FCC Test Report

Report No.:	RFBFPJ-WTW-P20120778
FCC ID:	SWX-AF60XG
Test Model:	AF60-XG
Received Date:	Dec. 23, 2020
Test Date:	Dec. 26, 2020 to Apr. 14, 2021
Issued Date:	July 27, 2021
Applicant:	Ubiquiti Inc.
Address:	685 Third Avenue, New York, New York 10017 USA
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan
FCC Registration / Designation Number:	788550 / TW0003

Testing Laboratory
2021

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Release Control Record

Issue No.	Description	Date Issued
RFBFPJ-WTW-P20120778	Original release.	July 27, 2021

1 Certificate of Conformity

Product:	airFiber 60 XG
Brand:	UI.COM or or UBIQUITI NETWORKS
Test Model:	AF60-XG
Sample Status:	Engineering sample
Applicant:	Ubiquiti Inc.
Test Date:	Dec. 26, 2020 to Apr. 14, 2021
Standard:	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 : Vivian Huang , **Date:** July 27, 2021

Vivian Huang / Specialist

Approved by : Bruce Chen , **Date:** July 27, 2021

Bruce Chen / 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 -2.03dB at 0.58563MHz.
15.407(b) (1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -0.3dB at 5150.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	No antenna connector is used.

Note: 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	150kHz ~ 30MHz	1.9 dB
Radiated Emissions	30MHz ~ 200MHz	3.59 dB
	200MHz ~1000MHz	3.60 dB
	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	airFiber 60 XG
Brand	UI.COM or or UBIQUITI NETWORKS
Test Model	AF60-XG
Sample Status	Engineering sample
Power Supply Method	Refer to note
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK
Modulation Technology	OFDM
Transfer Rate	MCS 0-9
Operating Frequency	5160~5240MHz, 5735~5840MHz
Number of Channel	5160~5240MHz: 802.11ac (20 MHz): 17 802.11ac (40 MHz): 13 802.11ac (80 MHz): 5 5735~5825MHz: 802.11ac (20 MHz): 23 802.11ac (40 MHz): 19 802.11ac (80 MHz): 10
Output Power	5160 ~ 5240MHz: 124.186 mW 5735 ~ 5840MHz: 139.808 mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	PoE Adapter x1
Data Cable Supplied	NA

Note:

1. The EUT has three radios as following table:

Radio 1	Radio 2	Radio 3
WLAN 5GHz+BT-LE	WiGi 60GHz	GPS

2. The EUT must be supplied with a PoE adapter:

Brand	Model No.	Spec.
UBIQUITI	GP-H480-065G	Input: 100-240Vac, 50/60Hz Max, 0.75A Output: 48.0V-0.65A, 31.2W Power cord: Shielded, 0.6m

3. The antennas provided to the EUT, please refer to the following table:

Antenna No.	Antenna Net Gain (dBi)	Frequency Range	Antenna Type	Connector Type
WiGi 60GHz	45	57-71GHz	Dish	None
5G	26	5.15~5.85GHz	Dish	None
BT	2	2.4~2.4835GHz	PIFA	None

4. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.
5. 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.

3.2 Description of Test Modes

FOR 5160 ~ 5240MHz:

17 channels are provided for 802.11ac (20MHz):

Channel	Frequency	Channel	Frequency
32	5160 MHz	33	5165 MHz
34	5170 MHz	35	5175 MHz
36	5180 MHz	37	5185 MHz
38	5190 MHz	39	5195 MHz
40	5200 MHz	41	5205 MHz
42	5210 MHz	43	5215 MHz
44	5220 MHz	45	5225 MHz
46	5230 MHz	47	5235 MHz
48	5240 MHz		

13 channels are provided for 802.11ac (40MHz):

Channel	Frequency	Channel	Frequency
34	5170 MHz	35	5175 MHz
36	5180 MHz	37	5185 MHz
38	5190 MHz	39	5195 MHz
40	5200 MHz	41	5205 MHz
42	5210 MHz	43	5215 MHz
44	5220 MHz	45	5225 MHz
46	5230 MHz		

5 channel is provided for 802.11ac (80MHz):

Channel	Frequency	Channel	Frequency
38	5190 MHz	39	5195 MHz
40	5200 MHz	41	5205 MHz
42	5210 MHz		

FOR 5735 ~ 5840MHz:

23 channels are provided for 802.11ac (20MHz):

Channel	Frequency	Channel	Frequency
147	5735 MHz	148	5740 MHz
149	5745 MHz	150	5750 MHz
151	5755 MHz	152	5760 MHz
153	5765 MHz	154	5770 MHz
155	5775 MHz	156	5780 MHz
157	5785 MHz	158	5790 MHz
159	5795 MHz	160	5800 MHz
161	5805 MHz	162	5810 MHz
163	5815 MHz	163	5815 MHz
164	5820 MHz	165	5825 MHz
166	5830 MHz	167	5835 MHz
168	5840 MHz		

19 channels are provided for 802.11ac (40MHz):

Channel	Frequency	Channel	Frequency
149	5745 MHz	150	5750 MHz
151	5755 MHz	152	5760 MHz
153	5765 MHz	154	5770 MHz
155	5775 MHz	156	5780 MHz
157	5785 MHz	158	5790 MHz
159	5795 MHz	160	5800 MHz
161	5805 MHz	162	5810 MHz
163	5815 MHz	163	5815 MHz
164	5820 MHz	165	5825 MHz
166	5830 MHz		

10 channel is provided for 802.11ac (80MHz):

Channel	Frequency	Channel	Frequency
153	5765 MHz	154	5770 MHz
155	5775 MHz	156	5780 MHz
157	5785 MHz	158	5790 MHz
159	5795 MHz	160	5800 MHz
161	5805 MHz	162	5810 MHz

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 1GHz & Bandedge Measurement RE<1G: Radiated Emission below 1GHz

PLC: Power Line Conducted Emission APCM: Antenna Port Conducted Measurement

Radiated Emission Test (Above 1GHz):

☒ 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.

Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate Parameter
802.11ac (20MHz)	5160-5240	32 to 48	32, 33, 34, 40, 48	OFDM	MCS0
802.11ac (40MHz)		34 to 46	34, 35, 36, 40, 46	OFDM	MCS0
802.11ac (80MHz)		38 to 42	38, 40, 42	OFDM	MCS0
802.11ac (20MHz)	5735-5840	147 to 168	147, 158, 165, 168	OFDM	MCS0
802.11ac (40MHz)		149 to 166	149, 158, 165, 166	OFDM	MCS0
802.11ac (80MHz)		153 to 162	153, 158, 162	OFDM	MCS0

Radiated Emission Test (Below 1GHz):

☒ 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.

Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate Parameter
802.11ac (20MHz)	5160-5240	32 to 48	147	OFDM	MCS0
	5735-5840	147 to 168		OFDM	MCS0

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.

Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate Parameter
802.11ac (20MHz)	5160-5240	32 to 48	147	OFDM	MCS0
	5735-5840	147 to 168		OFDM	MCS0

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.

Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate Parameter
802.11ac (20MHz)	5160-5240	32 to 48	32, 33, 34, 40, 48	OFDM	MCS0
802.11ac (40MHz)		34 to 46	34, 35, 36, 40, 46	OFDM	MCS0
802.11ac (80MHz)		38 to 42	38, 40, 42	OFDM	MCS0
802.11ac (20MHz)	5735-5840	147 to 168	147, 158, 165, 168	OFDM	MCS0
802.11ac (40MHz)		149 to 166	149, 158, 165, 166	OFDM	MCS0
802.11ac (80MHz)		153 to 162	153, 158, 162	OFDM	MCS0

Test Condition:

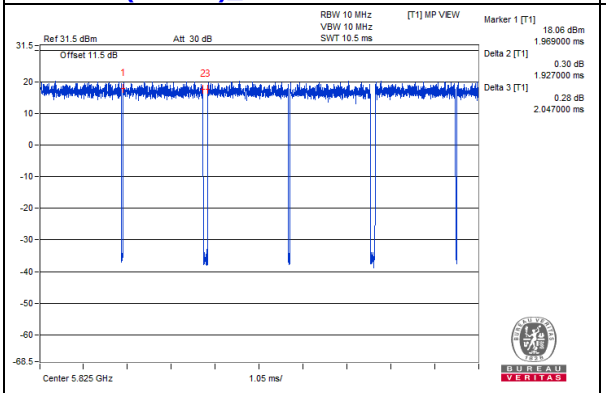
Applicable to	Environmental Conditions	Input Power	Tested by
RE≥1G	22 deg. C, 68% RH	120Vac, 60Hz	Greg Lin
RE<1G	22 deg. C, 68% RH	120Vac, 60Hz	Greg Lin
PLC	25 deg. C, 75% RH	120Vac, 60Hz	Greg Lin
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Frank FL Liu

3.3 Duty Cycle of Test Signal

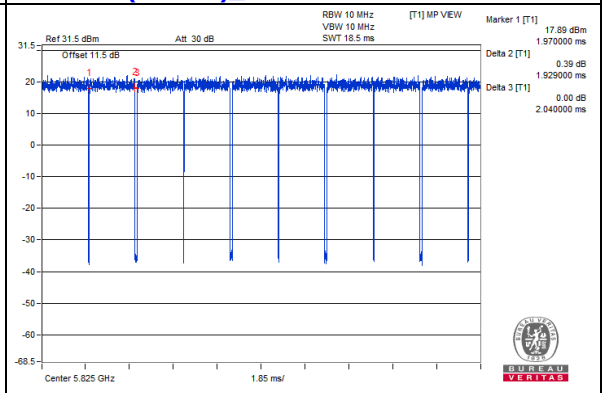
Duty cycle of test signal is < 98 %, duty factor is required

802.11ac (20MHz): Duty cycle = 1.927 ms /2.047 ms=0.941, Duty factor = 10 * log (1/Duty cycle) = 0.26 dB
802.11ac (40MHz): Duty cycle = 0.95 ms /1.072 ms=0.886, Duty factor = 10 * log (1/Duty cycle) = 0.52 dB
802.11ac (80MHz): Duty cycle = 0.462 ms /0.584 ms=0.791, Duty factor = 10 * log (1/Duty cycle) = 1.02 dB

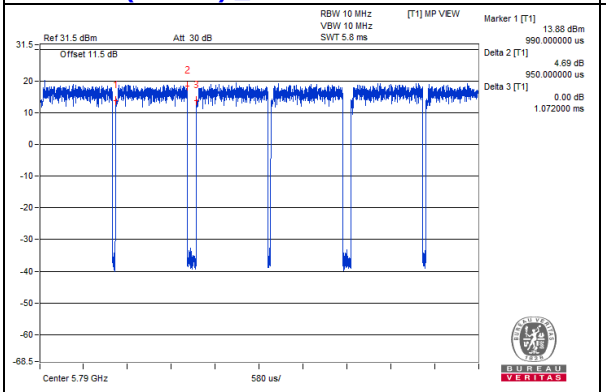
802.11ac (20MHz)_Chain 0



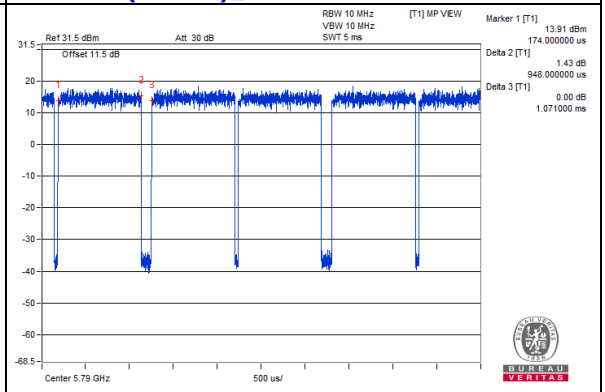
802.11ac (20MHz)_Chain 1



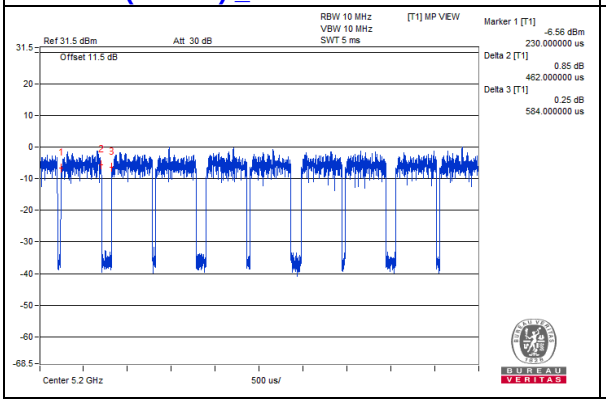
802.11ac (40MHz) _Chain 0



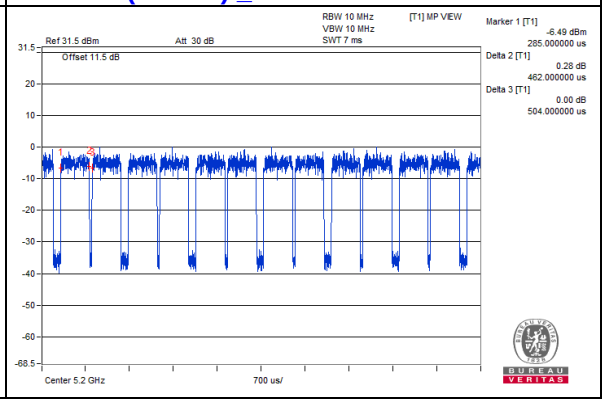
802.11ac (40MHz)_Chain 1



802.11ac (80MHz) _Chain 0



802.11ac (80MHz) _Chain 1



3.4 Description of Support Units

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

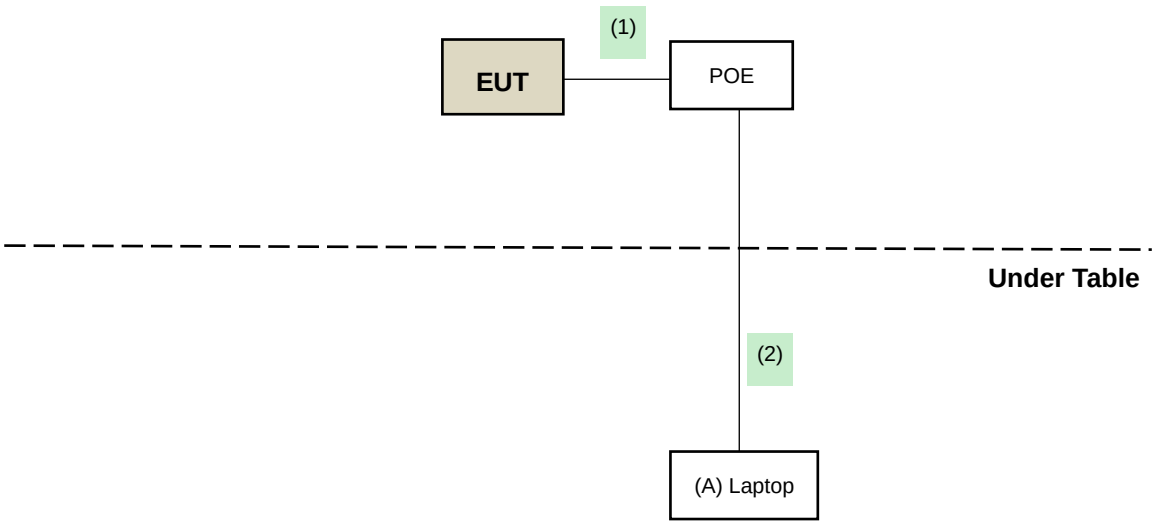
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	Lenovo	81A4	YD02TWF5	NA	Provided by Lab

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ-45	1	3	No	0	Provided by Lab
2.	RJ-45	1	10	No	0	Provided by Lab

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standard 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 Procedure New Rules v01r04
KDB 662911 D01 Multiple Transmitter Output v02r01

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, 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 20dB under any condition of modulation.

