

## FCC Test Report

**Report No.:** RFBGSN-WTW-P20070580-9

**FCC ID:** 2AX8C-3544

**Test Model:** FL44TE

**Received Date:** Jul. 29, 2020

**Test Date:** Nov. 10 ~ Nov. 25, 2020

**Issued Date:** Dec. 01, 2020

**Applicant:** Amazon.com Services LLC

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**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
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**FCC Registration /  
Designation Number:** 788550 / TW0003



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### Release Control Record

Issue No.	Description	Date Issued
RFBGSN-WTW-P20070580-9	Original Release	Dec. 01, 2020

## 1 Certificate of Conformity

**Product:** Fleet Edge

**Brand:** N/A

**Test Model:** FL44TE


**Sample Status:** Engineering Sample


**Applicant:** Amazon.com Services LLC

**Test Date:** Nov. 10 ~ Nov. 25, 2020

**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:** Dec. 01, 2020  
Gina Liu / Specialist

**Approved by :**  , **Date:** Dec. 01, 2020  
Dylan Chiou / Senior Project Engineer

## 2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -11.91 dB at 8.482 MHz.
15.407(b) (1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -1.57 dB at 5460 MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6 dB Bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	No antenna connector is used.

Note:

- For U-NII-3 band compliance with rule part 15.407(b)(4)(i), the OOB test plots were recorded in Annex A.
- For U-NII-1, U-NII-2A, U-NII-2C band compliance with rule 15.407(b) of the band-edge items, the test plots were recorded in Annex B. Test Procedures refer to report 4.1.3.
- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

### 2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150 kHz ~ 30 MHz	2.79 dB
Radiated Emissions up to 1 GHz	9 kHz ~ 30 MHz	3.04 dB
	30 MHz ~ 200 MHz	2.93 dB
	200 MHz ~ 1000 MHz	2.95 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB

### 2.2 Modification Record

There were no modifications required for compliance.

### 3 General Information

#### 3.1 General Description of EUT

<b>Product</b>	Fleet Edge
<b>Brand</b>	N/A
<b>Test Model</b>	FL44TE
<b>Status of EUT</b>	Engineering Sample
<b>Power Supply Rating</b>	12 Vdc
<b>Modulation Type</b>	256QAM, 64QAM, 16QAM, QPSK, BPSK
<b>Modulation Technology</b>	OFDM
<b>Transfer Rate</b>	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0 Mbps 802.11n: up to 300.0 Mbps 802.11ac: up to 1733.3 Mbps
<b>Operating Frequency</b>	5180 ~ 5250 MHz, 5250 ~ 5320 MHz, 5500 ~ 5720 MHz, 5745 ~ 5825 MHz
<b>Number of Channel</b>	5180 ~ 5250 MHz: 4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80) 1 for 802.11ac (VHT160) 5250 ~ 5320 MHz: 4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80) 5500 ~ 5720 MHz: 11 for 802.11a 12 for 802.11n (HT20) 6 for 802.11n (HT40) 3 for 802.11ac (VHT80) 1 for 802.11ac (VHT160) 5745 ~ 5825 MHz: 5 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80)
<b>Output Power</b>	179.498 mW for 5180 ~ 5250 MHz 184.730 mW for 5250 ~ 5320 MHz 216.543 mW for 5500 ~ 5720 MHz 260.644 mW for 5745 ~ 5825 MHz
<b>Antenna Type</b>	Refer to Note as below
<b>Antenna Connector</b>	N/A
<b>Accessory Device</b>	Refer to Note as below
<b>Data Cable Supplied</b>	N/A

**Note:**

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

Modulation Mode	Tx Function
802.11a	1TX
802.11n (HT20)	2TX
802.11n (HT40)	2TX
802.11ac (VHT20)	2TX
802.11ac (VHT40)	2TX
802.11ac (VHT80)	2TX
802.11ac (VHT160)	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)

\*For 802.11a conducted power test, pre-tested chain0, chain1 port and found chain1 port was the worst, therefore chosen for the final test.

2. The EUT contains following accessory devices.

Product	Brand	Model	Description
BT/WLAN Module	Intel	9560NGW	802.11 a/b/g/n/ac Wireless LAN + Bluetooth 5
WWAN Module	Quectel	EM06-A	WCDMA, LTE

3. The antenna information is listed as below.

Antenna information				Peak gain w/ cable loss (dBi)			
Brand	Type	Antenna Part number	Ant.	BT/WLAN 2.4 GHz	WLAN 5.15~5.35 GHz	WLAN 5.47~5.725 GHz	WLAN 5.725~5.85 GHz
TAOGLAS	Multiband	MA491.A.BICG.005.gb	0	-1.85	-4.8	-4.8	-4.8
			1	-3.05	-3.5	-3.5	-3.5

4. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.
5. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.



### 3.2 Description of Test Modes

#### For 5180 ~ 5250 MHz

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

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

2 channels are provided for 802.11n (HT40):

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

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
42	5210

1 channel is provided for 802.11ac (VHT160):

Channel	Frequency (MHz)
50	5250

#### For 5250 ~ 5320 MHz

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

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

2 channels are provided for 802.11n (HT40):

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

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
58	5290

**For 5500 ~ 5720 MHz**

11 channels are provided for 802.11a:

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

12 channels are provided for 802.11n (HT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
100	5500	124	5620
104	5520	128	5640
108	5540	132	5660
112	5560	136	5680
116	5580	140	5700
120	5600	144	5720

6 channels are provided for 802.11n (HT40):

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

3 channels are provided for 802.11ac (VHT80):

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

1 channel is provided for 802.11ac (VHT160):

Channel	Frequency (MHz)
114	5570

**For 5745 ~ 5825 MHz:**

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

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

2 channels are provided for 802.11n (HT40):

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

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
155	5775

### 3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To				Description
	RE $\geq$ 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. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.
2. For radiated emission (below 1GHz) and power line conducted emission test items, the worst radiated emission mode was selected.
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)
-	5180-5250	802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6.0
-		802.11n (HT20)	36 to 48	36, 40, 48	OFDM	BPSK	6.5
-		802.11n (HT40)	38 to 46	38, 46	OFDM	BPSK	13.5
-		802.11ac (VHT80)	42	42	OFDM	BPSK	29.3
-	5250-5320	802.11a	52 to 64	52, 60, 64	OFDM	BPSK	6.0
-		802.11n (HT20)	52 to 64	52, 60, 64	OFDM	BPSK	6.5
-		802.11n (HT40)	54 to 62	54, 62	OFDM	BPSK	13.5
-		802.11ac (VHT80)	58	58	OFDM	BPSK	29.3
-	5500-5720	802.11a	100 to 140	100, 116, 140	OFDM	BPSK	6.0
-		802.11n (HT20)	100 to 144	100, 116, 140, 144	OFDM	BPSK	6.5
-		802.11n (HT40)	102 to 142	102, 110, 134, 142	OFDM	BPSK	13.5
-		802.11ac (VHT80)	106 to 138	106, 122, 138	OFDM	BPSK	29.3
-	5745-5825	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-		802.11n (HT20)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
-		802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	13.5
-		802.11ac (VHT80)	155	155	OFDM	BPSK	29.3

#### **Radiated Emission Test (Below 1 GHz):**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5500-5720	802.11a	100 to 140	100	OFDM	BPSK	6.0

**Power Line Conducted Emission Test:**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5500-5720	802.11a	100 to 140	100	OFDM	BPSK	6.0

**Antenna Port Conducted Measurement:**

- This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5180-5250	802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6.0
-		802.11n (HT20)	36 to 48	36, 40, 48	OFDM	BPSK	6.5
-		802.11n (HT40)	38 to 46	38, 46	OFDM	BPSK	13.5
-		802.11ac (VHT80)	42	42	OFDM	BPSK	29.3
-	5250-5320	802.11a	52 to 64	52, 60, 64	OFDM	BPSK	6.0
-		802.11n (HT20)	52 to 64	52, 60, 64	OFDM	BPSK	6.5
-		802.11n (HT40)	54 to 62	54, 62	OFDM	BPSK	13.5
-		802.11ac (VHT80)	58	58	OFDM	BPSK	29.3
-	5500-5720	802.11a	100 to 140	100, 116, 140	OFDM	BPSK	6.0
-		802.11n (HT20)	100 to 144	100, 116, 140, 144	OFDM	BPSK	6.5
-		802.11n (HT40)	102 to 142	102, 110, 134, 142	OFDM	BPSK	13.5
-		802.11ac (VHT80)	106 to 138	106, 122, 138	OFDM	BPSK	29.3
-	5745-5825	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-		802.11n (HT20)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
-		802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	13.5
-		802.11ac (VHT80)	155	155	OFDM	BPSK	29.3

**Test Condition:**

Applicable To	Environmental Conditions	Input Power	Tested by
RE≥1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Getaz Yang
RE<1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Cyril Chen
PLC	25 deg. C, 65 % RH	120 Vac, 60 Hz	Tim Chen
APCM	25 deg. C, 65 % RH	120 Vac, 60 Hz	Gavin Wu

### 3.3 Duty Cycle of Test Signal

#### MODULATION TYPE: BPSK

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

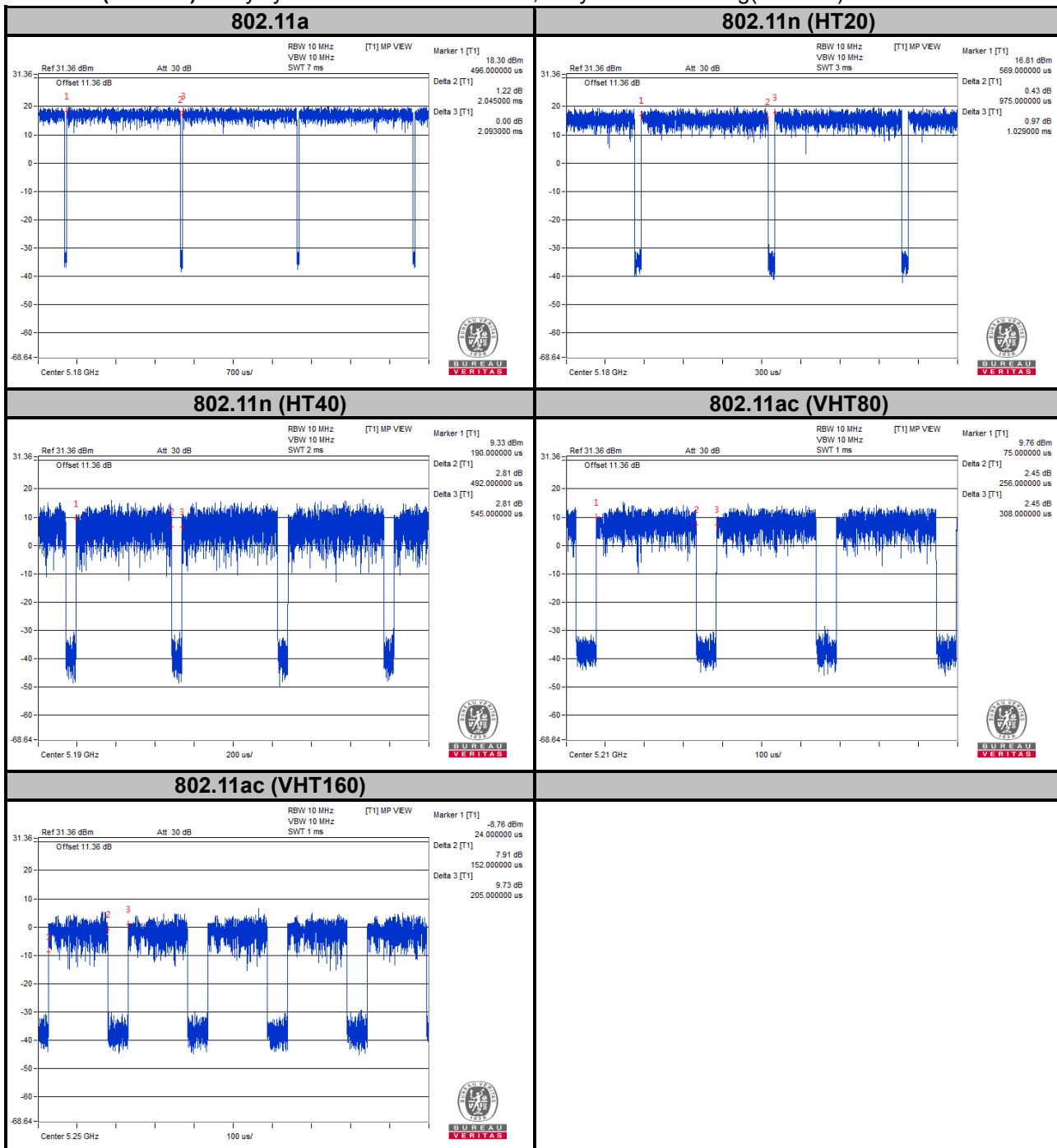
**802.11a:** Duty cycle =  $2.045/2.093 = 0.977$ , Duty factor =  $10 * \log(1/0.977) = 0.10$

**802.11n (HT20):** Duty cycle =  $0.975/1.029 = 0.948$ , Duty factor =  $10 * \log(1/0.948) = 0.23$

**802.11n (HT40):** Duty cycle =  $0.492/0.545 = 0.903$ , Duty factor =  $10 * \log(1/0.903) = 0.44$

**802.11ac (VHT80):** Duty cycle =  $0.256/0.308 = 0.831$ , Duty factor =  $10 * \log(1/0.831) = 0.80$

**802.11ac (VHT160):** Duty cycle =  $0.152/0.205 = 0.741$ , Duty factor =  $10 * \log(1/0.741) = 1.30$



### 3.4 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

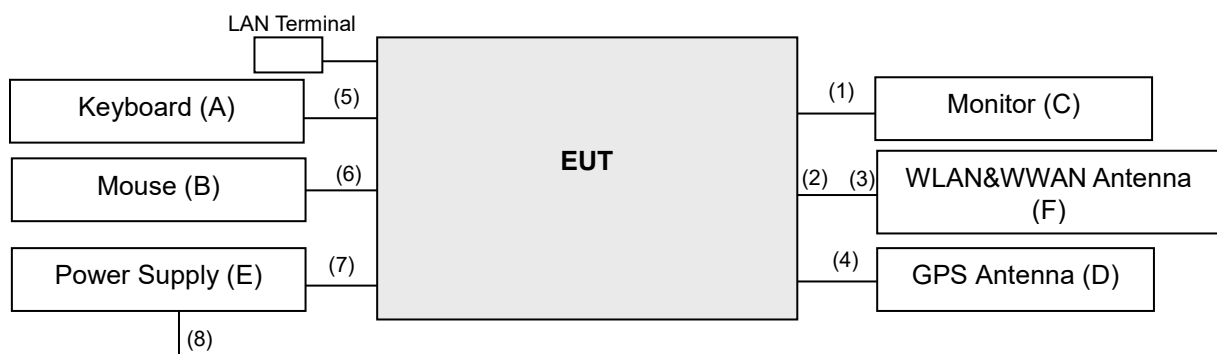
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Keyboard	DELL	RT7D50	CN-0J4624-37172-44T-000M	FCC DOC Approved	--
B	Mouse	DELL	MS111-L	N/A	N/A	--
C	Monitor	ViewSonic	VX2457-MHD	UG0182942333	N/A	--
D	GPS Antenna	NA	NA	NA	NA	Provided by client
E	Power Supply	NA	NA	NA	NA	--
F	WLAN&WWAN Antenna	TAOGLAS	MA491.A.BICG.005.gb	NA	NA	Provided by client

Note:

1. All power cords of the above support units are non-shielded (1.8m).

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	HDMI Cable	1	2	N	0	-
2.	RF Cable	1	0.5	N	0	-
3.	RF Cable	1	0.5	N	0	-
4.	RF Cable	1	0.5	N	0	-
5.	USB Cable	1	2.4	N	0	-
6.	USB Cable	1	2.2	N	0	-
7.	DC power Cable	1	1.2	N	0	-
8.	Power cord	1	1.8	N	0	-

#### 3.4.1 Configuration of System under Test



### **3.5 General Description of Applied Standards and References**

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

#### **Test Standard:**

**FCC Part 15, Subpart E (15.407)**

ANSI C63.10-2013

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

#### **References Test Guidance:**

**KDB 789033 D02 General UNII Test Procedures New Rules v02r01**

**KDB 662911 D01 Multiple Transmitter Output v02r01**

All test items have been performed as a reference to the above KDB test guidance.



## 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.

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	<input checked="" type="checkbox"/> 15.407(b)(4)(i)	PK:-27 (dBm/MHz) <sup>*1</sup> PK:10 (dBm/MHz) <sup>*2</sup> PK:15.6 (dBm/MHz) <sup>*3</sup> PK:27 (dBm/MHz) <sup>*4</sup>	PK: 68.2 (dBµV/m) <sup>*1</sup> PK:105.2 (dBµV/m) <sup>*2</sup> PK: 110.8 (dBµV/m) <sup>*3</sup> PK:122.2 (dBµV/m) <sup>*4</sup>
	<input type="checkbox"/> 15.407(b)(4)(ii)	Emission limits in section 15.247(d)	

<sup>\*1</sup> beyond 75 MHz or more above of the band edge.

<sup>\*2</sup> below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.

<sup>\*3</sup> below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.

<sup>\*4</sup> 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:

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

#### 4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent	N9038A	MY51210203	Mar. 18, 2020	Mar. 17, 2021
Spectrum Analyzer Agilent	N9010A	MY52220314	Dec. 12, 2019	Dec. 11, 2020
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Apr. 16, 2020	Apr. 15, 2021
Spectrum Analyzer ROHDE & SCHWARZ	FSV40	100980	Apr. 20, 2020	Apr. 19, 2021
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-969	Nov. 24, 2019	Nov. 23, 2020
			Nov. 22, 2020	Nov. 21, 2021
BILOG Antenna SCHWARZBECK	VULB 9168	9168-472	Nov. 06, 2020	Nov. 05, 2021
Fixed Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	Apr. 14, 2020	Apr. 13, 2021
Loop Antenna	EM-6879	269	Sep. 17, 2020	Sep. 16, 2021
Preamplifier EMCI	EMC001340	980201	Oct. 21, 2020	Oct. 20, 2021
Preamplifier EMCI	EMC 012645	980115	Oct. 07, 2020	Oct. 06, 2021
Preamplifier EMCI	EMC 184045	980116	Oct. 07, 2020	Oct. 06, 2021
Preamplifier EMCI	EMC 330H	980112	Oct. 07, 2020	Oct. 06, 2021
Power Meter Anritsu	ML2495A	1012010	Sep. 01, 2020	Aug. 31, 2021
Power Sensor Anritsu	MA2411B	1315050	Sep. 01, 2020	Aug. 31, 2021
RF Coaxial Cable EMCI	EMC104-SM-SM-8000	171005	Oct. 07, 2020	Oct. 06, 2021
RF Coaxial Cable HUBER+SUHNNER	SUCOFLEX 104	EMC104-SM-SM-1000(140807)	Oct. 07, 2020	Oct. 06, 2021
RF Coaxial Cable WOKEN	8D-FB	Cable-Ch10-01	Oct. 07, 2020	Oct. 06, 2021
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
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY55190004/MY55190007/MY55210005	Jul. 13, 2020	Jul. 12, 2021
Temperature & Humidity Chamber GIANT FORCE	GTH-120-40-CP-AR	MAA1306-019	Sep. 09, 2020	Sep. 08, 2021
DC power supply Keysight	U8002A	MY56330015	NA	NA
Digital Multimeter Fluke	87-III	70360742	Jun. 23, 2020	Jun. 22, 2021

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

2. The test was performed in HwaYa Chamber 10.

#### 4.1.3 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. 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:**

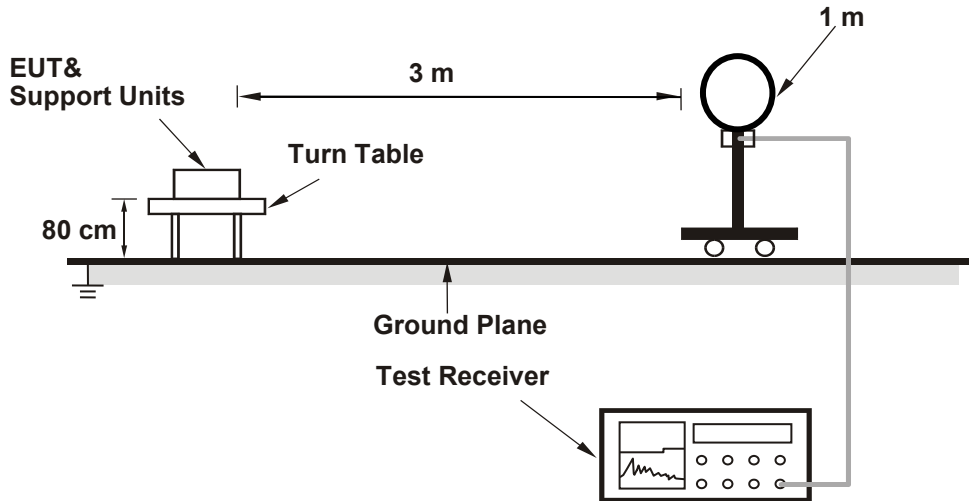
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) 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 = 3 kHz ;  
11n (HT40): RBW = 1 MHz, VBW = 3 kHz ; 11ac (VHT80): RBW = 1 MHz, VBW = 5 kHz;  
11ac (VHT160): RBW = 1 MHz, VBW = 10 kHz )
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

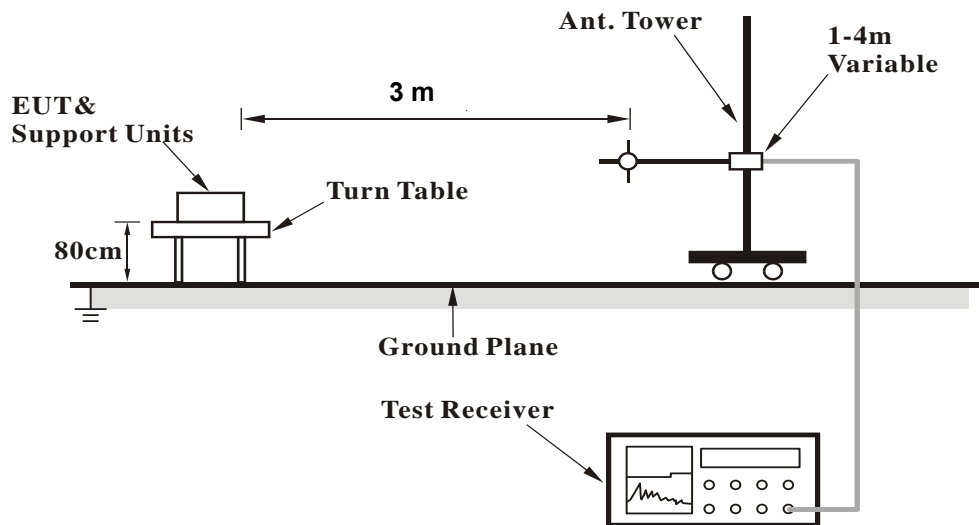
No deviation.

4.1.5 Test Setup

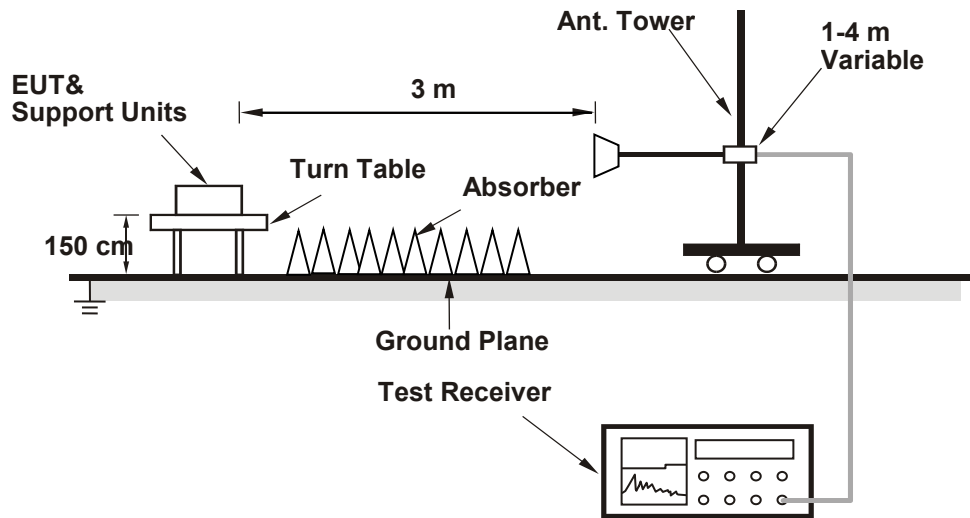
<Radiated Emission below 30 MHz>



<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).

**4.1.6 EUT Operating Conditions**

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

4.1.7 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	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	48.57	48.15	0.42	54	-5.43	257	189	Average
5150	60.52	60.1	0.42	74	-13.48	257	189	Peak
5180	95.58	95.32	0.26	-----	-----	257	189	Average
5180	102.35	102.09	0.26	-----	-----	257	189	Peak
*10360	53.5	55.42	-1.92	68.2	-14.7	205	218	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	44.49	44.07	0.42	54	-9.51	102	140	Average
5150	54.76	54.34	0.42	74	-19.24	102	140	Peak
5180	91.16	90.9	0.26	-----	-----	102	140	Average
5180	98	97.74	0.26	-----	-----	102	140	Peak
*10360	53.21	55.13	-1.92	68.2	-14.99	134	136	Peak

Remarks:

- Emission Level = Read Level + 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	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	44.48	44.06	0.42	54	-9.52	256	192	Average
5150	56.25	55.83	0.42	74	-17.75	256	192	Peak
5200	98.04	97.9	0.14	-----	-----	256	192	Average
5200	104.8	104.66	0.14	-----	-----	256	192	Peak
5350	39.55	39.22	0.33	54	-14.45	256	192	Average
5350	49.79	49.46	0.33	74	-24.21	256	192	Peak
*10400	53.6	55.42	-1.82	68.2	-14.6	198	224	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	42.1	41.68	0.42	54	-11.9	109	138	Average
5150	53.13	52.71	0.42	74	-20.87	109	138	Peak
5200	93.55	93.41	0.14	-----	-----	109	138	Average
5200	100.82	100.68	0.14	-----	-----	109	138	Peak
5350	39.07	38.74	0.33	54	-14.93	109	138	Average
5350	49.2	48.87	0.33	74	-24.8	109	138	Peak
*10400	52.51	54.33	-1.82	68.2	-15.69	126	122	Peak

Remarks:

- Emission Level = Read Level + Factor  
Margin value = Emission level – Limit value
- 5200 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 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	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	40.4	39.98	0.42	54	-13.6	262	190	Average
5150	49.33	48.91	0.42	74	-24.67	262	190	Peak
5240	97.95	97.85	0.1	-----	-----	262	190	Average
5240	105.32	105.22	0.1	-----	-----	262	190	Peak
5350	39.22	38.89	0.33	54	-14.78	262	190	Average
5350	48.77	48.44	0.33	74	-25.23	262	190	Peak
*10480	55.92	57.4	-1.48	68.2	-12.28	214	234	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	39.01	38.59	0.42	54	-14.99	110	139	Average
5150	49.37	48.95	0.42	74	-24.63	110	139	Peak
5240	93.72	93.62	0.1	-----	-----	110	139	Average
5240	100.85	100.75	0.1	-----	-----	110	139	Peak
5350	39.21	38.88	0.33	54	-14.79	110	139	Average
5350	48.62	48.29	0.33	74	-25.38	110	139	Peak
*10480	55.7	57.18	-1.48	68.2	-12.5	122	142	Peak

Remarks:

- Emission Level = Read Level + Factor  
Margin value = Emission level – Limit value
- 5240 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 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	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	40.37	39.95	0.42	54	-13.63	241	189	Average
5150	48.87	48.45	0.42	74	-25.13	241	189	Peak
5260	98.27	98.14	0.13	-----	-----	241	189	Average
5260	105.12	104.99	0.13	-----	-----	241	189	Peak
5350	39.39	39.06	0.33	54	-14.61	241	189	Average
5350	49.23	48.9	0.33	74	-24.77	241	189	Peak
*10520	55.3	56.75	-1.45	68.2	-12.9	221	241	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	39.18	38.76	0.42	54	-14.82	104	143	Average
5150	48.96	48.54	0.42	74	-25.04	104	143	Peak
5260	93.39	93.26	0.13	-----	-----	104	143	Average
5260	100.31	100.18	0.13	-----	-----	104	143	Peak
5350	39.23	38.9	0.33	54	-14.77	104	143	Average
5350	49.49	49.16	0.33	74	-24.51	104	143	Peak
*10520	54.94	56.39	-1.45	68.2	-13.26	127	137	Peak

Remarks:

- Emission Level = Read Level + 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	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	40.3	39.88	0.42	54	-13.7	235	191	Average
5150	48.73	48.31	0.42	74	-25.27	235	191	Peak
5300	97.64	97.43	0.21	-----	-----	235	191	Average
5300	105.14	104.93	0.21	-----	-----	235	191	Peak
5350	47.29	46.96	0.33	54	-6.71	235	191	Average
5350	57.68	57.35	0.33	74	-16.32	235	191	Peak
10600	46.14	47.75	-1.61	54	-7.86	215	253	Average
10600	55.52	57.13	-1.61	74	-18.48	215	253	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	39.27	38.85	0.42	54	-14.73	110	138	Average
5150	49.2	48.78	0.42	74	-24.8	110	138	Peak
5300	94.68	94.47	0.21	-----	-----	110	138	Average
5300	101.97	101.76	0.21	-----	-----	110	138	Peak
5350	44.76	44.43	0.33	54	-9.24	110	138	Average
5350	56.1	55.77	0.33	74	-17.9	110	138	Peak
10600	46.23	47.84	-1.61	54	-7.77	132	152	Average
10600	56.5	58.11	-1.61	74	-17.5	132	152	Peak

Remarks:

- Emission Level = Read Level + Factor  
Margin value = Emission level – Limit value
- 5300 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 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	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	92.38	92.12	0.26	-----	-----	234	190	Average
5320	99.4	99.14	0.26	-----	-----	234	190	Peak
5350	41.52	41.19	0.33	54	-12.48	234	190	Average
5350	53.74	53.41	0.33	74	-20.26	234	190	Peak
10640	46.15	47.77	-1.62	54	-7.85	207	223	Average
10640	55.47	57.09	-1.62	74	-18.53	207	223	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	89.49	89.23	0.26	-----	-----	108	143	Average
5320	96.69	96.43	0.26	-----	-----	108	143	Peak
5350	40.29	39.96	0.33	54	-13.71	108	143	Average
5350	50.29	49.96	0.33	74	-23.71	108	143	Peak
10640	46.05	47.67	-1.62	54	-7.95	125	144	Average
10640	56.44	58.06	-1.62	74	-17.56	125	144	Peak

