

FCC Test Report

Report No.: RF190111C05-4

FCC ID: HD5-CK65L0N

Test Model: CK65L0N

Received Date: Jan. 11, 2019

Test Date: Feb. 02, 2019 ~ Feb. 15, 2019

Issued Date: Mar. 08, 2019

Applicant: Honeywell International Inc.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

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(R.O.C)

Test Location (1): No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan
Hsien 333, Taiwan, R.O.C.

FCC Registration /
Designation Number: 788550 / TW0003



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Release Control Record

Issue No.	Description	Date Issued
RF190111C05-4	Original Release	Mar. 08, 2019

1 Certificate of Conformity

Product: Mobile computer

Brand: Honeywell

Test Model: CK65L0N

Sample Status: Engineering Sample

Applicant: Honeywell International Inc.

Test Date: Feb. 02, 2019 ~ Feb. 15, 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:

Mar. 08, 2019

Ivonne Wu / Supervisor

Approved by :



Date:

Mar. 08, 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	NA	Without AC power port of the EUT.
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 -2.03 dB at 5350.11 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 POGO pin not a standard connector.

Note:

- For U-NII-3 band compliance with rule part 15.407(b)(4)(i), the OOB test plots were recorded in Annex A.
- 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) ($\pm$)
Radiated Emissions up to 1 GHz	30 MHz ~ 200 MHz	2.93 dB
	200 MHz ~ 1000 MHz	2.95 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Mobile computer
Brand	Honeywell
Test Model	CK65L0N
Status of EUT	Engineering Sample
Power Supply Rating	3.7 Vdc (battery)
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK
Modulation Technology	OFDM
Transfer Rate	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0 Mbps 802.11n/ac: up to 300 Mbps 802.11ac: up to 867 Mbps
Operating Frequency	5180 ~ 5240 MHz, 5260 ~ 5320 MHz, 5500 ~ 5720 MHz, 5745 ~ 5825 MHz
Number of Channel	5180 ~ 5240 MHz: 4 for 802.11a, 802.11n (HT20) , 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80) 5260 ~ 5320 MHz: 4 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80) 5500 ~ 5720 MHz: 12 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 6 for 802.11n (HT40), 802.11ac (VHT40) 3 for 802.11ac (VHT80) 5745 ~ 5825 MHz: 5 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80)
Output Power	45.041 mW for 5180 ~ 5240 MHz 44.115 mW for 5260 ~ 5320 MHz 142.903 mW for 5500 ~ 5720 MHz 131.39 mW for 5745 ~ 5825 MHz
Antenna Type	Refer to Note as below
Antenna Connector	Refer to Note as below
Accessory Device	Refer to Note as below
Data Cable Supplied	N/A

Note:

1. There're 4 configurations for the EUT listed as below.

Sample	Scanner	Keypad	Antenna Type			
			Type	Connector	Gain (dBi)	
					Chain 0	Chain 1
A	N6703	Alpha/Num	FPC antenna	POGO pin	4.83	4.38
B	EX20	Alpha/Num	FPC antenna	POGO pin	4.85	4.82
C	N6703	Num	FPC antenna	POGO pin	4.83	4.38
D	EX20	Num	FPC antenna	POGO pin	4.85	4.82

- ✧ After pre-tested, only the worst configuration (Sample B) was chosen for the final test and recorded in this report.

2. The EUT contains following accessory devices.

Product	Brand	Model	Description
Battery	Intermec Technologies Corporation	AB18	3.7 Vdc, 5.1 Ah, 18.9 mAh

3. 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)

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

3.2 Description of Test Modes

For 5180 ~ 5240 MHz

4 channels are provided for 802.11a, 802.11n (HT20), and 802.11ac (VHT20):

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

2 channels are provided for 802.11n (HT40) and 802.11ac (VHT40):

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), and 802.11ac (VHT20):

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

2 channels are provided for 802.11n (HT40) and 802.11ac (VHT40):

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

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
58	5290

For 5500 ~ 5720 MHz

12 channels are provided for 802.11a, 802.11n (HT20), and 802.11ac (VHT20):

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) and 802.11ac (VHT40):

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) and 802.11ac (VHT20):

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

2 channels are provided for 802.11n (HT40) and 802.11ac (VHT40):

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 $\geq$ 1G	RE<1G	PLC	APCM	
-	√	√	-	√	-

Where **RE $\geq$ 1G**: Radiated Emission above 1 GHz

RE<1G: Radiated Emission below 1 GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

Note:

1. No need to concern of Conducted Emission since the EUT is powered by battery.
2. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.
3. "-" 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
-		802.11ac (VHT20)	36 to 48	36, 40, 48	OFDM	BPSK	7.2
-		802.11ac (VHT40)	38 to 46	38, 46	OFDM	BPSK	15
-		802.11ac (VHT80)	42	42	OFDM	BPSK	29.3
-	5260-5320	802.11a	52 to 64	52, 60, 64	OFDM	BPSK	6.0
-		802.11ac (VHT20)	52 to 64	52, 60, 64	OFDM	BPSK	7.2
-		802.11ac (VHT40)	54 to 62	54, 62	OFDM	BPSK	15
-		802.11ac (VHT80)	58	58	OFDM	BPSK	29.3
-	5500-5720	802.11a	100 to 144	100, 116, 140, 144	OFDM	BPSK	6.0
-		802.11ac (VHT20)	100 to 144	100, 116, 140, 144	OFDM	BPSK	7.2
-		802.11ac (VHT40)	102 to 142	102, 110, 134, 142	OFDM	BPSK	15
-		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
-		802.11ac (VHT20)	149 to 165	149, 157, 165	OFDM	BPSK	7.2
-		802.11ac (VHT40)	151 to 159	151, 159	OFDM	BPSK	15
-		802.11ac (VHT80)	155	155	OFDM	BPSK	29.3

Radiated Emission Test (Below 1 GHz):

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

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

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5260-5320	802.11ac (VHT20)	52 to 64	64	OFDM	BPSK	7.2

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
-		802.11ac (VHT20)	36 to 48	36, 40, 48	OFDM	BPSK	7.2
-		802.11ac (VHT40)	38 to 46	38, 46	OFDM	BPSK	15
-		802.11ac (VHT80)	42	42	OFDM	BPSK	29.3
-	5260-5320	802.11a	52 to 64	52, 60, 64	OFDM	BPSK	6.0
-		802.11ac (VHT20)	52 to 64	52, 60, 64	OFDM	BPSK	7.2
-		802.11ac (VHT40)	54 to 62	54, 62	OFDM	BPSK	15
-		802.11ac (VHT80)	58	58	OFDM	BPSK	29.3
-	5500-5720	802.11a	100 to 144	100, 116, 140, 144	OFDM	BPSK	6.0
-		802.11ac (VHT20)	100 to 144	100, 116, 140, 144	OFDM	BPSK	7.2
-		802.11ac (VHT40)	102 to 142	102, 110, 134, 142	OFDM	BPSK	15
-		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
-		802.11ac (VHT20)	149 to 165	149, 157, 165	OFDM	BPSK	7.2
-		802.11ac (VHT40)	151 to 159	151, 159	OFDM	BPSK	15
-		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	3.7 Vdc	Jisyong Wang
RE<1G	25 deg. C, 65 % RH	3.7 Vdc	Jisyong Wang
APCM	25 deg. C, 65 % RH	3.7 Vdc	Vincent Huang

3.3 Duty Cycle of Test Signal

MODULATION TYPE: BPSK

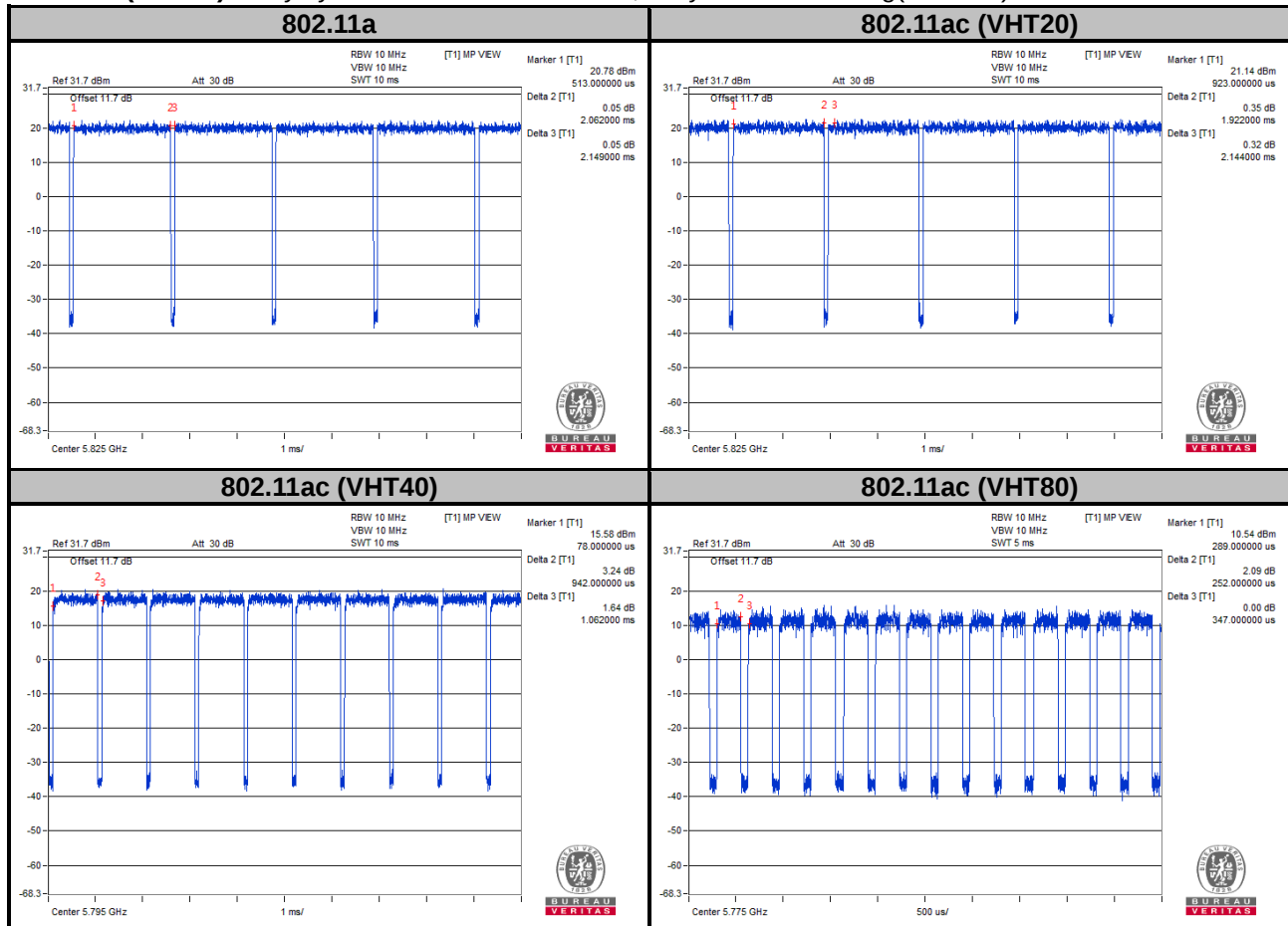
Duty cycle of test signal is < 98 %, duty factor is required.

802.11a: Duty cycle = $2.062/2.149 = 0.960$, Duty factor = $10 * \log(1/0.960) = 0.18$

802.11ac (VHT20): Duty cycle = $1.922/2.144 = 0.896$, Duty factor = $10 * \log(1/0.896) = 0.48$

802.11ac (VHT40): Duty cycle = $0.942/1.062 = 0.887$, Duty factor = $10 * \log(1/0.887) = 0.52$

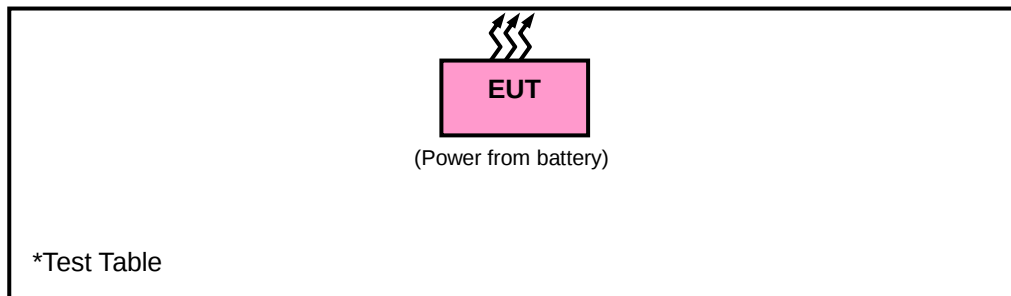
802.11ac (VHT80): Duty cycle = $0.252/0.347 = 0.726$, Duty factor = $10 * \log(1/0.726) = 1.39$



3.4 Description of Support Units

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

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart E (15.407)

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

KDB 662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10-2013

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F (kHz)	300
0.490 ~ 1.705	24000/F (kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

Note:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

4.1.2 Limits of Unwanted Emission Out of the Restricted Bands

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

^{*1} beyond 75 MHz or more above of the band edge.

^{*2} below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.

^{*3} below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.

^{*4} from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Note:

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

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

4.1.3 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent	N9038A	MY51210203	Mar. 16, 2018	Mar. 15, 2019
Spectrum Analyzer Agilent	N9010A	MY52220314	Dec. 13, 2018	Dec. 12, 2019
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	100115	Jan. 21, 2019	Jan. 20, 2020
Broadband 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
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 16, 2018	Apr. 15, 2019
Loop Antenna	EM-6879	269	Sep. 07, 2018	Sep. 06, 2019
Preamplifier EMCI	EMC001340	980201	Oct. 12, 2018	Oct. 11, 2019
Preamplifier EMCI	EMC 012645	980115	Oct. 12, 2018	Oct. 11, 2019
Preamplifier EMCI	EMC 184045	980116	Oct. 12, 2018	Oct. 11, 2019
Preamplifier EMCI	EMC 330H	980112	Oct. 12, 2018	Oct. 11, 2019
Power Meter Anritsu	ML2495A	1012010	Sep. 05, 2018	Sep. 04, 2019
Power Sensor Anritsu	MA2411B	1315050	Sep. 04, 2018	Sep. 03, 2019
RF Coaxial Cable HUBER+SUHNNER	EMC104-SM-SM-800 0&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. 29, 2018	Jun. 28, 2019

- Note:
1. The calibration interval of the above test instruments is 12 / 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Chamber 10.
 3. The horn antenna and preamplifier (model: EMC 184045) are used only for the measurement of emission frequency above 1 GHz if tested.
 4. The IC Site Registration No. is 7450F-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:

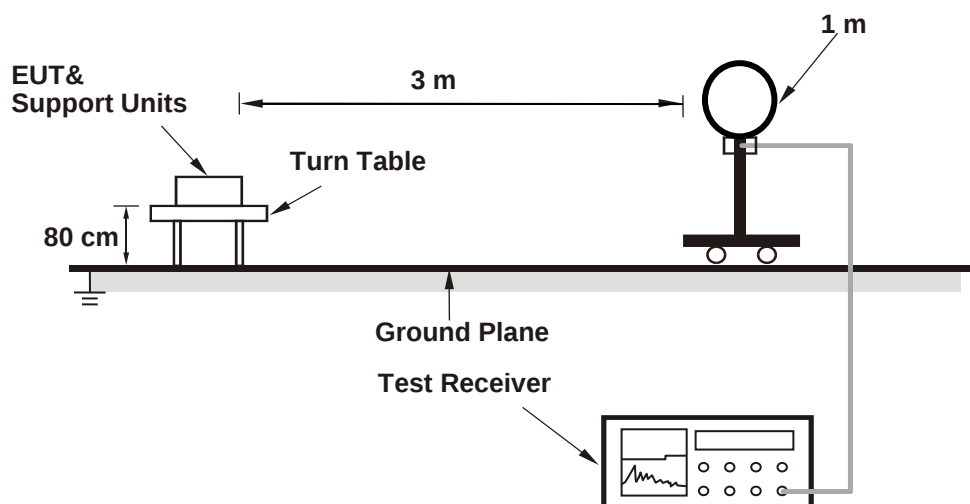
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK)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

4.1.5 Deviation from Test Standard

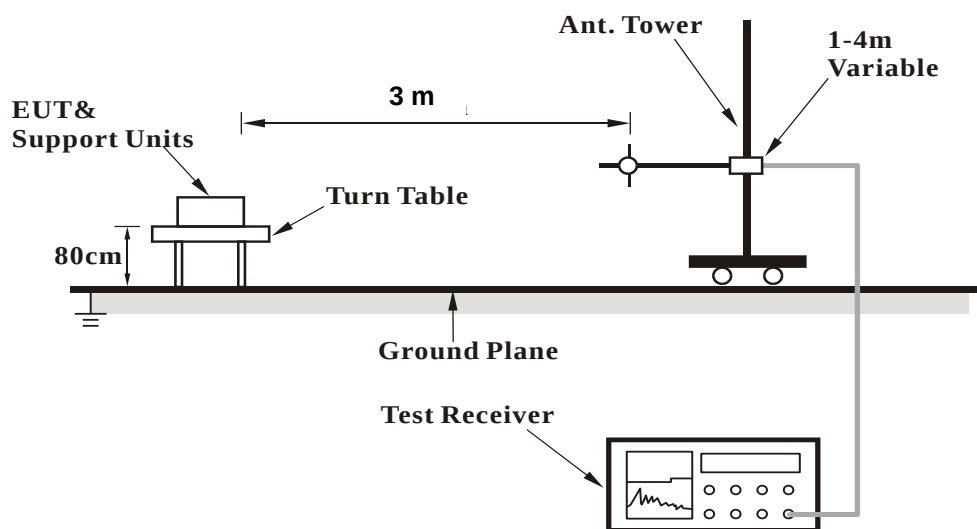
No deviation.

