	-6.38	110	147	Average
11420	56	58.24	-2.24	74	-18	110	147	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5710 MHz: Fundamental Frequency
3. 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**	Thomas Wei

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5755	97.47	95.57	1.9			247	332	Average
5755	105.86	103.96	1.9			247	332	Peak
11510	46.84	49.05	-2.21	54	-7.16	163	100	Average
11510	55.27	57.48	-2.21	74	-18.73	163	100	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5755	99.18	97.28	1.9			140	268	Average
5755	105.8	103.9	1.9			140	268	Peak
11510	47.07	49.28	-2.21	54	-6.93	127	145	Average
11510	55.8	58.01	-2.21	74	-18.2	127	145	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5641.2	52.89	51.01	1.88	68.2	-15.31	247	332	Peak
5659.25	53.69	51.84	1.85	75.07	-21.38	247	332	Peak
5920.975	50.33	48.02	2.31	71.17	-20.84	247	332	Peak
*5977.975	54.01	51.68	2.33	68.2	-14.19	247	332	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5631.7	53.72	51.88	1.84	68.2	-14.48	140	268	Peak
5659.25	54.12	52.27	1.85	75.07	-20.95	140	268	Peak
5918.125	50.62	48.31	2.31	73.27	-22.65	140	268	Peak
*5977.975	54.29	51.96	2.33	68.2	-13.91	140	268	Peak

Remarks:

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

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5795	95.64	93.64	2			137	337	Average
5795	102.31	100.31	2			137	337	Peak
11590	46.76	48.95	-2.19	54	-7.24	137	141	Average
11590	56.32	58.51	-2.19	74	-17.68	137	141	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5795	98.54	96.54	2			141	346	Average
5795	105.47	103.47	2			141	346	Peak
11590	47.26	49.45	-2.19	54	-6.74	162	149	Average
11590	54.96	57.15	-2.19	74	-19.04	162	149	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5579.45	51.01	49.19	1.82	68.2	-17.19	137	337	Peak
5658.775	49.22	47.37	1.85	74.72	-25.5	137	337	Peak
5915.275	50.4	48.09	2.31	75.37	-24.97	137	337	Peak
*6017.4	52.28	49.88	2.4	68.2	-15.92	137	337	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5572.8	50.44	48.58	1.86	68.2	-17.76	141	346	Peak
5652.6	50.49	48.58	1.91	70.13	-19.64	141	346	Peak
5921.45	52.47	50.16	2.31	70.82	-18.35	141	346	Peak
*6019.3	54.68	52.28	2.4	68.2	-13.52	141	346	Peak

Remarks:

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

802.11ac (VHT80)

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	49.42	47.89	1.53	54	-4.58	144	22	Average
5150	60.13	58.6	1.53	74	-13.87	144	22	Peak
5210	90.79	89.35	1.44			144	22	Average
5210	96.97	95.53	1.44			144	22	Peak
5350	41.37	39.91	1.46	54	-12.63	144	22	Average
5350	50.98	49.52	1.46	74	-23.02	144	22	Peak
*10420	53.9	56.75	-2.85	68.2	-14.3	187	311	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5150	53.59	52.06	1.53	54	-0.41	226	0	Average
5150	65.64	64.11	1.53	74	-8.36	226	0	Peak
5210	94.21	92.77	1.44			226	0	Average
5210	101.21	99.77	1.44			226	0	Peak
5350	42.05	40.59	1.46	54	-11.95	226	0	Average
5350	51.03	49.57	1.46	74	-22.97	226	0	Peak
*10420	54.47	57.32	-2.85	68.2	-13.73	123	109	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5126.72	41.41	39.92	1.49	54	-12.59	123	79	Average
5126.72	50.4	48.91	1.49	74	-23.6	123	79	Peak
5290	88.77	87.46	1.31			123	79	Average
5290	94.92	93.61	1.31			123	79	Peak
5355.72	50.46	49	1.46	54	-3.54	123	79	Average
5355.72	61.36	59.9	1.46	74	-12.64	123	79	Peak
*10580	54.63	57.51	-2.88	68.2	-12.65	141	251	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5135.36	41.5	40.01	1.49	54	-12.5	112	273	Average
5135.36	50.3	48.81	1.49	74	-23.7	112	273	Peak
5290	91.69	90.38	1.31			112	273	Average
5290	98.2	96.89	1.31			112	273	Peak
5351.76	53.66	52.19	1.47	54	-0.34	112	273	Average
5351.76	64.81	63.35	1.46	74	-9.19	112	273	Peak
*10580	55.55	58.43	-2.88	68.2	-12.65	101	18	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5459.44	51.01	49.14	1.87	54	-2.99	123	251	Average
5459.44	59.55	57.68	1.87	74	-14.45	123	251	Peak
*5470	62.04	60.18	1.86	68.2	-6.16	123	251	Peak
5530	88.69	86.88	1.81			123	251	Average
5530	95.02	93.21	1.81			123	251	Peak
*5725	50.42	48.66	1.76	68.2	-17.78	123	251	Peak
11060	47.14	49.56	-2.42	54	-6.86	138	122	Average
11060	55.38	57.8	-2.42	74	-18.62	138	122	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5458.32	52.41	50.54	1.87	54	-1.59	100	279	Average
5458.32	65.99	64.12	1.87	74	-8.01	100	279	Peak
*5470	65.84	63.98	1.86	68.2	-2.36	100	279	Peak
5530	92.6	90.79	1.81			100	279	Average
5530	98.48	96.67	1.81			100	279	Peak
*5725	50.18	48.42	1.76	68.2	-18.02	100	279	Peak
11060	47.43	49.85	-2.42	54	-6.57	118	149	Average
11060	55.1	57.52	-2.42	74	-18.9	118	149	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5454.96	45.82	43.95	1.87	54	-8.18	110	246	Average
5454.96	53.48	51.61	1.87	74	-20.52	110	246	Peak
*5470	55.75	53.89	1.86	68.2	-12.45	110	246	Peak
5610	92.35	90.48	1.87			110	246	Average
5610	99.08	97.21	1.87			110	246	Peak
*5725	63.91	62.15	1.76	68.2	-4.29	110	246	Peak
11220	47.25	49.77	-2.52	54	-6.75	118	159	Average
11220	57.29	59.81	-2.52	74	-16.71	118	159	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5460	49.51	47.64	1.87	54	-4.49	110	279	Average
5460	58.98	57.11	1.87	74	-15.02	110	279	Peak
*5470	60.63	58.77	1.86	68.2	-7.57	110	279	Peak
5610	95.49	93.62	1.87			110	279	Average
5610	101.9	100.03	1.87			110	279	Peak
*5725	66.51	64.75	1.76	68.2	-1.69	110	279	Peak
11220	47.64	50.16	-2.52	54	-6.36	104	261	Average
11220	56.15	58.67	-2.52	74	-17.85	104	261	Peak

Remarks:

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

EUT Test Condition		Measurement Detail	
Channel	Channel 138	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5459.12	42.46	40.59	1.87	54	-11.54	128	247	Average
5459.12	50.53	48.66	1.87	74	-23.47	128	247	Peak
5470	51.89	50.03	1.86	74	-22.11	128	247	Peak
5690	94.99	93.4	1.59			128	247	Average
5690	101.59	100	1.59			128	247	Peak
11380	46.95	49.21	-2.26	54	-7.05	139	152	Average
11380	55.93	58.19	-2.26	74	-18.07	139	152	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5452.24	43.15	41.28	1.87	54	-10.85	128	11	Average
5452.24	51.13	49.26	1.87	74	-22.87	128	11	Peak
5470	52.02	50.16	1.86	74	-21.98	128	11	Peak
5690	96.09	57.1	38.99			128	11	Average
5690	102.71	63.72	38.99			128	11	Peak
11380	47.21	49.47	-2.26	54	-6.79	142	166	Average
11380	55.57	57.83	-2.26	74	-18.43	142	166	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5690 MHz: Fundamental Frequency
3. 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**	Thomas Wei

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5775	95.28	93.32	1.96			127	246	Average
5775	101.85	99.89	1.96			127	246	Peak
11550	46.65	48.85	-2.2	54	-7.35	141	203	Average
11550	54.98	57.18	-2.2	74	-19.02	141	203	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
5775	97.84	95.88	1.96			140	346	Average
5775	104.13	102.17	1.96			140	346	Peak
11550	47.43	49.63	-2.2	54	-6.57	129	158	Average
11550	55.8	58	-2.2	74	-18.2	129	158	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5632.175	63.46	61.62	1.84	68.2	-4.74	127	246	Peak
5659.25	65.5	63.65	1.85	75.07	-9.57	127	246	Peak
5917.65	67.26	64.95	2.31	73.62	-6.36	127	246	Peak
*5944.25	61.78	59.49	2.29	68.2	-6.42	127	246	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
*5639.775	66.49	64.61	1.88	68.2	-1.71	140	346	Peak
5657.825	66.7	64.85	1.85	74.01	-7.31	140	346	Peak
5915.275	69.98	67.67	2.31	75.37	-5.39	140	346	Peak
*5927.625	67.6	65.3	2.3	68.2	-0.6	140	346	Peak

Remarks:

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

9 kHz ~ 30 MHz Data:

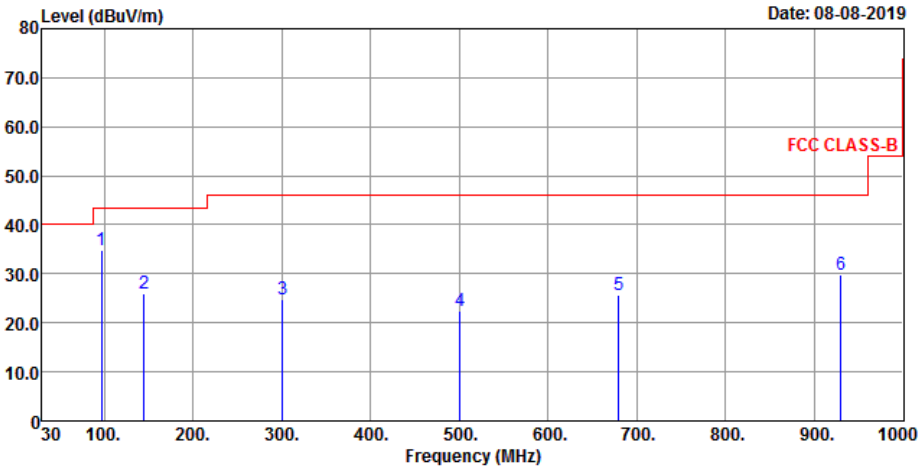
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Worst-Case Data:

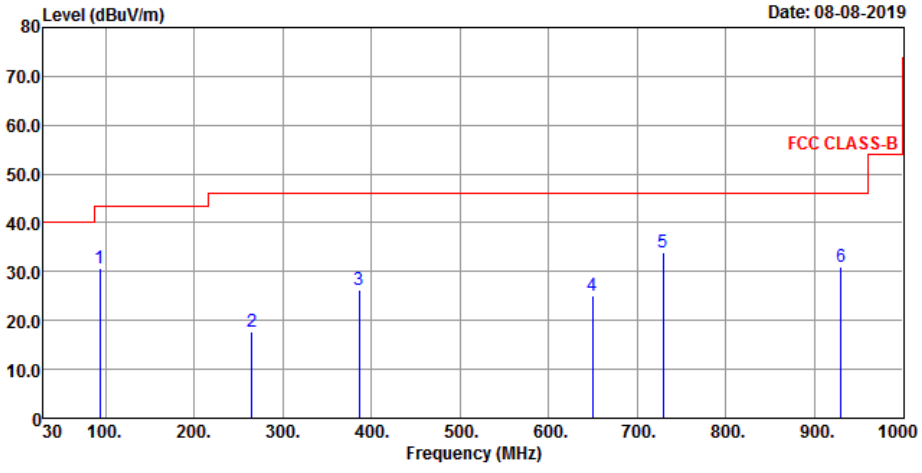
802.11a

EUT Test Condition		Measurement Detail	
Channel	Channel 100	**Frequency Range**	30 MHz ~ 1 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
96.93	34.88	56.37	-21.49	43.5	-8.62	126	138	Peak
144.46	26.04	43.57	-17.53	43.5	-17.46	148	156	Peak
300.63	24.7	41.35	-16.65	46	-21.3	195	211	Peak
500.45	22.32	32.83	-10.51	46	-23.68	246	258	Peak
679.9	25.56	32.56	-7	46	-20.44	279	281	Peak
930.16	29.79	32.64	-2.85	46	-16.21	304	325	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
94.02	30.82	52.76	-21.94	43.5	-12.68	125	135	Peak
264.74	17.8	34.88	-17.08	46	-28.2	158	167	Peak
385.99	26.38	40.95	-14.57	46	-19.62	189	206	Peak
649.83	25.11	33.32	-8.21	46	-20.89	214	238	Peak
729.37	33.92	40.48	-6.56	46	-12.08	267	276	Peak
930.16	30.99	33.84	-2.85	46	-15.01	299	311	Peak

Remarks:

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

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Dec. 10, 2018	Dec. 09, 2019
RF signal cable Woken	5D-FB	Cable-cond1-01	Sep. 05, 2018	Sep. 04, 2019
LISN/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
			Aug. 22, 2019	Aug. 21, 2020
Software ADT	BV ADT_Cond_ V7.3.7.4	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 1.
3. The VCCI Site Registration No. is C-12040.

4.2.3 Test Procedures

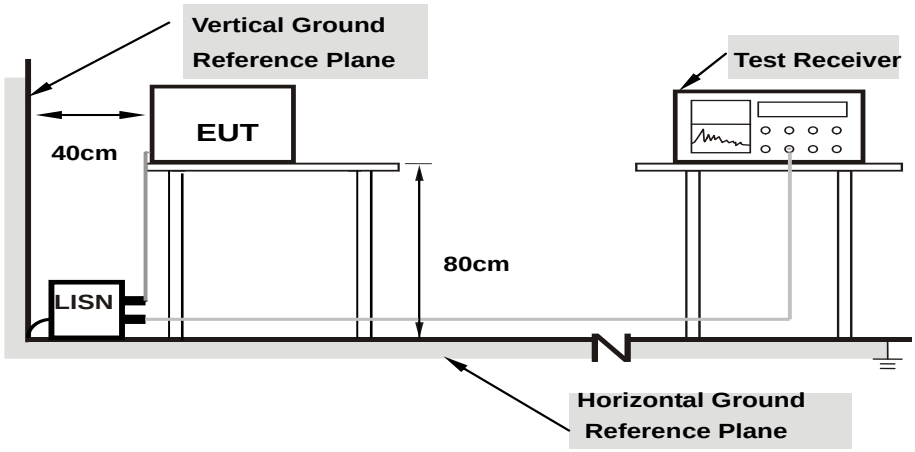
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

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

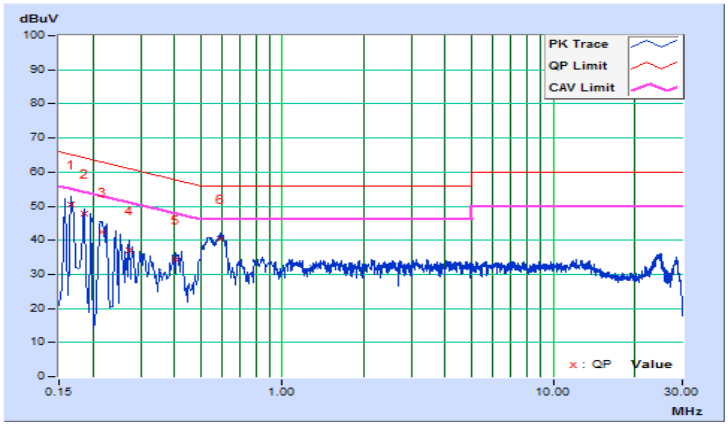
4.2.7 Test Results

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25℃, 65%RH
Tested by	Thomas Wei	Test Date	2019/8/13

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	0.16569	9.84	40.51	26.50	50.35	36.34	65.17	55.17	-14.82	-18.83
2	0.18508	9.85	37.96	25.83	47.81	35.68	64.25	54.25	-16.44	-18.57
3	0.21565	9.85	32.50	21.27	42.35	31.12	62.98	52.98	-20.63	-21.86
4	0.27120	9.86	27.13	14.82	36.99	24.68	61.08	51.08	-24.09	-26.40
5	0.40479	9.88	24.40	10.47	34.28	20.35	57.75	47.75	-23.47	-27.40
6	0.59183	9.89	30.41	18.55	40.30	28.44	56.00	46.00	-15.70	-17.56

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

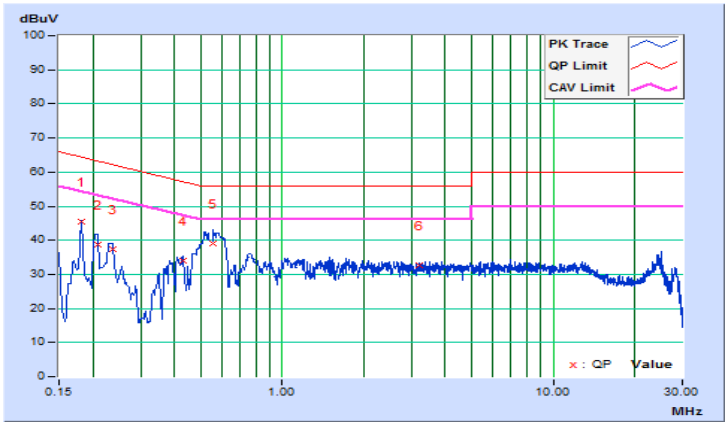


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25℃, 65%RH
Tested by	Thomas Wei	Test Date	2019/8/13

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	0.18128	9.83	35.55	23.50	45.38	33.33	64.43	54.43	-19.05	-21.10
2	0.20783	9.84	28.75	18.85	38.59	28.69	63.29	53.29	-24.70	-24.60
3	0.23586	9.85	27.55	16.92	37.40	26.77	62.24	52.24	-24.84	-25.47
4	0.43122	9.87	24.09	10.72	33.96	20.59	57.23	47.23	-23.27	-26.64
5	0.55679	9.87	29.30	18.51	39.17	28.38	56.00	46.00	-16.83	-17.62
6	3.21544	9.97	22.64	9.63	32.61	19.60	56.00	46.00	-23.39	-26.40

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 $N_{ANT} \leq 4$;