Remarks:

- Emission Level = Read Level + Factor  
Margin value = Emission level – Limit value
- 5320 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 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	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	52.43	51.68	0.75	54	-1.57	233	151	Average
5460	62.98	62.23	0.75	74	-11.02	233	151	Peak
*5470	66.78	66.01	0.77	68.2	-1.42	233	151	Peak
5500	98.07	97.18	0.89	-----	-----	233	151	Average
5500	105.74	104.85	0.89	-----	-----	233	151	Peak
*5725	48.49	47.62	0.87	68.2	-19.71	233	151	Peak
11100	46.29	47.68	-1.39	54	-7.71	202	206	Average
11100	53.95	55.34	-1.39	74	-20.05	202	206	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	42.56	41.81	0.75	54	-11.44	100	144	Average
5460	52.44	51.69	0.75	74	-21.56	100	144	Peak
*5470	58.88	58.11	0.77	68.2	-9.32	100	144	Peak
5500	94.24	93.35	0.89	-----	-----	100	144	Average
5500	101.33	100.44	0.89	-----	-----	100	144	Peak
*5725	48.63	47.76	0.87	68.2	-19.57	100	144	Peak
11100	46	47.39	-1.39	54	-8	129	136	Average
11100	55.46	56.85	-1.39	74	-18.54	129	136	Peak

Remarks:

- Emission Level = Read Level + 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	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	39.86	39.11	0.75	54	-14.14	227	144	Average
5460	51.21	50.46	0.75	74	-22.79	227	144	Peak
*5470	50.08	49.31	0.77	68.2	-18.12	227	144	Peak
5580	98.07	97.27	0.8	-----	-----	227	144	Average
5580	106.41	105.61	0.8	-----	-----	227	144	Peak
*5725	48.84	47.97	0.87	68.2	-19.36	227	144	Peak
11160	46.37	47.9	-1.53	54	-7.63	198	195	Average
11160	56.14	57.67	-1.53	74	-17.86	198	195	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	39.46	38.71	0.75	54	-14.54	109	146	Average
5460	49.67	48.92	0.75	74	-24.33	109	146	Peak
*5470	48.91	48.14	0.77	68.2	-19.29	109	146	Peak
5580	96.96	96.16	0.8	-----	-----	109	146	Average
5580	103.96	103.16	0.8	-----	-----	109	146	Peak
*5725	48.63	47.76	0.87	68.2	-19.57	109	146	Peak
11160	45.92	47.45	-1.53	54	-8.08	125	136	Average
11160	55.28	56.81	-1.53	74	-18.72	125	136	Peak

Remarks:

- Emission Level = Read Level + Factor  
Margin value = Emission level – Limit value
- 5580 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 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	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	39.35	38.6	0.75	54	-14.65	215	144	Average
5460	49.21	48.46	0.75	74	-24.79	215	144	Peak
*5470	48.43	47.66	0.77	68.2	-19.77	215	144	Peak
5700	96.82	95.97	0.85	-----	-----	215	144	Average
5700	104.22	103.37	0.85	-----	-----	215	144	Peak
*5725	61.93	61.06	0.87	68.2	-6.27	215	144	Peak
11400	46.53	47.88	-1.35	54	-7.47	212	210	Average
11400	56.08	57.43	-1.35	74	-17.92	212	210	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	39.13	38.38	0.75	54	-14.87	125	141	Average
5460	49.37	48.62	0.75	74	-24.63	125	141	Peak
*5470	48.46	47.69	0.77	68.2	-19.74	125	141	Peak
5700	94.7	93.85	0.85	-----	-----	125	141	Average
5700	101.58	100.73	0.85	-----	-----	125	141	Peak
*5725	60.88	60.01	0.87	68.2	-7.32	125	141	Peak
11400	46.44	47.79	-1.35	54	-7.56	129	155	Average
11400	57.28	58.63	-1.35	74	-16.72	129	155	Peak

Remarks:

- Emission Level = Read Level + 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 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	Getaz Yang

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	98.26	97.38	0.88	-----	-----	224	146	Average
5745	105.12	104.24	0.88	-----	-----	224	146	Peak
11490	46.64	47.96	-1.32	54	-7.36	215	206	Average
11490	55.49	56.81	-1.32	74	-18.51	215	206	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	97	96.12	0.88	-----	-----	118	146	Average
5745	103.9	103.02	0.88	-----	-----	118	146	Peak
11490	46.3	47.62	-1.32	54	-7.7	130	151	Average
11490	55.64	56.96	-1.32	74	-18.36	130	151	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5630.75	49.89	49.21	0.68	68.2	-18.31	224	146	Peak
5659.725	49.5	48.83	0.67	75.42	-25.92	224	146	Peak
5918.6	50.25	48.95	1.3	72.92	-22.67	224	146	Peak
5970.85	50.64	49.3	1.34	68.2	-17.56	224	146	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5586.1	50.08	49.28	0.8	68.2	-18.12	118	146	Peak
5659.25	50.21	49.54	0.67	75.07	-24.86	118	146	Peak
5919.075	49.94	48.64	1.3	72.57	-22.63	118	146	Peak
6017.4	50.89	49.45	1.44	68.2	-17.31	118	146	Peak

Remarks:

- Emission Level = Read Level + 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	Getaz Yang

**<Spurious Emission>**

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	98.81	97.89	0.92	-----	-----	221	149	Average
5785	105.79	104.87	0.92	-----	-----	221	149	Peak
11570	46.19	47.9	-1.71	54	-7.81	229	218	Average
11570	53.66	55.37	-1.71	74	-20.34	229	218	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	96.4	95.48	0.92	-----	-----	110	137	Average
5785	103.61	102.69	0.92	-----	-----	110	137	Peak
11570	45.85	47.56	-1.71	54	-8.15	140	146	Average
11570	55.56	57.27	-1.71	74	-18.44	140	146	Peak

**<Out of Band Emission (OOBE)>**

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5609.85	50.23	49.5	0.73	68.2	-17.97	221	149	Peak
5653.55	49.72	49.02	0.7	70.84	-21.12	221	149	Peak
5923.825	50.23	48.93	1.3	69.07	-18.84	221	149	Peak
5980.825	50.82	49.47	1.35	68.2	-17.38	221	149	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5583.25	50.47	49.67	0.8	68.2	-17.73	110	137	Peak
5653.55	49.12	48.42	0.7	70.84	-21.72	110	137	Peak
5923.35	50.06	48.76	1.3	69.42	-19.36	110	137	Peak
6011.225	50.87	49.45	1.42	68.2	-17.33	110	137	Peak

Remarks:

- Emission Level = Read Level + 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	Getaz Yang

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	98.75	97.69	1.06	-----	-----	232	192	Average
5825	105.59	104.53	1.06	-----	-----	232	192	Peak
11650	45.65	47.71	-2.06	54	-8.35	211	189	Average
11650	55.39	57.45	-2.06	74	-18.61	211	189	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	97.03	95.97	1.06	-----	-----	104	138	Average
5825	104.54	103.48	1.06	-----	-----	104	138	Peak
11650	45.57	47.63	-2.06	54	-8.43	129	137	Average
11650	55.35	57.41	-2.06	74	-18.65	129	137	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5576.6	49.66	48.82	0.84	68.2	-18.54	232	192	Peak
5650.7	50.74	50.06	0.68	68.72	-17.98	232	192	Peak
5915.275	51.37	50.07	1.3	75.37	-24	232	192	Peak
5939.975	50.76	49.44	1.32	68.2	-17.44	232	192	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5551.9	50.15	49.31	0.84	68.2	-18.05	104	138	Peak
5657.825	49.69	49.03	0.66	74.01	-24.32	104	138	Peak
5918.6	52.36	51.06	1.3	72.92	-20.56	104	138	Peak
6015.025	51.84	50.42	1.42	68.2	-16.36	104	138	Peak

Remarks:

- Emission Level = Read Level + 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

802.11n (HT20)

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

**Antenna Polarity & Test Distance: Horizontal at 3 m**

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	39.14	38.72	0.42	54	-14.86	100	209	Average
5150	47.85	47.43	0.42	74	-26.15	100	209	Peak
5180	87.26	87	0.26	-----	-----	100	209	Average
5180	95.04	94.78	0.26	-----	-----	100	209	Peak
10360	53.98	55.9	-1.92	68.2	-14.22	163	168	Peak

**Antenna Polarity & Test Distance: Vertical at 3 m**

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	40.86	40.44	0.42	54	-13.14	255	202	Average
5150	49.32	48.9	0.42	74	-24.68	255	202	Peak
5180	96.6	96.34	0.26	-----	-----	255	202	Average
5180	105.21	104.95	0.26	-----	-----	255	202	Peak
10360	54.32	56.24	-1.92	68.2	-13.88	144	200	Peak

Remarks:

- Emission Level = Read Level + 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	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	39.06	38.64	0.42	54	-14.94	114	203	Average
5150	47.73	47.31	0.42	74	-26.27	114	203	Peak
5200	91.96	91.82	0.14	-----	-----	114	203	Average
5200	98.64	98.5	0.14	-----	-----	114	203	Peak
5350	38.84	38.51	0.33	54	-15.16	114	203	Average
5350	48.15	47.82	0.33	74	-25.85	114	203	Peak
10400	54.33	56.15	-1.82	68.2	-13.87	177	148	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	42.07	41.65	0.42	54	-11.93	268	204	Average
5150	50.16	49.74	0.42	74	-23.84	268	204	Peak
5200	99.71	99.57	0.14	-----	-----	268	204	Average
5200	108.63	108.49	0.14	-----	-----	268	204	Peak
5350	40.16	39.83	0.33	54	-13.84	268	204	Average
5350	48.76	48.43	0.33	74	-25.24	268	204	Peak
10400	53.86	55.68	-1.82	68.2	-14.34	142	168	Peak

Remarks:

- Emission Level = Read Level + Factor  
Margin value = Emission level – Limit value
- 5200 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 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	Getaz Yang

**Antenna Polarity & Test Distance: Horizontal at 3 m**

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	39.07	38.65	0.42	54	-14.93	116	203	Average
5150	48.11	47.69	0.42	74	-25.89	116	203	Peak
5240	89.43	89.33	0.1	-----	-----	116	203	Average
5240	97.29	97.19	0.1	-----	-----	116	203	Peak
5350	38.94	38.61	0.33	54	-15.06	116	203	Average
5350	48.45	48.12	0.33	74	-25.55	116	203	Peak
10480	54.91	56.39	-1.48	68.2	-13.29	123	191	Peak

**Antenna Polarity & Test Distance: Vertical at 3 m**

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	39.74	39.32	0.42	54	-14.26	266	204	Average
5150	48.54	48.12	0.42	74	-25.46	266	204	Peak
5240	101.48	101.38	0.1	-----	-----	266	204	Average
5240	109.72	109.62	0.1	-----	-----	266	204	Peak
5350	40.17	39.84	0.33	54	-13.83	266	204	Average
5350	49.82	49.49	0.33	74	-24.18	266	204	Peak
10480	55.66	57.14	-1.48	68.2	-12.54	131	182	Peak

Remarks:

- Emission Level = Read Level + Factor  
Margin value = Emission level – Limit value
- 5240 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 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	Cyril Chen

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	38.9	38.48	0.42	54	-15.1	107	209	Average
5150	48.71	48.29	0.42	74	-25.29	107	209	Peak
5260	91.34	91.21	0.13	-----	-----	107	209	Average
5260	99.02	98.89	0.13	-----	-----	107	209	Peak
5350	38.97	38.64	0.33	54	-15.03	107	209	Average
5350	48.78	48.45	0.33	74	-25.22	107	209	Peak
10520	55.66	57.11	-1.45	68.2	-12.54	165	171	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	39.68	39.26	0.42	54	-14.32	235	203	Average
5150	49.47	49.05	0.42	74	-24.53	235	203	Peak
5260	100.94	100.81	0.13	-----	-----	235	203	Average
5260	109.11	108.98	0.13	-----	-----	235	203	Peak
5350	40.16	39.83	0.33	54	-13.84	235	203	Average
5350	49.52	49.19	0.33	74	-24.48	235	203	Peak
10520	55.65	57.1	-1.45	68.2	-12.55	185	122	Peak

Remarks:

- Emission Level = Read Level + 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	Cyril Chen

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	39.32	38.9	0.42	54	-14.68	100	204	Average
5150	48.58	48.16	0.42	74	-25.42	100	204	Peak
5300	92.28	92.07	0.21	-----	-----	100	204	Average
5300	99.75	99.54	0.21	-----	-----	100	204	Peak
5350	41.06	40.73	0.33	54	-12.94	100	204	Average
5350	50.34	50.01	0.33	74	-23.66	100	204	Peak
10600	46.58	48.19	-1.61	54	-7.42	148	110	Average
10600	57.01	58.62	-1.61	74	-16.99	148	110	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	41.23	40.81	0.42	54	-12.77	260	204	Average
5150	49.65	49.23	0.42	74	-24.35	260	204	Peak
5300	100.79	100.58	0.21	-----	-----	260	204	Average
5300	107.85	107.64	0.21	-----	-----	260	204	Peak
5350	41.87	41.54	0.33	54	-12.13	260	204	Average
5350	50.83	50.5	0.33	74	-23.17	260	204	Peak
10600	46.9	48.51	-1.61	54	-7.1	120	170	Average
10600	56.7	58.31	-1.61	74	-17.3	120	170	Peak

Remarks:

- Emission Level = Read Level + Factor  
Margin value = Emission level – Limit value
- 5300 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 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	Cyril Chen

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	87.5	87.24	0.26	-----	-----	100	212	Average
5320	94.29	94.03	0.26	-----	-----	100	212	Peak
5350	40.41	40.08	0.33	54	-13.59	100	212	Average
5350	48.87	48.54	0.33	74	-25.13	100	212	Peak
10640	46.65	48.27	-1.62	54	-7.35	167	237	Average
10640	57.05	58.67	-1.62	74	-16.95	167	237	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	97.01	96.75	0.26	-----	-----	248	204	Average
5320	104.66	104.4	0.26	-----	-----	248	204	Peak
5350	47.53	47.2	0.33	54	-6.47	248	204	Average
5350	56.8	56.47	0.33	74	-17.2	248	204	Peak
10640	47.03	48.65	-1.62	54	-6.97	182	231	Average
10640	56.78	58.4	-1.62	74	-17.22	182	231	Peak

Remarks:

- Emission Level = Read Level + Factor  
Margin value = Emission level – Limit value
- 5320 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 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	Cyril Chen

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	39.71	38.96	0.75	54	-14.29	110	211	Average
5460	48.74	47.99	0.75	74	-25.26	110	211	Peak
5470	47.89	47.12	0.77	68.2	-20.31	110	211	Peak
5500	88.12	87.23	0.89	-----	-----	110	211	Average
5500	95.38	94.49	0.89	-----	-----	110	211	Peak
5725	47.07	46.2	0.87	68.2	-21.13	110	211	Peak
11000	46.15	47.46	-1.31	54	-7.85	128	198	Average
11000	56.48	57.79	-1.31	74	-17.52	128	198	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	41.22	40.47	0.75	54	-12.78	264	205	Average
5460	49.22	48.47	0.75	74	-24.78	264	205	Peak
5470	51.08	50.31	0.77	68.2	-17.12	264	205	Peak
5500	97.88	96.99	0.89	-----	-----	264	205	Average
5500	106.04	105.15	0.89	-----	-----	264	205	Peak
5725	46.84	45.97	0.87	68.2	-21.36	264	205	Peak
11000	45.75	47.06	-1.31	54	-8.25	161	176	Average
11000	55.7	57.01	-1.31	74	-18.3	161	176	Peak

Remarks:

- Emission Level = Read Level + 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	Cyril Chen

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	39.58	38.83	0.75	54	-14.42	107	220	Average
5460	48.41	47.66	0.75	74	-25.59	107	220	Peak
5470	46.79	46.02	0.77	68.2	-21.41	107	220	Peak
5580	93.14	92.34	0.8	-----	-----	107	220	Average
5580	99.87	99.07	0.8	-----	-----	107	220	Peak
5725	46.34	45.47	0.87	68.2	-21.86	107	220	Peak
11160	46.01	47.54	-1.53	54	-7.99	153	148	Average
11160	56.04	57.57	-1.53	74	-17.96	153	148	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	40.81	40.06	0.75	54	-13.19	275	206	Average
5460	50.76	50.01	0.75	74	-23.24	275	206	Peak
5470	49.46	48.69	0.77	68.2	-18.74	275	206	Peak
5580	101.74	100.94	0.8	-----	-----	275	206	Average
5580	110.03	109.23	0.8	-----	-----	275	206	Peak
5725	46.84	45.97	0.87	68.2	-21.36	275	206	Peak
11160	46.2	47.73	-1.53	54	-7.8	185	210	Average
11160	56.17	57.7	-1.53	74	-17.83	185	210	Peak

Remarks:

- Emission Level = Read Level + Factor  
Margin value = Emission level – Limit value
- 5580 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 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	Cyril Chen

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	39.53	38.78	0.75	54	-14.47	100	220	Average
5460	48.86	48.11	0.75	74	-25.14	100	220	Peak
5470	46.85	46.08	0.77	68.2	-21.35	100	220	Peak
5700	91.16	90.31	0.85	-----	-----	100	220	Average
5700	98.74	97.89	0.85	-----	-----	100	220	Peak
5725	47.75	46.88	0.87	68.2	-20.45	100	220	Peak
11400	48.2	49.55	-1.35	54	-5.8	157	123	Average
11400	58.02	59.37	-1.35	74	-15.98	157	123	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	39.76	39.01	0.75	54	-14.24	210	201	Average
5460	48.44	47.69	0.75	74	-25.56	210	201	Peak
5470	47.56	46.79	0.77	68.2	-20.64	210	201	Peak
5700	99.12	98.27	0.85	-----	-----	210	201	Average
5700	107.38	106.53	0.85	-----	-----	210	201	Peak
5725	56.01	55.14	0.87	68.2	-12.19	210	201	Peak
11400	46.84	48.19	-1.35	54	-7.16	126	166	Average
11400	57.26	58.61	-1.35	74	-16.74	126	166	Peak

Remarks:

- Emission Level = Read Level + 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	Cyril Chen

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	38.25	37.5	0.75	54	-15.75	197	196	Average
5460	48.83	48.08	0.75	74	-25.17	197	196	Peak
5470	48.85	48.08	0.77	68.2	-19.35	197	196	Peak
5720	94.64	93.78	0.86	-----	-----	197	196	Average
5720	102.03	101.17	0.86	-----	-----	197	196	Peak
5850	50.91	49.75	1.16	68.2	-17.29	197	196	Peak
11440	46.21	47.54	-1.33	54	-7.79	130	146	Average
11440	56.41	57.74	-1.33	74	-17.59	130	146	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	38.63	37.88	0.75	54	-15.37	105	185	Average
5460	49.26	48.51	0.75	74	-24.74	105	185	Peak
5470	48.59	47.82	0.77	68.2	-19.61	105	185	Peak
5720	99.77	98.91	0.86	-----	-----	105	185	Average
5720	108.28	107.42	0.86	-----	-----	105	185	Peak
5850	50.48	49.32	1.16	68.2	-17.72	105	185	Peak
11440	45.86	47.19	-1.33	54	-8.14	161	150	Average
11440	56.02	57.35	-1.33	74	-17.98	161	150	Peak

Remarks:

- Emission Level = Read Level + 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	Cyril Chen

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	95.87	94.99	0.88	-----	-----	193	191	Average
5745	103.8	102.92	0.88	-----	-----	193	191	Peak
11490	46.32	47.64	-1.32	54	-7.68	180	169	Average
11490	55.78	57.1	-1.32	74	-18.22	180	169	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	101.21	100.33	0.88	-----	-----	111	185	Average
5745	109.17	108.29	0.88	-----	-----	111	185	Peak
11490	45.18	46.5	-1.32	54	-8.82	134	184	Average
11490	55.04	56.36	-1.32	74	-18.96	134	184	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5632.175	50.31	49.64	0.67	68.2	-17.89	193	191	Peak
5652.6	49.51	48.82	0.69	70.13	-20.62	193	191	Peak
5916.225	49.94	48.64	1.3	74.67	-24.73	193	191	Peak
5945.675	51.03	49.71	1.32	68.2	-17.17	193	191	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5573.75	50.18	49.35	0.83	68.2	-18.02	111	185	Peak
5660.2	49.51	48.84	0.67	75.77	-26.26	111	185	Peak
5917.175	49.92	48.62	1.3	73.97	-24.05	111	185	Peak
6006	50.73	49.33	1.4	68.2	-17.47	111	185	Peak

Remarks:

- Emission Level = Read Level + 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	Cyril Chen

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	95.48	94.56	0.92	-----	-----	195	197	Average
5785	103.17	102.25	0.92	-----	-----	195	197	Peak
11570	44.42	46.13	-1.71	54	-9.58	179	169	Average
11570	53.94	55.65	-1.71	74	-20.06	179	169	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	100.46	99.54	0.92	-----	-----	110	182	Average
5785	108.1	107.18	0.92	-----	-----	110	182	Peak
11570	45.15	46.86	-1.71	54	-8.85	160	166	Average
11570	54.35	56.06	-1.71	74	-19.65	160	166	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5616.025	49.78	49.05	0.73	68.2	-18.42	195	197	Peak
5653.55	48.69	47.99	0.7	70.84	-22.15	195	197	Peak
5916.7	49.64	48.34	1.3	74.32	-24.68	195	197	Peak
5975.125	51.22	49.87	1.35	68.2	-16.98	195	197	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5626.95	50.36	49.63	0.73	68.2	-17.84	110	182	Peak
5659.725	50.17	49.5	0.67	75.42	-25.25	110	182	Peak
5923.35	50.88	49.58	1.3	69.42	-18.54	110	182	Peak
5972.75	51.68	50.34	1.34	68.2	-16.52	110	182	Peak

Remarks:

- Emission Level = Read Level + 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	Cyril Chen

**<Spurious Emission>**

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	96.57	95.51	1.06	-----	-----	200	190	Average
5825	104.63	103.57	1.06	-----	-----	200	190	Peak
11650	44.07	46.13	-2.06	54	-9.93	198	194	Average
11650	54.04	56.1	-2.06	74	-19.96	198	194	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	100.31	99.25	1.06	-----	-----	120	186	Average
5825	108.89	107.83	1.06	-----	-----	120	186	Peak
11650	44.82	46.88	-2.06	54	-9.18	188	179	Average
11650	53.29	55.35	-2.06	74	-20.71	188	179	Peak

**<Out of Band Emission (OOBE)>**

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5588.475	49.99	49.2	0.79	68.2	-18.21	200	190	Peak
5651.65	49.77	49.08	0.69	69.43	-19.66	200	190	Peak
5915.75	50.47	49.17	1.3	75.02	-24.55	200	190	Peak
5938.55	50.64	49.32	1.32	68.2	-17.56	200	190	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5604.625	50.27	49.54	0.73	68.2	-17.93	120	186	Peak
5655.925	49.44	48.79	0.65	72.6	-23.16	120	186	Peak
5917.175	50.55	49.25	1.3	73.97	-23.42	120	186	Peak
5950.9	50.8	49.48	1.32	68.2	-17.4	120	186	Peak

Remarks:

- Emission Level = Read Level + 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

802.11n (HT40)

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

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	39.65	39.23	0.42	54	-14.35	117	204	Average
5150	47.03	46.61	0.42	74	-26.97	117	204	Peak
5190	84.96	84.76	0.2	-----	-----	117	204	Average
5190	92.27	92.07	0.2	-----	-----	117	204	Peak
5350	39.25	38.92	0.33	54	-14.75	117	204	Average
5350	46.43	46.1	0.33	74	-27.57	117	204	Peak
10380	55.29	57.15	-1.86	68.2	-12.91	171	192	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	44.06	43.64	0.42	54	-9.94	273	203	Average
5150	51.88	51.46	0.42	74	-22.12	273	203	Peak
5190	94.64	94.44	0.2	-----	-----	273	203	Average
5190	102.41	102.21	0.2	-----	-----	273	203	Peak
5350	39.94	39.61	0.33	54	-14.06	273	203	Average
5350	47.17	46.84	0.33	74	-26.83	273	203	Peak
10380	54.64	56.5	-1.86	68.2	-13.56	168	156	Peak

Remarks:

- Emission Level = Read Level + 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	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	39.8	39.38	0.42	54	-14.2	100	209	Average
5150	47.27	46.85	0.42	74	-26.73	100	209	Peak
5230	87.39	87.27	0.12	-----	-----	100	209	Average
5230	95.98	95.86	0.12	-----	-----	100	209	Peak
5350	39.25	38.92	0.33	54	-14.75	100	209	Average
5350	47.72	47.39	0.33	74	-26.28	100	209	Peak
10460	55.42	57.01	-1.59	68.2	-12.78	163	171	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	45.44	45.02	0.42	54	-8.56	251	204	Average
5150	52.64	52.22	0.42	74	-21.36	251	204	Peak
5230	98.3	98.18	0.12	-----	-----	251	204	Average
5230	106.05	105.93	0.12	-----	-----	251	204	Peak
5350	41.44	41.11	0.33	54	-12.56	251	204	Average
5350	54.85	54.52	0.33	74	-19.15	251	204	Peak
10460	55.09	56.68	-1.59	68.2	-13.11	162	146	Peak

Remarks:

- Emission Level = Read Level + 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	Cyril Chen

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	39.42	39	0.42	54	-14.58	113	202	Average
5150	46.95	46.53	0.42	74	-27.05	113	202	Peak
5270	87.29	87.16	0.13	-----	-----	113	202	Average
5270	94.57	94.44	0.13	-----	-----	113	202	Peak
5350	40.84	40.51	0.33	54	-13.16	113	202	Average
5350	47.47	47.14	0.33	74	-26.53	113	202	Peak
10540	56.51	58	-1.49	68.2	-11.69	122	172	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	41.24	40.82	0.42	54	-12.76	247	205	Average
5150	49.22	48.8	0.42	74	-24.78	247	205	Peak
5270	96.4	96.27	0.13	-----	-----	247	205	Average
5270	105.22	105.09	0.13	-----	-----	247	205	Peak
5350	44.54	44.21	0.33	54	-9.46	247	205	Average
5350	53.87	53.54	0.33	74	-20.13	247	205	Peak
10540	55.21	56.7	-1.49	68.2	-12.99	139	178	Peak

Remarks:

- Emission Level = Read Level + Factor  
Margin value = Emission level – Limit value
- 5270 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 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	Cyril Chen

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	39.88	39.46	0.42	54	-14.12	112	203	Average
5150	45.64	45.22	0.42	74	-28.36	112	203	Peak
5310	83.44	83.21	0.23	-----	-----	112	203	Average
5310	90.56	90.33	0.23	-----	-----	112	203	Peak
5350	44.33	44	0.33	54	-9.67	112	203	Average
5350	51.34	51.01	0.33	74	-22.66	112	203	Peak
10620	45.58	47.2	-1.62	54	-8.42	164	147	Average
10620	55.94	57.56	-1.62	74	-18.06	164	147	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	39.58	39.16	0.42	54	-14.42	270	204	Average
5150	46.51	46.09	0.42	74	-27.49	270	204	Peak
5310	93.25	93.02	0.23	-----	-----	270	204	Average
5310	101.26	101.03	0.23	-----	-----	270	204	Peak
5350	51.6	51.27	0.33	54	-2.4	270	204	Average
5350	59.29	58.96	0.33	74	-14.71	270	204	Peak
10620	46.95	48.57	-1.62	54	-7.05	144	169	Average
10620	56.75	58.37	-1.62	74	-17.25	144	169	Peak

Remarks:

- Emission Level = Read Level + Factor  
Margin value = Emission level – Limit value
- 5310 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 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	Cyril Chen

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	41.2	40.45	0.75	54	-12.8	109	218	Average
5460	47.42	46.67	0.75	74	-26.58	109	218	Peak
5470	49.41	48.64	0.77	68.2	-18.79	109	218	Peak
5510	86.51	85.64	0.87	-----	-----	109	218	Average
5510	92.91	92.04	0.87	-----	-----	109	218	Peak
5725	49.19	48.32	0.87	68.2	-19.01	109	218	Peak
11020	45.82	47.15	-1.33	54	-8.18	166	174	Average
11020	55.73	57.06	-1.33	74	-18.27	166	174	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	44.97	44.22	0.75	54	-9.03	220	202	Average
5460	50.85	50.1	0.75	74	-23.15	220	202	Peak
5470	52.26	51.49	0.77	68.2	-15.94	220	202	Peak
5510	95.68	94.81	0.87	-----	-----	220	202	Average
5510	103.26	102.39	0.87	-----	-----	220	202	Peak
5725	49.33	48.46	0.87	68.2	-18.87	220	202	Peak
11020	45.52	46.85	-1.33	54	-8.48	181	196	Average
11020	55.17	56.5	-1.33	74	-18.83	181	196	Peak

Remarks:

- Emission Level = Read Level + 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	Cyril Chen

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	40.94	40.19	0.75	54	-13.06	102	220	Average
5460	49.21	48.46	0.75	74	-24.79	102	220	Peak
5470	49.29	48.52	0.77	68.2	-18.91	102	220	Peak
5550	90.4	89.53	0.87	-----	-----	102	220	Average
5550	98.03	97.16	0.87	-----	-----	102	220	Peak
5725	48.03	47.16	0.87	68.2	-20.17	102	220	Peak
11100	46.37	47.76	-1.39	54	-7.63	114	106	Average
11100	56.4	57.79	-1.39	74	-17.6	114	106	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	45.31	44.56	0.75	54	-8.69	168	147	Average
5460	54.39	53.64	0.75	74	-19.61	168	147	Peak
5470	54.4	53.63	0.77	68.2	-13.8	168	147	Peak
5550	98.79	97.92	0.87	-----	-----	168	147	Average
5550	106.21	105.34	0.87	-----	-----	168	147	Peak
5725	48.71	47.84	0.87	68.2	-19.49	168	147	Peak
11100	46.12	47.51	-1.39	54	-7.88	166	181	Average
11100	56.17	57.56	-1.39	74	-17.83	166	181	Peak

Remarks:

- Emission Level = Read Level + Factor  
Margin value = Emission level – Limit value
- 5550 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 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	Cyril Chen

