FCC Test Report

Report No.: RF200427C09-4 R1

FCC ID: A4RGUIK2

Model Name: GUIK2

Received Date: Apr. 27, 2020

Test Date: May 21 ~ Jun. 02, 2020

Issued Date: Jun. 30, 2020

Applicant: Google 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
RF200427C09-4	Original Release	Jun. 12, 2020
RF200427C09-4 R1	Updated power supply rating	Jun. 30, 2020

1 Certificate of Conformity

Product: Interactive Device

Model Name: GUIK2

Sample Status: Engineering Sample

Applicant: Google LLC

Test Date: May 21 ~ Jun. 02, 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:** Jun. 30, 2020
Gina Liu / Specialist

Approved by : _____ , **Date:** Jun. 30, 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 -6.83 dB at 0.60893 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 -1.5 dB at 5150 MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6 dB Bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is i-pex(MHF) not a standard connector.

Note:

1. 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 A. Test Procedures refer to report 4.1.3.
2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150 kHz ~ 30 MHz	2.79 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

Product	Interactive Device
Model Name	GUIK2
Status of EUT	Engineering Sample
Power Supply Rating	14.0 Vdc (adapter)
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK
Modulation Technology	OFDM
Transfer Rate	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0 Mbps 802.11n: up to 150.0 Mbps 802.11ac: up to 433.3 Mbps
Operating Frequency	5180 ~ 5240 MHz, 5260 ~ 5320 MHz, 5500 ~ 5720 MHz, 5745 ~ 5825 MHz
Number of Channel	5180 ~ 5240 MHz: 4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80) 5260 ~ 5320 MHz: 4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80) 5500 ~ 5720 MHz: 12 for 802.11a, 802.11n (HT20) 6 for 802.11n (HT40) 3 for 802.11ac (VHT80) 5745 ~ 5825 MHz: 5 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 1 for 802.11ac (VHT80)
Output Power	68.549 mW for 5180 ~ 5240 MHz 65.013 mW for 5260 ~ 5320 MHz 66.069 mW for 5500 ~ 5720 MHz 59.979 mW for 5745 ~ 5825 MHz
Antenna Type	PIFA antenna with 4.0 dBi gain (5180 ~ 5240 MHz) PIFA antenna with 4.0 dBi gain (5260 ~ 5320 MHz) PIFA antenna with 4.0 dBi gain (5500 ~ 5720 MHz) PIFA antenna with 4.8 dBi gain (5745 ~ 5825 MHz)
Antenna Connector	i-pex(MHF)
SN	1J365004810040204Q00135(MLB SN) SEM000061016 (FATP SN)
Accessory Device	Refer to Note as below
Data Cable Supplied	Refer to Note as below

Note:

1. The EUT incorporates a SISO function. Physically, the EUT provides one completed transmitter and one receiver.

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

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

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

3.2 Description of Test Modes

For 5180 ~ 5240 MHz

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

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

2 channels are provided for 802.11n (HT40):

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

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
42	5210

For 5260 ~ 5320 MHz

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

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

2 channels are provided for 802.11n (HT40):

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

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
58	5290

For 5500 ~ 5720 MHz

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

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

6 channels are provided for 802.11n (HT40):

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

3 channels are provided for 802.11ac (VHT80):

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

For 5745 ~ 5825 MHz:

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

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

2 channels are provided for 802.11n (HT40):

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

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
155	5775

3.2.1 Test Mode Applicability and Tested Channel Detail

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

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

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

Radiated Emission Test (Above 1 GHz):

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

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

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5180-5240	802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6.0
-		802.11n (HT20)	36 to 48	36, 40, 48	OFDM	BPSK	6.5
-		802.11n (HT40)	38 to 46	38, 46	OFDM	BPSK	13.5
-		802.11ac (VHT80)	42	42	OFDM	BPSK	29.3
-	5260-5320	802.11a	52 to 64	52, 60, 64	OFDM	BPSK	6.0
-		802.11n (HT20)	52 to 64	52, 60, 64	OFDM	BPSK	6.5
-		802.11n (HT40)	54 to 62	54, 62	OFDM	BPSK	13.5
-		802.11ac (VHT80)	58	58	OFDM	BPSK	29.3
-	5500-5720	802.11a	100 to 144	100, 116, 140, 144	OFDM	BPSK	6.0
-		802.11n (HT20)	100 to 144	100, 116, 140, 144	OFDM	BPSK	6.5
-		802.11n (HT40)	102 to 142	102, 110, 134, 142	OFDM	BPSK	13.5
-		802.11ac (VHT80)	106 to 138	106, 122, 138	OFDM	BPSK	29.3
-	5745-5825	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-		802.11n (HT20)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
-		802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	13.5
-		802.11ac (VHT80)	155	155	OFDM	BPSK	29.3

Radiated Emission Test (Below 1 GHz):

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

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

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5180-5240	802.11a	36 to 48	36	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)
-	5180-5240	802.11a	36 to 48	36	OFDM	BPSK	6.0

Antenna Port Conducted Measurement:

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

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

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

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5180-5240	802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6.0
-		802.11n (HT20)	36 to 48	36, 40, 48	OFDM	BPSK	6.5
-		802.11n (HT40)	38 to 46	38, 46	OFDM	BPSK	13.5
-		802.11ac (VHT80)	42	42	OFDM	BPSK	29.3
-	5260-5320	802.11a	52 to 64	52, 60, 64	OFDM	BPSK	6.0
-		802.11n (HT20)	52 to 64	52, 60, 64	OFDM	BPSK	6.5
-		802.11n (HT40)	54 to 62	54, 62	OFDM	BPSK	13.5
-		802.11ac (VHT80)	58	58	OFDM	BPSK	29.3
-	5500-5720	802.11a	100 to 144	100, 116, 140, 144	OFDM	BPSK	6.0
-		802.11n (HT20)	100 to 144	100, 116, 140, 144	OFDM	BPSK	6.5
-		802.11n (HT40)	102 to 142	102, 110, 134, 142	OFDM	BPSK	13.5
-		802.11ac (VHT80)	106 to 138	106, 122, 138	OFDM	BPSK	29.3
-	5745-5825	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-		802.11n (HT20)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
-		802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	13.5
-		802.11ac (VHT80)	155	155	OFDM	BPSK	29.3

Test Condition:

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

3.3 Duty Cycle of Test Signal

MODULATION TYPE: BPSK

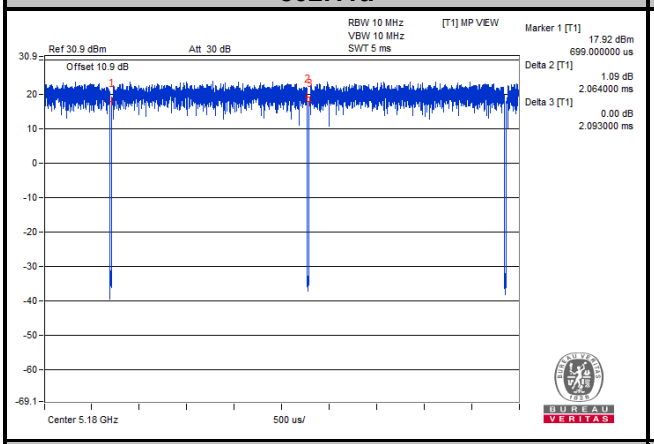
802.11a: Duty cycle of test signal is ≥ 98 %, duty factor is not required.

802.11n (HT20): Duty cycle of test signal is ≥ 98 %, duty factor is not required.

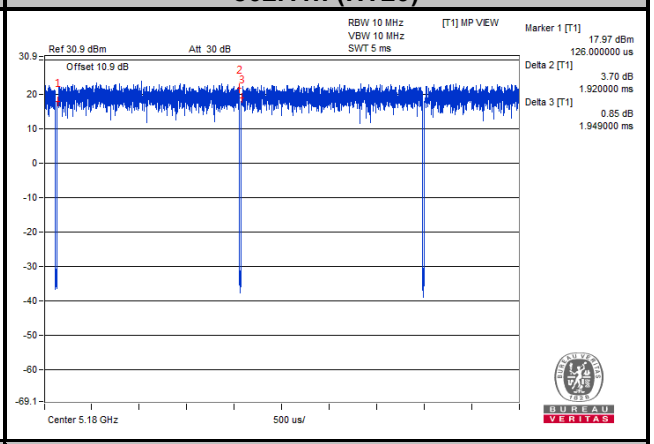
802.11n (HT40): Duty cycle = 0.942/0.967 = 0.974, Duty factor = 10 * log(1/0.974) = 0.11

802.11ac (VHT80): Duty cycle = 0.461/0.482 = 0.956, Duty factor = 10 * log(1/0.956) = 0.19

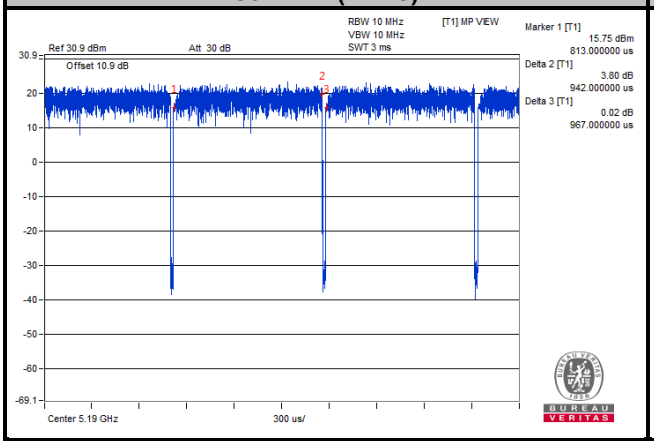
802.11a



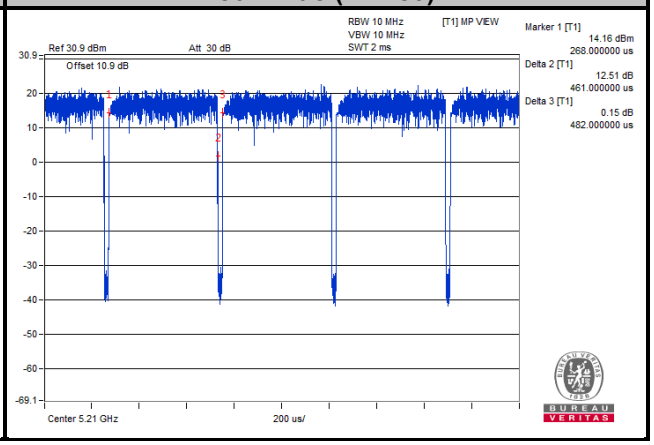
802.11n (HT20)



802.11n (HT40)



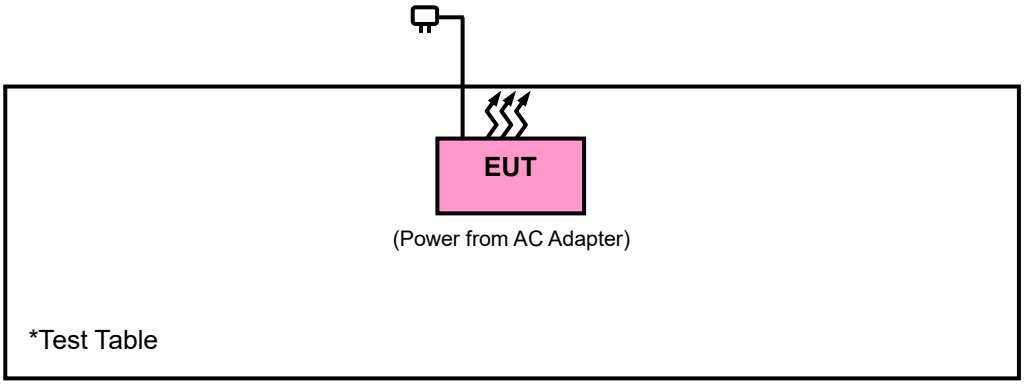
802.11ac (VHT80)



3.4 Description of Support Units

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

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards 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 414788 D01 Radiated Test Site v01r01

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	☒	15.407(b)(4)(i)	PK:-27 (dBm/MHz) *1 PK:10 (dBm/MHz) *2 PK:15.6 (dBm/MHz) *3 PK:27 (dBm/MHz) *4	PK: 68.2 (dBμV/m) *1 PK:105.2 (dBμV/m) *2 PK: 110.8 (dBμV/m) *3 PK:122.2 (dBμV/m) *4
	☐	15.407(b)(4)(ii)	Emission limits in section 15.247(d)	

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

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

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

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

Note:

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

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

4.1.2 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	FSW26	102023	Oct. 08, 2019	Oct. 07, 2020
Broadband Horn Antenna SCHWARZBECK	BBHA 9170	148	Nov. 24, 2019	Nov. 23, 2020
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-969	Nov. 24, 2019	Nov. 23, 2020
BILOG Antenna SCHWARZBECK	VULB 9168	9168-472	Nov. 08, 2019	Nov. 07, 2020
Fixed Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	Apr. 14, 2020	Apr. 13, 2021
Loop Antenna	HLA 6121	45745	Jul. 01, 2019	Jun. 30, 2020
Preamplifier EMCI	EMC001340	980201	Oct. 14, 2019	Oct. 13, 2020
Preamplifier EMCI	EMC 012645	980115	Oct. 08, 2019	Oct. 07, 2020
Preamplifier EMCI	EMC 184045	980116	Oct. 08, 2019	Oct. 07, 2020
Preamplifier EMCI	EMC 330H	980112	Oct. 08, 2019	Oct. 07, 2020
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY55190004/MY55190007/MY55210005	Jul. 15, 2019	Jul. 14, 2020
RF Coaxial Cable HUBER+SUHNNER	EMC104-SM-SM-8000&3000	140811+170717	Oct. 08, 2019	Oct. 07, 2020
RF Coaxial Cable HUBER+SUHNNER	SUCOFLEX 104	EMC104-SM-SM-1000(140807)	Oct. 08, 2019	Oct. 07, 2020
RF Coaxial Cable WOKEN	8D-FB	Cable-Ch10-01	Oct. 08, 2019	Oct. 07, 2020
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower &Turn Table Controller MF	MF-7802	NA	NA	NA
Temperature & Humidity Chamber GIANT FORCE	GTH-120-40-CP-AR	MAA1306-019	Sep. 10, 2019	Sep. 09, 2020
AC Power Source EEC	6905S	1991553	NA	NA
Digital Multimeter Fluke	87-III	70360742	Jun. 27, 2019	Jun. 26, 2020

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 10.

4.1.3 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:

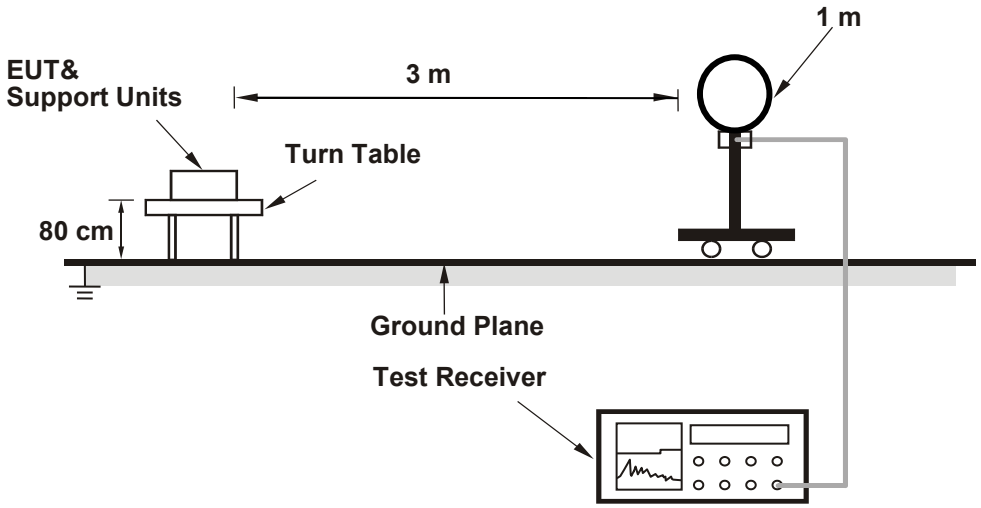
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK)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

4.1.4 Deviation from Test Standard

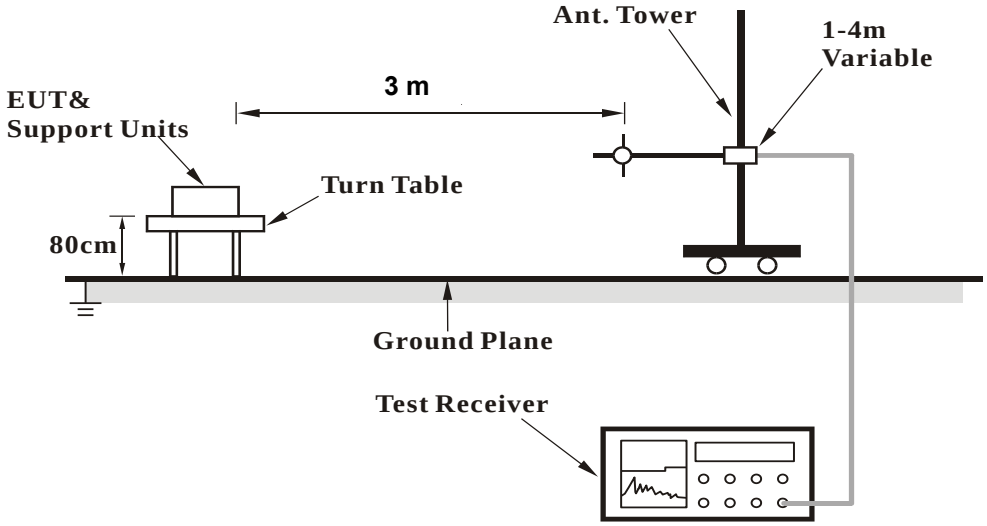
No deviation.

4.1.5 Test Setup

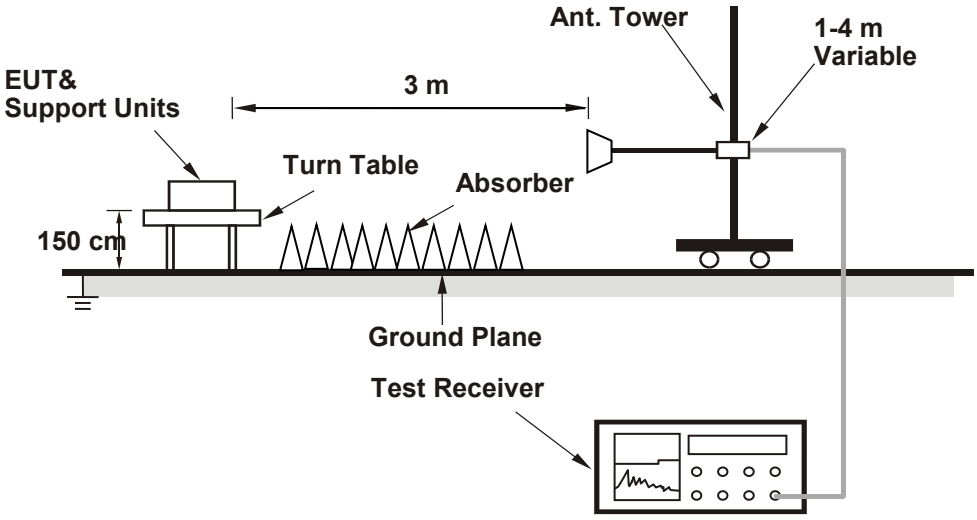
<Radiated Emission below 30 MHz>



<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).

KDB 414788 OATS and Chamber Correlation Justification

- Based on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in regulations; however, an attempt should be made to avoid making measurements in the near field.
- Open-field site and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

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.

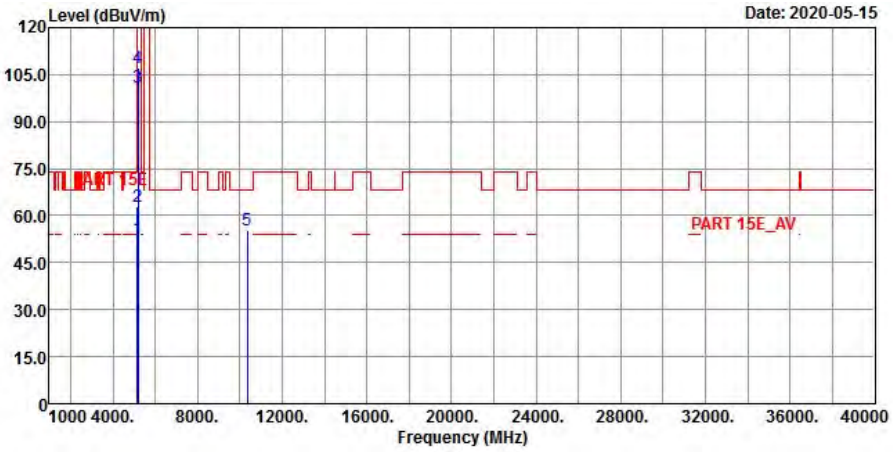
4.1.7 Test Results

Above 1 GHz Data：

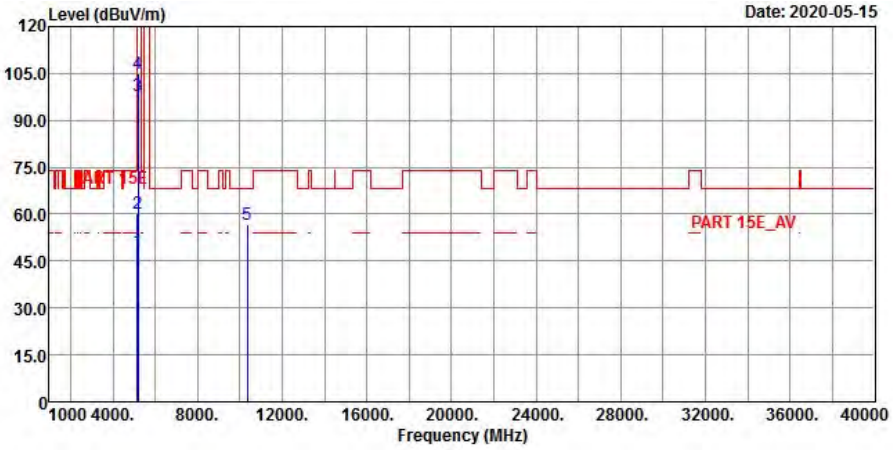
802.11a

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

Horizontal



Vertical



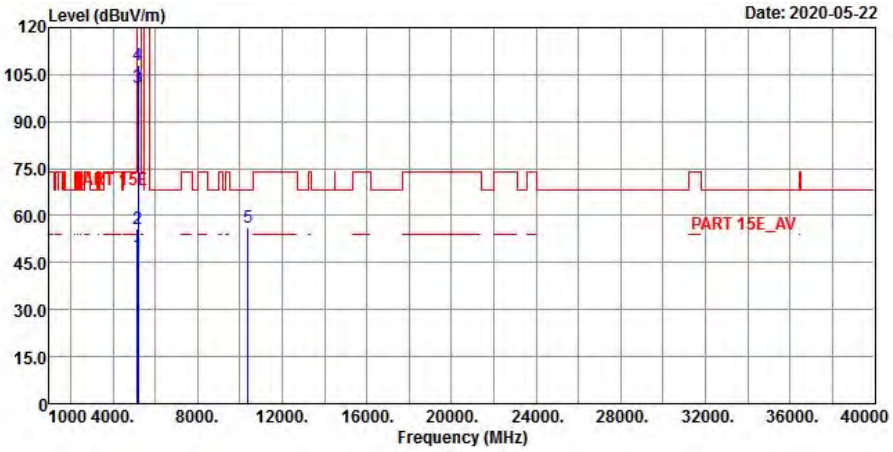
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	52.5	52.08	0.42	54	-1.5	195	276	Average
5150	63.09	62.67	0.42	74	-10.91	195	276	Peak
5180	100.94	100.68	0.26	------	------	195	276	Average
5180	107.34	107.08	0.26	------	------	195	276	Peak
10360	55.44	57.36	-1.92	68.2	-12.76	205	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	48.47	48.05	0.42	54	-5.53	209	94	Average
5150	60.07	59.65	0.42	74	-13.93	209	94	Peak
5180	97.74	97.48	0.26	------	------	209	94	Average
5180	105.06	104.8	0.26	------	------	209	94	Peak
10360	56.8	58.72	-1.92	68.2	-11.4	117	82	Peak

Remarks:

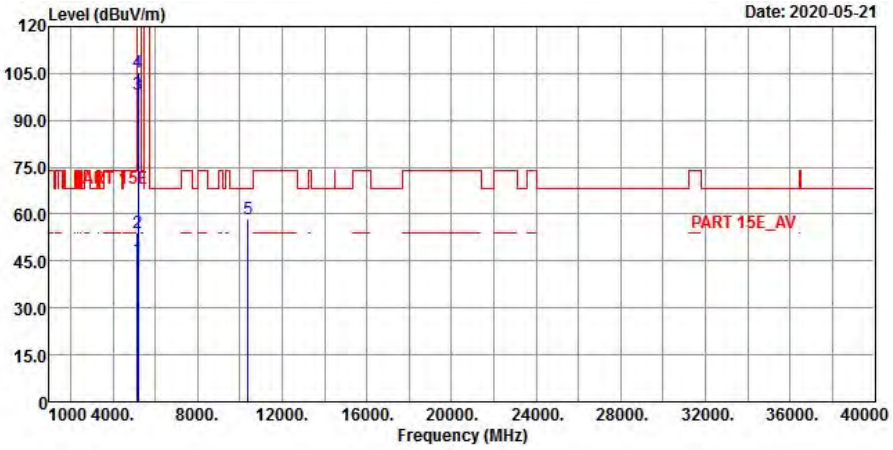
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5180 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Horizontal



Vertical



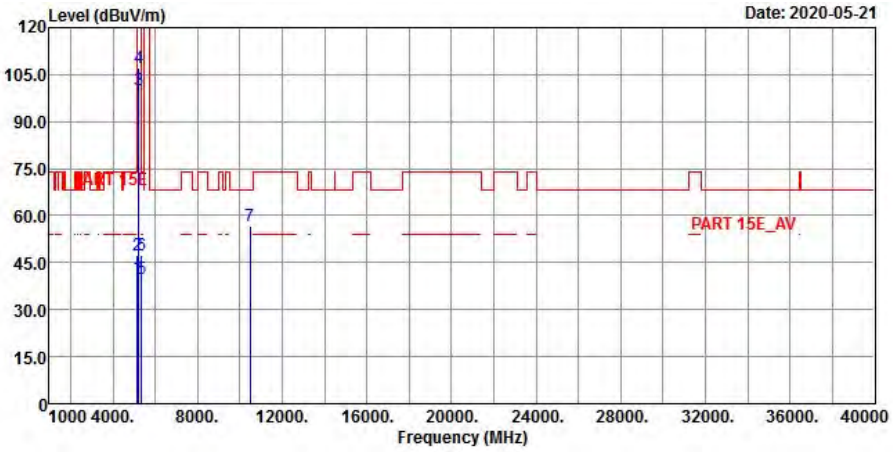
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	47.47	47.05	0.42	54	-6.53	192	92	Average
5150	55.66	55.24	0.42	74	-18.34	192	92	Peak
5200	101.17	101.03	0.14	------	------	192	92	Average
5200	107.86	107.72	0.14	------	------	192	92	Peak
10400	56.3	58.12	-1.82	68.2	-11.9	132	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	45.63	45.21	0.42	54	-8.37	199	119	Average
5150	53.9	53.48	0.42	74	-20.1	199	119	Peak
5200	98.44	98.3	0.14	------	------	199	119	Average
5200	105.37	105.23	0.14	------	------	199	119	Peak
10400	58.3	60.12	-1.82	68.2	-9.9	111	318	Peak

Remarks:

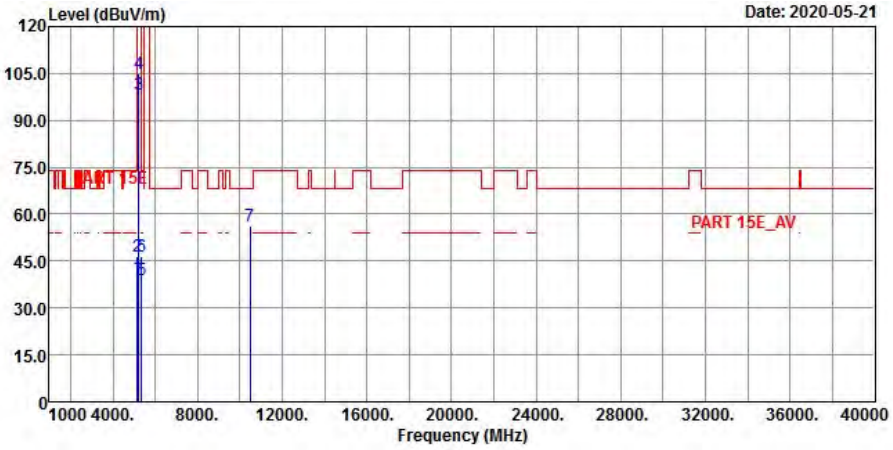
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5200 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Horizontal



Vertical



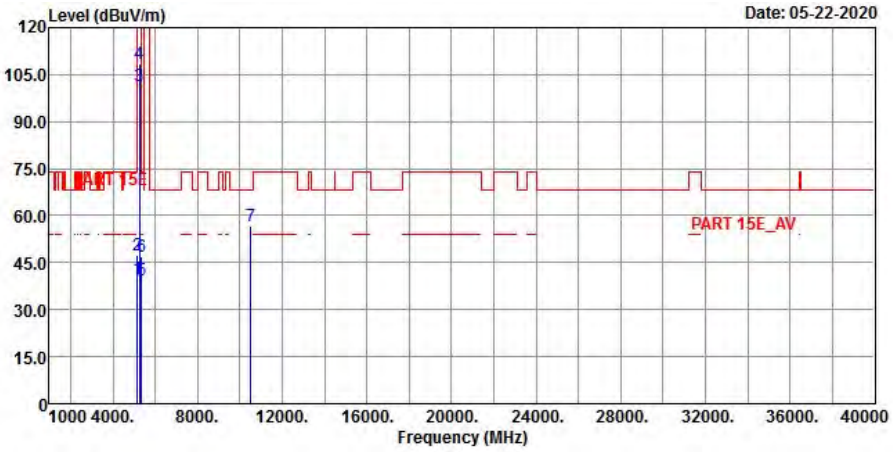
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	40.24	39.82	0.42	54	-13.76	350	27	Average
5150	47.57	47.15	0.42	74	-26.43	350	27	Peak
5240	100.25	100.15	0.1	------	------	350	27	Average
5240	107.29	107.19	0.1	------	------	350	27	Peak
5350	39.8	39.47	0.33	54	-14.2	350	27	Average
5350	47.22	46.89	0.33	74	-26.78	350	27	Peak
10480	56.67	58.15	-1.48	68.2	-11.53	181	122	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	39.71	39.29	0.42	54	-14.29	207	88	Average
5150	46.66	46.24	0.42	74	-27.34	207	88	Peak
5240	98.35	98.25	0.1	------	------	207	88	Average
5240	104.97	104.87	0.1	------	------	207	88	Peak
5350	38.9	38.57	0.33	54	-15.1	207	88	Average
5350	46.66	46.33	0.33	74	-27.34	207	88	Peak
10480	56.3	57.78	-1.48	68.2	-11.9	102	152	Peak

Remarks:

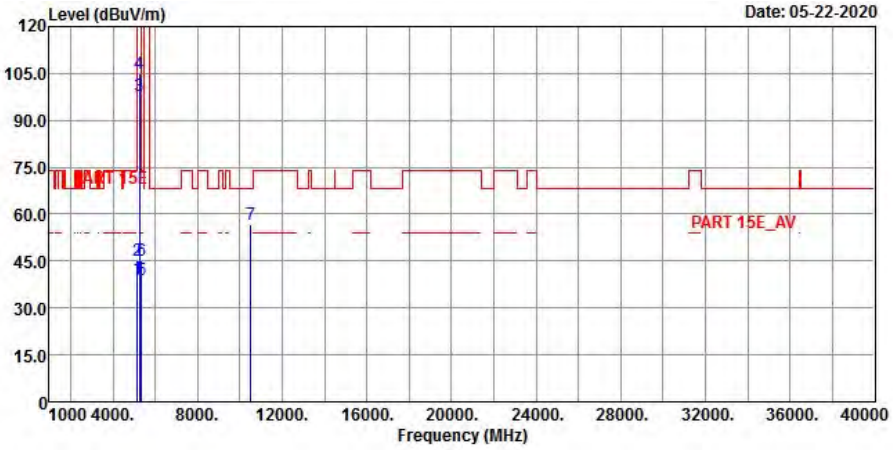
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5240 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Horizontal



Vertical



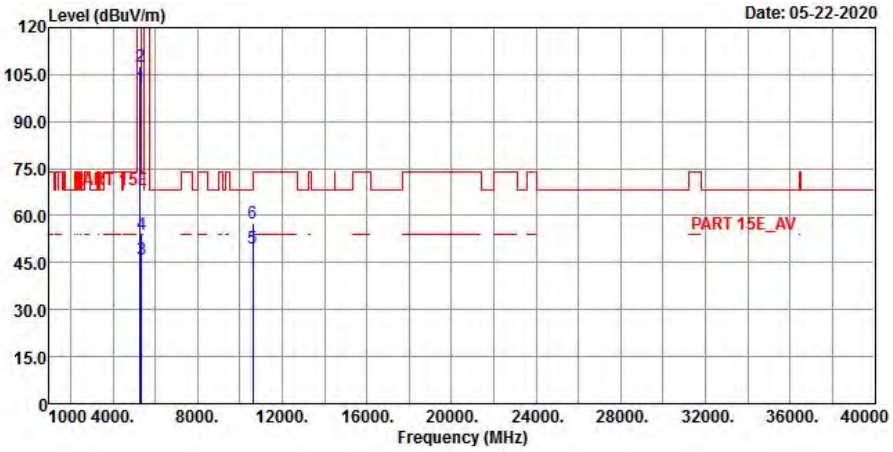
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	39.64	39.22	0.42	54	-14.36	192	274	Average
5150	47.54	47.12	0.42	74	-26.46	192	274	Peak
5260	101.52	101.39	0.13	------	------	192	274	Average
5260	108.49	108.36	0.13	------	------	192	274	Peak
5350	39.44	39.11	0.33	54	-14.56	192	274	Average
5350	46.8	46.47	0.33	74	-27.2	192	274	Peak
10520	56.86	58.31	-1.45	68.2	-11.34	100	132	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	39.27	38.85	0.42	54	-14.73	198	90	Average
5150	45.32	44.9	0.42	74	-28.68	198	90	Peak
5260	97.93	97.8	0.13	------	------	198	90	Average
5260	104.83	104.7	0.13	------	------	198	90	Peak
5350	38.85	38.52	0.33	54	-15.15	198	90	Average
5350	45.32	44.99	0.33	74	-28.68	198	90	Peak
10520	56.49	57.94	-1.45	68.2	-11.71	132	152	Peak

Remarks:

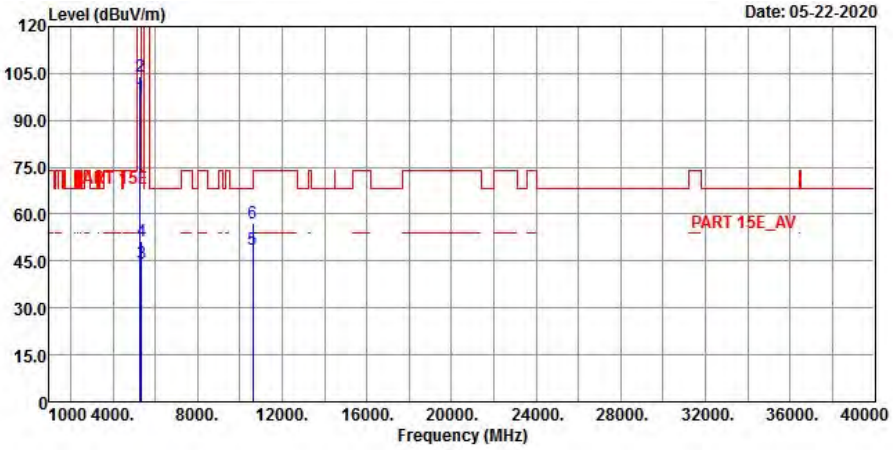
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5260 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Horizontal



Vertical



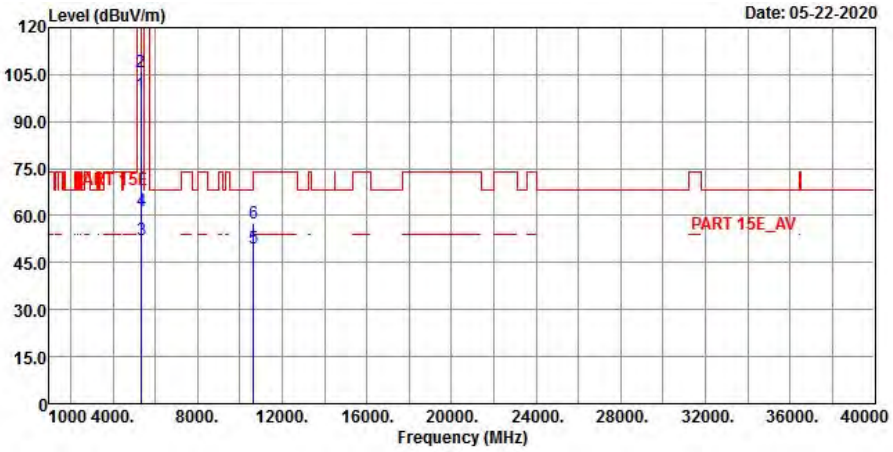
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5300	100.75	100.54	0.21	------	------	190	274	Average
5300	107.53	107.32	0.21	------	------	190	274	Peak
5350	46.26	45.93	0.33	54	-7.74	190	274	Average
5350	53.83	53.5	0.33	74	-20.17	190	274	Peak
10600	49.62	51.23	-1.61	54	-4.38	125	131	Average
10600	57.72	59.33	-1.61	74	-16.28	125	131	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5300	97.6	97.39	0.21	------	------	197	124	Average
5300	103.92	103.71	0.21	------	------	197	124	Peak
5350	44.07	43.74	0.33	54	-9.93	197	124	Average
5350	51.4	51.07	0.33	74	-22.6	197	124	Peak
10600	48.52	50.13	-1.61	54	-5.48	132	145	Average
10600	57.19	58.8	-1.61	74	-16.81	132	145	Peak

Remarks:

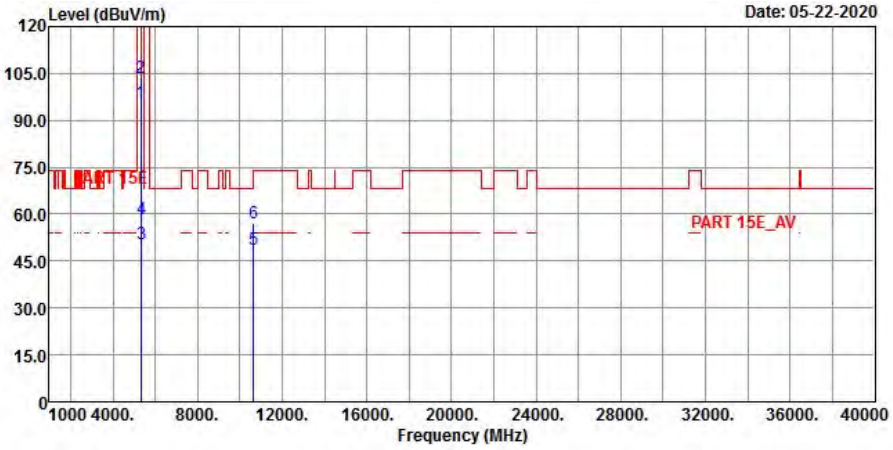
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5300 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Horizontal



Vertical



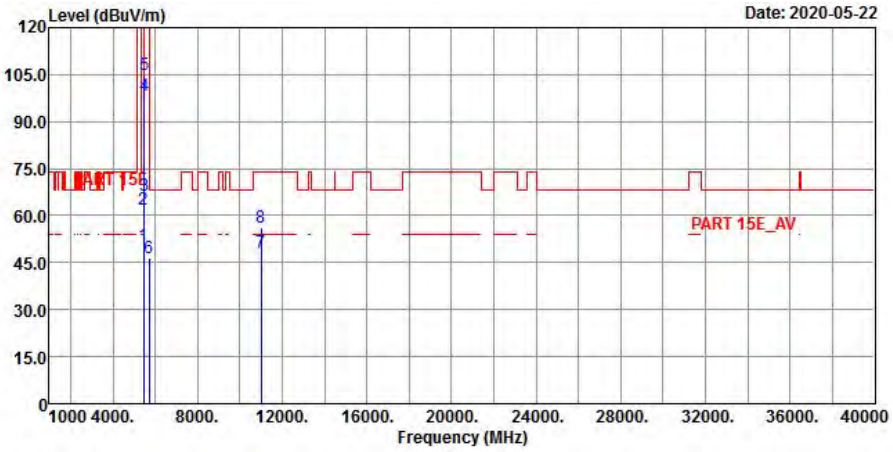
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	98.95	98.69	0.26	------	------	198	273	Average
5320	105.63	105.37	0.26	------	------	198	273	Peak
5350	52.42	52.09	0.33	54	-1.58	198	273	Average
5350	61.44	61.11	0.33	74	-12.56	198	273	Peak
10640	49.55	51.17	-1.62	54	-4.45	132	152	Average
10640	57.53	59.15	-1.62	74	-16.47	132	152	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	95.86	95.6	0.26	------	------	197	122	Average
5320	103.53	103.27	0.26	------	------	197	122	Peak
5350	50.34	50.01	0.33	54	-3.66	197	122	Average
5350	58.67	58.34	0.33	74	-15.33	197	122	Peak
10640	48.84	50.46	-1.62	54	-5.16	111	132	Average
10640	57.17	58.79	-1.62	74	-16.83	111	132	Peak

Remarks:

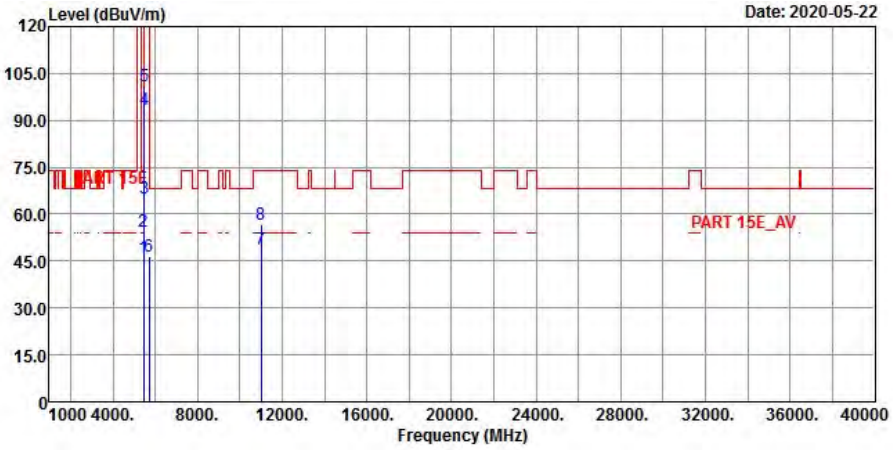
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5320 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Horizontal