Limits of unwanted emission out of the restricted bands

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

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

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

4.1.2 Test Instruments

For Radiated Emission (Above 1GHz) & OOBE & BandEdge test:

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver KEYSIGHT	N9038A	MY55420137	Apr. 16, 2020	Apr. 15, 2021
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Jun. 12, 2020	Jun. 11, 2021
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1169	Nov. 22, 2020	Nov. 21, 2021
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 22, 2020	Nov. 21, 2021
Preamplifier Agilent (Above 1GHz)	8449B	3008A02367	Feb. 17, 2021	Feb. 16, 2022
RF signal cable HUBER+SUHNER&EMCI	SUCOFLEX 104 & EMC104-SM-SM8000	CABLE-CH9-02 (248780+171006)	Jan. 16, 2021	Jan. 15, 2022
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(250795/4)	Jan. 16, 2021	Jan. 15, 2022
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower &Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Pre-amplifier (18GHz-40GHz) EMC	EMC184045B	980175	Sep. 04, 2020	Sep. 03, 2021
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY55190004/MY55190007/MY55210005	Jul. 13, 2020	Jul. 12, 2021

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 9.
3. Tested Date: Mar. 04 to Apr. 14, 2021

For Radiated Emission (Below 1GHz) test:

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver KEYSIGHT	N9038A	MY55420137	Apr. 16, 2020	Apr. 15, 2021
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Jun. 12, 2020	Jun. 11, 2021
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Nov. 06, 2020	Nov. 05, 2021
Preamplifier Agilent (Below 1GHz)	8447D	2944A10638	Jun. 08, 2020	Jun. 07, 2021
RF signal cable Woken	8D-FB	Cable-CH9-01	Jun. 08, 2020	Jun. 07, 2021
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower &Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	NA	NA
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY55190004/MY55190007/MY55210005	Jul. 13, 2020	Jul. 12, 2021

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 9.
3. Tested Date: Dec. 26, 2020

For other test items:

Description & Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Spectrum Analyzer ROHDE & SCHWARZ	FSV40	100980	Apr. 20, 2020	Apr.19, 2021
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY55190004/MY55190007/MY55210005	Jul. 13, 2020	Jul. 12, 2021
Temperature And Humidity Chamber TERCHY	MHU-225AU	920842	May 27, 2020	May 26, 2021
DC Power Supply Topward	6603D	700637	NA	NA
Digital Multimeter Fluke	87-III	70360742	Jun. 23, 2020	Jun. 22, 2021

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

4.1.3 Test Procedure

For Radiated emission below 30MHz

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 9kHz at frequency below 30MHz.

For Radiated emission above 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) 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 detects 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:

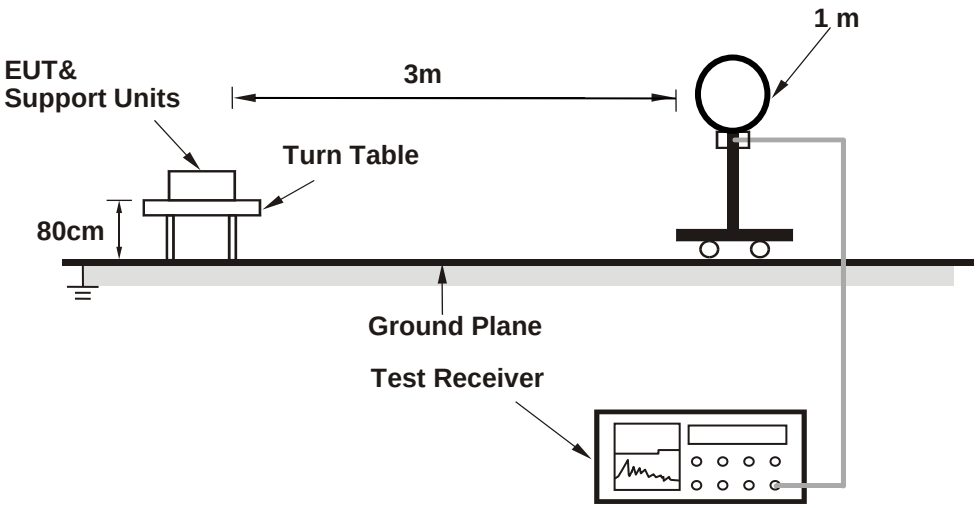
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.1.4 Deviation from Test Standard

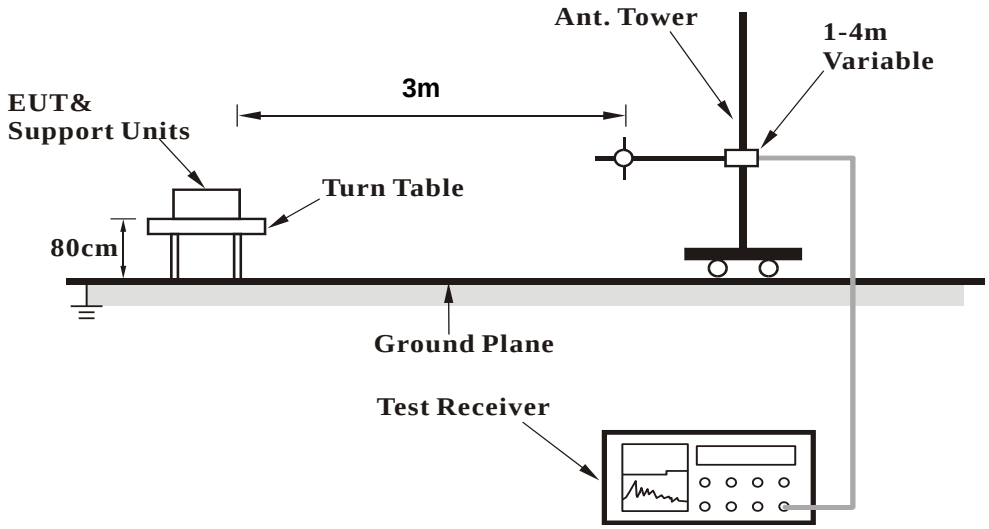
No deviation.

4.1.5 Test Setup

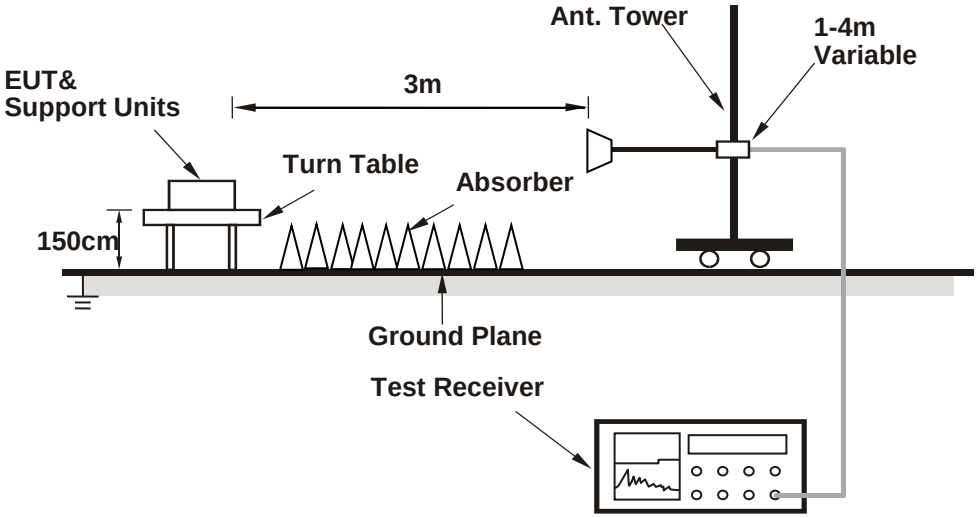
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Conditions

a. Placed the EUT on the testing table.

b. Controlling software (CMD) has been activated to set the EUT under transmission condition at specific channel frequency.

4.1.7 Test Results

ABOVE 1GHz DATA

RF Mode	TX 802.11ac (20MHz)	Channel	CH 32：5160 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	73.5 PK	74.0	-0.5	2.09 H	7	71.4	2.1
2	5150.00	53.0 AV	54.0	-1.0	2.09 H	7	50.9	2.1
3	*5160.00	93.5 PK			2.09 H	7	57.0	36.5
4	*5160.00	84.2 AV			2.09 H	7	47.7	36.5
5	#10320.00	56.3 PK	68.2	-11.9	2.37 H	12	41.4	14.9
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	72.1 PK	74.0	-1.9	1.91 V	5	70.0	2.1
2	5150.00	52.4 AV	54.0	-1.6	1.91 V	5	50.3	2.1
3	*5160.00	92.4 PK			1.91 V	5	55.9	36.5
4	*5160.00	82.6 AV			1.91 V	5	46.1	36.5
5	#10320.00	56.1 PK	68.2	-12.1	2.23 V	11	41.2	14.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

RF Mode	TX 802.11ac (20MHz)	Channel	CH 33：5165 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	71.4 PK	74.0	-2.6	1.94 H	1	69.3	2.1
2	5150.00	53.4 AV	54.0	-0.6	1.94 H	1	51.3	2.1
3	*5165.00	110.0 PK			1.94 H	1	73.6	36.4
4	*5165.00	99.9 AV			1.94 H	1	63.5	36.4
5	#10330.00	55.9 PK	68.2	-12.3	2.52 H	4	41.1	14.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	67.4 PK	74.0	-6.6	2.11 V	8	65.3	2.1
2	5150.00	48.5 AV	54.0	-5.5	2.11 V	8	46.4	2.1
3	*5165.00	107.8 PK			2.11 V	8	71.4	36.4
4	*5165.00	97.6 AV			2.11 V	8	61.2	36.4
5	#10330.00	55.4 PK	68.2	-12.8	2.09 V	6	40.6	14.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

RF Mode	TX 802.11ac (20MHz)	Channel	CH 34：5170 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	70.4 PK	74.0	-3.6	1.98 H	1	68.3	2.1
2	5150.00	53.6 AV	54.0	-0.4	1.98 H	1	51.5	2.1
3	*5170.00	118.6 PK			1.98 H	1	82.2	36.4
4	*5170.00	109.3 AV			1.98 H	1	72.9	36.4
5	#10340.00	62.6 PK	68.2	-5.6	2.01 H	5	47.7	14.9
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	64.7 PK	74.0	-9.3	2.06 V	4	62.6	2.1
2	5150.00	51.6 AV	54.0	-2.4	2.06 V	4	49.5	2.1
3	*5170.00	117.1 PK			2.06 V	4	80.7	36.4
4	*5170.00	107.1 AV			2.06 V	4	70.7	36.4
5	#10340.00	60.2 PK	68.2	-8.0	1.98 V	7	45.3	14.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

RF Mode	TX 802.11ac (20MHz)	Channel	CH 40：5200 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	64.8 PK	74.0	-9.2	2.02 H	2	62.7	2.1
2	5150.00	53.3 AV	54.0	-0.7	2.02 H	2	51.2	2.1
3	*5200.00	127.3 PK			2.02 H	2	90.9	36.4
4	*5200.00	117.4 AV			2.02 H	2	81.0	36.4
5	#10400.00	62.5 PK	68.2	-5.7	2.00 H	8	47.6	14.9
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	64.5 PK	74.0	-9.5	2.16 V	6	62.4	2.1
2	5150.00	52.4 AV	54.0	-1.6	2.16 V	6	50.3	2.1
3	*5200.00	125.1 PK			2.16 V	6	88.7	36.4
4	*5200.00	115.2 AV			2.11 V	6	78.8	36.4
5	#10400.00	59.7 PK	68.2	-8.5	2.12 V	9	44.8	14.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

RF Mode	TX 802.11ac (20MHz)	Channel	CH 48：5240 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	64.8 PK	74.0	-9.2	1.96 H	1	62.7	2.1
2	5150.00	52.8 AV	54.0	-1.2	1.96 H	1	50.7	2.1
3	*5240.00	120.4 PK			1.96 H	1	84.1	36.3
4	*5240.00	111.1 AV			1.96 H	1	74.8	36.3
5	5350.00	64.8 PK	74.0	-9.2	1.96 H	1	62.8	2.0
6	5350.00	50.7 AV	54.0	-3.3	1.96 H	1	48.7	2.0
7	#10480.00	56.4 PK	68.2	-11.8	2.11 H	6	41.5	14.9
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5124.00	64.1 PK	74.0	-9.9	2.04 V	5	61.9	2.2
2	5124.00	50.9 AV	54.0	-3.1	2.04 V	5	48.7	2.2
3	*5240.00	118.2 PK			2.04 V	5	81.9	36.3
4	*5240.00	108.2 AV			2.04 V	5	71.9	36.3
5	5350.00	62.1 PK	74.0	-11.9	2.04 V	5	60.1	2.0
6	5350.00	50.1 AV	54.0	-3.9	2.04 V	5	48.1	2.0
7	#10480.00	54.2 PK	68.2	-14.0	2.14 V	11	39.3	14.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

RF Mode	TX 802.11ac (20MHz)	Channel	CH 147：5735 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5607.60	66.9 PK	68.2	-1.3	1.98 H	2	64.1	2.8
2	*5735.00	125.5 PK			1.98 H	2	88.2	37.3
3	*5735.00	117.0 AV			1.98 H	2	79.7	37.3
4	#5944.00	63.0 PK	68.2	-5.2	1.98 H	2	59.5	3.5
5	11470.00	68.0 PK	74.0	-6.0	2.26 H	1	51.7	16.3
6	11470.00	53.6 AV	54.0	-0.4	2.26 H	1	37.3	16.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5643.90	62.9 PK	68.2	-5.3	2.07 V	6	60.1	2.8
2	*5735.00	122.8 PK			2.07 V	6	85.5	37.3
3	*5735.00	112.6 AV			2.07 V	6	75.3	37.3
4	#5943.10	58.4 PK	68.2	-9.8	2.07 V	6	54.9	3.5
5	11470.00	67.2 PK	74.0	-6.8	2.14 V	8	50.9	16.3
6	11470.00	52.7 AV	54.0	-1.3	2.14 V	8	36.4	16.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

RF Mode	TX 802.11ac (20MHz)	Channel	CH 158：5790 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5642.00	67.5 PK	68.2	-0.7	1.95 H	2	64.7	2.8
2	*5790.00	125.5 PK			1.95 H	2	87.9	37.6
3	*5790.00	116.4 AV			1.95 H	2	78.8	37.6
4	#5950.80	64.0 PK	68.2	-4.2	1.95 H	2	60.5	3.5
5	11580.00	67.5 PK	74.0	-6.5	2.26 H	2	51.5	16.0
6	11580.00	53.4 AV	54.0	-0.6	2.26 H	2	37.4	16.0
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5649.50	64.7 PK	68.2	-3.5	2.04 V	4	61.9	2.8
2	*5790.00	120.5 PK			2.04 V	4	82.9	37.6
3	*5790.00	110.6 AV			2.04 V	4	73.0	37.6
4	#5929.00	61.3 PK	68.2	-6.9	2.04 V	4	57.9	3.4
5	11580.00	66.4 PK	74.0	-7.6	2.16 V	7	51.0	15.4
6	11580.00	52.3 AV	54.0	-1.7	2.16 V	7	36.9	15.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