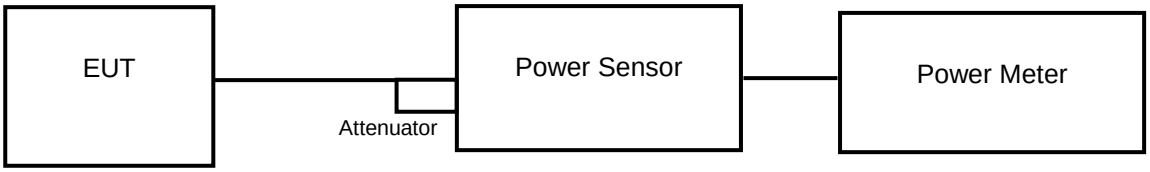
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};

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

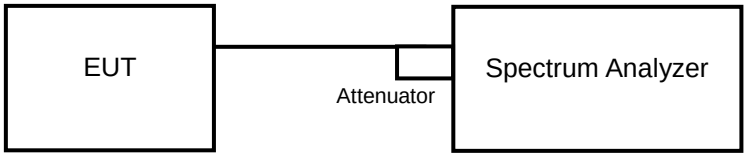
For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

4.3.2 Test Setup

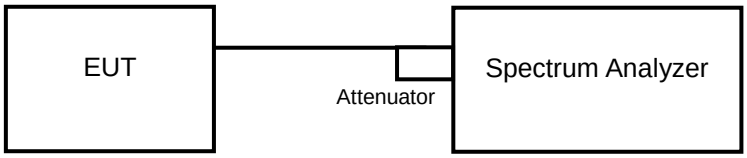
<Power Output Measurement>



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) and transmission above 5.725 GHz where the EBW crosses 5.725 GHz>

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	13.01	12.49	37.741	15.77	24	Pass
40	5200	12.85	12.35	36.454	15.62	24	Pass
48	5240	13.10	12.42	37.875	15.78	24	Pass
52	5260	12.78	12.70	37.588	15.75	24	Pass
60	5300	13.01	12.93	39.633	15.98	24	Pass
64	5320	13.02	12.92	39.633	15.98	24	Pass
100	5500	13.41	12.35	39.107	15.92	24	Pass
116	5580	13.33	12.17	38.010	15.80	24	Pass
140	5700	13.32	12.55	39.467	15.96	24	Pass
144	5720 (U-NII-2C)	11.78	11.18	28.188	14.50	22.99	Pass
144	5720 (U-NII-3)	7.75	7.08	11.062	10.44	30	Pass
149	5745	13.27	12.26	38.059	15.80	30	Pass
157	5785	13.51	12.06	38.508	15.86	30	Pass
165	5825	13.62	11.76	38.011	15.80	30	Pass

Note:

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

Chain 0

1. 11 dBm + 10log (22.75) = 24.56 dBm > 24 dBm.
2. 11 dBm + 10log (22.84) = 24.58 dBm > 24 dBm.
3. 11 dBm + 10log (22.45) = 24.51 dBm > 24 dBm.
4. 11 dBm + 10log (22.02) = 24.42 dBm > 24 dBm.
5. 11 dBm + 10log (22.34) = 24.49 dBm > 24 dBm.
6. 11 dBm + 10log (22.30) = 24.48 dBm > 24 dBm.
7. 11 dBm + 10log (16.21) = 23.09 dBm < 24 dBm.

Chain 1

1. 11 dBm + 10log (21.97) = 24.41 dBm > 24 dBm.
2. 11 dBm + 10log (21.86) = 24.39 dBm > 24 dBm.
3. 11 dBm + 10log (22.37) = 24.49 dBm > 24 dBm.
4. 11 dBm + 10log (22.07) = 24.43 dBm > 24 dBm.
5. 11 dBm + 10log (22.04) = 24.43 dBm > 24 dBm.
6. 11 dBm + 10log (21.53) = 24.33 dBm > 24 dBm.
7. 11 dBm + 10log (15.84) = 22.99 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	13.03	12.88	39.500	15.97	24	Pass
40	5200	12.74	12.56	36.823	15.66	24	Pass
48	5240	13.08	12.71	38.988	15.91	24	Pass
52	5260	12.93	12.73	38.384	15.84	24	Pass
60	5300	13.14	12.77	39.529	15.97	24	Pass
64	5320	12.87	12.63	37.687	15.76	24	Pass
100	5500	13.13	12.78	39.526	15.97	24	Pass
116	5580	13.40	12.34	39.018	15.91	24	Pass
140	5700	13.28	12.20	37.877	15.78	24	Pass
144	5720 (U-NII-2C)	11.61	11.16	27.55	14.40	23.1	Pass
144	5720 (U-NII-3)	8.19	7.01	11.615	10.65	30	Pass
149	5745	13.07	12.31	37.299	15.72	30	Pass
157	5785	13.49	12.10	38.554	15.86	30	Pass
165	5825	13.94	11.55	39.063	15.92	30	Pass

Note:

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

Chain 0

1. 11 dBm + 10log (23.24) = 24.66 dBm > 24 dBm.
2. 11 dBm + 10log (23.75) = 24.75 dBm > 24 dBm.
3. 11 dBm + 10log (24.47) = 24.88 dBm > 24 dBm.
4. 11 dBm + 10log (24.60) = 24.90 dBm > 24 dBm.
5. 11 dBm + 10log (23.74) = 24.75 dBm > 24 dBm.
6. 11 dBm + 10log (23.45) = 24.70 dBm > 24 dBm.
7. 11 dBm + 10log (16.51) = 23.17 dBm < 24 dBm.

Chain 1

1. 11 dBm + 10log (22.99) = 24.61 dBm > 24 dBm.
2. 11 dBm + 10log (22.57) = 24.53 dBm > 24 dBm.
3. 11 dBm + 10log (22.85) = 24.58 dBm > 24 dBm.
4. 11 dBm + 10log (22.43) = 24.50 dBm > 24 dBm.
5. 11 dBm + 10log (22.50) = 24.52 dBm > 24 dBm.
6. 11 dBm + 10log (22.44) = 24.51 dBm > 24 dBm.
7. 11 dBm + 10log (16.25) = 23.10 dBm < 24 dBm.

802.11n (HT40)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	13.11	12.82	39.607	15.98	24	Pass
46	5230	12.90	12.98	39.359	15.95	24	Pass
54	5270	12.85	12.85	38.550	15.86	24	Pass
62	5310	12.83	12.67	37.680	15.76	24	Pass
102	5510	13.37	12.48	39.428	15.96	24	Pass
110	5550	12.92	12.21	36.222	15.59	24	Pass
134	5670	13.37	12.42	39.185	15.93	24	Pass
142	5710 (U-NII-2C)	12.58	11.73	33.007	15.19	24	Pass
142	5710 (U-NII-3)	5.98	4.31	6.661	8.24	30	Pass
151	5755	13.14	12.14	36.974	15.68	30	Pass
159	5795	13.49	11.77	37.367	15.72	30	Pass

Note:

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

Chain 0

1. 11 dBm + 10log (41.99) = 27.23 dBm > 24 dBm.
2. 11 dBm + 10log (42.04) = 27.23 dBm > 24 dBm.
3. 11 dBm + 10log (41.61) = 27.19 dBm > 24 dBm.
4. 11 dBm + 10log (42.15) = 27.24 dBm > 24 dBm.
5. 11 dBm + 10log (42.26) = 27.25 dBm > 24 dBm.
6. 11 dBm + 10log (36.77) = 26.65 dBm > 24 dBm.

Chain 1

1. 11 dBm + 10log (41.72) = 27.20 dBm > 24 dBm.
2. 11 dBm + 10log (41.87) = 27.21 dBm > 24 dBm.
3. 11 dBm + 10log (41.71) = 27.20 dBm > 24 dBm.
4. 11 dBm + 10log (42.23) = 27.25 dBm > 24 dBm.
5. 11 dBm + 10log (41.84) = 27.21 dBm > 24 dBm.
6. 11 dBm + 10log (36.94) = 26.67 dBm > 24 dBm.

802.11ac (VHT80)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	12.92	12.85	38.863	15.90	24	Pass
58	5290	13.00	12.92	39.541	15.97	24	Pass
106	5530	13.25	12.61	39.374	15.95	24	Pass
122	5610	13.22	12.32	38.050	15.80	24	Pass
138	5690 (U-NII-2C)	12.99	11.87	35.289	15.48	24	Pass
138	5690 (U-NII-3)	3.39	1.97	3.757	5.75	30	Pass
155	5775	13.28	12.00	37.130	15.70	30	Pass

Note:

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

Chain 0

1. 11 dBm + 10log (84.99) = 30.29 dBm > 24 dBm.
2. 11 dBm + 10log (85.59) = 30.32 dBm > 24 dBm.
3. 11 dBm + 10log (85.12) = 30.30 dBm > 24 dBm.
4. 11 dBm + 10log (77.38) = 29.88 dBm > 24 dBm.

Chain 1

1. 11 dBm + 10log (84.53) = 30.27 dBm > 24 dBm.
2. 11 dBm + 10log (85.10) = 30.29 dBm > 24 dBm.
3. 11 dBm + 10log (84.23) = 30.25 dBm > 24 dBm.
4. 11 dBm + 10log (77.42) = 29.88 dBm > 24 dBm.