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	39.49	38.74	0.75	54	-14.51	210	190	Average
5460	49.06	48.31	0.75	74	-24.94	210	190	Peak
5470	48.09	47.32	0.77	68.2	-20.11	210	190	Peak
5670	89.71	88.98	0.73	-----	-----	210	190	Average
5670	96.84	96.11	0.73	-----	-----	210	190	Peak
5725	50.55	49.68	0.87	68.2	-17.65	210	190	Peak
11340	47	48.61	-1.61	54	-7	152	198	Average
11340	56.99	58.6	-1.61	74	-17.01	152	198	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	40	39.25	0.75	54	-14	157	151	Average
5460	50.63	49.88	0.75	74	-23.37	157	151	Peak
5470	48.37	47.6	0.77	68.2	-19.83	157	151	Peak
5670	94.55	93.82	0.73	-----	-----	157	151	Average
5670	102.61	101.88	0.73	-----	-----	157	151	Peak
5725	51.47	50.6	0.87	68.2	-16.73	157	151	Peak
11340	46.55	48.16	-1.61	54	-7.45	182	153	Average
11340	56.84	58.45	-1.61	74	-17.16	182	153	Peak

Remarks:

- Emission Level = Read Level + 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	Cyril Chen

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	38.58	37.83	0.75	54	-15.42	187	196	Average
5460	49.42	48.67	0.75	74	-24.58	187	196	Peak
5470	48.34	47.57	0.77	68.2	-19.86	187	196	Peak
5710	92.34	91.5	0.84	-----	-----	187	196	Average
5710	100.42	99.58	0.84	-----	-----	187	196	Peak
5850	50.66	49.5	1.16	68.2	-17.54	187	196	Peak
11420	45.48	46.83	-1.35	54	-8.52	172	114	Average
11420	55.48	56.83	-1.35	74	-18.52	172	114	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	39.67	38.92	0.75	54	-14.33	112	185	Average
5460	49.73	48.98	0.75	74	-24.27	112	185	Peak
5470	48.08	47.31	0.77	68.2	-20.12	112	185	Peak
5710	97.75	96.91	0.84	-----	-----	112	185	Average
5710	105.15	104.31	0.84	-----	-----	112	185	Peak
5850	51.08	49.92	1.16	68.2	-17.12	112	185	Peak
11420	46.51	47.86	-1.35	54	-7.49	138	184	Average
11420	55.78	57.13	-1.35	74	-18.22	138	184	Peak

Remarks:

- Emission Level = Read Level + 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	Cyril Chen

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5755	90.77	89.86	0.91	-----	-----	185	197	Average
5755	99.3	98.39	0.91	-----	-----	185	197	Peak
11510	44.82	46.17	-1.35	54	-9.18	157	120	Average
11510	54.54	55.89	-1.35	74	-19.46	157	120	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5755	95.95	95.04	0.91	-----	-----	115	182	Average
5755	103.36	102.45	0.91	-----	-----	115	182	Peak
11510	45.81	47.16	-1.35	54	-8.19	171	169	Average
11510	55.56	56.91	-1.35	74	-18.44	171	169	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5645.475	50.48	49.81	0.67	68.2	-17.72	185	197	Peak
5659.725	50.52	49.85	0.67	75.42	-24.9	185	197	Peak
5917.175	50.04	48.74	1.3	73.97	-23.93	185	197	Peak
5971.8	50.72	49.38	1.34	68.2	-17.48	185	197	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5646.9	51.08	50.41	0.67	68.2	-17.12	115	182	Peak
5657.825	51.32	50.66	0.66	74.01	-22.69	115	182	Peak
5920.025	50.62	49.32	1.3	71.87	-21.25	115	182	Peak
5994.125	50.6	49.23	1.37	68.2	-17.6	115	182	Peak

Remarks:

- Emission Level = Read Level + 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	Cyril Chen

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5795	91.82	90.87	0.95	-----	-----	193	196	Average
5795	97.61	96.66	0.95	-----	-----	193	196	Peak
11590	44.08	45.88	-1.8	54	-9.92	131	184	Average
11590	53.07	54.87	-1.8	74	-20.93	131	184	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5795	95.92	94.97	0.95	-----	-----	105	185	Average
5795	104.43	103.48	0.95	-----	-----	105	185	Peak
11590	44.35	46.15	-1.8	54	-9.65	175	105	Average
11590	53.62	55.42	-1.8	74	-20.38	175	105	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5634.55	49.96	49.29	0.67	68.2	-18.24	193	196	Peak
5655.925	49.46	48.81	0.65	72.6	-23.14	193	196	Peak
5921.925	49.82	48.52	1.3	70.47	-20.65	193	196	Peak
5966.575	51.56	50.22	1.34	68.2	-16.64	193	196	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5626.95	50.23	49.5	0.73	68.2	-17.97	105	185	Peak
5655.45	50.19	49.54	0.65	72.25	-22.06	105	185	Peak
5917.65	51.83	50.53	1.3	73.62	-21.79	105	185	Peak
5944.25	51.23	49.91	1.32	68.2	-16.97	105	185	Peak

Remarks:

- Emission Level = Read Level + 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	Getaz Yang

**Antenna Polarity & Test Distance: Horizontal at 3 m**

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	39.86	39.44	0.42	54	-14.14	106	207	Average
5150	47.29	46.87	0.42	74	-26.71	106	207	Peak
5210	82.66	82.54	0.12	-----	-----	106	207	Average
5210	88.65	88.53	0.12	-----	-----	106	207	Peak
5350	39.57	39.24	0.33	54	-14.43	106	207	Average
5350	46.92	46.59	0.33	74	-27.08	106	207	Peak
10420	54.95	56.69	-1.74	68.2	-13.25	141	165	Peak

**Antenna Polarity & Test Distance: Vertical at 3 m**

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	43.93	43.51	0.42	54	-10.07	253	202	Average
5150	51.15	50.73	0.42	74	-22.85	253	202	Peak
5210	92.68	92.56	0.12	-----	-----	253	202	Average
5210	100.32	100.2	0.12	-----	-----	253	202	Peak
5350	40.52	40.19	0.33	54	-13.48	253	202	Average
5350	48.07	47.74	0.33	74	-25.93	253	202	Peak
10420	55.38	57.12	-1.74	68.2	-12.82	180	153	Peak

Remarks:

- Emission Level = Read Level + 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	Cyril Chen

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	40.02	39.6	0.42	54	-13.98	100	204	Average
5150	47.86	47.44	0.42	74	-26.14	100	204	Peak
5290	81.18	81.01	0.17	-----	-----	100	204	Average
5290	86.48	86.31	0.17	-----	-----	100	204	Peak
5350	40.49	40.16	0.33	54	-13.51	100	204	Average
5350	45.81	45.48	0.33	74	-28.19	100	204	Peak
10580	55.84	57.41	-1.57	68.2	-12.36	178	226	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	40.29	39.87	0.42	54	-13.71	265	205	Average
5150	46.09	45.67	0.42	74	-27.91	265	205	Peak
5290	90.21	90.04	0.17	-----	-----	265	205	Average
5290	96.94	96.77	0.17	-----	-----	265	205	Peak
5350	42.69	42.36	0.33	54	-11.31	265	205	Average
5350	48.45	48.12	0.33	74	-25.55	265	205	Peak
10580	55.31	56.88	-1.57	68.2	-12.89	147	260	Peak

Remarks:

- Emission Level = Read Level + 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	Cyril Chen

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	41.92	41.17	0.75	54	-12.08	109	209	Average
5460	47.62	46.87	0.75	74	-26.38	109	209	Peak
5470	48.61	47.84	0.77	68.2	-19.59	109	209	Peak
5530	82.94	82.08	0.86	-----	-----	109	209	Average
5530	89.2	88.34	0.86	-----	-----	109	209	Peak
5725	47.69	46.82	0.87	68.2	-20.51	109	209	Peak
11060	45.8	47.15	-1.35	54	-8.2	174	129	Average
11060	55.9	57.25	-1.35	74	-18.1	174	129	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	47.64	46.89	0.75	54	-6.36	262	174	Average
5460	52.92	52.17	0.75	74	-21.08	262	174	Peak
5470	51.04	50.27	0.77	68.2	-17.16	262	174	Peak
5530	92.9	92.04	0.86	-----	-----	262	174	Average
5530	99.66	98.8	0.86	-----	-----	262	174	Peak
5725	49.11	48.24	0.87	68.2	-19.09	262	174	Peak
11060	45.54	46.89	-1.35	54	-8.46	162	188	Average
11060	55.46	56.81	-1.35	74	-18.54	162	188	Peak

Remarks:

- Emission Level = Read Level + Factor  
Margin value = Emission level – Limit value
- 5530 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 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	Cyril Chen

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	44.03	43.28	0.75	54	-9.97	220	184	Average
5460	49.79	49.04	0.75	74	-24.21	220	184	Peak
5470	50.69	49.92	0.77	68.2	-17.51	220	184	Peak
5610	89.24	88.51	0.73	-----	-----	220	184	Average
5610	95.57	94.84	0.73	-----	-----	220	184	Peak
5725	49.62	48.75	0.87	68.2	-18.58	220	184	Peak
11220	45.5	47.16	-1.66	54	-8.5	148	169	Average
11220	55.75	57.41	-1.66	74	-18.25	148	169	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	46.74	45.99	0.75	54	-7.26	208	204	Average
5460	53.17	52.42	0.75	74	-20.83	208	204	Peak
5470	54.28	53.51	0.77	68.2	-13.92	208	204	Peak
5610	95.67	94.94	0.73	-----	-----	208	204	Average
5610	101.89	101.16	0.73	-----	-----	208	204	Peak
5725	54.87	54	0.87	68.2	-13.33	208	204	Peak
11220	46.57	48.23	-1.66	54	-7.43	153	145	Average
11220	56.8	58.46	-1.66	74	-17.2	153	145	Peak

Remarks:

- Emission Level = Read Level + Factor  
Margin value = Emission level – Limit value
- 5610 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 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	Cyril Chen

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	40.07	39.32	0.75	54	-13.93	188	196	Average
5460	49.34	48.59	0.75	74	-24.66	188	196	Peak
5470	48.57	47.8	0.77	68.2	-19.63	188	196	Peak
5690	90.64	89.85	0.79	-----	-----	188	196	Average
5690	97.13	96.34	0.79	-----	-----	188	196	Peak
5850	52.04	50.88	1.16	68.2	-16.16	188	196	Peak
11380	46.07	47.49	-1.42	54	-7.93	127	138	Average
11380	56.39	57.81	-1.42	74	-17.61	127	138	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	41.24	40.49	0.75	54	-12.76	106	186	Average
5460	51.91	51.16	0.75	74	-22.09	106	186	Peak
5470	49.91	49.14	0.77	68.2	-18.29	106	186	Peak
5690	96.63	95.84	0.79	-----	-----	106	186	Average
5690	103.42	102.63	0.79	-----	-----	106	186	Peak
5850	52.79	51.63	1.16	68.2	-15.41	106	186	Peak
11380	45.64	47.06	-1.42	54	-8.36	180	183	Average
11380	55.63	57.05	-1.42	74	-18.37	180	183	Peak

Remarks:

- Emission Level = Read Level + 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	Cyril Chen

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5775	89.21	88.27	0.94	-----	-----	194	196	Average
5775	95.93	94.99	0.94	-----	-----	194	196	Peak
11550	44.75	46.35	-1.6	54	-9.25	175	190	Average
11550	54.88	56.48	-1.6	74	-19.12	175	190	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5775	93.24	92.3	0.94	-----	-----	106	191	Average
5775	99.71	98.77	0.94	-----	-----	106	191	Peak
11550	44.3	45.9	-1.6	54	-9.7	140	165	Average
11550	54.21	55.81	-1.6	74	-19.79	140	165	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5618.4	50.3	49.56	0.74	68.2	-17.9	194	196	Peak
5651.65	50.28	49.59	0.69	69.43	-19.15	194	196	Peak
5921.925	51.94	50.64	1.3	70.47	-18.53	194	196	Peak
5958.5	50.77	49.44	1.33	68.2	-17.43	194	196	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5593.225	50.5	49.71	0.79	68.2	-17.7	106	191	Peak
5658.3	50.68	50.02	0.66	74.36	-23.68	106	191	Peak
5919.075	52.42	51.12	1.3	72.57	-20.15	106	191	Peak
5937.125	51.9	50.6	1.3	68.2	-16.3	106	191	Peak

Remarks:

- Emission Level = Read Level + 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

802.11ac (VHT160)

EUT Test Condition		Measurement Detail	
Channel	Channel 50	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Getaz Yang

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	39.95	39.53	0.42	54	-14.05	109	208	Average
5150	47.8	47.38	0.42	74	-26.2	109	208	Peak
5250	76.19	76.06	0.13	-----	-----	109	208	Average
5250	81.73	81.6	0.13	-----	-----	109	208	Peak
5350	40.05	39.72	0.33	54	-13.95	109	208	Average
5350	46.22	45.89	0.33	74	-27.78	109	208	Peak
10500	54.39	55.8	-1.41	68.2	-13.81	162	153	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	41.85	41.43	0.42	54	-12.15	274	205	Average
5150	49.3	48.88	0.42	74	-24.7	274	205	Peak
5250	85.78	85.65	0.13	-----	-----	274	205	Average
5250	92.41	92.28	0.13	-----	-----	274	205	Peak
5350	41.78	41.45	0.33	54	-12.22	274	205	Average
5350	48.54	48.21	0.33	74	-25.46	274	205	Peak
10500	54.87	56.28	-1.41	68.2	-13.33	138	146	Peak

Remarks:

- Emission Level = Read Level + Factor  
Margin value = Emission level – Limit value
- 5250 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 114	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Cyril Chen

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	41.54	40.79	0.75	54	-12.46	201	202	Average
5460	46.78	46.03	0.75	74	-27.22	201	202	Peak
5470	46.37	45.6	0.77	68.2	-21.83	201	202	Peak
5570	81.4	80.57	0.83	-----	-----	201	202	Average
5570	88.46	87.63	0.83	-----	-----	201	202	Peak
5725	51.67	50.8	0.87	68.2	-16.53	201	202	Peak
11140	45.99	47.5	-1.51	54	-8.01	144	182	Average
11140	56.17	57.68	-1.51	74	-17.83	144	182	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	47.46	46.71	0.75	54	-6.54	261	205	Average
5460	52.1	51.35	0.75	74	-21.9	261	205	Peak
5470	54.53	53.76	0.77	68.2	-13.67	261	205	Peak
5570	88.2	87.37	0.83	-----	-----	261	205	Average
5570	95.38	94.55	0.83	-----	-----	261	205	Peak
5725	55.41	54.54	0.87	68.2	-12.79	261	205	Peak
11140	45.64	47.15	-1.51	54	-8.36	133	189	Average
11140	56.34	57.85	-1.51	74	-17.66	133	189	Peak

Remarks:

- Emission Level = Read Level + Factor  
Margin value = Emission level – Limit value
- 5570 MHz: Fundamental Frequency
- \*: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

**9 kHz ~ 30 MHz Data:**

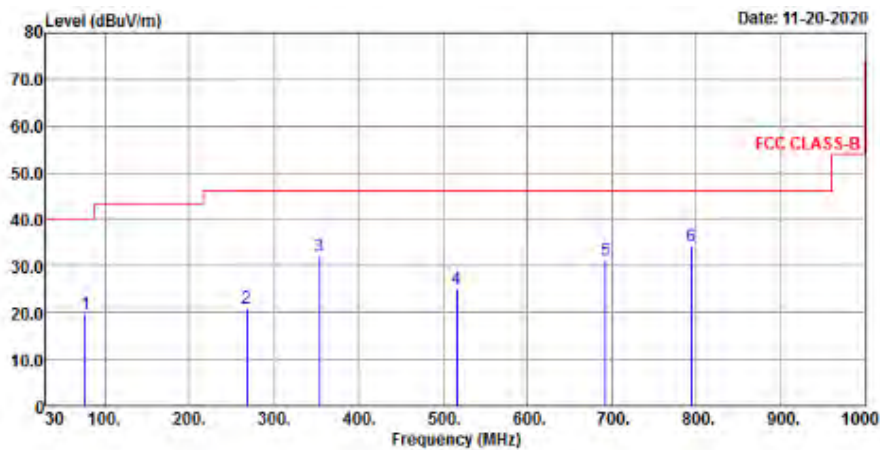
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

**30 MHz ~ 1 GHz Worst-Case Data:**

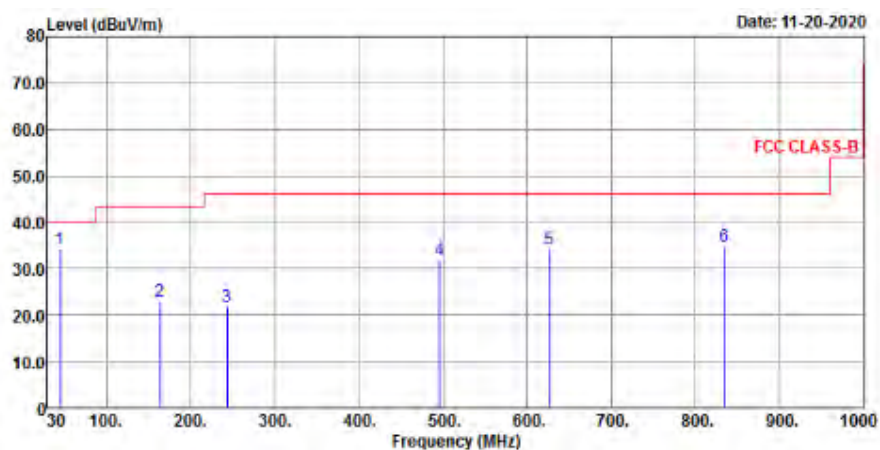
**802.11a**

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

**Horizontal**



**Vertical**



**Antenna Polarity & Test Distance: Horizontal at 3 m**

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
76.56	19.67	35.3	-15.63	40	-20.33	189	79	QP
267.65	21.07	33.32	-12.25	46	-24.93	104	117	QP
353.98	32.31	41.95	-9.64	46	-13.69	111	196	QP
515.97	25.07	30.26	-5.19	46	-20.93	179	168	QP
692.51	31.31	32.12	-0.81	46	-14.69	150	262	QP
794.36	34.13	32.58	1.55	46	-11.87	166	187	QP

**Antenna Polarity & Test Distance: Vertical at 3 m**

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
44.55	34.21	46.08	-11.87	40	-5.79	124	199	QP
163.86	22.96	34.96	-12	43.5	-20.54	155	108	QP
243.4	21.7	34.92	-13.22	46	-24.3	139	164	QP
495.6	31.84	37.38	-5.54	46	-14.16	147	123	QP
626.55	34.16	36.02	-1.86	46	-11.84	167	258	QP
835.1	34.96	32.68	2.28	46	-11.04	181	193	QP

Remarks:

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

## 4.2 Conducted Emission Measurement

### 4.2.1 Limits of Conducted Emission Measurement

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

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

### 4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Dec. 11, 2019	Dec. 10, 2020
RF signal cable Woken	5D-FB	Cable-cond1-01	Sep. 04, 2020	Sep. 03, 2021
LISN ROHDE & SCHWARZ (EUT)	ENV216	101826	Feb. 20, 2020	Feb. 19, 2021
V-LISN SCHWARZBECK (Peripheral)	NNBL 8226-2	8226-142	Jul. 31, 2020	Jul. 30, 2021
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

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

#### 4.2.3 Test Procedures

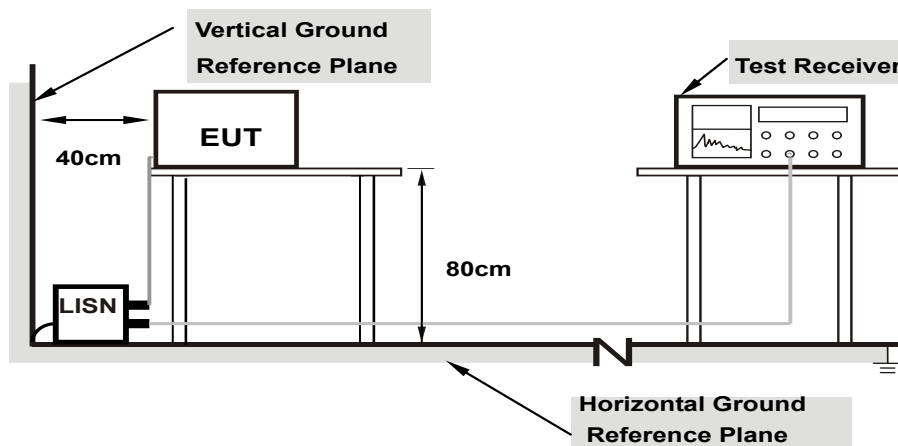
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

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

#### 4.2.4 Deviation from Test Standard

No deviation.

#### 4.2.5 Test Setup



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

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

#### 4.2.6 EUT Operating Conditions

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

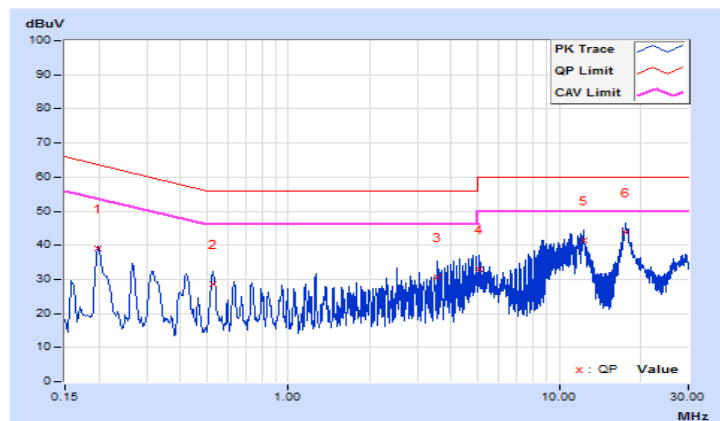
#### 4.2.7 Test Results

<b>Frequency Range</b>	150kHz ~ 30MHz	<b>Detector Function &amp; Resolution Bandwidth</b>	Quasi-Peak (QP) / Average (AV), 9kHz
<b>Input Power</b>	120Vac, 60Hz	<b>Environmental Conditions</b>	24°C, 67%RH
<b>Tested by</b>	Tim Chen	<b>Test Date</b>	2020/11/21

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19800	9.66	29.26	25.03	38.92	34.69	63.69	53.69	-24.77	-19.00
2	0.52600	9.66	18.95	11.63	28.61	21.29	56.00	46.00	-27.39	-24.71
3	3.57000	9.73	20.88	14.20	30.61	23.93	56.00	46.00	-25.39	-22.07
4	5.04200	9.75	23.09	13.97	32.84	23.72	60.00	50.00	-27.16	-26.28
5	12.37800	9.82	31.62	26.27	41.44	36.09	60.00	50.00	-18.56	-13.91
6	17.62600	9.86	33.81	26.31	43.67	36.17	60.00	50.00	-16.33	-13.83

**Remarks:**

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

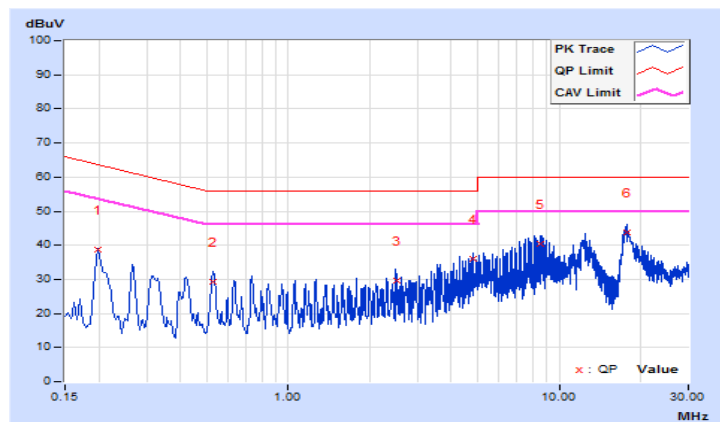


<b>Frequency Range</b>	150kHz ~ 30MHz	<b>Detector Function &amp; Resolution Bandwidth</b>	Quasi-Peak (QP) / Average (AV), 9kHz
<b>Input Power</b>	120Vac, 60Hz	<b>Environmental Conditions</b>	24°C, 67%RH
<b>Tested by</b>	Tim Chen	<b>Test Date</b>	2020/11/21

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19800	9.68	29.16	25.25	38.84	34.93	63.69	53.69	-24.85	-18.76
2	0.52984	9.68	19.61	13.60	29.29	23.28	56.00	46.00	-26.71	-22.72
3	2.51700	9.74	19.89	16.08	29.63	25.82	56.00	46.00	-26.37	-20.18
4	4.84100	9.78	26.21	16.99	35.99	26.77	56.00	46.00	-20.01	-19.23
<b>5</b>	<b>8.48200</b>	<b>9.81</b>	<b>30.72</b>	<b>28.28</b>	<b>40.53</b>	<b>38.09</b>	<b>60.00</b>	<b>50.00</b>	<b>-19.47</b>	<b>-11.91</b>
6	17.75000	9.96	33.94	26.96	43.90	36.92	60.00	50.00	-16.10	-13.08

**Remarks:**

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



### 4.3 Transmit Power Measurement

#### 4.3.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p $\leq$ 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  $N_{ANT} \leq 4$ ;

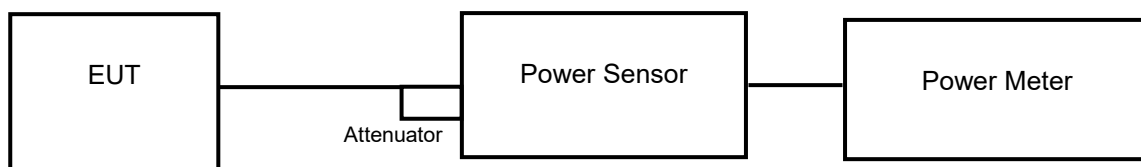
Array Gain = 0 dB (i.e., no array gain) for channel widths  $\geq 40$  MHz for any  $N_{ANT}$ ;

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

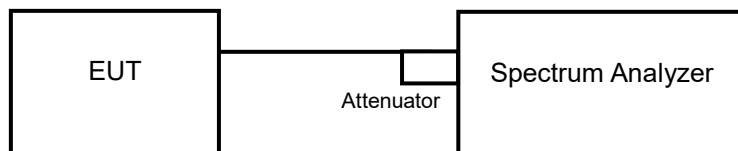
For power measurements on all other devices: Array Gain =  $10 \log(N_{ANT}/N_{SS})$  dB.

#### 4.3.2 Test Setup

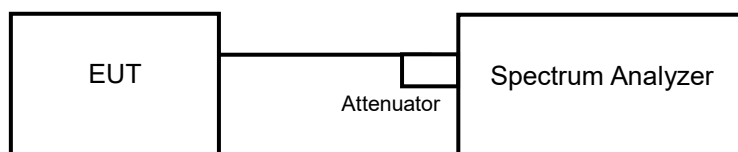
##### <Power Output Measurement>



or



##### <26 dB Bandwidth>





#### 4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

#### 4.3.4 Test Procedure

##### **Average Power Measurement**

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

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

<802.11ac (VHT80), 802.11ac (VHT160), Straddle channel>

- 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.
- k. Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument’s band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum

##### **26 dB Bandwidth**

- a. Set RBW = approximately 1 % of the emission bandwidth.
- b. Set the VBW  $\geq$  3 x RBW.
- c. Detector = Peak.
- d. Trace mode = max hold.
- e. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1 %.

#### 4.3.5 Deviation from Test Standard

No deviation.

#### 4.3.6 EUT Operating Conditions

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

#### 4.3.7 Test Results

##### Power Output:

##### 802.11a

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	73.451	18.66	24	Pass
40	5200	136.458	21.35	24	Pass
48	5240	123.88	20.93	24	Pass
52	5260	131.22	21.18	24	Pass
60	5300	133.968	21.27	24	Pass
64	5320	47.206	16.74	24	Pass
100	5500	82.794	19.18	24	Pass
116	5580	126.765	21.03	24	Pass
140	5700	70.307	18.47	24	Pass
149	5745	124.451	20.95	30	Pass
157	5785	130.017	21.14	30	Pass
165	5825	128.529	21.09	30	Pass

##### Note:

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

1.  $11 \text{ dBm} + 10\log (29.78) = 25.74 \text{ dBm} > 24 \text{ dBm}$ .
2.  $11 \text{ dBm} + 10\log (27.62) = 25.41 \text{ dBm} > 24 \text{ dBm}$ .
3.  $11 \text{ dBm} + 10\log (24.07) = 24.81 \text{ dBm} > 24 \text{ dBm}$ .
4.  $11 \text{ dBm} + 10\log (23.93) = 24.79 \text{ dBm} > 24 \text{ dBm}$ .
5.  $11 \text{ dBm} + 10\log (29.05) = 25.63 \text{ dBm} > 24 \text{ dBm}$ .
6.  $11 \text{ dBm} + 10\log (24.62) = 24.91 \text{ dBm} > 24 \text{ dBm}$ .

### 802.11n (HT20)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	15.59	15.57	72.282	18.59	24	Pass
40	5200	19.48	19.58	179.498	22.54	24	Pass
48	5240	19.49	19.47	177.432	22.49	24	Pass
52	5260	19.68	19.63	184.730	22.67	24	Pass
60	5300	19.47	19.55	178.669	22.52	24	Pass
64	5320	16.00	15.94	79.075	18.98	24	Pass
100	5500	15.84	15.75	75.954	18.81	24	Pass
116	5580	19.53	19.62	181.365	22.59	24	Pass
140	5700	17.94	18.05	126.056	21.01	24	Pass
144	5720 (U-NII-2C)	16.62	16.78	98.745	19.95	23.29	Pass
144	5720 (U-NII-3)	10.06	10.38	22.22	13.47	30	Pass
149	5745	20.99	20.98	250.917	24.00	30	Pass
157	5785	21.11	21.19	260.644	24.16	30	Pass
165	5825	21.06	20.99	253.247	24.04	30	Pass

**Note:**

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

**Chain 0**

1.  $11 \text{ dBm} + 10\log (24.74) = 24.93 \text{ dBm} > 24 \text{ dBm}$ .
2.  $11 \text{ dBm} + 10\log (24.49) = 24.89 \text{ dBm} > 24 \text{ dBm}$ .
3.  $11 \text{ dBm} + 10\log (25.08) = 24.99 \text{ dBm} > 24 \text{ dBm}$ .
4.  $11 \text{ dBm} + 10\log (24.58) = 24.91 \text{ dBm} > 24 \text{ dBm}$ .
5.  $11 \text{ dBm} + 10\log (25.00) = 24.98 \text{ dBm} > 24 \text{ dBm}$ .
6.  $11 \text{ dBm} + 10\log (24.74) = 24.93 \text{ dBm} > 24 \text{ dBm}$ .
7.  $11 \text{ dBm} + 10\log (16.94) = 23.29 \text{ dBm} < 24 \text{ dBm}$ .