4.1.6 Test Setup

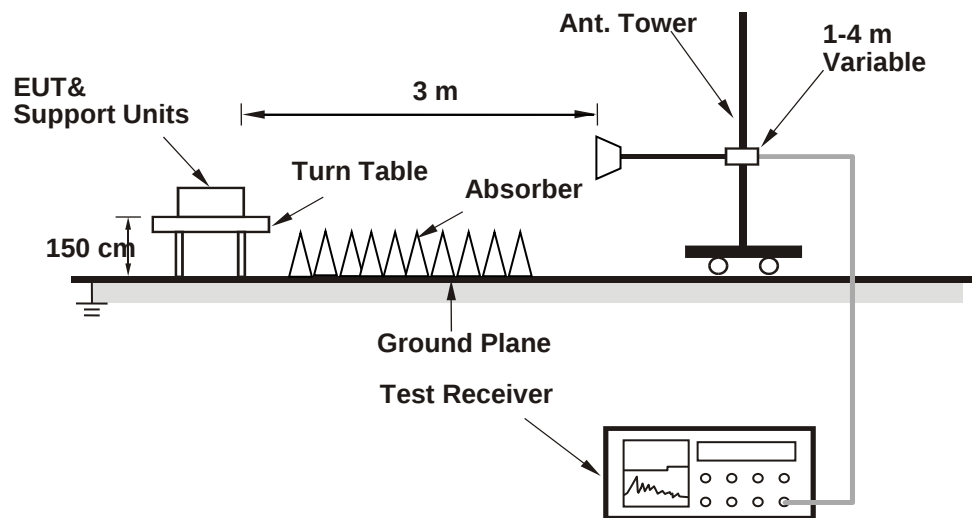
<Radiated Emission below 30 MHz>



<Radiated Emission 30 MHz to 1 GHz>



<Radiated Emission above 1 GHz>



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

4.1.7 EUT Operating Conditions

- Placed the EUT on a testing table.
- 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	Jisyoung Wang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.94	51.89	51.31	54	-2.11	31.56	6.34	37.32	120	196	Average
5149.94	68.07	67.49	74	-5.93	31.56	6.34	37.32	120	196	Peak
5180	100.66	100.04			31.59	6.37	37.34	120	196	Average
5180	110.67	110.05			31.59	6.37	37.34	120	196	Peak
*10360	55.7	58.46	68.2	-12.5	39.48	10.21	52.45	182	251	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5147.96	48.66	48.08	54	-5.34	31.56	6.34	37.32	138	83	Average
5147.96	66.65	66.07	74	-7.35	31.56	6.34	37.32	138	83	Peak
5180	100.07	99.45			31.59	6.37	37.34	138	83	Average
5180	110.08	109.46			31.59	6.37	37.34	138	83	Peak
*10360	55.85	58.61	68.2	-12.35	39.48	10.21	52.45	132	251	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5180 MHz: Fundamental Frequency
- *: Out of Restricted Band
- 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	Jisyoung Wang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5144	46.99	46.42	54	-7.01	31.56	6.33	37.32	126	194	Average
5144	65.1	64.53	74	-8.9	31.56	6.33	37.32	126	194	Peak
5200	102.69	102.06			31.6	6.39	37.36	126	194	Average
5200	112.69	112.06			31.6	6.39	37.36	126	194	Peak
5447.46	39.21	38.07	54	-14.79	31.77	6.5	37.13	126	194	Average
5447.46	51.33	50.19	74	-22.67	31.77	6.5	37.13	126	194	Peak
*10400	55.02	57.76	68.2	-13.18	39.51	10.2	52.45	147	295	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5143.28	46.11	45.52	54	-7.89	31.56	6.33	37.3	132	87	Average
5143.28	64.39	63.8	74	-9.61	31.56	6.33	37.3	132	87	Peak
5200	101.81	101.18			31.6	6.39	37.36	132	87	Average
5200	111.81	111.18			31.6	6.39	37.36	132	87	Peak
5448.01	38.98	37.84	54	-15.02	31.77	6.5	37.13	132	87	Average
5448.01	51.59	50.45	74	-22.41	31.77	6.5	37.13	132	87	Peak
*10400	56.23	58.97	68.2	-11.97	39.51	10.2	52.45	178	165	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5148.5	39.36	38.78	54	-14.64	31.56	6.34	37.32	121	198	Average
5148.5	51.49	50.91	74	-22.51	31.56	6.34	37.32	121	198	Peak
5240	101.64	100.92			31.62	6.42	37.32	121	198	Average
5240	111.71	110.99			31.62	6.42	37.32	121	198	Peak
5452.52	39.73	38.53	54	-14.27	31.77	6.51	37.08	121	198	Average
5452.52	52.08	50.88	74	-21.92	31.77	6.51	37.08	121	198	Peak
*10480	57.12	59.96	68.2	-11.08	39.6	10.22	52.66	185	162	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5140.94	39.23	38.64	54	-14.77	31.56	6.33	37.3	110	82	Average
5140.94	51.01	50.42	74	-22.99	31.56	6.33	37.3	110	82	Peak
5240	101.34	100.62			31.62	6.42	37.32	110	82	Average
5240	111.42	110.7			31.62	6.42	37.32	110	82	Peak
5379.81	39.23	38.21	54	-14.77	31.73	6.47	37.18	110	82	Average
5379.81	51.65	50.63	74	-22.35	31.73	6.47	37.18	110	82	Peak
*10480	55.16	58	68.2	-13.04	39.6	10.22	52.66	132	295	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5130.68	38.75	38.18	54	-15.25	31.55	6.32	37.3	121	129	Average
5130.68	51.26	50.69	74	-22.74	31.55	6.32	37.3	121	129	Peak
5260	101.58	100.77			31.65	6.43	37.27	121	129	Average
5260	111.66	110.85			31.65	6.43	37.27	121	129	Peak
5358.14	39.66	38.67	54	-14.34	31.7	6.47	37.18	121	129	Average
5358.14	51.95	50.96	74	-22.05	31.7	6.47	37.18	121	129	Peak
*10520	56.01	58.81	68.2	-12.19	39.66	10.27	52.73	162	251	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5145.62	38.85	38.27	54	-15.15	31.56	6.34	37.32	115	266	Average
5145.62	50.78	50.2	74	-23.22	31.56	6.34	37.32	115	266	Peak
5260	101.11	100.3			31.65	6.43	37.27	115	266	Average
5260	111.11	110.3			31.65	6.43	37.27	115	266	Peak
5355.06	39.42	38.43	54	-14.58	31.7	6.47	37.18	115	266	Average
5355.06	51.73	50.74	74	-22.27	31.7	6.47	37.18	115	266	Peak
*10520	56.23	59.03	68.2	-11.97	39.66	10.27	52.73	147	184	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5139.32	38.77	38.19	54	-15.23	31.55	6.33	37.3	111	118	Average
5139.32	51.08	50.5	74	-22.92	31.55	6.33	37.3	111	118	Peak
5300	101.53	100.59			31.67	6.46	37.19	111	118	Average
5300	111.56	110.62			31.67	6.46	37.19	111	118	Peak
5355.5	45.25	44.26	54	-8.75	31.7	6.47	37.18	111	118	Average
5355.5	61.56	60.57	74	-12.44	31.7	6.47	37.18	111	118	Peak
10600	46.28	49.11	54	-7.72	39.85	10.43	53.11	162	251	Average
10600	56.18	59.01	74	-17.82	39.85	10.43	53.11	162	251	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5129.6	38.76	38.19	54	-15.24	31.55	6.32	37.3	156	263	Average
5129.6	50.88	50.31	74	-23.12	31.55	6.32	37.3	156	263	Peak
5300	99.53	98.59			31.67	6.46	37.19	156	263	Average
5300	109.56	108.62			31.67	6.46	37.19	156	263	Peak
5352.31	43.23	42.24	54	-10.77	31.7	6.47	37.18	156	263	Average
5352.31	57.66	56.67	74	-16.34	31.7	6.47	37.18	156	263	Peak
10600	46.16	48.99	54	-7.84	39.85	10.43	53.11	111	147	Average
10600	56.16	58.99	74	-17.84	39.85	10.43	53.11	111	147	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5300 MHz: Fundamental Frequency
3. The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	100.54	99.59			31.68	6.46	37.19	103	114	Average
5320	110.56	109.61			31.68	6.46	37.19	103	114	Peak
5352.53	51.52	50.53	54	-2.48	31.7	6.47	37.18	103	114	Average
5352.53	66.46	65.47	74	-7.54	31.7	6.47	37.18	103	114	Peak
10640	46.74	49.52	54	-7.26	39.93	10.36	53.07	185	145	Average
10640	56.74	59.52	74	-17.26	39.93	10.36	53.07	185	145	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	99.94	98.99			31.68	6.46	37.19	128	265	Average
5320	110.03	109.08			31.68	6.46	37.19	128	265	Peak
5350.66	51.14	50.15	54	-2.86	31.7	6.47	37.18	128	265	Average
5350.66	65.98	64.99	74	-8.02	31.7	6.47	37.18	128	265	Peak
10640	46.23	49.01	54	-7.77	39.93	10.36	53.07	132	265	Average
10640	56.23	59.01	74	-17.77	39.93	10.36	53.07	132	265	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5320 MHz: Fundamental Frequency
- 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	Jisyoung Wang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459.6	45.4	44.2	54	-8.6	31.77	6.51	37.08	128	44	Average
5459.6	62.4	61.2	74	-11.6	31.77	6.51	37.08	128	44	Peak
*5470	66.1	64.87	68.2	-2.1	31.79	6.52	37.08	128	44	Peak
5500	99.44	98.12			31.81	6.54	37.03	128	44	Average
5500	109.44	108.12			31.81	6.54	37.03	128	44	Peak
*5725	51.01	49.5	68.2	-17.19	32.18	6.76	37.43	128	44	Peak
11000	47.16	49.06	54	-6.84	40.73	10.4	53.03	152	111	Average
11000	57.17	59.07	74	-16.83	40.73	10.4	53.03	152	111	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5456.72	44.76	43.56	54	-9.24	31.77	6.51	37.08	150	220	Average
5456.72	62.14	60.94	74	-11.86	31.77	6.51	37.08	150	220	Peak
*5470	64.94	63.71	68.2	-3.26	31.79	6.52	37.08	150	220	Peak
5500	101.6	100.28			31.81	6.54	37.03	150	220	Average
5500	111.61	110.29			31.81	6.54	37.03	150	220	Peak
*5725	52.16	50.65	68.2	-16.04	32.18	6.76	37.43	150	220	Peak
11000	47.49	49.39	54	-6.51	40.73	10.4	53.03	169	252	Average
11000	57.49	59.39	74	-16.51	40.73	10.4	53.03	169	252	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5500 MHz: Fundamental Frequency
- *: Out of Restricted Band
- 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	Jisyoung Wang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5377.52	40.2	39.18	54	-13.8	31.73	6.47	37.18	140	43	Average
5377.52	51.81	50.79	74	-22.19	31.73	6.47	37.18	140	43	Peak
*5470	50.74	49.51	68.2	-17.46	31.79	6.52	37.08	140	43	Peak
5580	100.85	99.44			31.92	6.65	37.16	140	43	Average
5580	110.85	109.44			31.92	6.65	37.16	140	43	Peak
*5725	51.12	49.61	68.2	-17.08	32.18	6.76	37.43	140	43	Peak
11160	47.75	49.45	54	-6.25	40.56	10.52	52.78	125	251	Average
11160	57.75	59.45	74	-16.25	40.56	10.52	52.78	125	251	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5432.24	39.7	38.58	54	-14.3	31.76	6.49	37.13	143	212	Average
5432.24	51.66	50.54	74	-22.34	31.76	6.49	37.13	143	212	Peak
*5470	52.4	51.17	68.2	-15.8	31.79	6.52	37.08	143	212	Peak
5580	102.63	101.22			31.92	6.65	37.16	143	212	Average
5580	112.63	111.22			31.92	6.65	37.16	143	212	Peak
*5725	52.09	50.58	68.2	-16.11	32.18	6.76	37.43	143	212	Peak
11160	47.35	49.05	54	-6.65	40.56	10.52	52.78	174	152	Average
11160	57.35	59.05	74	-16.65	40.56	10.52	52.78	174	152	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5454.32	39.9	38.7	54	-14.1	31.77	6.51	37.08	132	37	Average
5454.32	51.84	50.64	74	-22.16	31.77	6.51	37.08	132	37	Peak
*5470	50.29	49.06	68.2	-17.91	31.79	6.52	37.08	132	37	Peak
5700	97.89	96.44			32.12	6.73	37.4	132	37	Average
5700	107.89	106.44			32.12	6.73	37.4	132	37	Peak
*5725	65.81	64.3	68.2	-2.39	32.18	6.76	37.43	132	37	Peak
11400	48	49.9	54	-6	40.33	10.47	52.7	182	251	Average
11400	58	59.9	74	-16	40.33	10.47	52.7	182	251	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5426.96	39.22	38.11	54	-14.78	31.75	6.49	37.13	153	222	Average
5426.96	52.03	50.92	74	-21.97	31.75	6.49	37.13	153	222	Peak
*5470	49.73	48.5	68.2	-18.47	31.79	6.52	37.08	153	222	Peak
5700	100.2	98.75			32.12	6.73	37.4	153	222	Average
5700	110.2	108.75			32.12	6.73	37.4	153	222	Peak
*5725	64.76	63.25	68.2	-3.44	32.18	6.76	37.43	153	222	Peak
11400	47.7	49.6	54	-6.3	40.33	10.47	52.7	162	251	Average
11400	57.7	59.6	74	-16.3	40.33	10.47	52.7	162	251	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5700 MHz: Fundamental Frequency
- *: Out of Restricted Band
- 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	Jisyoung Wang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5415.76	39.12	38.07	54	-14.88	31.75	6.48	37.18	147	286	Average
5415.76	52.2	51.15	74	-21.8	31.75	6.48	37.18	147	286	Peak
*5470	49.96	48.73	68.2	-18.24	31.79	6.52	37.08	147	286	Peak
5720	101.18	99.68			32.18	6.75	37.43	147	286	Average
5720	111.37	109.87			32.18	6.75	37.43	147	286	Peak
11440	48.11	49.99	54	-5.89	40.3	10.55	52.73	165	231	Average
11440	58.12	60	74	-15.88	40.3	10.55	52.73	165	231	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5457.04	39.47	38.27	54	-14.53	31.77	6.51	37.08	133	231	Average
5457.04	51.82	50.62	74	-22.18	31.77	6.51	37.08	133	231	Peak
*5470	50.94	49.71	68.2	-17.26	31.79	6.52	37.08	133	231	Peak
5720	103.93	102.43			32.18	6.75	37.43	133	231	Average
5720	113.97	112.47			32.18	6.75	37.43	133	231	Peak
11440	47.98	49.86	54	-6.02	40.3	10.55	52.73	132	251	Average
11440	57.99	59.87	74	-16.01	40.3	10.55	52.73	132	251	Peak

Remarks:

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

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	102.46	100.94			32.21	6.78	37.47	148	137	Average
5745	112.46	110.94			32.21	6.78	37.47	148	137	Peak
11490	47.3	49.17	54	-6.7	40.25	10.66	52.78	195	256	Average
11490	57.3	59.17	74	-16.7	40.25	10.66	52.78	195	256	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	103.51	101.99			32.21	6.78	37.47	135	230	Average
5745	113.41	111.89			32.21	6.78	37.47	135	230	Peak
11490	47.2	49.07	54	-6.8	40.25	10.66	52.78	165	294	Average
11490	57.21	59.08	74	-16.79	40.25	10.66	52.78	165	294	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5643.575	52.23	50.77	68.2	-15.97	32.04	6.7	37.28	148	137	Peak
5659.725	51.88	50.45	75.42	-23.54	32.06	6.71	37.34	148	137	Peak
5920.5	51.81	49.96	71.52	-19.71	32.49	6.86	37.5	148	137	Peak
*5969.425	52.29	50.35	68.2	-15.91	32.57	6.88	37.51	148	137	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5637.875	52.56	51.1	68.2	-15.64	32.04	6.7	37.28	135	230	Peak
5655.45	52.21	50.78	72.25	-20.04	32.06	6.71	37.34	135	230	Peak
5915.275	51.35	49.5	75.37	-24.02	32.49	6.86	37.5	135	230	Peak
*6010.275	52.71	50.66	68.2	-15.49	32.67	6.89	37.51	135	230	Peak

Remarks:

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	102.89	101.35			32.26	6.82	37.54	144	138	Average
5785	112.9	111.36			32.26	6.82	37.54	144	138	Peak
11570	46.52	48.64	54	-7.48	40.13	10.76	53.01	165	295	Average
11570	56.52	58.64	74	-17.48	40.13	10.76	53.01	165	295	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	102.99	101.45			32.26	6.82	37.54	126	229	Average
5785	113	111.46			32.26	6.82	37.54	126	229	Peak
11570	47.04	49.16	54	-6.96	40.13	10.76	53.01	195	251	Average
11570	57.04	59.16	74	-16.96	40.13	10.76	53.01	195	251	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5619.825	52.01	50.53	68.2	-16.19	32.01	6.69	37.22	144	138	Peak
5651.65	51.53	50.04	69.43	-17.9	32.06	6.71	37.28	144	138	Peak
5919.55	51.76	49.91	72.22	-20.46	32.49	6.86	37.5	144	138	Peak
*6008.375	52.28	50.23	68.2	-15.92	32.67	6.89	37.51	144	138	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5590.85	52.2	50.74	68.2	-16	31.95	6.67	37.16	126	229	Peak
5657.35	50.68	49.25	73.66	-22.98	32.06	6.71	37.34	126	229	Peak
5922.875	52.16	50.28	69.77	-17.61	32.52	6.86	37.5	126	229	Peak
*5943.775	51.87	49.95	68.2	-16.33	32.55	6.87	37.5	126	229	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5785 MHz: Fundamental Frequency
- *: Out of Restricted Band
- 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	Jisyoung Wang

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	102.67	101.01			32.35	6.84	37.53	131	139	Average
5825	112.68	111.02			32.35	6.84	37.53	131	139	Peak
11650	46.41	48.72	54	-7.59	40.03	10.8	53.14	192	251	Average
11650	56.42	58.73	74	-17.58	40.03	10.8	53.14	192	251	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	102.36	100.7			32.35	6.84	37.53	117	236	Average
5825	112.36	110.7			32.35	6.84	37.53	117	236	Peak
11650	45.48	47.79	54	-8.52	40.03	10.8	53.14	121	192	Average
11650	55.49	57.8	74	-18.51	40.03	10.8	53.14	121	192	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5632.65	51.03	49.57	68.2	-17.17	32.04	6.7	37.28	131	139	Peak
5657.825	50.6	49.17	74.01	-23.41	32.06	6.71	37.34	131	139	Peak
5922.875	52.08	50.2	69.77	-17.69	32.52	6.86	37.5	131	139	Peak
*5943.775	53.48	51.56	68.2	-14.72	32.55	6.87	37.5	131	139	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5598.45	51	49.53	68.2	-17.2	31.95	6.68	37.16	117	236	Peak
5657.35	50.59	49.16	73.66	-23.07	32.06	6.71	37.34	117	236	Peak
5918.125	52.82	50.97	73.27	-20.45	32.49	6.86	37.5	117	236	Peak
*5995.075	53.02	51.01	68.2	-15.18	32.63	6.89	37.51	117	236	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5825 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

802.11ac (VHT20)

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	Jisyoung Wang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.85	50.61	50.03	54	-3.39	31.56	6.34	37.32	188	204	Average
5149.85	66.33	65.75	74	-7.67	31.56	6.34	37.32	188	204	Peak
5180	99.56	98.94			31.59	6.37	37.34	188	204	Average
5180	108.21	107.59			31.59	6.37	37.34	188	204	Peak
*10360	56.18	58.94	68.2	-12.02	39.48	10.21	52.45	150	271	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	48.79	48.21	54	-5.21	31.56	6.34	37.32	193	276	Average
5150	63.44	62.86	74	-10.56	31.56	6.34	37.32	193	276	Peak
5180	97.56	96.94			31.59	6.37	37.34	193	276	Average
5180	107.17	106.55			31.59	6.37	37.34	193	276	Peak
*10360	56.35	59.11	68.2	-11.85	39.48	10.21	52.45	125	179	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5180 MHz: Fundamental Frequency
- *: Out of Restricted Band
- 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	Jisyoung Wang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.22	45.63	45.05	54	-8.37	31.56	6.34	37.32	172	216	Average
5149.22	61.2	60.62	74	-12.8	31.56	6.34	37.32	172	216	Peak
5200	99.95	99.32			31.6	6.39	37.36	172	216	Average
5200	109.95	109.32			31.6	6.39	37.36	172	216	Peak
5442.07	38.94	37.81	54	-15.06	31.76	6.5	37.13	172	216	Average
5442.07	51.36	50.23	74	-22.64	31.76	6.5	37.13	172	216	Peak
*10400	55.92	58.66	68.2	-12.28	39.51	10.2	52.45	192	245	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5147.78	46.36	45.78	54	-7.64	31.56	6.34	37.32	118	76	Average
5147.78	61.35	60.77	74	-12.65	31.56	6.34	37.32	118	76	Peak
5200	100.27	99.64			31.6	6.39	37.36	118	76	Average
5200	110.27	109.64			31.6	6.39	37.36	118	76	Peak
5392.02	38.84	37.82	54	-15.16	31.73	6.47	37.18	118	76	Average
5392.02	51.61	50.59	74	-22.39	31.73	6.47	37.18	118	76	Peak
*10400	56.57	59.31	68.2	-11.63	39.51	10.2	52.45	158	152	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5142.92	39.72	39.13	54	-14.28	31.56	6.33	37.3	163	190	Average
5142.92	51.12	50.53	74	-22.88	31.56	6.33	37.3	163	190	Peak
5240	101.13	100.41			31.62	6.42	37.32	163	190	Average
5240	111.14	110.42			31.62	6.42	37.32	163	190	Peak
5366.83	39.5	38.49	54	-14.5	31.72	6.47	37.18	163	190	Average
5366.83	52.27	51.26	74	-21.73	31.72	6.47	37.18	163	190	Peak
*10480	57.6	60.44	68.2	-10.6	39.6	10.22	52.66	155	285	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5133.56	39.43	38.86	54	-14.57	31.55	6.32	37.3	119	65	Average
5133.56	50.77	50.2	74	-23.23	31.55	6.32	37.3	119	65	Peak
5240	98.69	97.97			31.62	6.42	37.32	119	65	Average
5240	108.7	107.98			31.62	6.42	37.32	119	65	Peak
5401.59	39	37.97	54	-15	31.74	6.47	37.18	119	65	Average
5401.59	50.91	49.88	74	-23.09	31.74	6.47	37.18	119	65	Peak
*10480	55.86	58.7	68.2	-12.34	39.6	10.22	52.66	145	132	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5133.38	39.08	38.51	54	-14.92	31.55	6.32	37.3	122	114	Average
5133.38	51.27	50.7	74	-22.73	31.55	6.32	37.3	122	114	Peak
5260	100.68	99.87			31.65	6.43	37.27	122	114	Average
5260	110.69	109.88			31.65	6.43	37.27	122	114	Peak
5389.05	39.89	38.87	54	-14.11	31.73	6.47	37.18	122	114	Average
5389.05	51.7	50.68	74	-22.3	31.73	6.47	37.18	122	114	Peak
*10520	56.47	59.27	68.2	-11.73	39.66	10.27	52.73	165	231	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5130.32	38.82	38.25	54	-15.18	31.55	6.32	37.3	162	271	Average
5130.32	50.66	50.09	74	-23.34	31.55	6.32	37.3	162	271	Peak
5260	96.77	95.96			31.65	6.43	37.27	162	271	Average
5260	106.78	105.97			31.65	6.43	37.27	162	271	Peak
5395.1	39.43	38.4	54	-14.57	31.74	6.47	37.18	162	271	Average
5395.1	51.84	50.81	74	-22.16	31.74	6.47	37.18	162	271	Peak
*10520	56.93	59.73	68.2	-11.27	39.66	10.27	52.73	195	284	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5260 MHz: Fundamental Frequency
- *: Out of Restricted Band
- 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	Jisyoung Wang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5144	38.72	38.15	54	-15.28	31.56	6.33	37.32	122	120	Average
5144	50.28	49.71	74	-23.72	31.56	6.33	37.32	122	120	Peak
5300	101.27	100.33			31.67	6.46	37.19	122	120	Average
5300	111.28	110.34			31.67	6.46	37.19	122	120	Peak
5350.55	45.1	44.11	54	-8.9	31.7	6.47	37.18	122	120	Average
5350.55	61.52	60.53	74	-12.48	31.7	6.47	37.18	122	120	Peak
10600	46.45	49.28	54	-7.55	39.85	10.43	53.11	192	265	Average
10600	56.45	59.28	74	-17.55	39.85	10.43	53.11	192	265	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5075.42	38.81	38.29	54	-15.19	31.52	6.27	37.27	136	260	Average
5075.42	51.03	50.51	74	-22.97	31.52	6.27	37.27	136	260	Peak
5300	97.93	96.99			31.67	6.46	37.19	136	260	Average
5300	107.93	106.99			31.67	6.46	37.19	136	260	Peak
5350.55	43.38	42.39	54	-10.62	31.7	6.47	37.18	136	260	Average
5350.55	56.45	55.46	74	-17.55	31.7	6.47	37.18	136	260	Peak
10600	46.18	49.01	54	-7.82	39.85	10.43	53.11	132	265	Average
10600	56.19	59.02	74	-17.81	39.85	10.43	53.11	132	265	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5300 MHz: Fundamental Frequency
3. The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	100.24	99.29			31.68	6.46	37.19	202	233	Average
5320	108.23	107.28			31.68	6.46	37.19	202	233	Peak
5350.11	51.97	50.98	54	-2.03	31.7	6.47	37.18	202	233	Average
5350.11	65.28	64.29	74	-8.72	31.7	6.47	37.18	202	233	Peak
10640	46.56	49.34	54	-7.44	39.93	10.36	53.07	168	279	Average
10640	56.72	59.5	74	-17.28	39.93	10.36	53.07	168	279	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	97.04	96.09			31.68	6.46	37.19	187	281	Average
5320	105.64	104.69			31.68	6.46	37.19	187	281	Peak
5350	49.51	48.52	54	-4.49	31.7	6.47	37.18	187	281	Average
5350	63.26	62.27	74	-10.74	31.7	6.47	37.18	187	281	Peak
10640	46.37	49.15	54	-7.63	39.93	10.36	53.07	137	261	Average
10640	56.36	59.14	74	-17.64	39.93	10.36	53.07	137	261	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5320 MHz: Fundamental Frequency
- 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	Jisyoung Wang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459.6	44.4	43.2	54	-9.6	31.77	6.51	37.08	127	68	Average
5459.6	61.37	60.17	74	-12.63	31.77	6.51	37.08	127	68	Peak
*5470	64.08	62.85	68.2	-4.12	31.79	6.52	37.08	127	68	Peak
5500	99.35	98.03			31.81	6.54	37.03	127	68	Average
5500	108.17	106.85			31.81	6.54	37.03	127	68	Peak
*5725	51.79	50.28	68.2	-16.41	32.18	6.76	37.43	127	68	Peak
11000	46.66	48.56	54	-7.34	40.73	10.4	53.03	127	305	Average
11000	57.17	59.07	74	-16.83	40.73	10.4	53.03	127	305	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459.44	44.21	43.01	54	-9.79	31.77	6.51	37.08	144	181	Average
5459.44	63.46	62.26	74	-10.54	31.77	6.51	37.08	144	181	Peak
*5470	65.15	63.92	68.2	-3.05	31.79	6.52	37.08	144	181	Peak
5500	97.85	96.53			31.81	6.54	37.03	144	181	Average
5500	109.79	108.47			31.81	6.54	37.03	144	181	Peak
*5725	51.01	49.5	68.2	-17.19	32.18	6.76	37.43	144	181	Peak
11000	46.7	48.6	54	-7.3	40.73	10.4	53.03	169	203	Average
11000	57.49	59.39	74	-16.51	40.73	10.4	53.03	169	203	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5453.04	40.09	38.89	54	-13.91	31.77	6.51	37.08	128	34	Average
5453.04	52.22	51.02	74	-21.78	31.77	6.51	37.08	128	34	Peak
*5470	51.74	50.51	68.2	-16.46	31.79	6.52	37.08	128	34	Peak
5580	101	99.59			31.92	6.65	37.16	128	34	Average
5580	111.01	109.6			31.92	6.65	37.16	128	34	Peak
*5725	51.59	50.08	68.2	-16.61	32.18	6.76	37.43	128	34	Peak
11160	47.71	49.41	54	-6.29	40.56	10.52	52.78	185	247	Average
11160	57.75	59.45	74	-16.25	40.56	10.52	52.78	185	247	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5456.88	39.79	38.59	54	-14.21	31.77	6.51	37.08	153	214	Average
5456.88	51.92	50.72	74	-22.08	31.77	6.51	37.08	153	214	Peak
*5470	51.91	50.68	68.2	-16.29	31.79	6.52	37.08	153	214	Peak
5580	103.4	101.99			31.92	6.65	37.16	153	214	Average
5580	113.4	111.99			31.92	6.65	37.16	153	214	Peak
*5725	52.05	50.54	68.2	-16.15	32.18	6.76	37.43	153	214	Peak
11160	47.35	49.05	54	-6.65	40.56	10.52	52.78	192	285	Average
11160	57.35	59.05	74	-16.65	40.56	10.52	52.78	192	285	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5447.44	39.64	38.5	54	-14.36	31.77	6.5	37.13	100	65	Average
5447.44	51.47	50.33	74	-22.53	31.77	6.5	37.13	100	65	Peak
*5470	49.66	48.43	68.2	-18.54	31.79	6.52	37.08	100	65	Peak
5700	98.05	96.6			32.12	6.73	37.4	100	65	Average
5700	107.35	105.9			32.12	6.73	37.4	100	65	Peak
*5725	65.15	63.64	68.2	-3.05	32.18	6.76	37.43	100	65	Peak
11400	46.73	48.63	54	-7.27	40.33	10.47	52.7	152	237	Average
11400	56.28	58.18	74	-17.72	40.33	10.47	52.7	152	237	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5432.56	39.84	38.72	54	-14.16	31.76	6.49	37.13	114	235	Average
5432.56	50.98	49.86	74	-23.02	31.76	6.49	37.13	114	235	Peak
*5470	51.83	50.6	68.2	-16.37	31.79	6.52	37.08	114	235	Peak
5700	98.15	96.7			32.12	6.73	37.4	114	235	Average
5700	108.99	107.54			32.12	6.73	37.4	114	235	Peak
*5725	62	60.49	68.2	-6.2	32.18	6.76	37.43	114	235	Peak
11400	46.45	48.35	54	-7.55	40.33	10.47	52.7	185	261	Average
11400	56.97	58.87	74	-17.03	40.33	10.47	52.7	185	261	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5700 MHz: Fundamental Frequency
- *: Out of Restricted Band
- 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	Jisyoung Wang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5354.8	39.2	38.21	54	-14.8	31.7	6.47	37.18	118	284	Average
5354.8	50.81	49.82	74	-23.19	31.7	6.47	37.18	118	284	Peak
*5470	51.13	49.9	68.2	-17.07	31.79	6.52	37.08	118	284	Peak
5720	101.33	99.83			32.18	6.75	37.43	118	284	Average
5720	111.34	109.84			32.18	6.75	37.43	118	284	Peak
11440	47.92	49.8	54	-6.08	40.3	10.55	52.73	192	285	Average
11440	57.93	59.81	74	-16.07	40.3	10.55	52.73	192	285	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459.12	39.39	38.19	54	-14.61	31.77	6.51	37.08	132	225	Average
5459.12	51.63	50.43	74	-22.37	31.77	6.51	37.08	132	225	Peak
*5470	51	49.77	68.2	-17.2	31.79	6.52	37.08	132	225	Peak
5720	103.23	101.73			32.18	6.75	37.43	132	225	Average
5720	113.28	111.78			32.18	6.75	37.43	132	225	Peak
11440	47.68	49.56	54	-6.32	40.3	10.55	52.73	165	231	Average
11440	57.69	59.57	74	-16.31	40.3	10.55	52.73	165	231	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5720 MHz: Fundamental Frequency
- *: Out of Restricted Band
- 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	Jisyoung Wang

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	105.19	103.67			32.21	6.78	37.47	112	68	Average
5745	113.43	111.91			32.21	6.78	37.47	112	68	Peak
11490	46.69	48.56	54	-7.31	40.25	10.66	52.78	148	113	Average
11490	57.3	59.17	74	-16.7	40.25	10.66	52.78	148	113	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	104.71	103.19			32.21	6.78	37.47	119	235	Average
5745	113.2	111.68			32.21	6.78	37.47	119	235	Peak
11490	47.04	48.91	54	-6.96	40.25	10.66	52.78	146	255	Average
11490	57.21	59.08	74	-16.79	40.25	10.66	52.78	146	255	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5640.25	52.78	51.32	68.2	-15.42	32.04	6.7	37.28	112	68	Peak
5660.2	53.65	52.22	75.77	-22.12	32.06	6.71	37.34	112	68	Peak
5921.45	51.84	49.99	70.82	-18.98	32.49	6.86	37.5	112	68	Peak
*5998.875	52.9	50.89	68.2	-15.3	32.63	6.89	37.51	112	68	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5646.9	52.53	51.07	68.2	-15.67	32.04	6.7	37.28	119	235	Peak
5658.775	55.4	53.97	74.72	-19.32	32.06	6.71	37.34	119	235	Peak
5919.075	52.45	50.6	72.57	-20.12	32.49	6.86	37.5	119	235	Peak
*6008.375	52.87	50.82	68.2	-15.33	32.67	6.89	37.51	119	235	Peak