Vertical



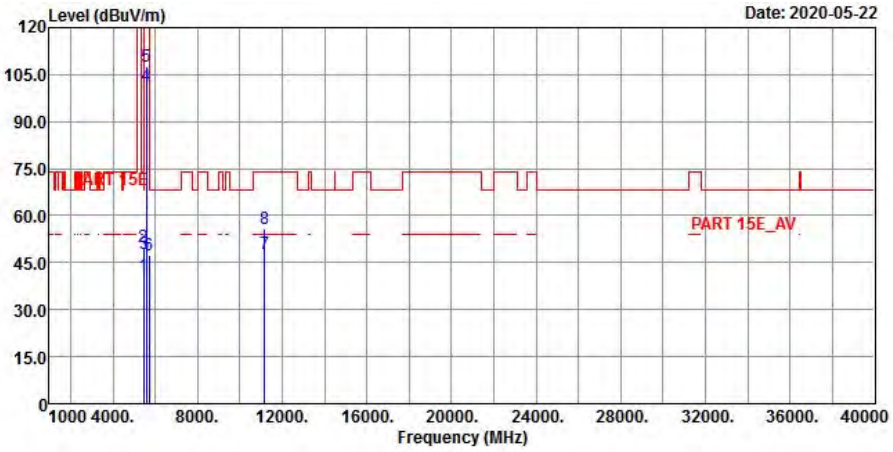
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	50.3	49.55	0.75	54	-3.7	261	46	Average
5460	62.1	61.35	0.75	74	-11.9	261	46	Peak
5470	66.53	65.76	0.77	68.2	-1.67	261	46	Peak
5500	98.42	97.53	0.89	------	------	261	46	Average
5500	105.07	104.18	0.89	------	------	261	46	Peak
5725	46.5	45.63	0.87	68.2	-21.7	261	46	Peak
11000	48.23	49.54	-1.31	54	-5.77	168	325	Average
11000	56.15	57.46	-1.31	74	-17.85	168	325	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	46.1	45.35	0.75	54	-7.9	106	174	Average
5460	54.37	53.62	0.75	74	-19.63	106	174	Peak
5470	64.94	64.17	0.77	68.2	-3.26	106	174	Peak
5500	93.49	92.6	0.89	------	------	106	174	Average
5500	100.79	99.9	0.89	------	------	106	174	Peak
5725	46.27	45.4	0.87	68.2	-21.93	106	174	Peak
11000	48.82	50.13	-1.31	54	-5.18	131	67	Average
11000	56.51	57.82	-1.31	74	-17.49	131	67	Peak

Remarks:

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

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

Horizontal



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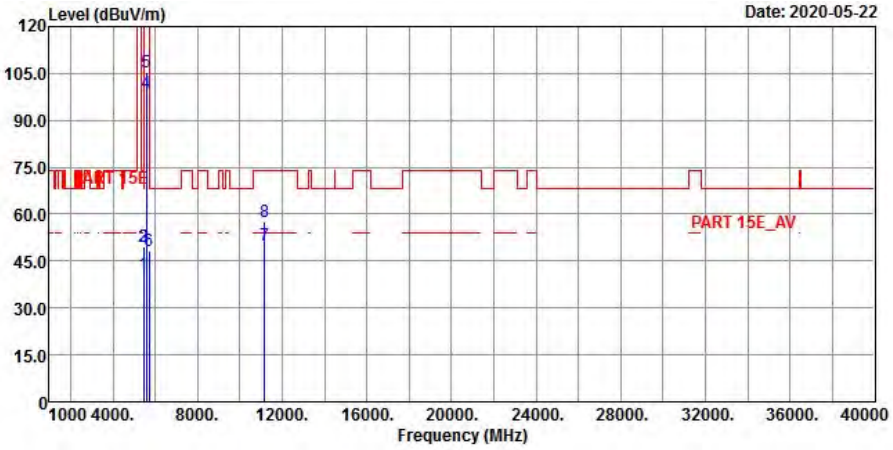


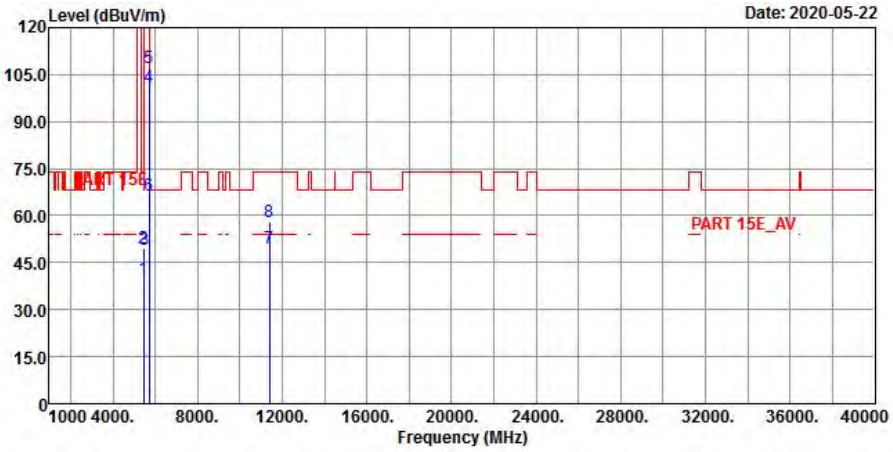
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	40.66	39.91	0.75	54	-13.34	203	86	Average
5460	50.02	49.27	0.75	74	-23.98	203	86	Peak
5470	48.01	47.24	0.77	68.2	-20.19	203	86	Peak
5580	101.4	100.6	0.8	------	------	203	86	Average
5580	107.82	107.02	0.8	------	------	203	86	Peak
5725	47.42	46.55	0.87	68.2	-20.78	203	86	Peak
11160	47.63	49.16	-1.53	54	-6.37	132	207	Average
11160	55.95	57.48	-1.53	74	-18.05	132	207	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	40.72	39.97	0.75	54	-13.28	296	105	Average
5460	49.71	48.96	0.75	74	-24.29	296	105	Peak
5470	49.78	49.01	0.77	68.2	-18.42	296	105	Peak
5580	98.69	97.89	0.8	------	------	296	105	Average
5580	105.42	104.62	0.8	------	------	296	105	Peak
5725	48.05	47.18	0.87	68.2	-20.15	296	105	Peak
11160	49.93	51.46	-1.53	54	-4.07	114	316	Average
11160	57.69	59.22	-1.53	74	-16.31	114	316	Peak

Remarks:

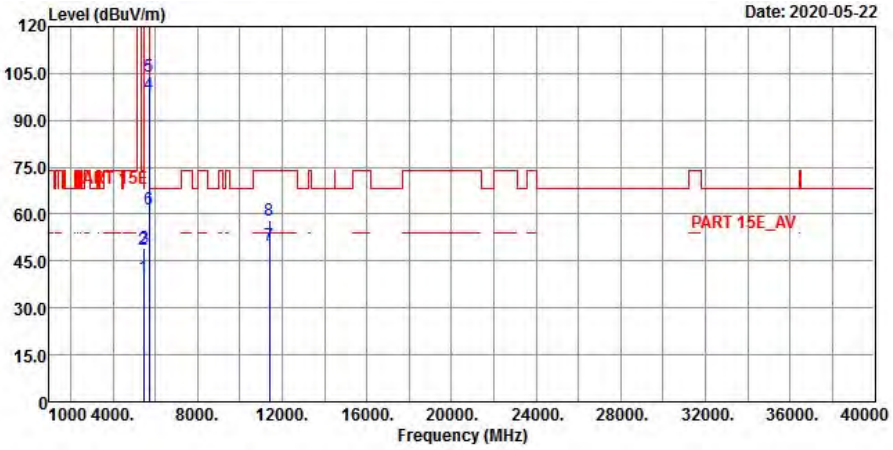
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5580 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Horizontal



Vertical



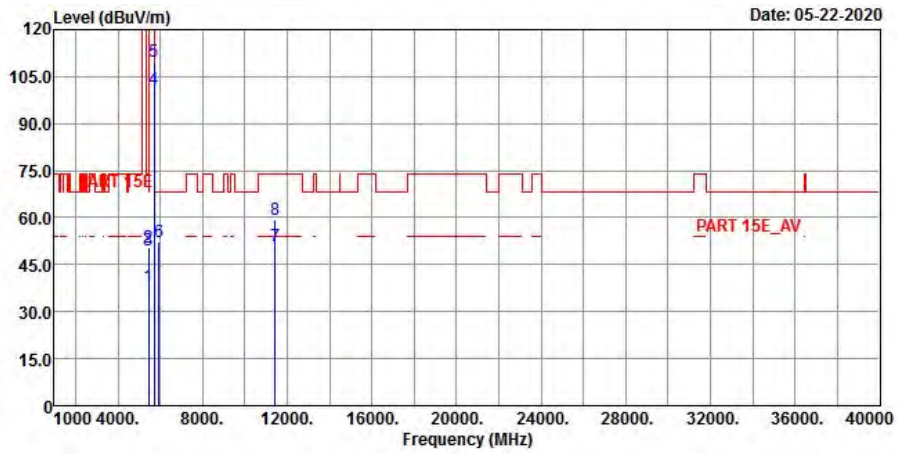
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	39.79	39.04	0.75	54	-14.21	185	91	Average
5460	49.69	48.94	0.75	74	-24.31	185	91	Peak
5470	48.98	48.21	0.77	68.2	-19.22	185	91	Peak
5700	100.77	99.92	0.85	------	------	185	91	Average
5700	106.95	106.1	0.85	------	------	185	91	Peak
5725	66.44	65.57	0.87	68.2	-1.76	185	91	Peak
11400	49.38	50.73	-1.35	54	-4.62	132	266	Average
11400	58.19	59.54	-1.35	74	-15.81	132	266	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	39.92	39.17	0.75	54	-14.08	386	104	Average
5460	48.82	48.07	0.75	74	-25.18	386	104	Peak
5470	49.07	48.3	0.77	68.2	-19.13	386	104	Peak
5700	98.17	97.32	0.85	------	------	386	104	Average
5700	103.84	102.99	0.85	------	------	386	104	Peak
5725	61.55	60.68	0.87	68.2	-6.65	386	104	Peak
11400	50.06	51.41	-1.35	54	-3.94	112	342	Average
11400	57.89	59.24	-1.35	74	-16.11	112	342	Peak

Remarks:

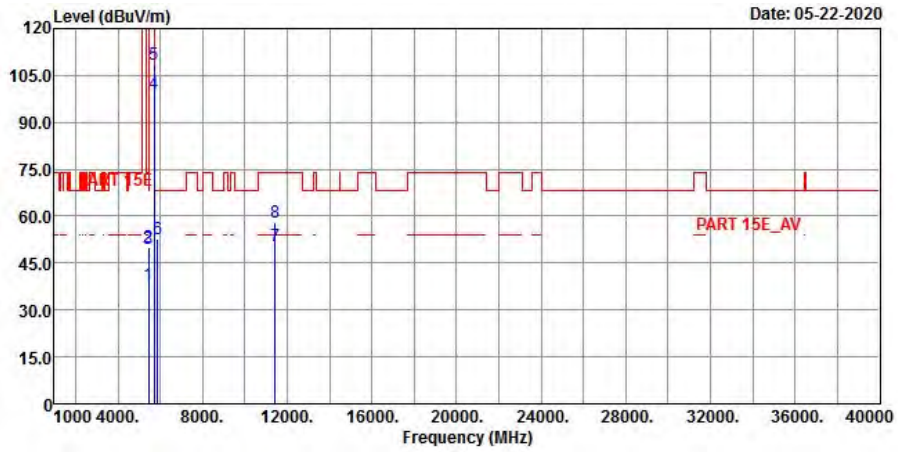
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5700 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Horizontal



Vertical



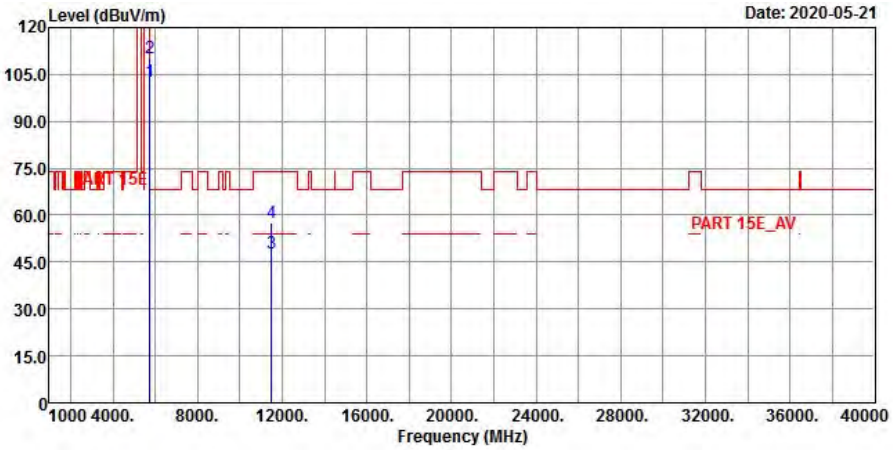
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459	37.97	37.22	0.75	54	-16.03	195	56	Average
5459	50.44	49.69	0.75	74	-23.56	195	56	Peak
5466.4	49.48	48.71	0.77	68.2	-18.72	195	56	Peak
5720	101.15	100.29	0.86	------	------	195	56	Average
5720	109.61	108.75	0.86	------	------	195	56	Peak
5929	52.46	51.16	1.3	68.2	-15.74	195	56	Peak
11440	50.99	52.32	-1.33	54	-3.01	125	132	Average
11440	59.48	60.81	-1.33	74	-14.52	125	132	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459	37.91	37.16	0.75	54	-16.09	306	114	Average
5459	49.84	49.09	0.75	74	-24.16	306	114	Peak
5464	49.71	48.95	0.76	68.2	-18.49	306	114	Peak
5720	99.02	98.16	0.86	------	------	306	114	Average
5720	108.67	107.81	0.86	------	------	306	114	Peak
5864.2	52.58	51.38	1.2	68.2	-15.62	306	114	Peak
11440	50.29	51.62	-1.33	54	-3.71	132	164	Average
11440	57.85	59.18	-1.33	74	-16.15	132	164	Peak

Remarks:

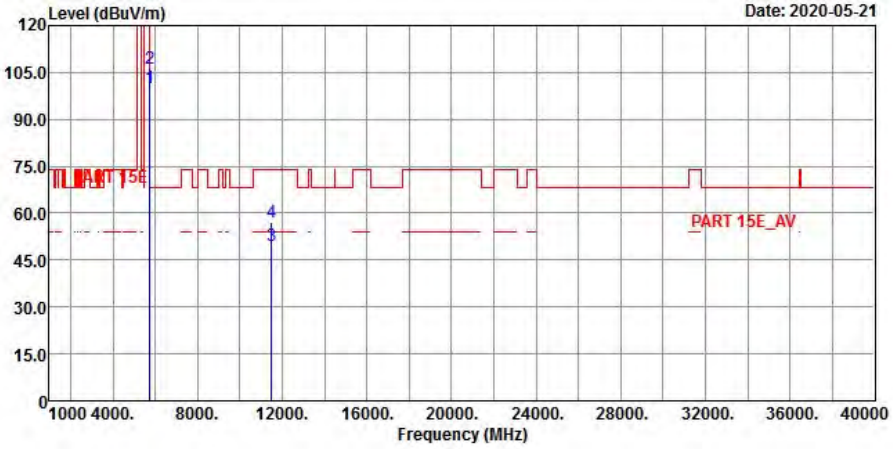
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5720 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

<Spurious Emission>
Horizontal

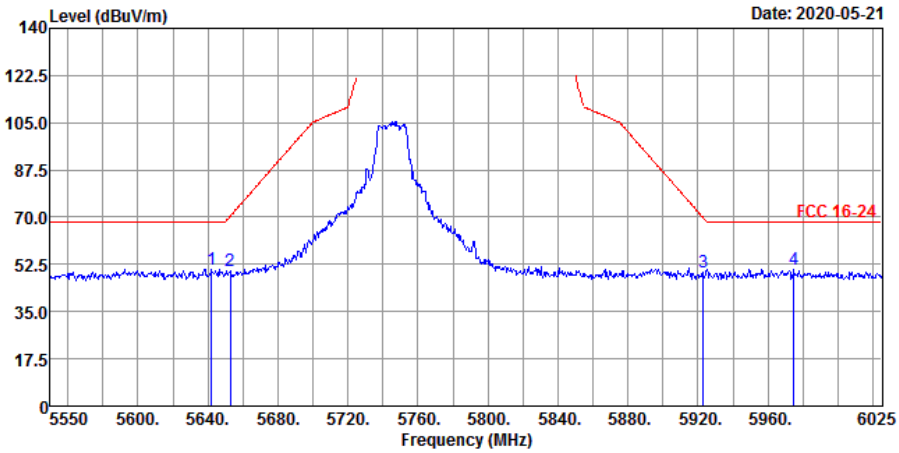


Vertical

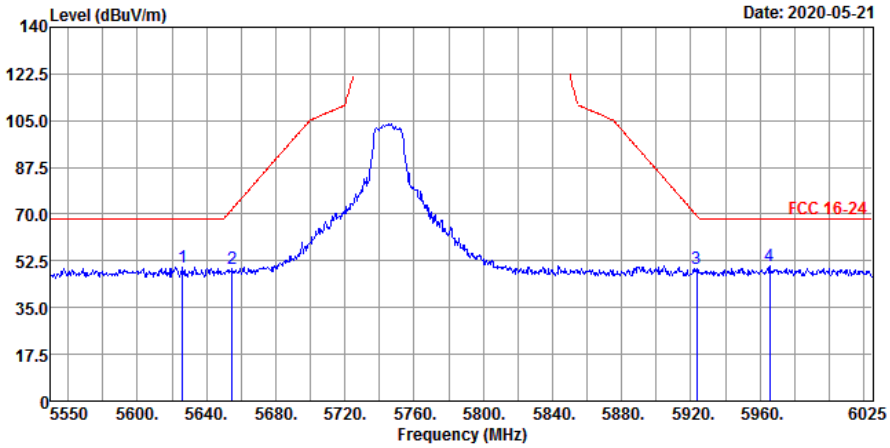


<Out of Band Emission (OOBE)>

Horizontal



Vertical



<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	102.92	102.04	0.88	------	------	201	92	Average
5745	110.22	109.34	0.88	------	------	201	92	Peak
11490	47.74	49.06	-1.32	54	-6.26	179	124	Average
11490	57.37	58.69	-1.32	74	-16.63	179	124	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	99.91	99.03	0.88	------	------	196	103	Average
5745	106.47	105.59	0.88	------	------	196	103	Peak
11490	49.4	50.72	-1.32	54	-4.6	167	123	Average
11490	56.98	58.3	-1.32	74	-17.02	167	123	Peak

<Out of Band Emission (OOBE)>

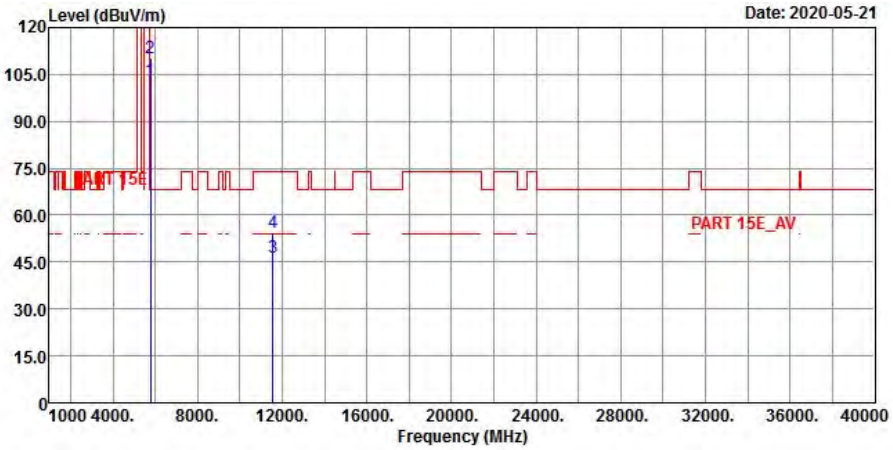
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5642.15	50.86	50.18	0.68	68.2	-17.34	201	92	Peak
5652.6	49.92	49.23	0.69	70.13	-20.21	201	92	Peak
5922.875	49.35	48.05	1.3	69.77	-20.42	201	92	Peak
5974.65	50.81	49.47	1.34	68.2	-17.39	201	92	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	50.06	49.33	0.73	68.2	-18.14	196	103	Peak
5654.975	49.61	48.97	0.64	71.9	-22.29	196	103	Peak
5923.35	49.64	48.34	1.3	69.42	-19.78	196	103	Peak
5965.625	50.54	49.2	1.34	68.2	-17.66	196	103	Peak

Remarks:

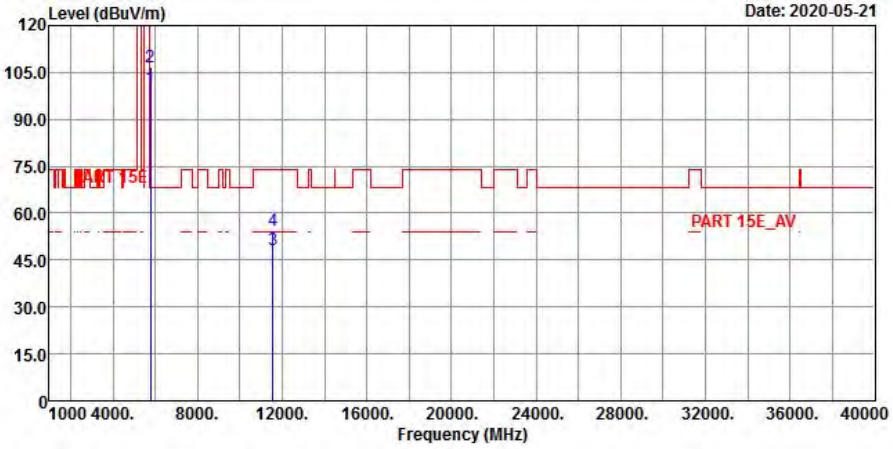
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5745 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

<Spurious Emission>
Horizontal

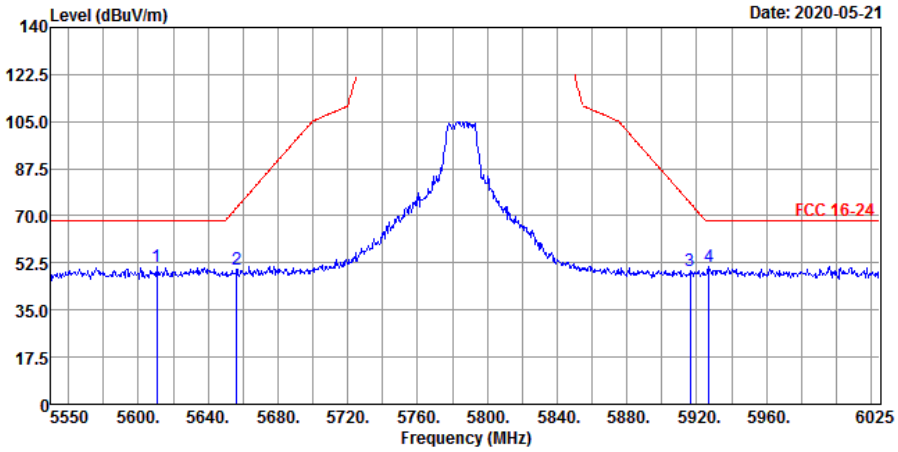


Vertical

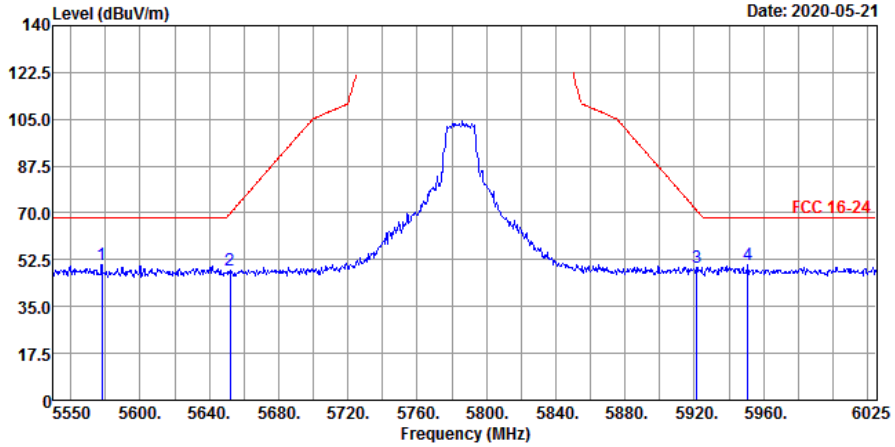


<Out of Band Emission (OOBE)>

Horizontal



Vertical



<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	103.05	102.13	0.92	------	------	198	91	Average
5785	110.08	109.16	0.92	------	------	198	91	Peak
11570	46.32	48.03	-1.71	54	-7.68	185	131	Average
11570	54.26	55.97	-1.71	74	-19.74	185	131	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	100.08	99.16	0.92	------	------	202	94	Average
5785	106.69	105.77	0.92	------	------	202	94	Peak
11570	48.11	49.82	-1.71	54	-5.89	158	113	Average
11570	54.38	56.09	-1.71	74	-19.62	158	113	Peak

<Out of Band Emission (OOBE)>

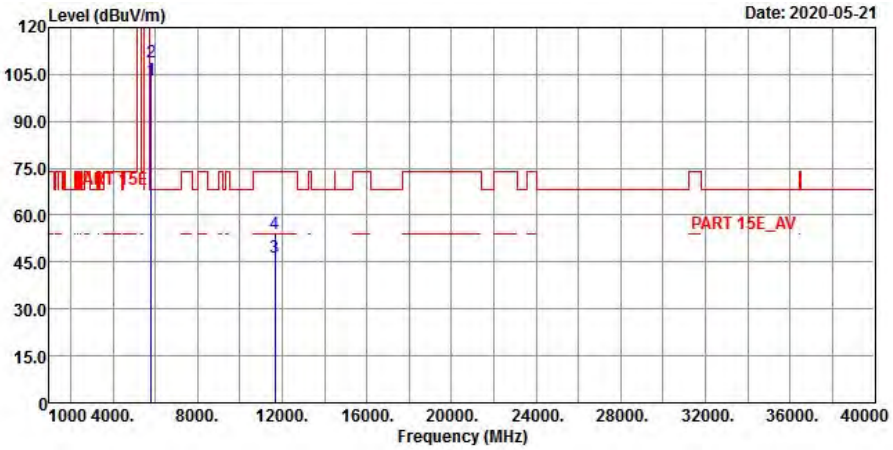
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5610.8	51.06	50.33	0.73	68.2	-17.14	198	91	Peak
5656.4	50.25	49.6	0.65	72.95	-22.7	198	91	Peak
5916.225	49.39	48.09	1.3	74.67	-25.28	198	91	Peak
5927.15	51.33	50.03	1.3	68.2	-16.87	198	91	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
5578.025	50.69	49.89	0.8	68.2	-17.51	202	94	Peak
5652.125	48.76	48.07	0.69	69.78	-21.02	202	94	Peak
5921.45	49.85	48.55	1.3	70.82	-20.97	202	94	Peak
5950.9	50.47	49.15	1.32	68.2	-17.73	202	94	Peak

Remarks:

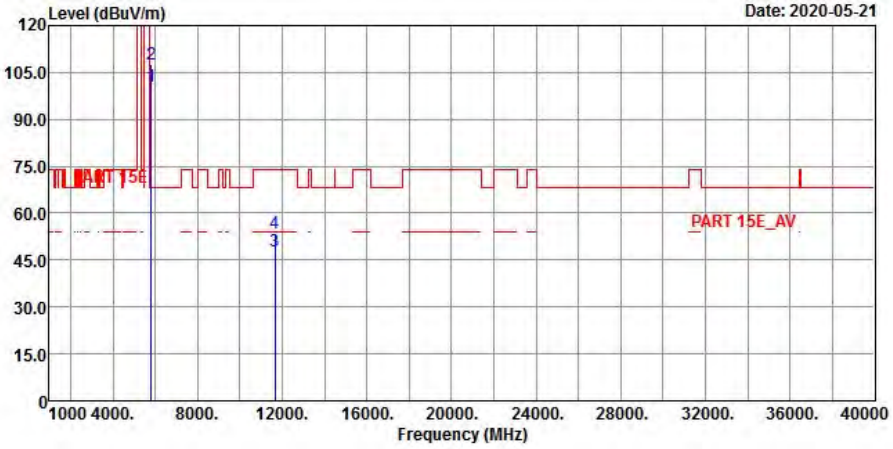
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5785 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

<Spurious Emission>
Horizontal

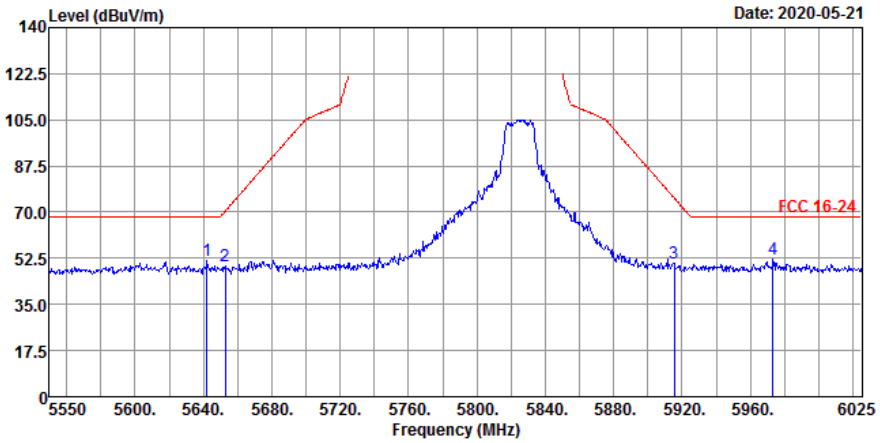


Vertical

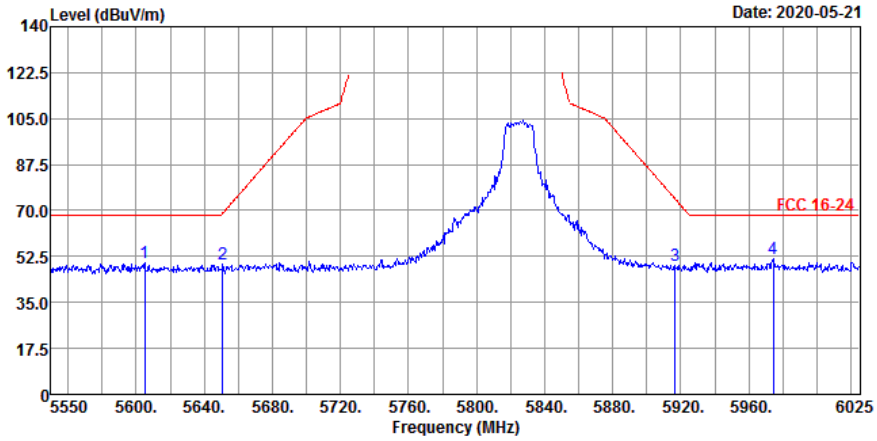


<Out of Band Emission (OOBE)>

Horizontal



Vertical



<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	103.08	102.02	1.06	------	------	196	91	Average
5825	108.99	107.93	1.06	------	------	196	91	Peak
11650	46.68	48.74	-2.06	54	-7.32	184	120	Average
11650	54.19	56.25	-2.06	74	-19.81	184	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
5825	100.59	99.53	1.06	------	------	202	96	Average
5825	107.49	106.43	1.06	------	------	202	96	Peak
11650	47.69	49.75	-2.06	54	-6.31	167	136	Average
11650	53.54	55.6	-2.06	74	-20.46	167	136	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
5642.15	51.51	50.83	0.68	68.2	-16.69	195	91	Peak
5652.6	49.75	49.06	0.69	70.13	-20.38	195	91	Peak
5915.275	50.53	49.23	1.3	75.37	-24.84	195	91	Peak
5973.225	52.36	51.02	1.34	68.2	-15.84	195	91	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
5605.1	50	49.27	0.73	68.2	-18.2	202	96	Peak
5650.7	49.72	49.04	0.68	68.72	-19	202	96	Peak
5916.7	49.28	47.98	1.3	74.32	-25.04	202	96	Peak
5974.175	51.43	50.09	1.34	68.2	-16.77	202	96	Peak

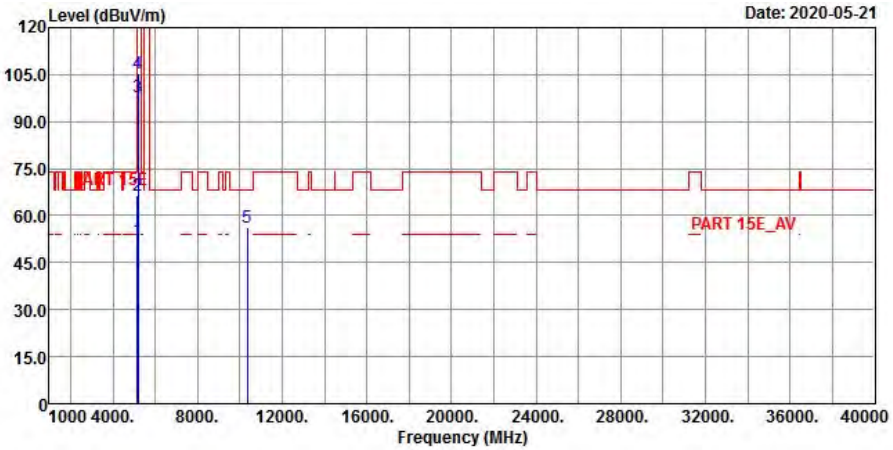
Remarks:

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

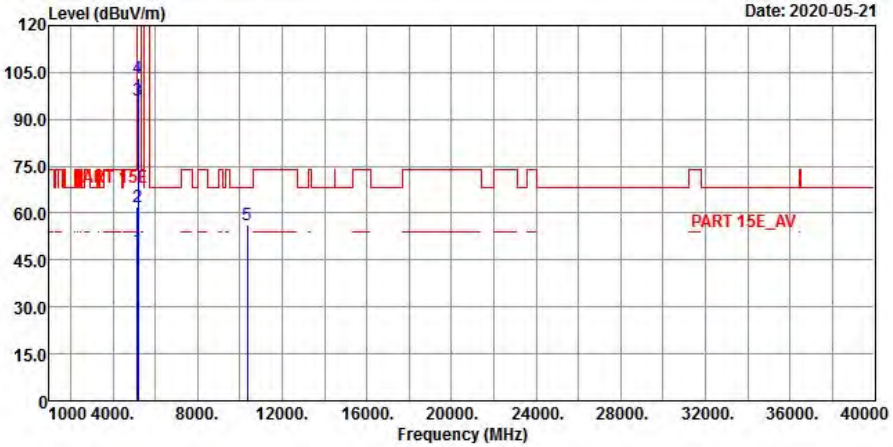
802.11n (HT20)

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

Horizontal



Vertical



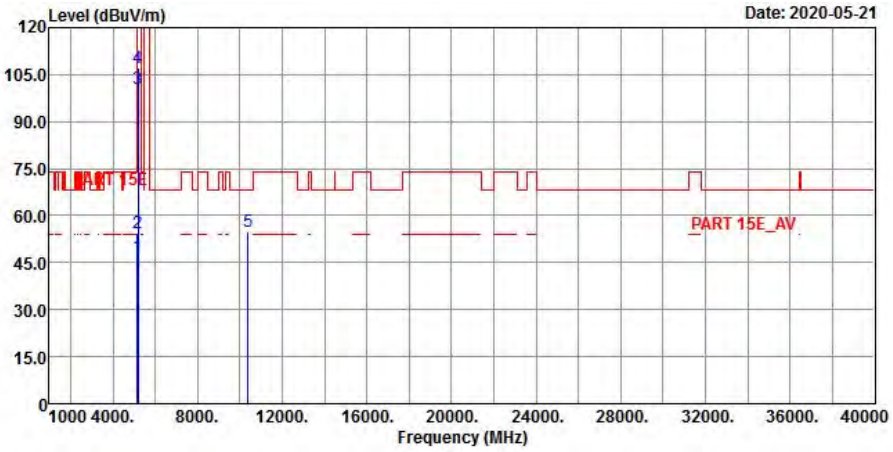
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	52.44	52.02	0.42	54	-1.56	198	85	Average
5150	66.29	65.87	0.42	74	-7.71	198	85	Peak
5180	97.92	97.66	0.26	------	------	198	85	Average
5180	105.3	105.04	0.26	------	------	198	85	Peak
10360	56.35	58.27	-1.92	68.2	-11.85	155	107	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	48.37	47.95	0.42	54	-5.63	202	120	Average
5150	62.2	61.78	0.42	74	-11.8	202	120	Peak
5180	96.19	95.93	0.26	------	------	202	120	Average
5180	103.01	102.75	0.26	------	------	202	120	Peak
10360	56.2	58.12	-1.92	68.2	-12	136	207	Peak

Remarks:

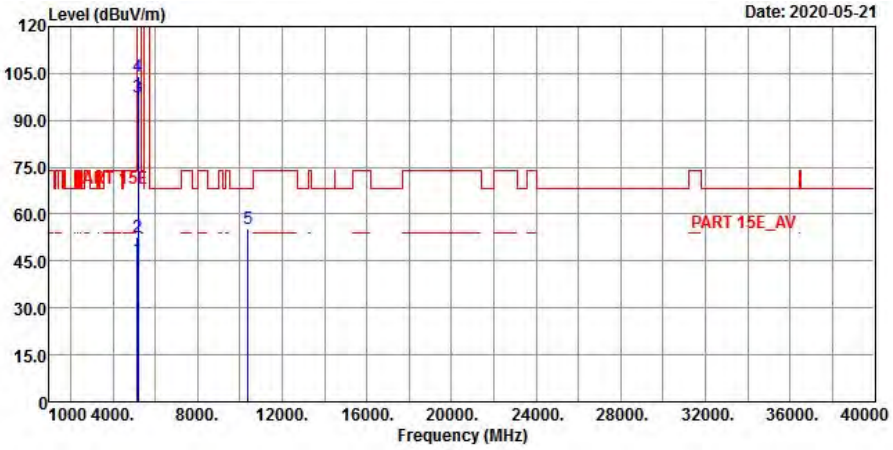
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5180 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Horizontal



Vertical



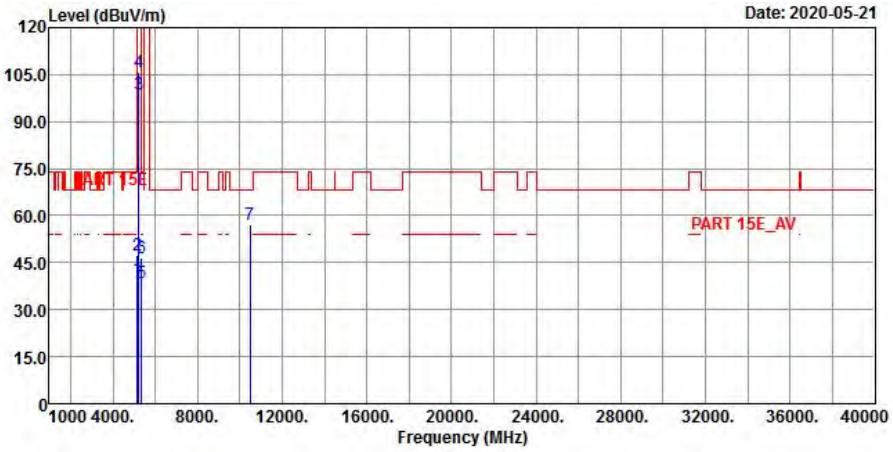
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	47.02	46.6	0.42	54	-6.98	193	91	Average
5150	54.63	54.21	0.42	74	-19.37	193	91	Peak
5200	100.41	100.27	0.14	------	------	193	91	Average
5200	107.25	107.11	0.14	------	------	193	91	Peak
10400	54.87	56.69	-1.82	68.2	-13.33	187	23	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	45.52	45.1	0.42	54	-8.48	200	118	Average
5150	52.81	52.39	0.42	74	-21.19	200	118	Peak
5200	97.44	97.3	0.14	------	------	200	118	Average
5200	104.1	103.96	0.14	------	------	200	118	Peak
10400	55.33	57.15	-1.82	68.2	-12.87	136	154	Peak

Remarks:

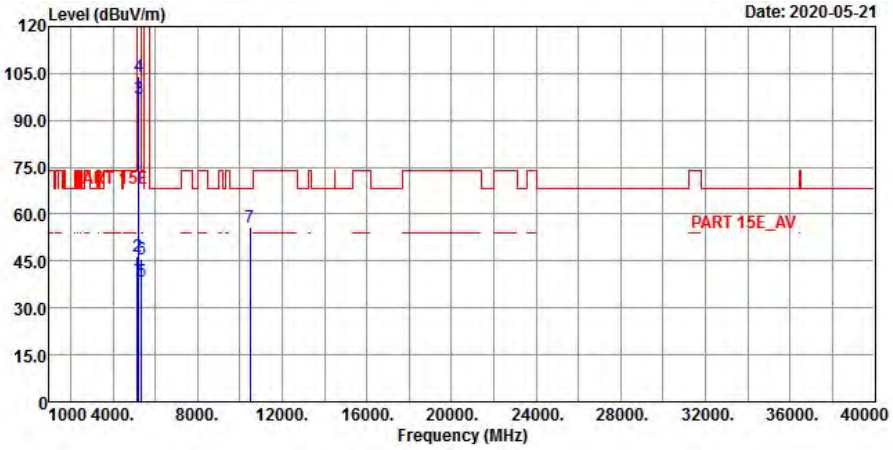
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5200 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Horizontal



Vertical



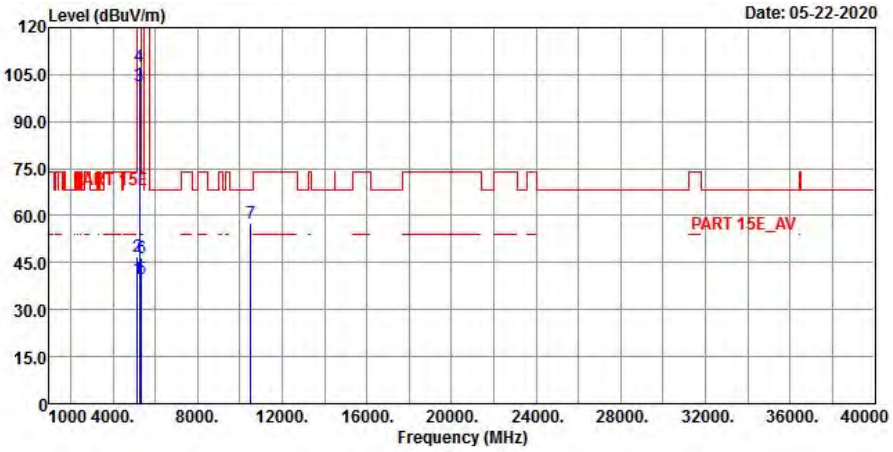
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	39.73	39.31	0.42	54	-14.27	206	90	Average
5150	47.33	46.91	0.42	74	-26.67	206	90	Peak
5240	98.79	98.69	0.1	------	------	206	90	Average
5240	105.63	105.53	0.1	------	------	206	90	Peak
5350	38.7	38.37	0.33	54	-15.3	206	90	Average
5350	46.6	46.27	0.33	74	-27.4	206	90	Peak
10480	57.14	58.62	-1.48	68.2	-11.06	163	271	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	39.4	38.98	0.42	54	-14.6	197	88	Average
5150	46.29	45.87	0.42	74	-27.71	197	88	Peak
5240	96.93	96.83	0.1	------	------	197	88	Average
5240	104.24	104.14	0.1	------	------	197	88	Peak
5350	38.73	38.4	0.33	54	-15.27	197	88	Average
5350	45.68	45.35	0.33	74	-28.32	197	88	Peak
10480	55.65	57.13	-1.48	68.2	-12.55	102	73	Peak