26 dB Bandwidth:

802.11a

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	22.69	21.72
40	5200	22.99	21.87
48	5240	22.95	21.59
52	5260	22.75	21.97
60	5300	22.84	21.86
64	5320	22.45	22.37
100	5500	22.02	22.07
116	5580	22.34	22.04
140	5700	22.30	21.53
144	5720 (U-NII-2C)	16.21	15.84
144	5720 (U-NII-3)	6.40	6.16

802.11n (HT20)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	23.45	22.79
40	5200	23.53	22.46
48	5240	23.71	22.50
52	5260	23.24	22.99
60	5300	23.75	22.57
64	5320	24.47	22.85
100	5500	24.60	22.43
116	5580	23.74	22.50
140	5700	23.45	22.44
144	5720 (U-NII-2C)	16.51	16.25
144	5720 (U-NII-3)	7.51	6.25

802.11n (HT40)

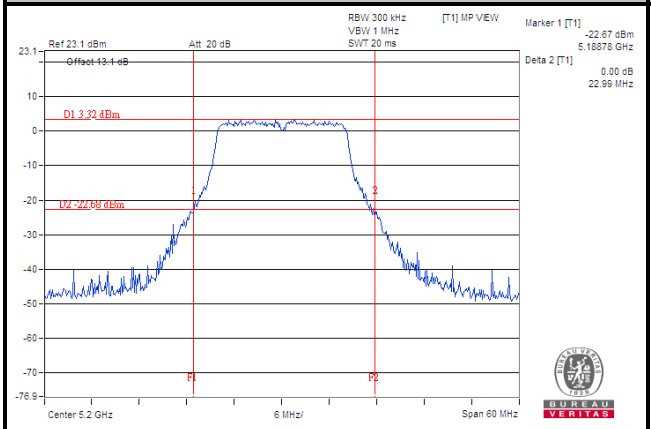
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	42.33	41.65
46	5230	41.82	41.73
54	5270	41.99	41.72
62	5310	42.04	41.87
102	5510	41.61	41.71
110	5550	42.15	42.23
134	5670	42.26	41.84
142	5710 (U-NII-2C)	36.77	36.94
142	5710 (U-NII-3)	8.04	6.70

802.11ac (VHT80)

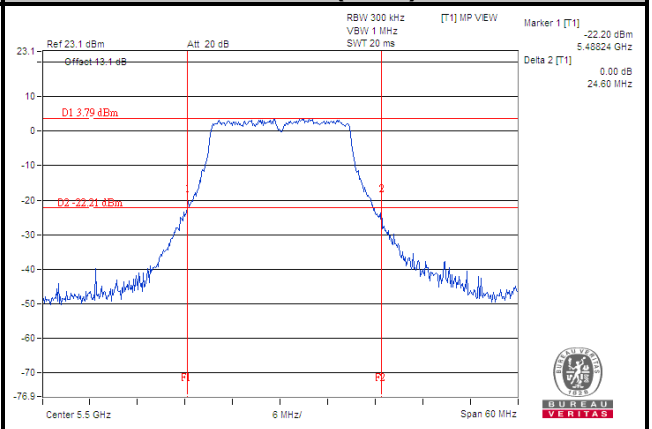
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	85.47	84.68
58	5290	84.99	84.53
106	5530	85.59	85.10
122	5610	85.12	84.23
138	5690 (U-NII-2C)	77.38	77.42
138	5690 (U-NII-3)	8.49	7.92

Spectrum Plot of Worst Value

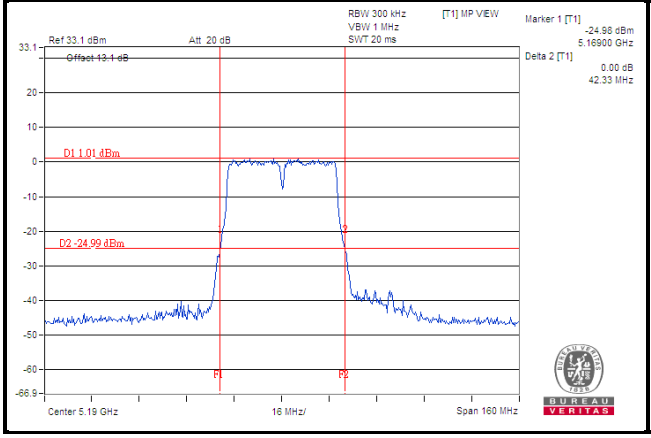
802.11a



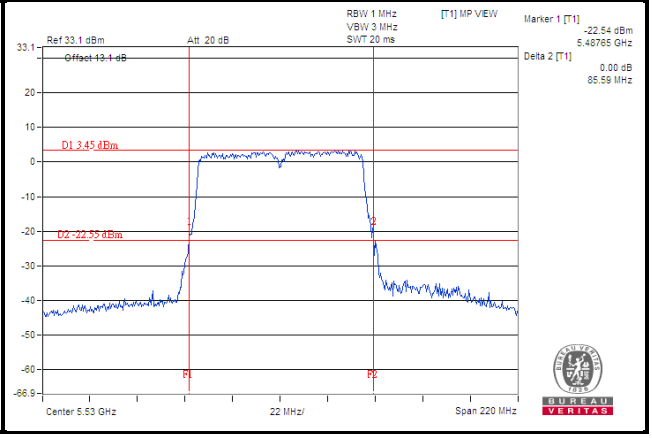
802.11n (HT20)



802.11n (HT40)

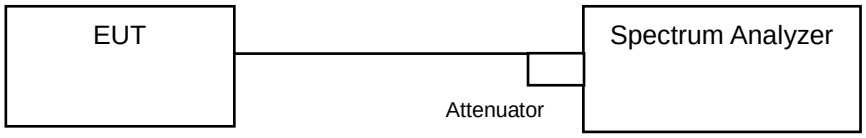


802.11ac (VHT80)



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	16.80	16.68
40	5200	16.68	16.68
48	5240	16.92	16.80
52	5260	16.80	16.80
60	5300	16.92	16.80
64	5320	17.04	16.80
100	5500	16.68	16.80
116	5580	16.80	16.68
140	5700	16.80	16.80
144	5720 (U-NII-2C)	13.28	13.28
144	5720 (U-NII-3)	3.16	3.16
149	5745	16.92	16.83
157	5785	16.83	16.64
165	5825	16.83	16.74

802.11n (HT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	18.12	17.88
40	5200	18.00	17.88
48	5240	18.12	17.88
52	5260	18.00	18.00
60	5300	18.00	17.88
64	5320	18.00	18.00
100	5500	18.00	17.88
116	5580	18.00	17.88
140	5700	18.00	17.88
144	5720 (U-NII-2C)	13.88	13.88
144	5720 (U-NII-3)	3.76	3.76
149	5745	18.08	17.98
157	5785	17.98	18.07
165	5825	18.08	17.88

802.11n (HT40)

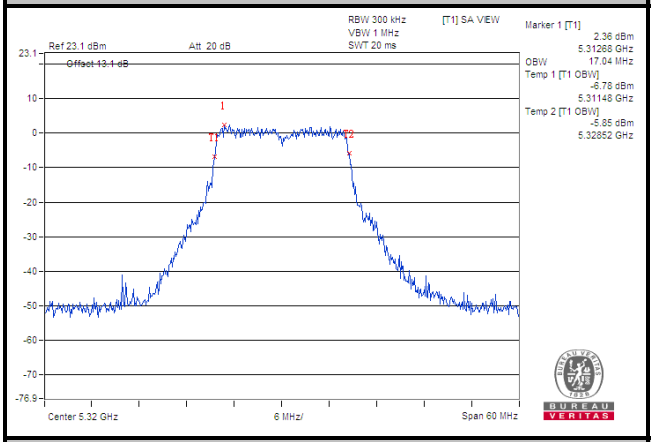
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	36.84	37.08
46	5230	36.84	37.08
54	5270	36.96	36.96
62	5310	36.96	36.84
102	5510	36.84	36.96
110	5550	36.72	36.72
134	5670	36.84	36.96
142	5710 (U-NII-2C)	33.72	33.60
142	5710 (U-NII-3)	3.48	3.48
151	5755	36.84	36.84
159	5795	36.84	36.96

802.11ac (VHT80)

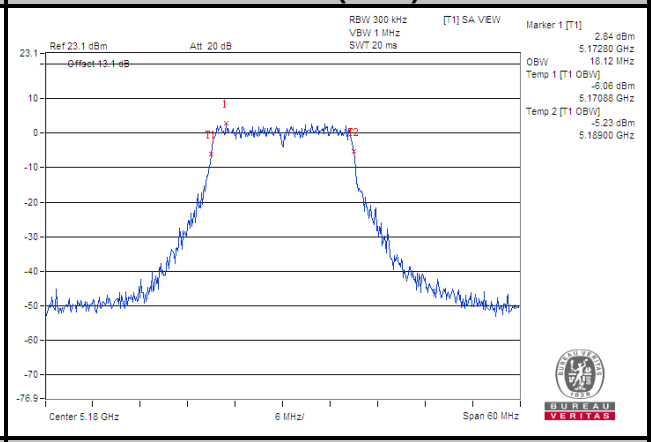
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	76.32	75.84
58	5290	75.84	76.08
106	5530	76.08	76.32
122	5610	75.84	75.84
138	5690 (U-NII-2C)	73.16	73.16
138	5690 (U-NII-3)	2.92	2.92
155	5775	75.96	76.16