Remarks:

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

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	101.77	100.23			32.26	6.82	37.54	142	127	Average
5785	111.77	110.23			32.26	6.82	37.54	142	127	Peak
11570	46.52	48.64	54	-7.48	40.13	10.76	53.01	185	251	Average
11570	56.52	58.64	74	-17.48	40.13	10.76	53.01	185	251	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	102.76	101.22			32.26	6.82	37.54	150	219	Average
5785	112.76	111.22			32.26	6.82	37.54	150	219	Peak
11570	47.04	49.16	54	-6.96	40.13	10.76	53.01	185	295	Average
11570	57.04	59.16	74	-16.96	40.13	10.76	53.01	185	295	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5638.825	52.04	50.58	68.2	-16.16	32.04	6.7	37.28	142	127	Peak
5653.075	50.72	49.23	70.49	-19.77	32.06	6.71	37.28	142	127	Peak
5921.925	53.48	51.6	70.47	-16.99	32.52	6.86	37.5	142	127	Peak
*6022.625	52.25	50.18	68.2	-15.95	32.67	6.9	37.5	142	127	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5646.425	53.73	52.27	68.2	-14.47	32.04	6.7	37.28	150	219	Peak
5660.2	51.65	50.22	75.77	-24.12	32.06	6.71	37.34	150	219	Peak
5919.55	51.96	50.11	72.22	-20.26	32.49	6.86	37.5	150	219	Peak
*6014.55	52.79	50.72	68.2	-15.41	32.67	6.9	37.5	150	219	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5785 MHz: Fundamental Frequency
- *: Out of Restricted Band
- 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	Jisyoung Wang

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	105.19	103.53			32.35	6.84	37.53	122	67	Average
5825	113.44	111.78			32.35	6.84	37.53	122	67	Peak
11650	46.1	48.41	54	-7.9	40.03	10.8	53.14	139	142	Average
11650	55.38	57.69	74	-18.62	40.03	10.8	53.14	139	142	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	104.39	102.73			32.35	6.84	37.53	131	233	Average
5825	113.12	111.46			32.35	6.84	37.53	131	233	Peak
11650	46.44	48.75	54	-7.56	40.03	10.8	53.14	141	256	Average
11650	55.64	57.95	74	-18.36	40.03	10.8	53.14	141	256	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5642.15	51.52	50.06	68.2	-16.68	32.04	6.7	37.28	122	67	Peak
5656.875	51.91	50.48	73.31	-21.4	32.06	6.71	37.34	122	67	Peak
5917.175	54.6	52.75	73.97	-19.37	32.49	6.86	37.5	122	67	Peak
*5929.05	55.76	53.88	68.2	-12.44	32.52	6.86	37.5	122	67	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5635.975	51.22	49.76	68.2	-16.98	32.04	6.7	37.28	131	233	Peak
5653.075	51.06	49.57	70.49	-19.43	32.06	6.71	37.28	131	233	Peak
5920.5	53.42	51.57	71.52	-18.1	32.49	6.86	37.5	131	233	Peak
*5951.85	52.57	50.65	68.2	-15.63	32.55	6.87	37.5	131	233	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5825 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

802.11ac (VHT40)

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	Jisyoung Wang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.94	50.24	49.66	54	-3.76	31.56	6.34	37.32	214	202	Average
5149.94	68.3	67.72	74	-5.7	31.56	6.34	37.32	214	202	Peak
5190	94.28	93.65			31.59	6.38	37.34	214	202	Average
5190	103.49	102.86			31.59	6.38	37.34	214	202	Peak
5429.86	39.76	38.64	54	-14.24	31.76	6.49	37.13	214	202	Average
5429.86	51.69	50.57	74	-22.31	31.76	6.49	37.13	214	202	Peak
*10380	55.96	58.7	68.2	-12.24	39.5	10.21	52.45	164	281	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5148.32	48.35	47.77	54	-5.65	31.56	6.34	37.32	194	274	Average
5148.32	65.38	64.8	74	-8.62	31.56	6.34	37.32	194	274	Peak
5190	92.27	91.64			31.59	6.38	37.34	194	274	Average
5190	101.82	101.19			31.59	6.38	37.34	194	274	Peak
5430.63	39.84	38.72	54	-14.16	31.76	6.49	37.13	194	274	Average
5430.63	51.19	50.07	74	-22.81	31.76	6.49	37.13	194	274	Peak
*10380	55.49	58.23	68.2	-12.71	39.5	10.21	52.45	198	230	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5190 MHz: Fundamental Frequency
- *: Out of Restricted Band
- 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	Jisyoung Wang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5148.86	51.91	51.33	54	-2.09	31.56	6.34	37.32	151	192	Average
5148.86	66.31	65.73	74	-7.69	31.56	6.34	37.32	151	192	Peak
5230	99.33	98.62			31.62	6.41	37.32	151	192	Average
5230	109.35	108.64			31.62	6.41	37.32	151	192	Peak
5356.38	42.83	41.84	54	-11.17	31.7	6.47	37.18	151	192	Average
5356.38	59.24	58.25	74	-14.76	31.7	6.47	37.18	151	192	Peak
*10460	55.89	58.69	68.2	-12.31	39.57	10.22	52.59	152	123	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.94	49.93	49.35	54	-4.07	31.56	6.34	37.32	112	68	Average
5149.94	63.6	63.02	74	-10.4	31.56	6.34	37.32	112	68	Peak
5230	97.35	96.64			31.62	6.41	37.32	112	68	Average
5230	107.35	106.64			31.62	6.41	37.32	112	68	Peak
5356.49	41.13	40.14	54	-12.87	31.7	6.47	37.18	112	68	Average
5356.49	55	54.01	74	-19	31.7	6.47	37.18	112	68	Peak
*10460	55.69	58.49	68.2	-12.51	39.57	10.22	52.59	165	231	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5230 MHz: Fundamental Frequency
- *: Out of Restricted Band
- 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	Jisyoung Wang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.58	42.46	41.88	54	-11.54	31.56	6.34	37.32	120	118	Average
5149.58	57.44	56.86	74	-16.56	31.56	6.34	37.32	120	118	Peak
5270	98.39	97.57			31.65	6.44	37.27	120	118	Average
5270	108.48	107.66			31.65	6.44	37.27	120	118	Peak
5357.7	50.39	49.4	54	-3.61	31.7	6.47	37.18	120	118	Average
5357.7	64.62	63.63	74	-9.38	31.7	6.47	37.18	120	118	Peak
*10540	55.64	58.49	68.2	-12.56	39.7	10.31	52.86	162	184	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5148.14	41.25	40.67	54	-12.75	31.56	6.34	37.32	128	266	Average
5148.14	55.91	55.33	74	-18.09	31.56	6.34	37.32	128	266	Peak
5270	96.89	96.07			31.65	6.44	37.27	128	266	Average
5270	106.93	106.11			31.65	6.44	37.27	128	266	Peak
5355.39	49.1	48.11	54	-4.9	31.7	6.47	37.18	128	266	Average
5355.39	61.86	60.87	74	-12.14	31.7	6.47	37.18	128	266	Peak
*10540	55.09	57.94	68.2	-13.11	39.7	10.31	52.86	192	231	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5145.62	39.61	39.03	54	-14.39	31.56	6.34	37.32	175	201	Average
5145.62	51.29	50.71	74	-22.71	31.56	6.34	37.32	175	201	Peak
5310	92.7	91.75			31.68	6.46	37.19	175	201	Average
5310	102.65	101.7			31.68	6.46	37.19	175	201	Peak
5350.66	50.04	49.05	54	-3.96	31.7	6.47	37.18	175	201	Average
5350.66	67.66	66.67	74	-6.34	31.7	6.47	37.18	175	201	Peak
10620	46.45	49.26	54	-7.55	39.89	10.39	53.09	159	294	Average
10620	56.52	59.33	74	-17.48	39.89	10.39	53.09	159	294	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5110.88	39.32	38.76	54	-14.68	31.54	6.3	37.28	190	286	Average
5110.88	50.66	50.1	74	-23.34	31.54	6.3	37.28	190	286	Peak
5310	90.54	89.59			31.68	6.46	37.19	190	286	Average
5310	99.77	98.82			31.68	6.46	37.19	190	286	Peak
5350	47.75	46.76	54	-6.25	31.7	6.47	37.18	190	286	Average
5350	63.02	62.03	74	-10.98	31.7	6.47	37.18	190	286	Peak
10620	46.55	49.36	54	-7.45	39.89	10.39	53.09	147	203	Average
10620	56.87	59.68	74	-17.13	39.89	10.39	53.09	147	203	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5310 MHz: Fundamental Frequency
3. The emission levels of other frequencies were very low against the limit

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459.92	41.85	40.65	54	-12.15	31.77	6.51	37.08	117	71	Average
5459.92	59.1	57.9	74	-14.9	31.77	6.51	37.08	117	71	Peak
*5470	63	61.77	68.2	-5.2	31.79	6.52	37.08	117	71	Peak
5510	92.86	91.56			31.81	6.55	37.06	117	71	Average
5510	101.79	100.49			31.81	6.55	37.06	117	71	Peak
*5725	51.32	49.81	68.2	-16.88	32.18	6.76	37.43	117	71	Peak
11020	46.44	48.27	54	-7.56	40.71	10.41	52.95	159	241	Average
11020	57.08	58.91	74	-16.92	40.71	10.41	52.95	159	241	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	41.86	40.66	54	-12.14	31.77	6.51	37.08	131	180	Average
5460	59.83	58.63	74	-14.17	31.77	6.51	37.08	131	180	Peak
*5470	60.41	59.18	68.2	-7.79	31.79	6.52	37.08	131	180	Peak
5510	93.26	91.96			31.81	6.55	37.06	131	180	Average
5510	102.4	101.1			31.81	6.55	37.06	131	180	Peak
*5725	51.27	49.76	68.2	-16.93	32.18	6.76	37.43	131	180	Peak
11020	46.58	48.41	54	-7.42	40.71	10.41	52.95	126	243	Average
11020	56.6	58.43	74	-17.4	40.71	10.41	52.95	126	243	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5510 MHz: Fundamental Frequency
- *: Out of Restricted Band
- 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	Jisyoung Wang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5457.52	48.12	46.92	54	-5.88	31.77	6.51	37.08	123	36	Average
5457.52	63.61	62.41	74	-10.39	31.77	6.51	37.08	123	36	Peak
*5470	64.61	63.38	68.2	-3.59	31.79	6.52	37.08	123	36	Peak
5550	98.57	97.16			31.89	6.61	37.09	123	36	Average
5550	108.58	107.17			31.89	6.61	37.09	123	36	Peak
*5725	51.21	49.7	68.2	-16.99	32.18	6.76	37.43	123	36	Peak
11100	47.46	49.07	54	-6.54	40.63	10.47	52.71	182	251	Average
11100	57.46	59.07	74	-16.54	40.63	10.47	52.71	182	251	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5452.24	45.96	44.76	54	-8.04	31.77	6.51	37.08	157	218	Average
5452.24	61.87	60.67	74	-12.13	31.77	6.51	37.08	157	218	Peak
*5470	62.64	61.41	68.2	-5.56	31.79	6.52	37.08	157	218	Peak
5550	100.07	98.66			31.89	6.61	37.09	157	218	Average
5550	110.08	108.67			31.89	6.61	37.09	157	218	Peak
*5725	52.66	51.15	68.2	-15.54	32.18	6.76	37.43	157	218	Peak
11100	47.17	48.78	54	-6.83	40.63	10.47	52.71	185	265	Average
11100	57.17	58.78	74	-16.83	40.63	10.47	52.71	185	265	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5457.04	39.97	38.77	54	-14.03	31.77	6.51	37.08	126	67	Average
5457.04	51.43	50.23	74	-22.57	31.77	6.51	37.08	126	67	Peak
*5470	50.71	49.48	68.2	-17.49	31.79	6.52	37.08	126	67	Peak
5670	96.94	95.47			32.09	6.72	37.34	126	67	Average
5670	105.62	104.15			32.09	6.72	37.34	126	67	Peak
*5725	65.83	64.32	68.2	-2.37	32.18	6.76	37.43	126	67	Peak
11340	47.2	49	54	-6.8	40.4	10.52	52.72	146	105	Average
11340	57.35	59.15	74	-16.65	40.4	10.52	52.72	146	105	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5401.36	39.83	38.8	54	-14.17	31.74	6.47	37.18	118	234	Average
5401.36	51.69	50.66	74	-22.31	31.74	6.47	37.18	118	234	Peak
*5470	51.1	49.87	68.2	-17.1	31.79	6.52	37.08	118	234	Peak
5670	96.51	95.04			32.09	6.72	37.34	118	234	Average
5670	105.62	104.15			32.09	6.72	37.34	118	234	Peak
*5725	64.19	62.68	68.2	-4.01	32.18	6.76	37.43	118	234	Peak
11340	47.43	49.23	54	-6.57	40.4	10.52	52.72	162	237	Average
11340	57.26	59.06	74	-16.74	40.4	10.52	52.72	162	237	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5670 MHz: Fundamental Frequency
- *: Out of Restricted Band
- 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	Jisyoung Wang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5408.88	39.21	38.17	54	-14.79	31.74	6.48	37.18	120	286	Average
5408.88	51.43	50.39	74	-22.57	31.74	6.48	37.18	120	286	Peak
*5470	50.66	49.43	68.2	-17.54	31.79	6.52	37.08	120	286	Peak
5710	98.41	96.95			32.15	6.74	37.43	120	286	Average
5710	108.8	107.34			32.15	6.74	37.43	120	286	Peak
11420	47.92	49.83	54	-6.08	40.31	10.51	52.73	185	295	Average
11420	57.93	59.84	74	-16.07	40.31	10.51	52.73	185	295	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5426	39.56	38.45	54	-14.44	31.75	6.49	37.13	127	219	Average
5426	51.62	50.51	74	-22.38	31.75	6.49	37.13	127	219	Peak
*5470	51.1	49.87	68.2	-17.1	31.79	6.52	37.08	127	219	Peak
5710	100.91	99.45			32.15	6.74	37.43	127	219	Average
5710	110.91	109.45			32.15	6.74	37.43	127	219	Peak
11420	47.11	49.02	54	-6.89	40.31	10.51	52.73	192	284	Average
11420	57.11	59.02	74	-16.89	40.31	10.51	52.73	192	284	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5710 MHz: Fundamental Frequency
- *: Out of Restricted Band
- 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	Jisyong Wang

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5755	103.22	101.67			32.23	6.79	37.47	122	67	Average
5755	111.72	110.17			32.23	6.79	37.47	122	67	Peak
11510	46.84	48.73	54	-7.16	40.23	10.69	52.81	169	114	Average
11510	56.76	58.65	74	-17.24	40.23	10.69	52.81	169	114	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5755	101.86	100.31			32.23	6.79	37.47	120	232	Average
5755	111.11	109.56			32.23	6.79	37.47	120	232	Peak
11510	46.47	48.36	54	-7.53	40.23	10.69	52.81	157	242	Average
11510	56.54	58.43	74	-17.46	40.23	10.69	52.81	157	242	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5646.9	62.24	60.78	68.2	-5.96	32.04	6.7	37.28	122	67	Peak
5657.35	63.09	61.66	73.66	-10.57	32.06	6.71	37.34	122	67	Peak
5920.025	56.39	54.54	71.87	-15.48	32.49	6.86	37.5	122	67	Peak
*5929.525	54.03	52.15	68.2	-14.17	32.52	6.86	37.5	122	67	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5645.95	62.85	61.39	68.2	-5.35	32.04	6.7	37.28	120	232	Peak
5656.875	64.5	63.07	73.31	-8.81	32.06	6.71	37.34	120	232	Peak
5920.5	53.21	51.36	71.52	-18.31	32.49	6.86	37.5	120	232	Peak
*5940.45	53.75	51.83	68.2	-14.45	32.55	6.87	37.5	120	232	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5755 MHz: Fundamental Frequency
- *: Out of Restricted Band
- 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	Jisyong Wang