Remarks:

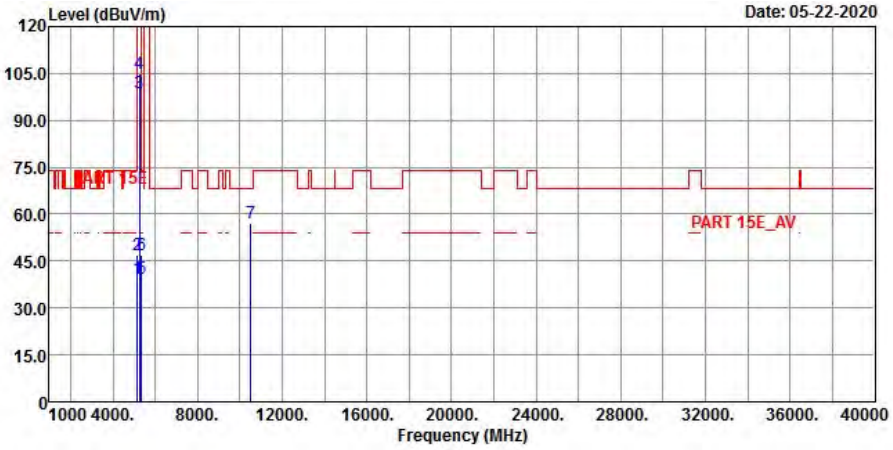
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5240 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Horizontal



Vertical



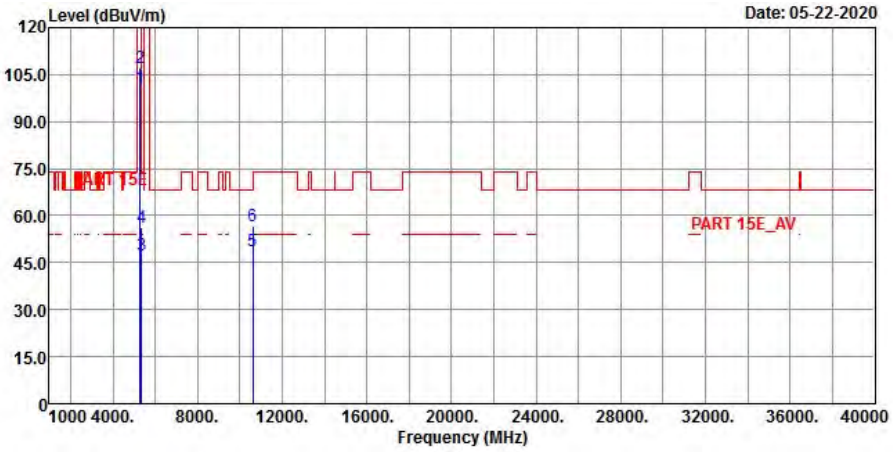
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	39.78	39.36	0.42	54	-14.22	199	274	Average
5150	47.08	46.66	0.42	74	-26.92	199	274	Peak
5260	101.47	101.34	0.13	------	------	199	274	Average
5260	107.63	107.5	0.13	------	------	199	274	Peak
5350	39.66	39.33	0.33	54	-14.34	199	274	Average
5350	46.47	46.14	0.33	74	-27.53	199	274	Peak
10520	57.73	59.18	-1.45	68.2	-10.47	111	132	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	39.33	38.91	0.42	54	-14.67	206	120	Average
5150	46.76	46.34	0.42	74	-27.24	206	120	Peak
5260	98.73	98.6	0.13	------	------	206	120	Average
5260	105.16	105.03	0.13	------	------	206	120	Peak
5350	39.23	38.9	0.33	54	-14.77	206	120	Average
5350	46.81	46.48	0.33	74	-27.19	206	120	Peak
10520	57.08	58.53	-1.45	68.2	-11.12	165	192	Peak

Remarks:

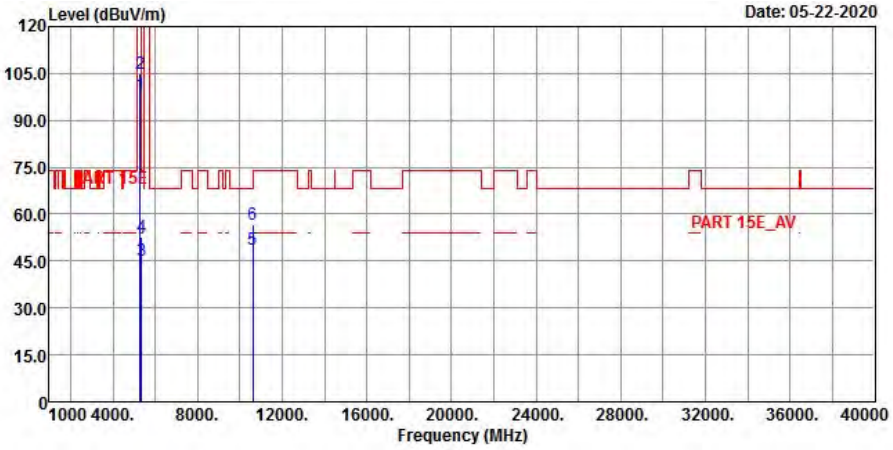
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5260 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Horizontal



Vertical



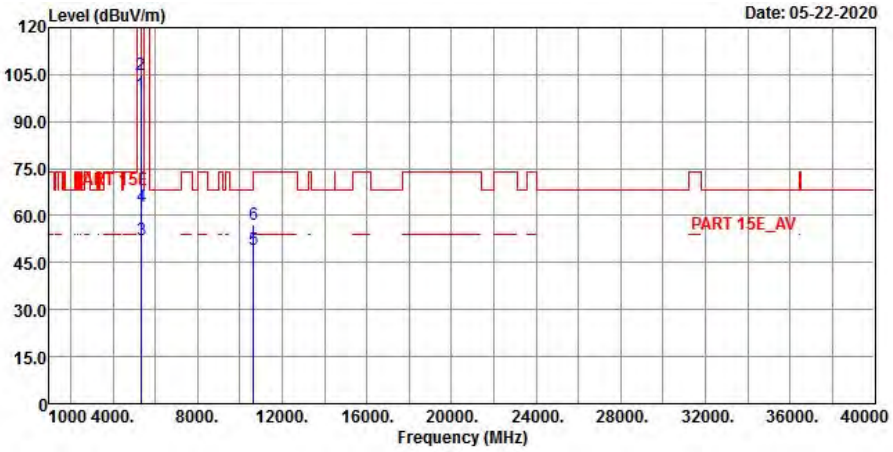
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5300	100.78	100.57	0.21	------	------	202	275	Average
5300	107.16	106.95	0.21	------	------	202	275	Peak
5350	47.38	47.05	0.33	54	-6.62	202	275	Average
5350	56.39	56.06	0.33	74	-17.61	202	275	Peak
10600	48.65	50.26	-1.61	54	-5.35	145	152	Average
10600	56.67	58.28	-1.61	74	-17.33	145	152	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5300	98.37	98.16	0.21	------	------	203	120	Average
5300	104.73	104.52	0.21	------	------	203	120	Peak
5350	45.1	44.77	0.33	54	-8.9	203	120	Average
5350	52.66	52.33	0.33	74	-21.34	203	120	Peak
10600	48.6	50.21	-1.61	54	-5.4	162	251	Average
10600	56.64	58.25	-1.61	74	-17.36	162	251	Peak

Remarks:

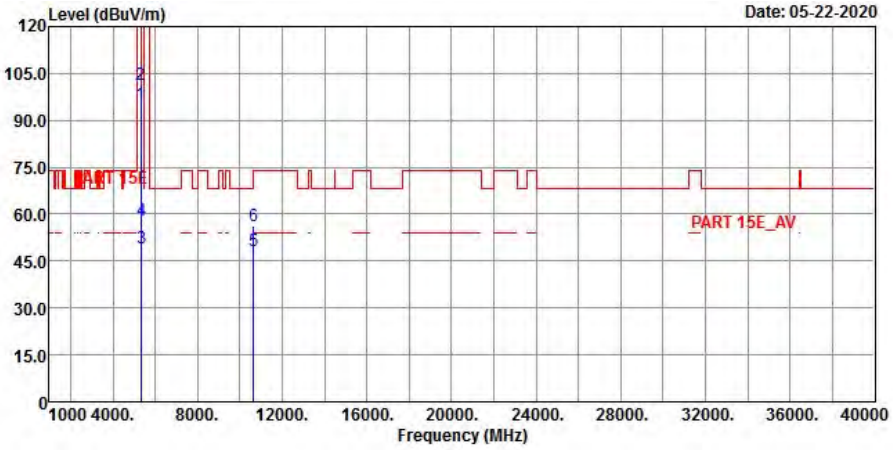
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5300 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Horizontal



Vertical



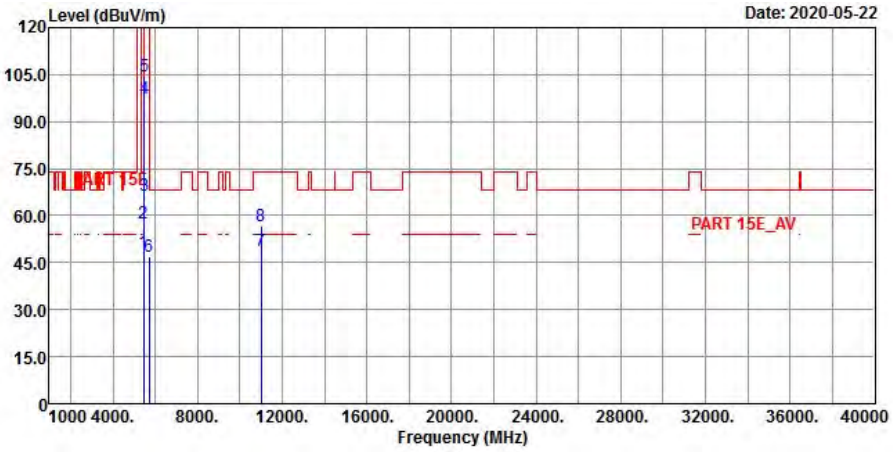
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	98.64	98.38	0.26	------	------	201	274	Average
5320	105.16	104.9	0.26	------	------	201	274	Peak
5350	52.28	51.95	0.33	54	-1.72	201	274	Average
5350	62.76	62.43	0.33	74	-11.24	201	274	Peak
10640	49.31	50.93	-1.62	54	-4.69	111	132	Average
10640	57.34	58.96	-1.62	74	-16.66	111	132	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	95.39	95.13	0.26	------	------	205	117	Average
5320	101.33	101.07	0.26	------	------	205	117	Peak
5350	48.98	48.65	0.33	54	-5.02	205	117	Average
5350	57.85	57.52	0.33	74	-16.15	205	117	Peak
10640	48.41	50.03	-1.62	54	-5.59	132	261	Average
10640	56.45	58.07	-1.62	74	-17.55	132	261	Peak

Remarks:

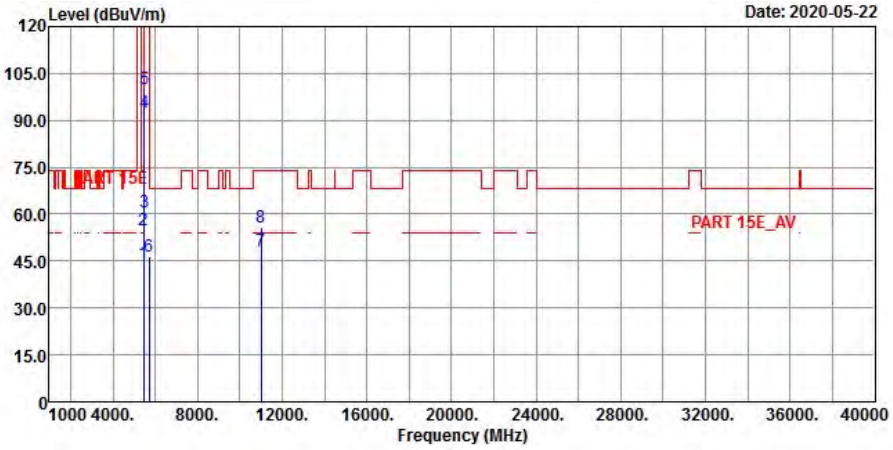
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5320 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Horizontal



Vertical



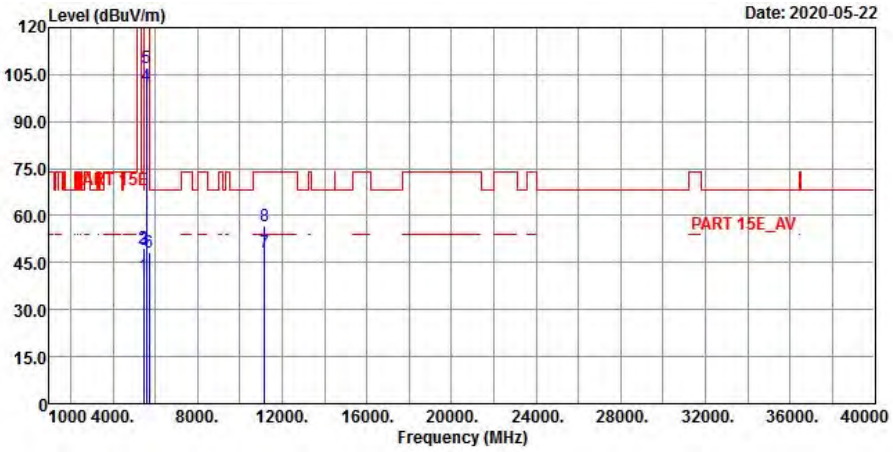
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	48.23	47.48	0.75	54	-5.77	270	51	Average
5460	57.74	56.99	0.75	74	-16.26	270	51	Peak
5470	66.56	65.79	0.77	68.2	-1.64	270	51	Peak
5500	97.32	96.43	0.89	------	------	270	51	Average
5500	104.44	103.55	0.89	------	------	270	51	Peak
5725	46.91	46.04	0.87	68.2	-21.29	270	51	Peak
11000	48.73	50.04	-1.31	54	-5.27	132	168	Average
11000	56.81	58.12	-1.31	74	-17.19	132	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
5460	44.29	43.54	0.75	54	-9.71	100	173	Average
5460	54.9	54.15	0.75	74	-19.1	100	173	Peak
5470	60.53	59.76	0.77	68.2	-7.67	100	173	Peak
5500	92.38	91.49	0.89	------	------	100	173	Average
5500	100.26	99.37	0.89	------	------	100	173	Peak
5725	46.37	45.5	0.87	68.2	-21.83	100	173	Peak
11000	48.33	49.64	-1.31	54	-5.67	141	156	Average
11000	55.92	57.23	-1.31	74	-18.08	141	156	Peak

Remarks:

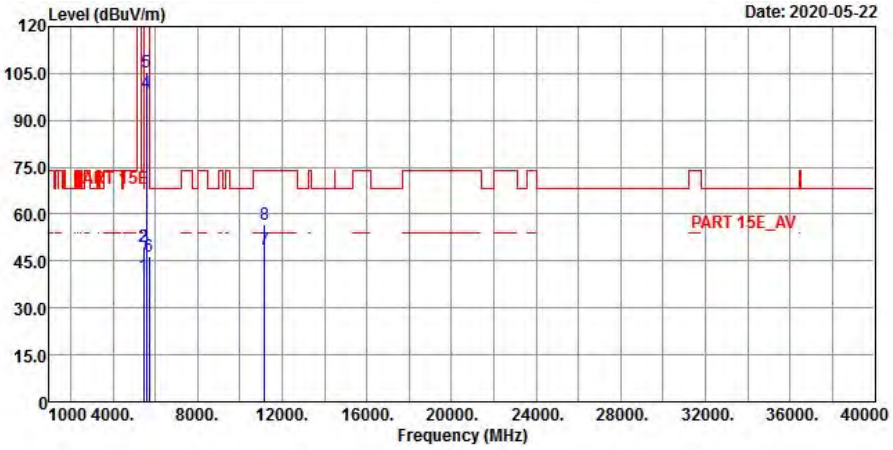
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5500 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Horizontal



Vertical



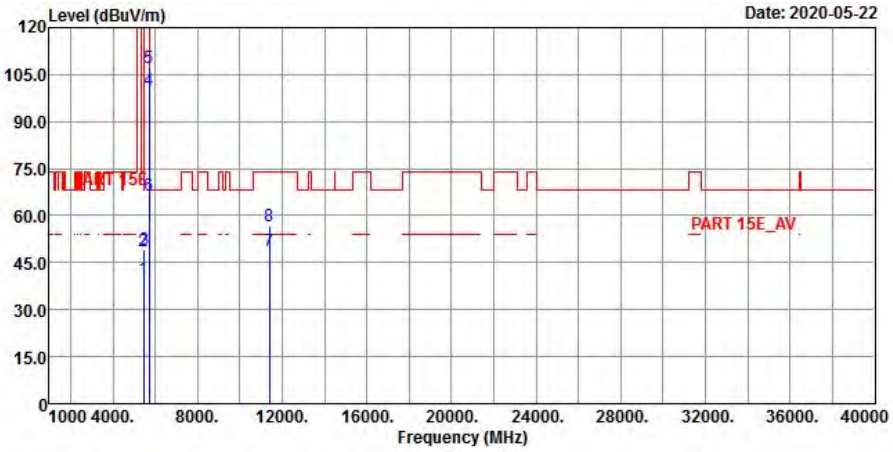
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	40.79	40.04	0.75	54	-13.21	202	86	Average
5460	49.73	48.98	0.75	74	-24.27	202	86	Peak
5470	49.03	48.26	0.77	68.2	-19.17	202	86	Peak
5580	101.29	100.49	0.8	------	------	202	86	Average
5580	106.94	106.14	0.8	------	------	202	86	Peak
5725	48.44	47.57	0.87	68.2	-19.76	202	86	Peak
11160	48.14	49.67	-1.53	54	-5.86	134	102	Average
11160	56.87	58.4	-1.53	74	-17.13	134	102	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	40.42	39.67	0.75	54	-13.58	354	106	Average
5460	49.74	48.99	0.75	74	-24.26	354	106	Peak
5470	49.68	48.91	0.77	68.2	-18.52	354	106	Peak
5580	98.6	97.8	0.8	------	------	354	106	Average
5580	105.21	104.41	0.8	------	------	354	106	Peak
5725	46.4	45.53	0.87	68.2	-21.8	354	106	Peak
11160	48.53	50.06	-1.53	54	-5.47	159	309	Average
11160	56.78	58.31	-1.53	74	-17.22	159	309	Peak

Remarks:

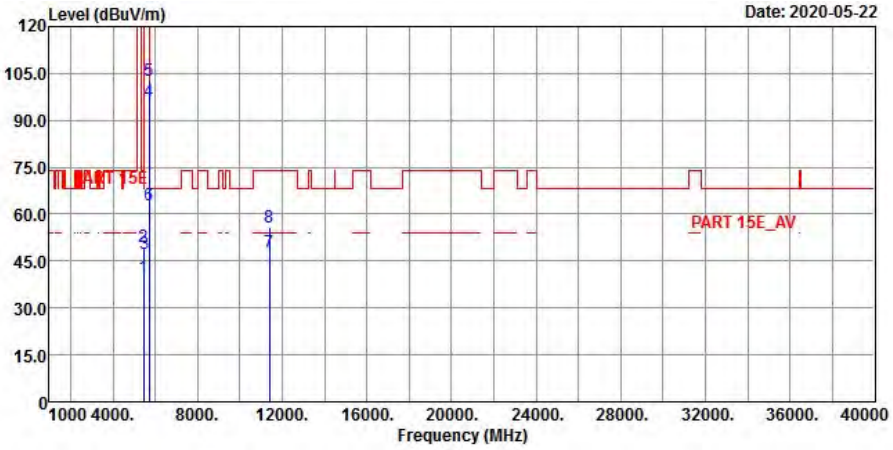
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5580 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Horizontal



Vertical



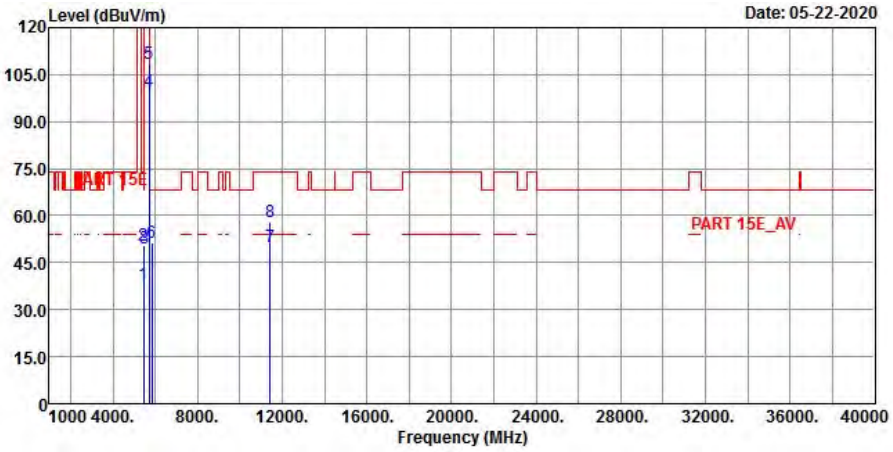
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	39.76	39.01	0.75	54	-14.24	188	91	Average
5460	48.76	48.01	0.75	74	-25.24	188	91	Peak
5470	49.01	48.24	0.77	68.2	-19.19	188	91	Peak
5700	100.04	99.19	0.85	------	------	188	91	Average
5700	106.95	106.1	0.85	------	------	188	91	Peak
5725	66.29	65.42	0.87	68.2	-1.91	188	91	Peak
11400	48.49	49.84	-1.35	54	-5.51	106	53	Average
11400	56.73	58.08	-1.35	74	-17.27	106	53	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	39.84	39.09	0.75	54	-14.16	189	105	Average
5460	49.78	49.03	0.75	74	-24.22	189	105	Peak
5470	47.43	46.66	0.77	68.2	-20.77	189	105	Peak
5700	96.13	95.28	0.85	------	------	189	105	Average
5700	102.73	101.88	0.85	------	------	189	105	Peak
5725	62.86	61.99	0.87	68.2	-5.34	189	105	Peak
11400	47.88	49.23	-1.35	54	-6.12	149	101	Average
11400	55.97	57.32	-1.35	74	-18.03	149	101	Peak

Remarks:

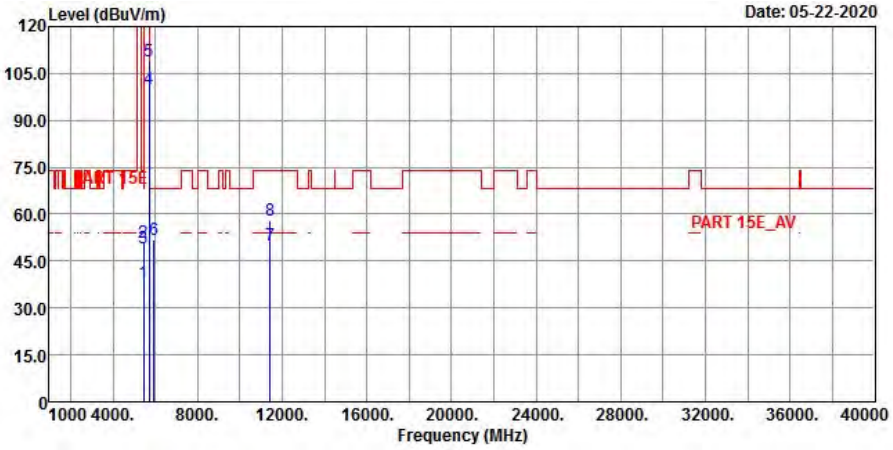
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5700 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Horizontal



Vertical



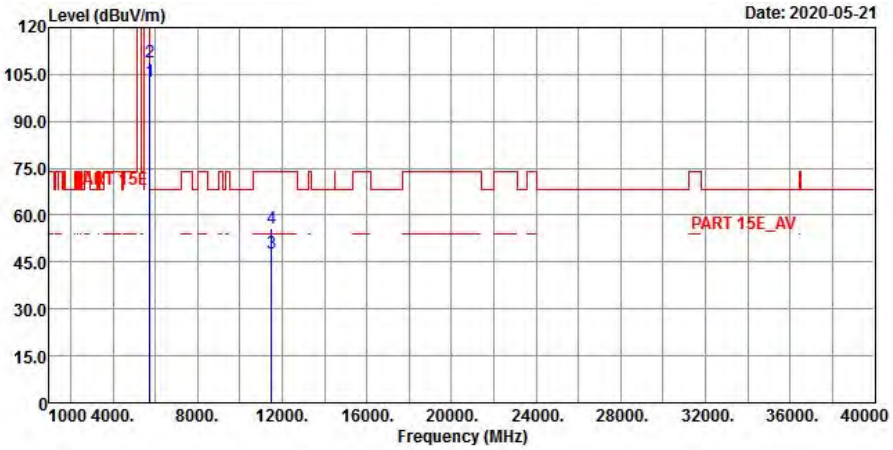
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5455	37.96	37.22	0.74	54	-16.04	250	51	Average
5455	50.41	49.67	0.74	74	-23.59	250	51	Peak
5470	49.58	48.81	0.77	68.2	-18.62	250	51	Peak
5720	99.8	98.94	0.86	------	------	250	51	Average
5720	108.48	107.62	0.86	------	------	250	51	Peak
5851	51.36	50.19	1.17	68.2	-16.84	250	51	Peak
11440	49.97	51.3	-1.33	54	-4.03	145	261	Average
11440	57.97	59.3	-1.33	74	-16.03	145	261	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459	37.94	37.19	0.75	54	-16.06	315	121	Average
5459	50.73	49.98	0.75	74	-23.27	315	121	Peak
5463.4	49.27	48.51	0.76	68.2	-18.93	315	121	Peak
5720	99.88	99.02	0.86	------	------	315	121	Average
5720	108.89	108.03	0.86	------	------	315	121	Peak
5940.4	51.73	50.41	1.32	68.2	-16.47	315	121	Peak
11440	50.19	51.52	-1.33	54	-3.81	192	285	Average
11440	58.22	59.55	-1.33	74	-15.78	192	285	Peak

Remarks:

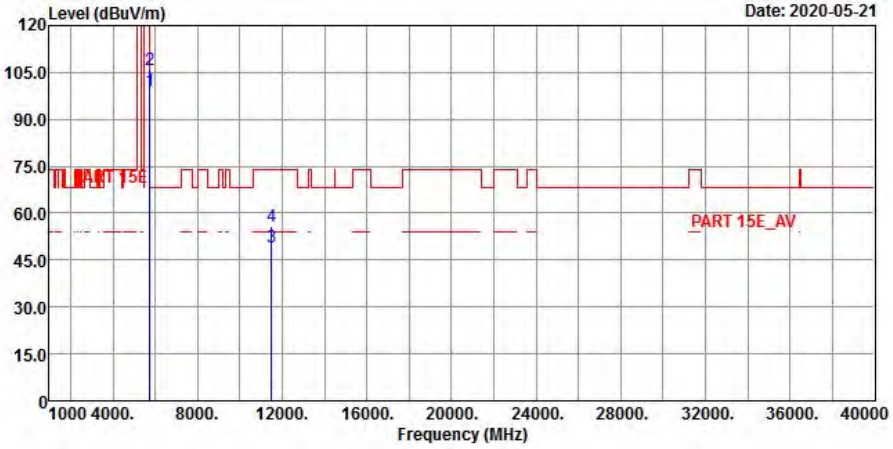
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5720 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

<Spurious Emission>
Horizontal

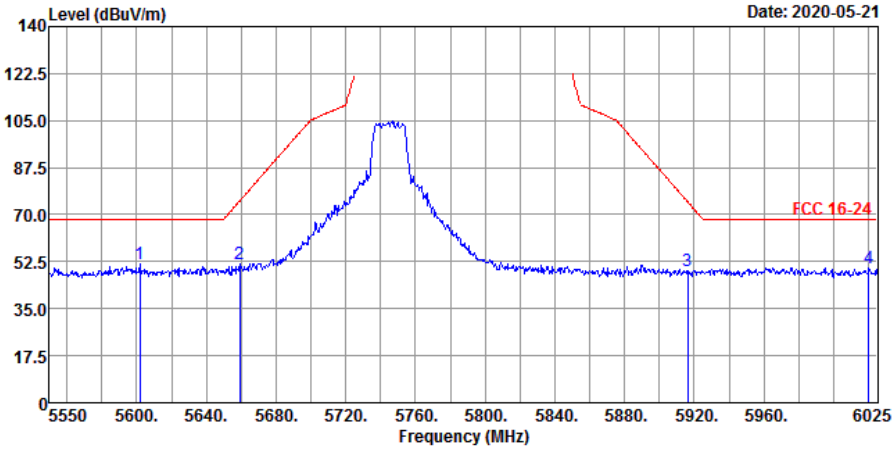


Vertical



<Out of Band Emission (OOBE)>

Horizontal



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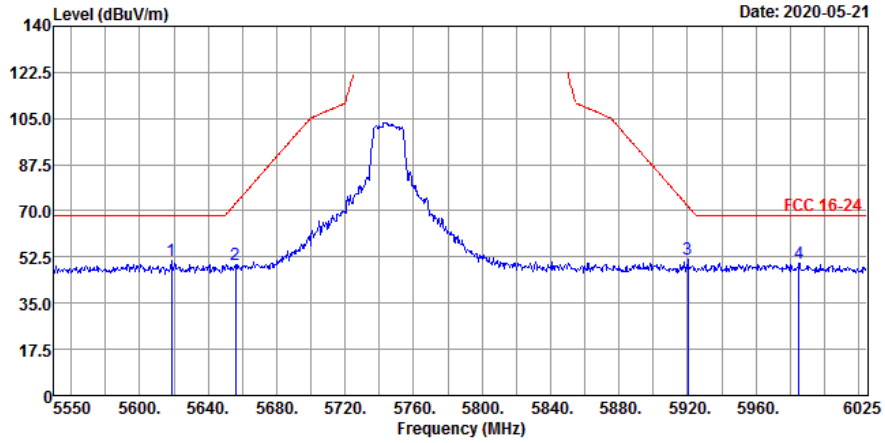


<Spurious Emission>

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	102.6	101.72	0.88	------	------	201	92	Average
5745	109.02	108.14	0.88	------	------	201	92	Peak
11490	47.71	49.03	-1.32	54	-6.29	178	118	Average
11490	55.66	56.98	-1.32	74	-18.34	178	118	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	99.32	98.44	0.88	------	------	203	109	Average
5745	105.92	105.04	0.88	------	------	203	109	Peak
11490	49.35	50.67	-1.32	54	-4.65	147	130	Average
11490	55.92	57.24	-1.32	74	-18.08	147	130	Peak

<Out of Band Emission (OOBE)>

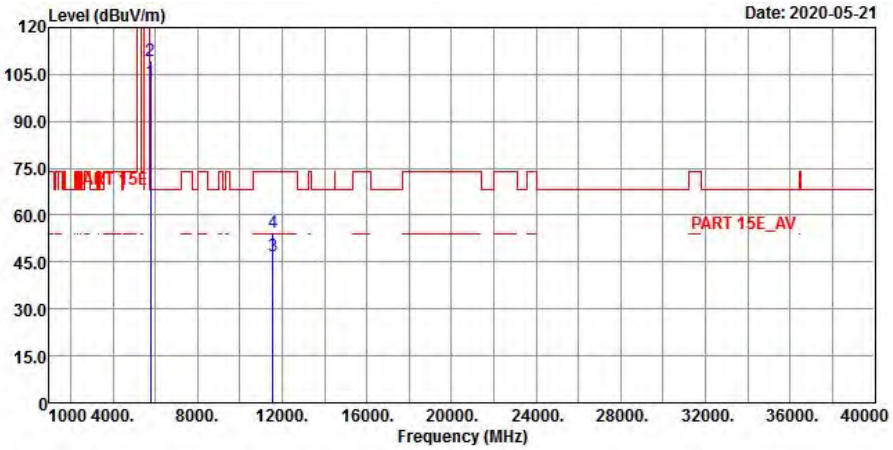
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5601.775	51.55	50.76	0.79	68.2	-16.65	201	92	Peak
5659.25	51.68	51.01	0.67	75.07	-23.39	201	92	Peak
5916.225	49.31	48.01	1.3	74.67	-25.36	201	92	Peak
6020.25	50.18	48.74	1.44	68.2	-18.02	201	92	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
5618.4	50.9	50.16	0.74	68.2	-17.3	203	109	Peak
5655.925	49.69	49.04	0.65	72.6	-22.91	203	109	Peak
5920.025	51.54	50.24	1.3	71.87	-20.33	203	109	Peak
5985.1	50.3	48.94	1.36	68.2	-17.9	203	109	Peak

Remarks:

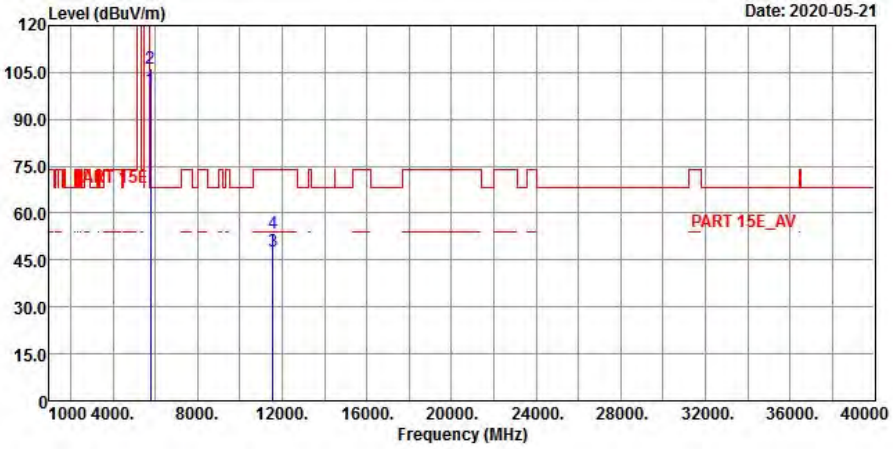
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5745 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

<Spurious Emission>
Horizontal

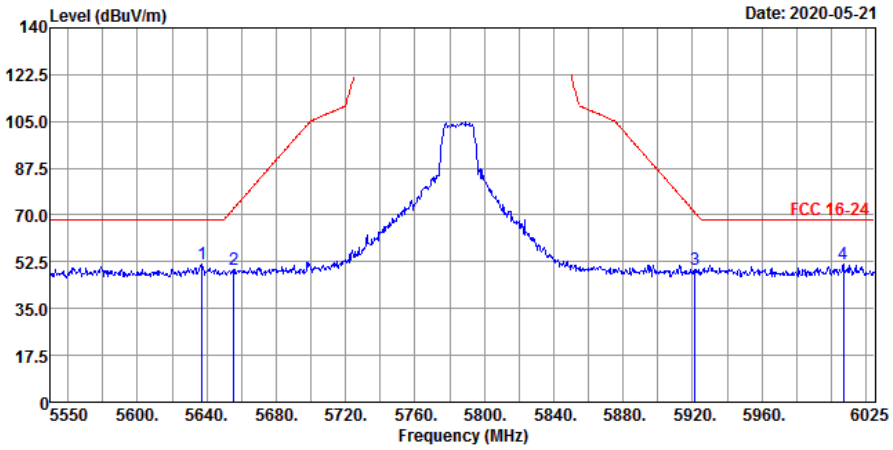


Vertical



<Out of Band Emission (OOBE)>

Horizontal



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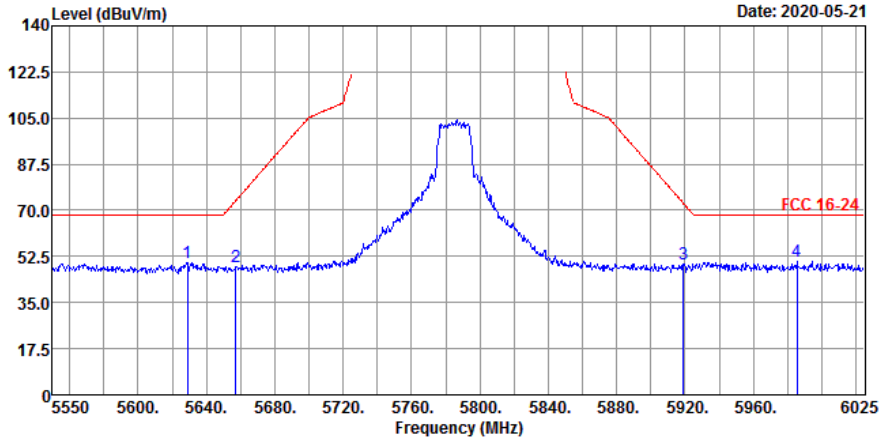


<Spurious Emission>

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	102.85	101.93	0.92	------	------	198	92	Average
5785	109.32	108.4	0.92	------	------	198	92	Peak
11570	46.98	48.69	-1.71	54	-7.02	186	127	Average
11570	54.38	56.09	-1.71	74	-19.62	186	127	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	99.58	98.66	0.92	------	------	203	94	Average
5785	106.28	105.36	0.92	------	------	203	94	Peak
11570	47.85	49.56	-1.71	54	-6.15	169	125	Average
11570	53.42	55.13	-1.71	74	-20.58	169	125	Peak

<Out of Band Emission (OOBE)>

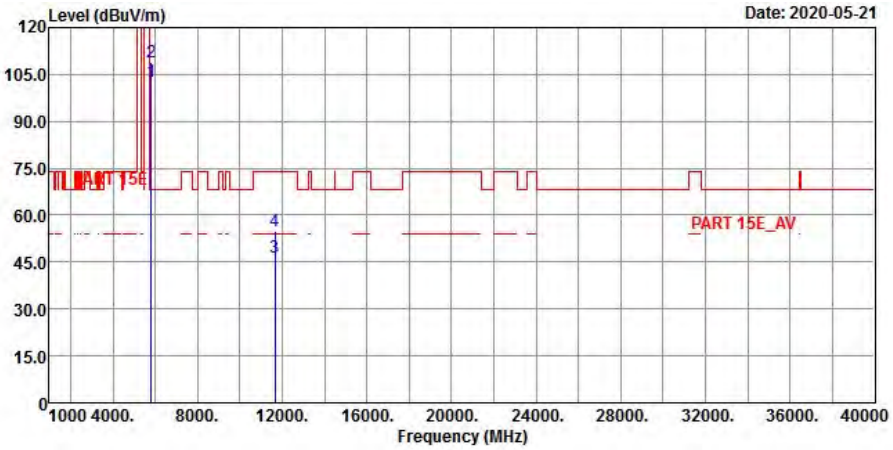
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5637.4	51.57	50.9	0.67	68.2	-16.63	198	92	Peak
5655.45	49.49	48.84	0.65	72.25	-22.76	198	92	Peak
5921.45	49.77	48.47	1.3	70.82	-21.05	198	92	Peak
6006.95	51.45	50.05	1.4	68.2	-16.75	198	92	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
5628.85	49.97	49.29	0.68	68.2	-18.23	203	94	Peak
5657.35	48.71	48.05	0.66	73.66	-24.95	203	94	Peak
5919.075	49.74	48.44	1.3	72.57	-22.83	203	94	Peak
5985.575	50.69	49.33	1.36	68.2	-17.51	203	94	Peak

Remarks:

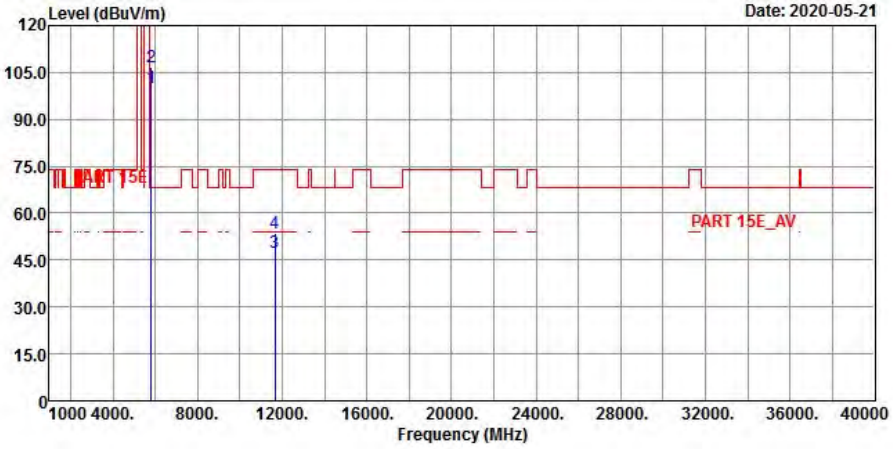
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5785 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

<Spurious Emission>
Horizontal

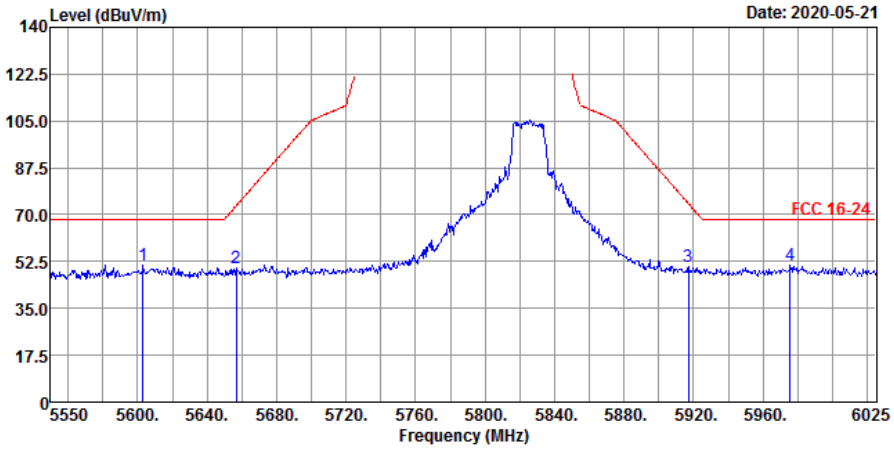


Vertical

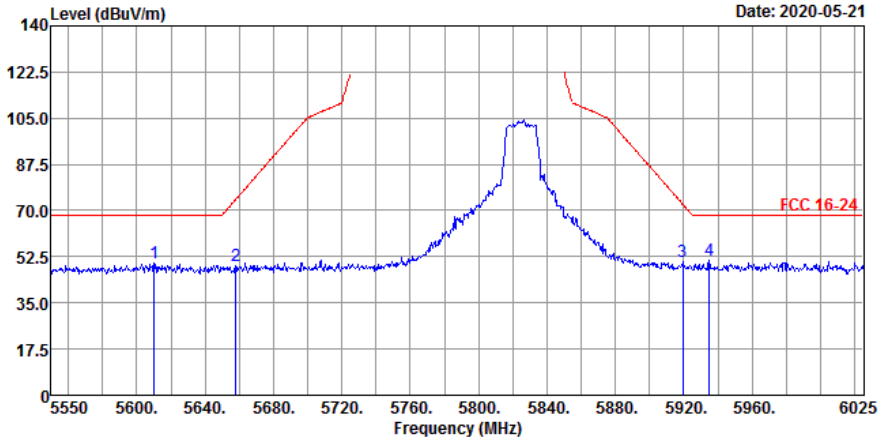


<Out of Band Emission (OOBE)>

Horizontal



Vertical



<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	102.78	101.72	1.06	------	------	196	94	Average
5825	109.12	108.06	1.06	------	------	196	94	Peak
11650	46.54	48.6	-2.06	54	-7.46	193	137	Average
11650	54.69	56.75	-2.06	74	-19.31	193	137	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	100.11	99.05	1.06	------	------	204	101	Average
5825	106.55	105.49	1.06	------	------	204	101	Peak
11650	47.57	49.63	-2.06	54	-6.43	152	118	Average
11650	53.61	55.67	-2.06	74	-20.39	152	118	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
5603.2	51.25	50.52	0.73	68.2	-16.95	196	94	Peak
5656.875	50.17	49.52	0.65	73.31	-23.14	196	94	Peak
5917.175	50.67	49.37	1.3	73.97	-23.3	196	94	Peak
5975.6	50.97	49.62	1.35	68.2	-17.23	196	94	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
5610.325	49.94	49.21	0.73	68.2	-18.26	204	101	
5657.825	48.95	48.29	0.66	74.01	-25.06	204	101	
5919.55	50.38	49.08	1.3	72.22	-21.84	204	101	
5934.75	50.9	49.6	1.3	68.2	-17.3	204	101	