Spectrum Plot of Worst Value

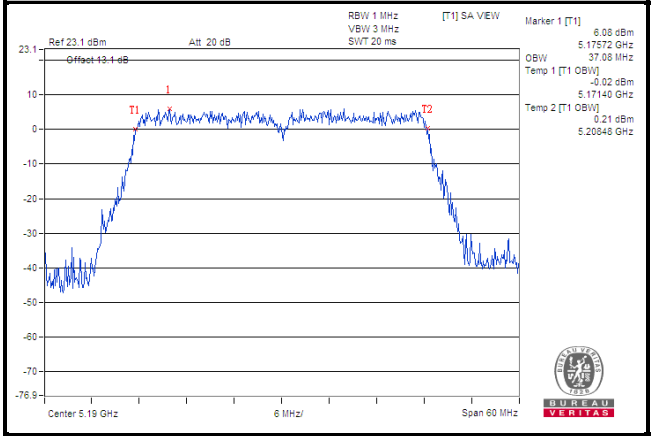
802.11a



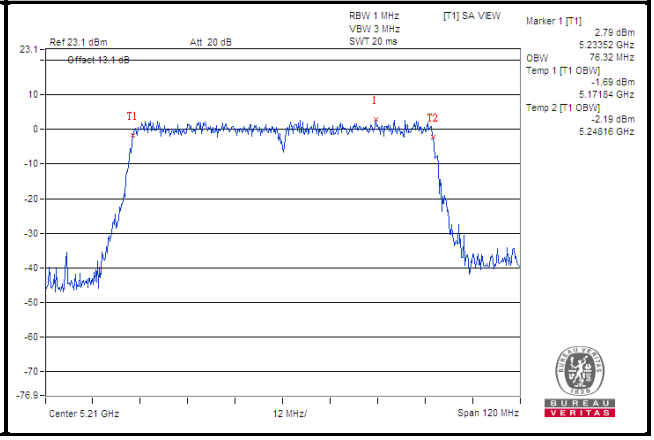
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

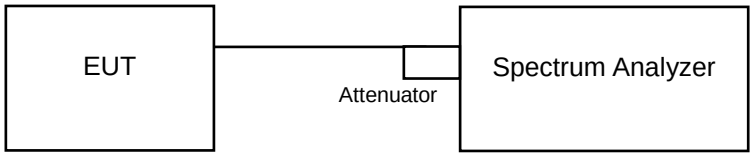


4.5 Peak Power Spectral Density Measurement

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	-1.57	-1.82	0.11	1.43	11	Pass
40	5200	-1.57	-2.03	0.11	1.33	11	Pass
48	5240	-1.34	-2.06	0.11	1.44	11	Pass
52	5260	-1.15	-1.78	0.11	1.67	11	Pass
60	5300	-1.42	-1.76	0.11	1.54	11	Pass
64	5320	-1.48	-1.98	0.11	1.40	11	Pass
100	5500	-1.17	-1.30	0.11	1.89	11	Pass
116	5580	-1.09	-1.53	0.11	1.82	11	Pass
140	5700	-1.53	-1.45	0.11	1.63	11	Pass
144	5720 (U-NII-2C)	2.29	1.67	0.11	5.12	11	Pass

Note:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 4.26$ 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	-1.45	-1.79	0.17	1.57	11	Pass
40	5200	-1.82	-2.34	0.17	1.11	11	Pass
48	5240	-1.85	-2.25	0.17	1.14	11	Pass
52	5260	-1.79	-1.90	0.17	1.34	11	Pass
60	5300	-1.30	-1.57	0.17	1.75	11	Pass
64	5320	-1.55	-2.15	0.17	1.34	11	Pass
100	5500	-1.45	-1.77	0.17	1.58	11	Pass
116	5580	-0.99	-2.14	0.17	1.66	11	Pass
140	5700	-0.49	-1.52	0.17	2.21	11	Pass
144	5720 (U-NII-2C)	1.82	1.03	0.17	4.63	11	Pass

Note:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 4.26$ 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	-4.39	-4.82	0.46	-1.13	11	Pass
46	5230	-4.93	-4.73	0.46	-1.36	11	Pass
54	5270	-4.15	-4.60	0.46	-0.90	11	Pass
62	5310	-4.88	-5.08	0.46	-1.51	11	Pass
102	5510	-4.54	-4.56	0.46	-1.08	11	Pass
110	5550	-4.13	-4.85	0.46	-1.01	11	Pass
134	5670	-3.65	-4.78	0.46	-0.71	11	Pass
142	5710 (U-NII-2C)	-0.80	-1.89	0.46	2.16	11	Pass

Note:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 4.26$ 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)

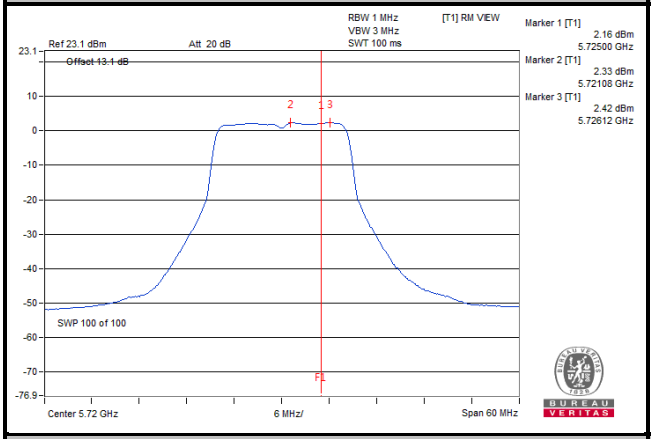
Channel	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
42	5210	-7.28	-7.55	0.48	-3.92	11	Pass
58	5290	-7.26	-7.54	0.48	-3.91	11	Pass
106	5530	-7.44	-7.20	0.48	-3.83	11	Pass
122	5610	-6.89	-7.50	0.48	-3.69	11	Pass
138	5690 (U-NII-2C)	-3.61	-4.46	0.48	-0.52	11	Pass

Note:

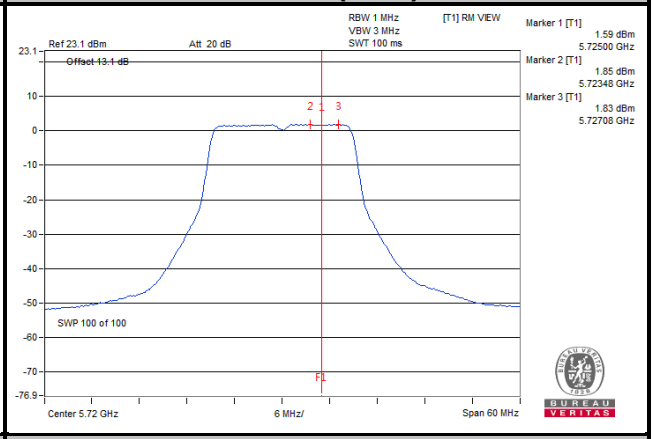
1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 4.26$ 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

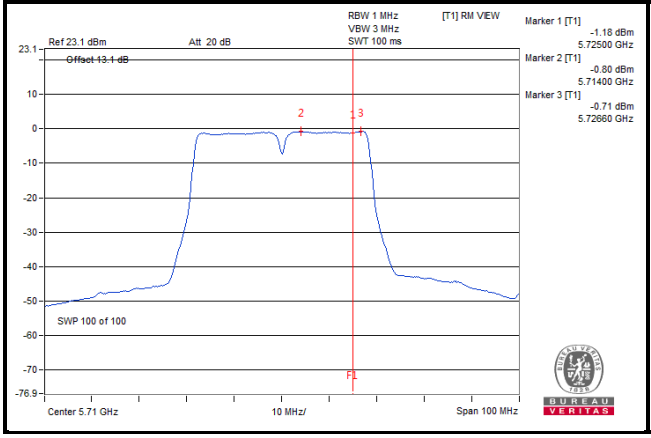
802.11a



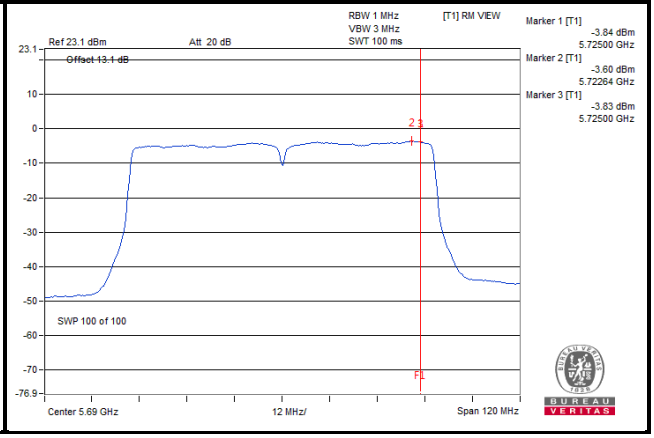
802.11n (HT20)