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5795	103.23	101.65			32.29	6.83	37.54	116	65	Average
5795	111.65	110.07			32.29	6.83	37.54	116	65	Peak
11590	46.64	48.76	54	-7.36	40.11	10.78	53.01	156	243	Average
11590	56.67	58.79	74	-17.33	40.11	10.78	53.01	156	243	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5795	102.73	101.15			32.29	6.83	37.54	127	233	Average
5795	111.86	110.28			32.29	6.83	37.54	127	233	Peak
11590	46.92	49.04	54	-7.08	40.11	10.78	53.01	137	228	Average
11590	56.97	59.09	74	-17.03	40.11	10.78	53.01	137	228	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5643.1	55.75	54.29	68.2	-12.45	32.04	6.7	37.28	116	65	Peak
5658.3	57.27	55.84	74.36	-17.09	32.06	6.71	37.34	116	65	Peak
5921.45	62.29	60.44	70.82	-8.53	32.49	6.86	37.5	116	65	Peak
*5930.475	60.7	58.82	68.2	-7.5	32.52	6.86	37.5	116	65	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5645.95	54.4	52.94	68.2	-13.8	32.04	6.7	37.28	127	233	Peak
5659.25	56.52	55.09	75.07	-18.55	32.06	6.71	37.34	127	233	Peak
5921.925	60.11	58.23	70.47	-10.36	32.52	6.86	37.5	127	233	Peak
*5932.85	60.82	58.94	68.2	-7.38	32.52	6.86	37.5	127	233	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5795 MHz: Fundamental Frequency
- *: Out of Restricted Band
- 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	Jisyoung Wang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.76	50.75	50.17	54	-3.25	31.56	6.34	37.32	200	238	Average
5149.76	66.36	65.78	74	-7.64	31.56	6.34	37.32	200	238	Peak
5210	92.11	91.46			31.61	6.4	37.36	200	238	Average
5210	101.94	101.29			31.61	6.4	37.36	200	238	Peak
5358.03	42.18	41.19	54	-11.82	31.7	6.47	37.18	200	238	Average
5358.03	53.54	52.55	74	-20.46	31.7	6.47	37.18	200	238	Peak
*10420	55.99	58.7	68.2	-12.21	39.53	10.21	52.45	186	259	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5138.42	48.21	47.63	54	-5.79	31.55	6.33	37.3	203	286	Average
5138.42	62.56	61.98	74	-11.44	31.55	6.33	37.3	203	286	Peak
5210	90.01	89.36			31.61	6.4	37.36	203	286	Average
5210	98.83	98.18			31.61	6.4	37.36	203	286	Peak
5360.34	41.2	40.21	54	-12.8	31.7	6.47	37.18	203	286	Average
5360.34	51.71	50.72	74	-22.29	31.7	6.47	37.18	203	286	Peak
*10420	56.53	59.24	68.2	-11.67	39.53	10.21	52.45	176	197	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5210 MHz: Fundamental Frequency
- *: Out of Restricted Band
- 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	Jisyoung Wang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5122.76	40.63	40.07	54	-13.37	31.55	6.31	37.3	198	235	Average
5122.76	51.52	50.96	74	-22.48	31.55	6.31	37.3	198	235	Peak
5290	86.22	85.34			31.66	6.45	37.23	198	235	Average
5290	94.21	93.33			31.66	6.45	37.23	198	235	Peak
5356.93	51.03	50.04	54	-2.97	31.7	6.47	37.18	198	235	Average
5356.93	64.37	63.38	74	-9.63	31.7	6.47	37.18	198	235	Peak
*10580	56.39	59.3	68.2	-11.81	39.81	10.39	53.11	189	237	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5108.36	40.75	40.19	54	-13.25	31.54	6.3	37.28	188	280	Average
5108.36	50.5	49.94	74	-23.5	31.54	6.3	37.28	188	280	Peak
5290	84.01	83.13			31.66	6.45	37.23	188	280	Average
5290	93.57	92.69			31.66	6.45	37.23	188	280	Peak
5358.69	48.48	47.49	54	-5.52	31.7	6.47	37.18	188	280	Average
5358.69	60.18	59.19	74	-13.82	31.7	6.47	37.18	188	280	Peak
*10580	56.66	59.57	68.2	-11.54	39.81	10.39	53.11	156	213	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5290 MHz: Fundamental Frequency
- *: Out of Restricted Band
- 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	Jisyoung Wang

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5458.32	51.27	50.07	54	-2.73	31.77	6.51	37.08	128	70	Average
5458.32	64.07	62.87	74	-9.93	31.77	6.51	37.08	128	70	Peak
*5470	65.98	64.75	68.2	-2.22	31.79	6.52	37.08	128	70	Peak
5530	90.42	89.09			31.84	6.58	37.09	128	70	Average
5530	99.38	98.05			31.84	6.58	37.09	128	70	Peak
*5725	51.46	49.95	68.2	-16.74	32.18	6.76	37.43	128	70	Peak
11060	46.51	48.2	54	-7.49	40.66	10.44	52.79	181	257	Average
11060	57.66	59.35	74	-16.34	40.66	10.44	52.79	181	257	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5454.32	48.74	47.54	54	-5.26	31.77	6.51	37.08	131	183	Average
5454.32	61.92	60.72	74	-12.08	31.77	6.51	37.08	131	183	Peak
*5470	61.08	59.85	68.2	-7.12	31.79	6.52	37.08	131	183	Peak
5530	90.72	89.39			31.84	6.58	37.09	131	183	Average
5530	99.73	98.4			31.84	6.58	37.09	131	183	Peak
*5725	51.44	49.93	68.2	-16.76	32.18	6.76	37.43	131	183	Peak
11060	46.58	48.27	54	-7.42	40.66	10.44	52.79	162	105	Average
11060	57.04	58.73	74	-16.96	40.66	10.44	52.79	162	105	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5452.72	45.9	44.7	54	-8.1	31.77	6.51	37.08	128	34	Average
5452.72	63.22	62.02	74	-10.78	31.77	6.51	37.08	128	34	Peak
*5470	60.56	59.33	68.2	-7.64	31.79	6.52	37.08	128	34	Peak
5610	94.34	92.9			31.98	6.68	37.22	128	34	Average
5610	104.35	102.91			31.98	6.68	37.22	128	34	Peak
*5725	65.04	63.53	68.2	-3.16	32.18	6.76	37.43	128	34	Peak
11220	47.65	49.4	54	-6.35	40.51	10.55	52.81	174	152	Average
11220	57.73	59.48	74	-16.27	40.51	10.55	52.81	174	152	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5452.88	45.64	44.44	54	-8.36	31.77	6.51	37.08	156	224	Average
5452.88	61.97	60.77	74	-12.03	31.77	6.51	37.08	156	224	Peak
*5470	61.66	60.43	68.2	-6.54	31.79	6.52	37.08	156	224	Peak
5610	96.17	94.73			31.98	6.68	37.22	156	224	Average
5610	106.17	104.73			31.98	6.68	37.22	156	224	Peak
*5725	63.84	62.33	68.2	-4.36	32.18	6.76	37.43	156	224	Peak
11220	48.95	50.7	54	-5.05	40.51	10.55	52.81	192	285	Average
11220	58.97	60.72	74	-15.03	40.51	10.55	52.81	192	285	Peak

Remarks:

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

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

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459.12	42.48	41.28	54	-11.52	31.77	6.51	37.08	115	284	Average
5459.12	55.51	54.31	74	-18.49	31.77	6.51	37.08	115	284	Peak
*5470	58.87	57.64	68.2	-9.33	31.79	6.52	37.08	115	284	Peak
5690	97.2	95.76			32.12	6.72	37.4	115	284	Average
5690	107.2	105.76			32.12	6.72	37.4	115	284	Peak
11650	46.45	48.76	54	-7.55	40.03	10.8	53.14	185	145	Average
11650	56.45	58.76	74	-17.55	40.03	10.8	53.14	185	145	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5456.08	45.31	44.11	54	-8.69	31.77	6.51	37.08	135	220	Average
5456.08	58.09	56.89	74	-15.91	31.77	6.51	37.08	135	220	Peak
*5470	61.27	60.04	68.2	-6.93	31.79	6.52	37.08	135	220	Peak
5690	99.15	97.71			32.12	6.72	37.4	135	220	Average
5690	109.22	107.78			32.12	6.72	37.4	135	220	Peak
11650	45	47.31	54	-9	40.03	10.8	53.14	185	265	Average
11650	55.01	57.32	74	-18.99	40.03	10.8	53.14	185	265	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5690 MHz: Fundamental Frequency
- *: Out of Restricted Band
- 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	Jisyong Wang

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5775	97.92	96.35	54	43.92	32.26	6.81	37.5	100	66	Average
5775	106.99	105.42	74	32.99	32.26	6.81	37.5	100	66	Peak
11550	46.32	48.36	54	-7.68	40.16	10.74	52.94	161	245	Average
11550	56.89	58.93	74	-17.11	40.16	10.74	52.94	161	245	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5775	97.37	95.8	54	43.37	32.26	6.81	37.5	132	231	Average
5775	106.4	104.83	74	32.4	32.26	6.81	37.5	132	231	Peak
11550	46.86	48.9	54	-7.14	40.16	10.74	52.94	182	201	Average
11550	55.62	57.66	74	-18.38	40.16	10.74	52.94	182	201	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5642.625	63.62	62.16	68.2	-4.58	32.04	6.7	37.28	100	66	Peak
5652.6	64.88	63.39	70.13	-5.25	32.06	6.71	37.28	100	66	Peak
5916.225	63.69	61.84	74.67	-10.98	32.49	6.86	37.5	100	66	Peak
*5928.575	62.43	60.55	68.2	-5.77	32.52	6.86	37.5	100	66	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5617.925	62.88	61.4	68.2	-5.32	32.01	6.69	37.22	132	231	Peak
5659.25	64.39	62.96	75.07	-10.68	32.06	6.71	37.34	132	231	Peak
5917.175	62.03	60.18	73.97	-11.94	32.49	6.86	37.5	132	231	Peak
*5930.95	58.82	56.94	68.2	-9.38	32.52	6.86	37.5	132	231	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5775 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

9 kHz ~ 30 MHz Data:

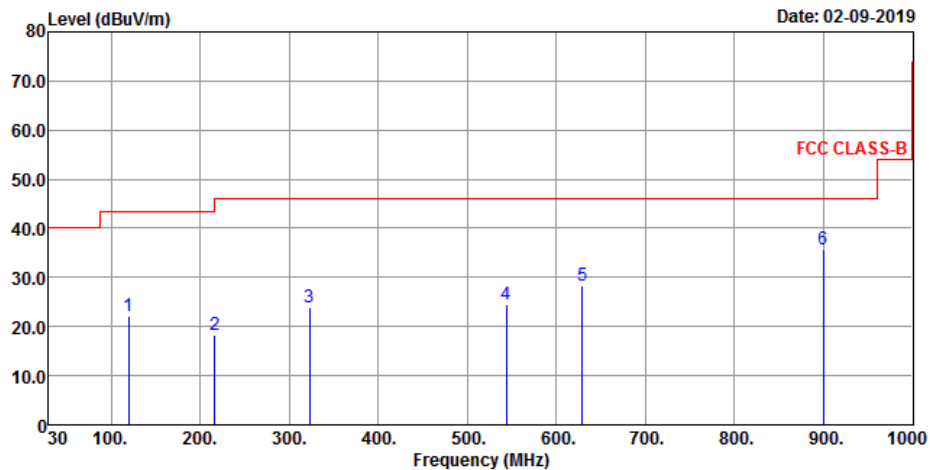
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Worst-Case Data:

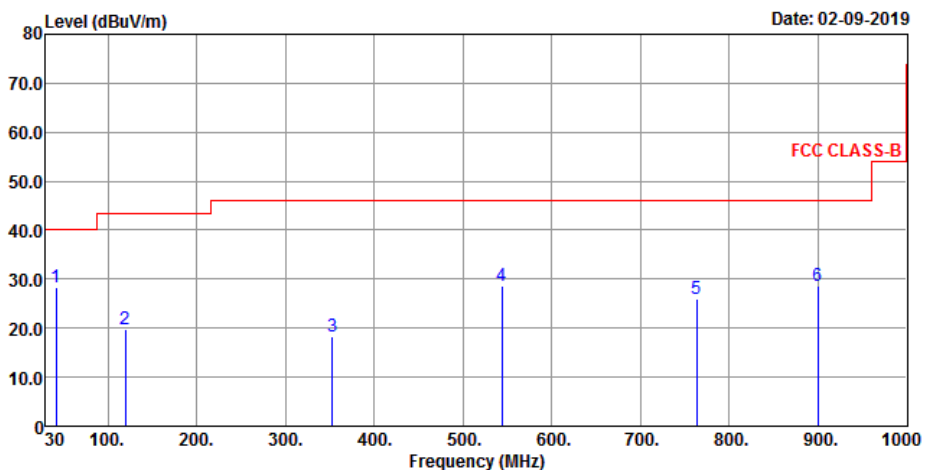
802.11ac (VHT20)

EUT Test Condition		Measurement Detail	
Channel	Channel 64	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	Jisyoung Wang

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
119.24	22.1	42.22	43.5	-21.4	10.93	0.84	31.89	116	332	Peak
216.24	18.29	38.59	46	-27.71	10.05	1.31	31.66	119	99	Peak
322.94	23.79	40.4	46	-22.21	13.5	1.76	31.87	116	51	Peak
544.1	24.52	35.34	46	-21.48	18.33	2.67	31.82	113	69	Peak
629.46	28.21	37.37	46	-17.79	19.96	3.02	32.14	138	233	Peak
900.09	35.66	40.13	46	-10.34	23.51	4.03	32.01	146	208	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
41.64	28.31	45.3	40	-11.69	13.56	0.5	31.05	101	139	Peak
119.24	19.71	39.83	43.5	-23.79	10.93	0.84	31.89	114	276	Peak
353.01	18.29	34.06	46	-27.71	14.22	1.89	31.88	119	9	Peak
544.1	28.57	39.39	46	-17.43	18.33	2.67	31.82	149	161	Peak
763.32	26.09	32.24	46	-19.91	21.71	3.55	31.41	150	16	Peak
900.09	28.78	33.25	46	-17.22	23.51	4.03	32.01	126	39	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- The emission levels of other frequencies were very low against the limit

4.2 Transmit Power Measurement

4.2.1 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 $\leq$ 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 $N_{ANT} \leq 4$;

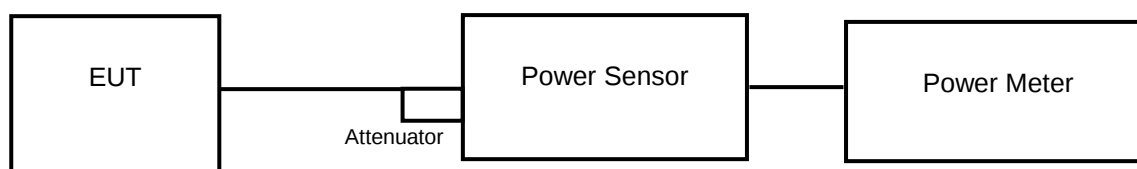
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

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

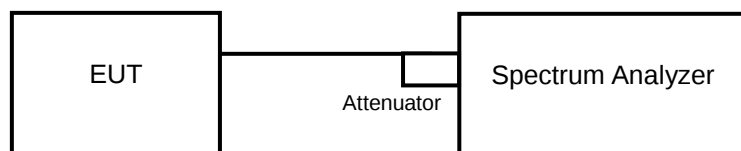
For power measurements on all other devices: Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

4.2.2 Test Setup

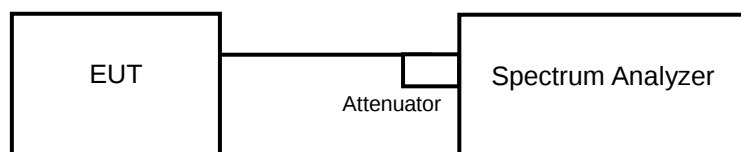
<Power Output Measurement>



or



<26 dB Bandwidth>



4.2.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.2.4 Test Procedure

Average Power Measurement

<802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11n (HT40), 802.11ac (VHT40)>

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

<802.11ac (VHT80)>

- a. Set span to encompass the entire 26 dB EBW (or, alternatively, the entire 99 % occupied bandwidth) of the signal.
- b. Set sweep trigger to "free run".
- c. Set RBW = 1 MHz.
- d. Set VBW $\geq$ 3 MHz
- e. Number of points in sweep $\geq$ 2 Span / RBW.
- f. Sweep time $\leq$ (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 %.

4.2.5 Deviation from Test Standard

No deviation.

4.2.6 EUT Operating Conditions

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

4.2.7 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	12.59	12.51	35.979	15.56	24	Pass
40	5200	12.63	12.47	35.983	15.56	24	Pass
48	5240	12.81	12.41	36.517	15.62	24	Pass
52	5260	13.65	13.21	44.115	16.45	24	Pass
60	5300	13.54	13.31	44.023	16.44	24	Pass
64	5320	13.41	13.10	42.345	16.27	24	Pass
100	5500	17.06	17.88	112.192	20.50	24	Pass
116	5580	18.27	18.18	132.909	21.24	24	Pass
140	5700	15.99	15.71	76.958	18.86	24	Pass
144	5720 (U-NII-2C)	16.21	16.19	86.848	19.39	24	Pass
144	5720 (U-NII-3)	14.11	13.97	52.822	17.23	30	Pass
149	5745	18.07	17.61	121.798	20.86	30	Pass
157	5785	17.89	17.47	117.365	20.70	30	Pass
165	5825	17.83	17.66	119.019	20.76	30	Pass

Note:

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

Chain 0

1. $11 \text{ dBm} + 10\log(24.80) = 24.94 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log(24.09) = 24.81 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log(21.71) = 24.36 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log(34.98) = 26.43 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log(38.03) = 26.8 \text{ dBm} > 24 \text{ dBm}$.
6. $11 \text{ dBm} + 10\log(25.64) = 25.08 \text{ dBm} > 24 \text{ dBm}$.
7. $11 \text{ dBm} + 10\log(22.70) = 24.56 \text{ dBm} > 24 \text{ dBm}$.

Chain 1

1. $11 \text{ dBm} + 10\log(21.74) = 24.37 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log(21.20) = 24.26 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log(24.13) = 24.82 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log(24.76) = 24.93 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log(35.03) = 26.44 \text{ dBm} > 24 \text{ dBm}$.
6. $11 \text{ dBm} + 10\log(23.75) = 24.75 \text{ dBm} > 24 \text{ dBm}$.
7. $11 \text{ dBm} + 10\log(21.92) = 24.40 \text{ dBm} > 24 \text{ dBm}$.