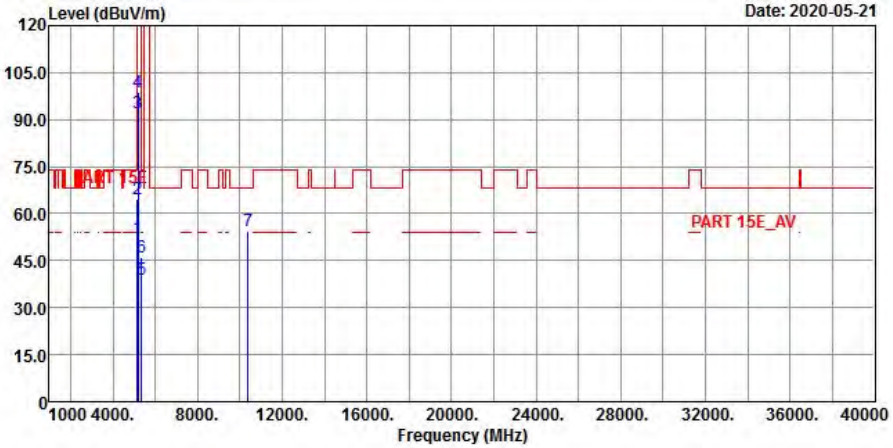
Remarks:

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

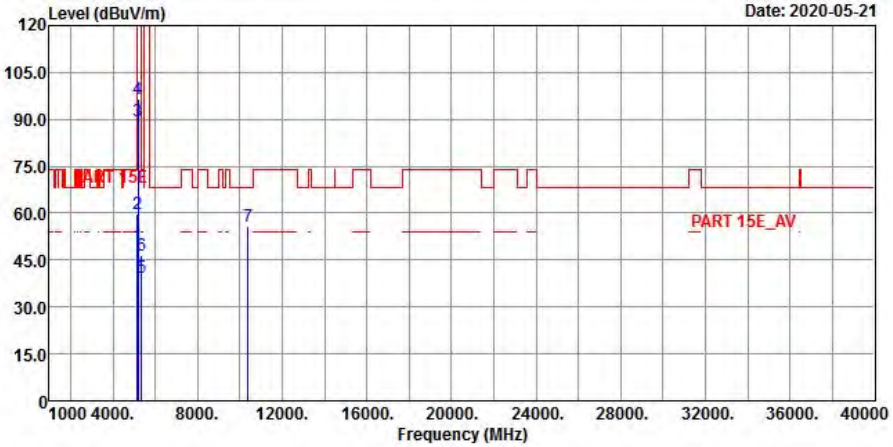
802.11n (HT40)

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

Horizontal



Vertical



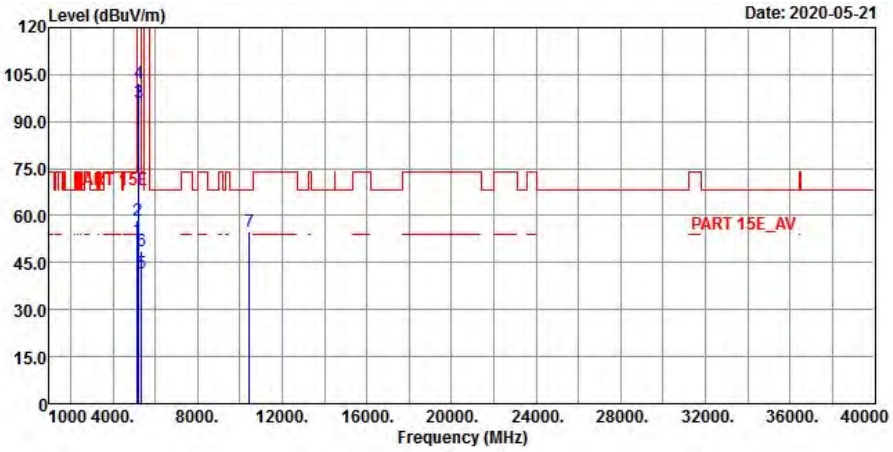
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	52.23	51.81	0.42	54	-1.77	196	92	Average
5150	64.43	64.01	0.42	74	-9.57	196	92	Peak
5190	92.11	91.91	0.2	------	------	196	92	Average
5190	98.74	98.54	0.2	------	------	196	92	Peak
5350	38.79	38.46	0.33	54	-15.21	196	92	Average
5350	46.02	45.69	0.33	74	-27.98	196	92	Peak
10380	54.51	56.37	-1.86	68.2	-13.69	116	285	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	49.73	49.31	0.42	54	-4.27	201	120	Average
5150	59.69	59.27	0.42	74	-14.31	201	120	Peak
5190	89.39	89.19	0.2	------	------	201	120	Average
5190	96.41	96.21	0.2	------	------	201	120	Peak
5350	39.43	39.1	0.33	54	-14.57	201	120	Average
5350	46.48	46.15	0.33	74	-27.52	201	120	Peak
10380	55.75	57.61	-1.86	68.2	-12.45	106	52	Peak

Remarks:

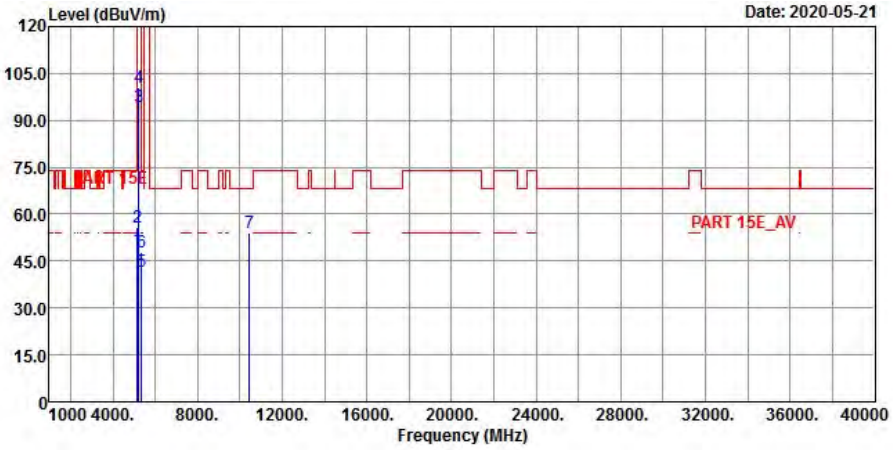
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5190 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Horizontal



Vertical



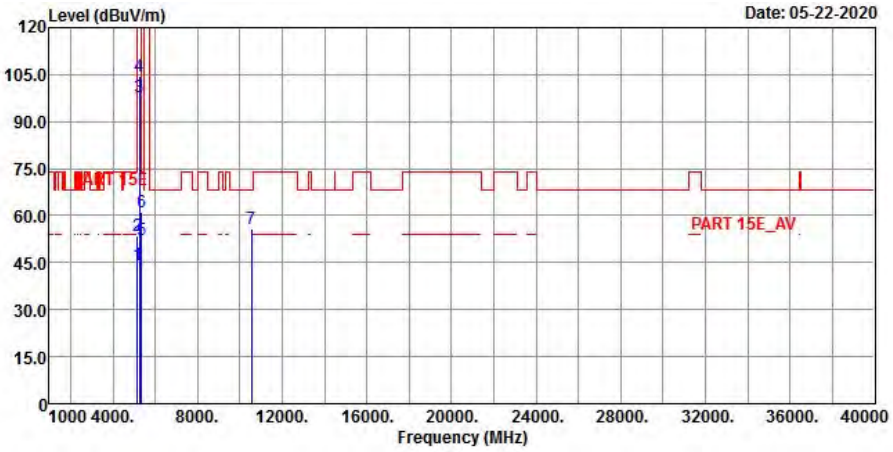
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	52.37	51.95	0.42	54	-1.63	196	88	Average
5150	58.61	58.19	0.42	74	-15.39	196	88	Peak
5230	95.89	95.77	0.12	------	------	196	88	Average
5230	102.39	102.27	0.12	------	------	196	88	Peak
5350	41.43	41.1	0.33	54	-12.57	196	88	Average
5350	48.51	48.18	0.33	74	-25.49	196	88	Peak
10460	54.98	56.57	-1.59	68.2	-13.22	142	36	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	48.62	48.2	0.42	54	-5.38	209	120	Average
5150	55.59	55.17	0.42	74	-18.41	209	120	Peak
5230	94.1	93.98	0.12	------	------	209	120	Average
5230	100.45	100.33	0.12	------	------	209	120	Peak
5350	41.82	41.49	0.33	54	-12.18	209	120	Average
5350	47.87	47.54	0.33	74	-26.13	209	120	Peak
10460	53.96	55.55	-1.59	68.2	-14.24	102	173	Peak

Remarks:

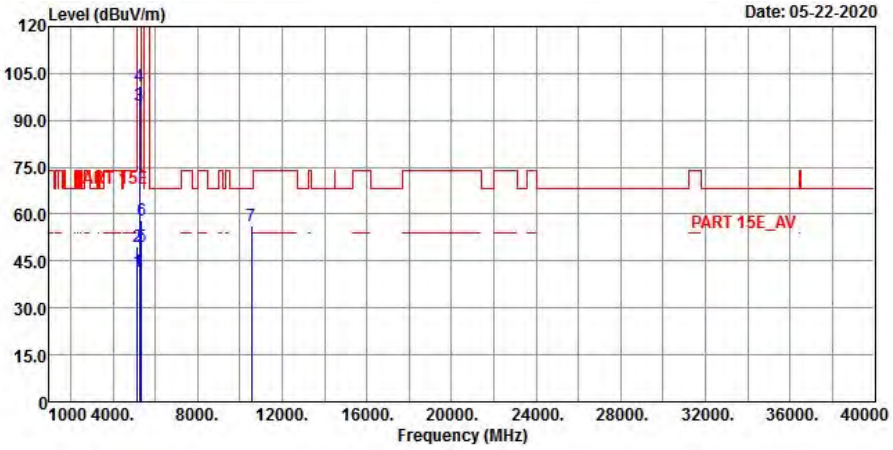
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5230 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Horizontal



Vertical



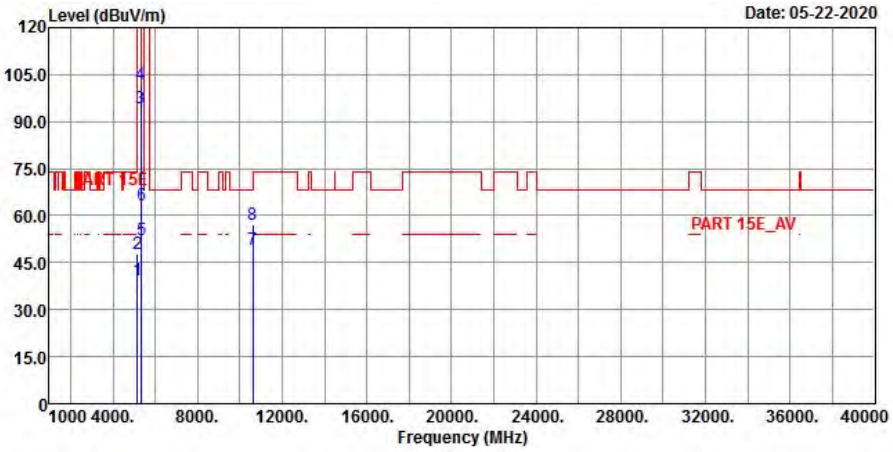
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	44.16	43.74	0.42	54	-9.84	202	277	Average
5150	53.44	53.02	0.42	74	-20.56	202	277	Peak
5270	97.66	97.53	0.13	------	------	202	277	Average
5270	104.38	104.25	0.13	------	------	202	277	Peak
5350	52.24	51.91	0.33	54	-1.76	202	277	Average
5350	61.11	60.78	0.33	74	-12.89	202	277	Peak
10540	55.8	57.29	-1.49	68.2	-12.4	132	261	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	41.48	41.06	0.42	54	-12.52	209	116	Average
5150	49.45	49.03	0.42	74	-24.55	209	116	Peak
5270	94.54	94.41	0.13	------	------	209	116	Average
5270	100.86	100.73	0.13	------	------	209	116	Peak
5350	49.65	49.32	0.33	54	-4.35	209	116	Average
5350	58.17	57.84	0.33	74	-15.83	209	116	Peak
10540	56.3	57.79	-1.49	68.2	-11.9	125	132	Peak

Remarks:

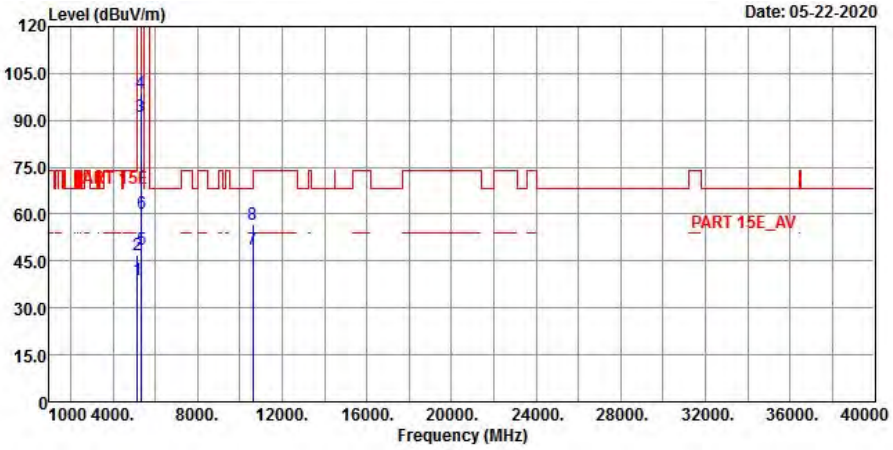
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5270 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Horizontal



Vertical



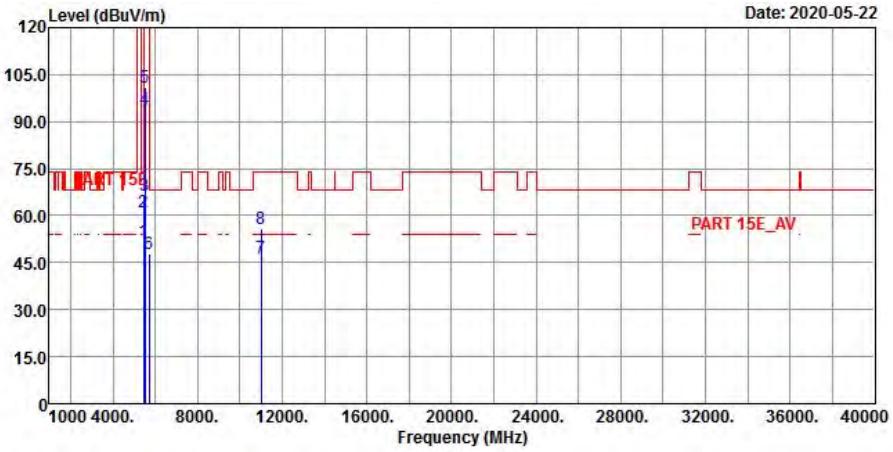
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	39.59	39.17	0.42	54	-14.41	199	274	Average
5150	47.79	47.37	0.42	74	-26.21	199	274	Peak
5310	94.4	94.17	0.23	------	------	199	274	Average
5310	101.97	101.74	0.23	------	------	199	274	Peak
5350	52.26	51.93	0.33	54	-1.74	199	274	Average
5350	63.42	63.09	0.33	74	-10.58	199	274	Peak
10620	49.21	50.83	-1.62	54	-4.79	111	132	Average
10620	57.27	58.89	-1.62	74	-16.73	111	132	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	39.11	38.69	0.42	54	-14.89	205	119	Average
5150	46.98	46.56	0.42	74	-27.02	205	119	Peak
5310	91.4	91.17	0.23	------	------	205	119	Average
5310	98.72	98.49	0.23	------	------	205	119	Peak
5350	48.51	48.18	0.33	54	-5.49	205	119	Average
5350	60.13	59.8	0.33	74	-13.87	205	119	Peak
10620	48.85	50.47	-1.62	54	-5.15	168	152	Average
10620	56.87	58.49	-1.62	74	-17.13	168	152	Peak

Remarks:

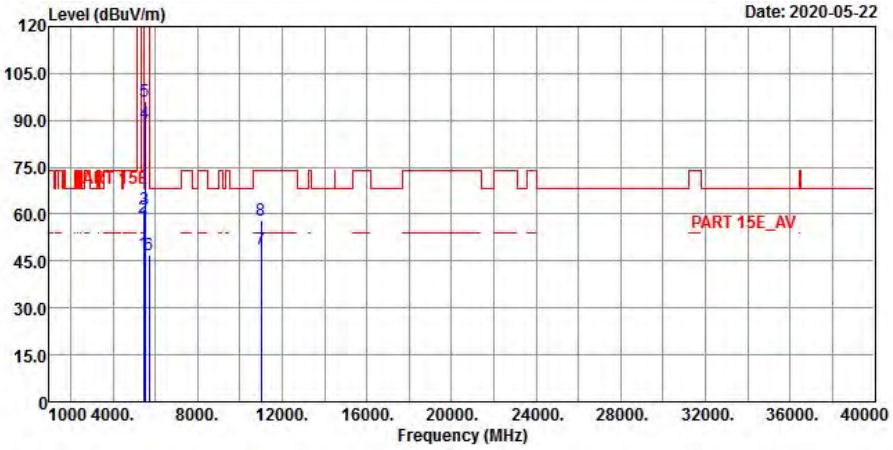
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5310 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Horizontal



Vertical



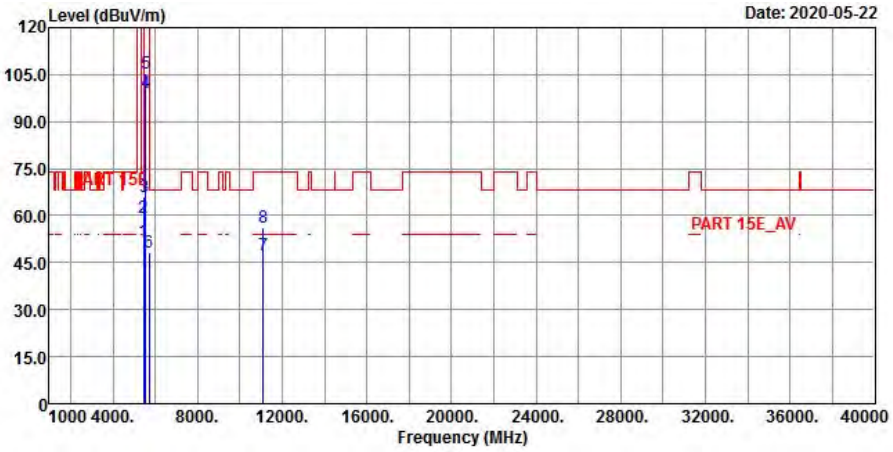
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	51.78	51.03	0.75	54	-2.22	270	45	Average
5460	61.31	60.56	0.75	74	-12.69	270	45	Peak
5470	66.44	65.67	0.77	68.2	-1.76	270	45	Peak
5510	94.07	93.2	0.87	------	------	270	45	Average
5510	100.77	99.9	0.87	------	------	270	45	Peak
5725	48.01	47.14	0.87	68.2	-20.19	270	45	Peak
11020	46.7	48.03	-1.33	54	-7.3	126	159	Average
11020	55.64	56.97	-1.33	74	-18.36	126	159	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	47.35	46.6	0.75	54	-6.65	100	173	Average
5460	59.08	58.33	0.75	74	-14.92	100	173	Peak
5470	61.56	60.79	0.77	68.2	-6.64	100	173	Peak
5510	89.14	88.27	0.87	------	------	100	173	Average
5510	96.04	95.17	0.87	------	------	100	173	Peak
5725	46.96	46.09	0.87	68.2	-21.24	100	173	Peak
11020	48.69	50.02	-1.33	54	-5.31	102	209	Average
11020	57.97	59.3	-1.33	74	-16.03	102	209	Peak

Remarks:

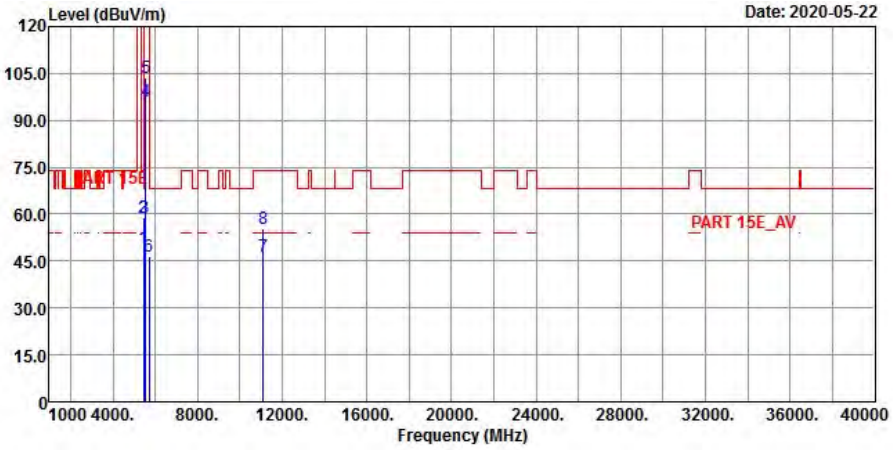
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5510 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Horizontal



Vertical



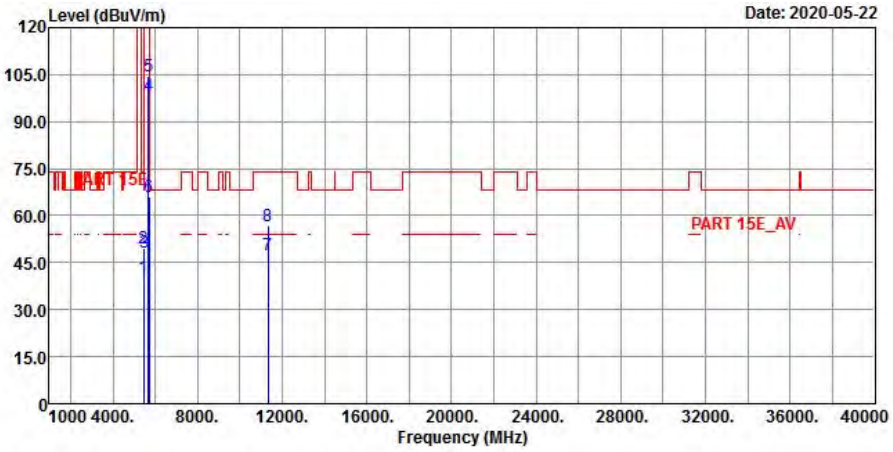
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	51.91	51.16	0.75	54	-2.09	267	80	Average
5460	59.4	58.65	0.75	74	-14.6	267	80	Peak
5470	66.03	65.26	0.77	68.2	-2.17	267	80	Peak
5550	99.3	98.43	0.87	------	------	267	80	Average
5550	105.57	104.7	0.87	------	------	267	80	Peak
5725	48.4	47.53	0.87	68.2	-19.8	267	80	Peak
11100	47.18	48.57	-1.39	54	-6.82	101	67	Average
11100	56.34	57.73	-1.39	74	-17.66	101	67	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	49.27	48.52	0.75	54	-4.73	314	104	Average
5460	58.79	58.04	0.75	74	-15.21	314	104	Peak
5470	59.07	58.3	0.77	68.2	-9.13	314	104	Peak
5550	96.22	95.35	0.87	------	------	314	104	Average
5550	103.6	102.73	0.87	------	------	314	104	Peak
5725	46.48	45.61	0.87	68.2	-21.72	314	104	Peak
11100	46.44	47.83	-1.39	54	-7.56	136	291	Average
11100	55.49	56.88	-1.39	74	-18.51	136	291	Peak

Remarks:

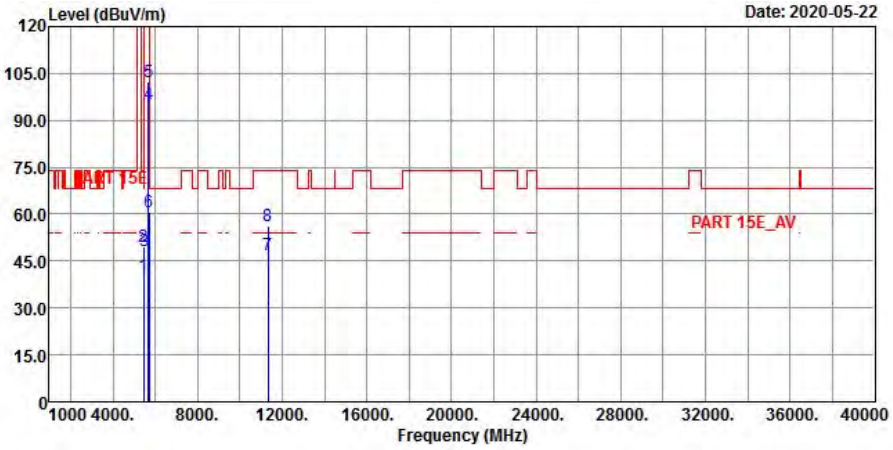
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5550 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Horizontal



Vertical



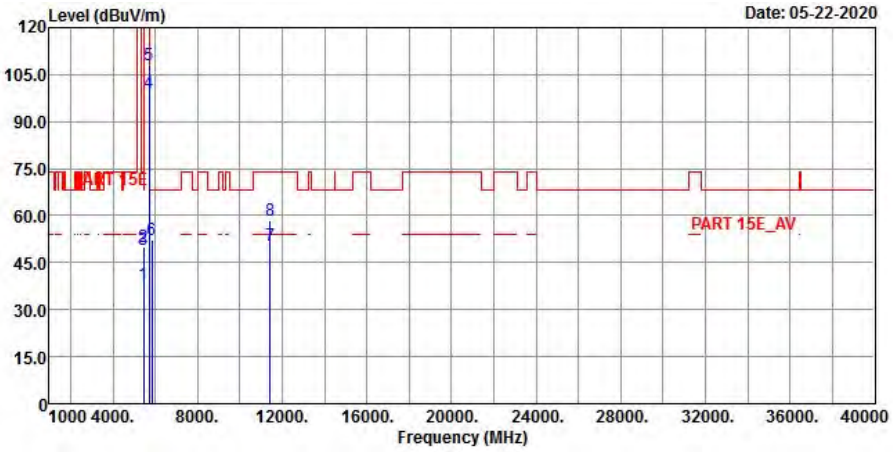
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	40.39	39.64	0.75	54	-13.61	198	91	Average
5460	49.74	48.99	0.75	74	-24.26	198	91	Peak
5470	48.35	47.58	0.77	68.2	-19.85	198	91	Peak
5670	98.29	97.56	0.73	------	------	198	91	Average
5670	104.67	103.94	0.73	------	------	198	91	Peak
5725	66.18	65.31	0.87	68.2	-2.02	198	91	Peak
11340	47.56	49.17	-1.61	54	-6.44	121	192	Average
11340	56.84	58.45	-1.61	74	-17.16	121	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
5460	40.25	39.5	0.75	54	-13.75	340	108	Average
5460	49.44	48.69	0.75	74	-24.56	340	108	Peak
5470	48.1	47.33	0.77	68.2	-20.1	340	108	Peak
5670	95.27	94.54	0.73	------	------	340	108	Average
5670	102.17	101.44	0.73	------	------	340	108	Peak
5725	60.53	59.66	0.87	68.2	-7.67	340	108	Peak
11340	47.09	48.7	-1.61	54	-6.91	152	29	Average
11340	56.38	57.99	-1.61	74	-17.62	152	29	Peak

Remarks:

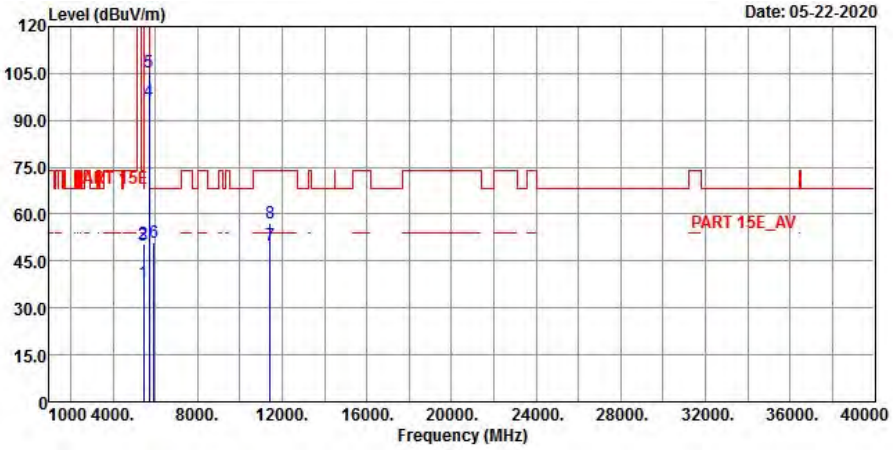
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5670 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Horizontal



Vertical



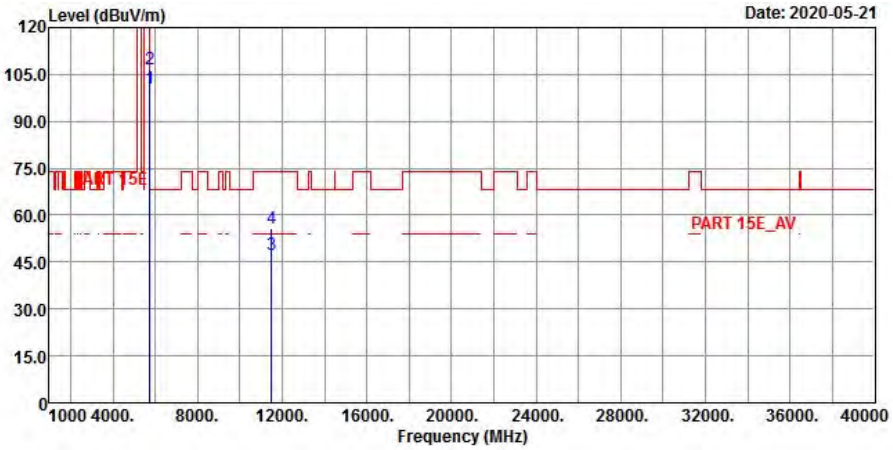
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5445.4	38.03	37.36	0.67	54	-15.97	260	86	Average
5445.4	50.11	49.44	0.67	74	-23.89	260	86	Peak
5463.4	49.07	48.31	0.76	68.2	-19.13	260	86	Peak
5710	99.02	98.18	0.84	------	------	260	86	Average
5710	108.16	107.32	0.84	------	------	260	86	Peak
5860.6	52.26	51.07	1.19	68.2	-15.94	260	86	Peak
11420	50.28	51.63	-1.35	54	-3.72	145	131	Average
11420	58.26	59.61	-1.35	74	-15.74	145	131	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459	37.96	37.21	0.75	54	-16.04	344	110	Average
5459	50.62	49.87	0.75	74	-23.38	344	110	Peak
5461	49.9	49.15	0.75	68.2	-18.3	344	110	Peak
5710	96.21	95.37	0.84	------	------	344	110	Average
5710	105.57	104.73	0.84	------	------	344	110	Peak
5928.4	50.73	49.43	1.3	68.2	-17.47	344	110	Peak
11420	49.98	51.33	-1.35	54	-4.02	132	285	Average
11420	57.04	58.39	-1.35	74	-16.96	132	285	Peak

Remarks:

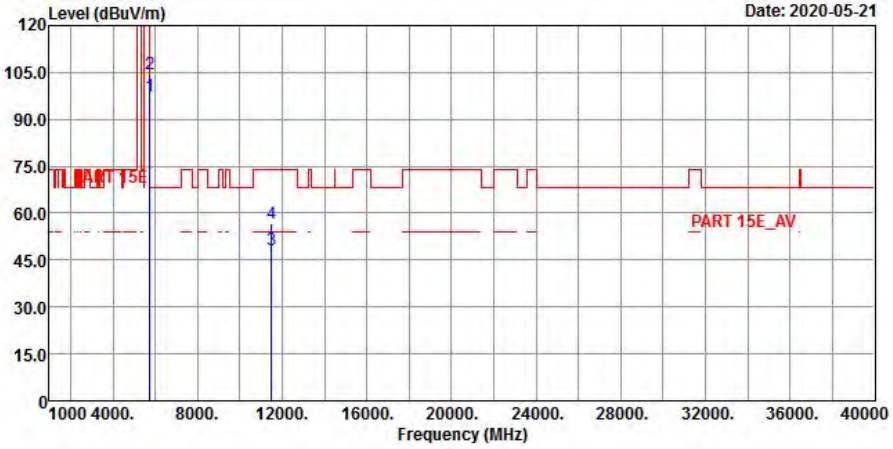
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5710 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 151	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Getaz Yang

<Spurious Emission>
Horizontal

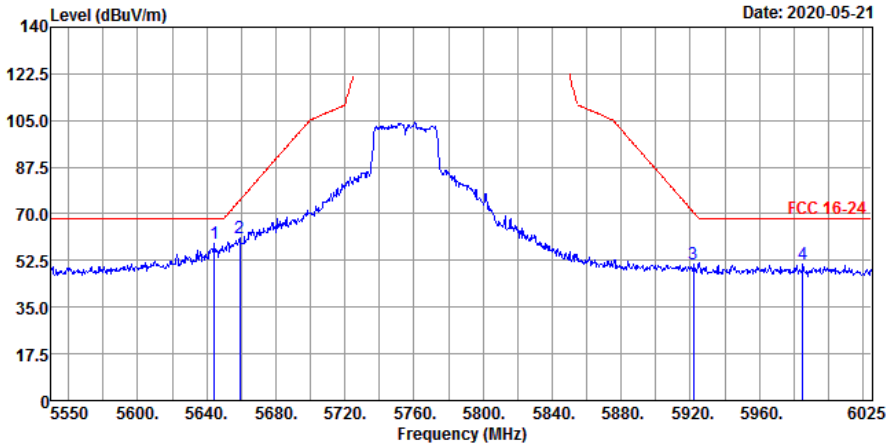


Vertical



<Out of Band Emission (OOBE)>

Horizontal



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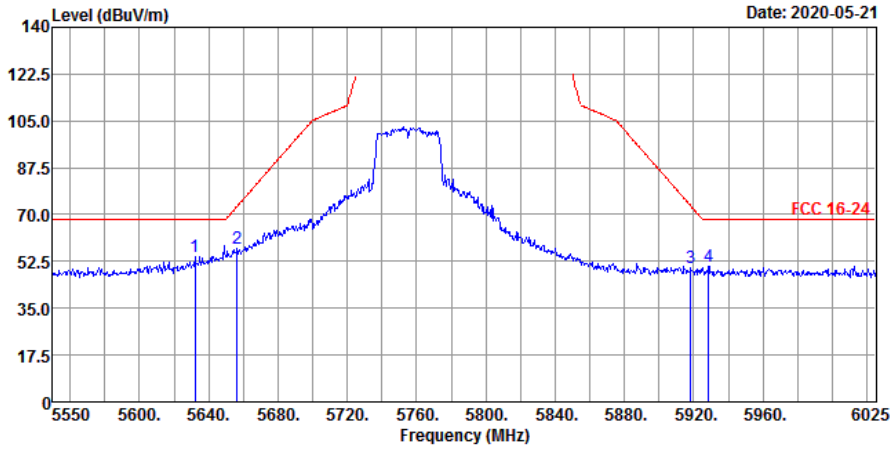


<Spurious Emission>

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	100.65	99.74	0.91	------	------	201	93	Average
5755	106.89	105.98	0.91	------	------	201	93	Peak
11510	47.25	48.6	-1.35	54	-6.75	183	138	Average
11510	55.83	57.18	-1.35	74	-18.17	183	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
5755	97.44	96.53	0.91	------	------	205	95	Average
5755	104.44	103.53	0.91	------	------	205	95	Peak
11510	48.19	49.54	-1.35	54	-5.81	163	123	Average
11510	56.83	58.18	-1.35	74	-17.17	163	123	Peak

<Out of Band Emission (OOBE)>

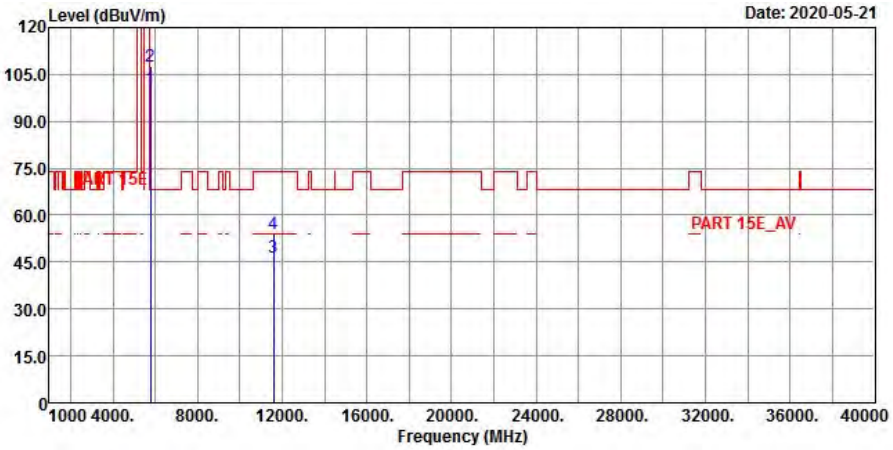
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5644.525	58.72	58.05	0.67	68.2	-9.48	201	93	Peak
5659.25	60.72	60.05	0.67	75.07	-14.35	201	93	Peak
5921.925	50.92	49.62	1.3	70.47	-19.55	201	93	Peak
5985.1	51.06	49.7	1.36	68.2	-17.14	201	93	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
5632.175	54.48	53.81	0.67	68.2	-13.72	205	95	Peak
5656.4	57.43	56.78	0.65	72.95	-15.52	205	95	Peak
5918.125	50.03	48.73	1.3	73.27	-23.24	205	95	Peak
5928.575	50.87	49.57	1.3	68.2	-17.33	205	95	Peak

Remarks:

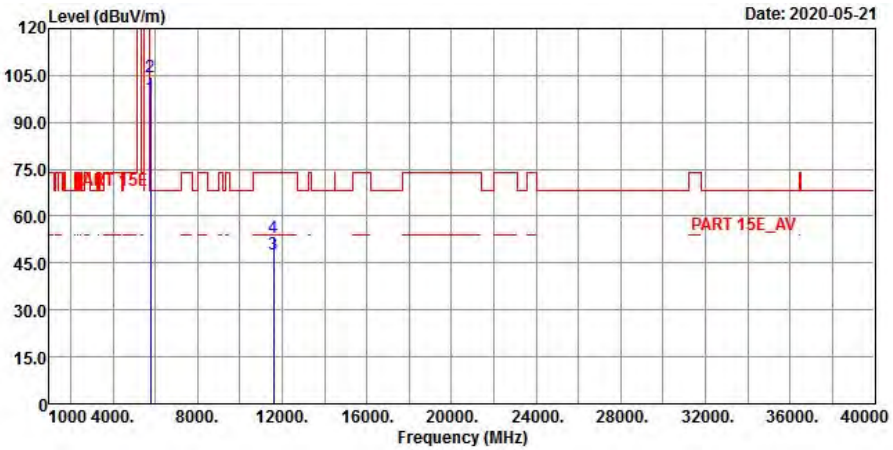
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5755 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

<Spurious Emission>
Horizontal

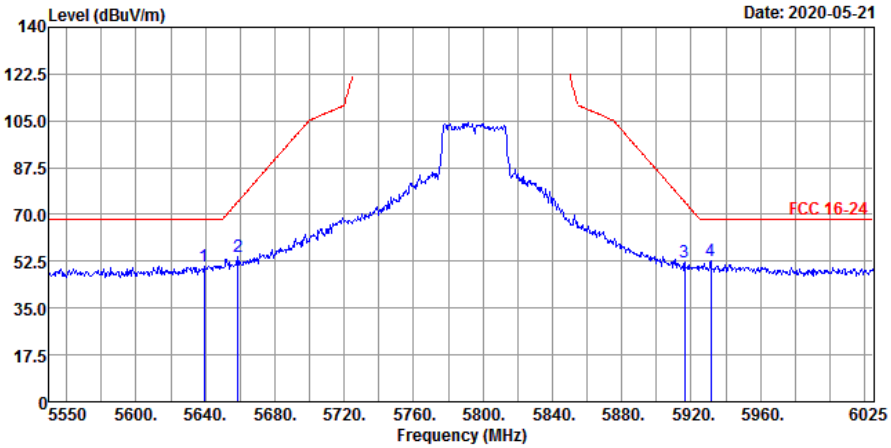


Vertical



<Out of Band Emission (OOBE)>

Horizontal



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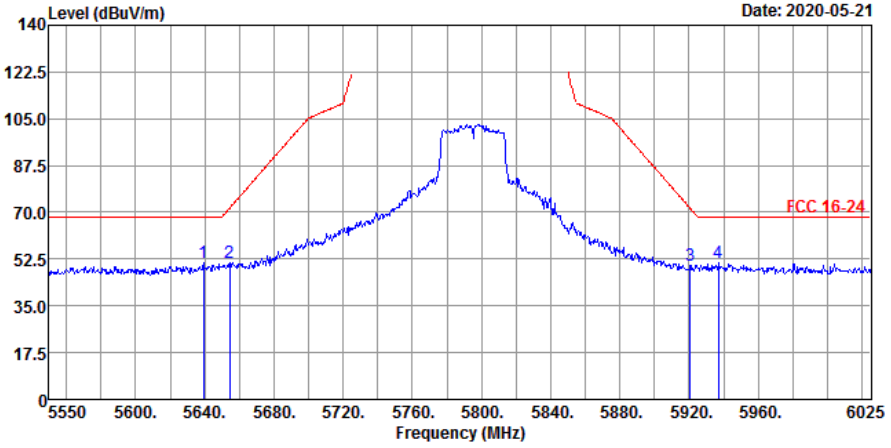


<Spurious Emission>

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	100.55	99.6	0.95	------	------	195	93	Average
5795	107.79	106.84	0.95	------	------	195	93	Peak
11590	46.71	48.51	-1.8	54	-7.29	175	131	Average
11590	53.82	55.62	-1.8	74	-20.18	175	131	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5795	97.77	96.82	0.95	------	------	210	102	Average
5795	104.35	103.4	0.95	------	------	210	102	Peak
11590	47.87	49.67	-1.8	54	-6.13	161	141	Average
11590	53.18	54.98	-1.8	74	-20.82	161	141	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5639.3	50.84	50.16	0.68	68.2	-17.36	195	93	Peak
5658.775	54.35	53.69	0.66	74.72	-20.37	195	93	Peak
5916.225	52.33	51.03	1.3	74.67	-22.34	195	93	Peak
5931.425	52.46	51.16	1.3	68.2	-15.74	195	93	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5639.3	51.26	50.58	0.68	68.2	-16.94	210	102	Peak
5654.5	51.01	50.37	0.64	71.54	-20.53	210	102	Peak
5920.5	50.34	49.04	1.3	71.52	-21.18	210	102	Peak
5937.125	50.93	49.63	1.3	68.2	-17.27	210	102	Peak