**Chain 1**

1.  $11 \text{ dBm} + 10\log (26.27) = 25.19 \text{ dBm} > 24 \text{ dBm}$ .
2.  $11 \text{ dBm} + 10\log (24.22) = 24.84 \text{ dBm} > 24 \text{ dBm}$ .
3.  $11 \text{ dBm} + 10\log (24.83) = 24.95 \text{ dBm} > 24 \text{ dBm}$ .
4.  $11 \text{ dBm} + 10\log (24.05) = 24.81 \text{ dBm} > 24 \text{ dBm}$ .
5.  $11 \text{ dBm} + 10\log (23.93) = 24.79 \text{ dBm} > 24 \text{ dBm}$ .
6.  $11 \text{ dBm} + 10\log (24.70) = 24.93 \text{ dBm} > 24 \text{ dBm}$ .
7.  $11 \text{ dBm} + 10\log (17.09) = 23.33 \text{ dBm} < 24 \text{ dBm}$ .

### 802.11n (HT40)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	15.28	15.32	67.77	18.31	24	Pass
46	5230	18.49	18.48	141.101	21.50	24	Pass
54	5270	17.33	17.43	109.41	20.39	24	Pass
62	5310	14.11	14.21	52.127	17.17	24	Pass
102	5510	15.65	15.69	73.796	18.68	24	Pass
110	5550	20.38	20.31	216.543	23.36	24	Pass
134	5670	18.04	18.10	128.245	21.08	24	Pass
142	5710 (U-NII-2C)	16.96	16.69	106.702	20.28	24	Pass
142	5710 (U-NII-3)	8.46	8.83	16.231	12.10	30	Pass
151	5755	18.32	18.26	134.909	21.30	30	Pass
159	5795	19.40	19.45	175.201	22.44	30	Pass

**Note:**

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

**Chain 0**

1.  $11 \text{ dBm} + 10\log (45.12) = 27.54 \text{ dBm} > 24 \text{ dBm}$ .
2.  $11 \text{ dBm} + 10\log (44.11) = 27.45 \text{ dBm} > 24 \text{ dBm}$ .
3.  $11 \text{ dBm} + 10\log (45.27) = 27.56 \text{ dBm} > 24 \text{ dBm}$ .
4.  $11 \text{ dBm} + 10\log (48.25) = 27.83 \text{ dBm} > 24 \text{ dBm}$ .
5.  $11 \text{ dBm} + 10\log (44.94) = 27.53 \text{ dBm} > 24 \text{ dBm}$ .
6.  $11 \text{ dBm} + 10\log (37.95) = 26.79 \text{ dBm} > 24 \text{ dBm}$ .

**Chain 1**

1.  $11 \text{ dBm} + 10\log (43.74) = 27.41 \text{ dBm} > 24 \text{ dBm}$ .
2.  $11 \text{ dBm} + 10\log (43.79) = 27.41 \text{ dBm} > 24 \text{ dBm}$ .
3.  $11 \text{ dBm} + 10\log (43.80) = 27.41 \text{ dBm} > 24 \text{ dBm}$ .
4.  $11 \text{ dBm} + 10\log (43.09) = 27.34 \text{ dBm} > 24 \text{ dBm}$ .
5.  $11 \text{ dBm} + 10\log (45.00) = 27.53 \text{ dBm} > 24 \text{ dBm}$ .
6.  $11 \text{ dBm} + 10\log (36.67) = 26.64 \text{ dBm} > 24 \text{ dBm}$ .

### 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	14.08	14.09	51.231	17.10	24	Pass
58	5290	12.23	12.18	33.231	15.22	24	Pass
106	5530	14.86	14.88	61.381	17.88	24	Pass
122	5610	19.68	19.66	185.366	22.68	24	Pass
138	5690 (U-NII-2C)	18.20	17.92	154.016	21.88	24	Pass
138	5690 (U-NII-3)	5.58	5.11	8.25	9.16	30	Pass
155	5775	17.83	17.81	121.068	20.83	30	Pass

**Note:**

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

**Chain 0**

1.  $11 \text{ dBm} + 10\log ( 87.80 ) = 30.43 \text{ dBm} > 24 \text{ dBm}$ .
2.  $11 \text{ dBm} + 10\log ( 85.28 ) = 30.31 \text{ dBm} > 24 \text{ dBm}$ .
3.  $11 \text{ dBm} + 10\log ( 84.44 ) = 30.27 \text{ dBm} > 24 \text{ dBm}$ .
4.  $11 \text{ dBm} + 10\log ( 80.63 ) = 30.06 \text{ dBm} > 24 \text{ dBm}$ .

**Chain 1**

1.  $11 \text{ dBm} + 10\log ( 85.11 ) = 30.30 \text{ dBm} > 24 \text{ dBm}$ .
2.  $11 \text{ dBm} + 10\log ( 83.49 ) = 30.22 \text{ dBm} > 24 \text{ dBm}$ .
3.  $11 \text{ dBm} + 10\log ( 87.02 ) = 30.40 \text{ dBm} > 24 \text{ dBm}$ .
4.  $11 \text{ dBm} + 10\log ( 77.15 ) = 29.87 \text{ dBm} > 24 \text{ dBm}$ .

### 802.11ac (VHT160)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
50	5250 (U-NII-1)	4.23	4.33	5.761	7.60	24	Pass
50	5250 (U-NII-2A)	5.77	5.86	8.204	9.14	24	Pass
114	5570	12.31	12.31	34.043	15.32	24	Pass

**Note:**

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

**Chain 0**

1.  $11 \text{ dBm} + 10\log ( 83.58 ) = 30.22 \text{ dBm} > 24 \text{ dBm}$ .
2.  $11 \text{ dBm} + 10\log ( 163.46 ) = 33.13 \text{ dBm} > 24 \text{ dBm}$ .

**Chain 1**

1.  $11 \text{ dBm} + 10\log ( 83.45 ) = 30.21 \text{ dBm} > 24 \text{ dBm}$ .
2.  $11 \text{ dBm} + 10\log ( 162.86 ) = 33.12 \text{ dBm} > 24 \text{ dBm}$ .

**26 dB Bandwidth:**
**802.11a**

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
36	5180	29.94
40	5200	27.82
48	5240	25.53
52	5260	29.78
60	5300	27.62
64	5320	24.07
100	5500	23.93
116	5580	29.05
140	5700	24.62

**802.11n (HT20)**

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	24.74	24.18
40	5200	25.41	24.22
48	5240	25.35	24.60
52	5260	24.74	26.27
60	5300	24.49	24.22
64	5320	25.08	24.83
100	5500	24.58	24.05
116	5580	25.00	23.93
140	5700	24.74	24.70
144	5720 (U-NII-2C)	16.94	17.09
144	5720 (U-NII-3)	7.01	7.22

**802.11n (HT40)**

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	46.04	44.64
46	5230	44.21	43.29
54	5270	45.12	43.74
62	5310	44.11	43.79
102	5510	45.27	43.80
110	5550	48.25	43.09
134	5670	44.94	45.00
142	5710 (U-NII-2C)	37.95	36.67
142	5710 (U-NII-3)	8.38	7.00

**802.11ac (VHT80)**

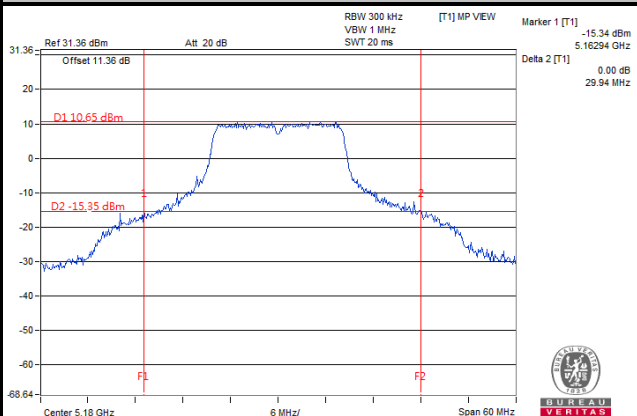
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	83.59	82.21
58	5290	87.80	85.11
106	5530	85.28	83.49
122	5610	84.44	87.02
138	5690 (U-NII-2C)	80.63	77.15
138	5690 (U-NII-3)	11.60	6.80

**802.11ac (VHT160)**

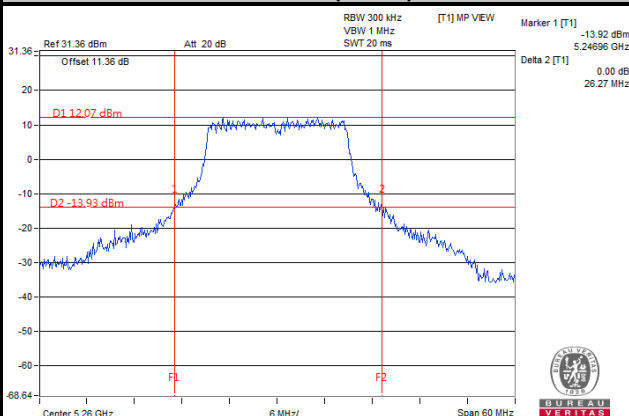
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
50 (U-NII-1)	5250	82.83	82.68
50 (U-NII-2A)	5250	83.58	83.45
114	5570	163.46	162.86

### Spectrum Plot of Worst Value

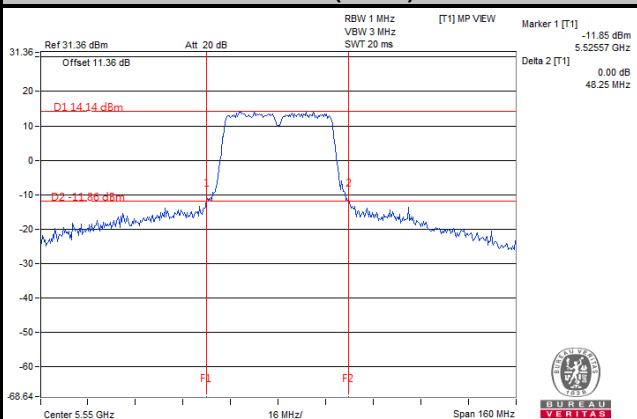
#### 802.11a



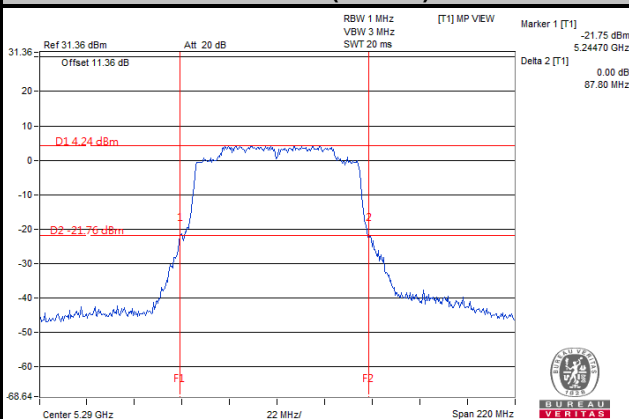
#### 802.11n (HT20)



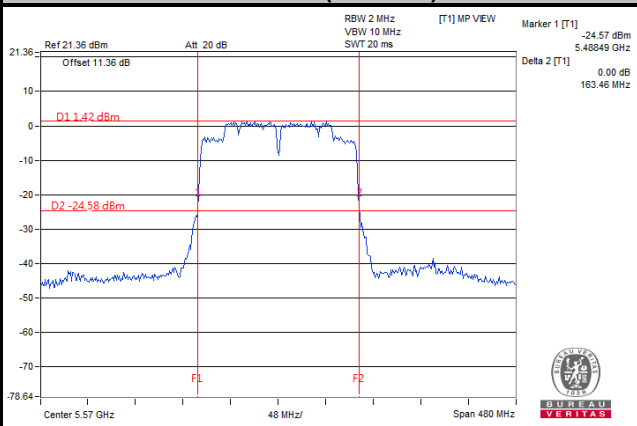
#### 802.11n (HT40)



#### 802.11ac (VHT80)



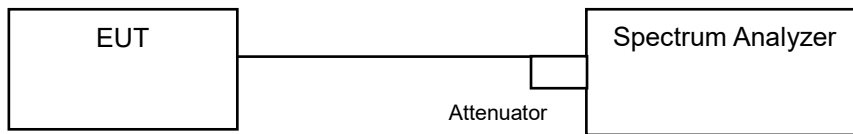
#### 802.11ac (VHT160)





## 4.4 Occupied Bandwidth Measurement

### 4.4.1 Test Setup



### 4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 4.4.3 Test Procedure

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

#### 4.4.4 Test Results

##### 802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
36	5180	17.76
40	5200	17.28
48	5240	17.04
52	5260	17.28
60	5300	17.40
64	5320	16.92
100	5500	16.92
116	5580	17.52
140	5700	16.92
149	5745	17.28
157	5785	17.40
165	5825	17.52

##### 802.11n (HT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	18.12	18.00
40	5200	18.00	18.00
48	5240	18.12	17.88
52	5260	18.00	18.12
60	5300	18.12	18.00
64	5320	18.00	18.00
100	5500	18.00	17.88
116	5580	18.12	18.12
140	5700	18.00	17.88
144	5720 (U-NII-2C)	14.12	14.00
144	5720 (U-NII-3)	4.00	4.00
149	5745	18.12	17.88
157	5785	18.12	18.12
165	5825	18.12	17.88

### 802.11n (HT40)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	36.72	36.72
46	5230	36.72	36.72
54	5270	36.72	36.72
62	5310	36.72	36.72
102	5510	36.72	36.72
110	5550	36.96	36.72
134	5670	36.72	36.72
142	5710 (U-NII-2C)	33.48	33.48
142	5710 (U-NII-3)	3.24	3.24
151	5755	36.72	36.72
159	5795	36.72	36.96

### 802.11ac (VHT80)

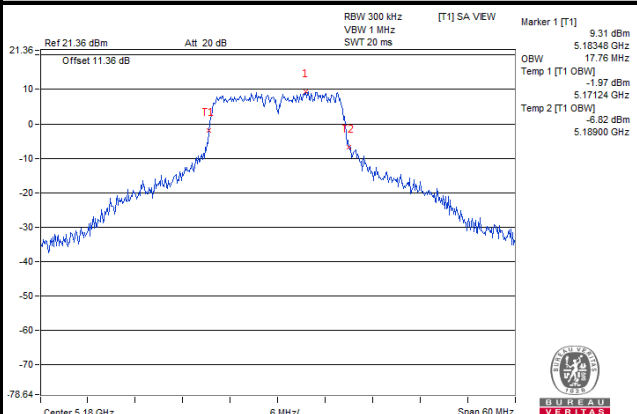
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	75.36	75.36
58	5290	75.36	75.36
106	5530	75.36	75.36
122	5610	75.36	75.36
138	5690 (U-NII-2C)	72.92	72.92
138	5690 (U-NII-3)	2.44	2.44
155	5775	75.36	74.88

### 802.11ac (VHT160)

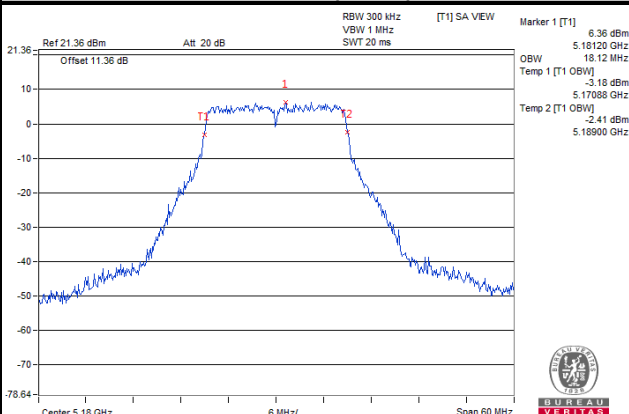
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
50	5250 (U-NII-1)	76.80	76.80
50	5250 (U-NII-2A)	75.84	75.84
114	5570	154.56	152.64

### Spectrum Plot of Worst Value

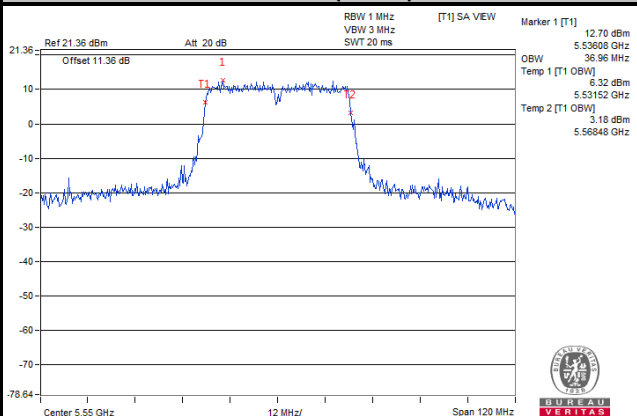
#### 802.11a



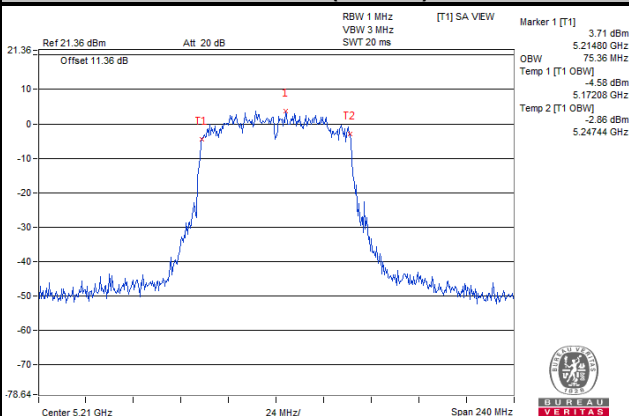
#### 802.11n (HT20)



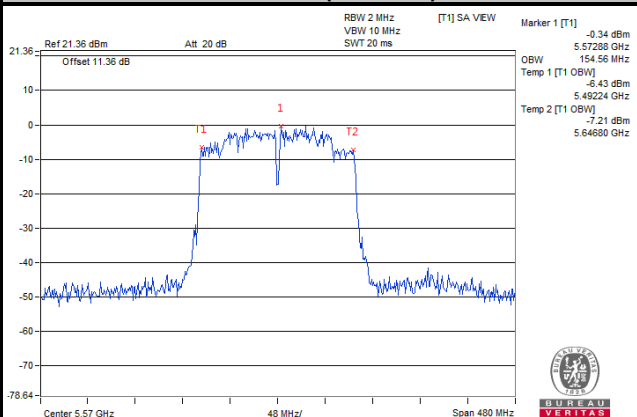
#### 802.11n (HT40)



#### 802.11ac (VHT80)



#### 802.11ac (VHT160)

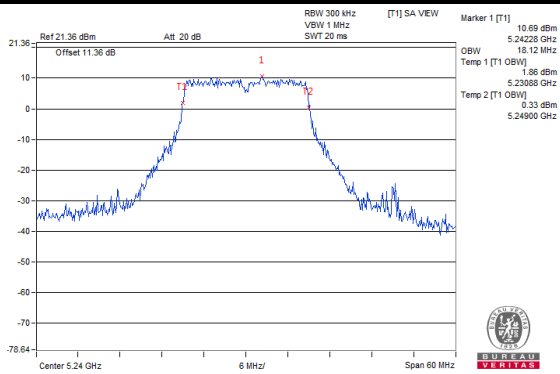


Chain 0

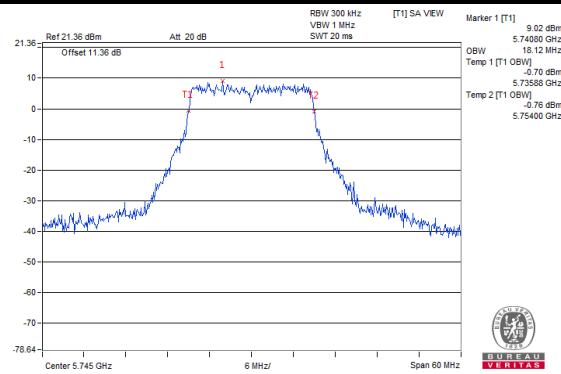
Spectrum Plot for Nearby DFS Band

802.11n (HT20)

Ch 48 (5240 MHz)

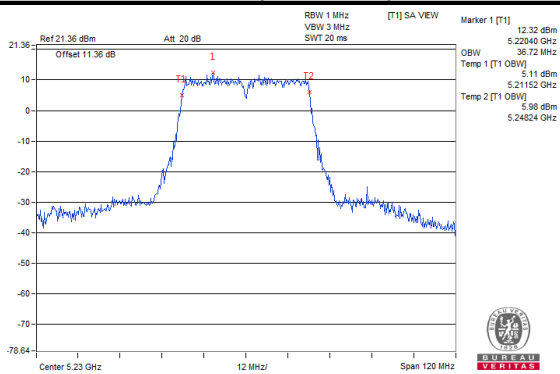


Ch 149 (5745 MHz)

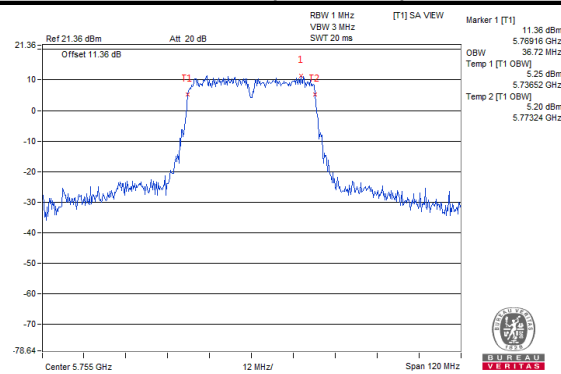


802.11n (HT40)

Ch 46 (5230 MHz)

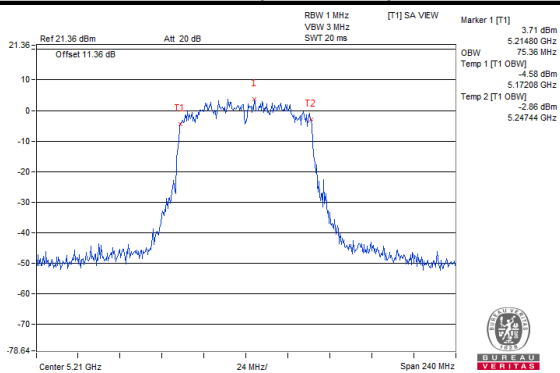


Ch 151 (5755 MHz)

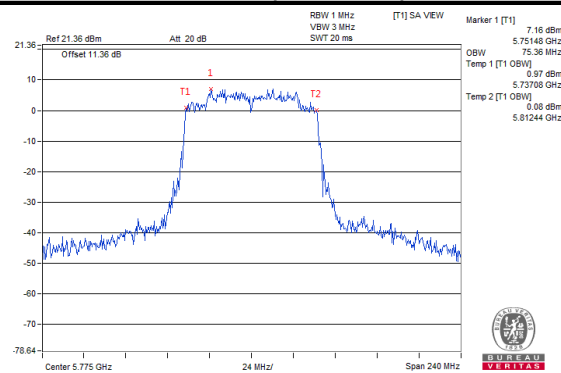


802.11ac (VHT80)

Ch 42 (5210 MHz)



Ch 155 (5775 MHz)

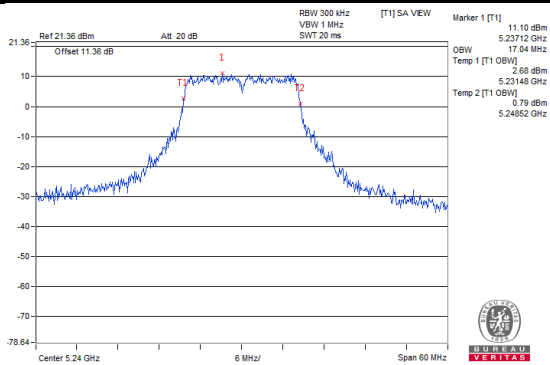


Chain 1

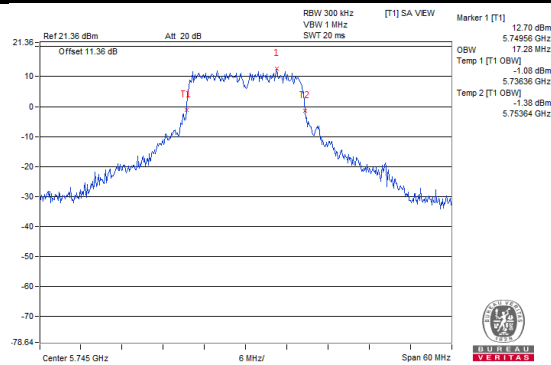
Spectrum Plot for Nearby DFS Band

802.11a

Ch 48 (5240 MHz)

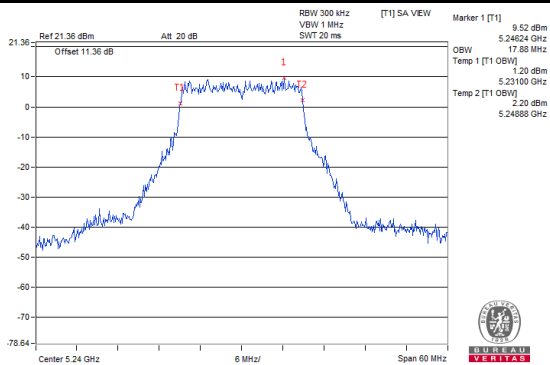


Ch 149 (5745 MHz)

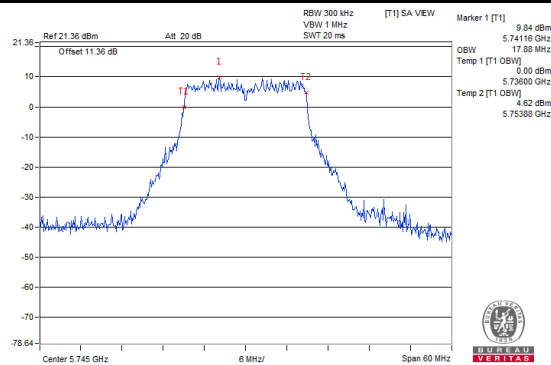


802.11n (HT20)

Ch 48 (5240 MHz)

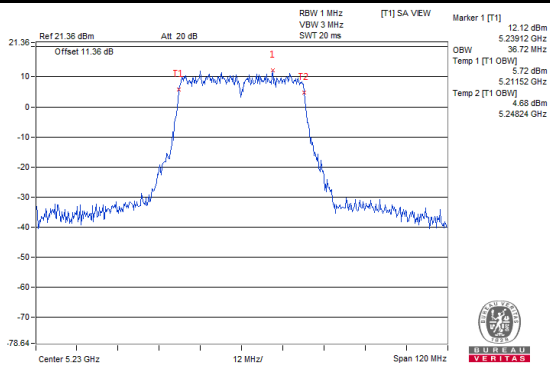


Ch 149 (5745 MHz)

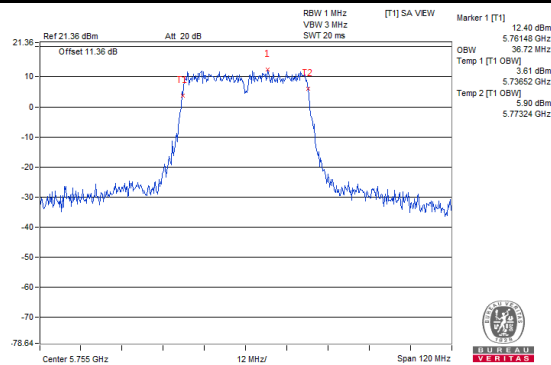


802.11n (HT40)

Ch 46 (5230 MHz)

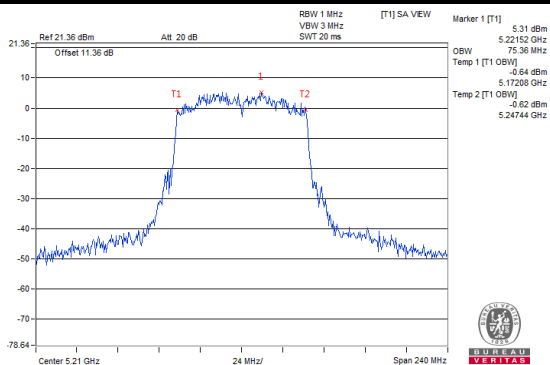


Ch 151 (5755 MHz)

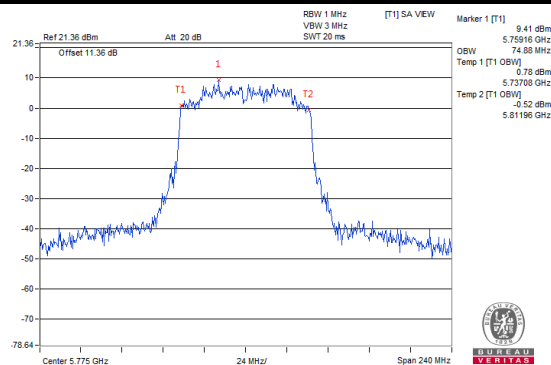


802.11ac (VHT80)

Ch 42 (5210 MHz)



Ch 155 (5775 MHz)

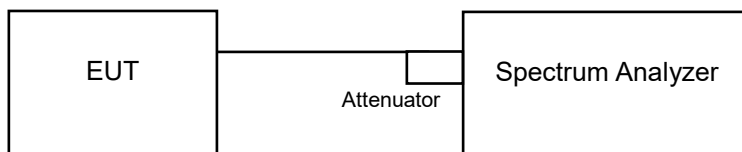


## 4.5 Peak Power Spectral Density Measurement

### 4.5.1 Limits of Peak Power Spectral Density Measurement

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

### 4.5.2 Test Setup



### 4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 4.5.4 Test Procedures

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

Using method SA-2

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW  $\geq$  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)

#### 4.5.5 Deviation from Test Standard

No deviation.

#### 4.5.6 EUT Operating Conditions

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

#### 4.5.7 Test Results

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

##### 802.11a

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD with Duty Factor (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
36	5180	4.38	0.10	4.48	11	Pass
40	5200	6.64	0.10	6.74	11	Pass
48	5240	6.14	0.10	6.24	11	Pass
52	5260	6.46	0.10	6.56	11	Pass
60	5300	6.10	0.10	6.20	11	Pass
64	5320	1.68	0.10	1.78	11	Pass
100	5500	4.42	0.10	4.52	11	Pass
116	5580	6.85	0.10	6.95	11	Pass
140	5700	3.87	0.10	3.97	11	Pass

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



### 802.11n (HT20)

Channel	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
36	5180	1.29	1.05	0.23	4.42	11	Pass
40	5200	5.59	5.89	0.23	8.99	11	Pass
48	5240	5.46	5.89	0.23	8.92	11	Pass
52	5260	5.89	5.81	0.23	9.09	11	Pass
60	5300	5.16	4.97	0.23	8.31	11	Pass
64	5320	0.88	1.48	0.23	4.43	11	Pass
100	5500	0.93	1.03	0.23	4.22	11	Pass
116	5580	5.64	5.36	0.23	8.75	11	Pass
140	5700	4.25	4.08	0.23	7.41	11	Pass
144	5720 (U-NII-2C)	5.29	5.81	0.23	8.80	11	Pass

**Note:**

- Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain =  $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = -1.12 \text{ dBi} < 6 \text{ dBi}$ , so the limit no need to be reduced.
- Refer to section 3.3 for duty cycle spectrum plot.