RF Mode	TX 802.11ac (20MHz)	Channel	CH 165：5825 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5608.40	66.4 PK	68.2	-1.8	1.99 H	2	63.6	2.8
2	*5825.00	124.9 PK			1.99 H	2	87.3	37.6
3	*5825.00	115.2 AV			1.99 H	2	77.6	37.6
4	#5936.40	63.2 PK	68.2	-5.0	1.99 H	2	59.7	3.5
5	11650.00	66.0 PK	74.0	-8.0	2.35 H	1	50.0	16.0
6	11650.00	53.3 AV	54.0	-0.7	2.35 H	1	37.3	16.0
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5641.00	62.6 PK	68.2	-5.6	2.12 V	9	59.8	2.8
2	*5825.00	119.3 PK			2.12 V	9	81.7	37.6
3	*5825.00	109.6 AV			2.12 V	9	72.0	37.6
4	#5930.40	61.4 PK	68.2	-6.8	2.12 V	9	58.0	3.4
5	11650.00	65.4 PK	74.0	-8.6	2.12 V	13	49.4	16.0
6	11650.00	52.7 AV	54.0	-1.3	2.12 V	13	36.7	16.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

RF Mode	TX 802.11ac (20MHz)	Channel	CH 168：5840 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5634.00	63.8 PK	68.2	-4.4	1.89 H	4	61.1	2.7
2	*5840.00	119.0 PK			1.89 H	4	81.4	37.6
3	*5840.00	109.1 AV			1.89 H	4	71.5	37.6
4	#5930.80	61.2 PK	68.2	-7.0	1.89 H	4	57.8	3.4
5	11680.00	59.4 PK	74.0	-14.6	1.85 H	11	43.4	16.0
6	11680.00	45.7 AV	54.0	-8.3	1.85 H	11	29.7	16.0
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5644.00	63.7 PK	68.2	-4.5	2.08 V	4	60.9	2.8
2	*5840.00	118.4 PK			2.08 V	4	80.8	37.6
3	*5840.00	108.5 AV			2.08 V	4	70.9	37.6
4	#5930.40	60.9 PK	68.2	-7.3	2.08 V	4	57.5	3.4
5	11680.00	59.2 PK	74.0	-14.8	2.12 V	12	43.2	16.0
6	11680.00	45.5 AV	54.0	-8.5	2.12 V	12	29.5	16.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

RF Mode	TX 802.11ac (40MHz)	Channel	CH 34：5170 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	72.0 PK	74.0	-2.0	2.06 H	7	69.9	2.1
2	5150.00	52.9 AV	54.0	-1.1	2.06 H	7	50.8	2.1
3	*5170.00	95.9 PK			2.06 H	7	59.5	36.4
4	*5170.00	85.8 AV			2.06 H	7	49.4	36.4
5	#10340.00	56.9 PK	68.2	-11.3	2.14 H	11	42.0	14.9
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	71.9 PK	74.0	-2.1	1.90 V	5	69.8	2.1
2	5150.00	52.7 AV	54.0	-1.3	1.90 V	5	50.6	2.1
3	*5170.00	94.7 PK			1.90 V	5	58.3	36.4
4	*5170.00	84.6 AV			1.90 V	5	48.2	36.4
5	#10340.00	56.1 PK	68.2	-12.1	2.19 V	7	41.2	14.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

RF Mode	TX 802.11ac (40MHz)	Channel	CH 35：5175 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	68.4 PK	74.0	-5.6	1.96 H	3	66.3	2.1
2	**5150.00**	**53.7 AV**	**54.0**	**-0.3**	**1.96 H**	**3**	**51.6**	**2.1**
3	*5175.00	106.3 PK			1.96 H	3	69.9	36.4
4	*5175.00	97.7 AV			1.96 H	3	61.3	36.4
5	#10350.00	56.5 PK	68.2	-11.7	2.08 H	10	41.6	14.9
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	67.7 PK	74.0	-6.3	2.01 V	7	65.6	2.1
2	5150.00	53.0 AV	54.0	-1.0	2.01 V	7	50.9	2.1
3	*5175.00	104.0 PK			2.01 V	7	67.6	36.4
4	*5175.00	93.7 AV			2.01 V	7	57.3	36.4
5	#10350.00	55.8 PK	68.2	-12.4	2.13 V	13	40.9	14.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

RF Mode	TX 802.11ac (40MHz)	Channel	CH 36：5180 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	69.5 PK	74.0	-4.5	2.04 H	1	67.4	2.1
2	**5150.00**	**53.7 AV**	**54.0**	**-0.3**	**2.04 H**	**1**	**51.6**	**2.1**
3	*5180.00	109.3 PK			2.04 H	1	72.9	36.4
4	*5180.00	100.1 AV			2.04 H	1	63.7	36.4
5	#10360.00	57.1 PK	68.2	-11.1	2.08 H	4	42.3	14.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	63.4 PK	74.0	-10.6	2.03 V	5	61.3	2.1
2	5150.00	49.3 AV	54.0	-4.7	2.03 V	5	47.2	2.1
3	*5180.00	106.4 PK			2.03 V	5	70.0	36.4
4	*5180.00	96.8 AV			2.03 V	5	60.4	36.4
5	#10360.00	56.5 PK	68.2	-11.7	2.16 V	9	41.7	14.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

RF Mode	TX 802.11ac (40MHz)	Channel	CH 40：5200 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	71.6 PK	74.0	-2.4	2.00 H	2	69.5	2.1
2	5150.00	53.5 AV	54.0	-0.5	2.00 H	2	51.4	2.1
3	*5200.00	120.0 PK			2.00 H	2	83.6	36.4
4	*5200.00	111.3 AV			2.00 H	2	74.9	36.4
5	#10400.00	56.4 PK	68.2	-11.8	2.08 H	5	41.5	14.9
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	63.7 PK	74.0	-10.3	2.07 V	9	61.6	2.1
2	5150.00	51.2 AV	54.0	-2.8	2.07 V	9	49.1	2.1
3	*5200.00	116.9 PK			2.07 V	9	80.5	36.4
4	*5200.00	107.2 AV			2.07 V	9	70.8	36.4
5	#10400.00	55.9 PK	68.2	-12.3	2.09 V	5	41.0	14.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

RF Mode	TX 802.11ac (40MHz)	Channel	CH 46：5230 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	65.3 PK	74.0	-8.7	2.02 H	1	63.2	2.1
2	5150.00	53.5 AV	54.0	-0.5	2.02 H	1	51.4	2.1
3	*5230.00	121.1 PK			2.02 H	1	84.8	36.3
4	*5230.00	112.2 AV			2.02 H	1	75.9	36.3
5	5350.00	62.5 PK	74.0	-11.5	2.02 H	1	60.5	2.0
6	5350.00	51.1 AV	54.0	-2.9	2.02 H	1	49.1	2.0
7	#10460.00	56.5 PK	68.2	-11.7	2.15 H	10	41.6	14.9
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	61.7 PK	74.0	-12.3	2.06 V	2	59.6	2.1
2	5150.00	50.2 AV	54.0	-3.8	2.06 V	2	48.1	2.1
3	*5230.00	117.3 PK			2.06 V	2	81.0	36.3
4	*5230.00	107.6 AV			2.06 V	2	71.3	36.3
5	5350.00	59.6 PK	74.0	-14.4	2.06 V	2	57.6	2.0
6	5350.00	48.1 AV	54.0	-5.9	2.06 V	2	46.1	2.0
7	#10460.00	55.3 PK	68.2	-12.9	2.08 V	5	40.4	14.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

RF Mode	TX 802.11ac (40MHz)	Channel	CH 149：5745 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5638.80	67.8 PK	68.2	-0.4	1.94 H	2	65.1	2.7
2	*5745.00	122.9 PK			1.94 H	2	85.6	37.3
3	*5745.00	114.0 AV			1.94 H	2	76.7	37.3
4	#5932.40	64.3 PK	68.2	-3.9	1.94 H	2	60.9	3.4
5	11490.00	64.9 PK	74.0	-9.1	2.27 H	1	48.7	16.2
6	11490.00	53.5 AV	54.0	-0.5	2.27 H	1	37.3	16.2
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5626.60	62.9 PK	68.2	-5.3	2.03 V	4	60.2	2.7
2	*5745.00	119.4 PK			2.03 V	5	82.1	37.3
3	*5745.00	109.7 AV			2.03 V	5	72.4	37.3
4	#5929.80	57.9 PK	68.2	-10.3	2.03 V	4	54.5	3.4
5	11490.00	64.5 PK	74.0	-9.5	2.13 V	15	48.3	16.2
6	11490.00	52.6 AV	54.0	-1.4	2.13 V	15	36.4	16.2

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

RF Mode	TX 802.11ac (40MHz)	Channel	CH 158：5790 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5619.20	66.8 PK	68.2	-1.4	1.95 H	1	64.1	2.7
2	*5790.00	126.3 PK			1.95 H	1	88.7	37.6
3	*5790.00	117.0 AV			1.95 H	1	79.4	37.6
4	#5929.20	63.1 PK	68.2	-5.1	1.95 H	1	59.7	3.4
5	11580.00	66.4 PK	74.0	-7.6	2.33 H	2	50.4	16.0
6	11580.00	53.2 AV	54.0	-0.8	2.33 H	2	37.2	16.0
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5645.60	61.7 PK	68.2	-6.5	2.07 V	9	58.9	2.8
2	*5790.00	120.8 PK			2.09 V	7	83.2	37.6
3	*5790.00	110.8 AV			2.09 V	7	73.2	37.6
4	#5927.30	61.3 PK	68.2	-6.9	2.07 V	9	57.9	3.4
5	11580.00	64.3 PK	74.0	-9.7	2.14 V	12	48.3	16.0
6	11580.00	52.3 AV	54.0	-1.7	2.14 V	12	36.3	16.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

RF Mode	TX 802.11ac (40MHz)	Channel	CH 165：5825 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5616.40	64.0 PK	68.2	-4.2	1.95 H	2	61.3	2.7
2	*5825.00	122.4 PK			1.95 H	2	84.8	37.6
3	*5825.00	113.8 AV			1.95 H	2	76.2	37.6
4	#5928.00	67.1 PK	68.2	-1.1	1.95 H	2	63.7	3.4
5	11650.00	58.9 PK	74.0	-15.1	2.34 H	2	42.9	16.0
6	11650.00	47.5 AV	54.0	-6.5	2.34 H	2	31.5	16.0
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5616.00	61.4 PK	68.2	-6.8	2.16 V	4	58.7	2.7
2	*5825.00	118.6 PK			2.16 V	4	81.0	37.6
3	*5825.00	108.5 AV			2.16 V	4	70.9	37.6
4	#5926.40	60.7 PK	68.2	-7.5	2.16 V	4	57.3	3.4
5	11650.00	58.6 PK	74.0	-15.4	2.20 V	4	43.1	15.5
6	11650.00	46.9 AV	54.0	-7.1	2.20 V	4	31.4	15.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

RF Mode	TX 802.11ac (40MHz)	Channel	CH 166：5830 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5606.00	59.1 PK	68.2	-9.1	1.89 H	4	56.3	2.8
2	*5830.00	116.2 PK			1.89 H	4	78.6	37.6
3	*5830.00	107.3 AV			1.89 H	4	69.7	37.6
4	#5935.60	58.1 PK	68.2	-10.1	1.89 H	4	54.6	3.5
5	11660.00	58.8 PK	74.0	-15.2	1.85 H	12	42.9	15.9
6	11660.00	45.6 AV	54.0	-8.4	1.85 H	12	29.7	15.9
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5636.00	56.8 PK	68.2	-11.4	2.16 V	3	54.1	2.7
2	*5830.00	115.6 PK			2.16 V	3	78.0	37.6
3	*5830.00	106.7 AV			2.16 V	3	69.1	37.6
4	#5936.80	60.0 PK	68.2	-8.2	2.16 V	3	56.5	3.5
5	11660.00	58.4 PK	74.0	-15.6	2.23 V	12	42.5	15.9
6	11660.00	45.1 AV	54.0	-8.9	2.23 V	12	29.2	15.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

RF Mode	TX 802.11ac (80MHz)	Channel	CH 38：5190 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	72.8 PK	74.0	-1.2	1.91 H	4	70.7	2.1
2	5150.00	52.6 AV	54.0	-1.4	1.91 H	4	50.5	2.1
3	*5190.00	95.3 PK			1.91 H	4	58.9	36.4
4	*5190.00	81.6 AV			1.91 H	4	45.2	36.4
5	#10380.00	55.7 PK	68.2	-12.5	2.24 H	10	40.8	14.9
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	71.6 PK	74.0	-2.4	2.11 V	6	69.5	2.1
2	5150.00	52.6 AV	54.0	-1.4	2.11 V	6	50.5	2.1
3	*5190.00	95.7 PK			2.11 V	6	59.3	36.4
4	*5190.00	81.3 AV			2.11 V	6	44.9	36.4
5	#10380.00	55.5 PK	68.2	-12.7	2.32 V	9	40.6	14.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

RF Mode	TX 802.11ac (80MHz)	Channel	CH 40：5200 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	68.0 PK	74.0	-6.0	1.97 H	1	65.9	2.1
2	5150.00	53.6 AV	54.0	-0.4	1.97 H	1	51.5	2.1
3	*5200.00	103.6 PK			1.97 H	1	67.2	36.4
4	*5200.00	93.0 AV			1.97 H	1	56.6	36.4
5	#10400.00	56.1 PK	68.2	-12.1	2.05 H	6	41.2	14.9
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	63.3 PK	74.0	-10.7	2.07 V	9	61.2	2.1
2	5150.00	50.9 AV	54.0	-3.1	2.07 V	9	48.8	2.1
3	*5200.00	99.7 PK			2.07 V	9	63.3	36.4
4	*5200.00	89.4 AV			2.07 V	9	53.0	36.4
5	#10400.00	55.8 PK	68.2	-12.4	2.11 V	6	40.9	14.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

RF Mode	TX 802.11ac (80MHz)	Channel	CH 42：5210 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	65.7 PK	74.0	-8.3	1.99 H	1	63.6	2.1
2	5150.00	53.1 AV	54.0	-0.9	1.99 H	1	51.0	2.1
3	*5210.00	108.8 PK			1.99 H	1	72.4	36.4
4	*5210.00	97.5 AV			1.99 H	1	61.1	36.4
5	#10420.00	56.9 PK	68.2	-11.3	2.16 H	13	42.0	14.9
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	64.5 PK	74.0	-9.5	2.07 V	8	62.4	2.1
2	5150.00	49.4 AV	54.0	-4.6	2.07 V	8	47.3	2.1
3	*5210.00	105.5 PK			2.07 V	8	69.1	36.4
4	*5210.00	94.8 AV			2.07 V	8	58.4	36.4
5	#10420.00	56.3 PK	68.2	-11.9	2.11 V	10	41.4	14.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