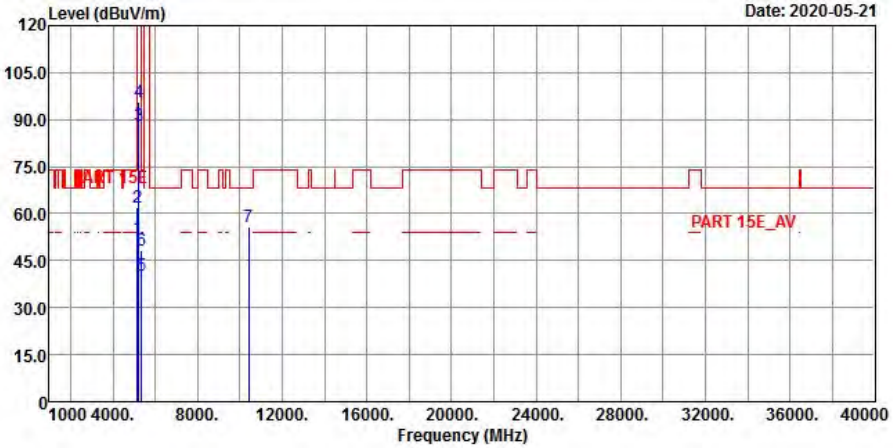
Remarks:

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

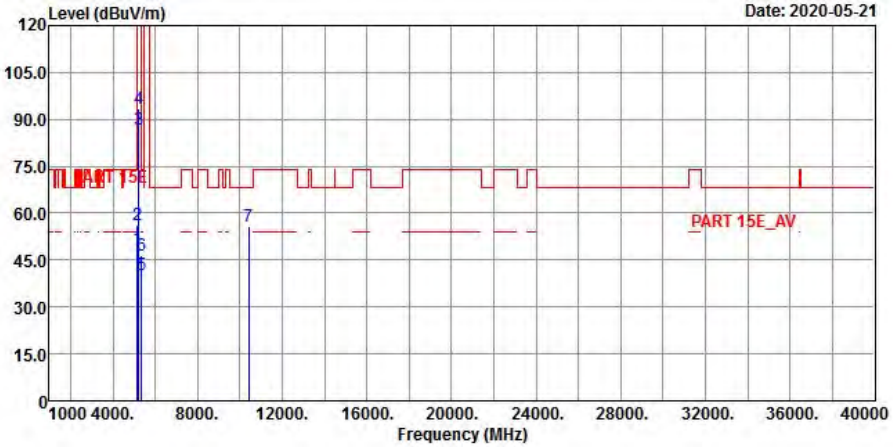
802.11ac (VHT80)

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

Horizontal



Vertical



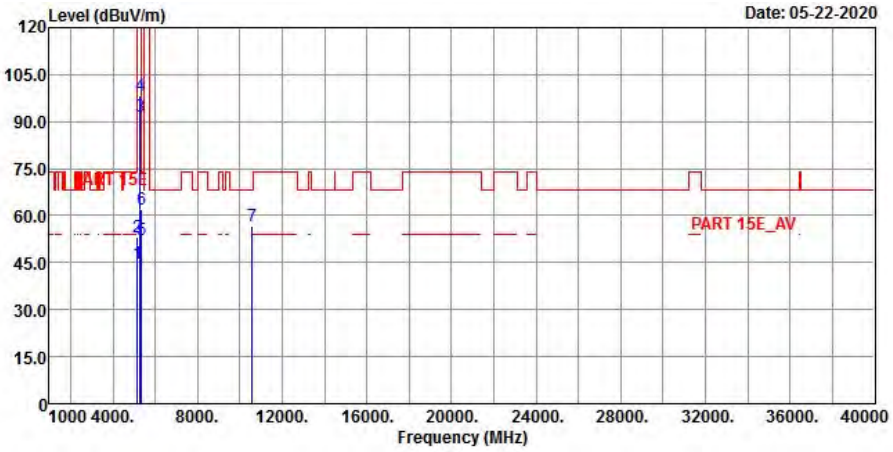
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	52.39	51.97	0.42	54	-1.61	193	84	Average
5150	62.16	61.74	0.42	74	-11.84	193	84	Peak
5210	88.06	87.94	0.12	------	------	193	84	Average
5210	95.85	95.73	0.12	------	------	193	84	Peak
5350	40.19	39.86	0.33	54	-13.81	193	84	Average
5350	48.21	47.88	0.33	74	-25.79	193	84	Peak
10420	55.75	57.49	-1.74	68.2	-12.45	189	103	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	48.79	48.37	0.42	54	-5.21	201	121	Average
5150	56.14	55.72	0.42	74	-17.86	201	121	Peak
5210	86.78	86.66	0.12	------	------	201	121	Average
5210	93.43	93.31	0.12	------	------	201	121	Peak
5350	40.38	40.05	0.33	54	-13.62	201	121	Average
5350	46.44	46.11	0.33	74	-27.56	201	121	Peak
10420	55.88	57.62	-1.74	68.2	-12.32	132	227	Peak

Remarks:

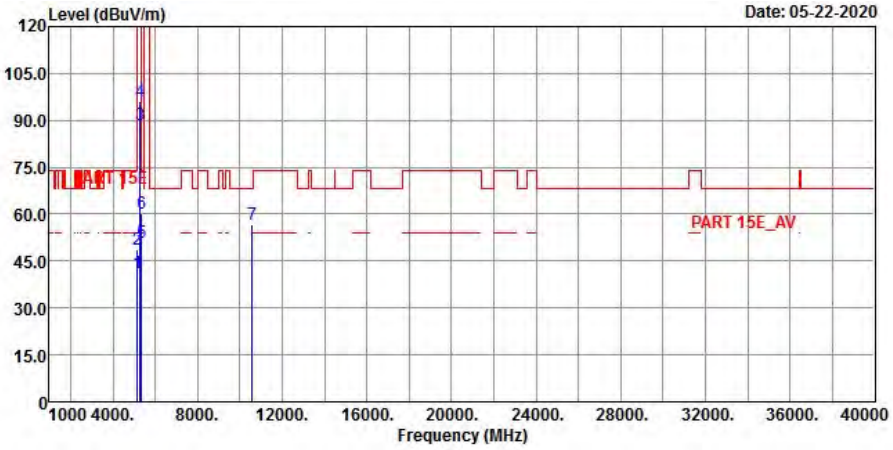
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5210 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Horizontal



Vertical



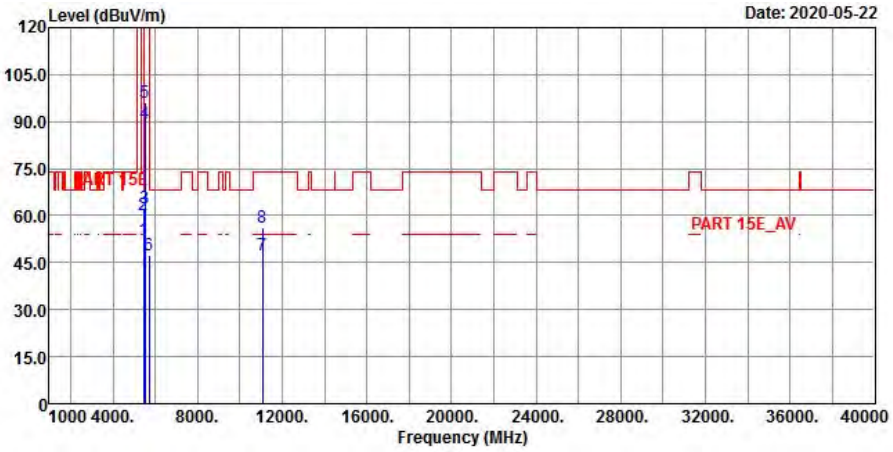
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	44.53	44.11	0.42	54	-9.47	198	275	Average
5150	53.35	52.93	0.42	74	-20.65	198	275	Peak
5290	91.83	91.66	0.17	------	------	198	275	Average
5290	98.28	98.11	0.17	------	------	198	275	Peak
5350	52.32	51.99	0.33	54	-1.68	198	275	Average
5350	61.79	61.46	0.33	74	-12.21	198	275	Peak
10580	56.68	58.25	-1.57	68.2	-11.52	111	132	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	41.26	40.84	0.42	54	-12.74	210	119	Average
5150	48.59	48.17	0.42	74	-25.41	210	119	Peak
5290	88.42	88.25	0.17	------	------	210	119	Average
5290	95.89	95.72	0.17	------	------	210	119	Peak
5350	50.81	50.48	0.33	54	-3.19	210	119	Average
5350	60.4	60.07	0.33	74	-13.6	210	119	Peak
10580	56.68	58.25	-1.57	68.2	-11.52	111	132	Peak

Remarks:

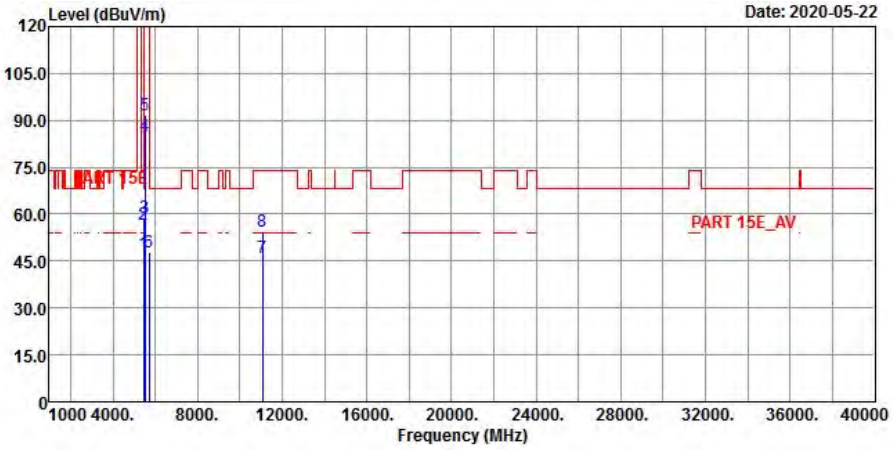
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5290 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Horizontal



Vertical



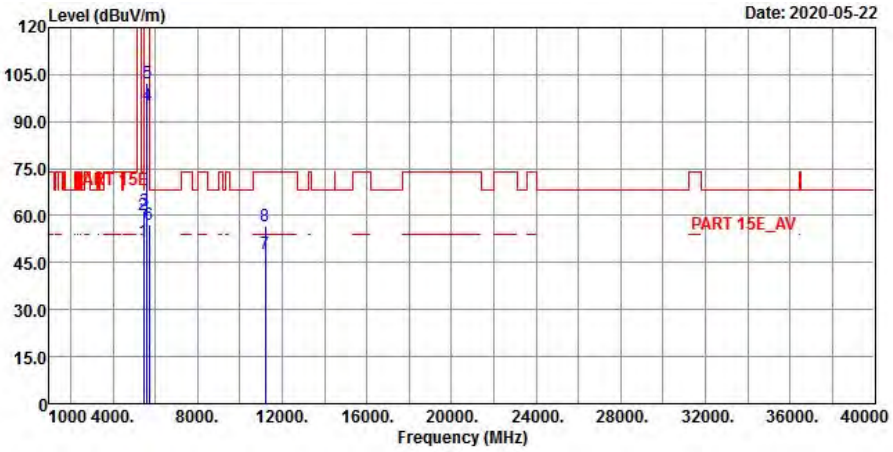
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	52.11	51.36	0.75	54	-1.89	261	46	Average
5460	60.31	59.56	0.75	74	-13.69	261	46	Peak
5470	62.32	61.55	0.77	68.2	-5.88	261	46	Peak
5530	89.45	88.59	0.86	------	------	261	46	Average
5530	96.21	95.35	0.86	------	------	261	46	Peak
5725	47.26	46.39	0.87	68.2	-20.94	261	46	Peak
11060	47.59	48.94	-1.35	54	-6.41	100	189	Average
11060	56.07	57.42	-1.35	74	-17.93	100	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
5460	47.19	46.44	0.75	54	-6.81	108	174	Average
5460	56.77	56.02	0.75	74	-17.23	108	174	Peak
5470	58.95	58.18	0.77	68.2	-9.25	108	174	Peak
5530	84.83	83.97	0.86	------	------	108	174	Average
5530	91.63	90.77	0.86	------	------	108	174	Peak
5725	47.81	46.94	0.87	68.2	-20.39	108	174	Peak
11060	45.9	47.25	-1.35	54	-8.1	167	247	Average
11060	54.5	55.85	-1.35	74	-19.5	167	247	Peak

Remarks:

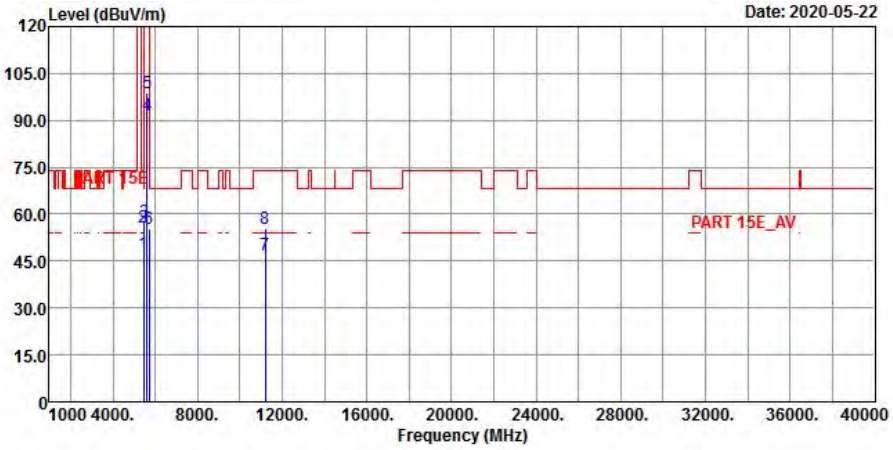
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5530 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Horizontal



Vertical



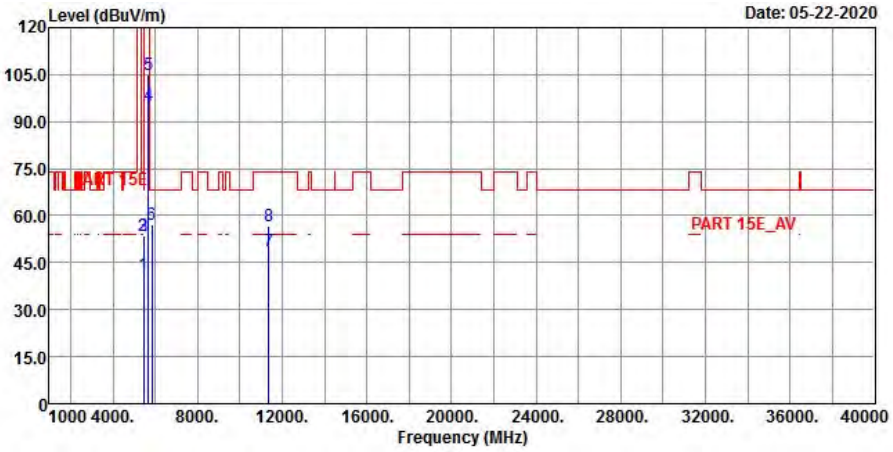
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	51.86	51.11	0.75	54	-2.14	202	85	Average
5460	60.36	59.61	0.75	74	-13.64	202	85	Peak
5470	61.65	60.88	0.77	68.2	-6.55	202	85	Peak
5610	95.37	94.64	0.73	------	------	202	85	Average
5610	102.17	101.44	0.73	------	------	202	85	Peak
5725	57.25	56.38	0.87	68.2	-10.95	202	85	Peak
11220	47.64	49.3	-1.66	54	-6.36	166	137	Average
11220	56.53	58.19	-1.66	74	-17.47	166	137	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	47.51	46.76	0.75	54	-6.49	208	106	Average
5460	55.98	55.23	0.75	74	-18.02	208	106	Peak
5470	57.49	56.72	0.77	68.2	-10.71	208	106	Peak
5610	91.61	90.88	0.73	------	------	208	106	Average
5610	98.75	98.02	0.73	------	------	208	106	Peak
5725	55.41	54.54	0.87	68.2	-12.79	208	106	Peak
11220	46.89	48.55	-1.66	54	-7.11	189	90	Average
11220	55.44	57.1	-1.66	74	-18.56	189	90	Peak

Remarks:

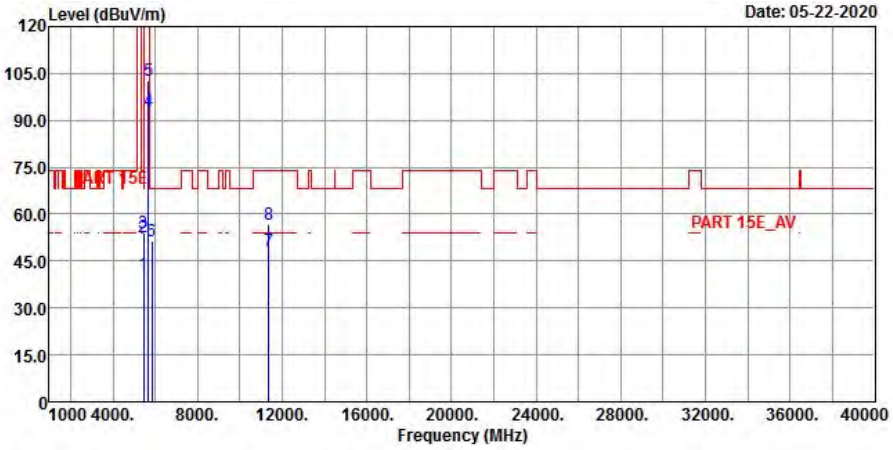
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5610 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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

Horizontal



Vertical



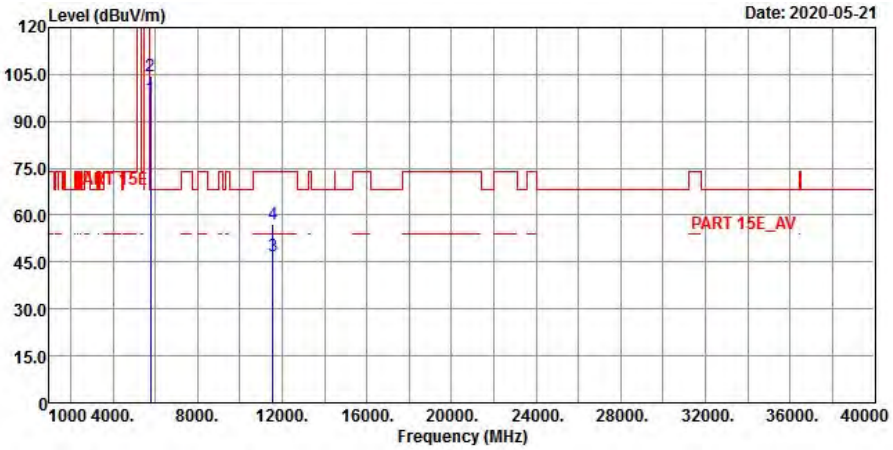
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459	41.27	40.52	0.75	54	-12.73	260	85	Average
5459	53.68	52.93	0.75	74	-20.32	260	85	Peak
5464	53.68	52.92	0.76	68.2	-14.52	260	85	Peak
5690	95.08	94.29	0.79	------	------	260	85	Average
5690	104.8	104.01	0.79	------	------	260	85	Peak
5851.6	57.03	55.86	1.17	68.2	-11.17	260	85	Peak
11380	48.53	49.95	-1.42	54	-5.47	145	125	Average
11380	56.57	57.99	-1.42	74	-17.43	145	125	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
5449	40.85	40.17	0.68	54	-13.15	345	106	Average
5449	52.57	51.89	0.68	74	-21.43	345	106	Peak
5468.8	53.83	53.06	0.77	68.2	-14.37	345	106	Peak
5690	92.84	92.05	0.79	------	------	345	106	Average
5690	102.74	101.95	0.79	------	------	345	106	Peak
5851.6	51.25	50.08	1.17	68.2	-16.95	345	106	Peak
11380	48.43	49.85	-1.42	54	-5.57	162	132	Average
11380	56.53	57.95	-1.42	74	-17.47	162	132	Peak

Remarks:

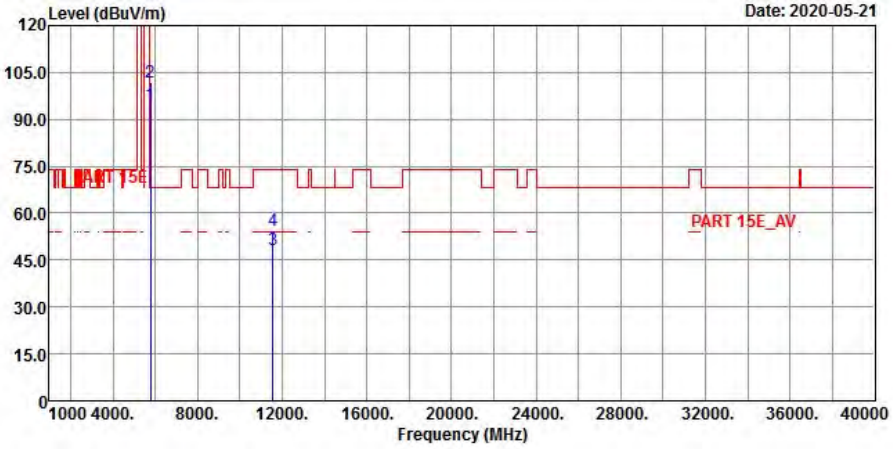
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 5690 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 155	**Frequency Range**	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Getaz Yang

<Spurious Emission>
Horizontal

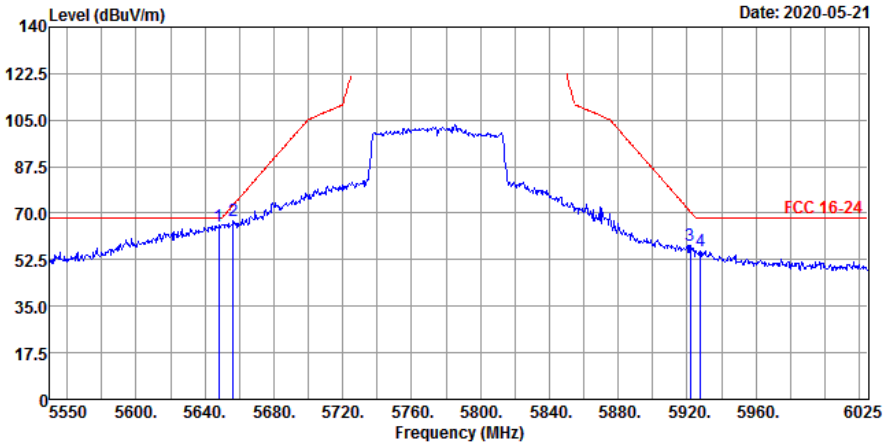


Vertical

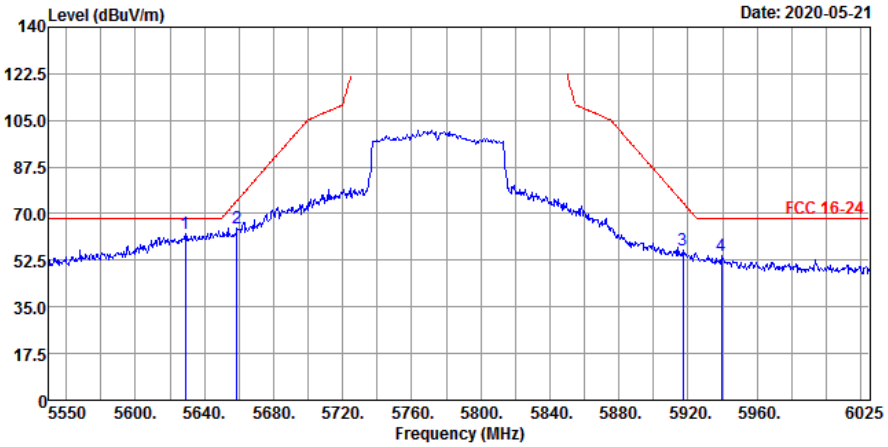


<Out of Band Emission (OOBE)>

Horizontal



Vertical



<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	97.21	96.27	0.94	------	------	197	92	Average
5775	104.33	103.39	0.94	------	------	197	92	Peak
11550	46.94	48.54	-1.6	54	-7.06	192	120	Average
11550	57.12	58.72	-1.6	74	-16.88	192	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
5775	94.75	93.81	0.94	------	------	197	103	Average
5775	101.74	100.8	0.94	------	------	197	103	Peak
11550	48.07	49.67	-1.6	54	-5.93	164	144	Average
11550	54.56	56.16	-1.6	74	-19.44	164	144	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
5647.85	65.33	64.66	0.67	68.2	-2.87	197	92	Peak
5656.4	67.26	66.61	0.65	72.95	-5.69	197	92	Peak
5921.925	58.07	56.77	1.3	70.47	-12.4	197	92	Peak
5927.625	56	54.7	1.3	68.2	-12.2	197	92	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
5628.85	62.68	62	0.68	68.2	-5.52	197	103	Peak
5658.775	64.69	64.03	0.66	74.72	-10.03	197	103	Peak
5917.175	56.28	54.98	1.3	73.97	-17.69	197	103	Peak
5939.5	54.05	52.73	1.32	68.2	-14.15	197	103	Peak

Remarks:

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

9 kHz ~ 30 MHz Data:

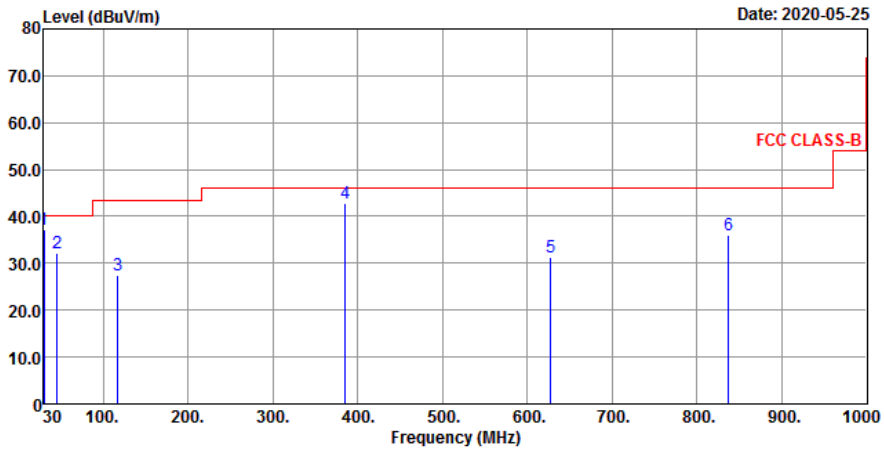
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Worst-Case Data:

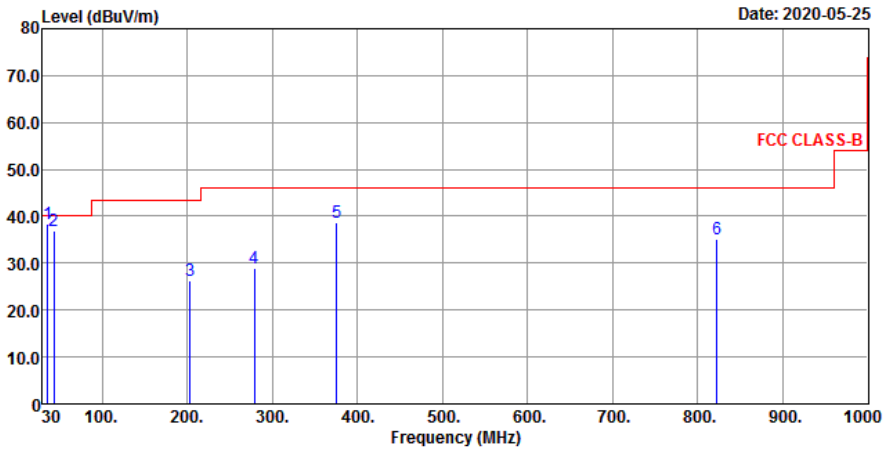
802.11a

EUT Test Condition		Measurement Detail	
Channel	Channel 36	**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**	Getaz Yang

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
30	37.13	50.01	-12.88	40	-2.87	130	184	QP
45.52	32.23	44.01	-11.78	40	-7.77	114	278	QP
117.3	27.32	41.35	-14.03	43.5	-16.18	117	353	Peak
385.02	42.76	51.4	-8.64	46	-3.24	103	158	Peak
627.52	31.34	33.18	-1.84	46	-14.66	131	281	Peak
837.04	35.98	33.65	2.33	46	-10.02	129	141	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
35.82	38.31	51.06	-12.75	40	-1.69	133	257	Peak
43.58	36.85	48.77	-11.92	40	-3.15	127	258	Peak
203.63	26.41	41.54	-15.13	43.5	-17.09	108	268	Peak
279.29	28.9	40.67	-11.77	46	-17.1	126	116	Peak
375.32	38.74	47.58	-8.84	46	-7.26	140	42	Peak
822.49	35.21	33	2.21	46	-10.79	125	82	Peak

Remarks:

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

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver ROHDE & SCHWARZ	ESR3	102412	Feb. 17, 2020	Feb. 16, 2021
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond2-01	Sep. 05, 2019	Sep. 04, 2020
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Jan. 20, 2020	Jan. 19, 2021
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Aug. 13, 2019	Aug. 12, 2020
Software ADT	BV ADT_Cond_ V7.3.7.4	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 2.
3. The VCCI Site Registration No. is C-12047.

4.2.3 Test Procedures

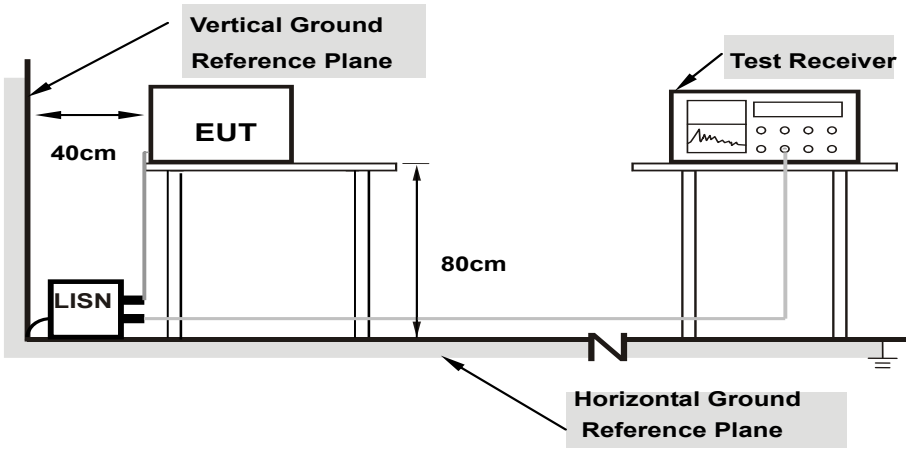
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

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

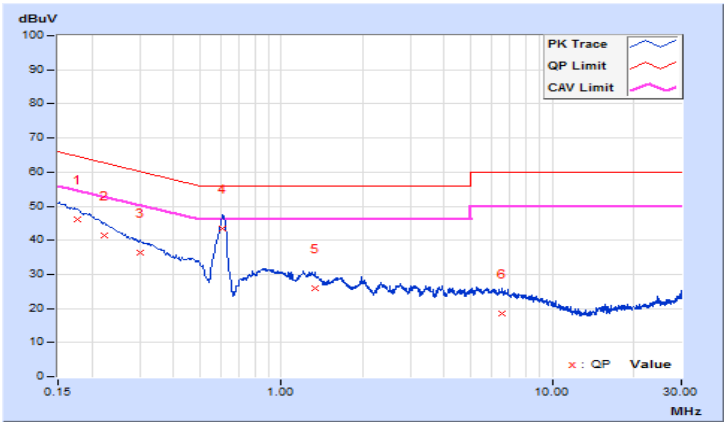
4.2.7 Test Results

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25℃, 65%RH
Tested by	Jisyong Wang	Test Date	2020/6/2

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	0.17605	10.16	35.91	30.21	46.07	40.37	64.67	54.67	-18.60	-14.30
2	0.22151	10.17	31.19	28.19	41.36	38.36	62.76	52.76	-21.40	-14.40
3	0.30300	10.19	26.16	20.25	36.35	30.44	60.16	50.16	-23.81	-19.72
4	0.60893	10.22	33.35	26.56	43.57	36.78	56.00	46.00	-12.43	-9.22
5	1.33575	10.27	15.58	10.10	25.85	20.37	56.00	46.00	-30.15	-25.63
6	6.52650	10.43	8.22	4.22	18.65	14.65	60.00	50.00	-41.35	-35.35

Remarks:

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

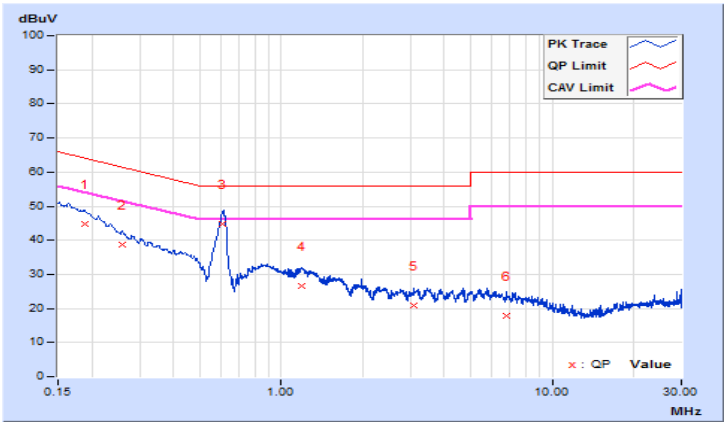


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25℃, 65%RH
Tested by	Jisyong Wang	Test Date	2020/6/2

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	0.18756	10.13	34.55	30.93	44.68	41.06	64.14	54.14	-19.46	-13.08
2	0.25800	10.14	28.42	20.94	38.56	31.08	61.50	51.50	-22.94	-20.42
3	**0.60893**	**10.20**	**34.74**	**28.97**	**44.94**	**39.17**	**56.00**	**46.00**	**-11.06**	**-6.83**
4	1.18725	10.25	16.41	13.28	26.66	23.53	56.00	46.00	-29.34	-22.47
5	3.09075	10.34	10.39	5.85	20.73	16.19	56.00	46.00	-35.27	-29.81
6	6.81675	10.47	7.48	5.28	17.95	15.75	60.00	50.00	-42.05	-34.25

Remarks:

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



4.3 Transmit Power Measurement

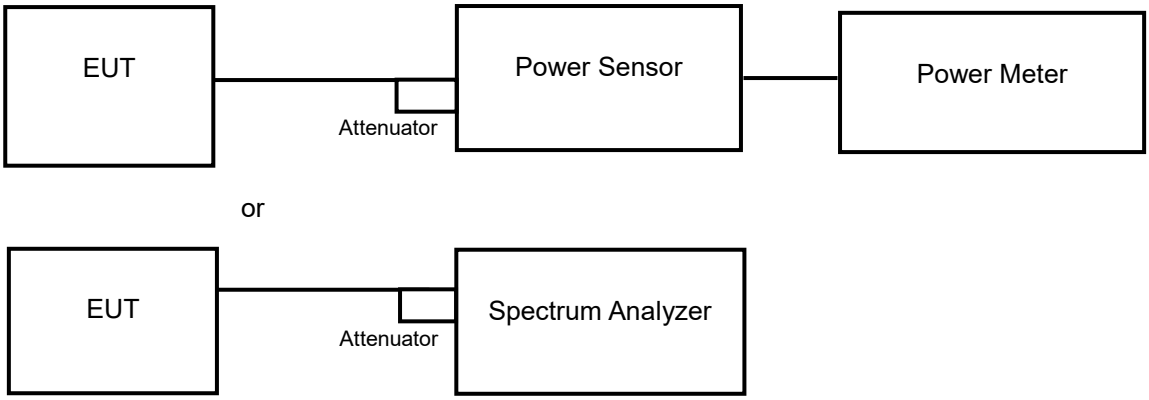
4.3.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p ≦ 125 mW (21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
		Indoor Access Point	1 Watt (30 dBm)
	√	Mobile and Portable client device	250 mW (24 dBm)
U-NII-2A	√		250 mW (24 dBm) or 11 dBm + 10 log B*
U-NII-2C	√		250 mW (24 dBm) or 11 dBm + 10 log B*
U-NII-3	√		1 Watt (30 dBm)

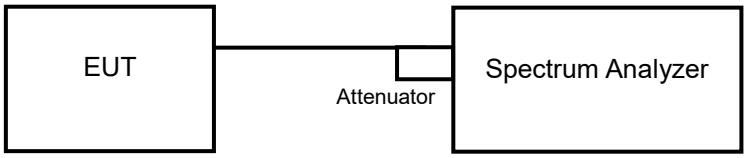
*B is the 26 dB emission bandwidth in megahertz

4.3.2 Test Setup

<Power Output Measurement>



<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), 802.11ac (VHT80)>

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.

<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 ≥ 3 MHz
e. Number of points in sweep ≥ 2 Span / RBW.
f. Sweep time ≤ (number of points in sweep) * T
g. Using emission bandwidth to determine the frequency span for integration the channel bandwidth.
h. Detector = RMS.
i. Trace mode = max hold.
j. Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.
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 ≥ 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	37.154	15.70	24	Pass
40	5200	68.549	18.36	24	Pass
48	5240	66.988	18.26	24	Pass
52	5260	65.013	18.13	24	Pass
60	5300	62.373	17.95	24	Pass
64	5320	41.305	16.16	24	Pass
100	5500	45.082	16.54	24	Pass
116	5580	63.533	18.03	24	Pass
140	5700	42.954	16.33	24	Pass
144	5720	57.677	17.61	24	Pass
149	5745	51.761	17.14	30	Pass
157	5785	50.699	17.05	30	Pass
165	5825	49.204	16.92	30	Pass

Note:

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

1. 11 dBm + 10log (24.22) = 24.84 dBm > 24 dBm.
2. 11 dBm + 10log (26.62) = 25.25 dBm > 24 dBm.
3. 11 dBm + 10log (21.85) = 24.39 dBm > 24 dBm.
4. 11 dBm + 10log (23.42) = 24.70 dBm > 24 dBm.
5. 11 dBm + 10log (33.23) = 26.22 dBm > 24 dBm.
6. 11 dBm + 10log (23.14) = 24.64 dBm > 24 dBm.
7. 11 dBm + 10log (21.62) = 24.35 dBm > 24 dBm.

802.11n (HT20)

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	41.687	16.20	24	Pass
40	5200	62.087	17.93	24	Pass
48	5240	61.376	17.88	24	Pass
52	5260	61.66	17.90	24	Pass
60	5300	60.814	17.84	24	Pass
64	5320	34.435	15.37	24	Pass
100	5500	37.239	15.71	24	Pass
116	5580	59.429	17.74	24	Pass
140	5700	35.563	15.51	24	Pass
144	5720	53.827	17.31	24	Pass
149	5745	49.091	16.91	30	Pass
157	5785	47.643	16.78	30	Pass
165	5825	46.559	16.68	30	Pass

Note:

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

1. 11 dBm + 10log (26.78) = 25.28 dBm > 24 dBm.
2. 11 dBm + 10log (28.14) = 25.49 dBm > 24 dBm.
3. 11 dBm + 10log (22.05) = 24.43 dBm > 24 dBm.
4. 11 dBm + 10log (25.40) = 25.05 dBm > 24 dBm.
5. 11 dBm + 10log (33.81) = 26.29 dBm > 24 dBm.
6. 11 dBm + 10log (23.74) = 24.75 dBm > 24 dBm.
7. 11 dBm + 10log (22.68) = 24.56 dBm > 24 dBm.

802.11n (HT40)

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
38	5190	21.627	13.35	24	Pass
46	5230	55.208	17.42	24	Pass
54	5270	52.481	17.20	24	Pass
62	5310	25.704	14.10	24	Pass
102	5510	27.99	14.47	24	Pass
110	5550	66.069	18.20	24	Pass
134	5670	52.845	17.23	24	Pass
142	5710	59.156	17.72	24	Pass
151	5755	59.979	17.78	30	Pass
159	5795	57.28	17.58	30	Pass

Note:

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

1. 11 dBm + 10log (66.44) = 29.22 dBm > 24 dBm.
2. 11 dBm + 10log (52.91) = 28.24 dBm > 24 dBm.
3. 11 dBm + 10log (56.43) = 28.52 dBm > 24 dBm.
4. 11 dBm + 10log (73.00) = 29.63 dBm > 24 dBm.
5. 11 dBm + 10log (68.33) = 29.35 dBm > 24 dBm.
6. 11 dBm + 10log (52.46) = 28.20 dBm > 24 dBm.

802.11ac (VHT80)

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
42	5210	18.707	12.72	24	Pass
58	5290	24.831	13.95	24	Pass
106	5530	23.55	13.72	24	Pass
122	5610	60.954	17.85	24	Pass
138	5690	55.847	17.47	24	Pass
155	5775	55.335	17.43	30	Pass

Note:

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

1. 11 dBm + 10log (85.80) = 30.33 dBm > 24 dBm.
2. 11 dBm + 10log (81.89) = 30.13 dBm > 24 dBm.
3. 11 dBm + 10log (131.59) = 32.19 dBm > 24 dBm.
4. 11 dBm + 10log (131.71) = 32.20 dBm > 24 dBm.