### 802.11n (HT40)

Channel	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
38	5190	-1.40	-1.28	0.44	2.11	11	Pass
46	5230	1.22	1.28	0.44	4.70	11	Pass
54	5270	0.16	0.13	0.44	3.60	11	Pass
62	5310	-3.77	-3.52	0.44	-0.19	11	Pass
102	5510	-1.97	-1.92	0.44	1.51	11	Pass
110	5550	2.26	1.96	0.44	5.57	11	Pass
134	5670	0.43	0.26	0.44	3.80	11	Pass
142	5710 (U-NII-2C)	2.65	2.21	0.44	5.89	11	Pass

**Note:**

- Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain =  $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = -1.12 \text{ dBi} < 6 \text{ dBi}$ , so the limit no need to be reduced.
- 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	-5.31	-5.00	0.80	-1.34	11	Pass
58	5290	-7.55	-7.28	0.80	-3.60	11	Pass
106	5530	-5.37	-5.59	0.80	-1.67	11	Pass
122	5610	-0.98	-0.84	0.80	2.90	11	Pass
138	5690 (U-NII-2C)	0.01	-0.05	0.80	3.79	11	Pass

**Note:**

- Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain =  $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = -1.12 \text{ dBi} < 6 \text{ dBi}$ , so the limit no need to be reduced.
- Refer to section 3.3 for duty cycle spectrum plot.

### 802.11ac (VHT160)

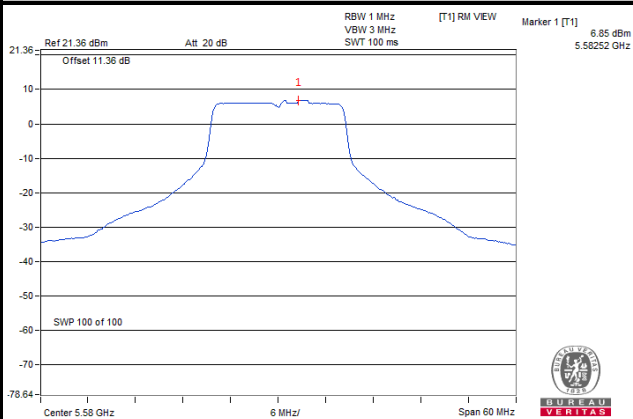
Channel	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
50	5250 (U-NII-1)	-14.22	-13.39	1.30	-9.48	11	Pass
50	5250 (U-NII-2A)	-15.24	-12.86	1.30	-9.58	11	Pass
114	5570	-11.60	-12.66	1.30	-7.79	11	Pass

**Note:**

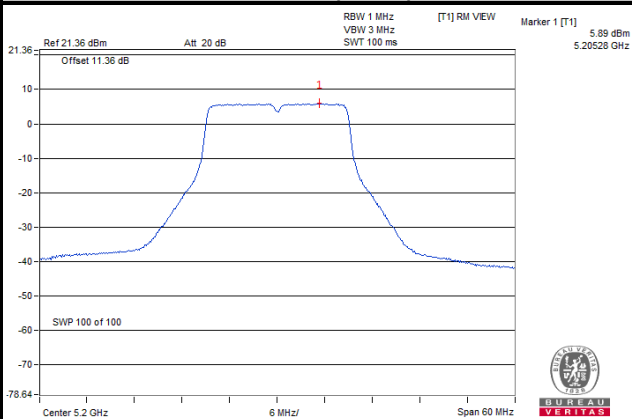
- Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain =  $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = -1.12 \text{ dBi} < 6 \text{ dBi}$ , so the limit no need to be reduced.
- Refer to section 3.3 for duty cycle spectrum plot.

### Spectrum Plot of Worst Value

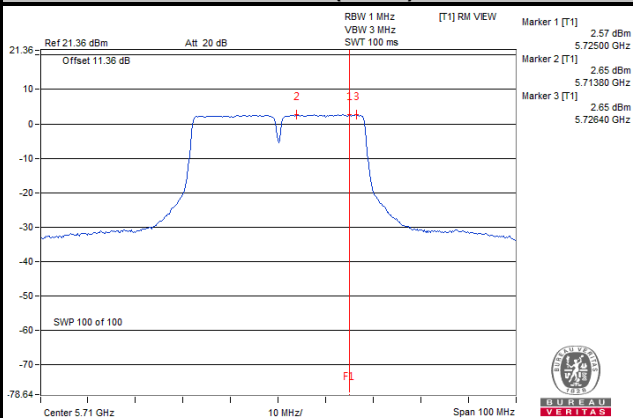
#### 802.11a



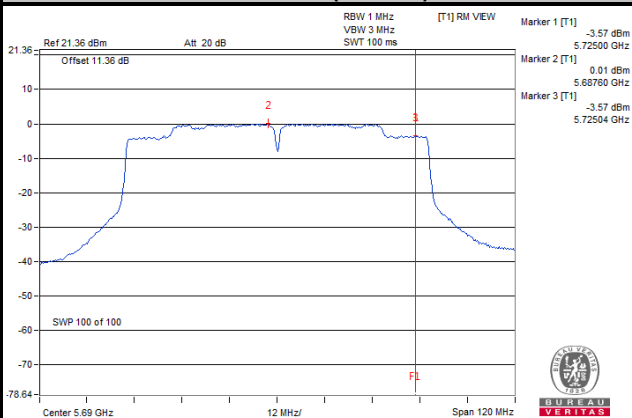
#### 802.11n (HT20)



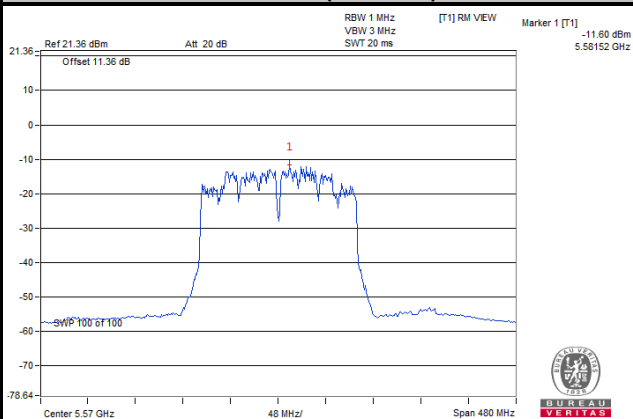
#### 802.11n (HT40)



#### 802.11ac (VHT80)



#### 802.11ac (VHT160)



### For U-NII-3 Band

#### 802.11a

Channel	Frequency (MHz)	PSD w/o Duty Factor		Duty Factor (dB)	PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
		(dBm/300 kHz)	(dBm/500 kHz)				
149	5745	-0.33	1.89	0.1	1.99	30	Pass
157	5785	-0.35	1.87	0.1	1.97	30	Pass
165	5825	-1.75	0.47	0.1	0.57	30	Pass

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

#### 802.11n (HT20)

TX Chain	Channel	Frequency (MHz)	PSD		10 log (N=2) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300 kHz)	(dBm/500 kHz)					
0	144	5720 (U-NII-3)	-2.53	-0.31	3.01	0.23	2.93	30	Pass
	149	5745	-1.16	1.06	3.01	0.23	4.3	30	Pass
	157	5785	-0.97	1.25	3.01	0.23	4.49	30	Pass
	165	5825	-1.15	1.07	3.01	0.23	4.31	30	Pass
1	144	5720 (U-NII-3)	-2.13	0.09	3.01	0.23	3.33	30	Pass
	149	5745	-0.74	1.48	3.01	0.23	4.72	30	Pass
	157	5785	-0.70	1.52	3.01	0.23	4.76	30	Pass
	165	5825	-0.99	1.23	3.01	0.23	4.47	30	Pass

**Note:**

- Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
- Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = -1.12 < 6$  dBi, so the limit does not need to be reduced.
- Refer to section 3.3 for duty cycle spectrum plot.

### 802.11n (HT40)

TX Chain	Channel	Frequency (MHz)	PSD		10 log (N=2) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300 kHz)	(dBm/500 kHz)					
0	142	5710 (U-NII-3)	-5.68	-3.46	3.01	0.44	-0.01	30	Pass
	151	5755	-6.91	-4.69	3.01	0.44	-1.24	30	Pass
	159	5795	-6.02	-3.8	3.01	0.44	-0.35	30	Pass
1	142	5710 (U-NII-3)	-5.57	-3.35	3.01	0.44	0.1	30	Pass
	151	5755	-6.61	-4.39	3.01	0.44	-0.94	30	Pass
	159	5795	-5.89	-3.67	3.01	0.44	-0.22	30	Pass

**Note:**

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = -1.12 < 6$  dBi, so the limit does not need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

### 802.11ac (VHT80)

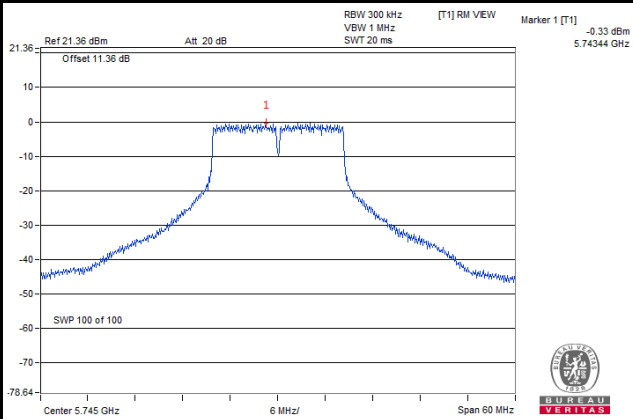
TX Chain	Channel	Frequency (MHz)	PSD		10 log (N=2) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300 kHz)	(dBm/500 kHz)					
0	138	5690 (U-NII-3)	-11.91	-9.69	3.01	0.8	-5.88	30	Pass
	155	5775	-9.64	-7.42	3.01	0.8	-3.61	30	Pass
1	138	5690 (U-NII-3)	-12.5	-10.28	3.01	0.8	-6.47	30	Pass
	155	5775	-9.69	-7.47	3.01	0.8	-3.66	30	Pass

**Note:**

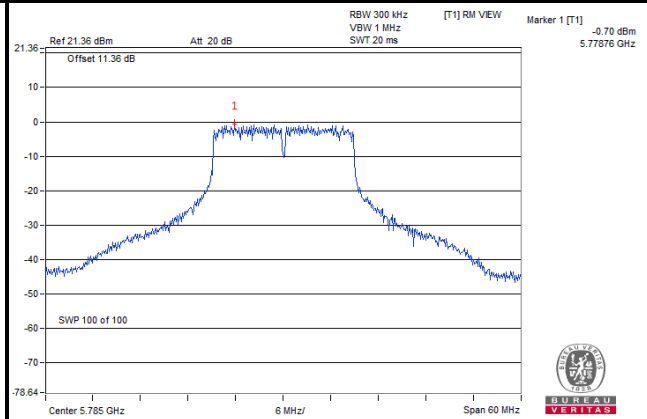
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = -1.12 < 6$  dBi, so the limit does not need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

### Spectrum Plot of Worst Value

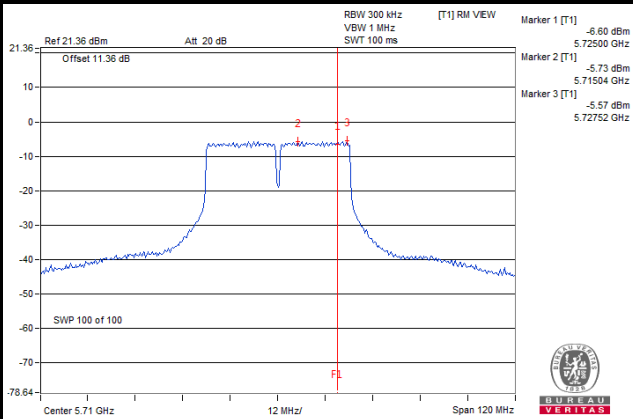
#### 802.11a



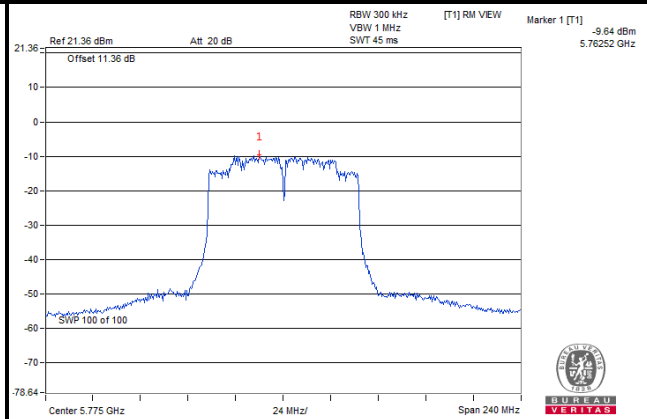
#### 802.11n (HT20)



#### 802.11n (HT40)



#### 802.11ac (VHT80)

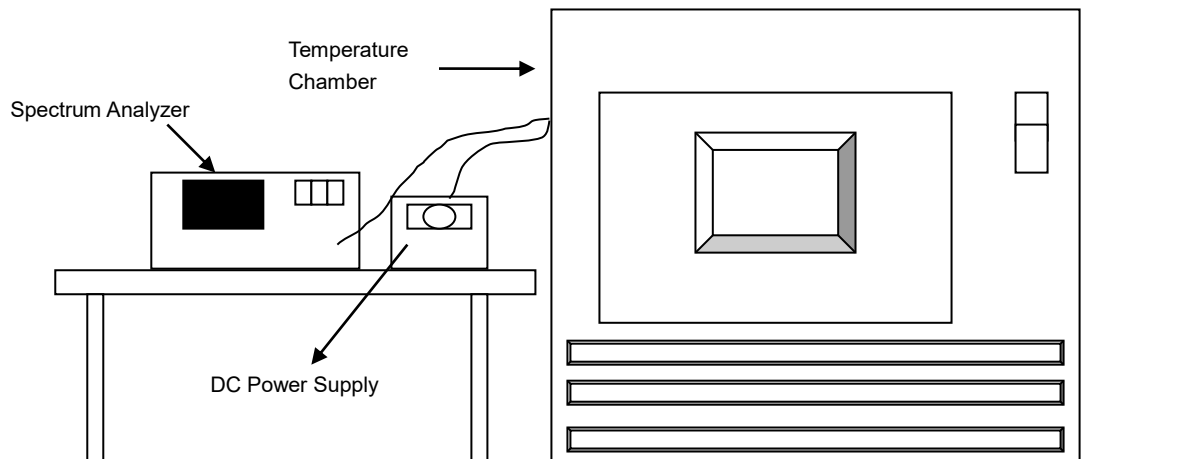


## 4.6 Frequency Stability

### 4.6.1 Limit of Frequency Stability Measurement

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

### 4.6.2 Test Setup



### 4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 4.6.4 Test Procedure

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

### 4.6.5 Deviation from Test Standard

No deviation.

### 4.6.6 EUT Operating Condition

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

4.6.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5180 MHz									
Temp. (°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)
80	12	5179.9949	PASS	5179.9923	PASS	5179.9948	PASS	5179.9915	PASS
70	12	5180.015	PASS	5180.0138	PASS	5180.0171	PASS	5180.0132	PASS
60	12	5180.0253	PASS	5180.0243	PASS	5180.0241	PASS	5180.0248	PASS
50	12	5180.0132	PASS	5180.0121	PASS	5180.0105	PASS	5180.0112	PASS
40	12	5179.9808	PASS	5179.9763	PASS	5179.9769	PASS	5179.9808	PASS
30	12	5179.9882	PASS	5179.9863	PASS	5179.9883	PASS	5179.9873	PASS
20	12	5179.9959	PASS	5179.9932	PASS	5179.9952	PASS	5179.9931	PASS
10	12	5180.0045	PASS	5180.0039	PASS	5180.0044	PASS	5180.0041	PASS
0	12	5179.9951	PASS	5179.9948	PASS	5179.993	PASS	5179.9943	PASS
-10	12	5180.0169	PASS	5180.0186	PASS	5180.0198	PASS	5180.0179	PASS
-20	12	5180.0178	PASS	5180.0139	PASS	5180.0178	PASS	5180.0144	PASS
-30	12	5180.0258	PASS	5180.0264	PASS	5180.0258	PASS	5180.0257	PASS

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	13.8	5179.9963	PASS	5179.9942	PASS	5179.9955	PASS	5179.9927	PASS
	12	5179.9959	PASS	5179.9932	PASS	5179.9952	PASS	5179.9931	PASS
	10.2	5179.9958	PASS	5179.9923	PASS	5179.9952	PASS	5179.9926	PASS

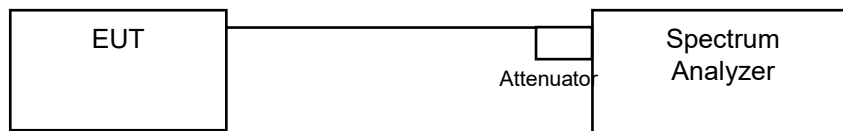


## 4.7 6 dB Bandwidth Measurement

### 4.7.1 Limits of 6 dB Bandwidth Measurement

The minimum of 6 dB Bandwidth Measurement is 0.5 MHz.

### 4.7.2 Test Setup



### 4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 4.7.4 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

### 4.7.5 Deviation from Test Standard

No deviation.

### 4.7.6 EUT Operating Condition

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

#### 4.7.7 Test Results

##### 802.11a

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	16.42	0.5	Pass
157	5785	16.41	0.5	Pass
165	5825	16.42	0.5	Pass

##### 802.11n (HT20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
144	5720 (U-NII-3)	3.81	3.82	0.5	Pass
149	5745	17.63	17.67	0.5	Pass
157	5785	17.63	17.63	0.5	Pass
165	5825	17.58	17.65	0.5	Pass

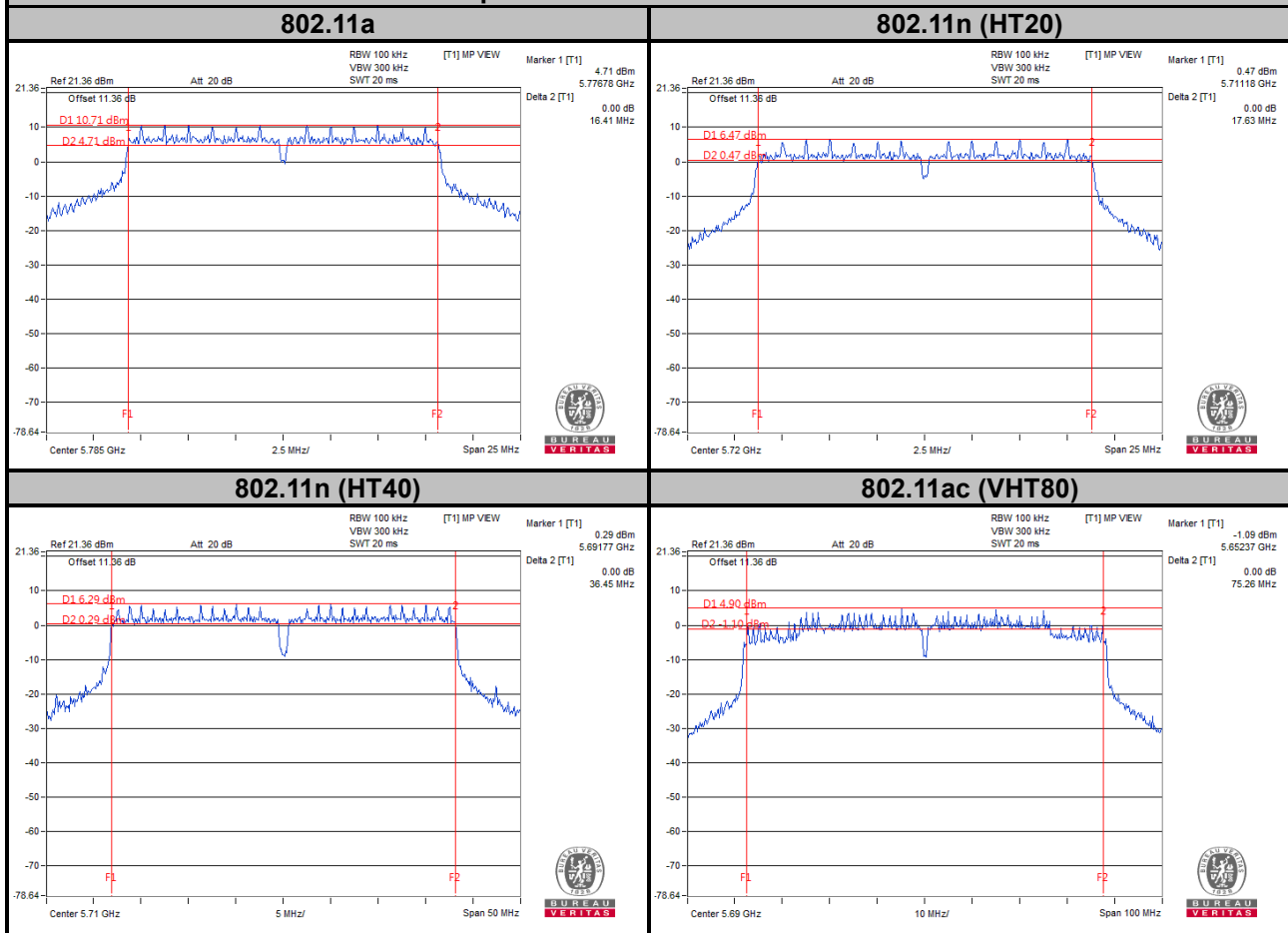
##### 802.11n (HT40)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
142	5710 (U-NII-3)	3.22	3.23	0.5	Pass
151	5755	36.42	36.45	0.5	Pass
159	5795	36.46	36.46	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)	2.65	2.63	0.5	Pass
155	5775	75.36	75.32	0.5	Pass

### Spectrum Plot of Worst Value



**Note:**

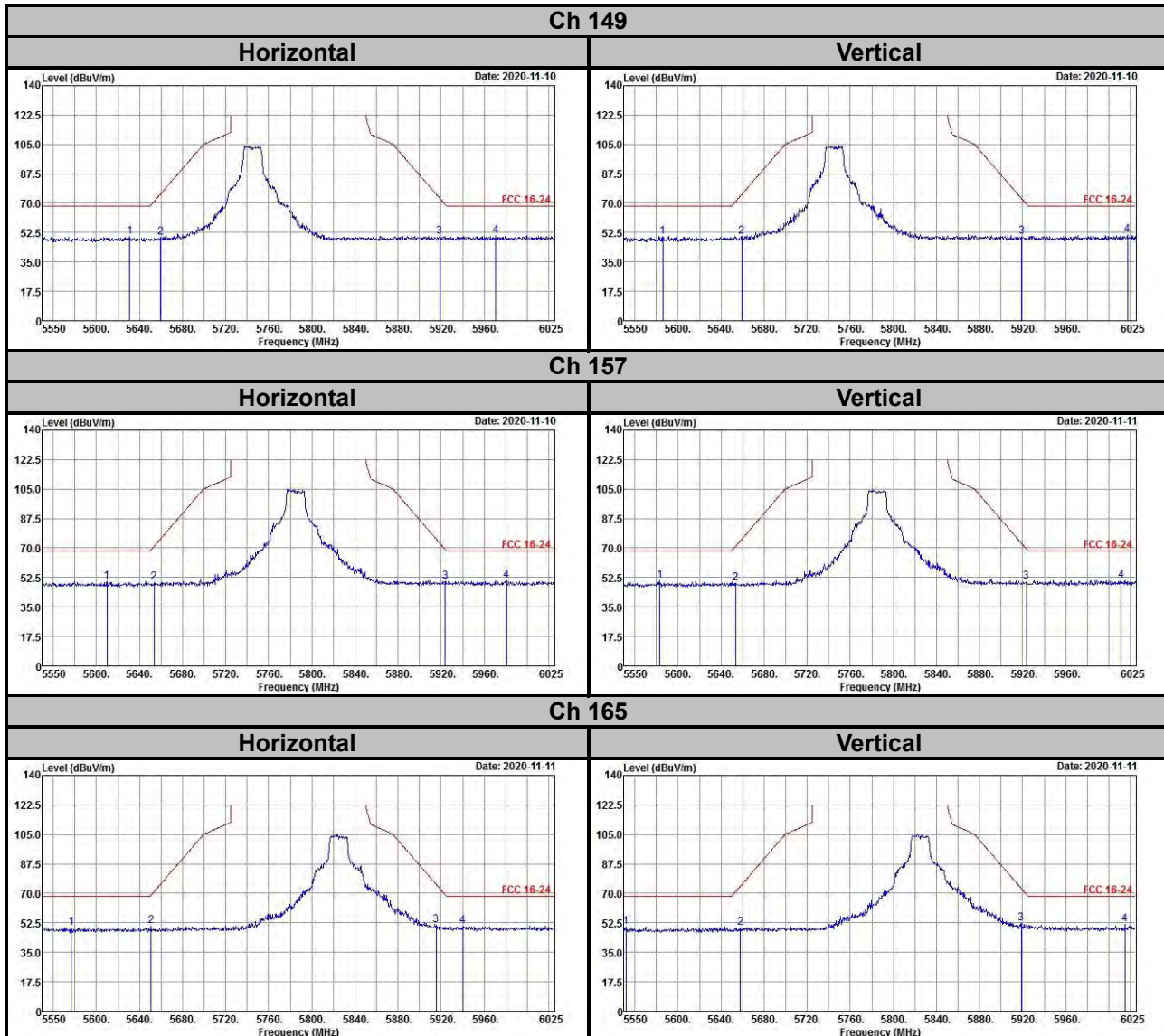
- For Ch144 (UNII-3 Band): The 6 dB bandwidth above 5725 MHz = Marker 1 + Delta 2 – 5725 MHz
- For Ch142 (UNII-3 Band): The 6 dB bandwidth above 5725 MHz = Marker 1 + Delta 2 – 5725 MHz
- For Ch138 (UNII-3 Band): The 6 dB bandwidth above 5725 MHz = Marker 1 + Delta 2 – 5725 MHz

## 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)

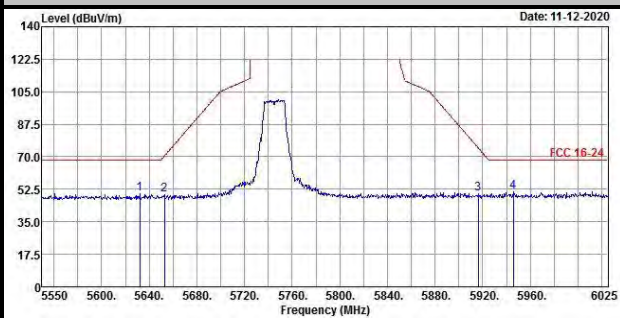
#### 802.11a



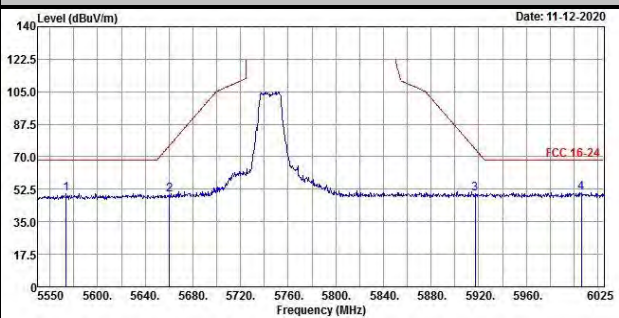
802.11n (HT20)

Ch 149

Horizontal

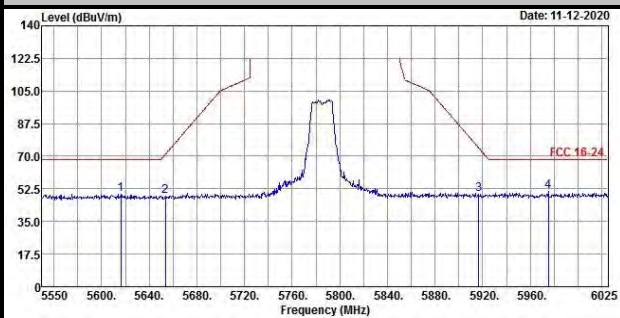


Vertical

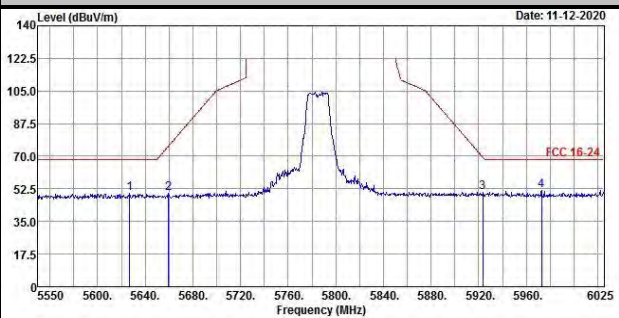


Ch 157

Horizontal

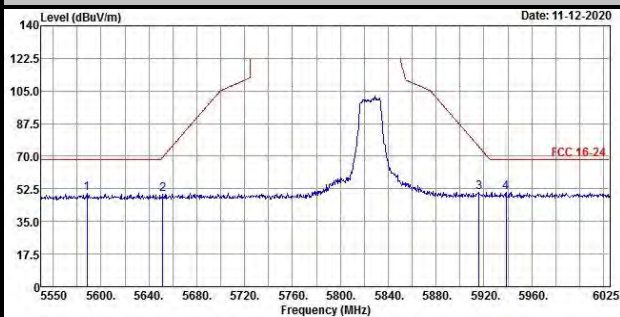


Vertical

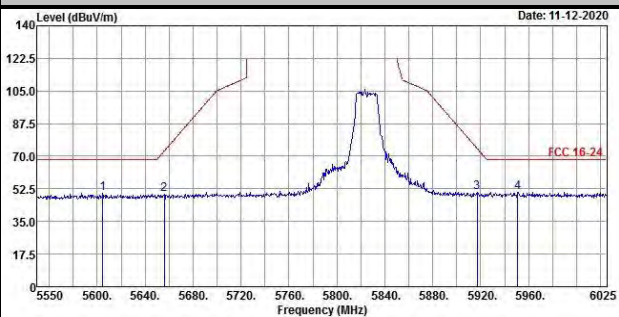


Ch 165

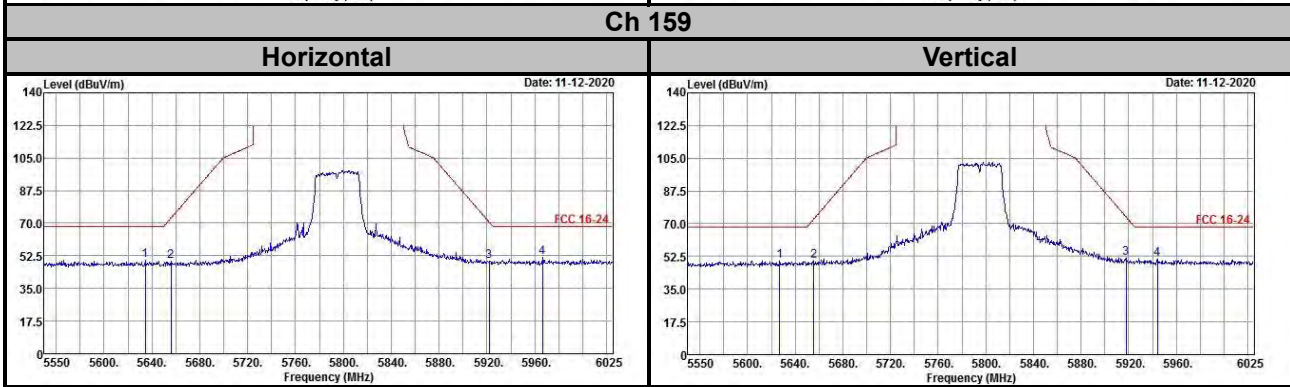
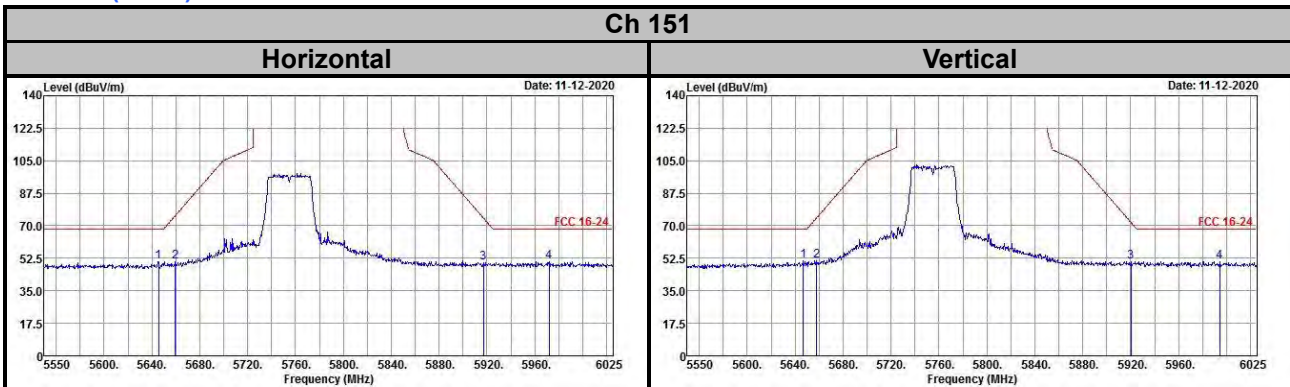
Horizontal