RF Mode	TX 802.11ac (80MHz)	Channel	CH 153：5765 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5642.00	67.5 PK	68.2	-0.7	1.95 H	1	64.7	2.8
2	*5765.00	119.8 PK			1.95 H	1	82.4	37.4
3	*5765.00	108.9 AV			1.95 H	1	71.5	37.4
4	#5930.40	65.6 PK	68.2	-2.6	1.95 H	1	62.2	3.4
5	11530.00	64.0 PK	74.0	-10.0	2.34 H	2	47.9	16.1
6	11530.00	51.3 AV	54.0	-2.7	2.34 H	2	35.2	16.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5640.80	62.0 PK	68.2	-6.2	2.13 V	5	59.2	2.8
2	*5765.00	115.9 PK			2.13 V	5	78.5	37.4
3	*5765.00	105.8 AV			2.13 V	5	68.4	37.4
4	#5932.00	58.3 PK	68.2	-9.9	2.13 V	5	54.9	3.4
5	11530.00	63.3 PK	74.0	-10.7	2.17 V	11	47.2	16.1
6	11530.00	51.2 AV	54.0	-2.8	2.17 V	11	35.1	16.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

RF Mode	TX 802.11ac (80MHz)	Channel	CH 158：5790 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5623.20	65.1 PK	68.2	-3.1	1.96 H	2	62.4	2.7
2	*5790.00	124.2 PK			1.96 H	2	86.6	37.6
3	*5790.00	109.1 AV			1.96 H	2	71.5	37.6
4	#5924.40	67.8 PK	68.6	-0.8	1.96 H	2	64.4	3.4
5	11580.00	62.4 PK	74.0	-11.6	2.29 H	5	46.4	16.0
6	11580.00	50.6 AV	54.0	-3.4	2.29 H	5	34.6	16.0
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5631.20	62.0 PK	68.2	-6.2	2.03 V	5	59.3	2.7
2	*5790.00	119.9 PK			2.03 V	5	82.3	37.6
3	*5790.00	105.8 AV			2.03 V	5	68.2	37.6
4	#5930.00	58.2 PK	68.2	-10.0	2.03 V	5	54.8	3.4
5	11580.00	61.8 PK	74.0	-12.2	2.07 V	11	45.8	16.0
6	11580.00	50.1 AV	54.0	-3.9	2.07 V	11	34.1	16.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

RF Mode	TX 802.11ac (80MHz)	Channel	CH 162：5810 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5626.40	64.6 PK	68.2	-3.6	1.93 H	1	61.9	2.7
2	*5810.00	122.5 PK			1.93 H	1	84.9	37.6
3	*5810.00	113.6 AV			1.93 H	1	76.0	37.6
4	#5926.80	67.7 PK	68.2	-0.5	1.93 H	1	64.3	3.4
5	11620.00	56.0 PK	74.0	-18.0	2.50 H	3	40.0	16.0
6	11620.00	44.4 AV	54.0	-9.6	2.50 H	3	28.4	16.0
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5626.40	62.0 PK	68.2	-6.2	2.09 V	5	59.3	2.7
2	*5810.00	118.4 PK			2.09 V	5	80.8	37.6
3	*5810.00	108.2 AV			2.09 V	5	70.6	37.6
4	#5935.20	61.5 PK	68.2	-6.7	2.09 V	5	58.0	3.5
5	11620.00	55.8 PK	74.0	-18.2	2.12 V	10	39.8	16.0
6	11620.00	44.2 AV	54.0	-9.8	2.12 V	10	28.2	16.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

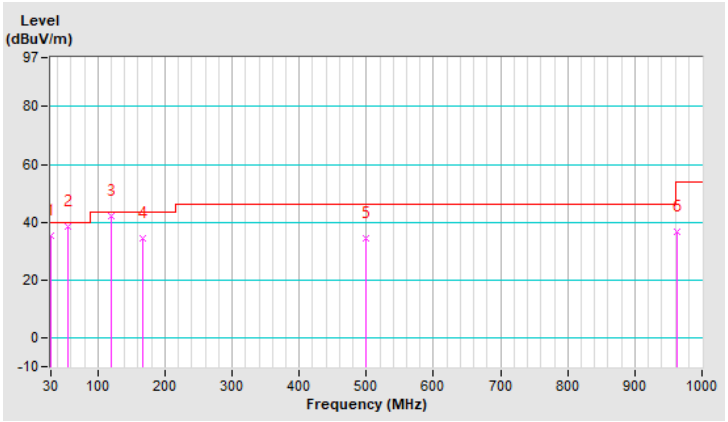
BELOW 1GHz DATA

RF Mode	TX 802.11ac (20MHz)	Channel	CH 147：5735 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	30.00	35.4 QP	40.0	-4.6	1.00 H	147	45.7	-10.3
2	55.22	38.7 QP	40.0	-1.3	1.25 H	198	47.7	-9.0
3	119.24	42.0 QP	43.5	-1.5	1.00 H	214	52.8	-10.8
4	167.74	34.5 QP	43.5	-9.0	1.50 H	299	43.0	-8.5
5	499.48	34.4 QP	46.0	-11.6	1.00 H	48	37.1	-2.7
6	963.14	36.9 QP	54.0	-17.1	1.25 H	92	30.8	6.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

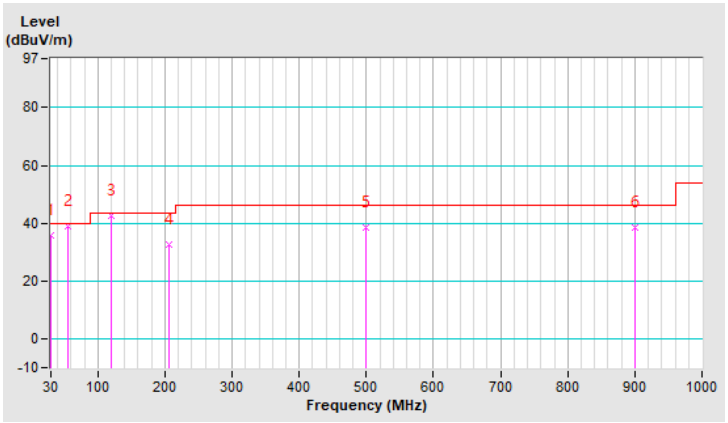


RF Mode	TX 802.11ac (20MHz)	Channel	CH 147：5735 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	30.00	36.0 QP	40.0	-4.0	1.00 V	48	46.3	-10.3
2	55.22	38.9 QP	40.0	-1.1	1.25 V	113	47.9	-9.0
3	119.24	42.6 QP	43.5	-0.9	1.00 V	188	53.4	-10.8
4	206.54	32.5 QP	43.5	-11.0	1.50 V	215	43.6	-11.1
5	499.48	38.7 QP	46.0	-7.3	1.00 V	6	41.4	-2.7
6	901.06	38.6 QP	46.0	-7.4	1.25 V	6	33.6	5.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



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 0.50MHz.

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Dec. 04, 2020	Dec. 03, 2021
RF signal cable Woken	5D-FB	Cable-cond1-01	Sep. 04, 2020	Sep. 03, 2021
LISN/AMN ROHDE & SCHWARZ (EUT)	ENV216	101826	Feb. 20, 2020	Feb. 19, 2021
LISN/AMN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 28, 2020	Aug. 27, 2021
Software ADT	BV ADT_Cond_ V7.3.7.4	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 1 (Conduction 1).
3. The VCCI Site Registration No. is C-12040.
4. Tested Date: Dec. 29, 2020

4.2.3 Test Procedure

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.

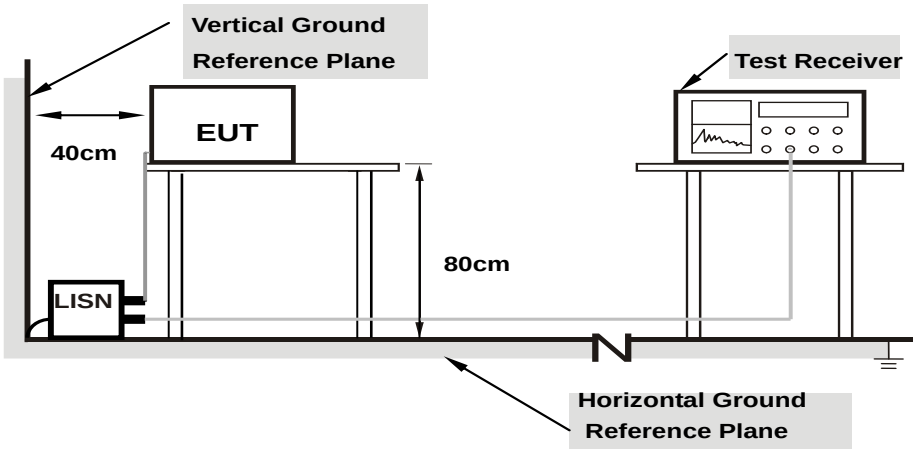
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

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

Same as 4.1.6.

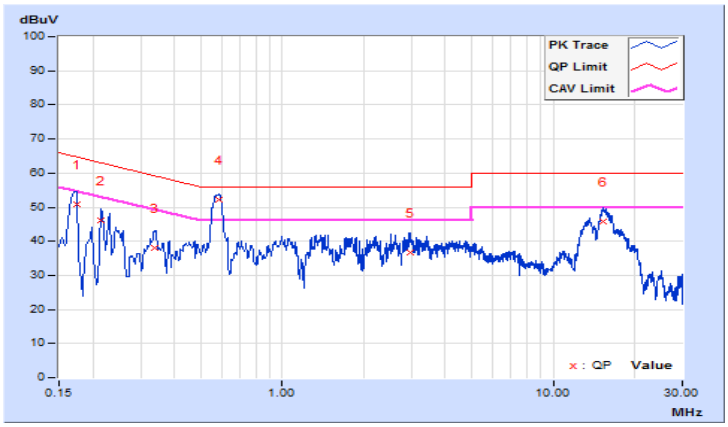
4.2.7 Test Results

RF Mode	TX 802.11ac (20MHz)	Channel	CH 147：5735 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

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	0.17400	9.58	41.32	24.39	50.90	33.97	64.77	54.77	-13.87	-20.80
2	0.21400	9.59	36.67	21.84	46.26	31.43	63.05	53.05	-16.79	-21.62
3	0.33945	9.58	28.34	17.60	37.92	27.18	59.22	49.22	-21.30	-22.04
4	**0.58563**	**9.59**	**42.60**	**34.38**	**52.19**	**43.97**	**56.00**	**46.00**	**-3.81**	**-2.03**
5	2.96200	9.65	27.05	20.83	36.70	30.48	56.00	46.00	-19.30	-15.52
6	15.23000	9.77	36.04	29.56	45.81	39.33	60.00	50.00	-14.19	-10.67

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

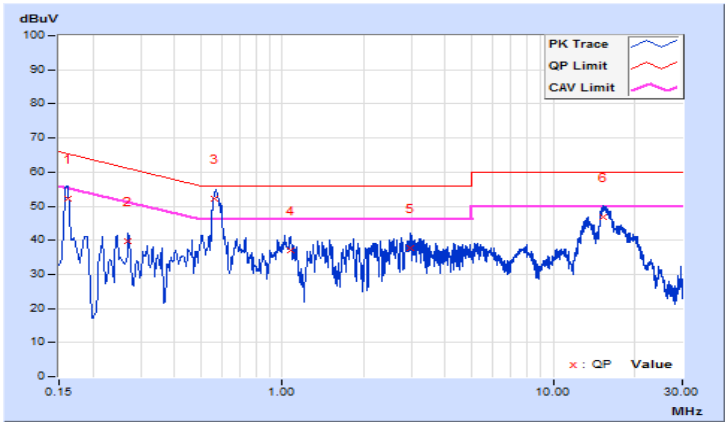


RF Mode	TX 802.11ac (20MHz)	Channel	CH 147：5735 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

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	0.16105	9.56	42.74	24.60	52.30	34.16	65.41	55.41	-13.11	-21.25
2	0.27000	9.57	30.08	15.24	39.65	24.81	61.12	51.12	-21.47	-26.31
3	0.56442	9.57	42.75	31.87	52.32	41.44	56.00	46.00	-3.68	-4.56
4	1.07346	9.58	27.37	19.40	36.95	28.98	56.00	46.00	-19.05	-17.02
5	2.98600	9.62	27.97	21.68	37.59	31.30	56.00	46.00	-18.41	-14.70
6	15.29800	9.80	36.98	30.73	46.78	40.53	60.00	50.00	-13.22	-9.47

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

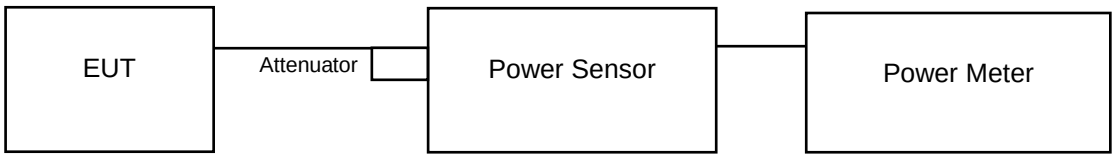
Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p ≦ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
	√	Fixed point-to-point Access Point	1 Watt (30 dBm)
		Indoor Access Point	1 Watt (30 dBm)
		Mobile and Portable client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

*B is the 26 dB emission bandwidth in megahertz

Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

For power measurements on all other devices: Array Gain = 10 log(NANT/NSS) dB.

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

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.

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 specific channel frequencies individually.

4.3.7 Test Result

POWER OUTPUT

802.11ac (20MHz)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
32	5160	-14.12	-14.32	0.07571	-11.21	27	Pass
33	5165	10.05	9.64	19.32	12.86	27	Pass
34	5170	11.92	11.75	30.522	14.85	27	Pass
40	5200	17.99	17.87	124.186	20.94	27	Pass
48	5240	14.73	14.68	59.093	17.72	27	Pass
147	5735	18.73	18.14	139.808	21.46	30	Pass
158	5790	16.11	15.70	77.985	18.92	30	Pass
165	5825	15.95	15.68	76.338	18.83	30	Pass
168	5840	11.38	10.55	25.091	14.00	30	Pass

Note: For U-NII-1 band: The antenna gain is 26dBi > 23dBi, therefore the limit needs to reduce, so the power limit shall be reduced to 30-(26-23) = 27dBm.

802.11ac (40MHz)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
34	5170	-9.33	-9.46	0.2299	-6.38	27	Pass
35	5175	-0.92	0.54	1.9415	2.88	27	Pass
36	5180	5.29	5.24	6.723	8.28	27	Pass
40	5200	15.32	15.11	66.475	18.23	27	Pass
46	5230	17.49	17.12	107.628	20.32	27	Pass
149	5745	18.62	17.85	133.732	21.26	30	Pass
158	5790	17.58	17.16	109.279	20.39	30	Pass
165	5825	17.42	16.86	103.737	20.16	30	Pass
166	5830	11.49	10.63	25.654	14.09	30	Pass

Note: For U-NII-1 band: The antenna gain is 26dBi > 23dBi, therefore the limit needs to reduce, so the power limit shall be reduced to 30-(26-23) = 27dBm.

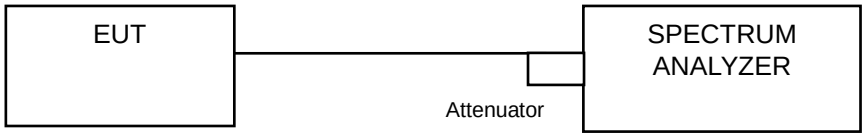
802.11ac (80MHz)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	-10.30	-10.97	0.17331	-7.61	27	Pass
40	5200	-1.49	0.06	1.7235	2.36	27	Pass
42	5210	4.37	4.35	5.458	7.37	27	Pass
153	5765	15.94	15.13	71.848	18.56	30	Pass
158	5790	15.87	15.31	72.599	18.61	30	Pass
162	5810	13.68	13.24	44.421	16.48	30	Pass

Note: For U-NII-1 band: The antenna gain is 26dBi > 23dBi, therefore the limit needs to reduce, so the power limit shall be reduced to 30-(26-23) = 27dBm.