26 dB Bandwidth:

802.11a

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
36	5180	21.57
40	5200	24.91
48	5240	24.44
52	5260	24.22
60	5300	26.62
64	5320	21.85
100	5500	23.42
116	5580	33.23
140	5700	23.14
144	5720 (U-NII-2C)	21.62
144	5720 (U-NII-3)	9.29

802.11n (HT20)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
36	5180	22.88
40	5200	28.71
48	5240	28.97
52	5260	26.78
60	5300	28.14
64	5320	22.05
100	5500	25.40
116	5580	33.81
140	5700	23.74
144	5720 (U-NII-2C)	22.68
144	5720 (U-NII-3)	12.80

802.11n (HT40)

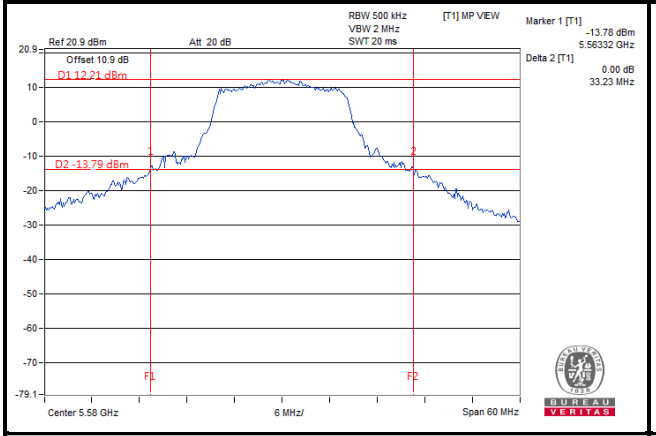
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
38	5190	43.37
46	5230	68.54
54	5270	66.44
62	5310	52.91
102	5510	56.43
110	5550	73.00
134	5670	68.33
142	5710 (U-NII-2C)	52.46
142	5710 (U-NII-3)	26.23

802.11ac (VHT80)

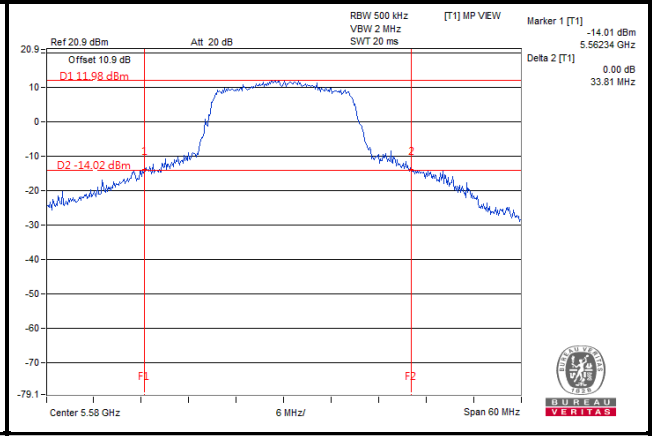
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
42	5210	81.83
58	5290	85.80
106	5530	81.89
122	5610	131.59
138	5690 (U-NII-2C)	131.71
138	5690 (U-NII-3)	16.38

Spectrum Plot of Worst Value

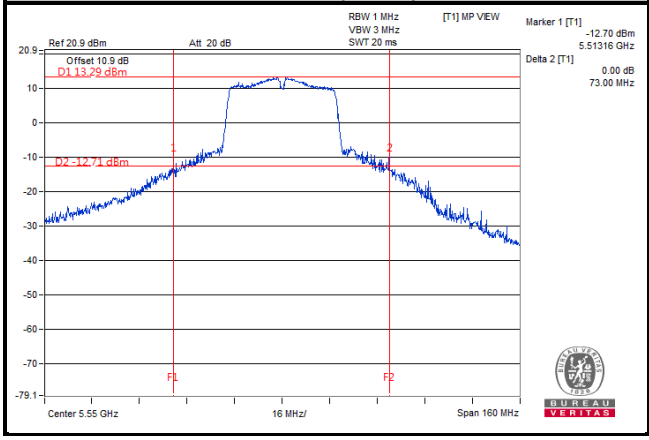
802.11a



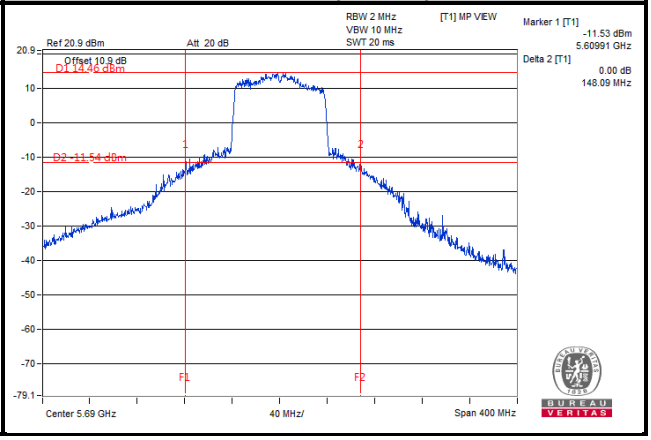
802.11n (HT20)



802.11n (HT40)

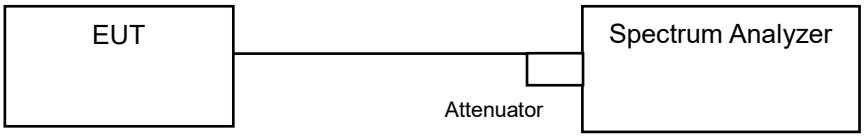


802.11ac (VHT80)



4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

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

4.4.4 Test Results

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
36	5180	16.92
40	5200	17.52
48	5240	17.52
52	5260	17.40
60	5300	17.64
64	5320	17.16
100	5500	17.28
116	5580	18.00
140	5700	17.16
144	5720 (U-NII-2C)	14.12
144	5720 (U-NII-3)	4.00
149	5745	17.50
157	5785	17.31
165	5825	17.16

802.11n (HT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
36	5180	18.12
40	5200	18.60
48	5240	18.36
52	5260	18.36
60	5300	18.48
64	5320	18.24
100	5500	18.24
116	5580	18.84
140	5700	18.24
144	5720 (U-NII-2C)	14.36
144	5720 (U-NII-3)	4.36
149	5745	18.46
157	5785	18.27
165	5825	18.27

802.11n (HT40)

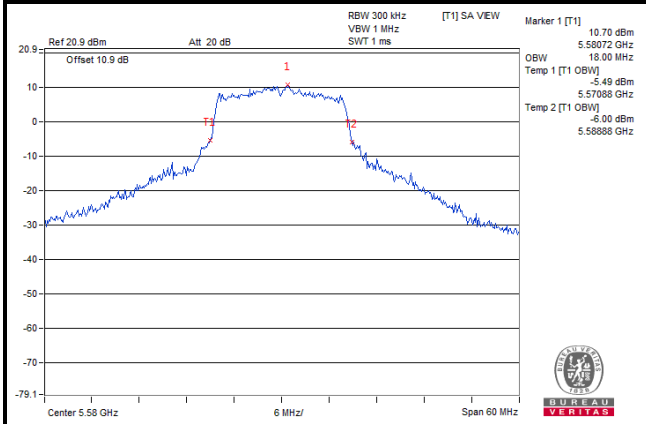
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
38	5190	36.72
46	5230	36.96
54	5270	37.68
62	5310	36.96
102	5510	36.96
110	5550	37.92
134	5670	37.44
142	5710 (U-NII-2C)	33.96
142	5710 (U-NII-3)	3.96
151	5755	37.20
159	5795	37.44

802.11ac (VHT80)

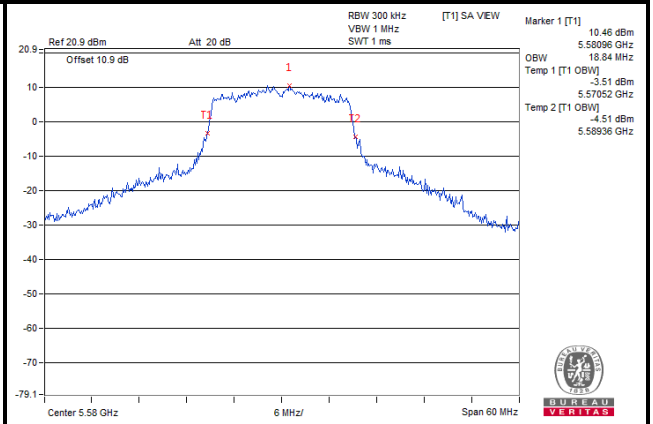
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
42	5210	75.84
58	5290	75.84
106	5530	75.84
122	5610	76.80
138	5690 (U-NII-2C)	74.36
138	5690 (U-NII-3)	2.92
155	5775	76.80

Spectrum Plot of Worst Value

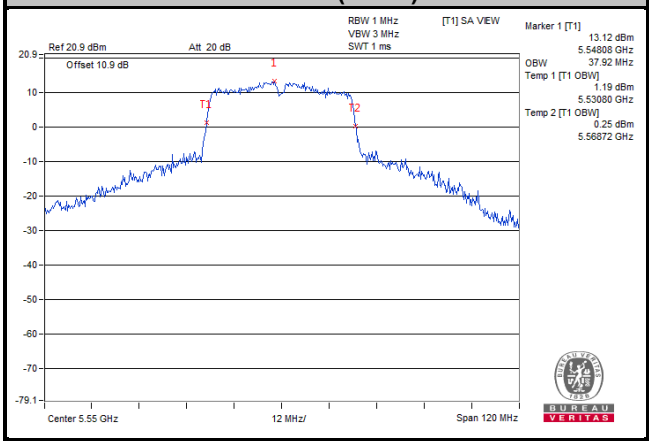
802.11a



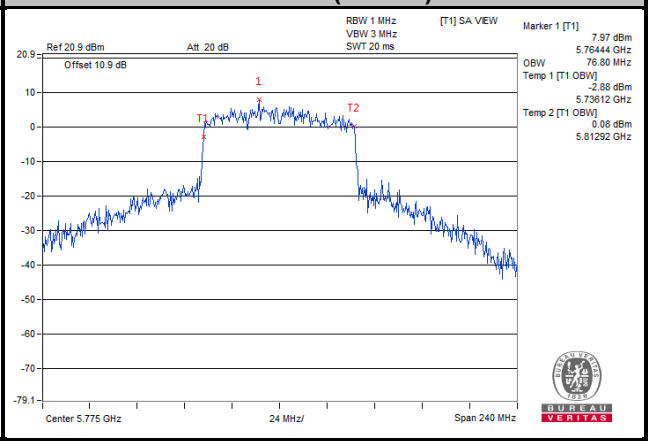
802.11n (HT20)



802.11n (HT40)



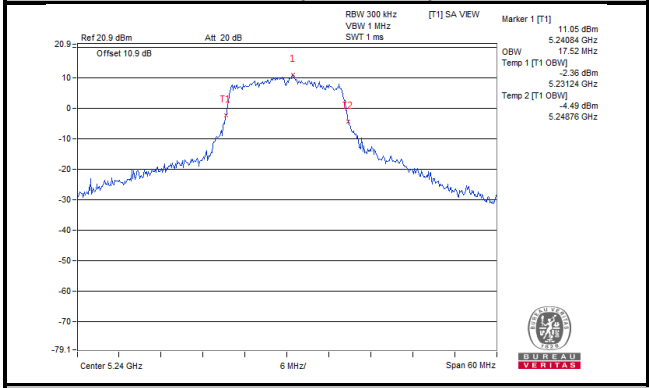
802.11ac (VHT80)



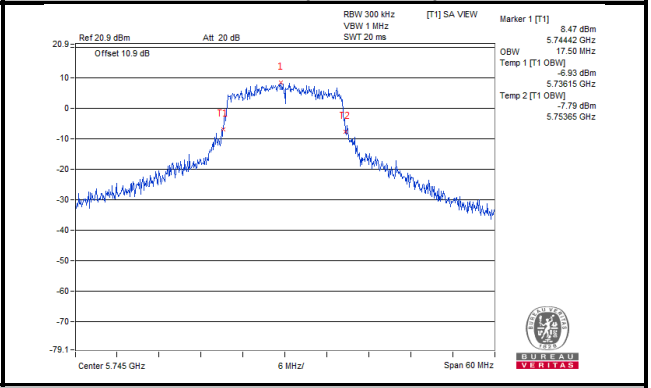
Spectrum Plot for Nearby DFS Band

802.11a

Ch 48 (5240 MHz)

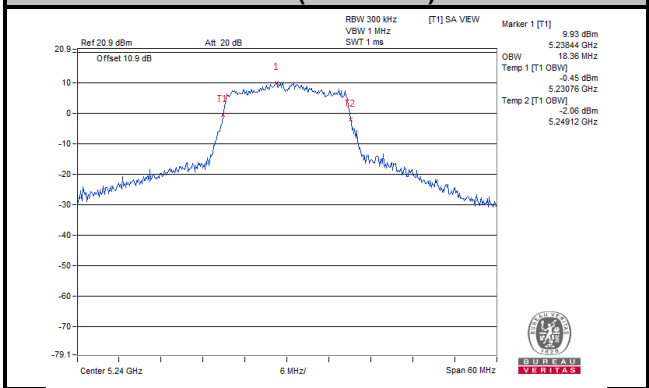


Ch 149 (5745 MHz)

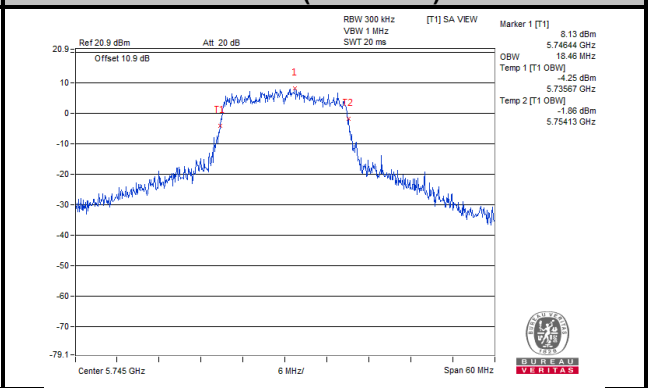


802.11n (HT20)

Ch 48 (5240 MHz)

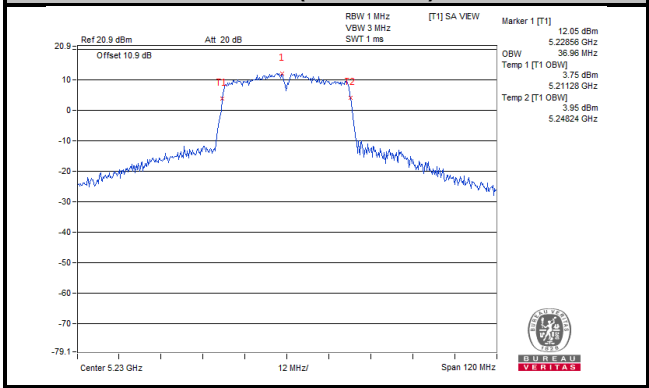


Ch 149 (5745 MHz)

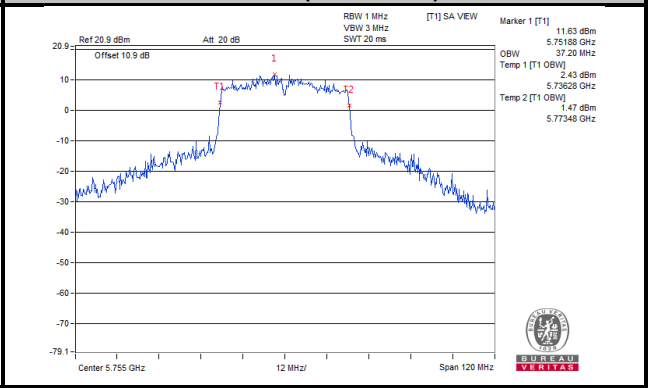


802.11n (HT40)

Ch 46 (5230 MHz)

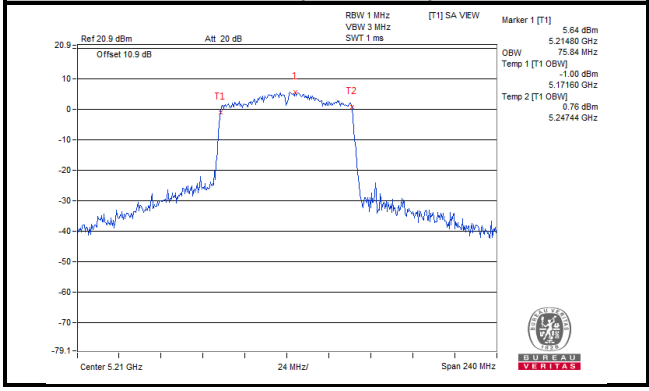


Ch 151 (5755 MHz)

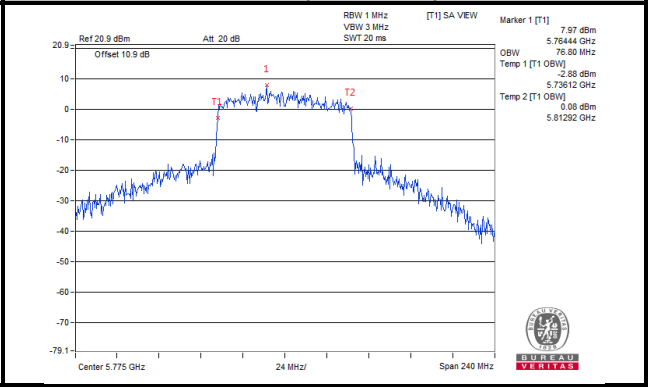


802.11ac (VHT80)

Ch 42 (5210 MHz)



Ch 155 (5775 MHz)

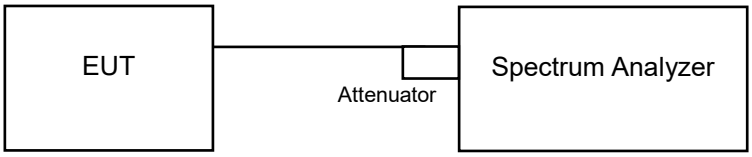


4.5 Peak Power Spectral Density Measurement

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-1

Duty cycle ≥ 98%

1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
2) Set RBW = 1 MHz, Set VBW ≥ 3 MHz, Detector = RMS
3) Set Channel power measure = 1MHz
4) Sweep time = auto, trigger set to “free run”.
5) Trace average at least 100 traces in power averaging mode.
6) Record the max value

Using method SA-2

Duty cycle < 98%

1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
2) Set RBW = 1 MHz, Set VBW ≥ 3 RBW, Detector = RMS
3) Sweep time = auto, trigger set to “free run”.
4) Trace average at least 100 traces in power averaging mode.
5) Record the max value and add 10 log (1/duty cycle)

※For U-NII-3:

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 300 kHz, Set VBW ≥ 1 RBW, Detector = RMS
3. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.
4. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log(500 kHz / 300 kHz).
5. Sweep time = auto, trigger set to “free run”.
6. Trace average at least 100 traces in power averaging mode.
7. Record the max value and add 10 log (1/duty cycle)

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

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

4.5.7 Test Results

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

802.11a

Channel	Frequency (MHz)	PSD (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
36	5180	3.16	11	Pass
40	5200	5.58	11	Pass
48	5240	5.12	11	Pass
52	5260	5.13	11	Pass
60	5300	5.10	11	Pass
64	5320	3.12	11	Pass
100	5500	4.10	11	Pass
116	5580	5.82	11	Pass
140	5700	3.94	11	Pass
144	5720 (U-NII-2C)	7.77	11	Pass

802.11n (HT20)

Channel	Frequency (MHz)	PSD (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
36	5180	3.04	11	Pass
40	5200	5.09	11	Pass
48	5240	4.58	11	Pass
52	5260	4.68	11	Pass
60	5300	4.48	11	Pass
64	5320	2.27	11	Pass
100	5500	3.21	11	Pass
116	5580	5.34	11	Pass
140	5700	2.77	11	Pass
144	5720 (U-NII-2C)	7.18	11	Pass

802.11n (HT40)

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
38	5190	-2.92	0.11	-2.81	11	Pass
46	5230	0.93	0.11	1.04	11	Pass
54	5270	1.02	0.11	1.13	11	Pass
62	5310	-2.25	0.11	-2.14	11	Pass
102	5510	-0.86	0.11	-0.75	11	Pass
110	5550	2.80	0.11	2.91	11	Pass
134	5670	1.64	0.11	1.75	11	Pass
142	5710 (U-NII-2C)	4.76	0.11	4.87	11	Pass

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

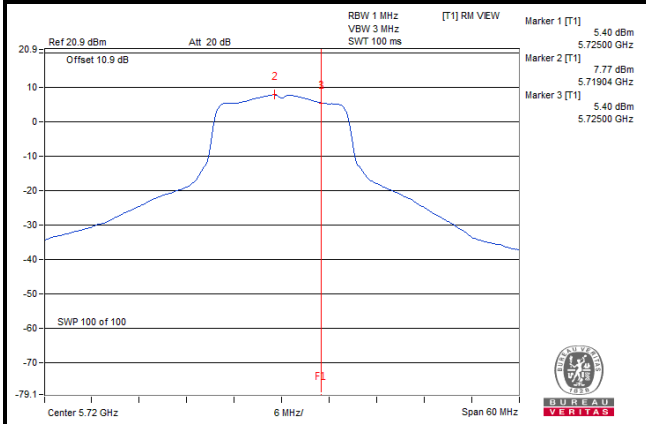
802.11ac (VHT80)

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
42	5210	-6.38	0.19	-6.19	11	Pass
58	5290	-4.94	0.19	-4.75	11	Pass
106	5530	-4.79	0.19	-4.60	11	Pass
122	5610	-0.17	0.19	0.02	11	Pass
138	5690 (U-NII-2C)	1.63	0.19	1.82	11	Pass

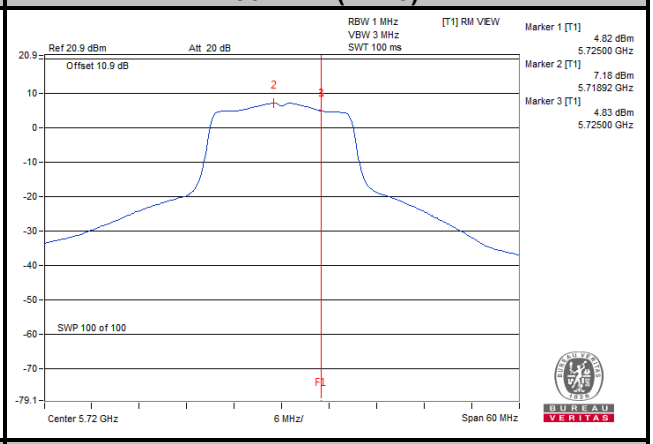
Note: Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

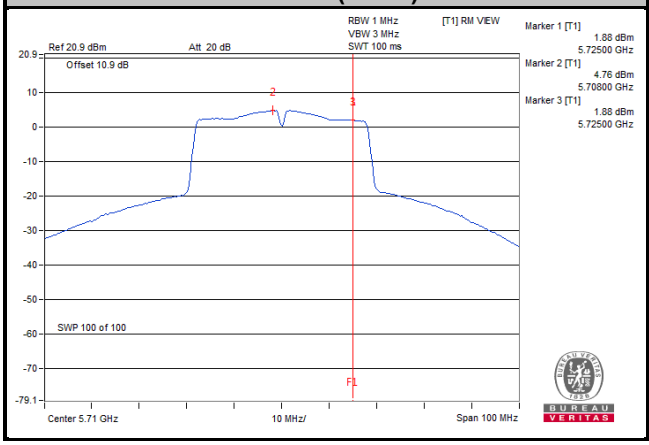
802.11a



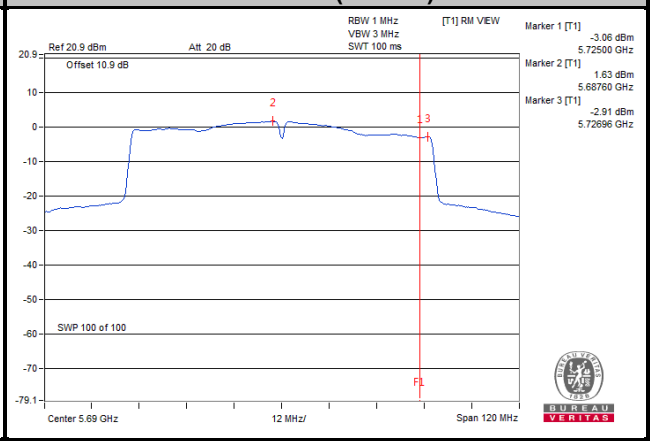
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)



For U-NII-3 Band

802.11a

Channel	Freq. (MHz)	PSD (dBm/300 kHz)	PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
144	5720 (U-NII-3)	0.00	2.22	30	Pass
149	5745	-2.80	-0.58	30	Pass
157	5785	-3.42	-1.20	30	Pass
165	5825	-3.33	-1.11	30	Pass

802.11n (HT20)

Channel	Freq. (MHz)	PSD (dBm/300 kHz)	PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
144	5720 (U-NII-3)	-0.63	1.59	30	Pass
149	5745	-3.34	-1.12	30	Pass
157	5785	-4.02	-1.80	30	Pass
165	5825	-3.78	-1.56	30	Pass

802.11n (HT40)

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)				
142	5710 (U-NII-3)	-3.27	-1.05	0.11	-0.94	30	Pass
151	5755	-6.33	-4.11	0.11	-4.00	30	Pass
159	5795	-6.75	-4.53	0.11	-4.42	30	Pass

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

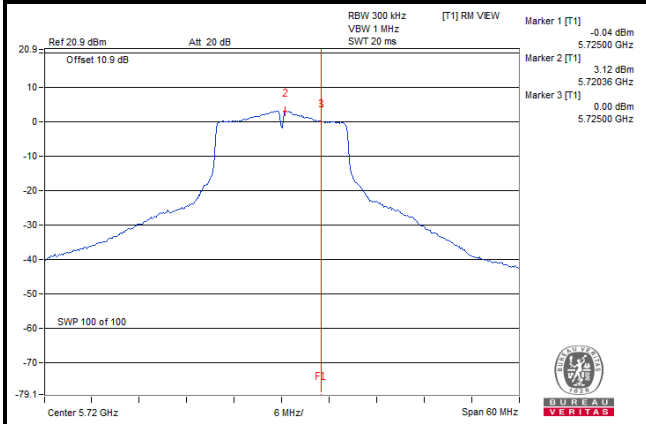
802.11ac (VHT80)

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)				
138	5690 (U-NII-3)	-7.96	-5.74	0.19	-5.55	30	Pass
155	5775	-10.17	-7.95	0.19	-7.76	30	Pass

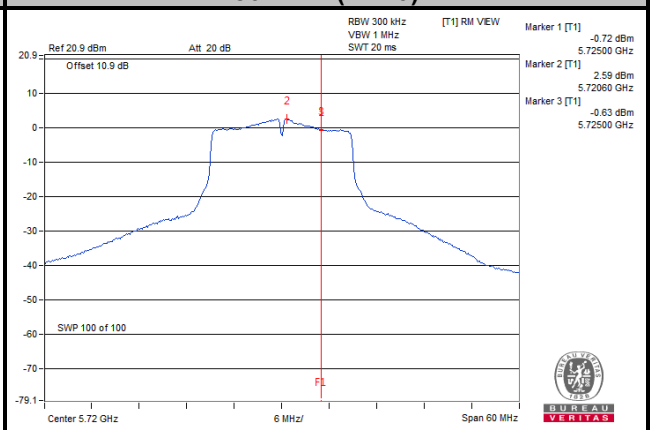
Note: Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

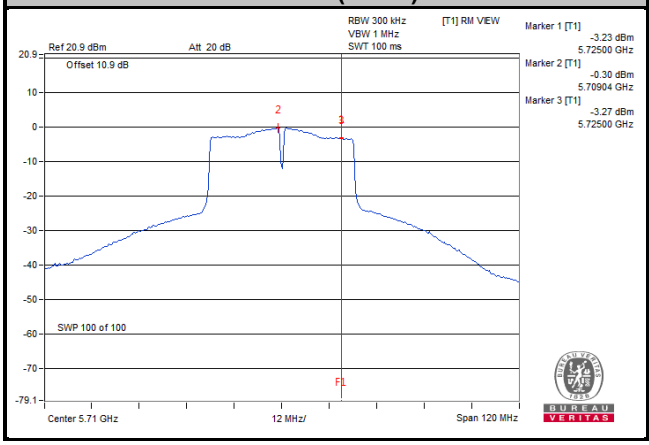
802.11a



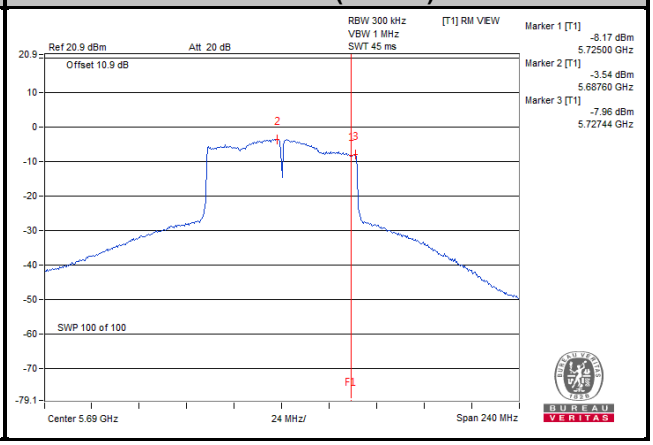
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

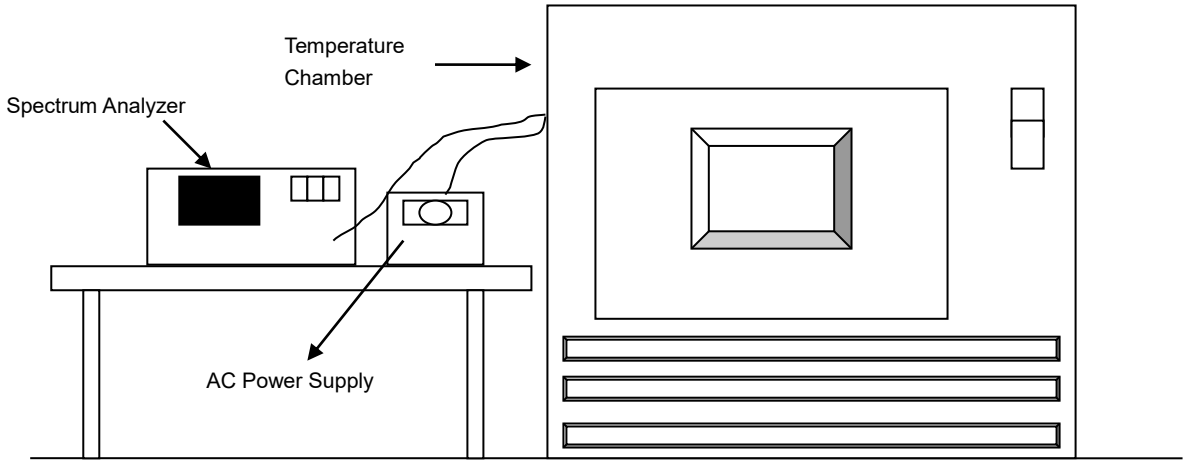


4.6 Frequency Stability

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

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

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

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

4.6.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5180 MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
40	120	5179.9904	PASS	5179.9898	PASS	5179.9866	PASS	5179.9888	PASS
30	120	5179.9953	PASS	5179.9967	PASS	5179.9963	PASS	5179.9962	PASS
20	120	5179.9984	PASS	5179.9962	PASS	5179.9974	PASS	5179.9953	PASS
10	120	5179.9794	PASS	5179.9798	PASS	5179.9753	PASS	5179.9747	PASS
0	120	5179.9816	PASS	5179.9838	PASS	5179.9853	PASS	5179.9856	PASS

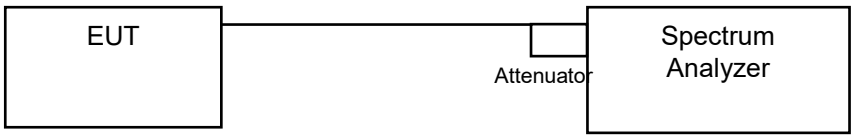
Frequency Stability Versus Voltage									
Operating Frequency: 5180 MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
20	138	5179.999	PASS	5179.996	PASS	5179.9973	PASS	5179.9948	PASS
	120	5179.9984	PASS	5179.9962	PASS	5179.9974	PASS	5179.9953	PASS
	102	5179.9986	PASS	5179.9954	PASS	5179.9984	PASS	5179.9956	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

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

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

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

4.7.7 Test Results

802.11a

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
144	5720 (U-NII-3)	2.92	0.5	Pass
149	5745	16.10	0.5	Pass
157	5785	16.11	0.5	Pass
165	5825	16.32	0.5	Pass

802.11n (HT20)

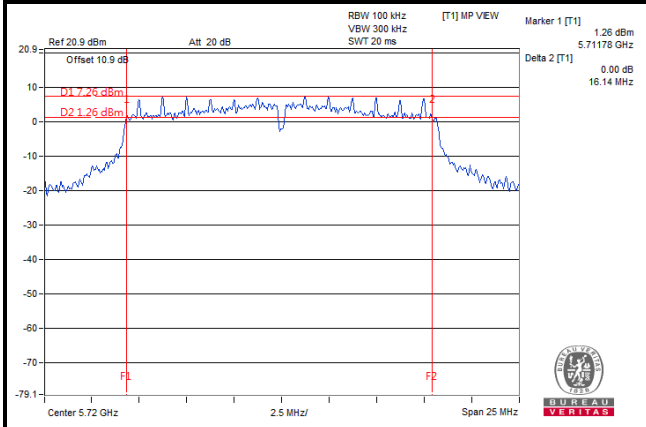
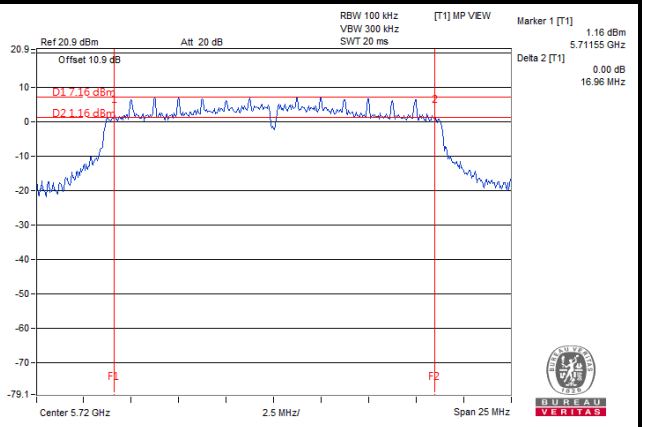
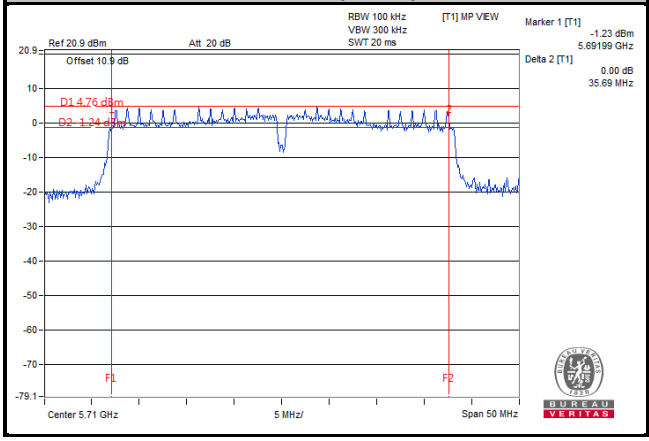
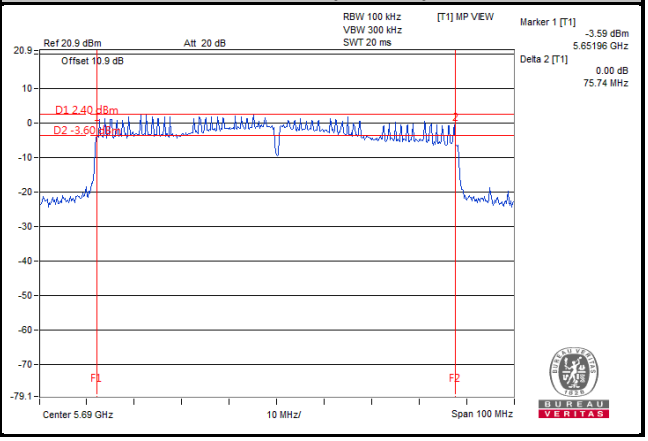
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
144	5720 (U-NII-3)	3.51	0.5	Pass
149	5745	17.55	0.5	Pass
157	5785	17.17	0.5	Pass
165	5825	17.34	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
142	5710 (U-NII-3)	2.68	0.5	Pass
151	5755	35.95	0.5	Pass
159	5795	35.87	0.5	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
138	5690 (U-NII-3)	2.70	0.5	Pass
155	5775	75.50	0.5	Pass

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

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

5 Pictures of Test Arrangements

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

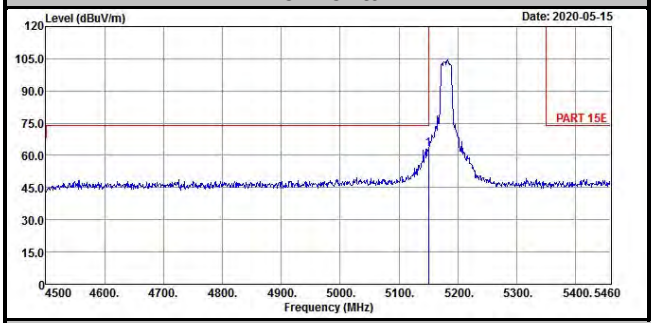
Annex A- Band-edge measurement (For U-NII-1, U-NII-2A, U-NII-2C band)