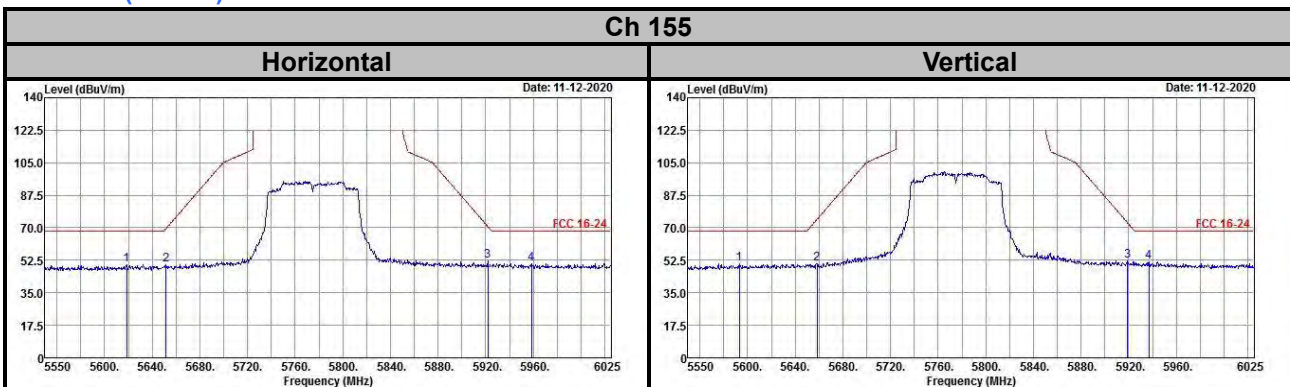
Vertical



802.11n (HT40)

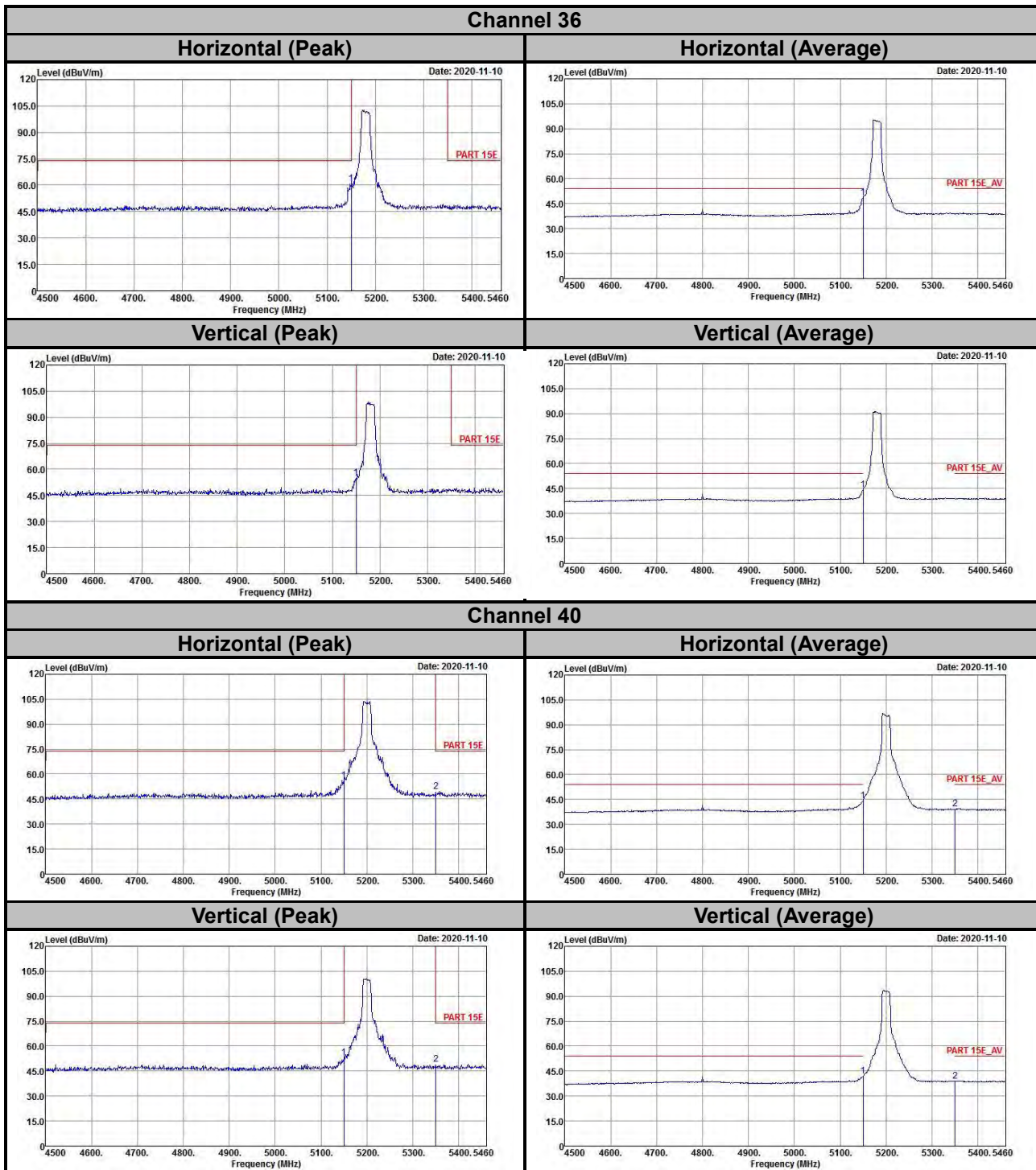


802.11ac (VHT80)



# Annex B- Band Edge Measurement

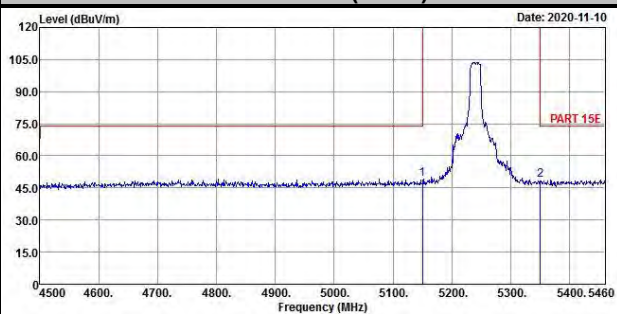
802.11a



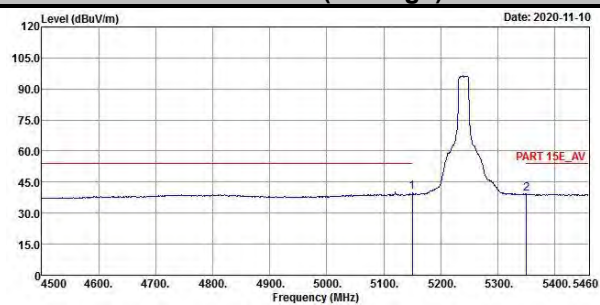


### Channel 48

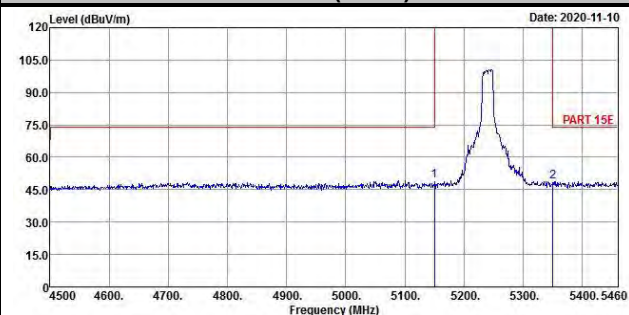
#### Horizontal (Peak)



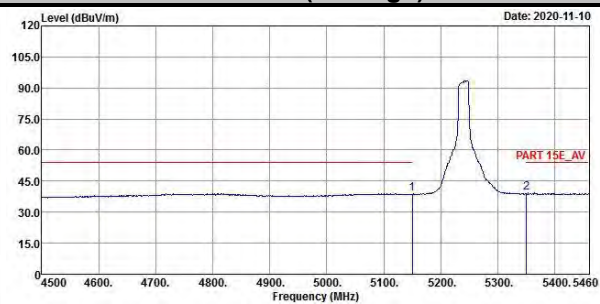
#### Horizontal (Average)



#### Vertical (Peak)

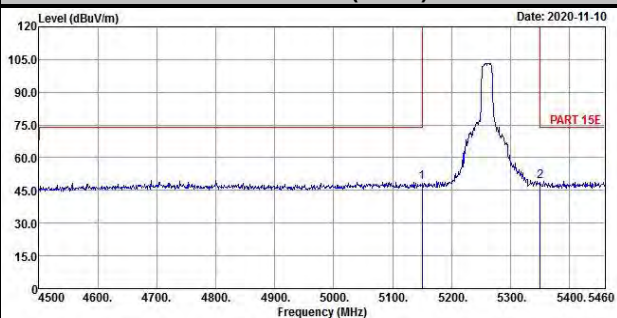


#### Vertical (Average)

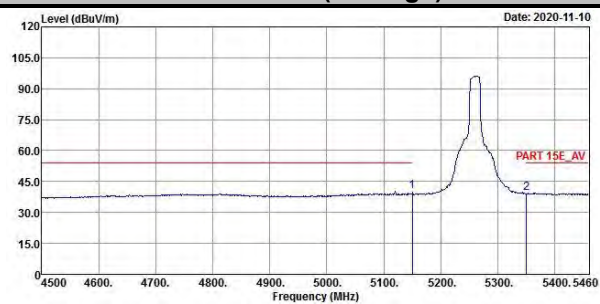


### Channel 52

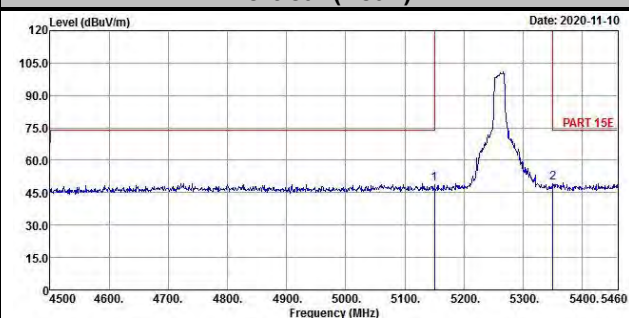
#### Horizontal (Peak)



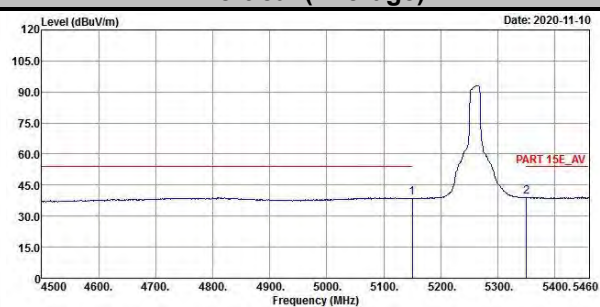
#### Horizontal (Average)



#### Vertical (Peak)

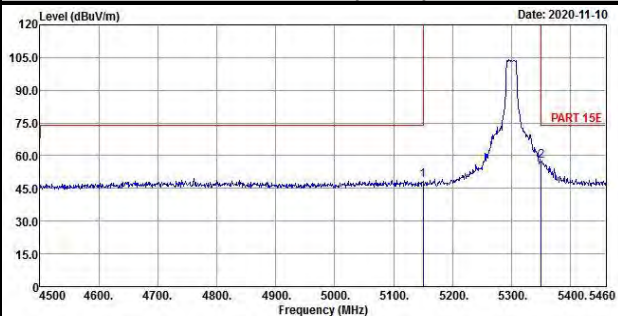


#### Vertical (Average)

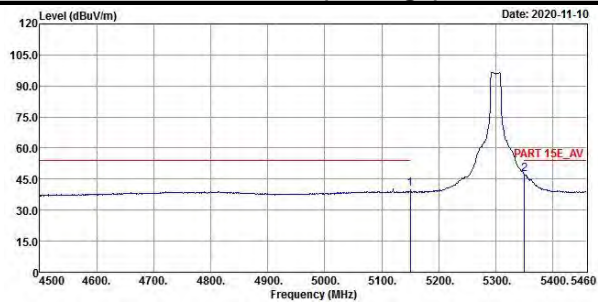


### Channel 60

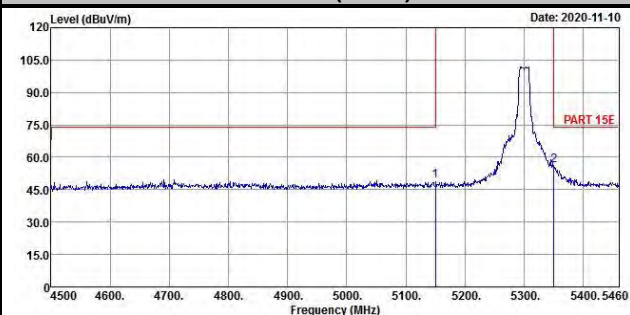
#### Horizontal (Peak)



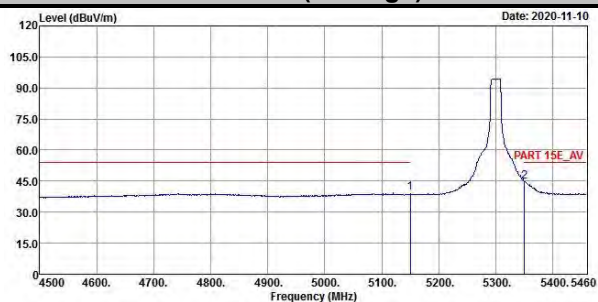
#### Horizontal (Average)



#### Vertical (Peak)

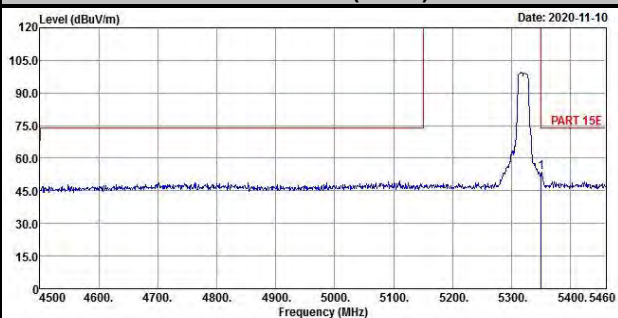


#### Vertical (Average)

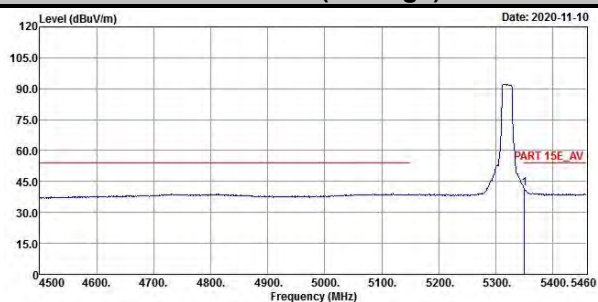


### Channel 64

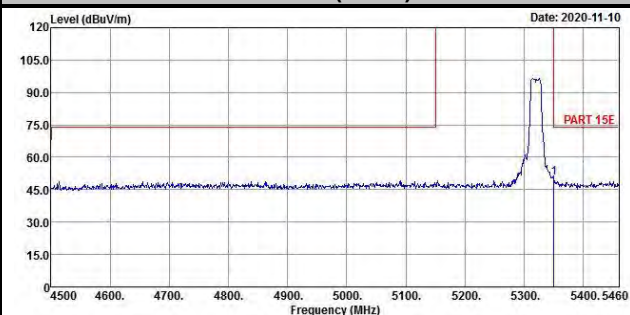
#### Horizontal (Peak)



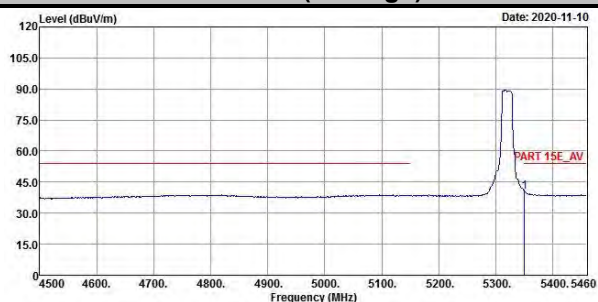
#### Horizontal (Average)



#### Vertical (Peak)

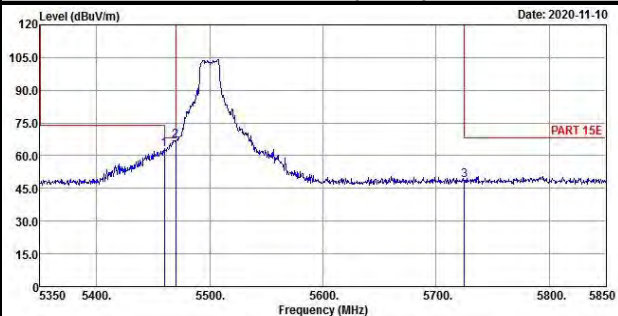


#### Vertical (Average)

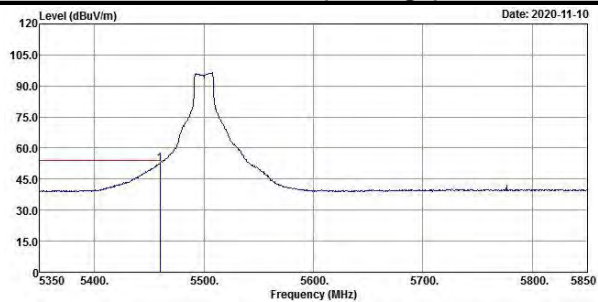


### Channel 100

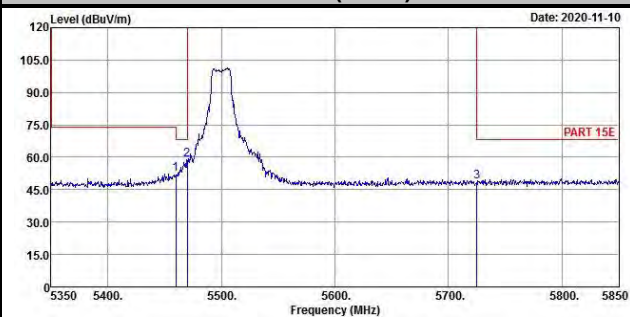
#### Horizontal (Peak)



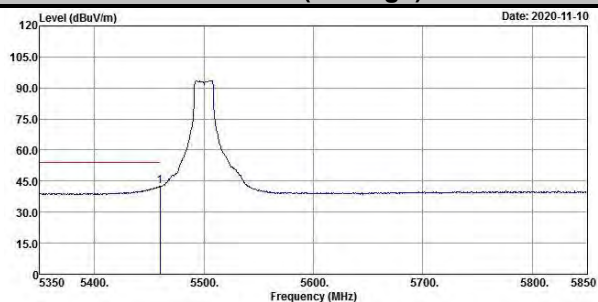
#### Horizontal (Average)



#### Vertical (Peak)

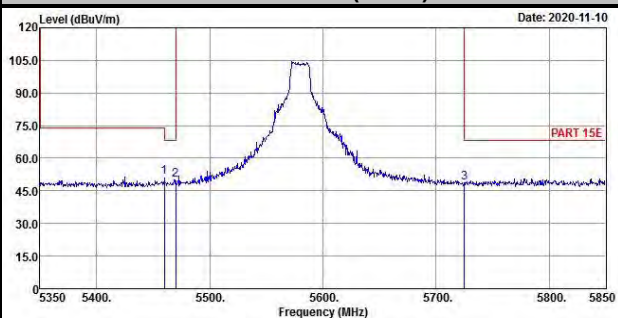


#### Vertical (Average)

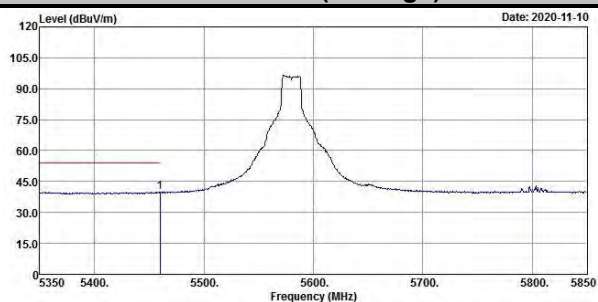


### Channel 116

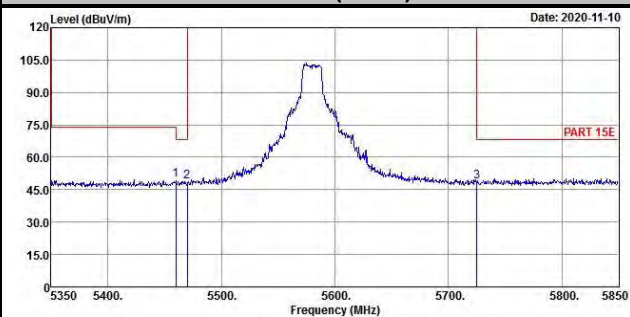
#### Horizontal (Peak)



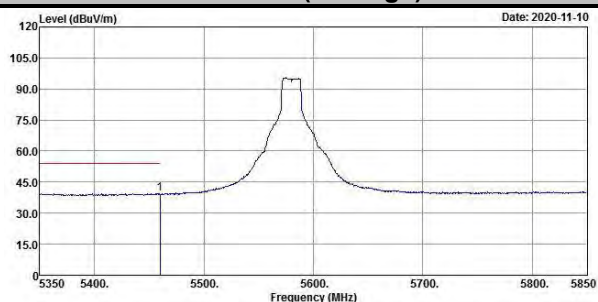
#### Horizontal (Average)



#### Vertical (Peak)

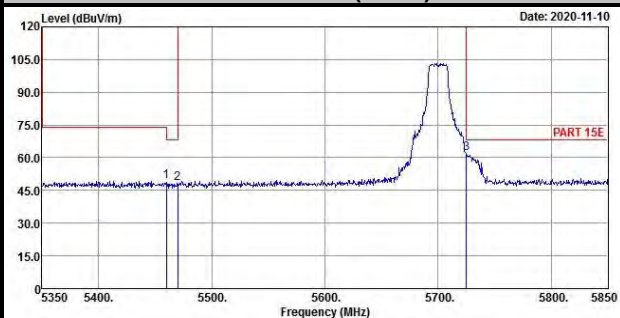


#### Vertical (Average)

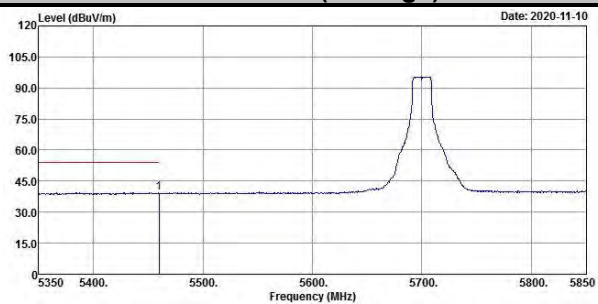


Channel 140

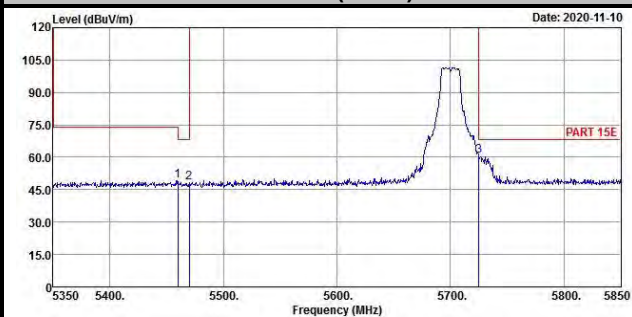
Horizontal (Peak)



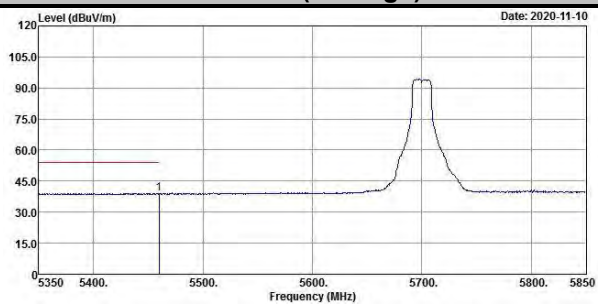
Horizontal (Average)



Vertical (Peak)



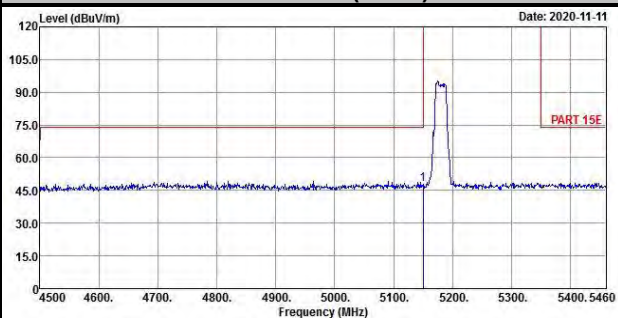
Vertical (Average)



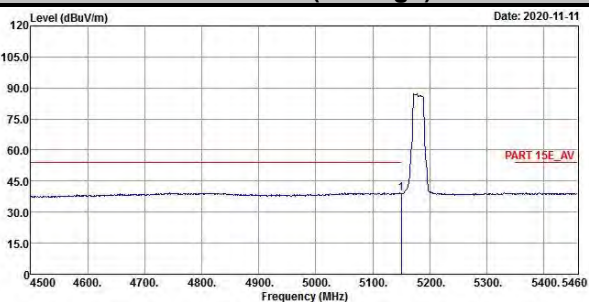
802.11n (HT20)

Channel 36

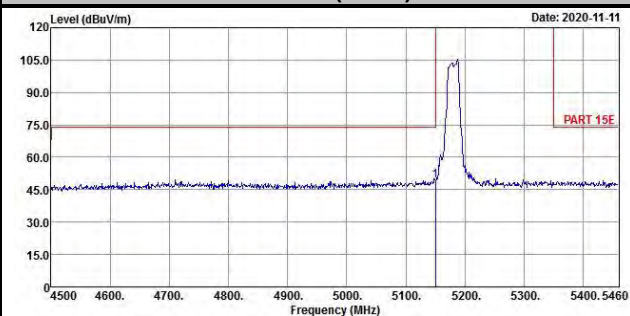
Horizontal (Peak)



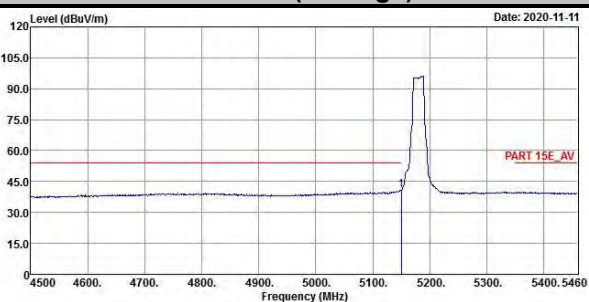
Horizontal (Average)



Vertical (Peak)

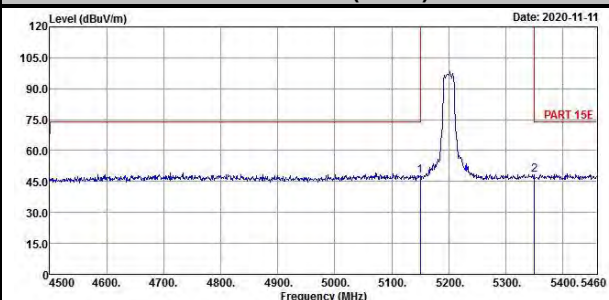


Vertical (Average)

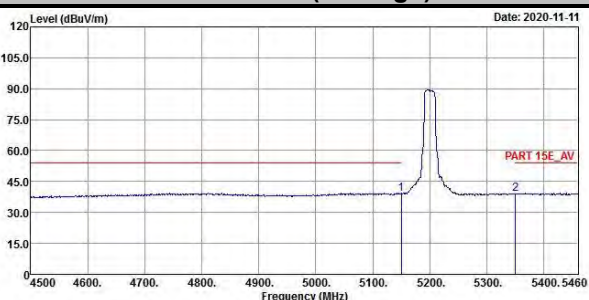


Channel 40

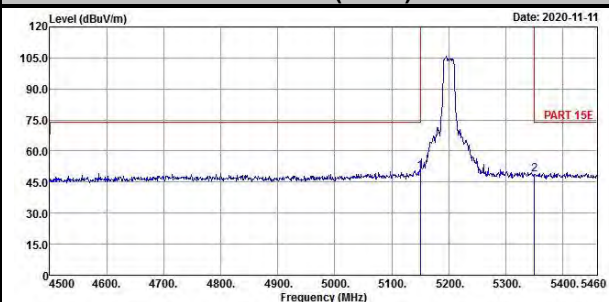
Horizontal (Peak)