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

802.11ac (20MHz)

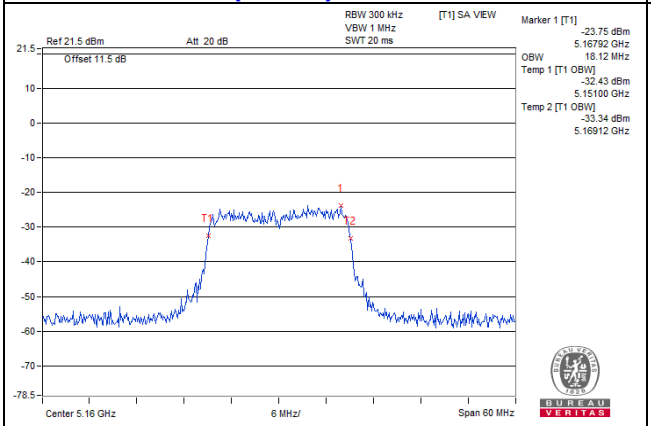
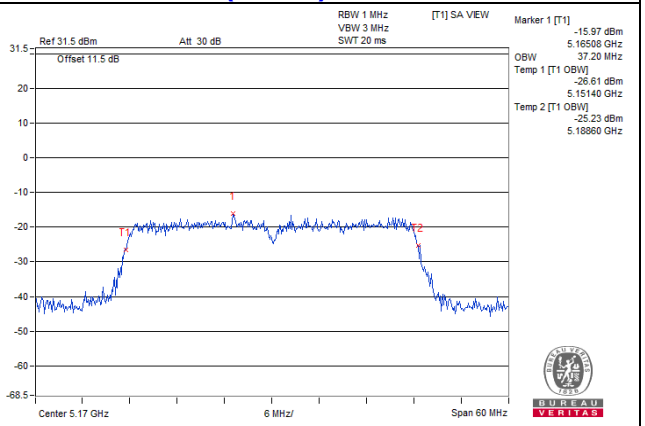
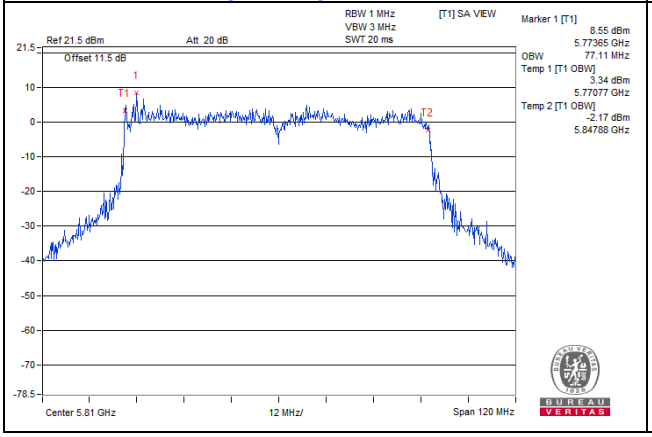
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
32	5160	18.12	18
33	5165	17.88	17.88
34	5170	17.76	17.76
40	5200	17.88	17.88
48	5240	17.76	17.88
147	5735	17.79	18.08
158	5790	17.98	17.79
165	5825	18	17.64
168	5840	17.79	17.88

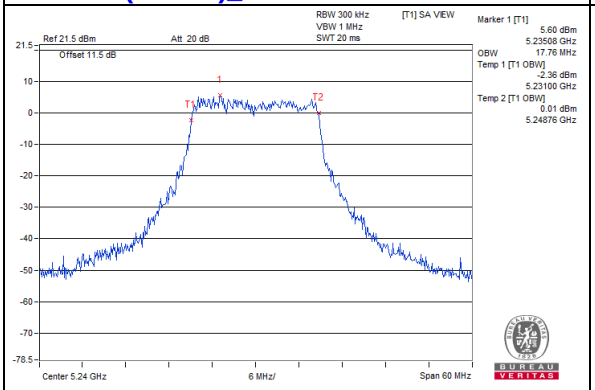
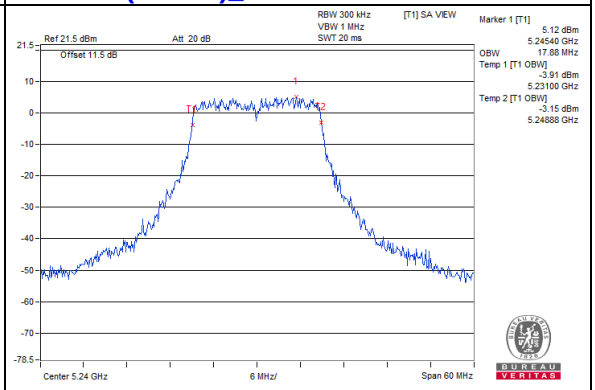
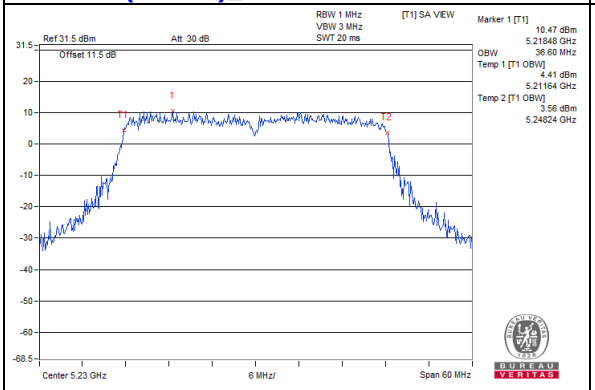
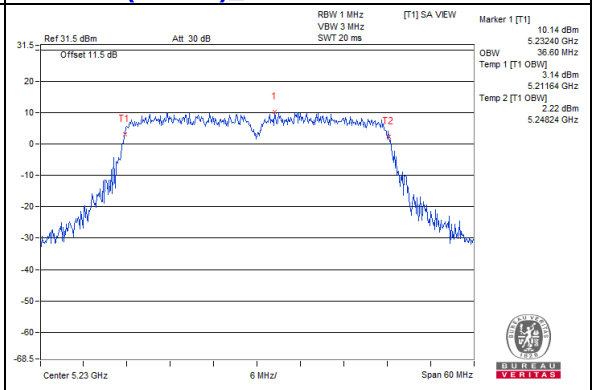
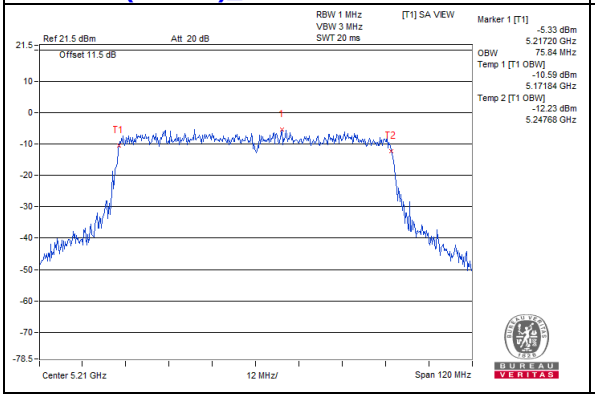
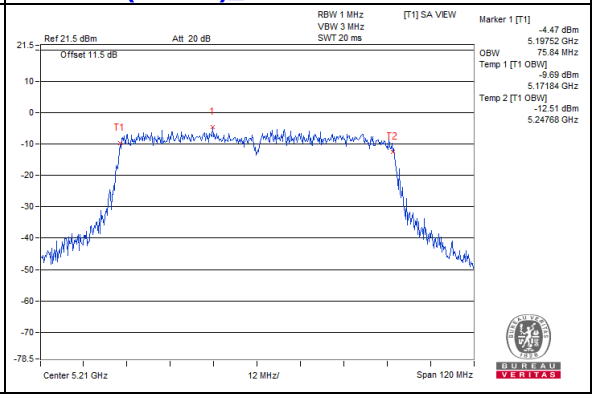
802.11ac (40MHz)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
34	5170	37.2	36.96
35	5175	36.84	36.72
36	5180	36.96	36.72
40	5200	36.84	36.72
46	5230	36.6	36.6
149	5745	36.6	36.96
158	5790	37.08	37.08
165	5825	36.72	36.96
166	5830	36.6	36.72

802.11ac (80MHz)

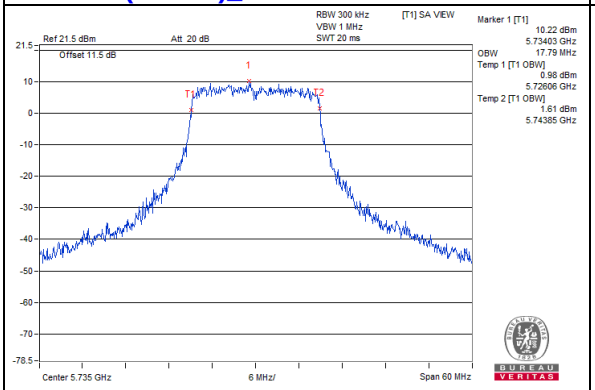
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	76.08	75.84
40	5200	75.84	76.08
42	5210	75.84	75.84
153	5765	76.34	76.92
158	5790	75.96	76.35
162	5810	76.15	77.11

Spectrum Plot of Max. Value	
802.11ac (20MHz)_Chain 0 / CH32	**802.11ac (40MHz)_Chain 0 / CH34**
	
802.11ac (80MHz)_Chain 1 / CH162	
	

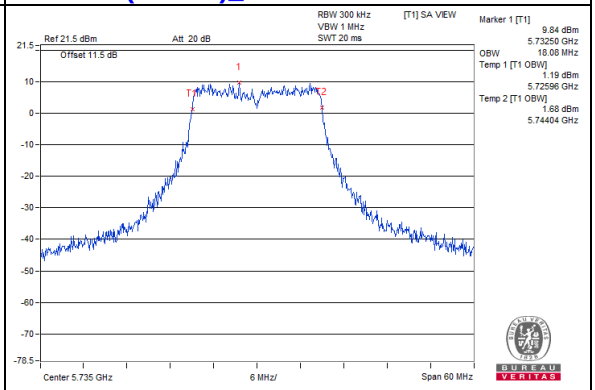
Spectrum Plot for near by DFS band (DFS is required, if 99% OCP straddle into U-NII-2A band)	
802.11ac (20MHz)_Chain 0 / CH48	**802.11ac (20MHz)_Chain 1 / CH48**
	
802.11ac (40MHz)_Chain 0 / CH46	**802.11ac (40MHz)_Chain 1 / CH46**
	
802.11ac (80MHz)_Chain 0 / CH42	**802.11ac (80MHz)_Chain 1 / CH42**
	

Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2C band)

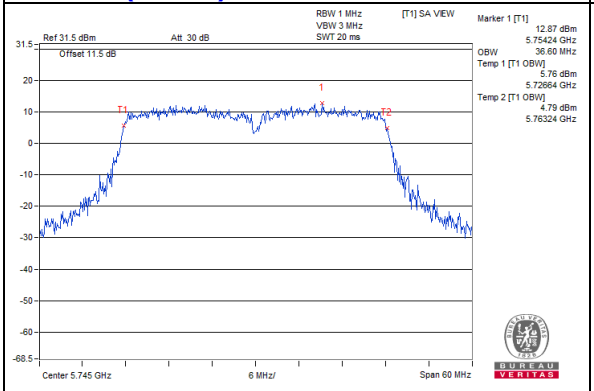
802.11ac (20MHz)_Chain 0 / CH147



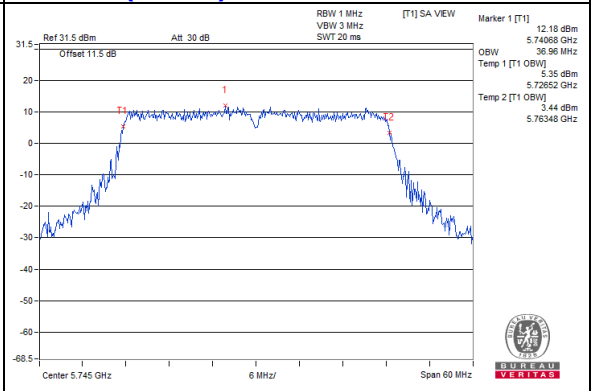
802.11ac (20MHz)_Chain 1 / CH147



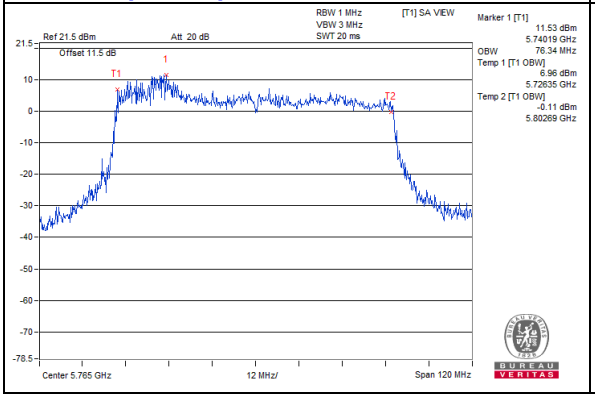
802.11ac (40MHz)_Chain 0 / CH149



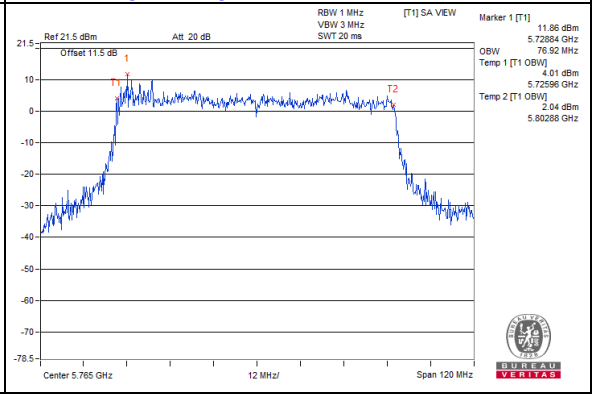
802.11ac (40MHz)_Chain 1 / CH149



802.11ac (80MHz)_Chain 0 / CH153



802.11ac (80MHz)_Chain 1 / CH153

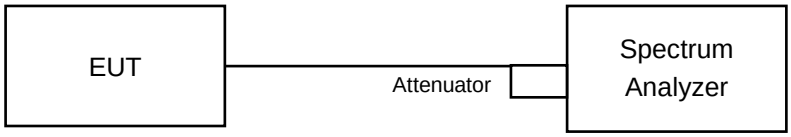


4.5 Peak Power Spectral Density Measurement

4.5.1 Limits of Peak Power Spectral Density Measurement

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

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 Procedure

For U-NII-1:

Using method SA-2

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW ≥ 3 MHz, 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 MHz, 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 (increasing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log(500 kHz/300kHz)
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 Condition

Same as 4.3.6.