802.11ac (VHT20)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	12.60	12.50	35.980	15.56	24	Pass
40	5200	12.54	12.30	34.929	15.43	24	Pass
48	5240	12.58	12.56	36.143	15.58	24	Pass
52	5260	13.43	13.22	43.018	16.34	24	Pass
60	5300	13.36	13.05	41.861	16.22	24	Pass
64	5320	13.39	12.95	41.551	16.19	24	Pass
100	5500	15.51	15.40	70.237	18.47	24	Pass
116	5580	18.27	18.18	132.909	21.24	24	Pass
140	5700	12.82	12.74	37.936	15.79	24	Pass
144	5720 (U-NII-2C)	16.14	16.19	92.306	19.65	24	Pass
144	5720 (U-NII-3)	13.97	14.08	56.397	17.51	30	Pass
149	5745	18.14	17.69	123.912	20.93	30	Pass
157	5785	17.99	17.61	120.628	20.81	30	Pass
165	5825	17.76	17.54	116.458	20.66	30	Pass

Note:

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

Chain 0

1. $11 \text{ dBm} + 10\log(23.24) = 24.66 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log(23.23) = 24.66 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log(23.27) = 24.66 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log(32.81) = 26.16 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log(45.24) = 27.55 \text{ dBm} > 24 \text{ dBm}$.
6. $11 \text{ dBm} + 10\log(23.23) = 24.66 \text{ dBm} > 24 \text{ dBm}$.
7. $11 \text{ dBm} + 10\log(26.61) = 25.25 \text{ dBm} > 24 \text{ dBm}$.

Chain 1

1. $11 \text{ dBm} + 10\log(23.78) = 24.76 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log(24.79) = 24.94 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log(23.34) = 24.68 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log(23.42) = 24.69 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log(37.89) = 26.78 \text{ dBm} > 24 \text{ dBm}$.
6. $11 \text{ dBm} + 10\log(23.33) = 24.67 \text{ dBm} > 24 \text{ dBm}$.
7. $11 \text{ dBm} + 10\log(24.34) = 24.86 \text{ dBm} > 24 \text{ dBm}$.

802.11ac (VHT40)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	13.47	13.43	44.262	16.46	24	Pass
46	5230	13.61	13.44	45.041	16.54	24	Pass
54	5270	13.49	13.08	42.660	16.30	24	Pass
62	5310	13.31	13.18	42.226	16.26	24	Pass
102	5510	11.43	11.30	27.390	14.38	24	Pass
110	5550	18.57	18.51	142.903	21.55	24	Pass
134	5670	13.74	13.69	47.047	16.73	24	Pass
142	5710 (U-NII-2C)	16.89	16.79	108.927	20.37	24	Pass
142	5710 (U-NII-3)	14.09	14.10	57.891	17.63	30	Pass
151	5755	18.15	17.71	124.333	20.95	30	Pass
159	5795	18.03	17.68	122.147	20.87	30	Pass

Note:

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

Chain 0

1. $11 \text{ dBm} + 10\log(43.48) = 27.38 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log(59.35) = 28.73 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log(43.91) = 27.42 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log(99.28) = 30.96 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log(46.45) = 27.66 \text{ dBm} > 24 \text{ dBm}$.
6. $11 \text{ dBm} + 10\log(63.85) = 29.05 \text{ dBm} > 24 \text{ dBm}$.

Chain 1

1. $11 \text{ dBm} + 10\log(51.89) = 28.15 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log(43.44) = 27.37 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log(43.50) = 27.38 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log(86.18) = 30.35 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log(43.97) = 27.43 \text{ dBm} > 24 \text{ dBm}$.
6. $11 \text{ dBm} + 10\log(55.54) = 28.44 \text{ dBm} > 24 \text{ dBm}$.

802.11ac (VHT80)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	13.41	13.27	43.160	16.35	24	Pass
58	5290	8.63	8.45	14.293	11.55	24	Pass
106	5530	11.91	11.80	30.660	14.87	24	Pass
122	5610	17.88	17.61	119.053	20.76	24	Pass
138	5690 (U-NII-2C)	16.70	16.74	129.449	21.12	24	Pass
138	5690 (U-NII-3)	13.74	13.38	62.584	17.96	30	Pass
155	5775	18.23	18.12	131.39	21.19	30	Pass

Note:

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

Chain 0

1. $11 \text{ dBm} + 10\log(86.31) = 30.36 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log(85.45) = 30.31 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log(181.92) = 33.59 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log(133.83) = 32.26 \text{ dBm} > 24 \text{ dBm}$.

Chain 1

1. $11 \text{ dBm} + 10\log(84.28) = 30.25 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log(83.57) = 30.22 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log(148.76) = 32.72 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log(133.73) = 32.26 \text{ dBm} > 24 \text{ dBm}$.

26 dB Bandwidth:
802.11a

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	22.27	21.35
40	5200	22.27	21.47
48	5240	22.19	21.41
52	5260	24.80	21.74
60	5300	24.09	21.20
64	5320	21.71	24.13
100	5500	34.98	24.76
116	5580	38.03	35.03
140	5700	25.64	23.75
144	5720 (U-NII-2C)	22.70	21.92
144	5720 (U-NII-3)	14.00	13.16

802.11ac (VHT20)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	23.16	23.36
40	5200	23.24	23.14
48	5240	23.16	23.07
52	5260	23.24	23.78
60	5300	23.23	24.79
64	5320	23.27	23.34
100	5500	32.81	23.42
116	5580	45.24	37.89
140	5700	23.23	23.33
144	5720 (U-NII-2C)	26.61	24.34
144	5720 (U-NII-3)	16.14	15.61

802.11ac (VHT40)

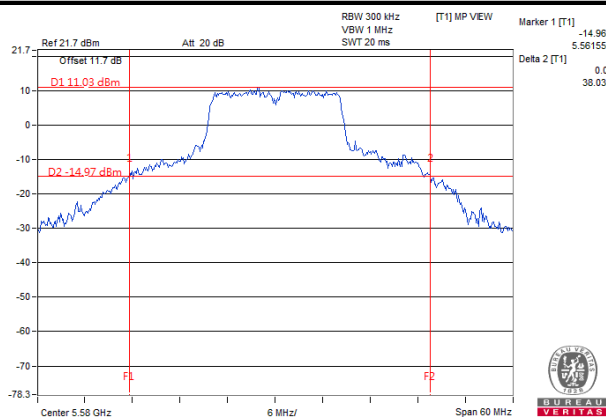
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	43.79	43.43
46	5230	48.32	43.60
54	5270	43.48	51.89
62	5310	59.35	43.44
102	5510	43.91	43.50
110	5550	99.28	86.18
134	5670	46.45	43.97
142	5710 (U-NII-2C)	63.85	55.54
142	5710 (U-NII-3)	33.57	29.85

802.11ac (VHT80)

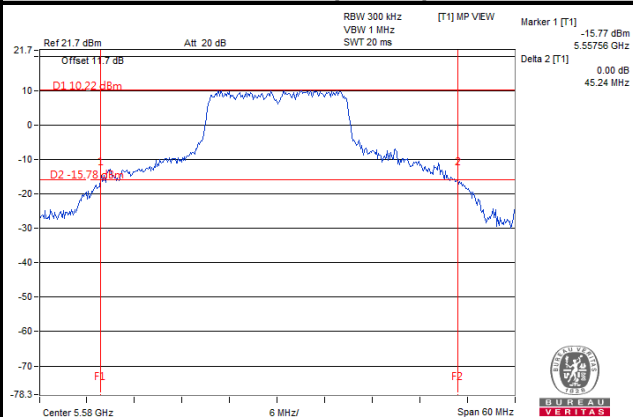
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	91.17	84.48
58	5290	86.31	84.28
106	5530	85.45	83.57
122	5610	181.92	148.76
138	5690 (U-NII-2C)	133.83	133.73
138	5690 (U-NII-3)	67.70	61.67

Spectrum Plot of Worst Value

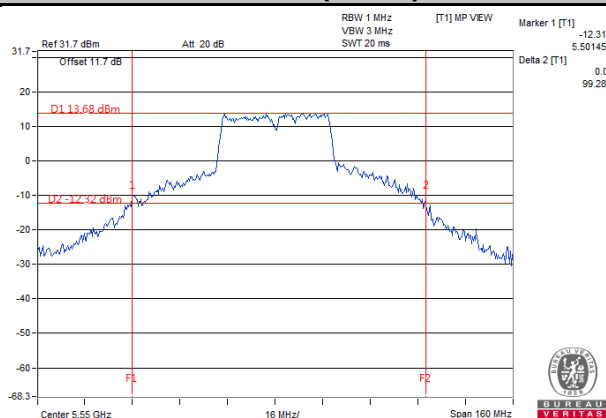
802.11a



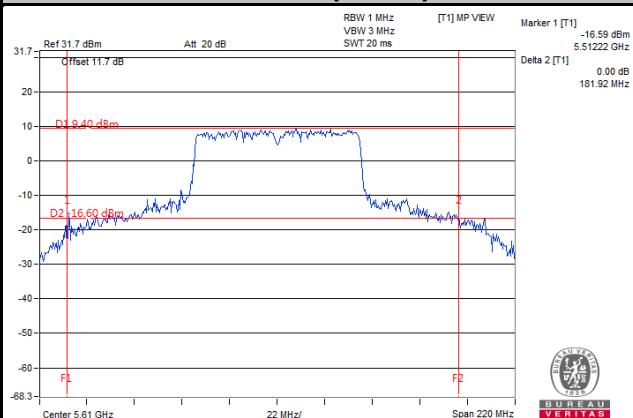
802.11ac (VHT20)



802.11a (VHT40)

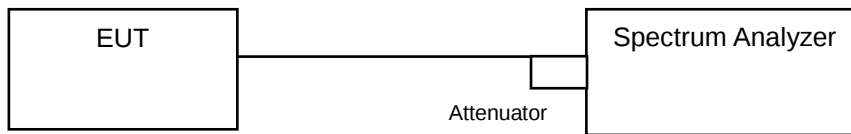


802.11ac (VHT80)



4.3 Occupied Bandwidth Measurement

4.3.1 Test Setup



4.3.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.3 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.

4.3.4 Test Results

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	16.80	16.80
40	5200	16.80	16.80
48	5240	16.80	16.80
52	5260	16.80	16.68
60	5300	16.80	16.80
64	5320	16.80	16.68
100	5500	17.40	16.80
116	5580	21.00	17.40
140	5700	16.92	16.80
144	5720 (U-NII-2C)	13.88	13.52
144	5720 (U-NII-3)	4.60	3.52
149	5745	22.12	20.67
157	5785	21.83	19.91
165	5825	20.86	19.90

802.11ac (VHT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	18.00	18.00
40	5200	18.00	18.00
48	5240	18.12	18.00
52	5260	18.00	18.00
60	5300	18.12	18.12
64	5320	18.00	18.00
100	5500	18.24	18.00
116	5580	22.56	18.48
140	5700	17.88	18.12
144	5720 (U-NII-2C)	14.48	14.24
144	5720 (U-NII-3)	4.72	4.24
149	5745	23.27	21.44
157	5785	22.50	21.73
165	5825	22.88	20.28

802.11ac (VHT40)

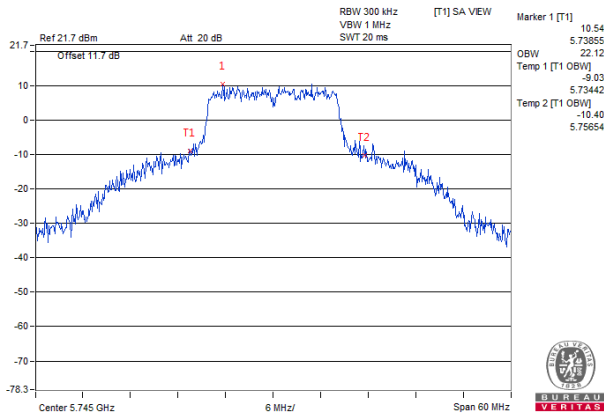
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	37.08	37.08
46	5230	36.84	36.72
54	5270	36.84	36.96
62	5310	36.84	36.96
102	5510	37.08	36.96
110	5550	42.00	37.56
134	5670	37.08	37.08
142	5710 (U-NII-2C)	34.32	34.08
142	5710 (U-NII-3)	4.68	4.08
151	5755	42.02	39.62
159	5795	41.73	39.61

802.11ac (VHT80)

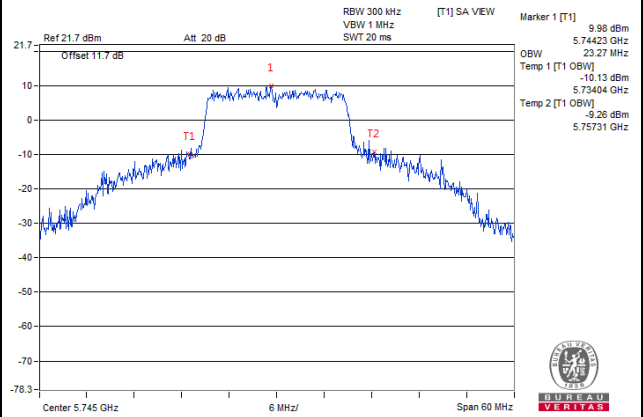
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	76.08	76.08
58	5290	76.08	75.84
106	5530	76.32	76.32
122	5610	76.80	76.32
138	5690 (U-NII-2C)	74.60	73.88
138	5690 (U-NII-3)	6.52	3.64
155	5775	76.35	76.16

Spectrum Plot of Worst Value

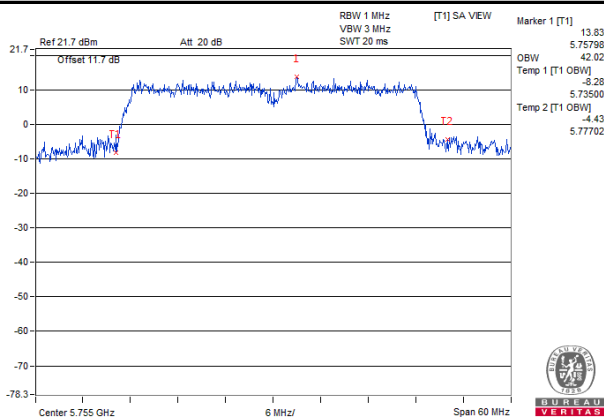
802.11a



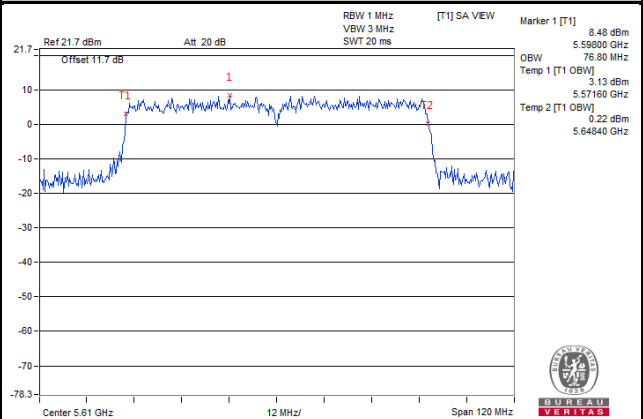
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)

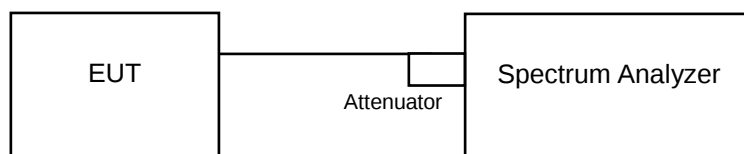


4.4 Peak Power Spectral Density Measurement

4.4.1 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

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.4.4 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 $\geq$ 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 $\geq$ 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 $BWCF = 10\log(500 \text{ kHz} / 300 \text{ kHz})$.
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)

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

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

4.4.7 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	-2.63	-2.32	0.18	0.72	9.15	Pass
40	5200	-2.50	-2.43	0.18	0.72	9.15	Pass
48	5240	-2.85	-2.32	0.18	0.61	9.15	Pass
52	5260	-0.82	-0.79	0.18	2.38	9.15	Pass
60	5300	-0.86	-1.01	0.18	2.25	9.15	Pass
64	5320	-0.35	-1.59	0.18	2.26	9.15	Pass
100	5500	3.16	2.50	0.18	6.03	9.15	Pass
116	5580	5.00	4.73	0.18	8.05	9.15	Pass
140	5700	2.18	1.93	0.18	5.24	9.15	Pass
144	5720 (U-NII-2C)	4.91	4.73	0.18	8.01	9.15	Pass

Note:

- Method 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 7.85 \text{ dBi} > 6 \text{ dBi}$, so the limit need to be reduced to $11 - (7.85 - 6) = 9.15 \text{ dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT20)