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	144	5720 (U-NII-3)	-2.81	-0.59	3.01	0.11	2.53	30	Pass
	149	5745	-8.68	-6.46	3.01	0.11	-3.34	30	Pass
	157	5785	-8.13	-5.91	3.01	0.11	-2.79	30	Pass
	165	5825	-7.89	-5.67	3.01	0.11	-2.55	30	Pass
1	144	5720 (U-NII-3)	-3.59	-1.37	3.01	0.11	1.75	30	Pass
	149	5745	-9.28	-7.06	3.01	0.11	-3.94	30	Pass
	157	5785	-9.34	-7.12	3.01	0.11	-4.00	30	Pass
	165	5825	-9.34	-7.12	3.01	0.11	-4.00	30	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 4.26$ 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	144	5720 (U-NII-3)	-3.34	-1.12	3.01	0.17	2.06	30	Pass
	149	5745	-9.12	-6.90	3.01	0.17	-3.72	30	Pass
	157	5785	-8.47	-6.25	3.01	0.17	-3.07	30	Pass
	165	5825	-8.23	-6.01	3.01	0.17	-2.83	30	Pass
1	144	5720 (U-NII-3)	-4.13	-1.91	3.01	0.17	1.27	30	Pass
	149	5745	-9.88	-7.66	3.01	0.17	-4.48	30	Pass
	157	5785	-9.70	-7.48	3.01	0.17	-4.30	30	Pass
	165	5825	-9.65	-7.43	3.01	0.17	-4.25	30	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 4.26$ 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	142	5710 (U-NII-3)	-5.83	-3.61	3.01	0.46	-0.14	30	Pass
	151	5755	-11.89	-9.67	3.01	0.46	-6.20	30	Pass
	159	5795	-11.41	-9.19	3.01	0.46	-5.72	30	Pass
1	142	5710 (U-NII-3)	-6.81	-4.59	3.01	0.46	-1.12	30	Pass
	151	5755	-13.05	-10.83	3.01	0.46	-7.36	30	Pass
	159	5795	-12.91	-10.69	3.01	0.46	-7.22	30	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 4.26$ 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)

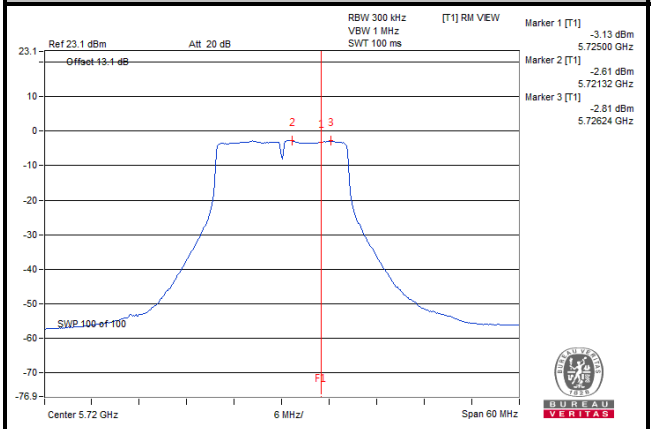
TX Chain	Channel	Frequency (MHz)	PSD		10 log (N=2) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300 kHz)	(dBm/500 kHz)					
0	138	5690 (U-NII-3)	-8.83	-6.61	3.01	0.48	-3.12	30	Pass
	155	5775	-14.85	-12.63	3.01	0.48	-9.14	30	Pass
1	138	5690 (U-NII-3)	-9.80	-7.58	3.01	0.48	-4.09	30	Pass
	155	5775	-15.87	-13.65	3.01	0.48	-10.16	30	Pass

Note:

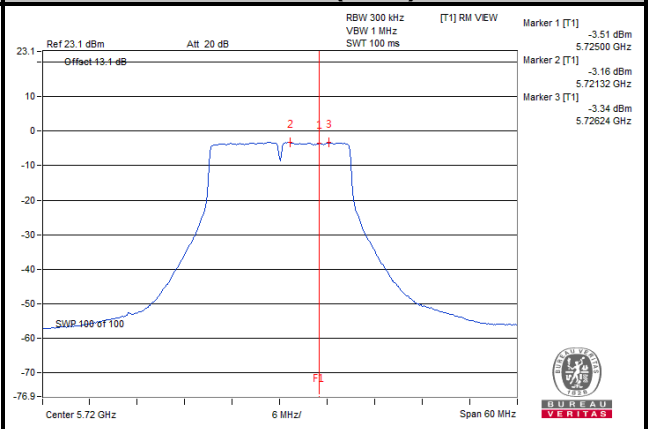
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 4.26$ dBi < 6 dBi, so the limit no need to be reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

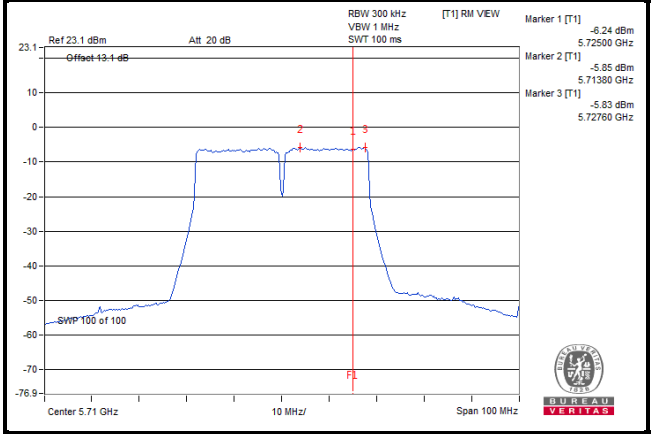
802.11a



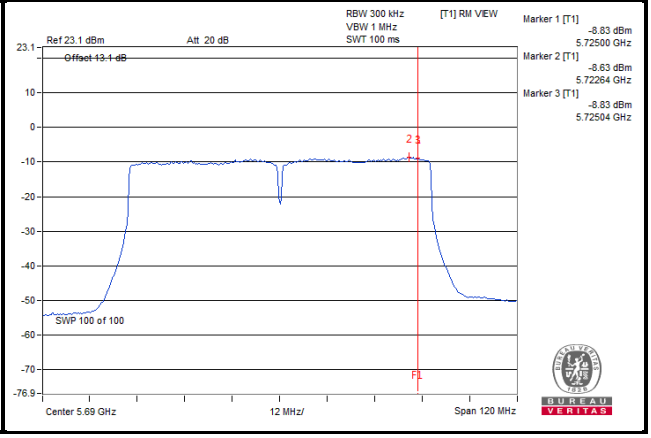
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

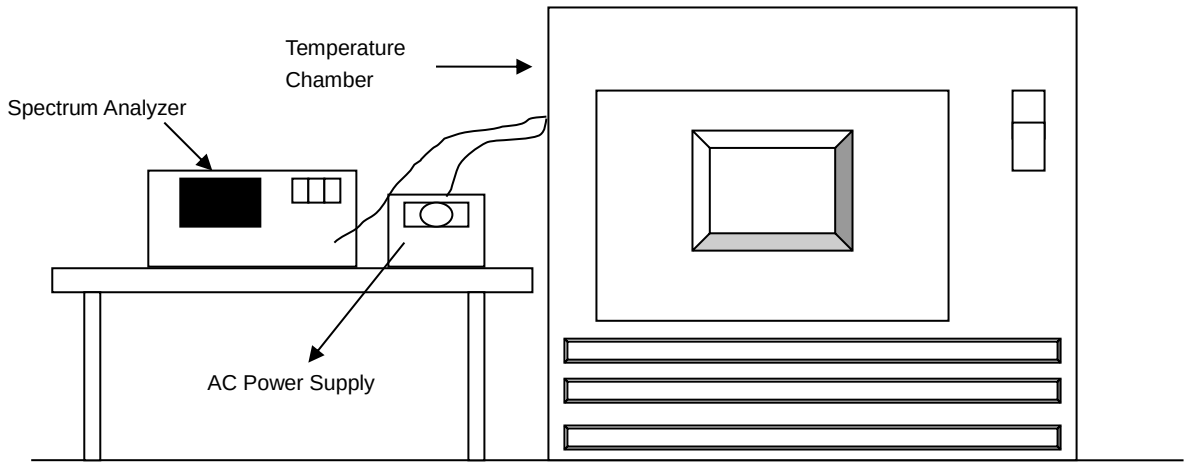


4.6 Frequency Stability

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

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

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

4.6.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5180 MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
50	120	5179.9876	PASS	5179.9889	PASS	5179.9894	PASS	5179.9898	PASS
40	120	5180.0035	PASS	5180.007	PASS	5180.0046	PASS	5180.0035	PASS
30	120	5180.0224	PASS	5180.0219	PASS	5180.0208	PASS	5180.0236	PASS
20	120	5179.9872	PASS	5179.9883	PASS	5179.9861	PASS	5179.988	PASS
10	120	5179.9788	PASS	5179.9748	PASS	5179.9779	PASS	5179.9747	PASS
0	120	5180.0072	PASS	5180.0056	PASS	5180.0052	PASS	5180.0073	PASS

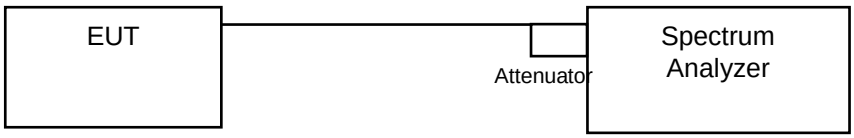
Frequency Stability Versus Voltage									
Operating Frequency: 5180 MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
20	138	5179.9881	PASS	5179.9881	PASS	5179.986	PASS	5179.9889	PASS
	120	5179.9872	PASS	5179.9883	PASS	5179.9861	PASS	5179.988	PASS
	102	5179.9881	PASS	5179.9875	PASS	5179.9852	PASS	5179.9871	PASS

4.7 6 dB Bandwidth Measurement

4.7.1 Limits of 6 dB Bandwidth Measurement

The minimum of 6 dB Bandwidth Measurement is 0.5 MHz.