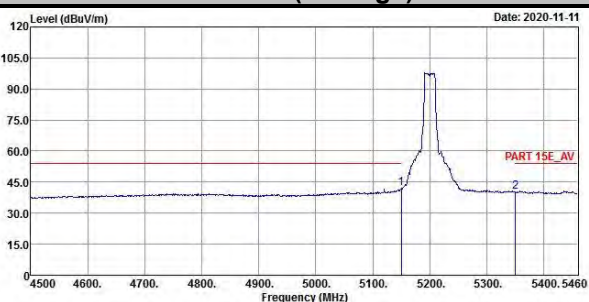
Horizontal (Average)



Vertical (Peak)

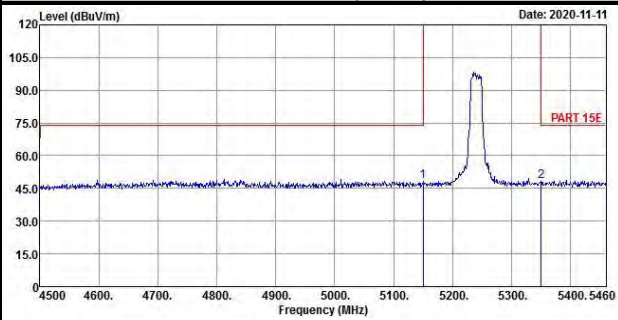


Vertical (Average)

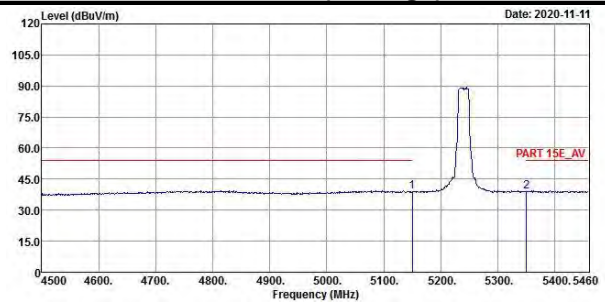


### Channel 48

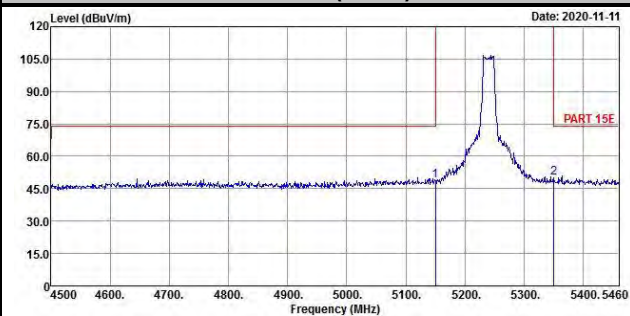
#### Horizontal (Peak)



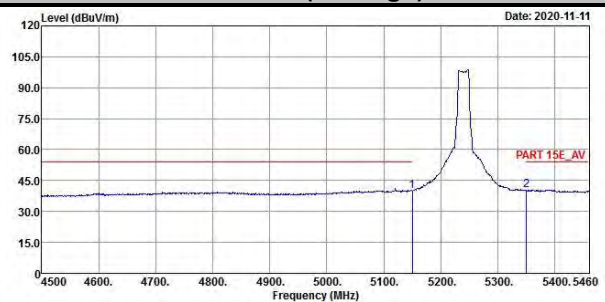
#### Horizontal (Average)



#### Vertical (Peak)

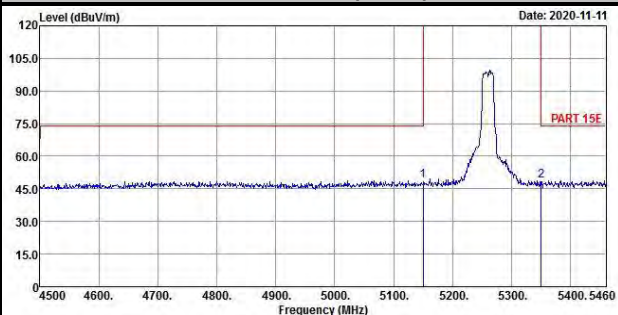


#### Vertical (Average)

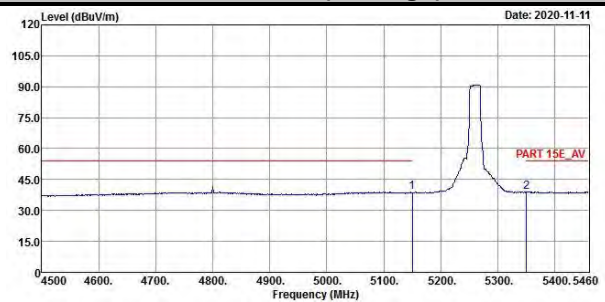


### Channel 52

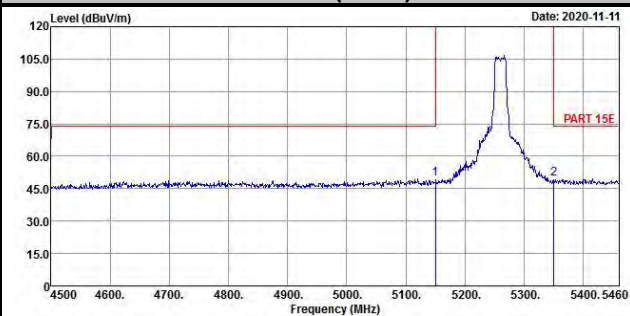
#### Horizontal (Peak)



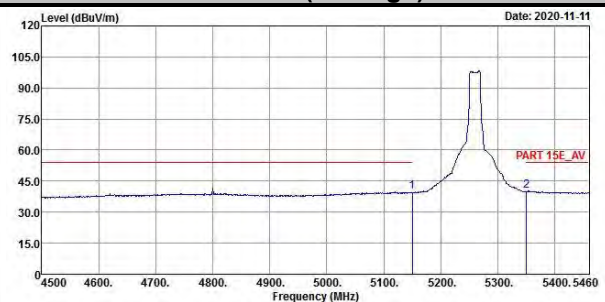
#### Horizontal (Average)



#### Vertical (Peak)

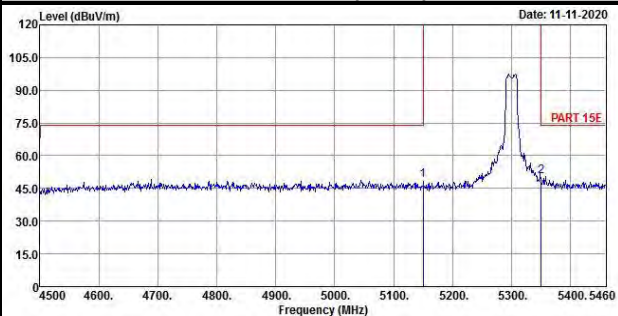


#### Vertical (Average)

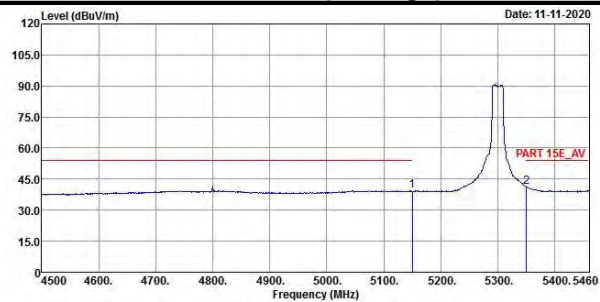


### Channel 60

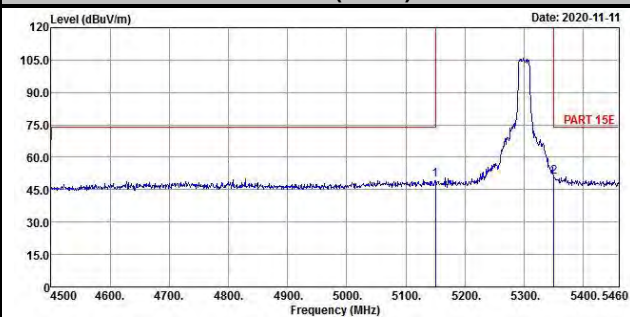
#### Horizontal (Peak)



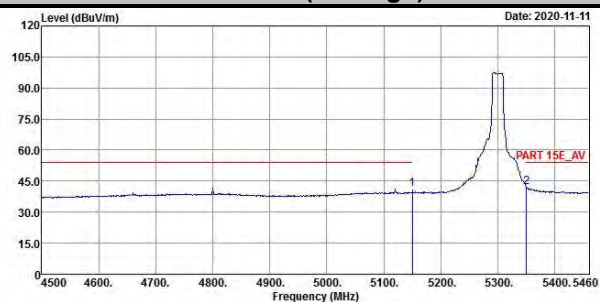
#### Horizontal (Average)



#### Vertical (Peak)

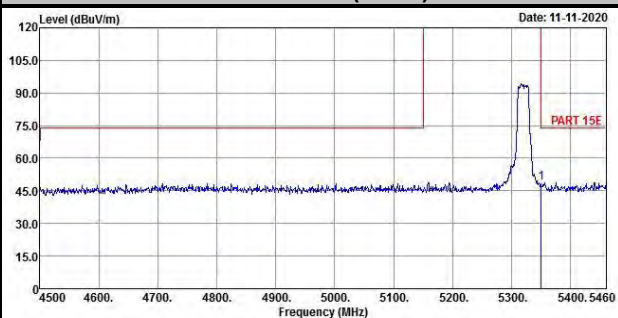


#### Vertical (Average)

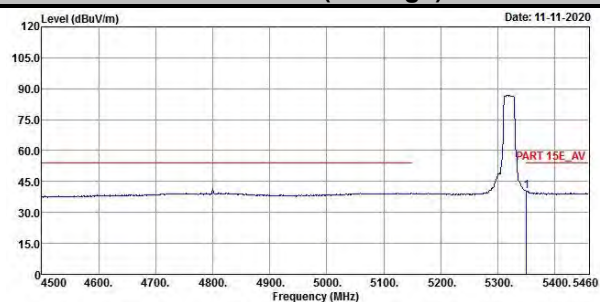


### Channel 64

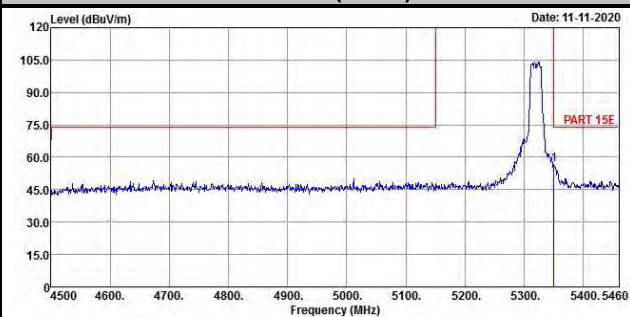
#### Horizontal (Peak)



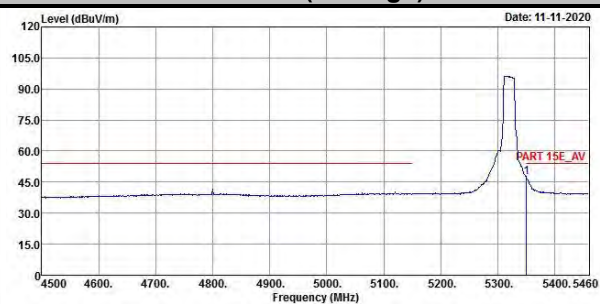
#### Horizontal (Average)



#### Vertical (Peak)

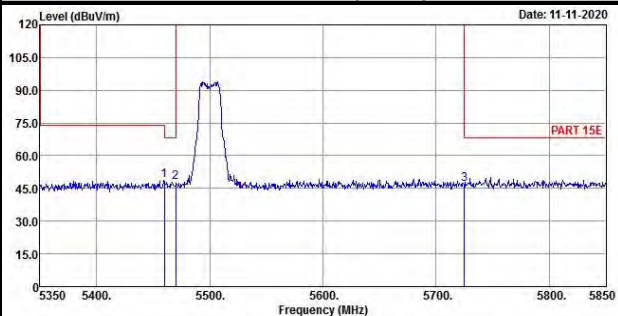


#### Vertical (Average)

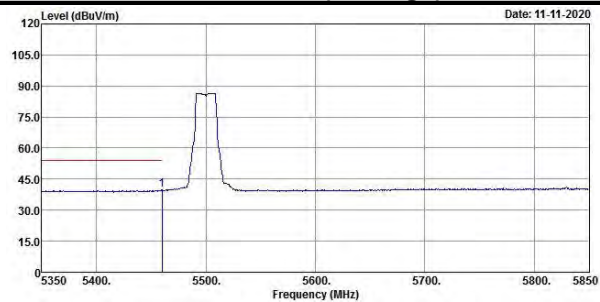


### Channel 100

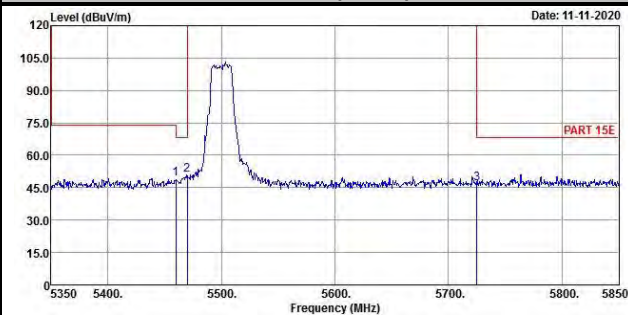
#### Horizontal (Peak)



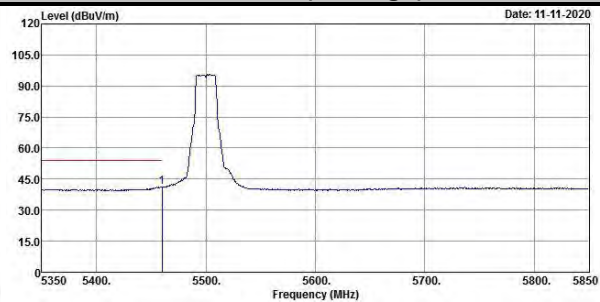
#### Horizontal (Average)



#### Vertical (Peak)

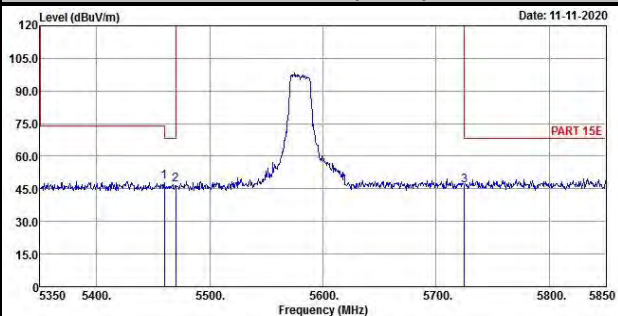


#### Vertical (Average)

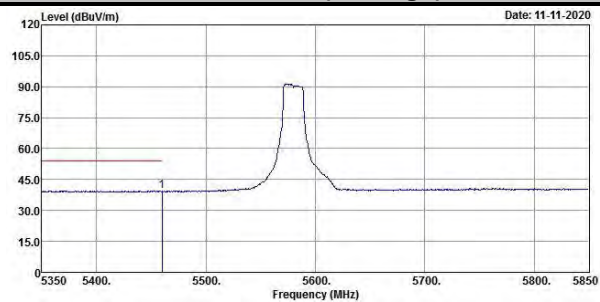


### Channel 116

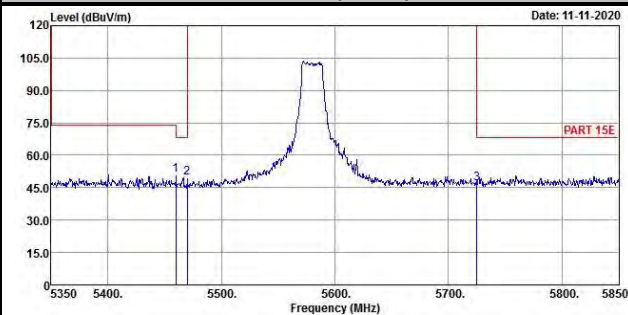
#### Horizontal (Peak)



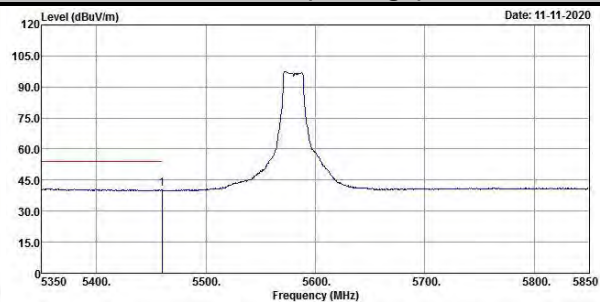
#### Horizontal (Average)



#### Vertical (Peak)



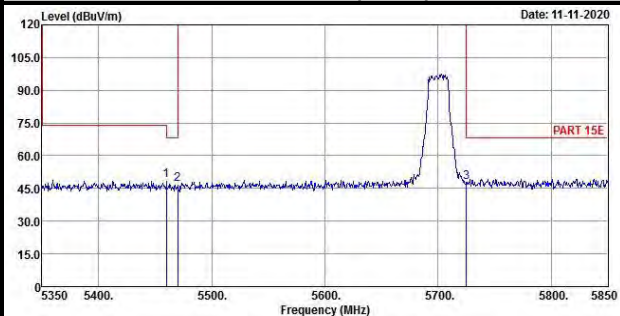
#### Vertical (Average)



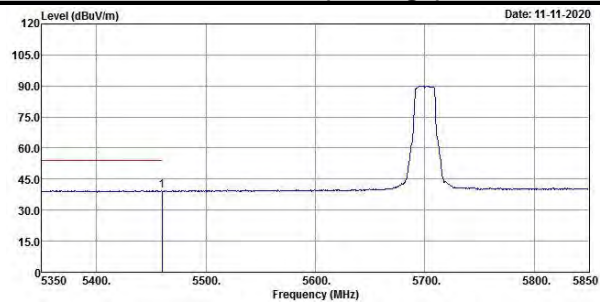


### Channel 140

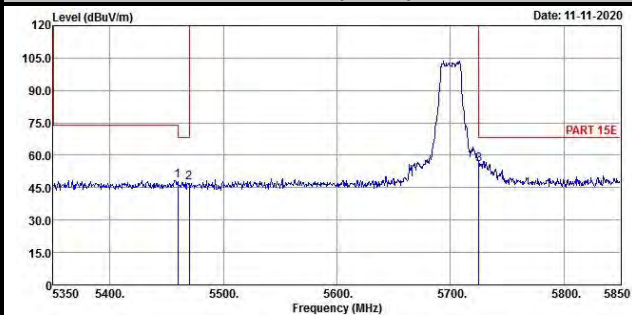
#### Horizontal (Peak)



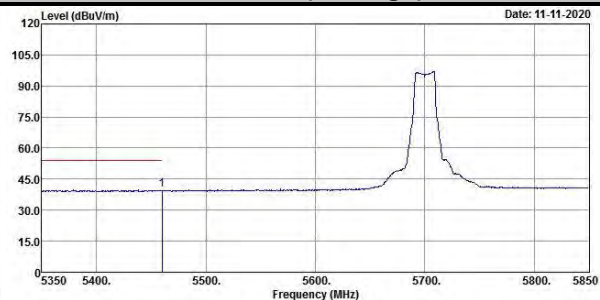
#### Horizontal (Average)



#### Vertical (Peak)

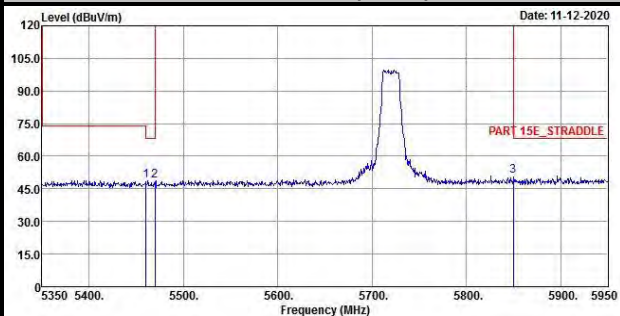


#### Vertical (Average)

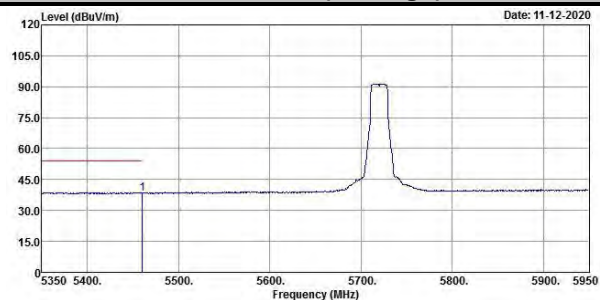


### Channel 144

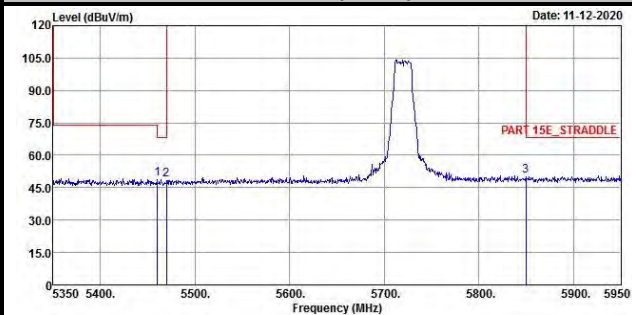
#### Horizontal (Peak)



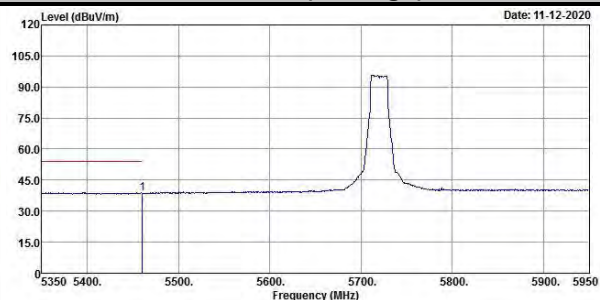
#### Horizontal (Average)



#### Vertical (Peak)



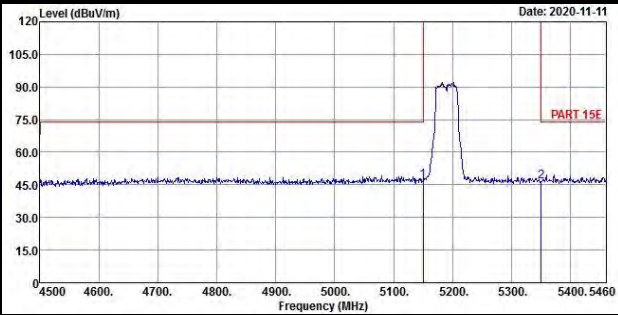
#### Vertical (Average)



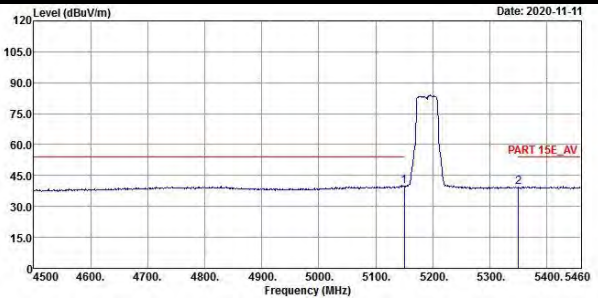
802.11n (HT40)

Channel 38

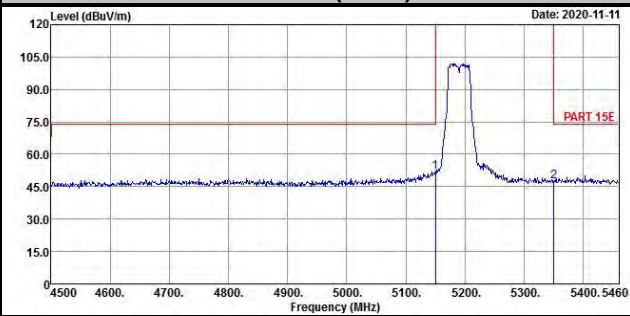
Horizontal (Peak)



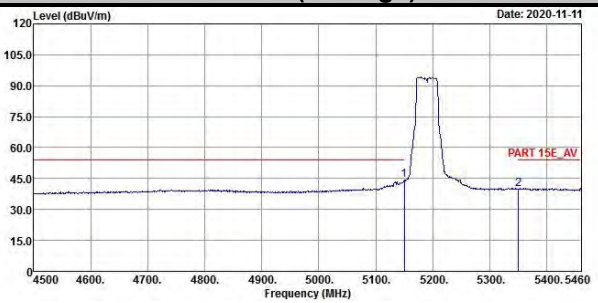
Horizontal (Average)



Vertical (Peak)

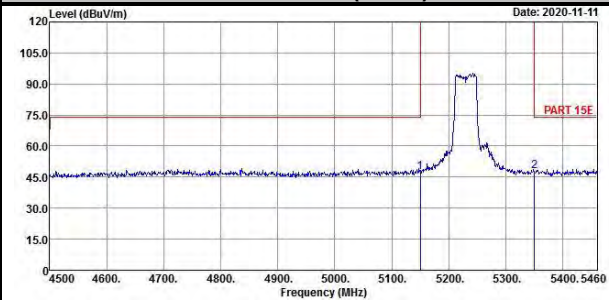


Vertical (Average)

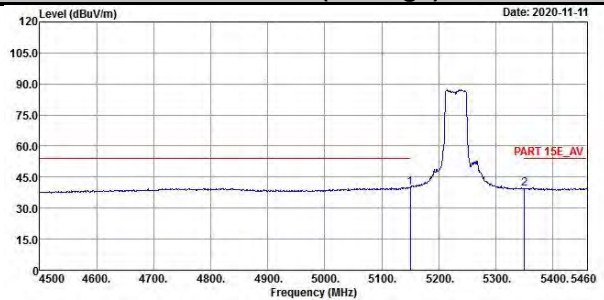


Channel 46

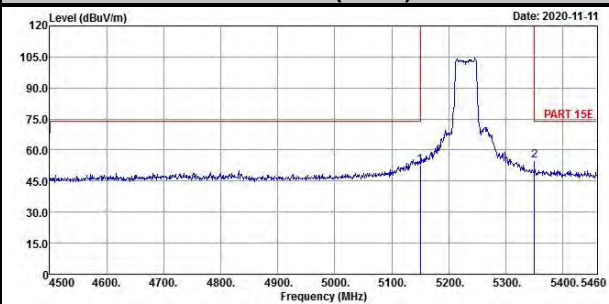
Horizontal (Peak)



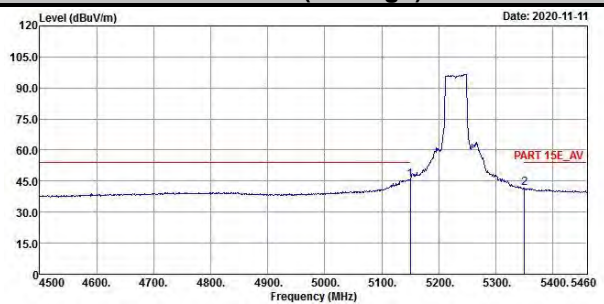
Horizontal (Average)



Vertical (Peak)

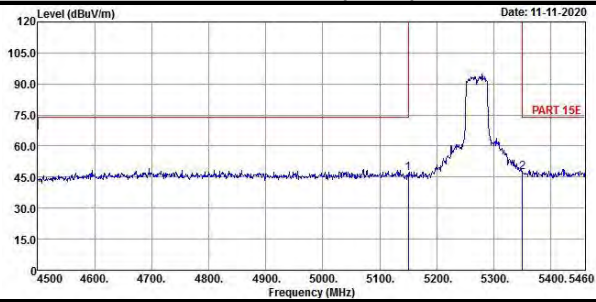


Vertical (Average)

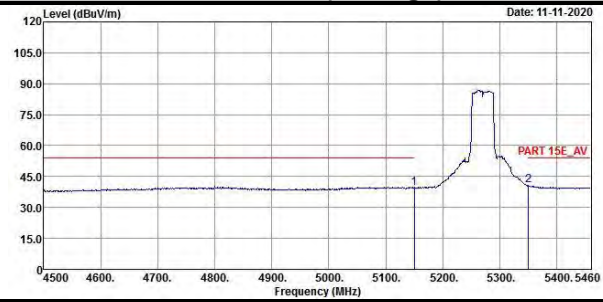


### Channel 54

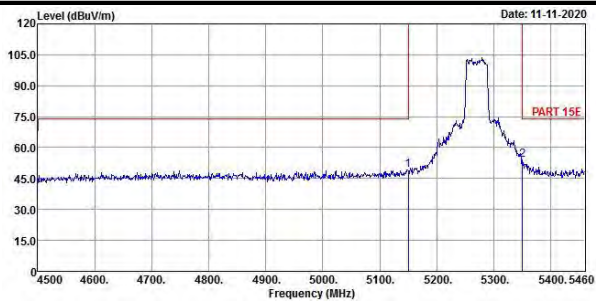
#### Horizontal (Peak)



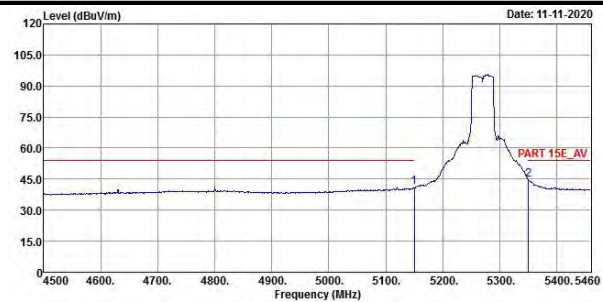
#### Horizontal (Average)