802.11a

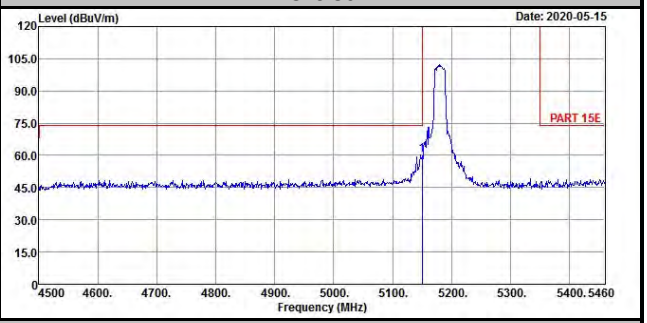
Ch 36

Peak

Horizontal

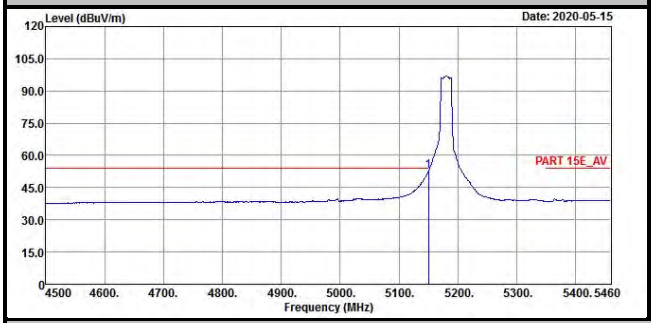


Vertical

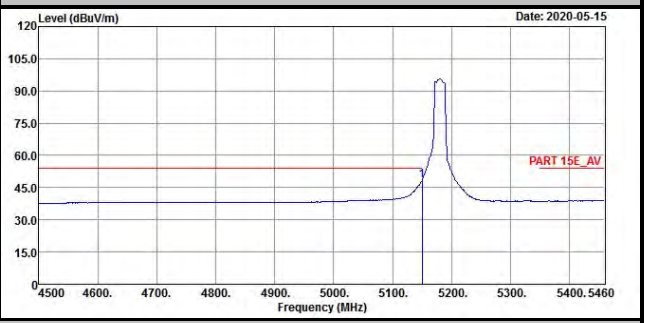


Average

Horizontal



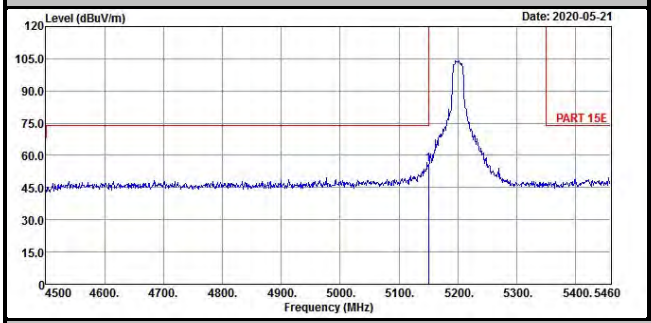
Vertical



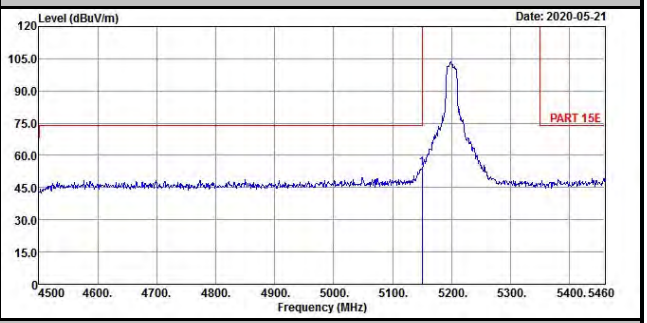
Ch 40

Peak

Horizontal

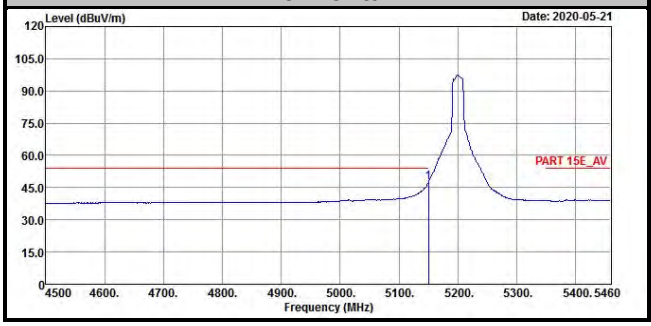


Vertical

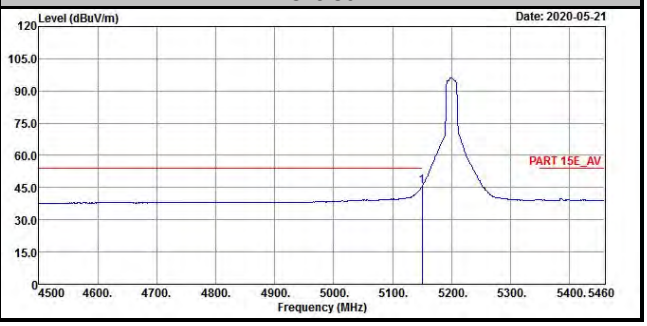


Average

Horizontal



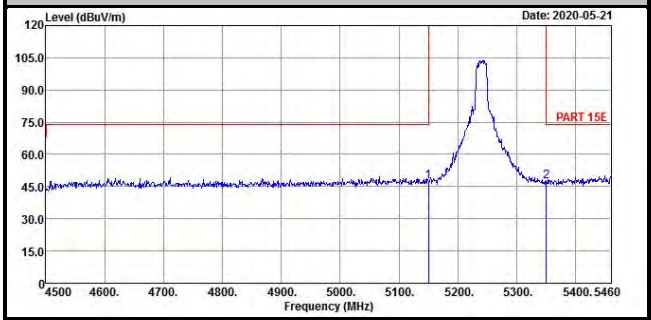
Vertical



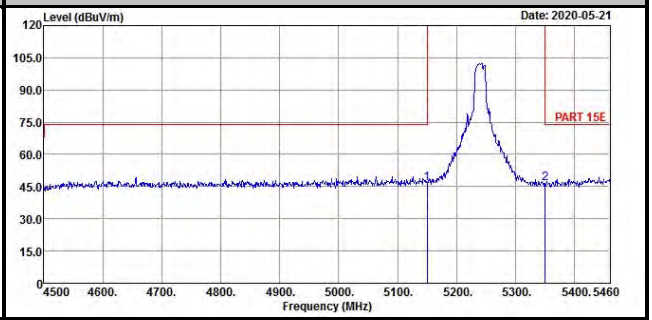
Ch 48

Peak

Horizontal

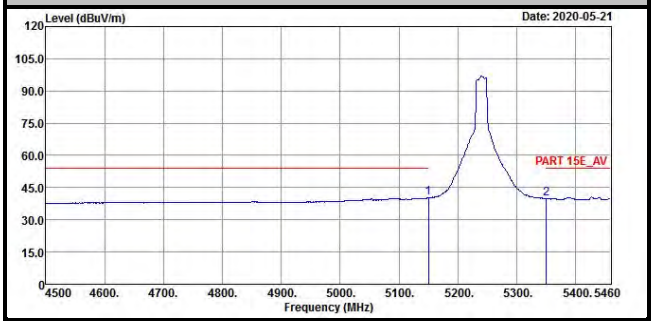


Vertical

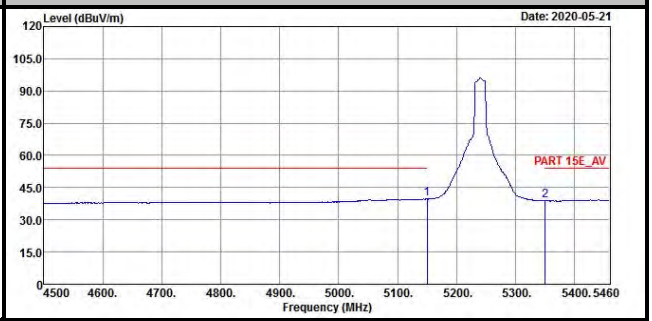


Average

Horizontal



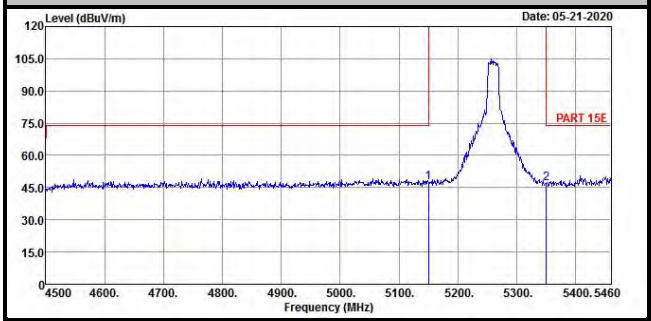
Vertical



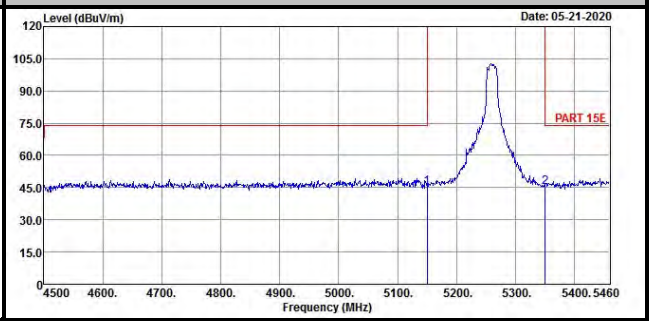
Ch 52

Peak

Horizontal

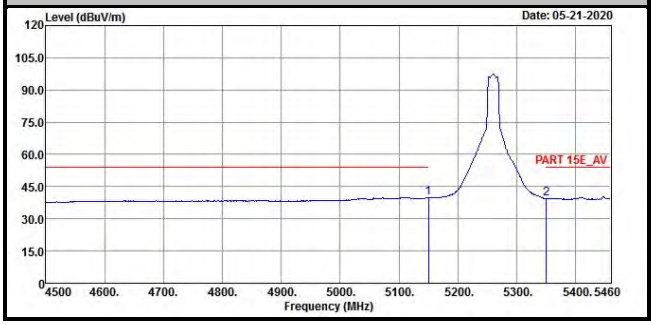


Vertical

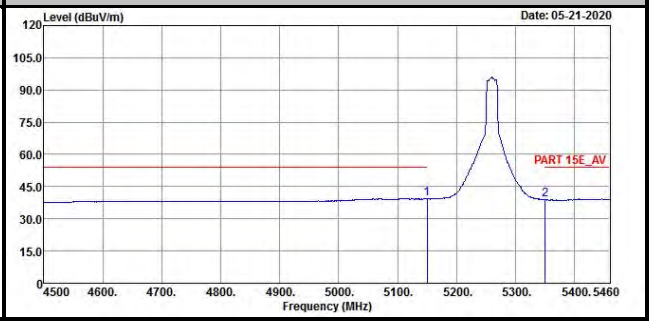


Average

Horizontal



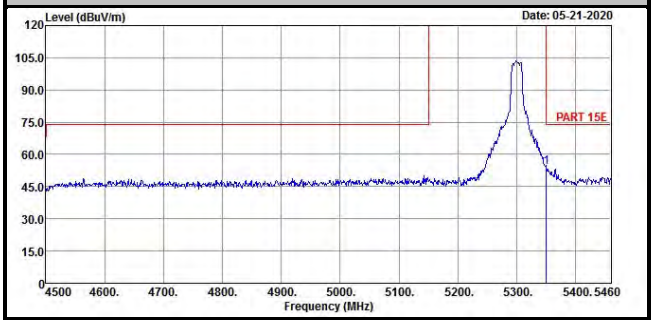
Vertical



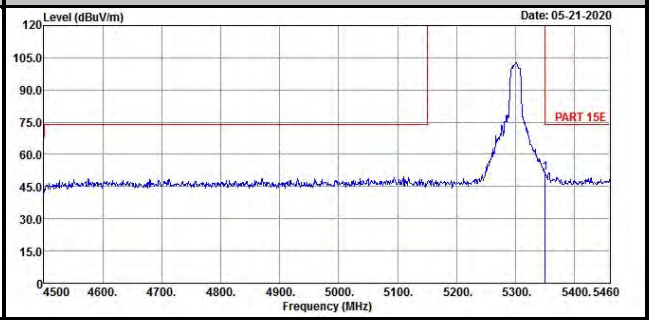
Ch 60

Peak

Horizontal

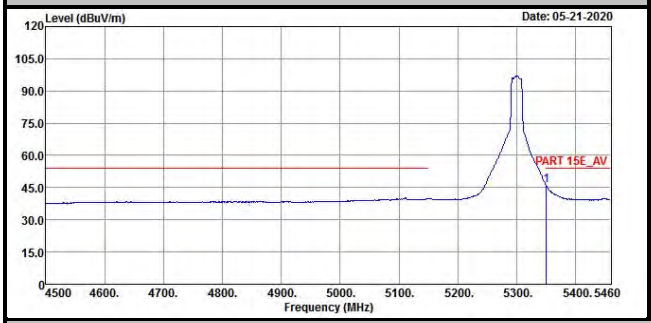


Vertical

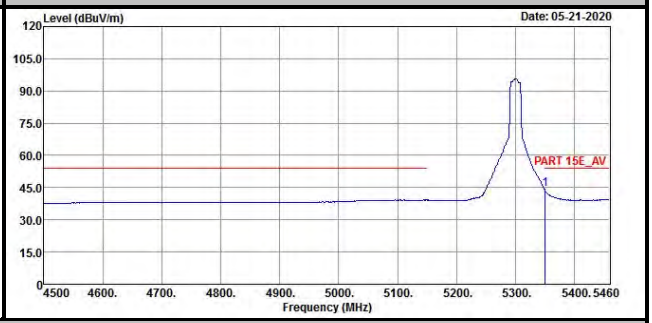


Average

Horizontal



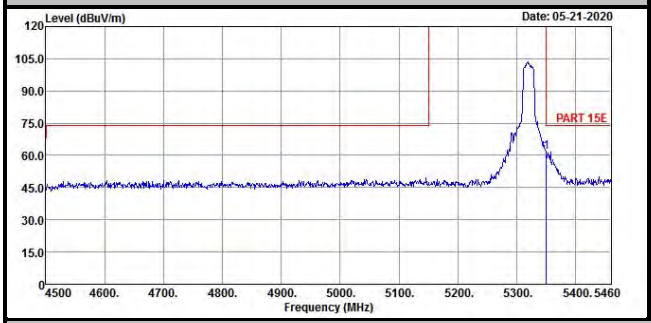
Vertical



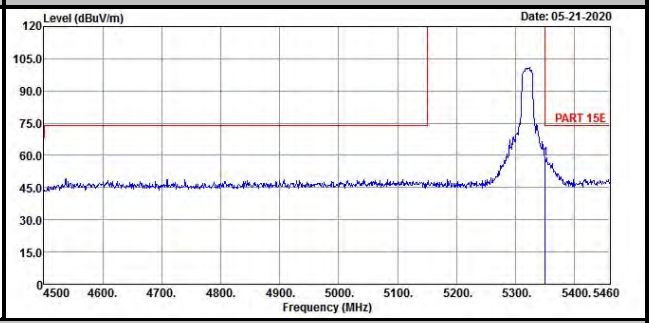
Ch 64

Peak

Horizontal

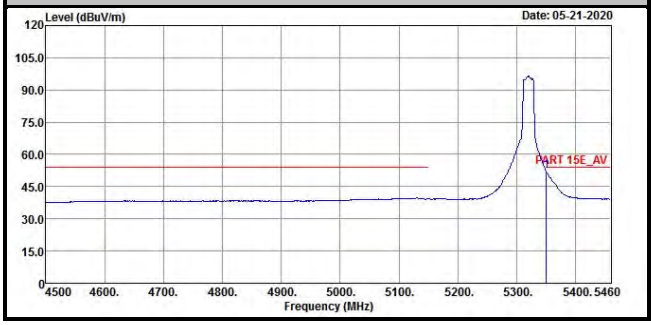


Vertical

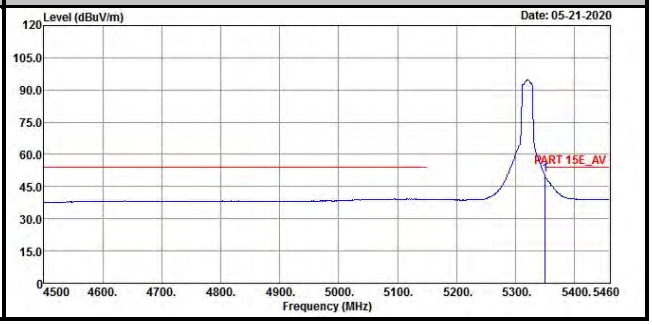


Average

Horizontal



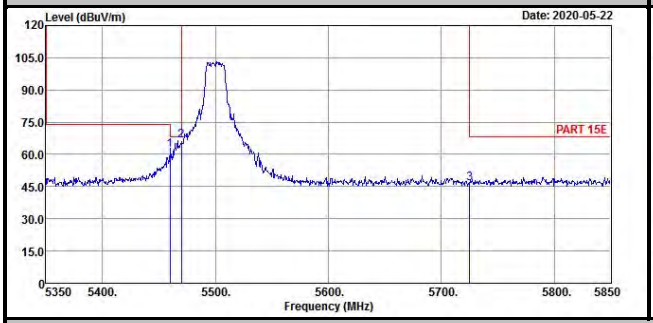
Vertical



Ch 100

Peak

Horizontal



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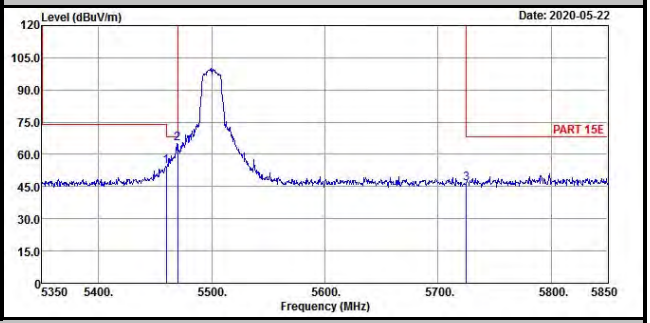
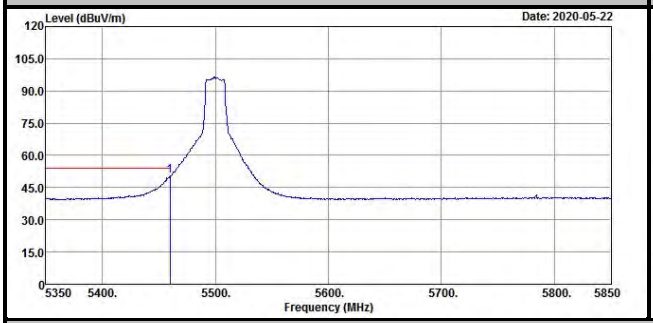


Average

Horizontal



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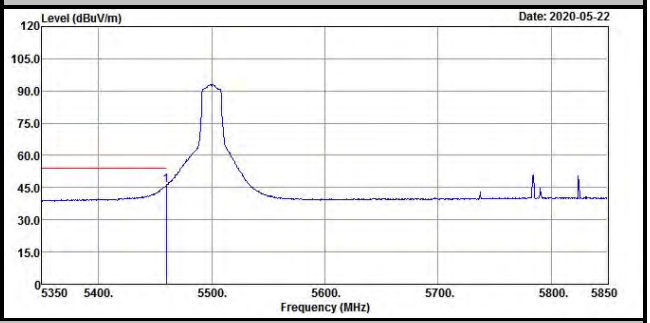
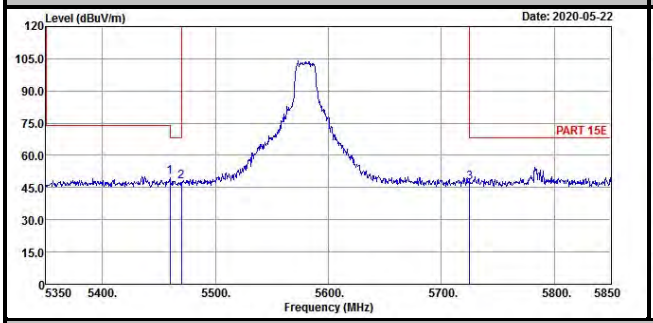


Ch 116

Peak

Horizontal



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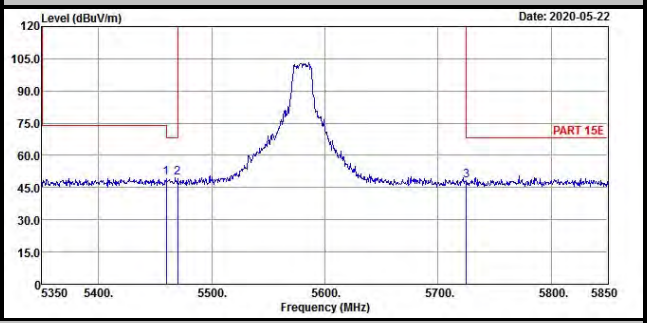
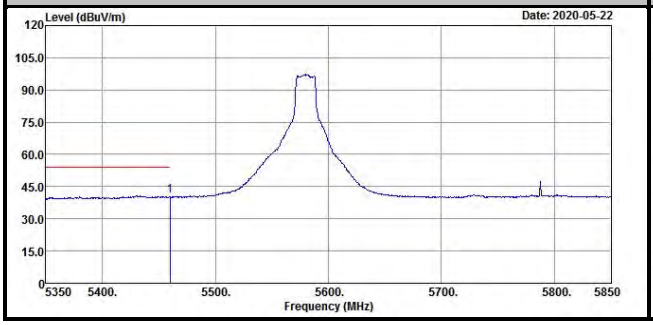


Average

Horizontal



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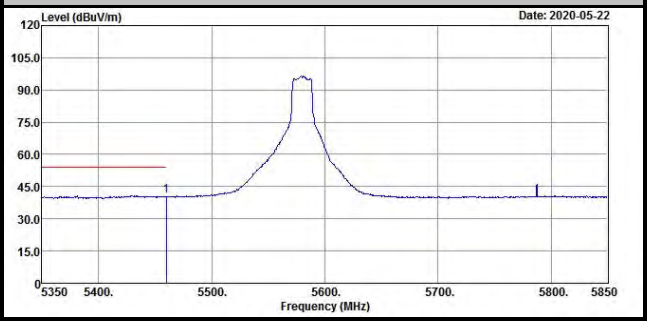
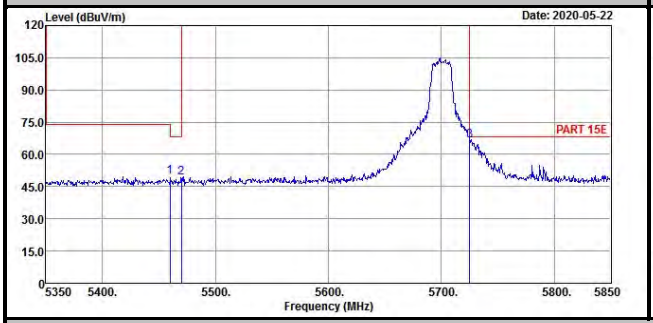


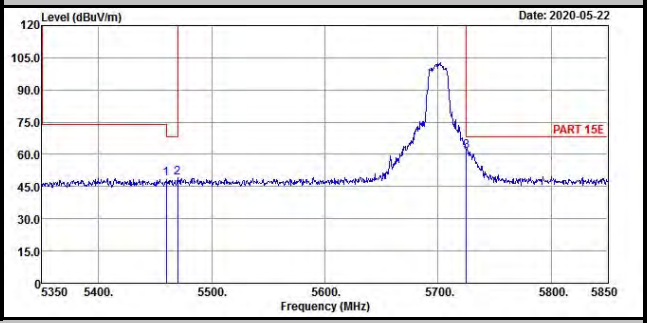
Ch 140

Peak

Horizontal

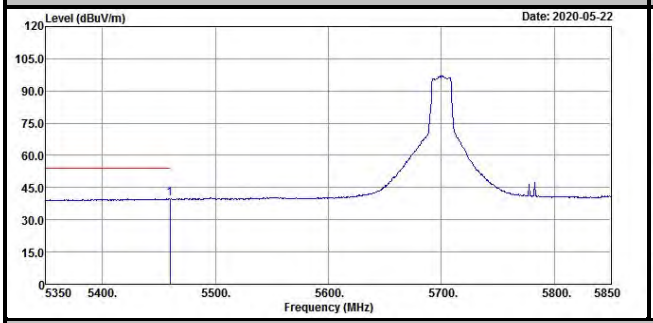


Vertical

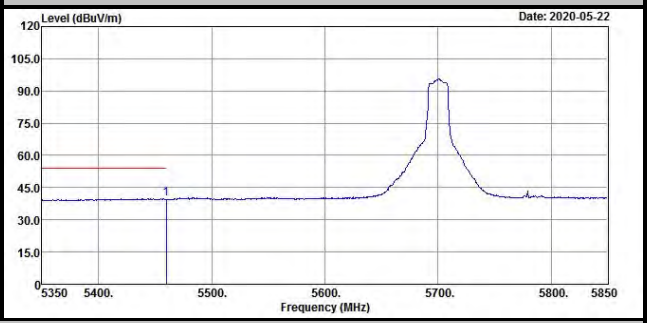


Average

Horizontal



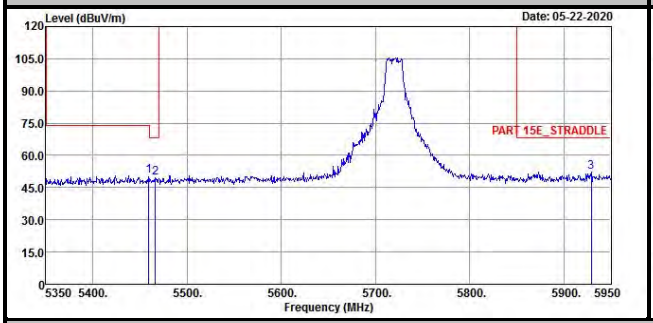
Vertical



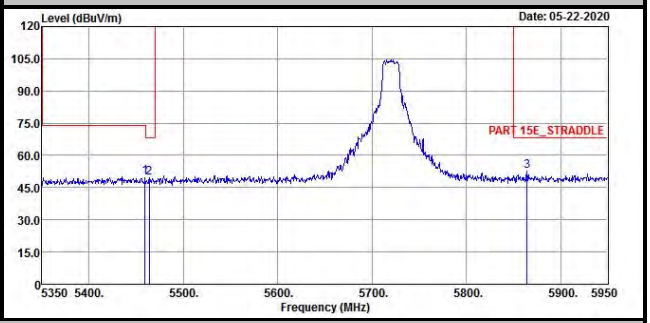
Ch 144

Peak

Horizontal

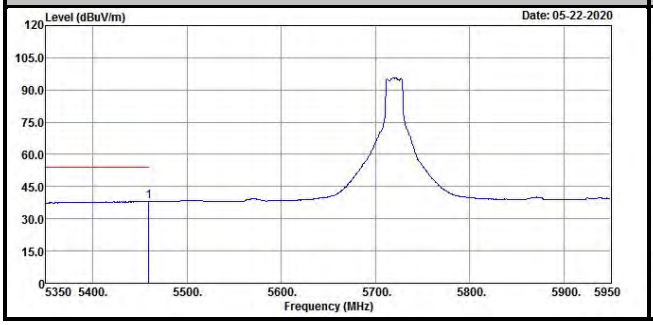


Vertical

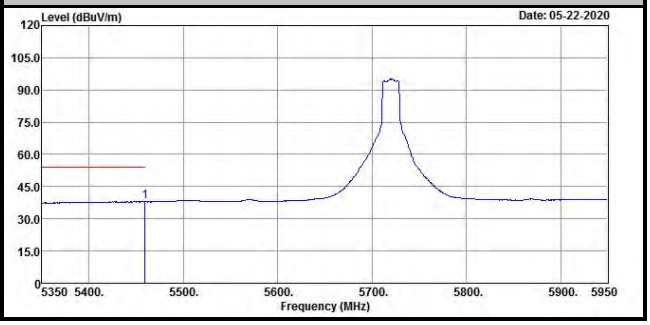


Average

Horizontal



Vertical

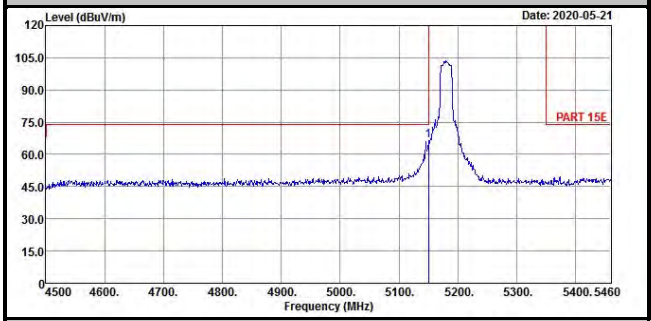


802.11n (HT20)