4.5.7 Test Results

For U-NII-1 Band

802.11ac (20MHz)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty factor	Total PSD with duty factor (dBm)	Max. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
32	5160	-28.21	-29.01	0.26	-25.32	10.99	Pass
33	5165	-5.57	-4.05	0.26	-1.47	10.99	Pass
34	5170	-1.94	-1.92	0.26	1.34	10.99	Pass
40	5200	3.54	3.60	0.26	6.84	10.99	Pass
48	5240	0.88	0.26	0.26	3.85	10.99	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

2. The directional gain= 26dBi + 10log(2) = 29.01dBi > 23dBi , so the power density limit shall be reduced to 17-(29.01-23) = 10.99dBm.

3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (40MHz)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty factor	Total PSD with duty factor (dBm)	Max. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
34	5170	-27.04	-26.68	0.52	-23.32	10.99	Pass
35	5175	-17.86	-16.43	0.52	-13.55	10.99	Pass
36	5180	-12.31	-12.24	0.52	-8.74	10.99	Pass
40	5200	-2.51	-1.95	0.52	1.31	10.99	Pass
46	5230	0.04	0.06	0.52	3.59	10.99	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

2. The directional gain= 26dBi + 10log(2) = 29.01dBi > 23dBi , so the power density limit shall be reduced to 17-(29.01-23) = 10.99dBm.

3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (80MHz)

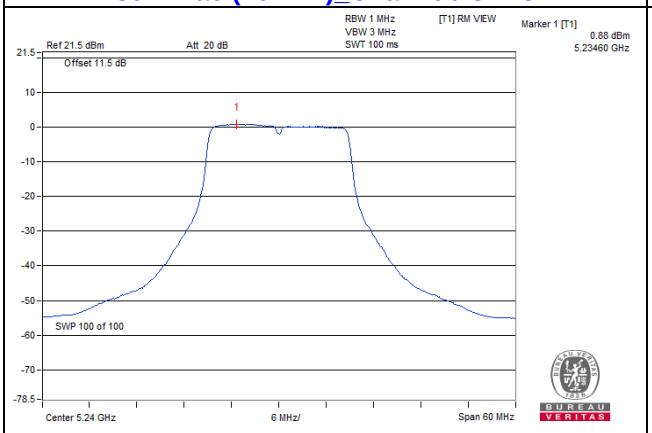
Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty factor	Total PSD with duty factor (dBm)	Max. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	-31.58	-31.52	1.02	-27.52	10.99	Pass
40	5200	-20.21	-20.13	1.02	-16.14	10.99	Pass
42	5210	-15.93	-15.86	1.02	-11.87	10.99	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

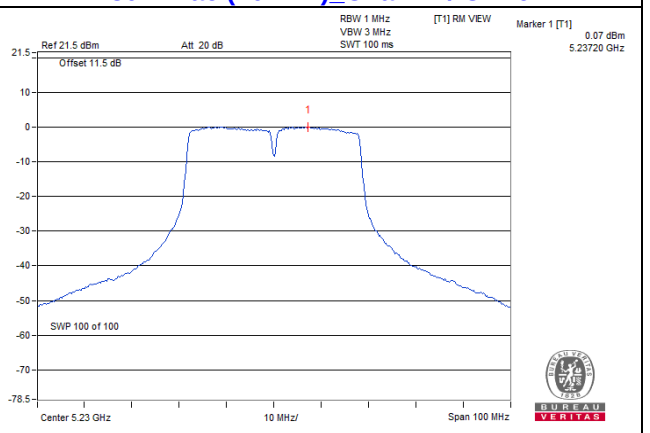
2. The directional gain= 26dBi + 10log(2) = 29.01dBi > 23dBi , so the power density limit shall be reduced to 17-(29.01-23) = 10.99dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

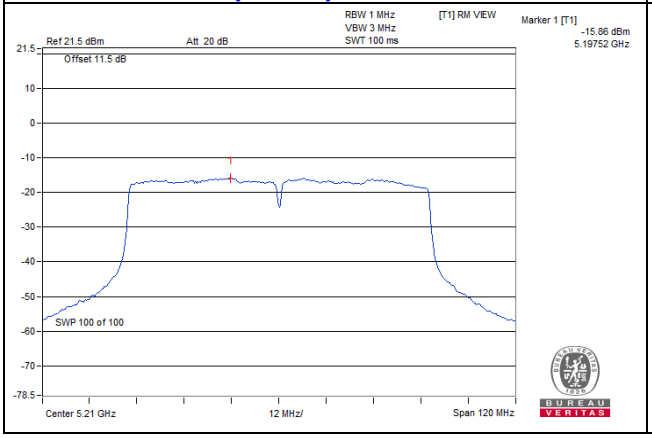
802.11ac (20MHz)_Chain 0 / CH48



802.11ac (40MHz)_Chain 1 / CH46



802.11ac (80MHz)_Chain 1 / CH42



For U-NII-3 Band

802.11ac (20MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=2) dB	Duty factor	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
0	147	5735	-2.59	-0.37	3.01	0.26	2.9	6.99	Pass
	158	5790	-5.22	-3	3.01	0.26	0.27	6.99	Pass
	165	5825	-5.22	-3	3.01	0.26	0.27	6.99	Pass
	168	5840	-11.49	-9.27	3.01	0.26	-6	6.99	Pass
1	147	5735	-2.6	-0.38	3.01	0.26	2.89	6.99	Pass
	158	5790	-5.18	-2.96	3.01	0.26	0.31	6.99	Pass
	165	5825	-5.16	-2.94	3.01	0.26	0.33	6.99	Pass
	168	5840	-11.14	-8.92	3.01	0.26	-5.65	6.99	Pass

Note: 1. Method c) Measure and add 10 log(NANT) dB of KDB 662911 is using for calculating total power density.

2. The directional gain= 26dBi + 10log(2) = 29.01dBi > 6dBi , so the power density limit shall be reduced to 30-(29.01-6) = 6.99dBm.

3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (40MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=2) dB	Duty factor	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
0	149	5745	-5.84	-3.62	3.01	0.52	-0.09	6.99	Pass
	158	5790	-7.37	-5.15	3.01	0.52	-1.62	6.99	Pass
	165	5825	-7.41	-5.19	3.01	0.52	-1.66	6.99	Pass
	166	5830	-15.02	-12.8	3.01	0.52	-9.27	6.99	Pass
1	149	5745	-6.21	-3.99	3.01	0.52	-0.46	6.99	Pass
	158	5790	-7.11	-4.89	3.01	0.52	-1.36	6.99	Pass
	165	5825	-7.88	-5.66	3.01	0.52	-2.13	6.99	Pass
	166	5830	-13.79	-11.57	3.01	0.52	-8.04	6.99	Pass

Note: 1. Method c) Measure and add 10 log(NANT) dB of KDB 662911 is using for calculating total power density.

2. The directional gain= 26dBi + 10log(2) = 29.01dBi > 6dBi , so the power density limit shall be reduced to 30-(29.01-6) = 6.99dBm.

3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (80MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=2) dB	Duty factor	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
0	153	5765	-12.34	-10.12	3.01	1.02	-6.09	6.99	Pass
	158	5790	-12.07	-9.85	3.01	1.02	-5.82	6.99	Pass
	162	5810	-14.17	-11.95	3.01	1.02	-7.92	6.99	Pass
1	153	5765	-12.17	-9.95	3.01	1.02	-5.92	6.99	Pass
	158	5790	-12.45	-10.23	3.01	1.02	-6.2	6.99	Pass
	162	5810	-14.38	-12.16	3.01	1.02	-8.13	6.99	Pass

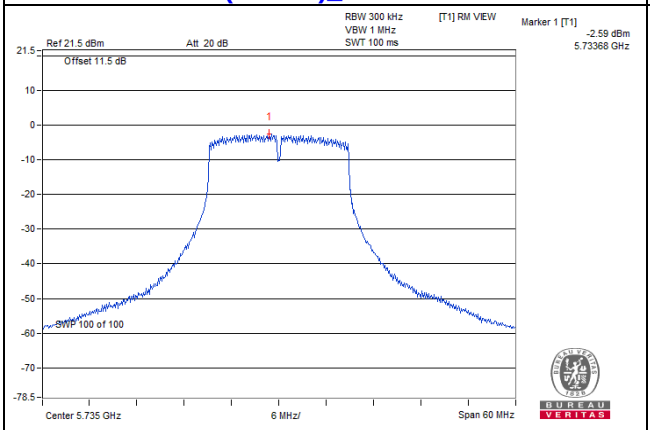
Note: 1. Method c) Measure and add 10 log(NANT) dB of KDB 662911 is using for calculating total power density.

2. The directional gain= 26dBi + 10log(2) = 29.01dBi > 6dBi , so the power density limit shall be reduced to 30-(29.01-6) = 6.99dBm.

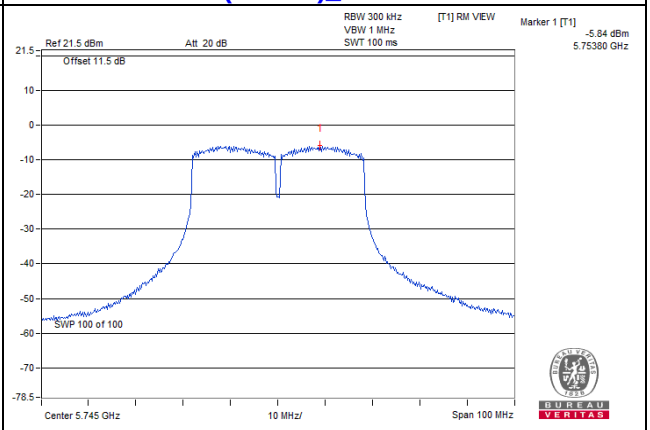
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

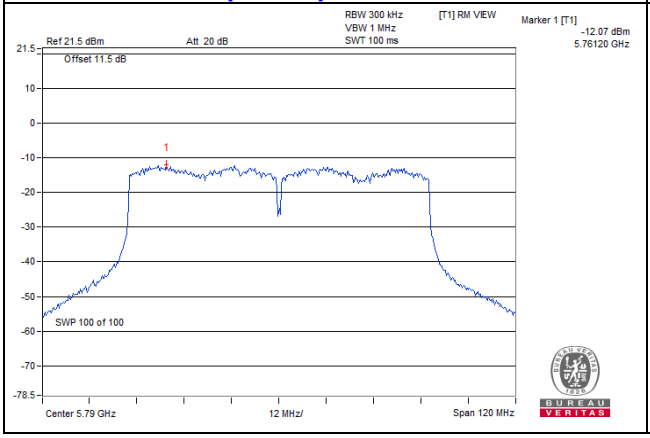
802.11ac (20MHz)_Chain 0 / CH147



802.11ac (40MHz)_Chain 0 / CH149



802.11ac (80MHz)_Chain 0 / CH158

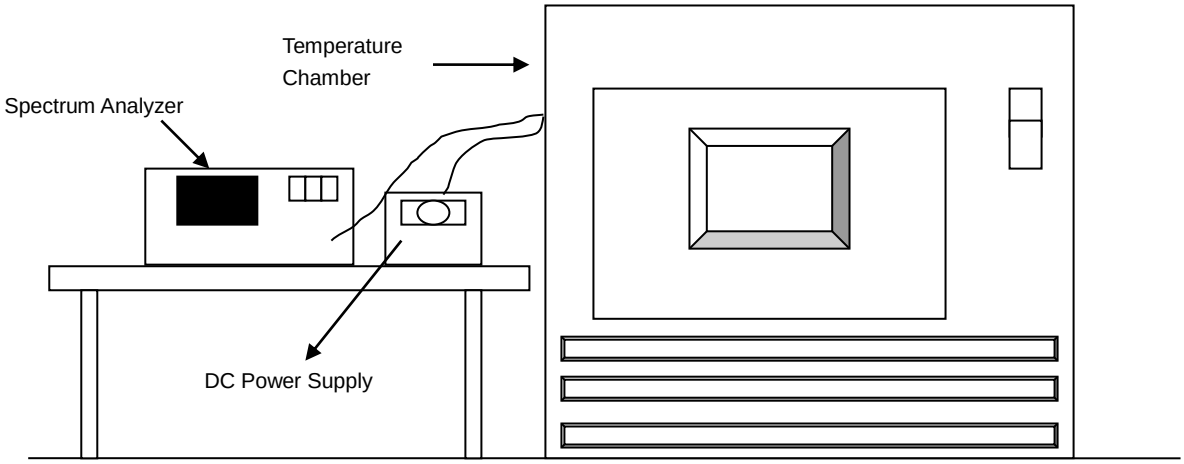


4.6 Frequency Stability

4.6.1 Limits 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 DC voltage.
b. Turn the EUT on and couple its output to a spectrum analyzer.
c. Turn the EUT off and set the chamber to the highest temperature specified.
d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
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

802.11ac (20MHz)

Frequency Stability Versus Temp.									
Operating Frequency: 5160MHz									
Temp. (℃)	Power Supply (Vdc)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
55	48	5159.977	PASS	5159.9746	PASS	5159.9749	PASS	5159.9792	PASS
50	48	5160.0081	PASS	5160.0081	PASS	5160.0071	PASS	5160.0089	PASS
40	48	5160.0097	PASS	5160.0091	PASS	5160.0117	PASS	5160.0083	PASS
30	48	5159.9884	PASS	5159.9913	PASS	5159.9887	PASS	5159.9919	PASS
20	48	5160.0065	PASS	5160.0095	PASS	5160.0061	PASS	5160.0092	PASS
10	48	5159.996	PASS	5159.9947	PASS	5159.9985	PASS	5159.998	PASS
0	48	5159.989	PASS	5159.9878	PASS	5159.9885	PASS	5159.9869	PASS
-10	48	5159.9958	PASS	5159.9959	PASS	5159.993	PASS	5159.9926	PASS
-20	48	5160.0031	PASS	5160.0042	PASS	5160.0011	PASS	5160.0043	PASS
-30	48	5160.0194	PASS	5160.0218	PASS	5160.0226	PASS	5160.0231	PASS
-40	48	5159.9965	PASS	5159.9973	PASS	5159.9977	PASS	5159.9958	PASS

Frequency Stability Versus Voltage									
Operating Frequency: 5160MHz									
Temp. (℃)	Power Supply (Vdc)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	55.2	5160.006	PASS	5160.0105	PASS	5160.0054	PASS	5160.0096	PASS
	48	5160.0065	PASS	5160.0095	PASS	5160.0061	PASS	5160.0092	PASS
	40.8	5160.0057	PASS	5160.0092	PASS	5160.0051	PASS	5160.0092	PASS

802.11ac (40MHz)

Frequency Stability Versus Temp.									
Operating Frequency: 5170MHz									
Temp. (℃)	Power Supply (Vdc)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
55	48	5169.9854	PASS	5169.9848	PASS	5169.9859	PASS	5169.9837	PASS
50	48	5170.0126	PASS	5170.0136	PASS	5170.0132	PASS	5170.0119	PASS
40	48	5170.0081	PASS	5170.0066	PASS	5170.0058	PASS	5170.0096	PASS
30	48	5169.9896	PASS	5169.9912	PASS	5169.9925	PASS	5169.9883	PASS
20	48	5169.9947	PASS	5169.9924	PASS	5169.9953	PASS	5169.9919	PASS
10	48	5169.981	PASS	5169.9838	PASS	5169.9797	PASS	5169.9841	PASS
0	48	5169.9882	PASS	5169.9889	PASS	5169.9918	PASS	5169.9894	PASS
-10	48	5170.0093	PASS	5170.0122	PASS	5170.0116	PASS	5170.0124	PASS
-20	48	5170.0141	PASS	5170.0141	PASS	5170.0115	PASS	5170.0095	PASS
-30	48	5170.0202	PASS	5170.0185	PASS	5170.0194	PASS	5170.0189	PASS
-40	48	5170.0058	PASS	5170.0051	PASS	5170.0063	PASS	5170.0067	PASS