#### Vertical (Peak)

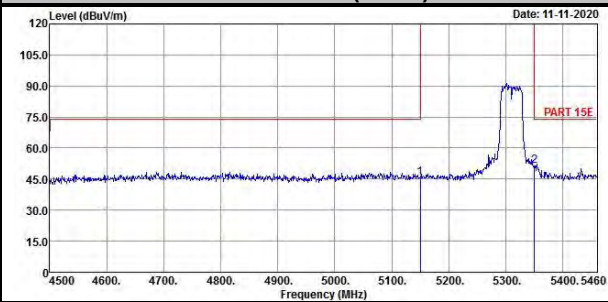


#### Vertical (Average)

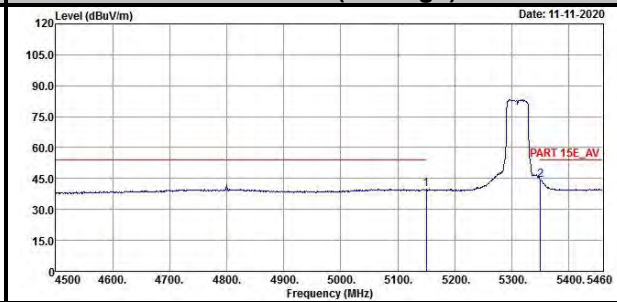


### Channel 62

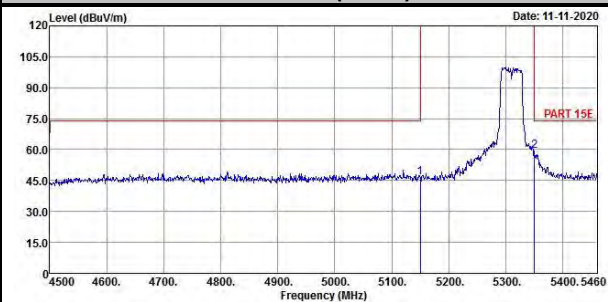
#### Horizontal (Peak)



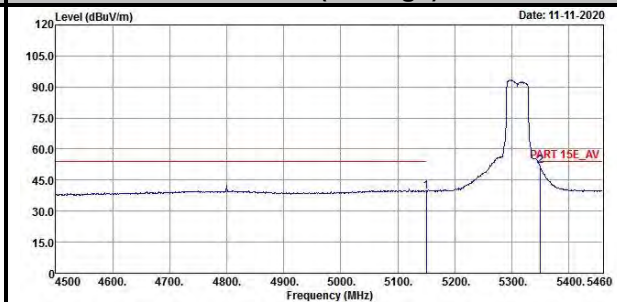
#### Horizontal (Average)



#### Vertical (Peak)

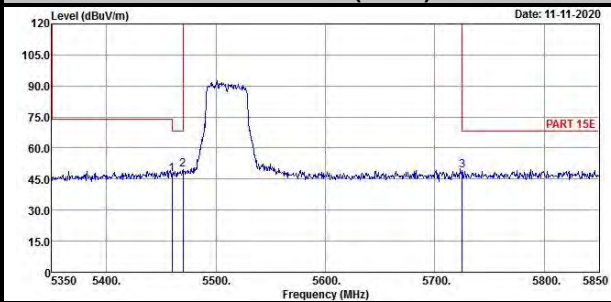


#### Vertical (Average)

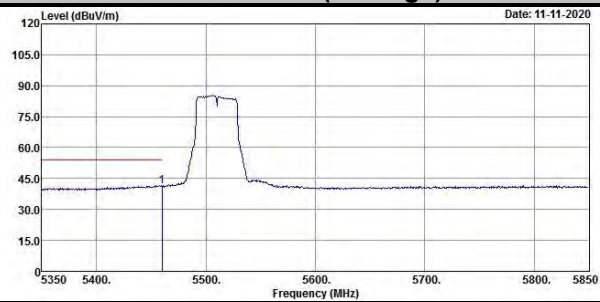


### Channel 102

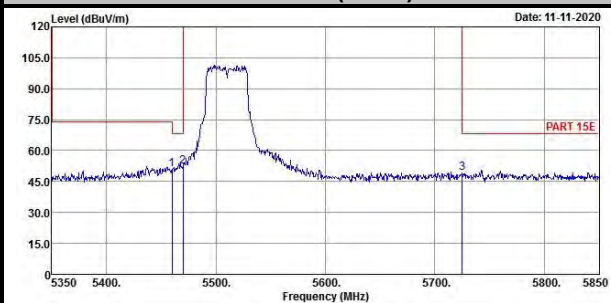
**Horizontal (Peak)**



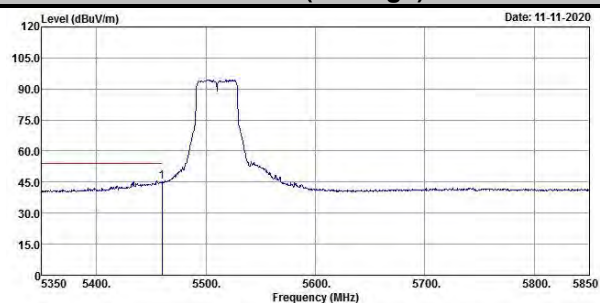
**Horizontal (Average)**



**Vertical (Peak)**

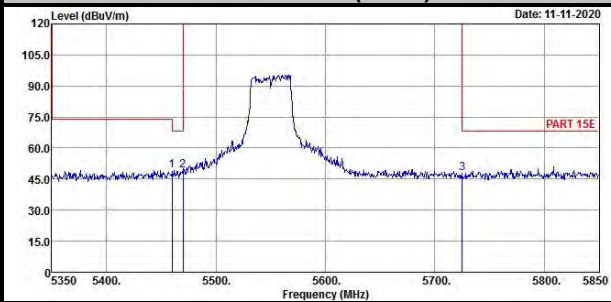


**Vertical (Average)**

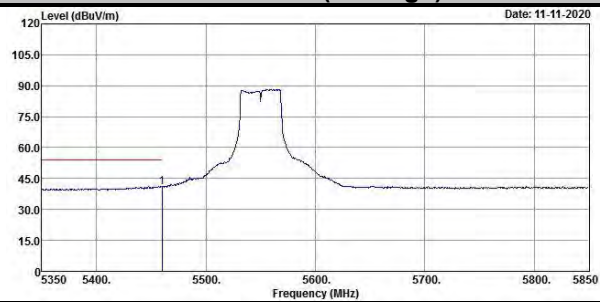


### Channel 110

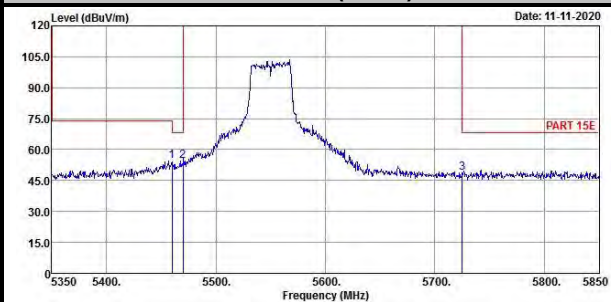
**Horizontal (Peak)**



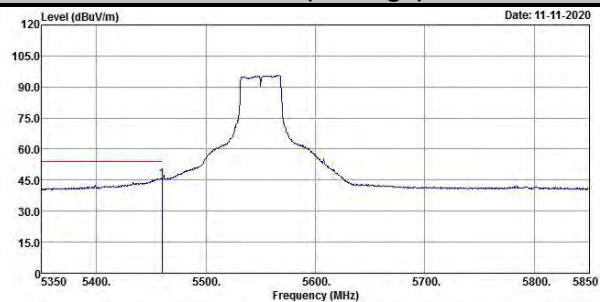
**Horizontal (Average)**



**Vertical (Peak)**

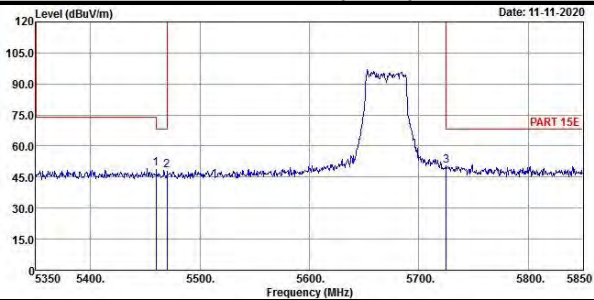


**Vertical (Average)**

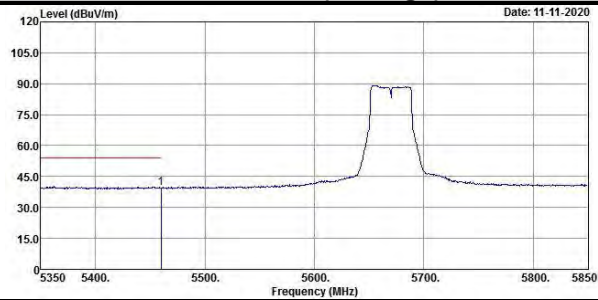


### Channel 134

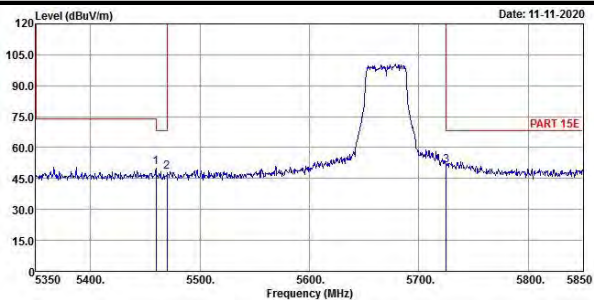
#### Horizontal (Peak)



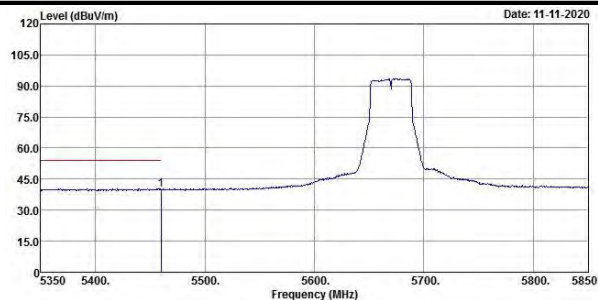
#### Horizontal (Average)



#### Vertical (Peak)

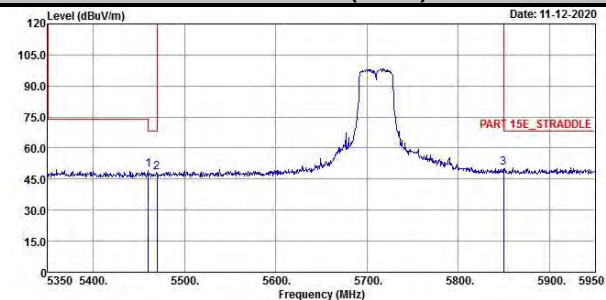


#### Vertical (Average)

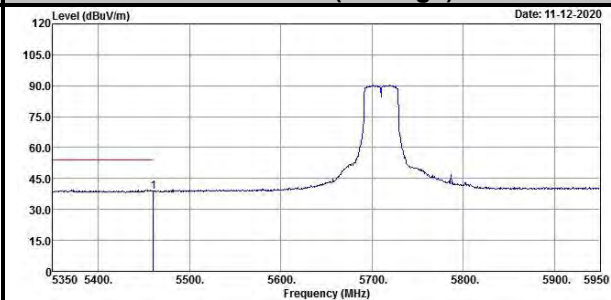


### Channel 142

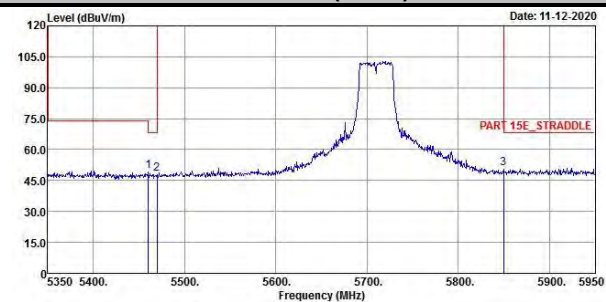
#### Horizontal (Peak)



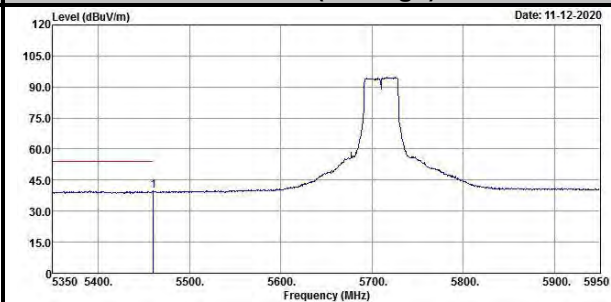
#### Horizontal (Average)



#### Vertical (Peak)



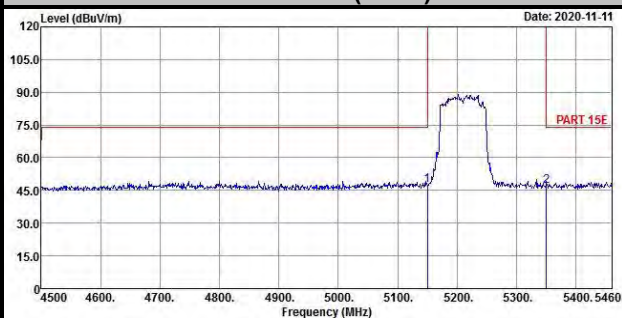
#### Vertical (Average)



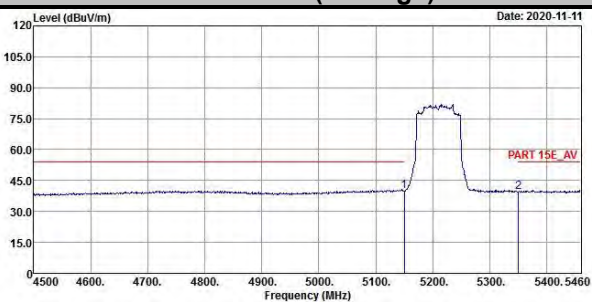
802.11ac (VHT80)

Channel 42

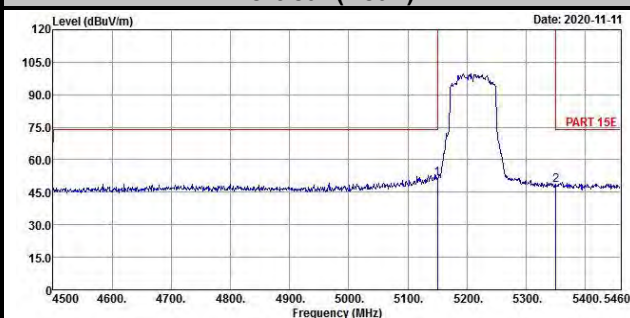
Horizontal (Peak)



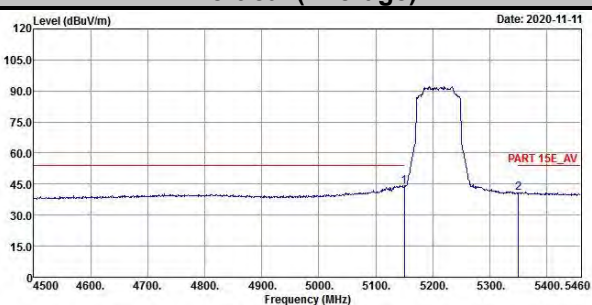
Horizontal (Average)



Vertical (Peak)

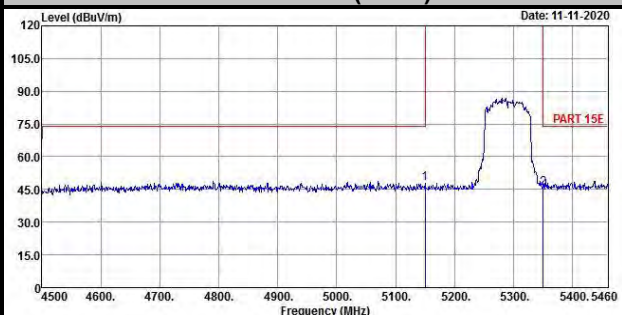


Vertical (Average)

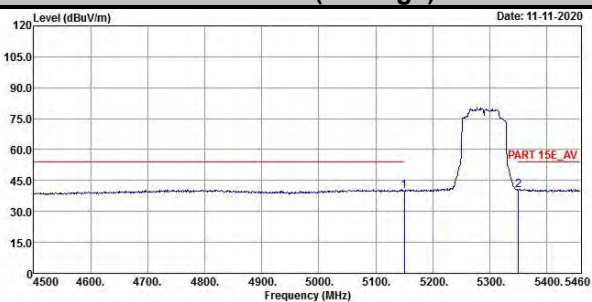


Channel 58

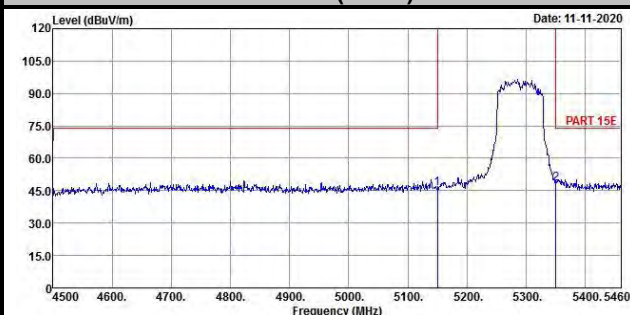
Horizontal (Peak)



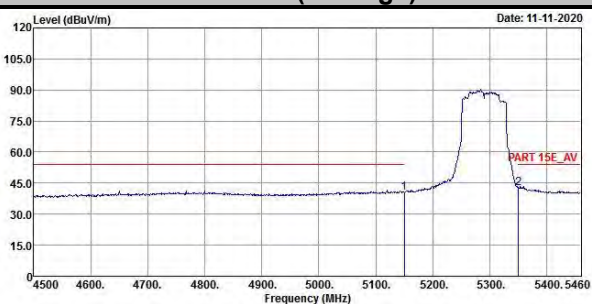
Horizontal (Average)



Vertical (Peak)

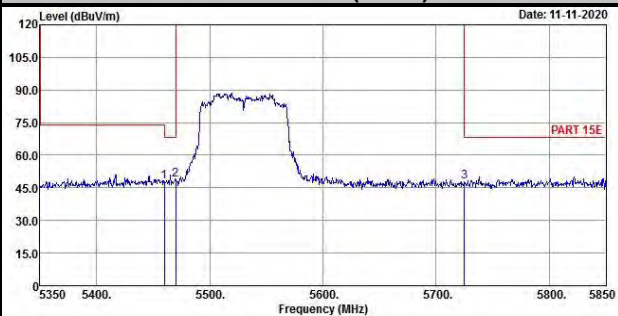


Vertical (Average)

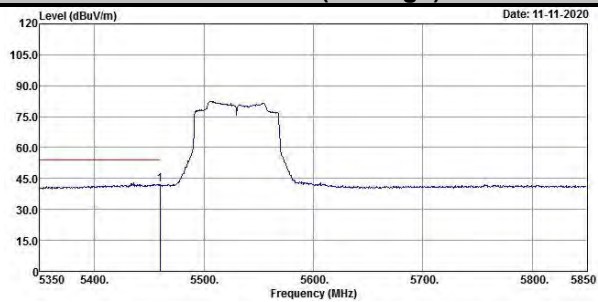


### Channel 106

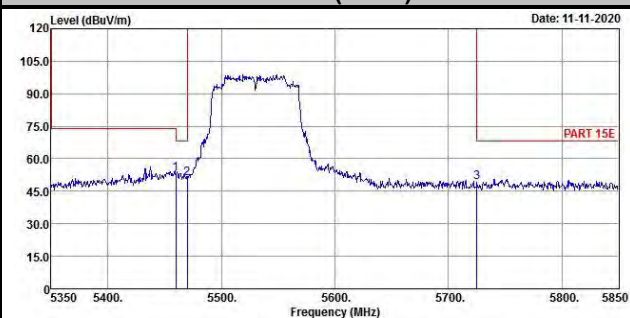
#### Horizontal (Peak)



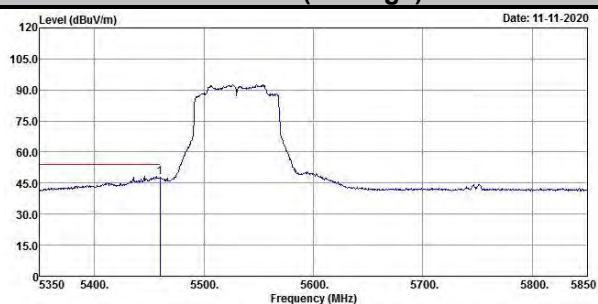
#### Horizontal (Average)



#### Vertical (Peak)

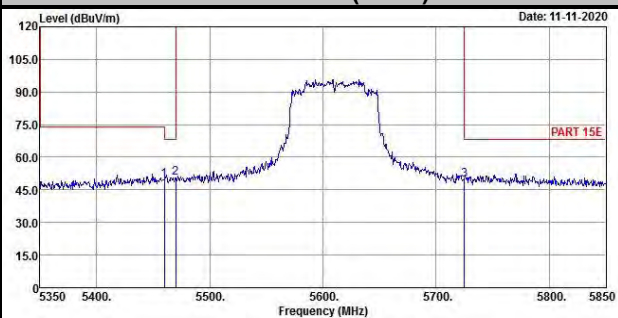


#### Vertical (Average)

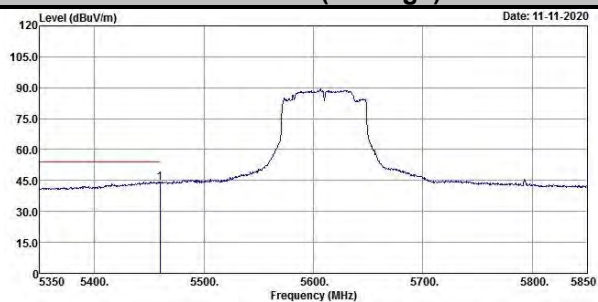


### Channel 122

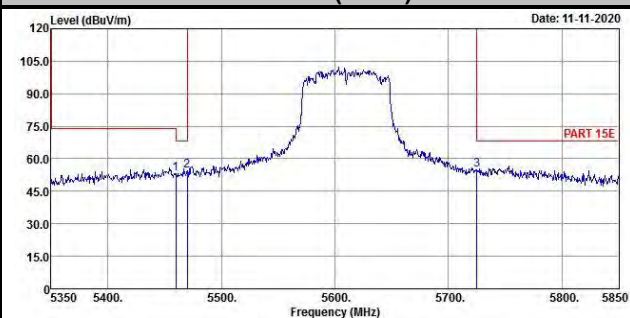
#### Horizontal (Peak)



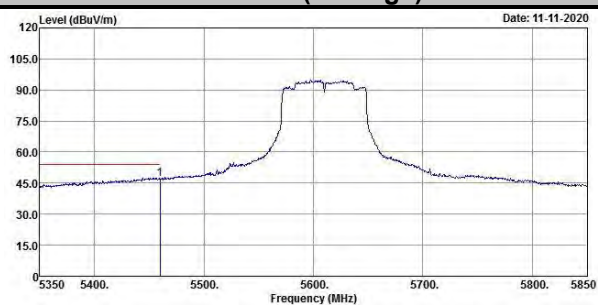
#### Horizontal (Average)



#### Vertical (Peak)

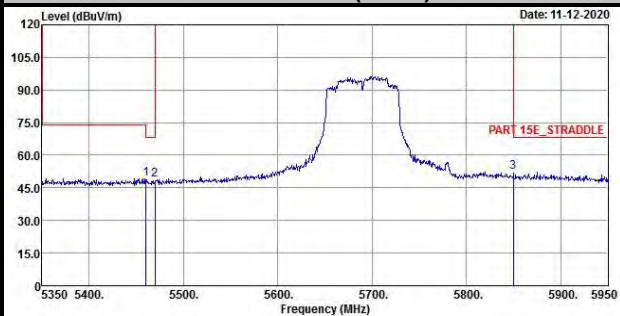


#### Vertical (Average)

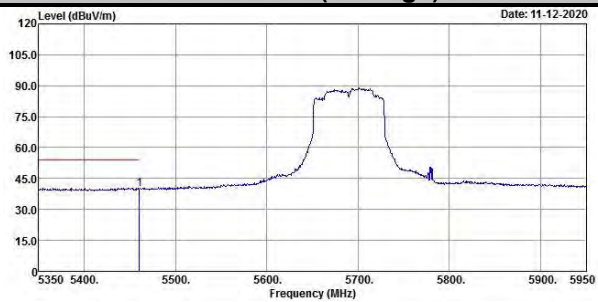


Channel 138

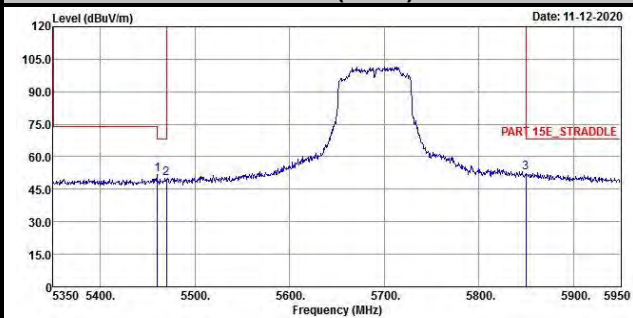
Horizontal (Peak)



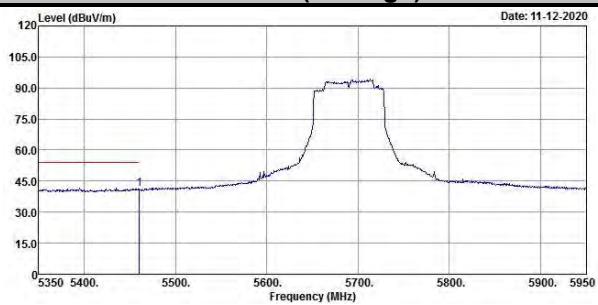
Horizontal (Average)



Vertical (Peak)



Vertical (Average)

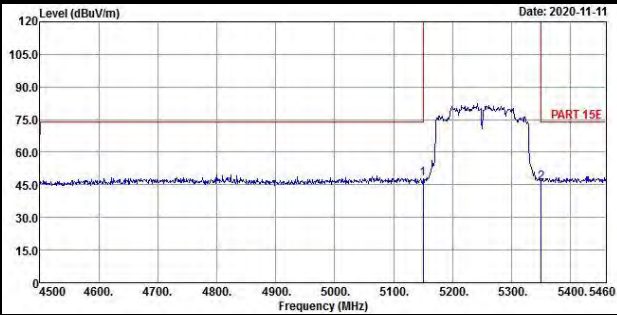




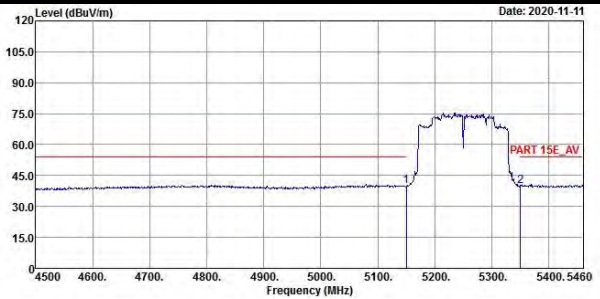
802.11ac (VHT160)

Channel 50

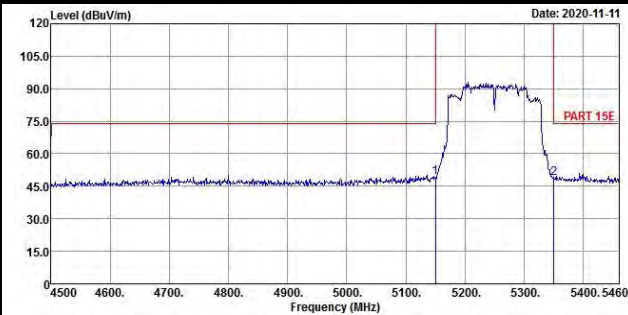
Horizontal (Peak)



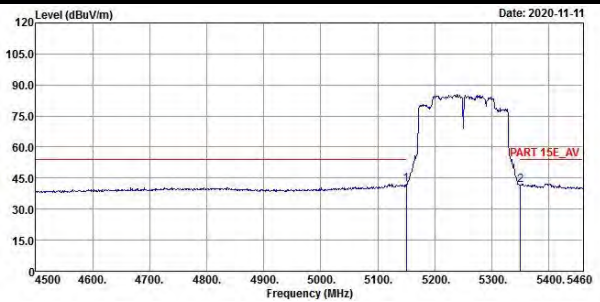
Horizontal (Average)



Vertical (Peak)

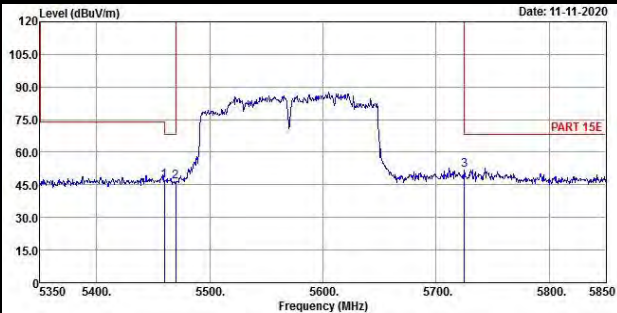


Vertical (Average)

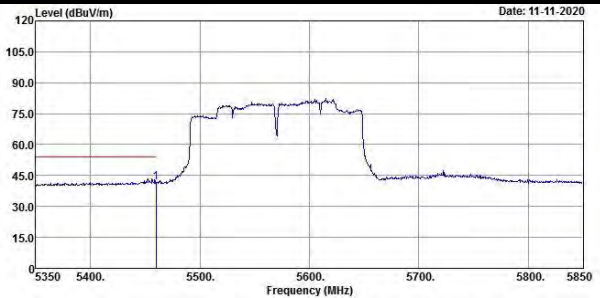


Channel 114

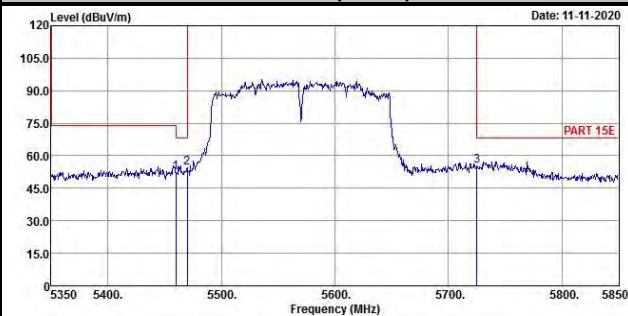
Horizontal (Peak)



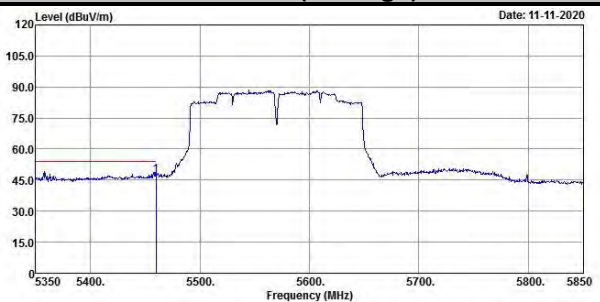
Horizontal (Average)



Vertical (Peak)



Vertical (Average)



## Appendix – Information of the Testing Laboratories

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

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

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