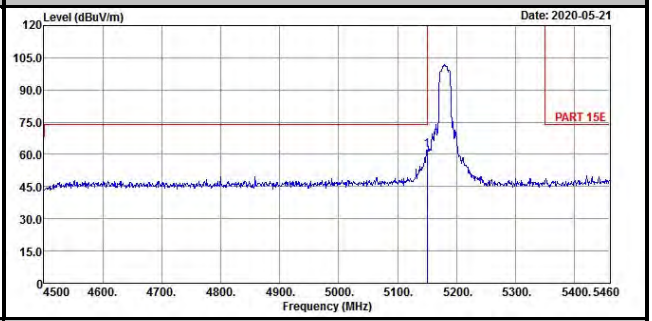
Ch 36

Peak

Horizontal

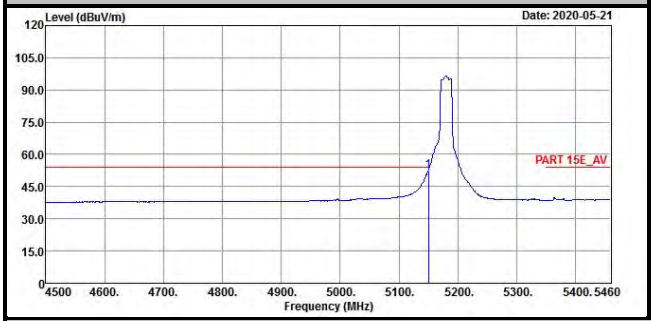


Vertical

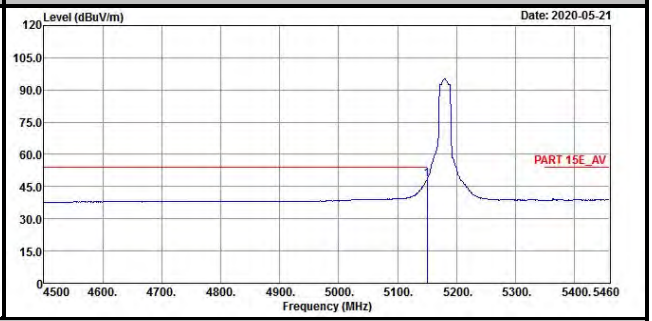


Average

Horizontal



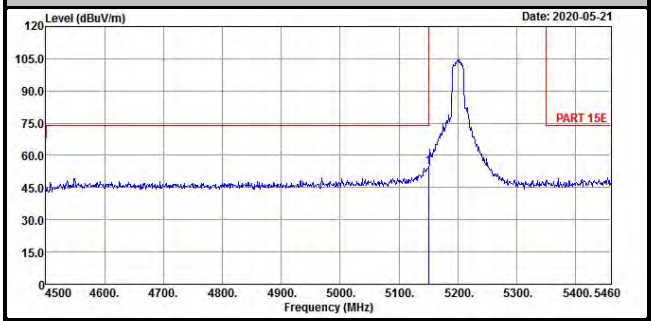
Vertical



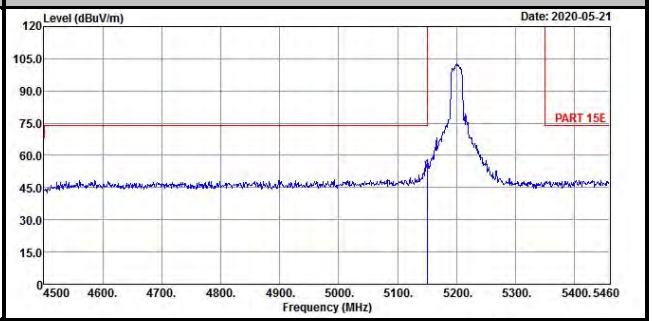
Ch 40

Peak

Horizontal

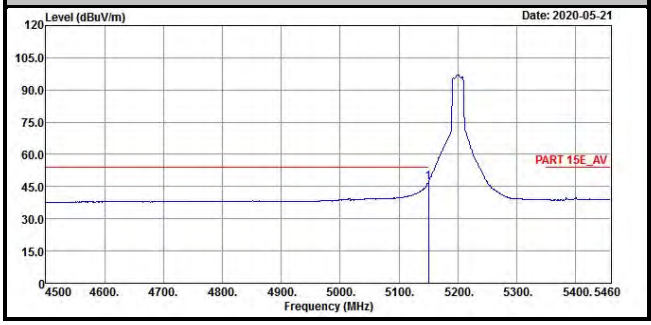


Vertical

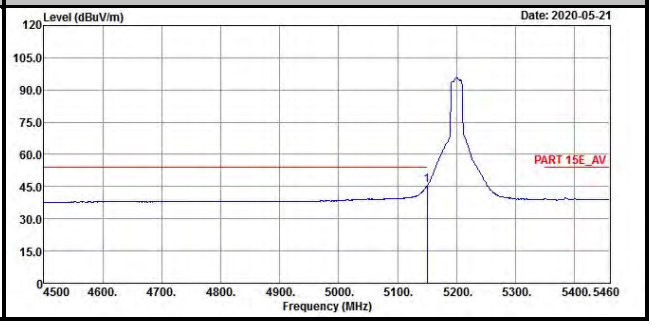


Average

Horizontal



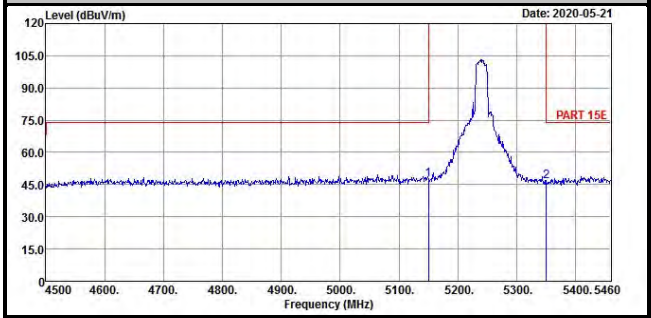
Vertical



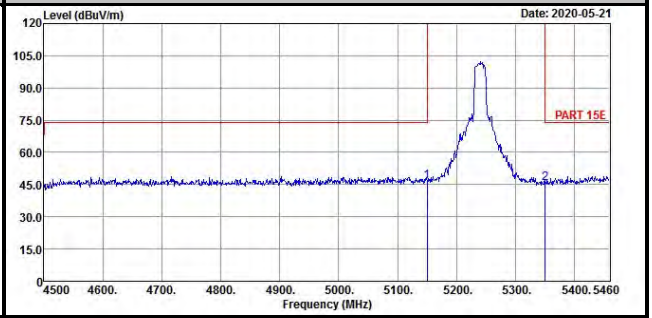
Ch 48

Peak

Horizontal

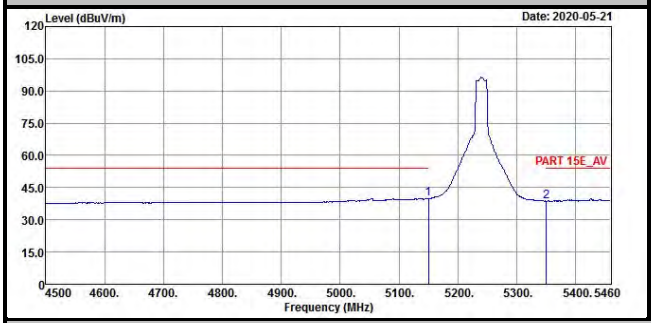


Vertical

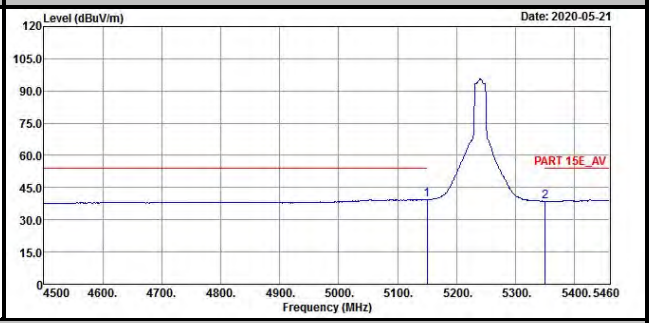


Average

Horizontal



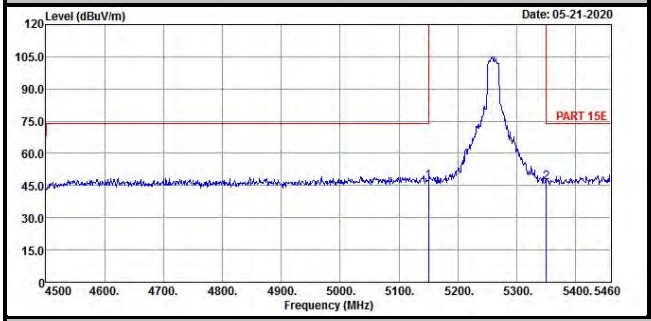
Vertical



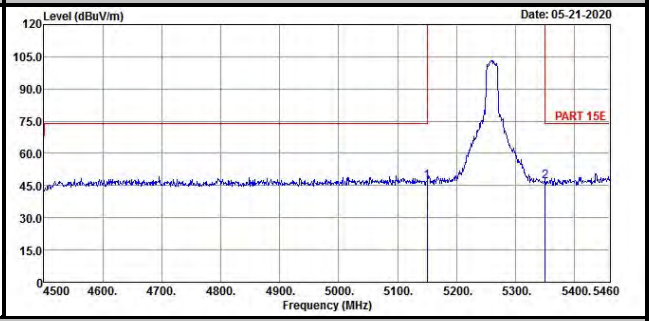
Ch 52

Peak

Horizontal

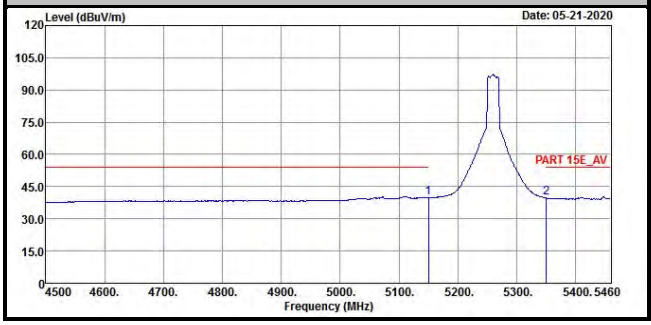


Vertical

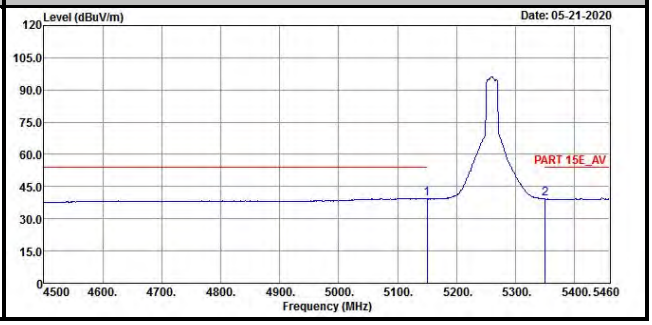


Average

Horizontal



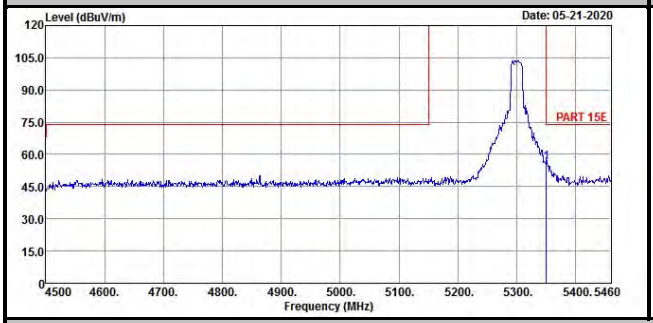
Vertical



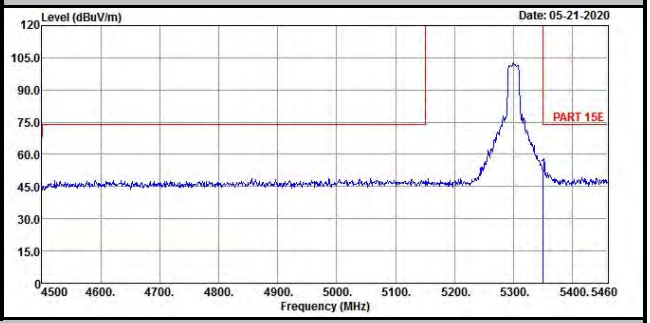
Ch 60

Peak

Horizontal

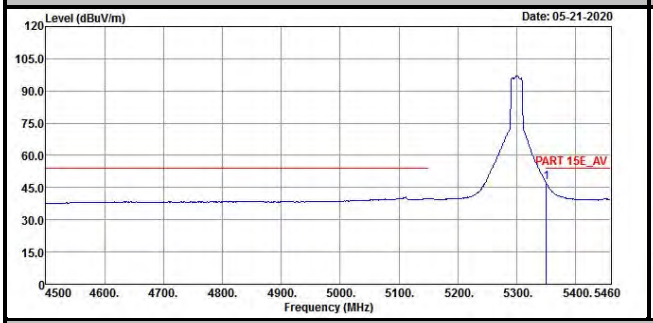


Vertical

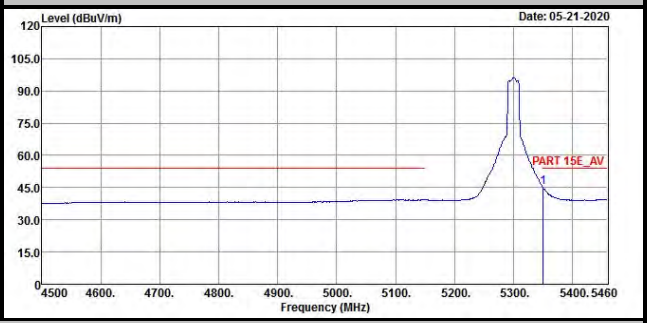


Average

Horizontal



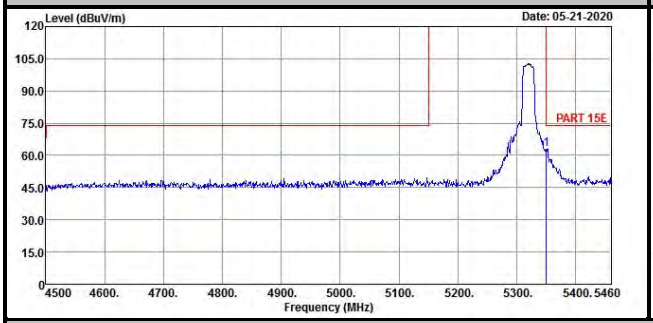
Vertical



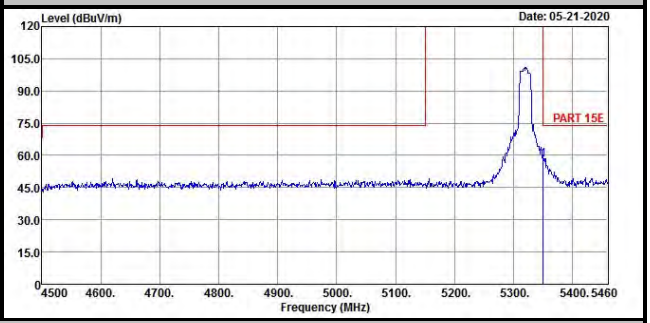
Ch 64

Peak

Horizontal

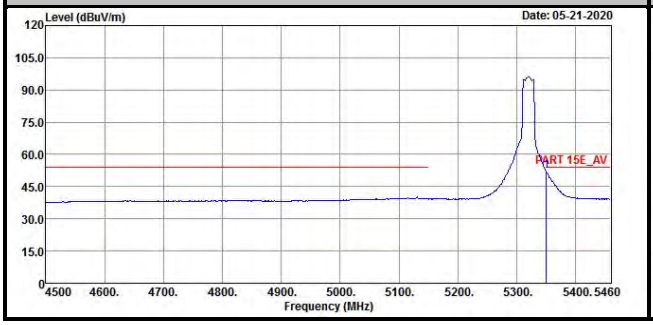


Vertical

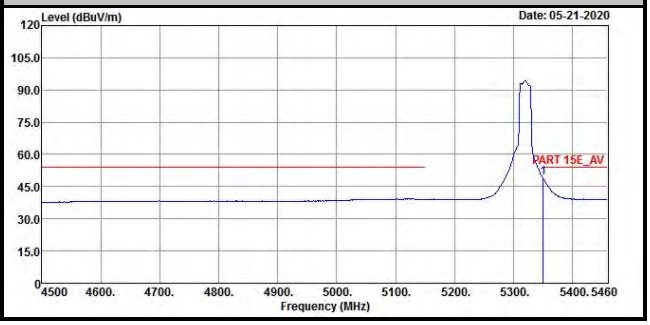


Average

Horizontal



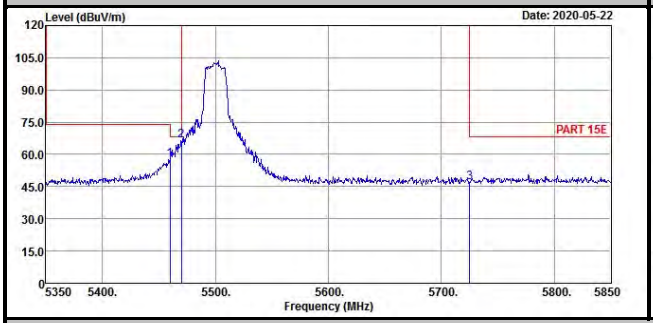
Vertical



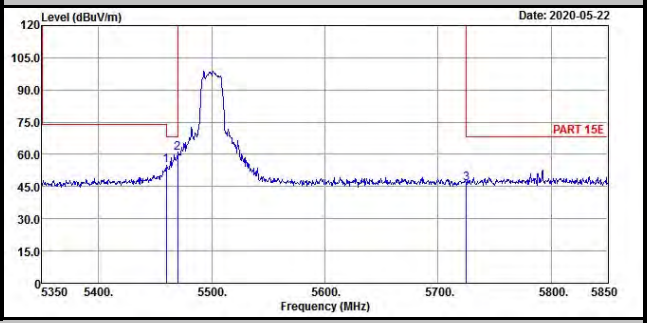
Ch 100

Peak

Horizontal

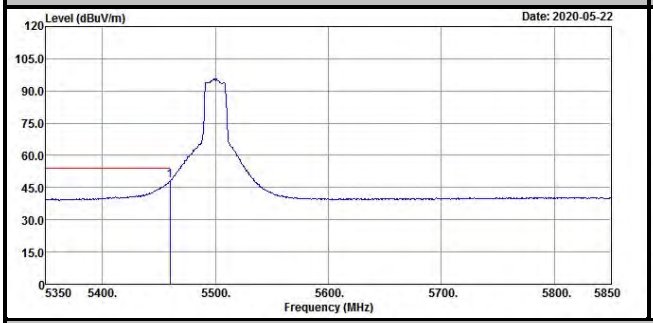


Vertical

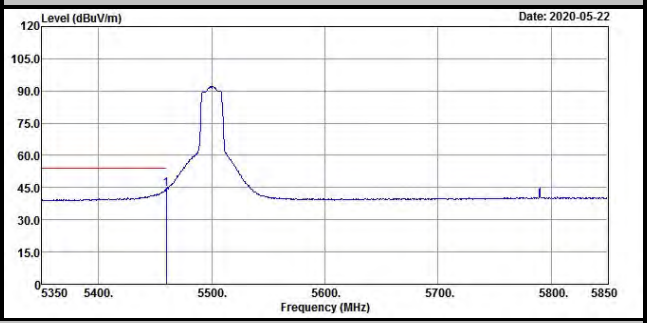


Average

Horizontal



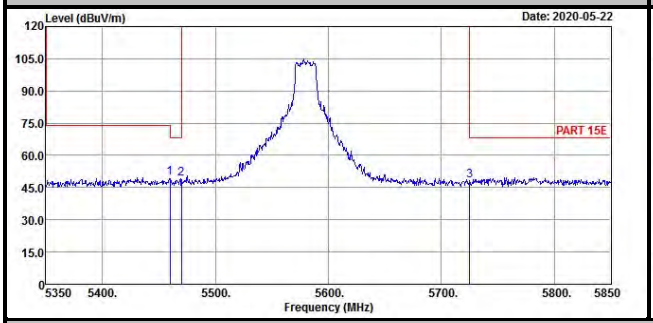
Vertical



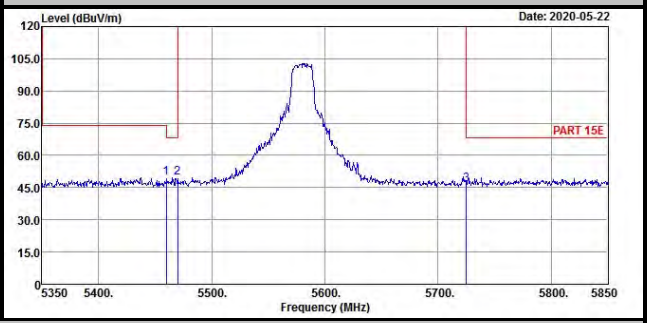
Ch 116

Peak

Horizontal

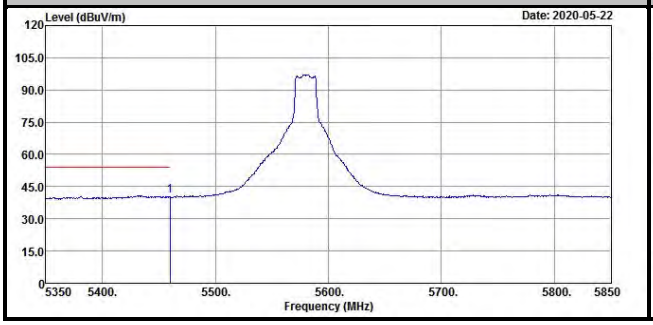


Vertical

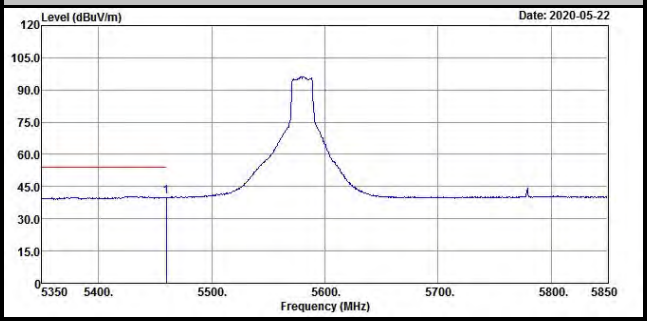


Average

Horizontal



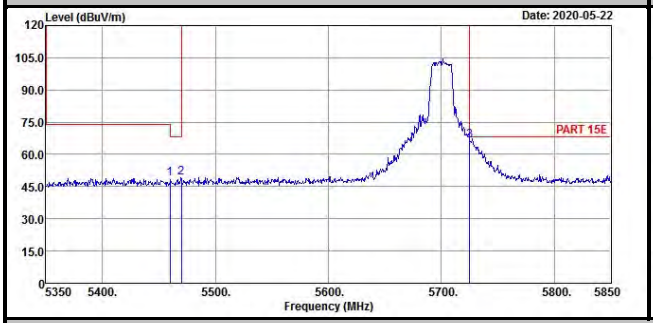
Vertical



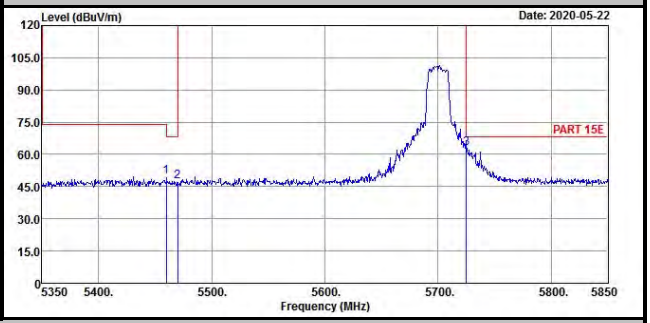
Ch 140

Peak

Horizontal

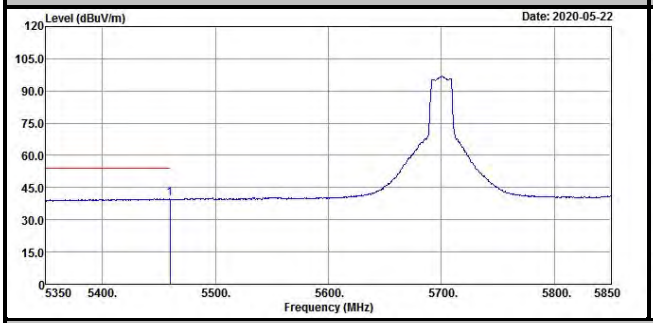


Vertical

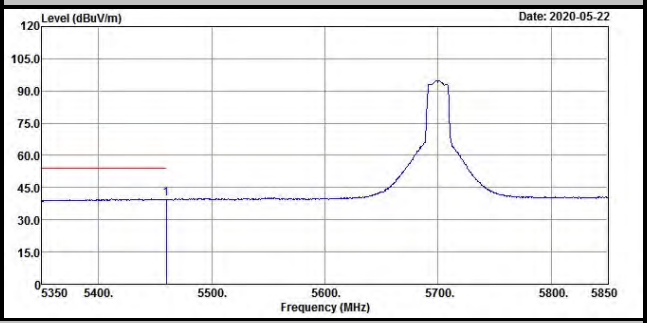


Average

Horizontal



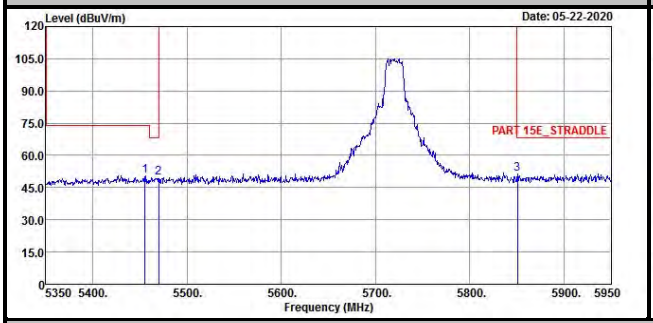
Vertical



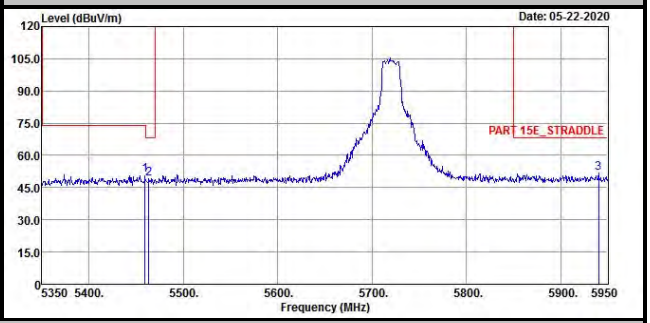
Ch 144

Peak

Horizontal

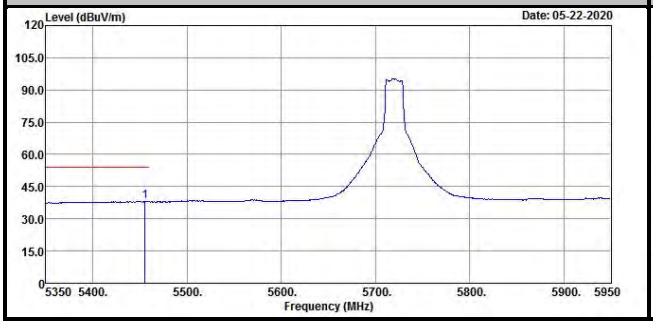


Vertical

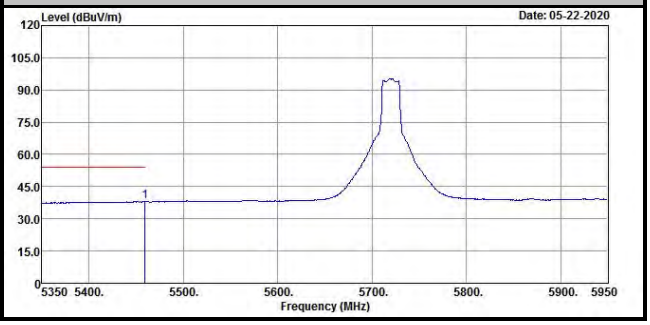


Average

Horizontal



Vertical

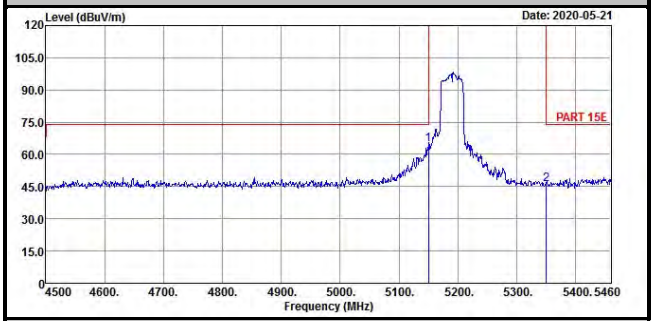


802.11n (HT40)

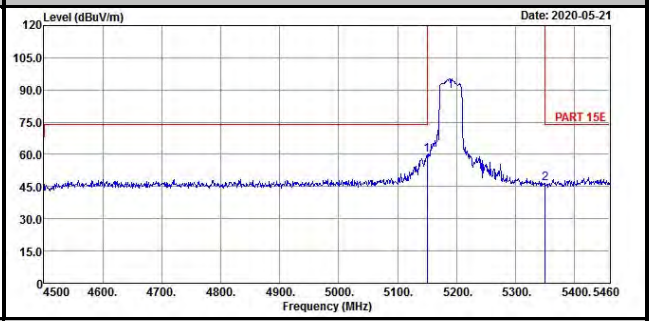
Ch 38

Peak

Horizontal

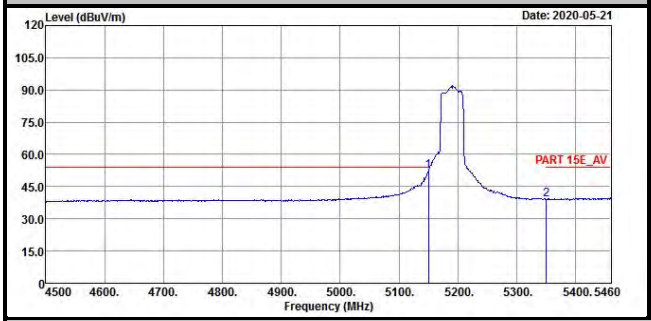


Vertical

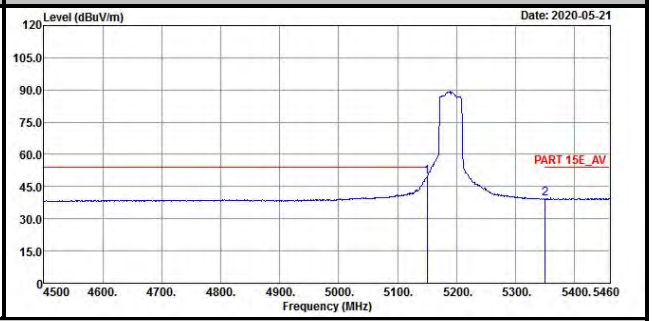


Average

Horizontal



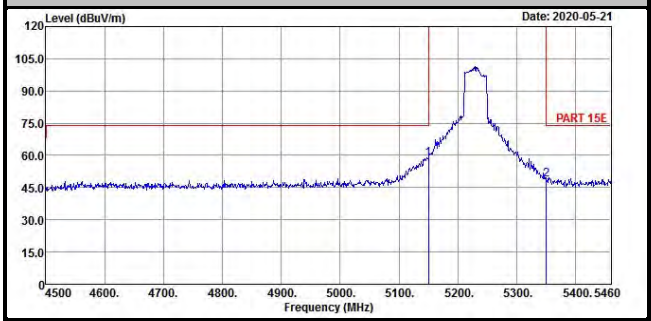
Vertical



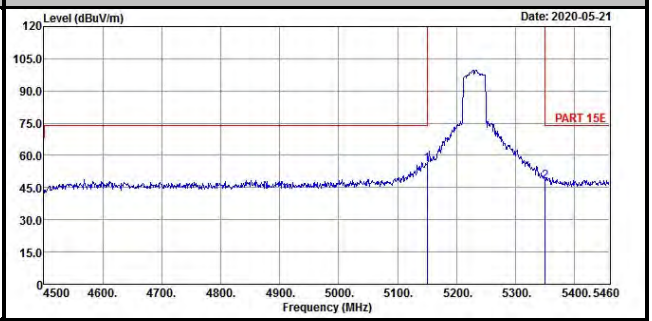
Ch 46

Peak

Horizontal

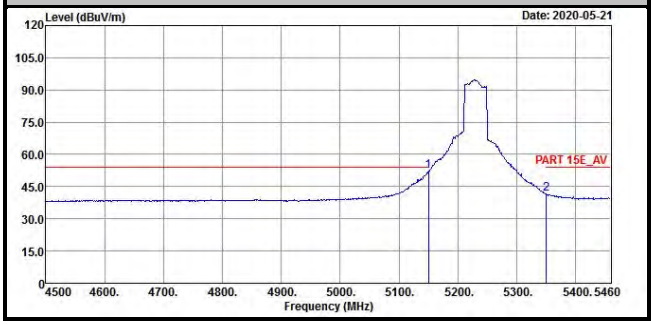


Vertical

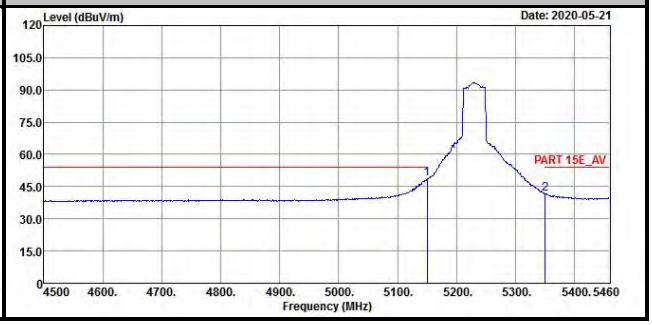


Average

Horizontal



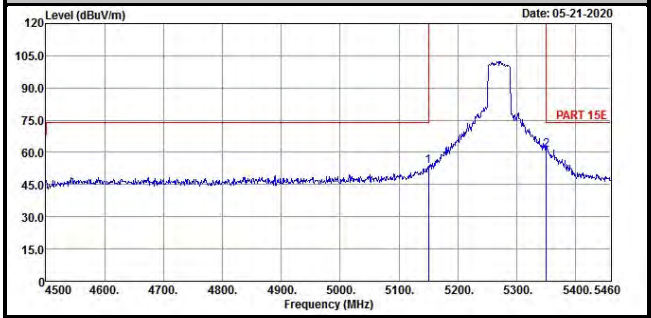
Vertical



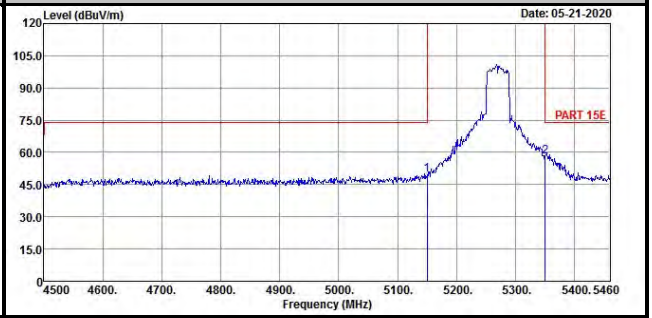
Ch 54

Peak

Horizontal

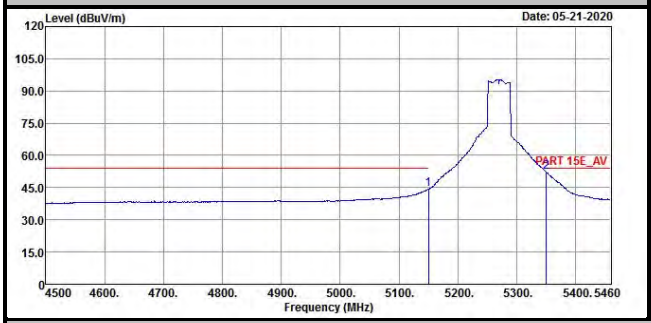


Vertical

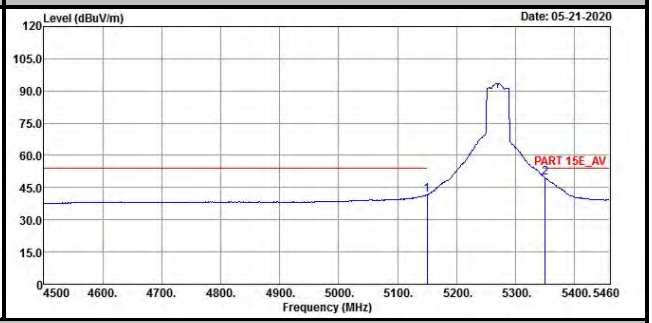


Average

Horizontal



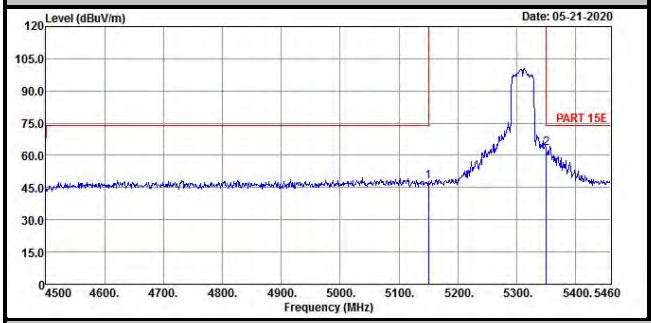
Vertical



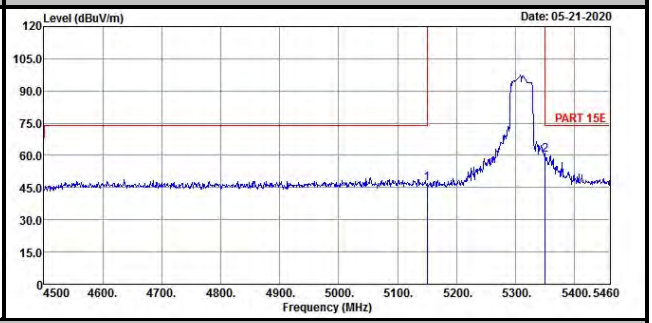
Ch 62

Peak

Horizontal

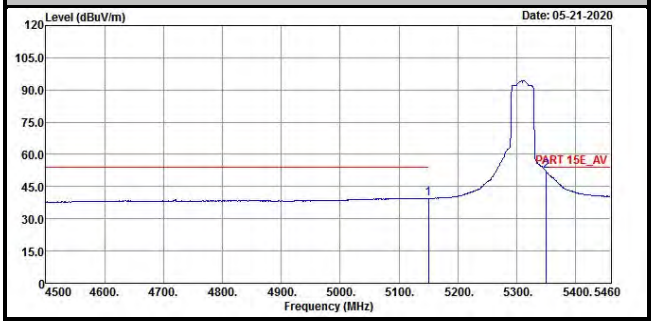


Vertical

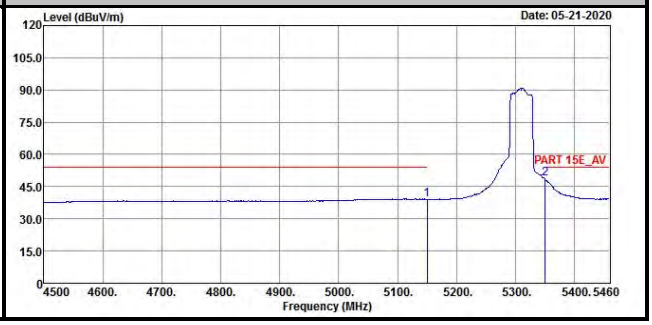


Average

Horizontal



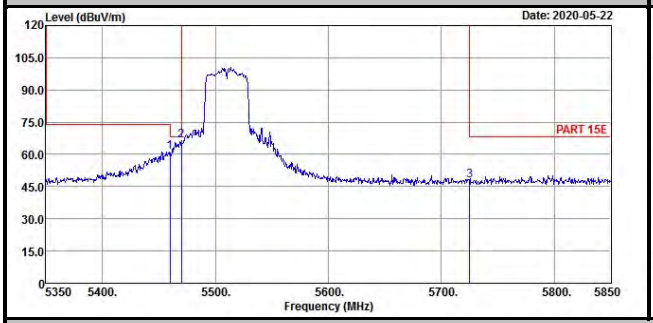
Vertical



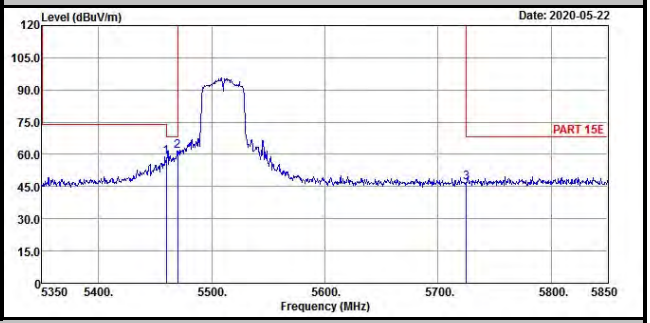
Ch 102

Peak

Horizontal

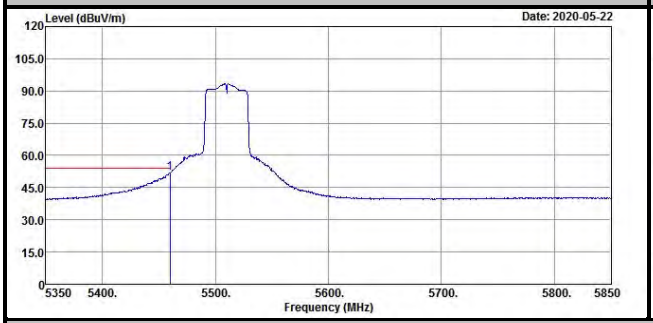


Vertical

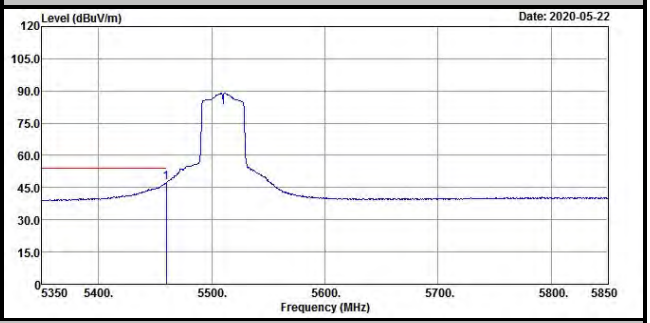


Average

Horizontal



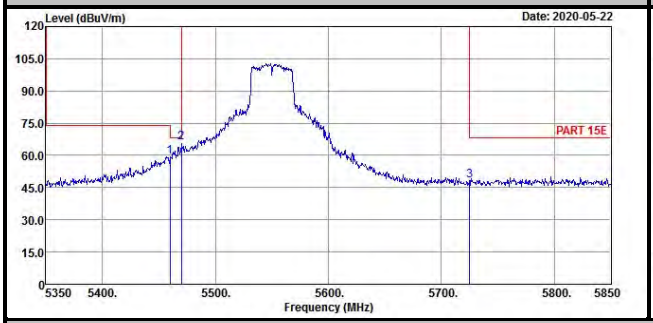
Vertical



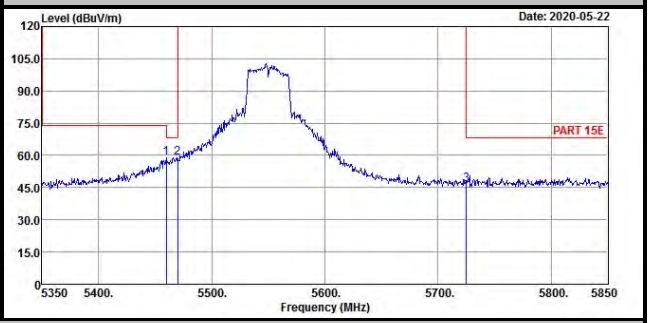
Ch 110

Peak

Horizontal

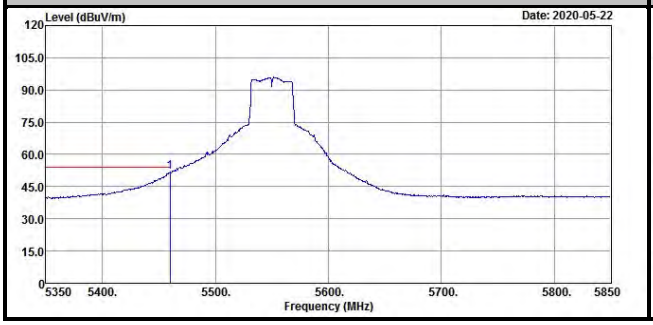


Vertical

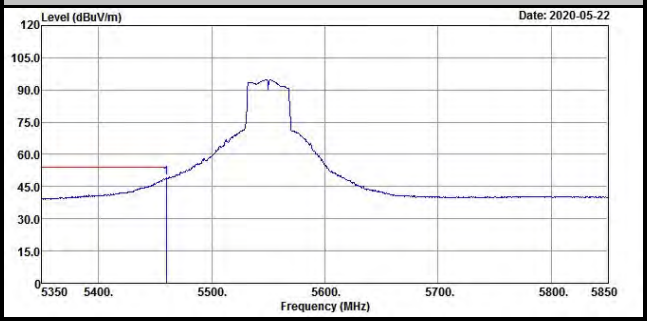


Average

Horizontal



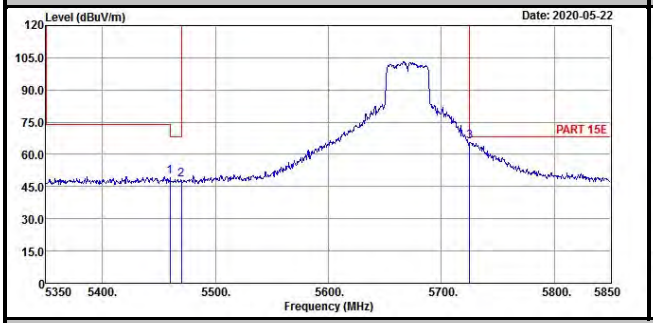
Vertical



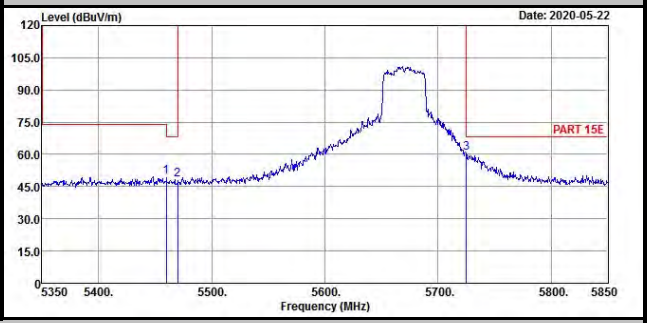
Ch 134

Peak

Horizontal

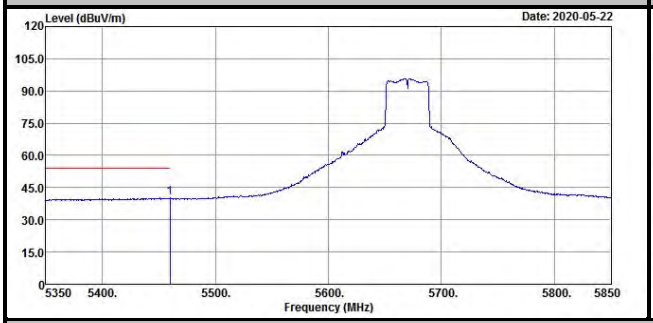


Vertical

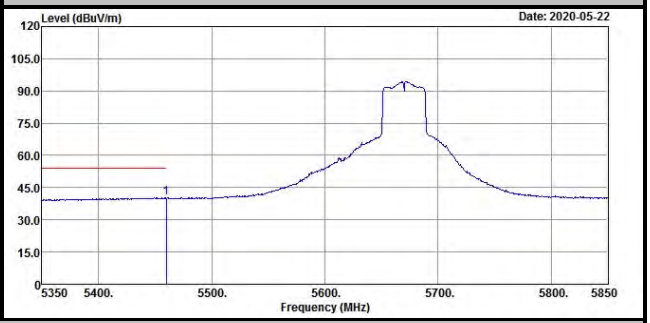


Average

Horizontal



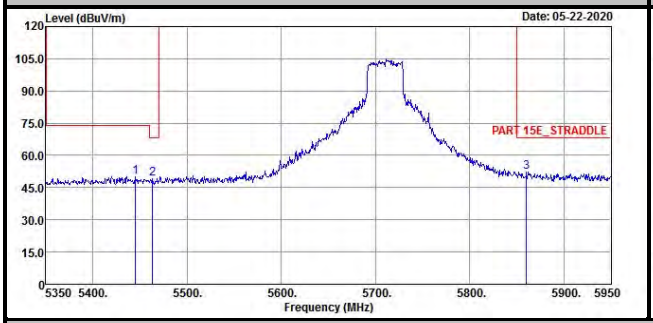
Vertical



Ch 142

Peak

Horizontal



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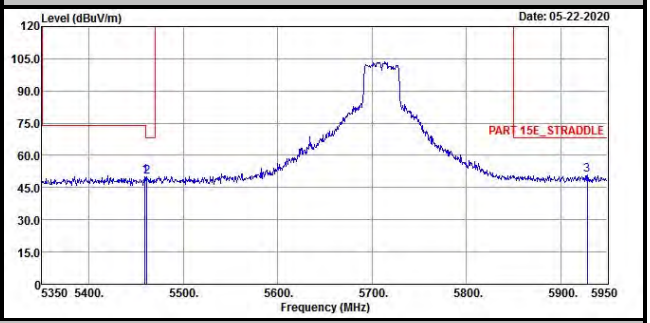
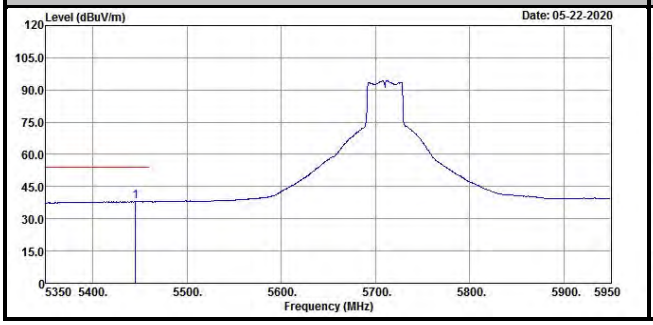


Average

Horizontal



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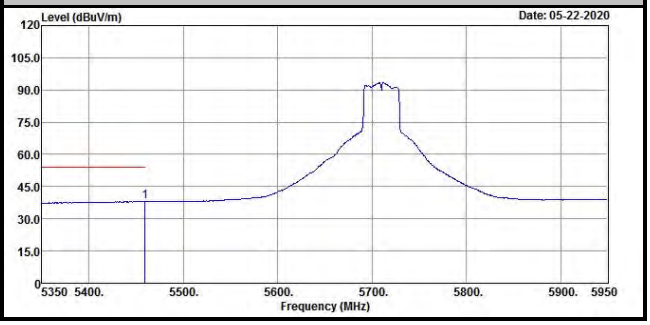
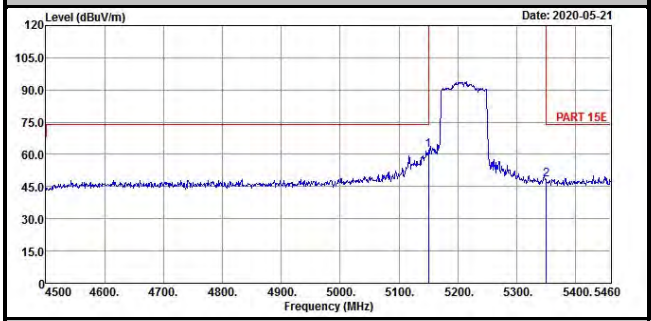


802.11ac (VHT80)

Ch 42

Peak

Horizontal



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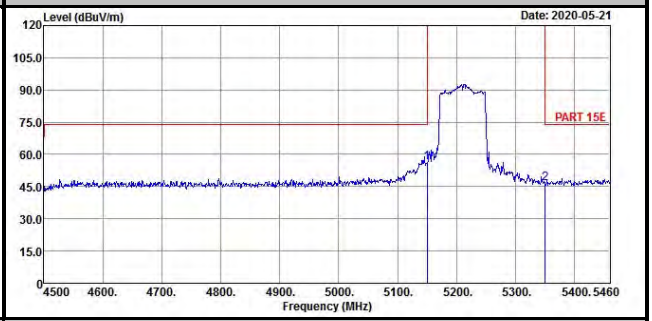
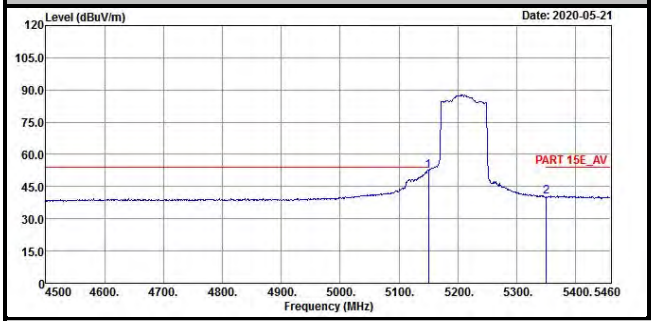
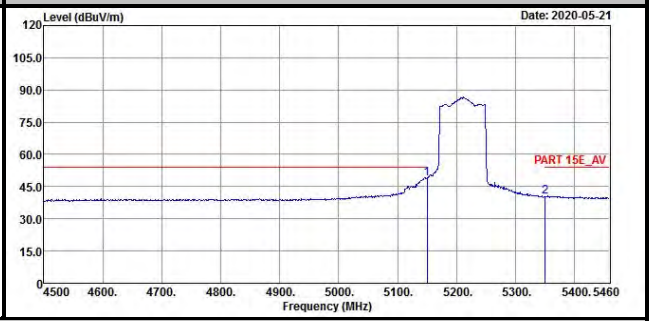


Average

Horizontal



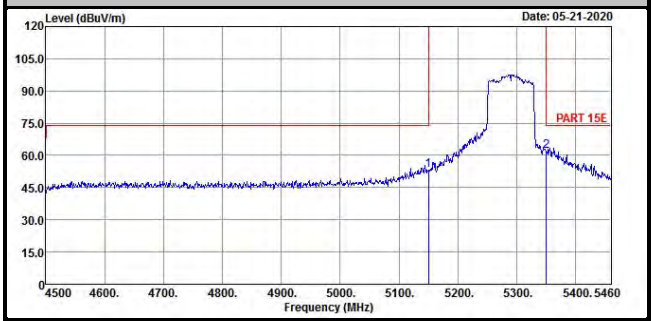
Vertical



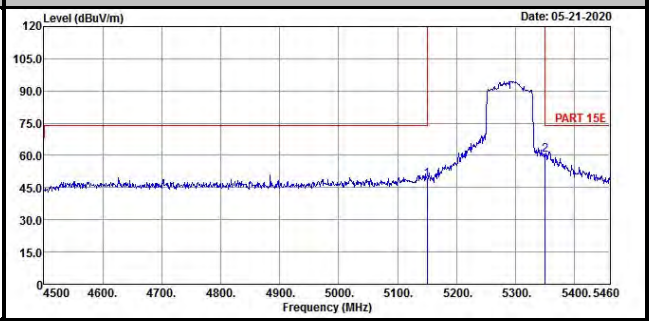
Ch 58

Peak

Horizontal

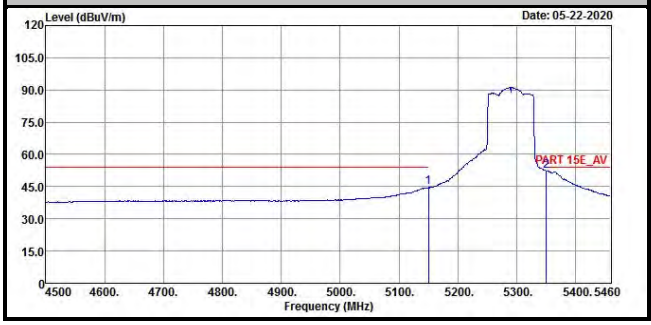


Vertical



Average

Horizontal



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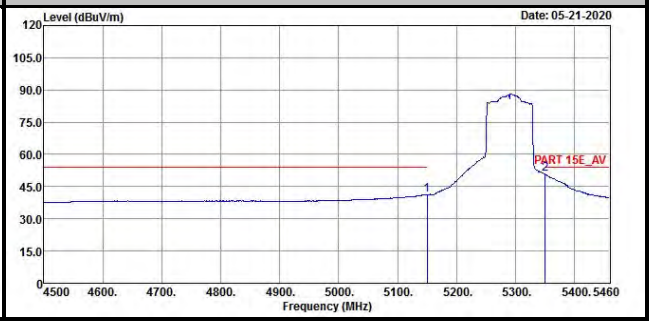
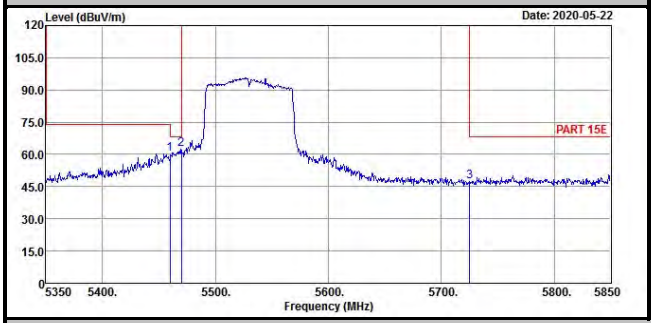


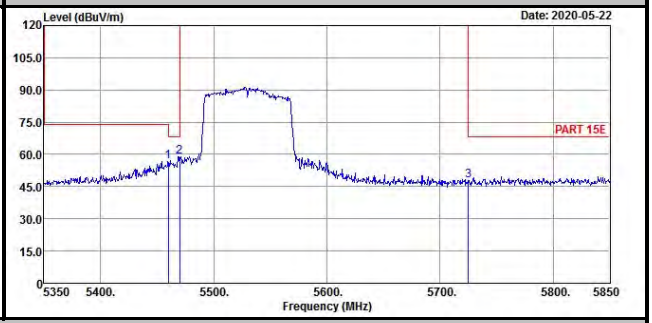
Ch 106

Peak

Horizontal

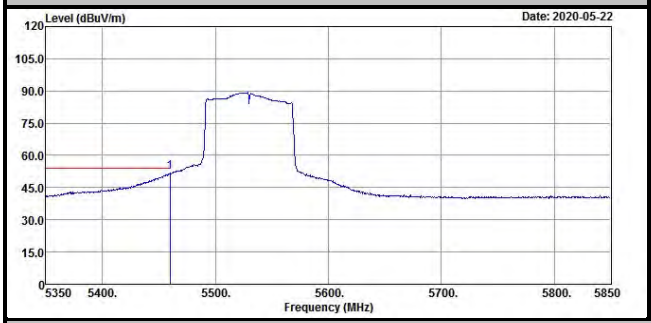


Vertical

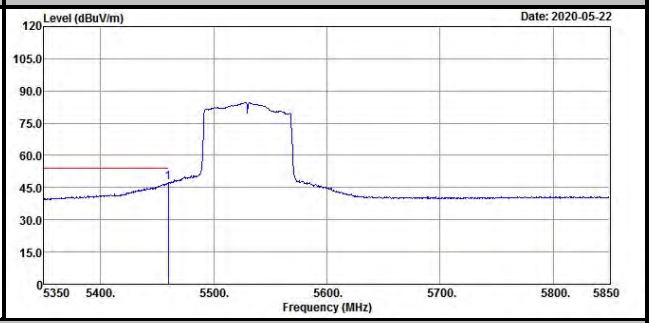


Average

Horizontal



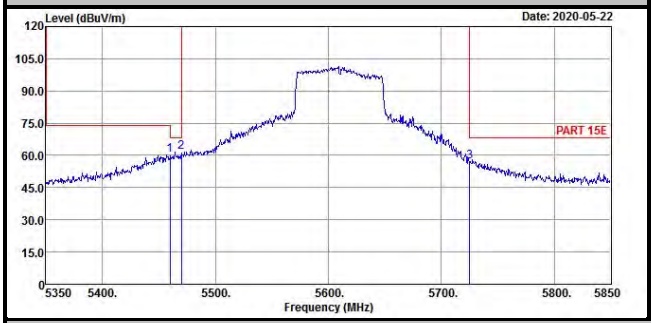
Vertical



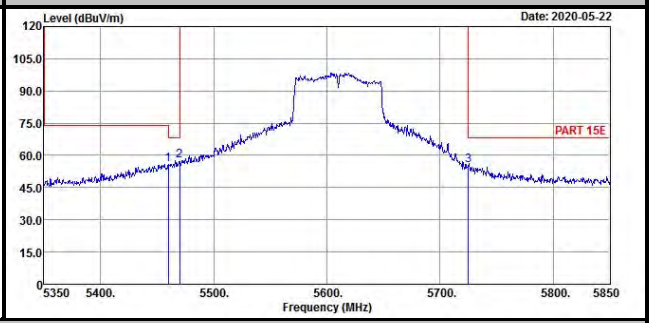
Ch 122

Peak

Horizontal

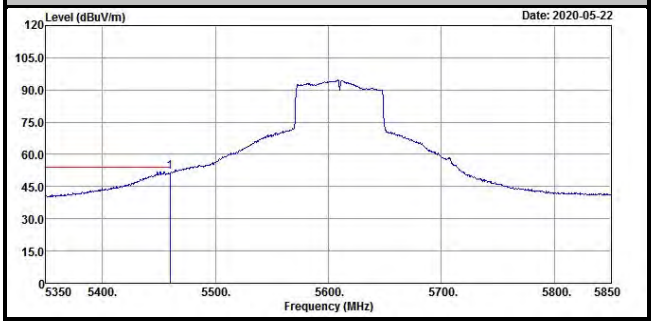


Vertical

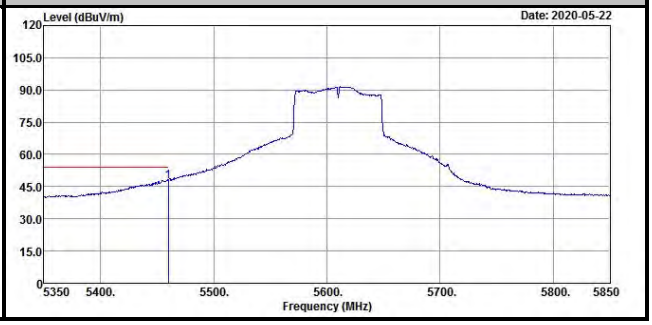


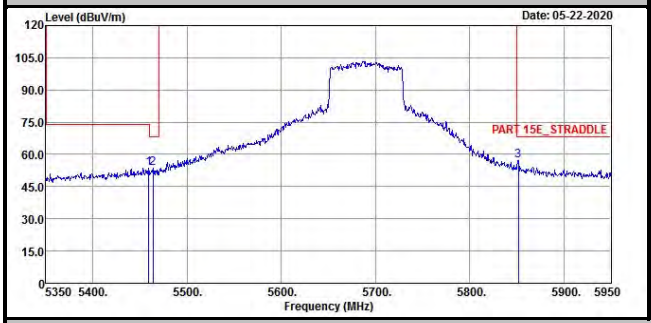
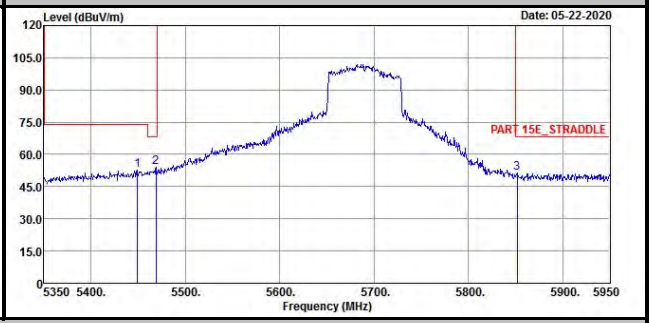
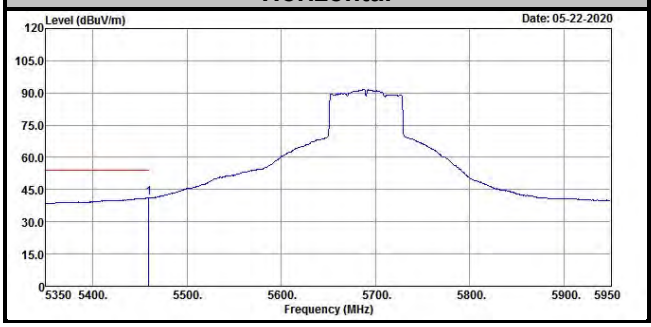
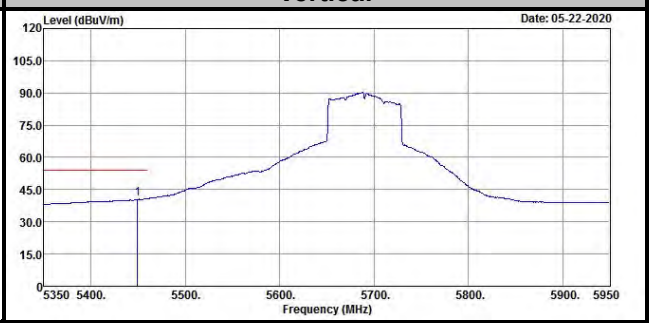
Average

Horizontal



Vertical



Ch 138	
Peak	
Horizontal	**Vertical**
	
Average	
Horizontal	**Vertical**
	

Appendix – Information of the Testing Laboratories

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

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

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

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

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