Frequency Stability Versus Voltage									
Operating Frequency: 5170MHz									
Temp. (℃)	Power Supply (Vdc)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	55.2	5169.9941	PASS	5169.9918	PASS	5169.9949	PASS	5169.991	PASS
	48	5169.9947	PASS	5169.9924	PASS	5169.9953	PASS	5169.9919	PASS
	40.8	5169.9937	PASS	5169.9933	PASS	5169.9947	PASS	5169.9927	PASS

802.11ac (80MHz)

Frequency Stability Versus Temp.									
Operating Frequency: 5190MHz									
Temp. (℃)	Power Supply (Vdc)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
55	48	5190.0205	PASS	5190.0203	PASS	5190.0229	PASS	5190.0235	PASS
50	48	5190.0034	PASS	5190.0043	PASS	5190.0067	PASS	5190.0053	PASS
40	48	5189.9883	PASS	5189.9854	PASS	5189.9876	PASS	5189.9859	PASS
30	48	5189.979	PASS	5189.9763	PASS	5189.9777	PASS	5189.9754	PASS
20	48	5189.9776	PASS	5189.9781	PASS	5189.9796	PASS	5189.9798	PASS
10	48	5190.0185	PASS	5190.0226	PASS	5190.0222	PASS	5190.0187	PASS
0	48	5189.976	PASS	5189.9756	PASS	5189.9734	PASS	5189.9756	PASS
-10	48	5190.0055	PASS	5190.0052	PASS	5190.005	PASS	5190.0055	PASS
-20	48	5190.0174	PASS	5190.0177	PASS	5190.0181	PASS	5190.0218	PASS
-30	48	5190.024	PASS	5190.022	PASS	5190.0232	PASS	5190.0228	PASS
-40	48	5190.0235	PASS	5190.0243	PASS	5190.0232	PASS	5190.0235	PASS

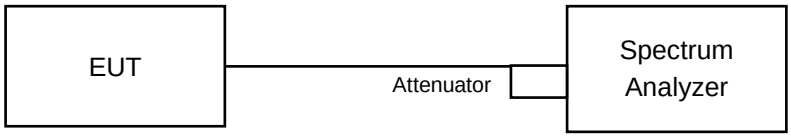
Frequency Stability Versus Voltage									
Operating Frequency: 5190MHz									
Temp. (℃)	Power Supply (Vdc)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	55.2	5189.9783	PASS	5189.9785	PASS	5189.9796	PASS	5189.9806	PASS
	48	5189.9776	PASS	5189.9781	PASS	5189.9796	PASS	5189.9798	PASS
	40.8	5189.9783	PASS	5189.9789	PASS	5189.9803	PASS	5189.9807	PASS

4.7 6dB Bandwidth Measurement

4.7.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

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

a. Set resolution bandwidth (RBW) = 100kHz
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 specific channel frequencies individually.

4.7.7 Test Results

802.11ac (20MHz)

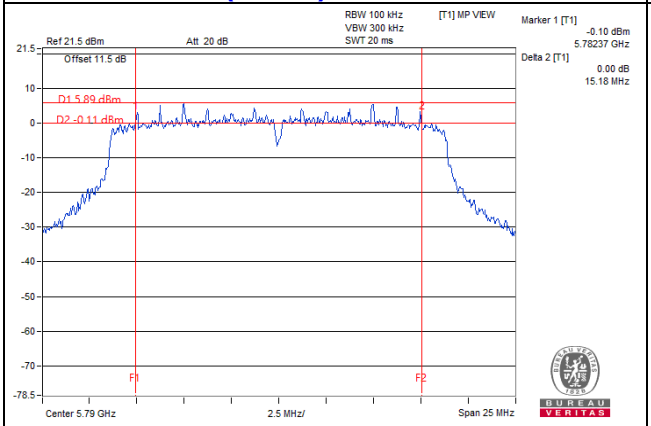
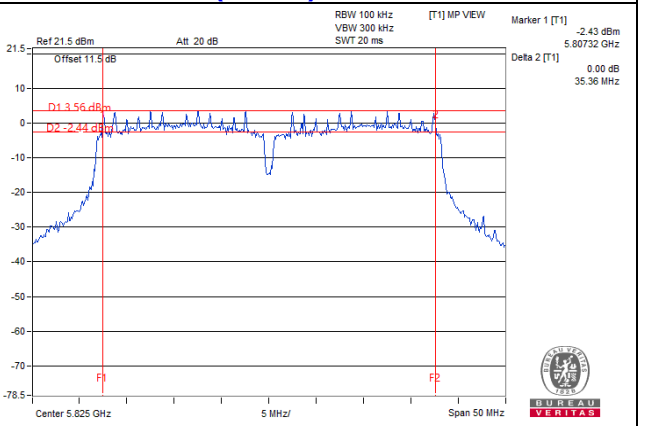
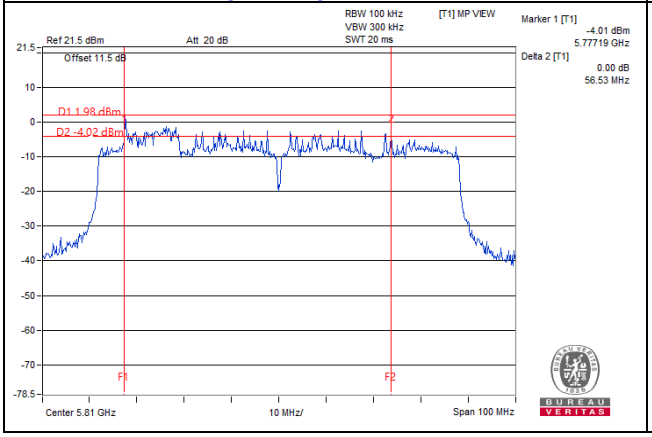
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
147	5735	16.83	17.59	0.5	Pass
158	5790	17.57	15.18	0.5	Pass
165	5825	17.29	15.2	0.5	Pass
168	5840	16.86	17.29	0.5	Pass

802.11ac (40MHz)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	35.44	36.69	0.5	Pass
158	5790	36.19	36.63	0.5	Pass
165	5825	35.36	35.84	0.5	Pass
166	5830	35.36	35.52	0.5	Pass

802.11ac (80MHz)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
153	5765	70.2	59.57	0.5	Pass
158	5790	76.56	64	0.5	Pass
162	5810	66.43	56.53	0.5	Pass

Spectrum Plot of Worst Value	
802.11ac (20MHz)_Chain 1 / CH158	**802.11ac (40MHz)_Chain 0 / CH165**
	
802.11ac (80MHz)_Chain 1 / CH162	
	

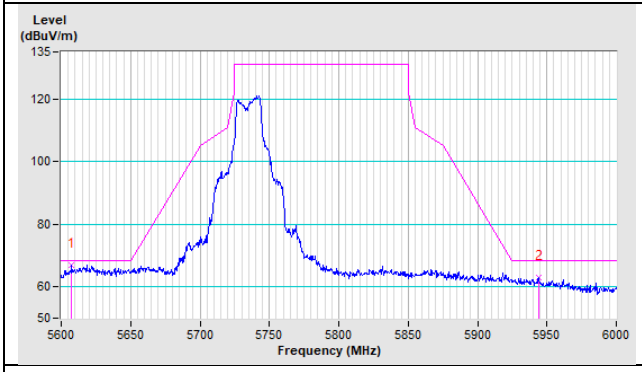
5 Pictures of Test Arrangements

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

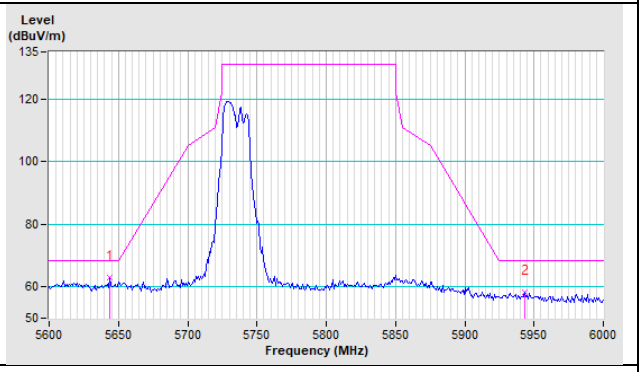
Annex A- Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band)

802.11ac (20MHz) CH 147：5735 MHz

Horizontal

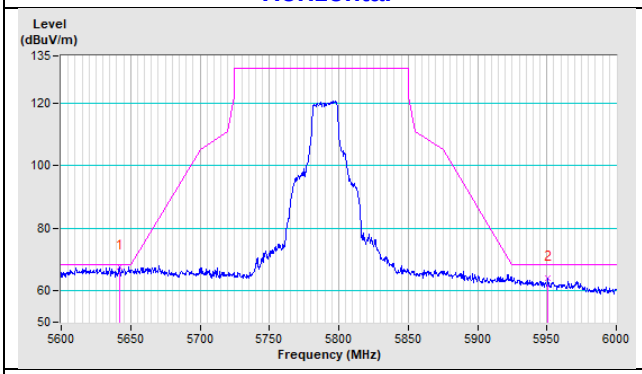


Vertical

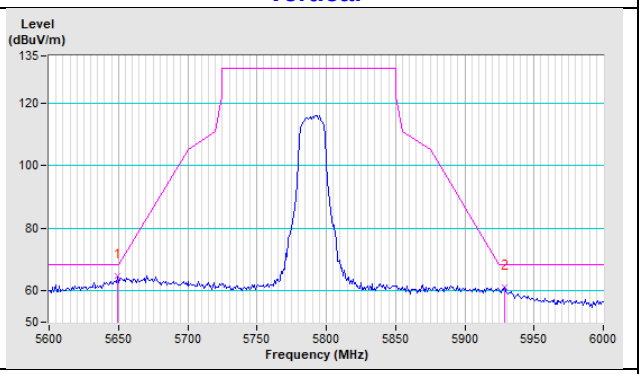


802.11ac (20MHz) CH 158：5790 MHz

Horizontal

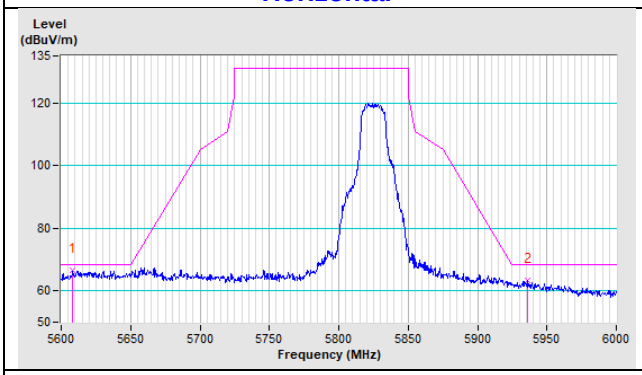


Vertical

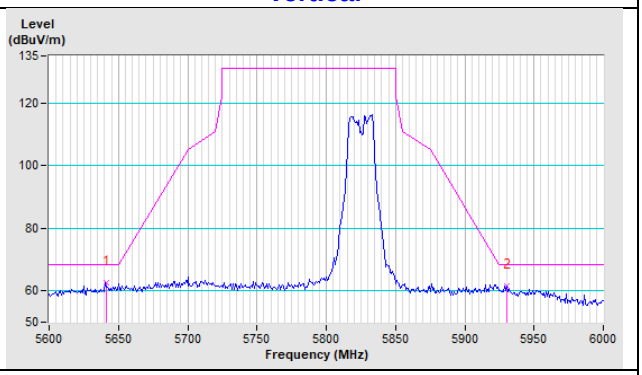


802.11ac (20MHz) CH 165：5825 MHz

Horizontal

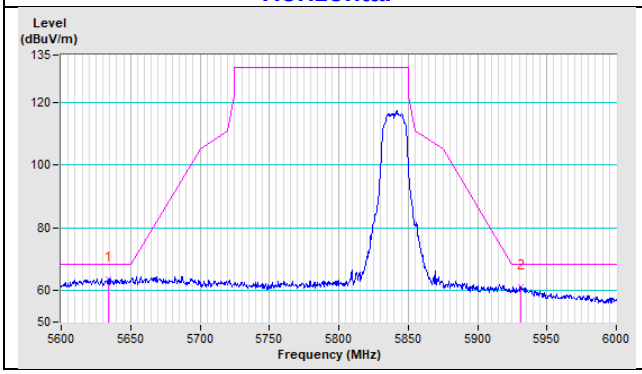


Vertical

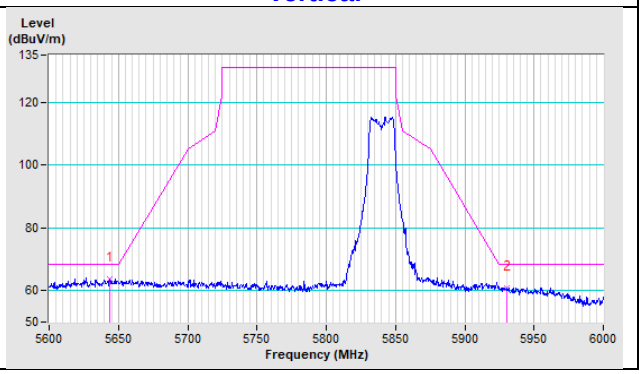


802.11ac (20MHz) CH 168：5840 MHz

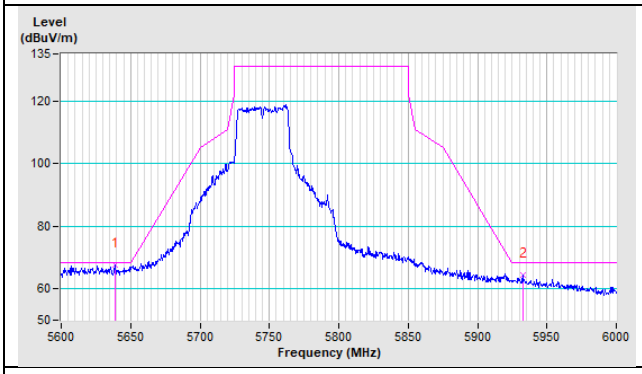
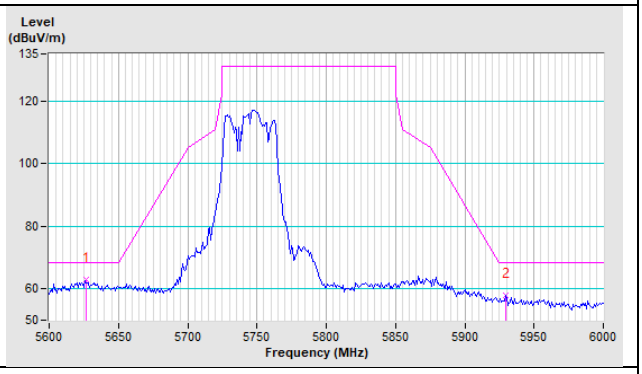
Horizontal