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	-2.98	-2.71	0.48	0.65	9.15	Pass
40	5200	-3.11	-2.83	0.48	0.52	9.15	Pass
48	5240	-3.21	-2.65	0.48	0.57	9.15	Pass
52	5260	-0.28	-1.80	0.48	2.52	9.15	Pass
60	5300	-1.26	-1.42	0.48	2.15	9.15	Pass
64	5320	-1.33	-1.78	0.48	1.94	9.15	Pass
100	5500	1.77	1.42	0.48	5.09	9.15	Pass
116	5580	4.52	4.60	0.48	8.05	9.15	Pass
140	5700	-0.79	-1.52	0.48	2.35	9.15	Pass
144	5720 (U-NII-2C)	4.76	4.39	0.48	8.07	9.15	Pass

Note:

- Method 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 7.85 \text{ dBi} > 6 \text{ dBi}$, so the limit need to be reduced to $11 - (7.85 - 6) = 9.15 \text{ dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT40)

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	-4.62	-4.14	0.52	-0.84	9.15	Pass
46	5230	-4.56	-4.80	0.52	-1.15	9.15	Pass
54	5270	-3.83	-4.00	0.52	-0.38	9.15	Pass
62	5310	-3.71	-3.17	0.52	0.10	9.15	Pass
102	5510	-5.05	-4.94	0.52	-1.46	9.15	Pass
110	5550	2.24	1.59	0.52	5.46	9.15	Pass
134	5670	-2.63	-3.09	0.52	0.68	9.15	Pass
142	5710 (U-NII-2C)	4.53	3.80	0.52	7.71	9.15	Pass

Note:

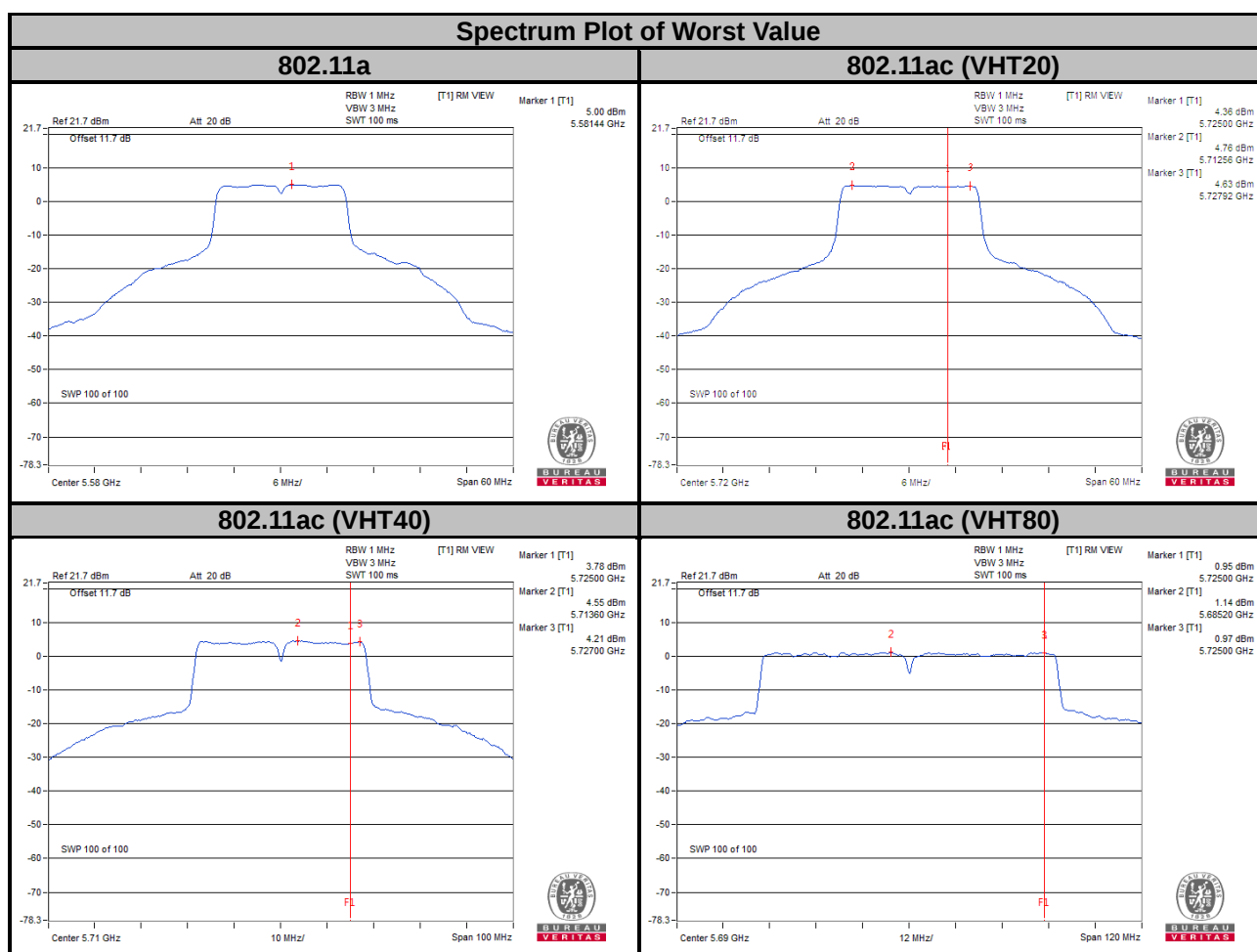
- Method 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 7.85 \text{ dBi} > 6 \text{ dBi}$, so the limit need to be reduced to $11 - (7.85 - 6) = 9.15 \text{ dBm}$.
- 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	-7.10	-7.19	1.39	-2.74	9.15	Pass
58	5290	-12.44	-12.27	1.39	-7.95	9.15	Pass
106	5530	-8.34	-8.30	1.39	-3.92	9.15	Pass
122	5610	-2.75	-2.69	1.39	1.68	9.15	Pass
138	5690 (U-NII-2C)	1.08	0.98	1.39	5.43	9.15	Pass

Note:

- Method 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 7.85 \text{ dBi} > 6 \text{ dBi}$, so the limit need to be reduced to $11 - (7.85 - 6) = 9.15 \text{ dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.



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)	-3.25	-1.03	3.01	0.18	2.16	28.15	Pass
	149	5745	-2.39	-0.17	3.01	0.18	3.02	28.15	Pass
	157	5785	-2.60	-0.38	3.01	0.18	2.81	28.15	Pass
	165	5825	-2.83	-0.61	3.01	0.18	2.58	28.15	Pass
1	144	5720 (U-NII-3)	-3.49	-1.27	3.01	0.18	1.92	28.15	Pass
	149	5745	-2.86	-0.64	3.01	0.18	2.55	28.15	Pass
	157	5785	-3.10	-0.88	3.01	0.18	2.31	28.15	Pass
	165	5825	-3.06	-0.84	3.01	0.18	2.35	28.15	Pass

Note:

- Method 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 7.85 > 6$ dBi, so the power density limit shall be reduced to $30 - (7.85 - 6) = 28.15$ dBm.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT20)

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)	-3.61	-1.39	3.01	0.48	2.10	28.15	Pass
	149	5745	-2.73	-0.51	3.01	0.48	2.98	28.15	Pass
	157	5785	-3.24	-1.02	3.01	0.48	2.47	28.15	Pass
	165	5825	-2.97	-0.75	3.01	0.48	2.74	28.15	Pass
1	144	5720 (U-NII-3)	-3.37	-1.15	3.01	0.48	2.34	28.15	Pass
	149	5745	-2.95	-0.73	3.01	0.48	2.76	28.15	Pass
	157	5785	-3.10	-0.88	3.01	0.48	2.61	28.15	Pass
	165	5825	-3.24	-1.02	3.01	0.48	2.47	28.15	Pass

Note:

- Method 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 7.85 > 6$ dBi, so the power density limit shall be reduced to $30 - (7.85 - 6) = 28.15$ dBm.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT40)

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)	-1.00	1.22	3.01	0.52	4.75	28.15	Pass
	151	5755	-5.41	-3.19	3.01	0.52	0.34	28.15	Pass
	159	5795	-5.82	-3.60	3.01	0.52	-0.07	28.15	Pass
1	142	5710 (U-NII-3)	-1.28	0.94	3.01	0.52	4.47	28.15	Pass
	151	5755	-5.75	-3.53	3.01	0.52	0.00	28.15	Pass
	159	5795	-6.42	-4.20	3.01	0.52	-0.67	28.15	Pass

Note:

- Method 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 7.85 > 6 \text{ dBi}$, so the power density limit shall be reduced to $30 - (7.85 - 6) = 28.15 \text{ dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

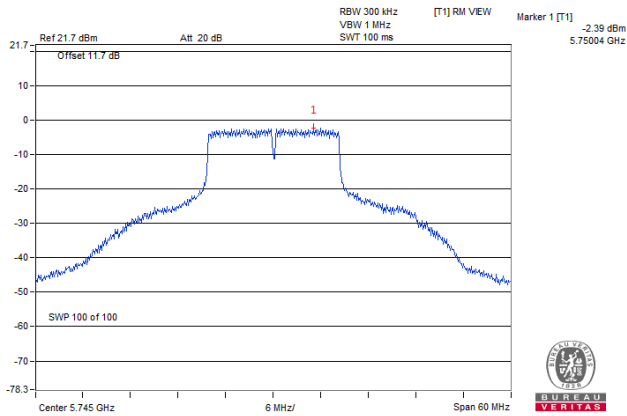
TX Chain	Channel	Frequency (MHz)	PSD		10 log (N=2) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300 kHz)	(dBm/500 kHz)					
0	138	5690 (U-NII-3)	-3.53	-1.31	3.01	1.39	3.09	28.15	Pass
	155	5775	-11.19	-8.97	3.01	1.39	-4.57	28.15	Pass
1	138	5690 (U-NII-3)	-3.88	-1.66	3.01	1.39	2.74	28.15	Pass
	155	5775	-11.67	-9.45	3.01	1.39	-5.05	28.15	Pass

Note:

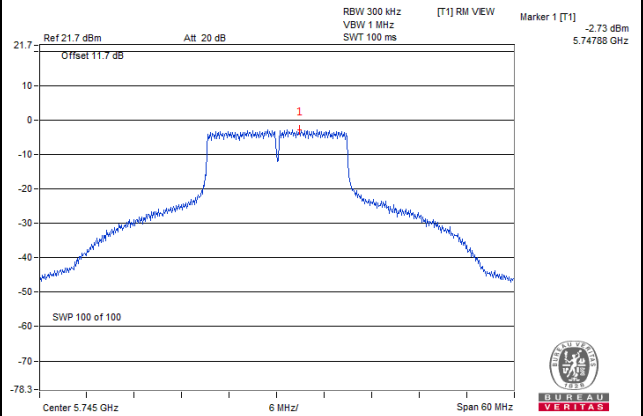
- Method 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 7.85 > 6 \text{ dBi}$, so the power density limit shall be reduced to $30 - (7.85 - 6) = 28.15 \text{ dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

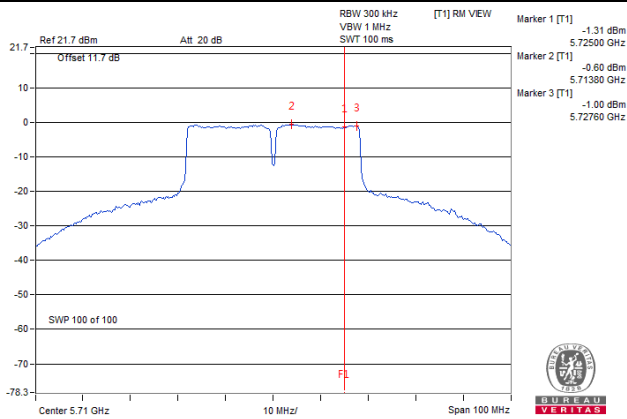
802.11a



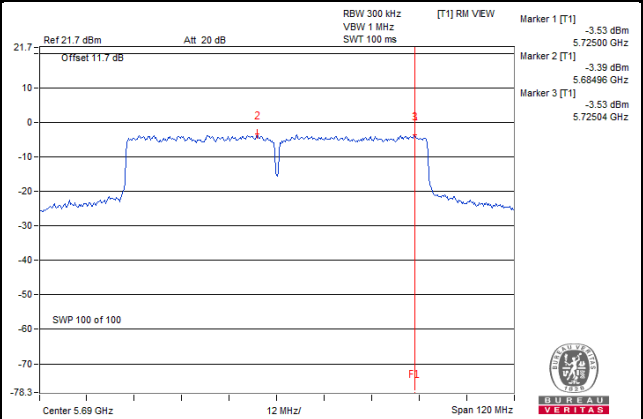
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)

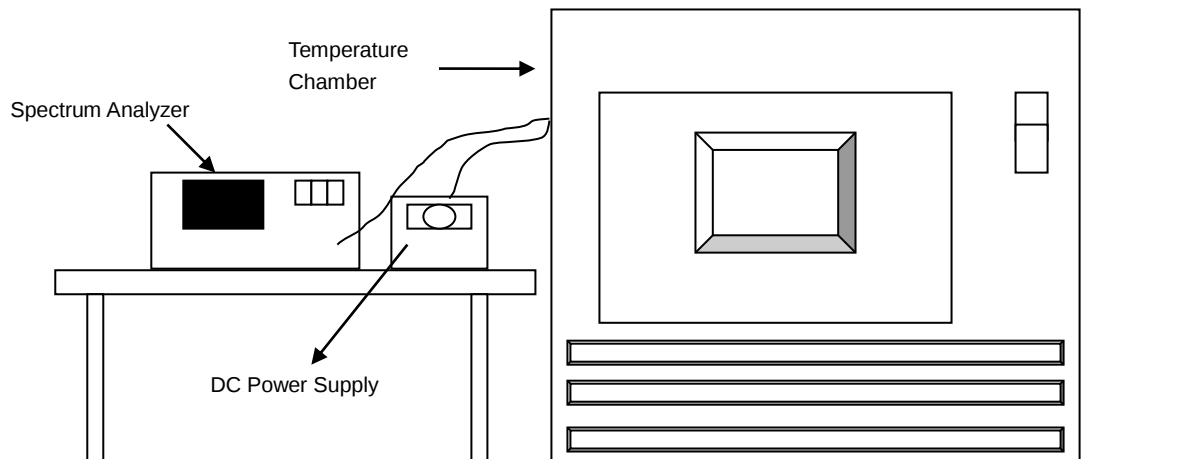


4.5 Frequency Stability

4.5.1 Limit of Frequency Stability Measurement

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

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 Procedure

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

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

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

4.5.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5180 MHz									
Temp. (°C)	Power Supply (Vdc)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
50	3.7	5179.9987	-0.25000	5179.9968	-0.62000	5179.9983	-0.33000	5179.9999	-0.02000
40	3.7	5179.9864	-2.63000	5179.9861	-2.68000	5179.9889	-2.14000	5179.9901	-1.91000
30	3.7	5180.0179	3.46000	5180.0151	2.92000	5180.0186	3.59000	5180.0182	3.51000
20	3.7	5180.0182	3.51000	5180.0161	3.11000	5180.0172	3.32000	5180.0159	3.07000
10	3.7	5180.0079	1.53000	5180.0082	1.58000	5180.0057	1.10000	5180.0056	1.08000
0	3.7	5179.9969	-0.60000	5179.9946	-1.04000	5179.9949	-0.98000	5179.9976	-0.46000
-10	3.7	5179.995	-0.97000	5179.9957	-0.83000	5179.9964	-0.69000	5179.9925	-1.45000
-20	3.7	5180.0134	2.59000	5180.0123	2.37000	5180.0141	2.72000	5180.0158	3.05000
-30	3.7	5179.9892	-2.08000	5179.9904	-1.85000	5179.9904	-1.85000	5179.9886	-2.20000

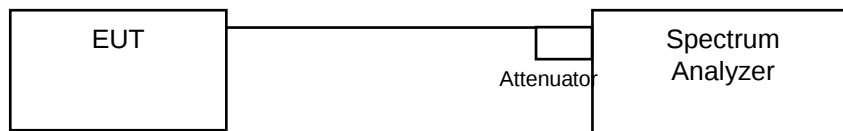
Frequency Stability Versus Voltage									
Operating Frequency: 5180 MHz									
Temp. (°C)	Power Supply (Vdc)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
20	4.255	5180.0175	3.38000	5180.0155	2.99000	5180.0175	3.38000	5180.0151	2.92000
	3.7	5180.0182	3.51000	5180.0161	3.11000	5180.0172	3.32000	5180.0159	3.07000
	3.145	5180.0174	3.36000	5180.0162	3.13000	5180.0171	3.30000	5180.0157	3.03000

4.6 6 dB Bandwidth Measurement

4.6.1 Limits of 6 dB Bandwidth Measurement

The minimum of 6 dB Bandwidth Measurement is 0.5 MHz.