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.7.4 Test Procedure

MEASUREMENT PROCEDURE REF

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

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

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

4.7.7 Test Results

802.11a

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
144	5720 (U-NII-3)	3.19	3.19	0.5	Pass
149	5745	16.43	16.41	0.5	Pass
157	5785	16.42	16.40	0.5	Pass
165	5825	16.42	16.44	0.5	Pass

802.11n (HT20)

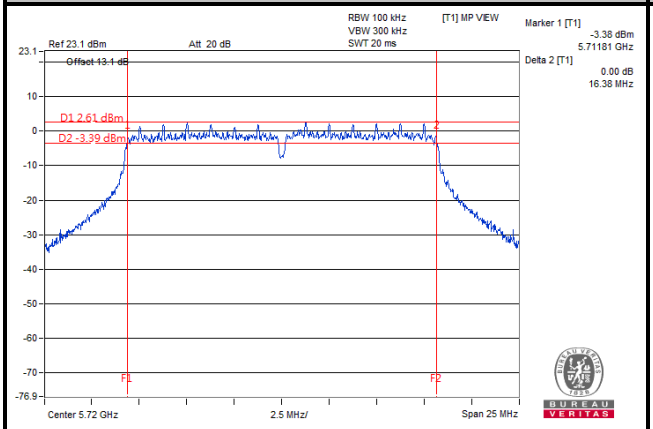
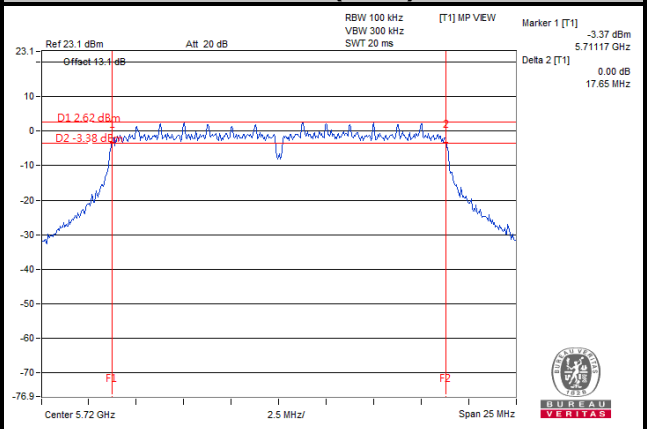
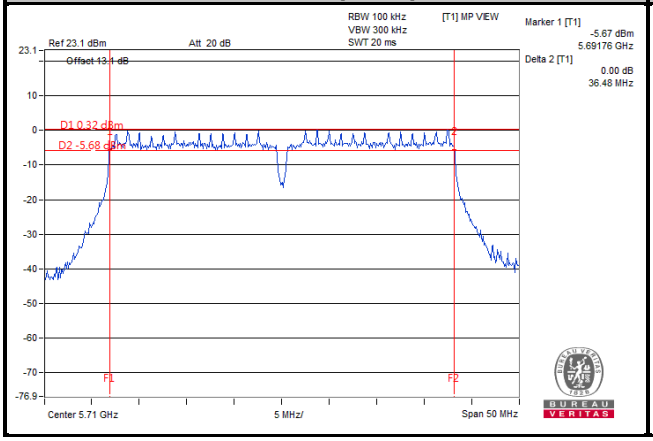
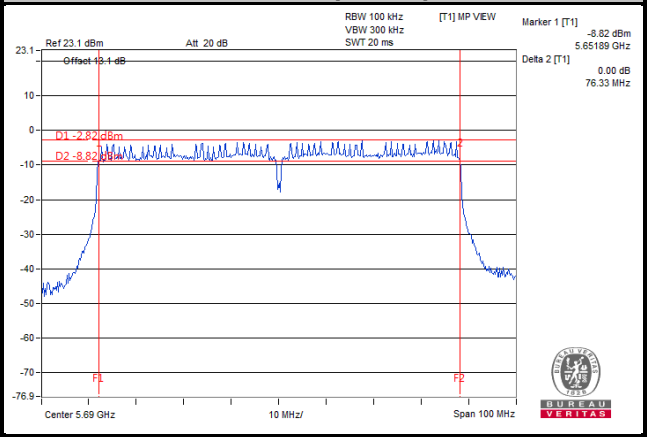
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
144	5720 (U-NII-3)	3.82	3.83	0.5	Pass
149	5745	17.65	17.67	0.5	Pass
157	5785	17.66	17.65	0.5	Pass
165	5825	17.65	17.66	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
142	5710 (U-NII-3)	3.24	3.25	0.5	Pass
151	5755	36.48	36.53	0.5	Pass
159	5795	36.43	36.49	0.5	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
138	5690 (U-NII-3)	3.22	3.24	0.5	Pass
155	5775	75.98	76.34	0.5	Pass

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

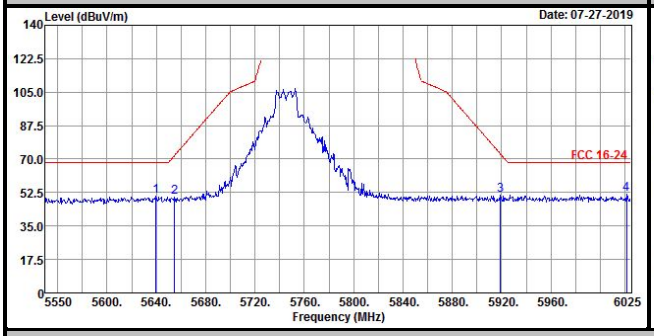
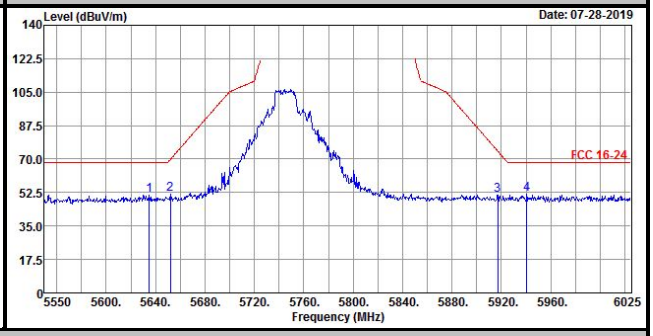
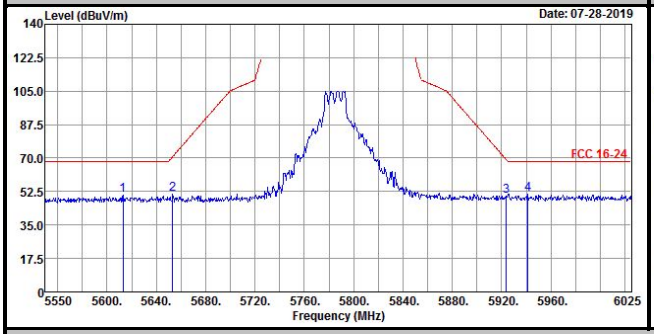
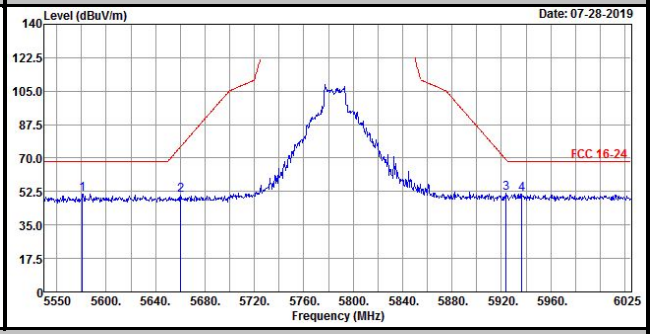
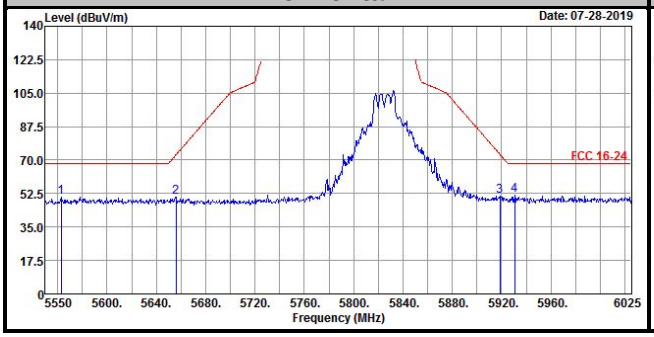
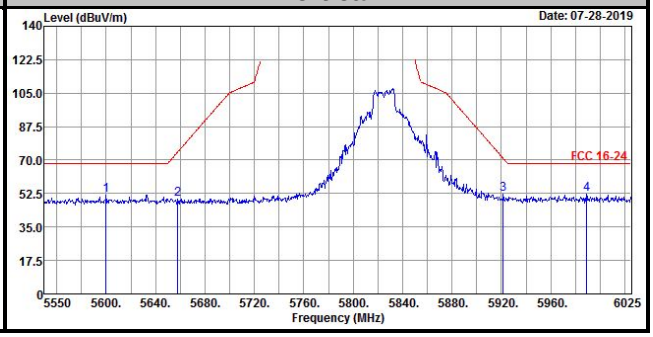
Note:
For Ch144 (UNII-3 Band: The 6 dB bandwidth above 5725 MHz = Marker 1 + Delta 2 – 5725 MHz)
For Ch142 (UNII-3 Band: The 6 dB bandwidth above 5725 MHz = Marker 1 + Delta 2 – 5725 MHz)
For Ch138 (UNII-3 Band: The 6 dB bandwidth above 5725 MHz = Marker 1 + Delta 2 – 5725 MHz)