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

MEASUREMENT PROCEDURE REF

- Set resolution bandwidth (RBW) = 100 kHz
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- 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

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

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

4.6.7 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)	3.18	3.20	0.5	Pass
149	5745	16.33	16.38	0.5	Pass
157	5785	16.35	16.39	0.5	Pass
165	5825	16.35	16.40	0.5	Pass

802.11ac (VHT20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
144	5720 (U-NII-3)	3.81	3.81	0.5	Pass
149	5745	17.62	17.64	0.5	Pass
157	5785	17.60	17.63	0.5	Pass
165	5825	17.61	17.61	0.5	Pass

802.11ac (VHT40)

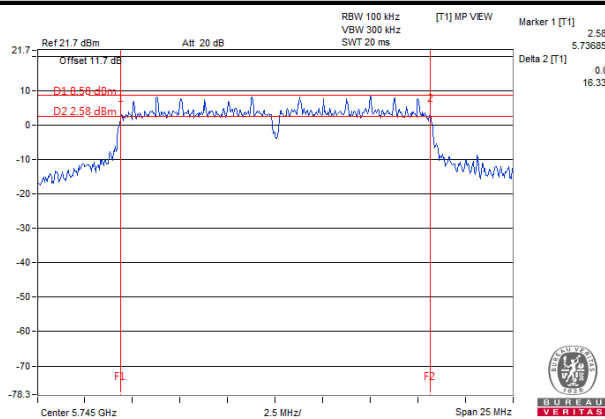
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
142	5710 (U-NII-3)	3.23	3.23	0.5	Pass
151	5755	36.43	36.43	0.5	Pass
159	5795	36.43	36.42	0.5	Pass

802.11ac (VHT80)

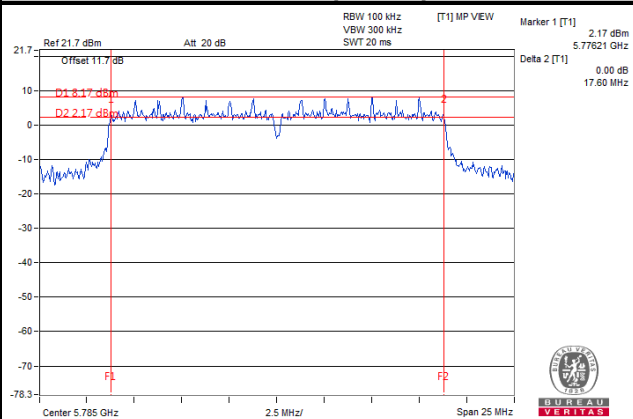
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
138	5690 (U-NII-3)	2.76	3.20	0.5	Pass
155	5775	76.50	76.48	0.5	Pass

Spectrum Plot of Worst Value

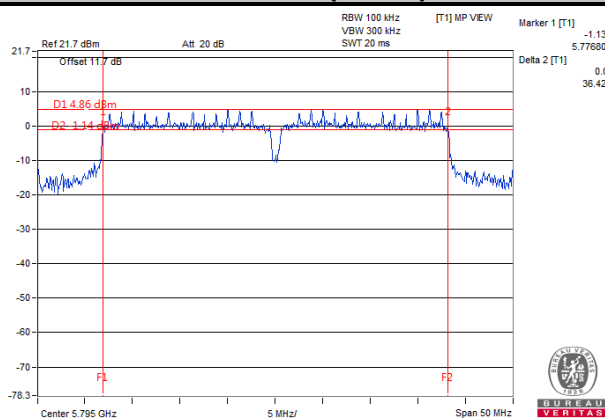
802.11a



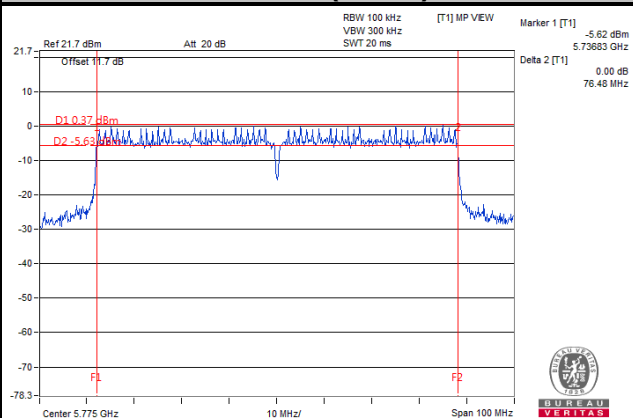
802.11ac (VHT20)



802.11ac (VHT40)



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

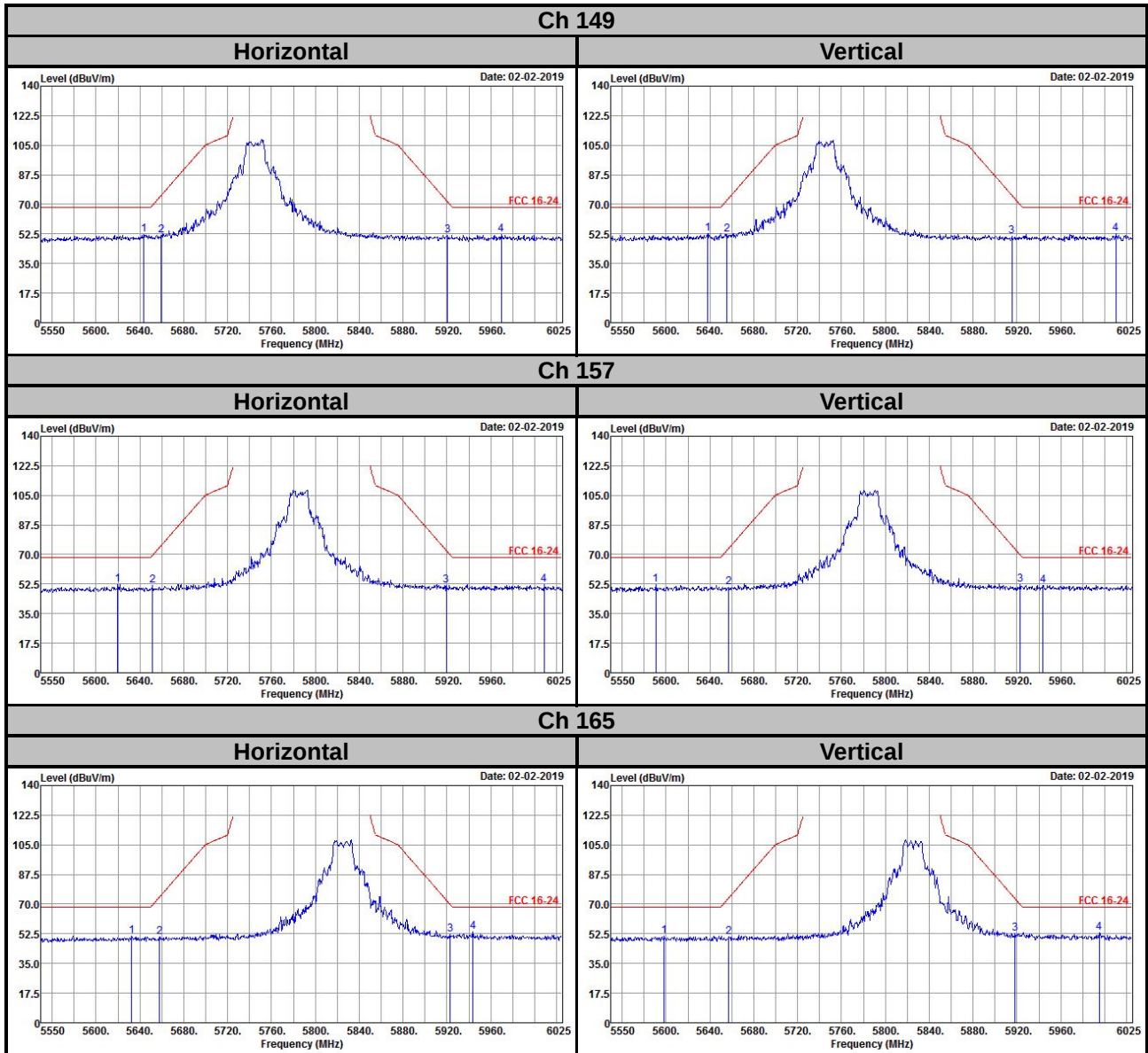
For Ch138 (UNII-3 Band): The 6 dB bandwidth above 5725 MHz = Marker 1 + Delta 2 – 5725 MHz

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)

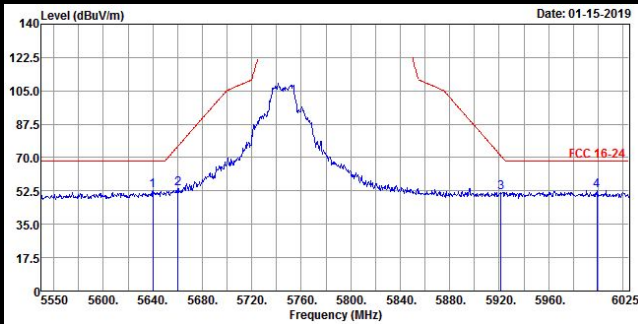
802.11a



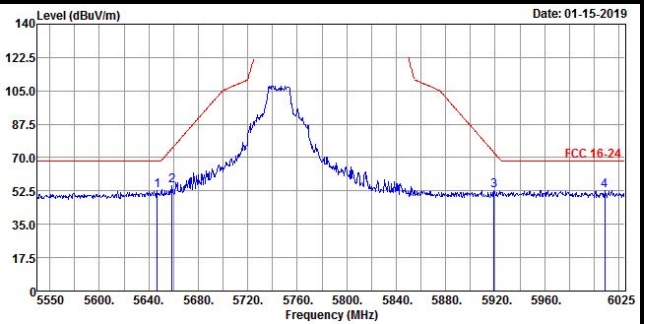
802.11ac (VHT20)

Ch 149

Horizontal

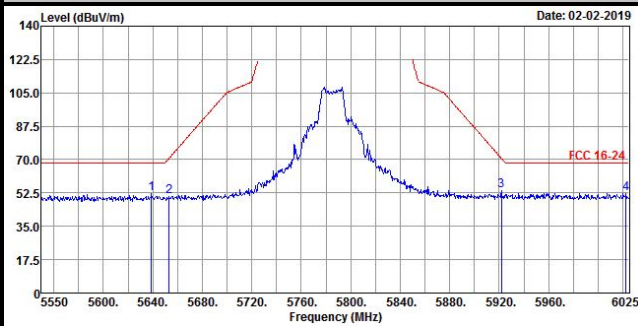


Vertical

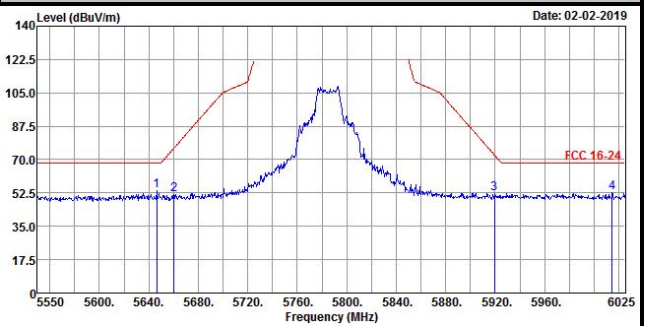


Ch 157

Horizontal

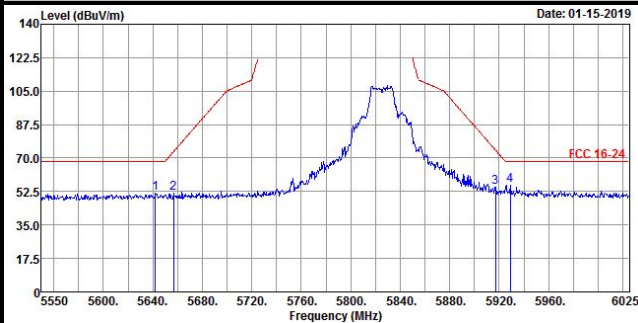


Vertical

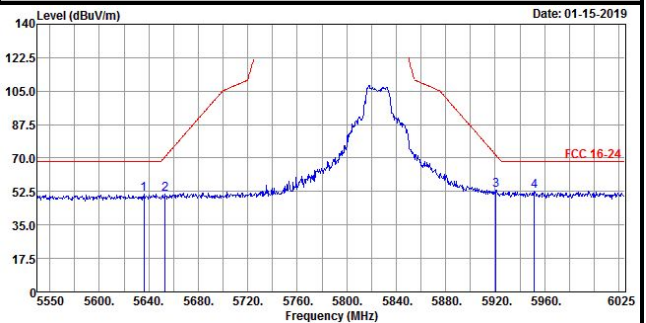


Ch 165

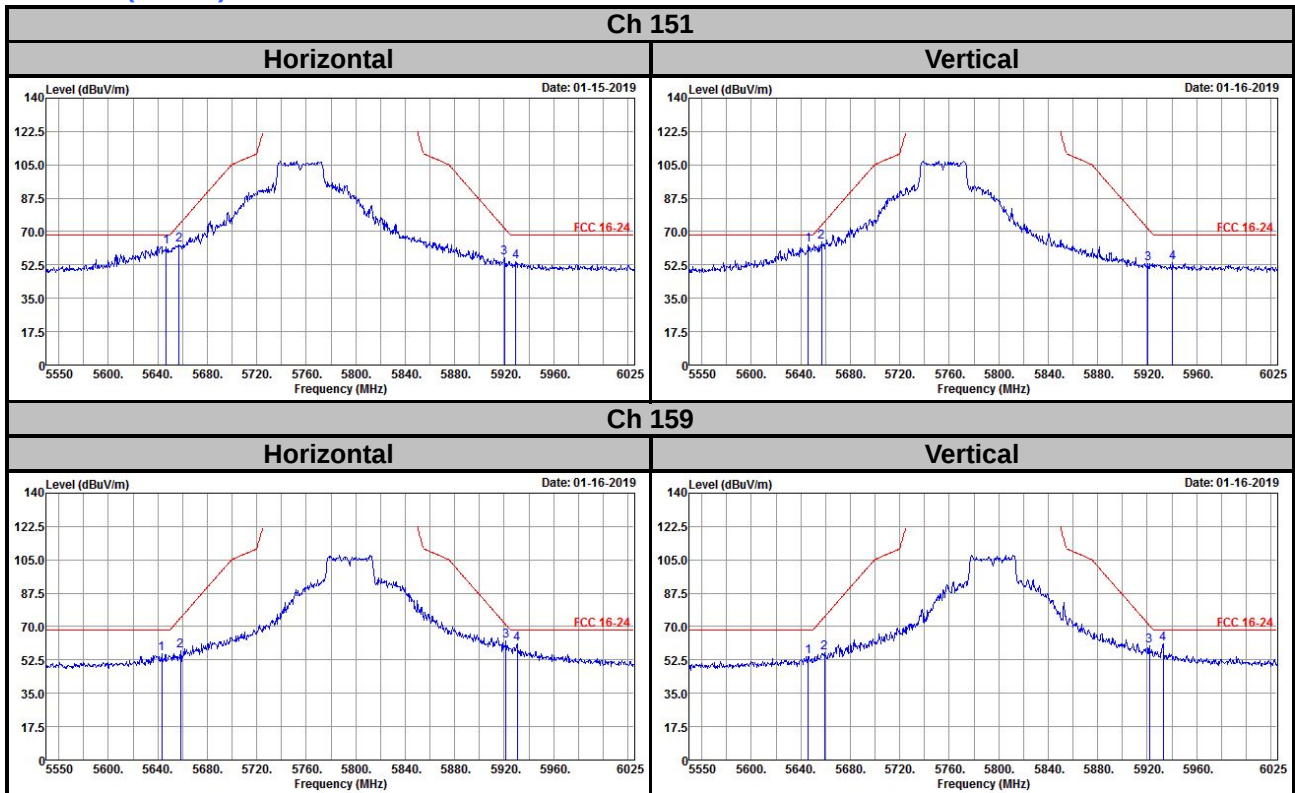
Horizontal



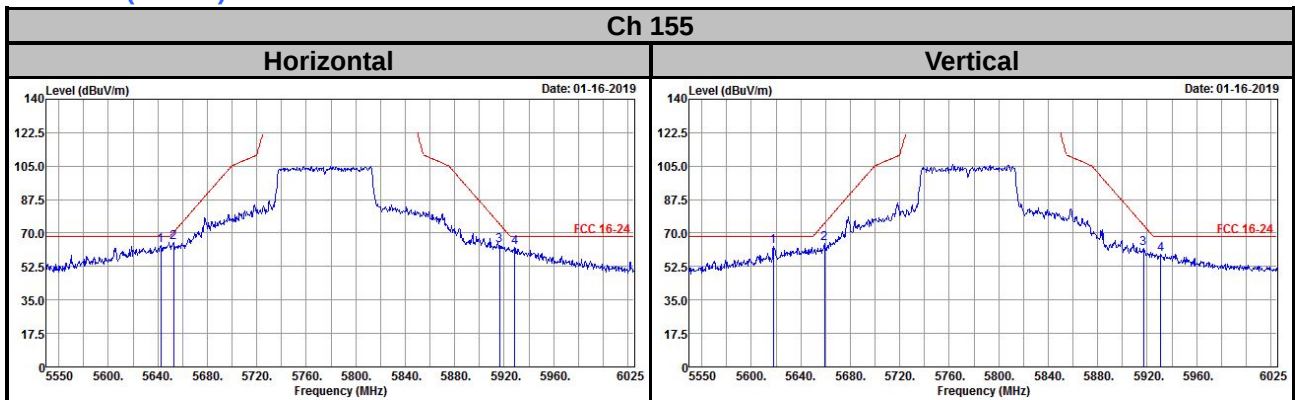
Vertical



802.11ac (VHT40)



802.11ac (VHT80)



Appendix – Information of the Testing Laboratories

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

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

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Web Site: www.bureauveritas-adt.com

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

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