5 Pictures of Test Arrangements

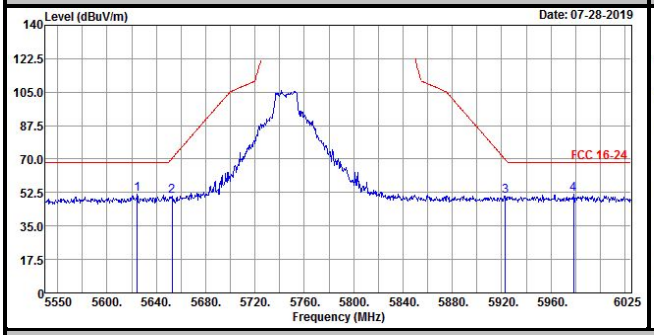
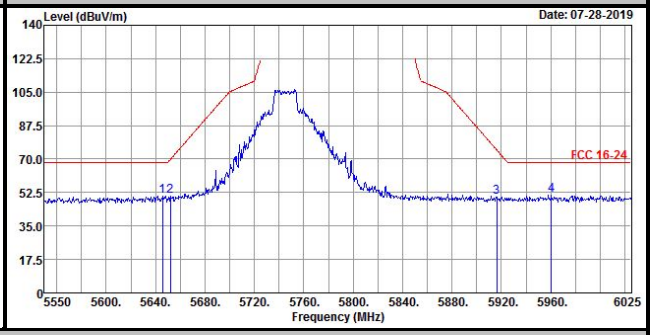
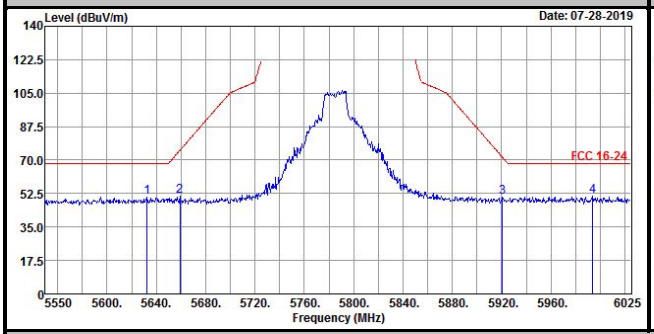
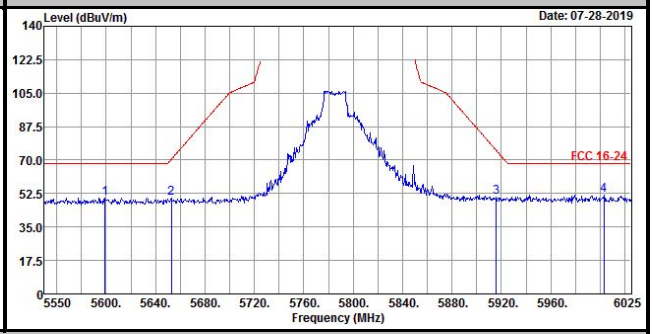
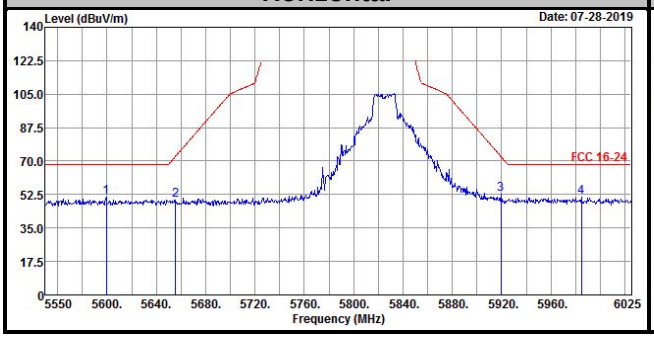
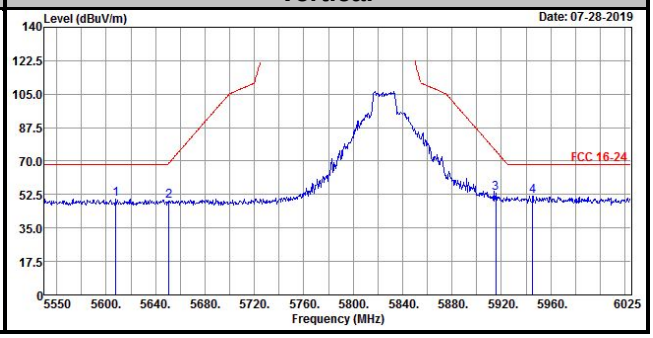
Please refer to the attached file (Test Setup Photo).

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

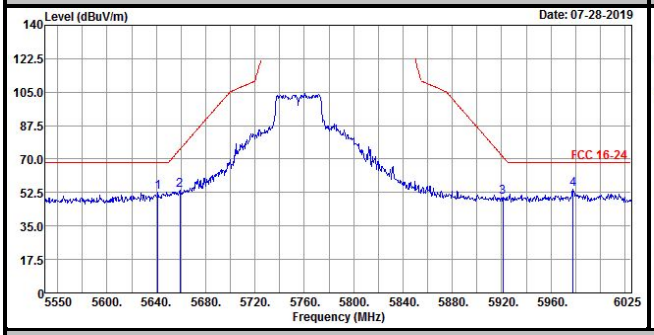
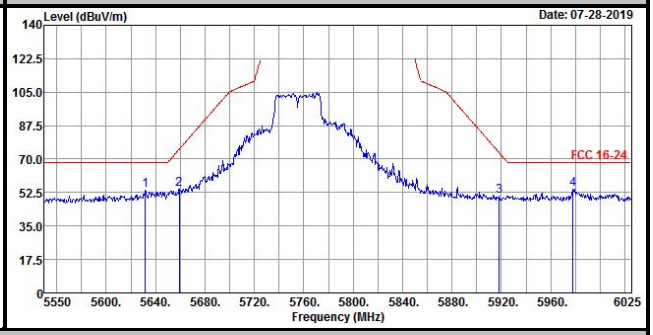
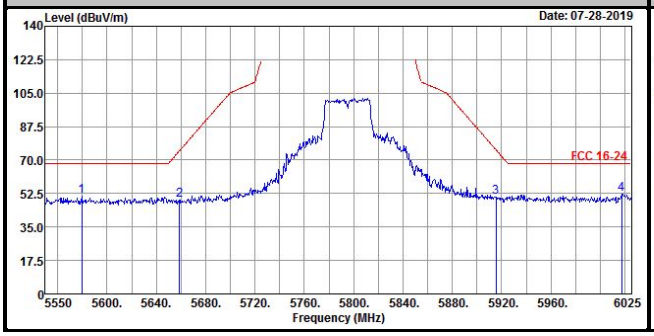
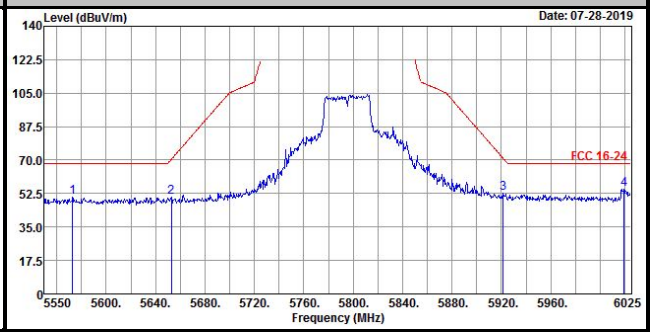
802.11a

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

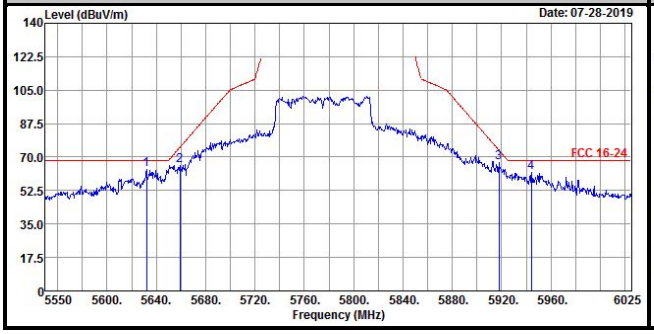
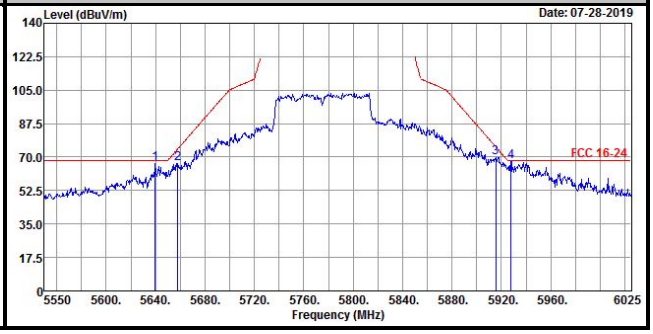
802.11n (HT20)

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

802.11n (HT40)

Ch 151	
Horizontal	Vertical
	
Ch 159	
Horizontal	Vertical
	

802.11ac (VHT80)

Ch 155	
Horizontal	Vertical
	

Appendix – Information of the Testing Laboratories

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

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

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 Lab
Tel: 886-3-3183232
Fax: 886-3-3270892

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

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

--- END ---