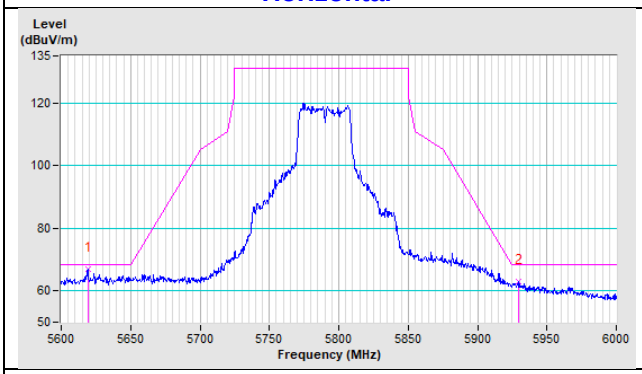
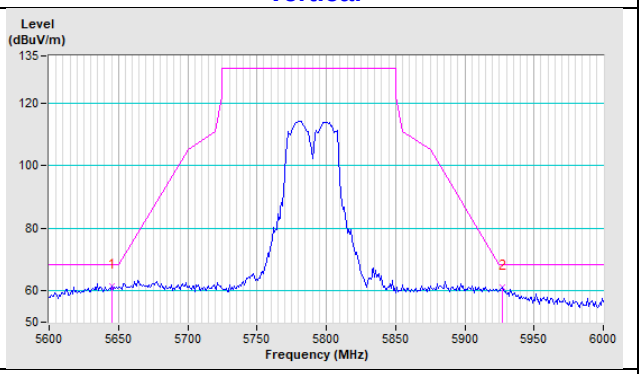
Vertical



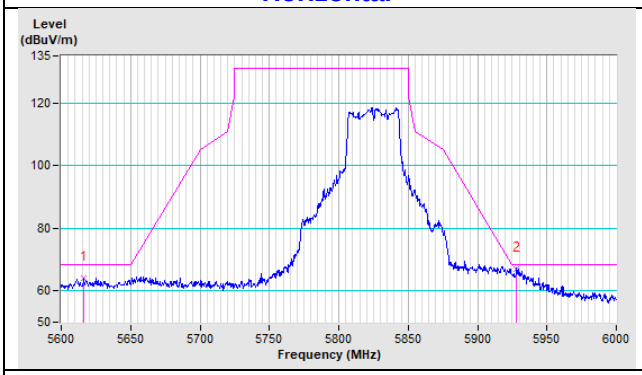
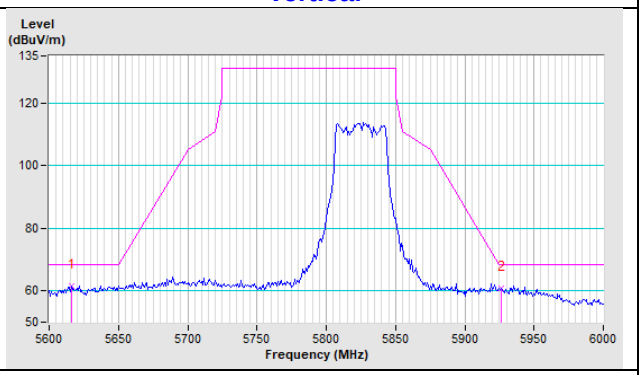
802.11ac (40MHz) CH 149：5745 MHz

Horizontal	Vertical
	

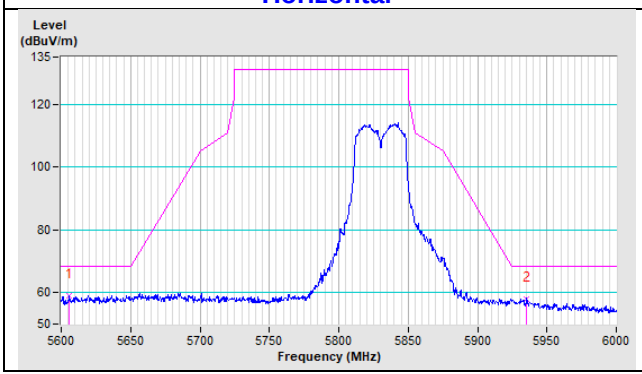
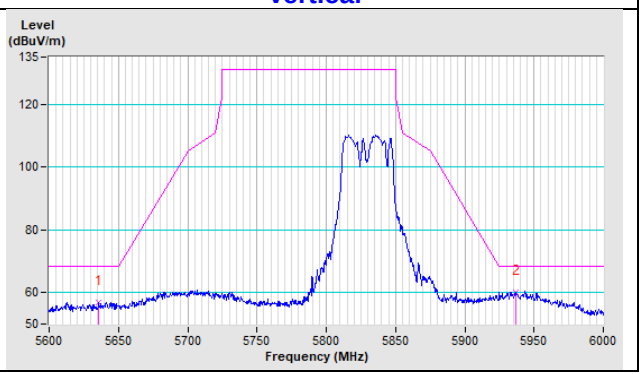
802.11ac (40MHz) CH 158：5790 MHz

Horizontal	Vertical
	

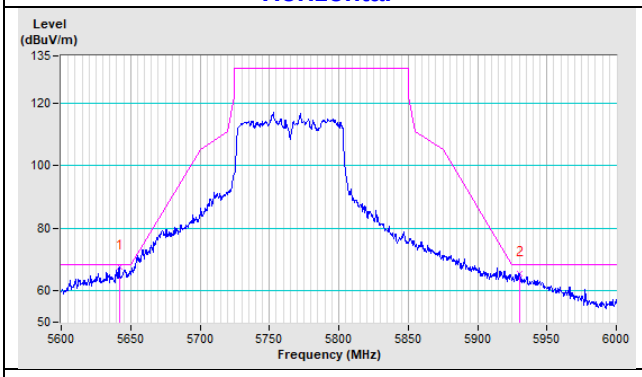
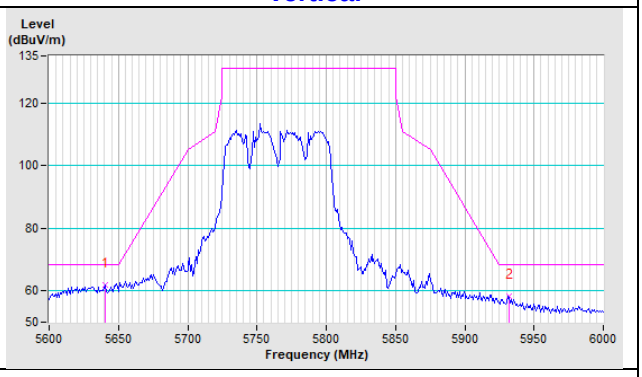
802.11ac (40MHz) CH 165：5825 MHz

Horizontal	Vertical
	

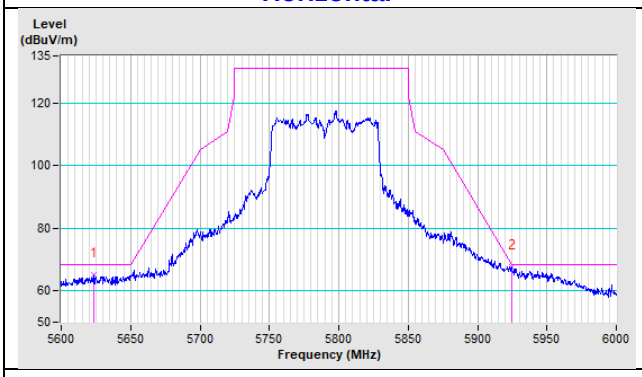
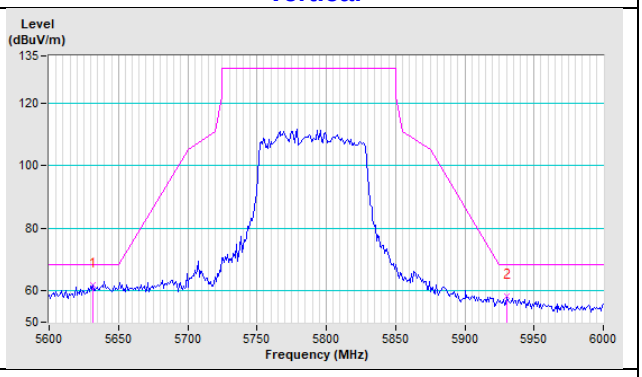
802.11ac (40MHz) CH 166：5830 MHz

Horizontal	Vertical
	

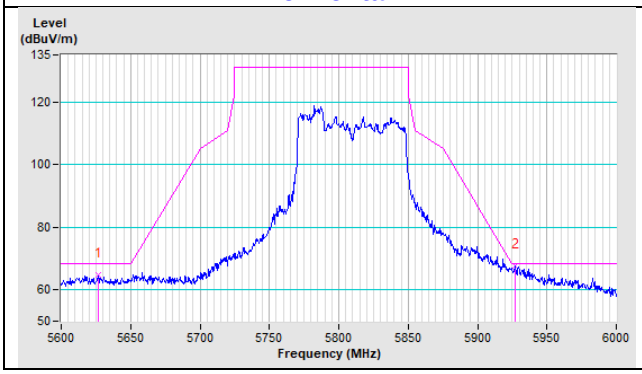
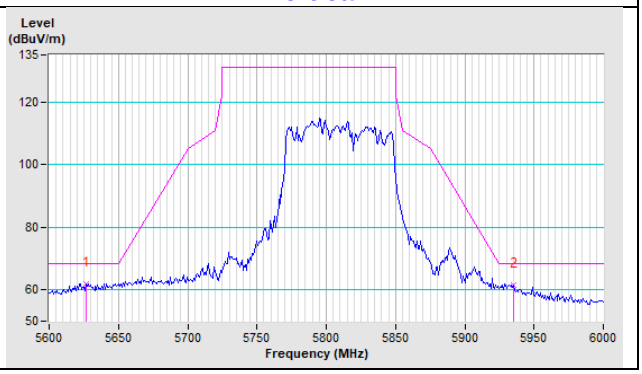
802.11ac (80MHz) CH 153：5765 MHz

Horizontal	Vertical
	

802.11ac (80MHz) CH 158：5790 MHz

Horizontal	Vertical
	

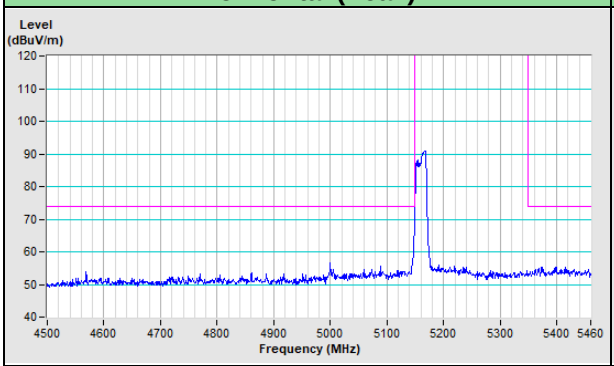
802.11ac (80MHz) CH 162：5810 MHz

Horizontal	Vertical
	

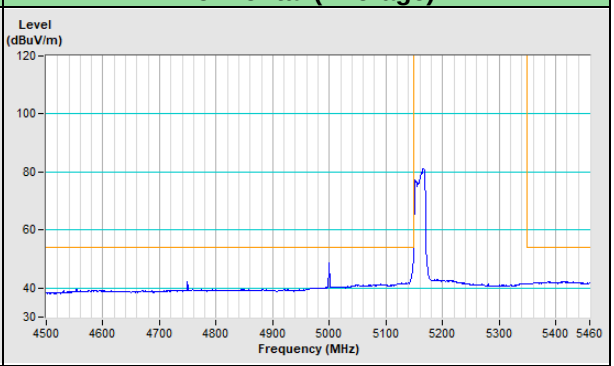
Annex B- Band-edge measurement (For U-NII-1 band)

802.11ac (20MHz) Channel 32

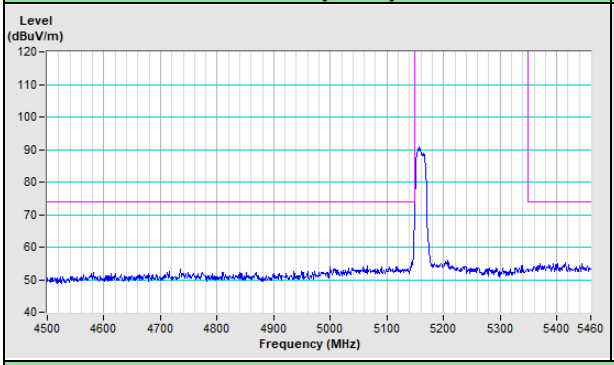
Horizontal (Peak)



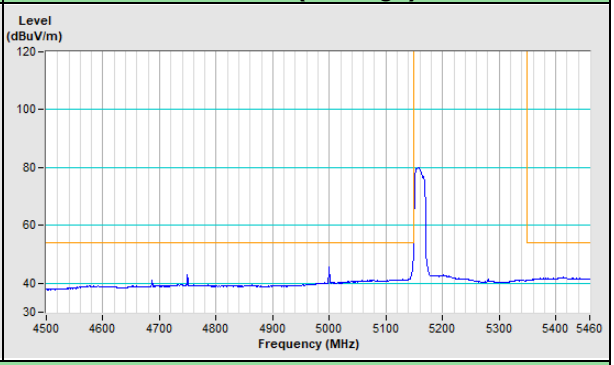
Horizontal (Average)



Vertical (Peak)

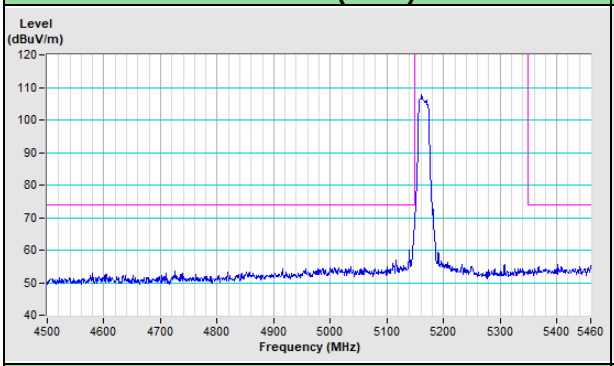


Vertical (Average)

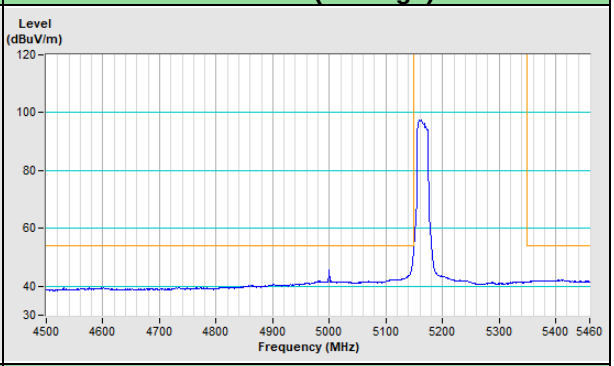


802.11ac (20MHz) Channel 33

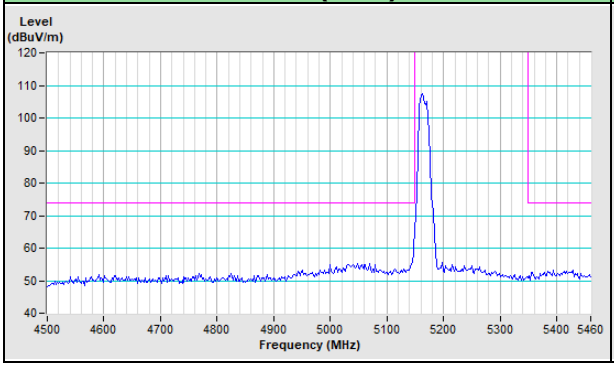
Horizontal (Peak)



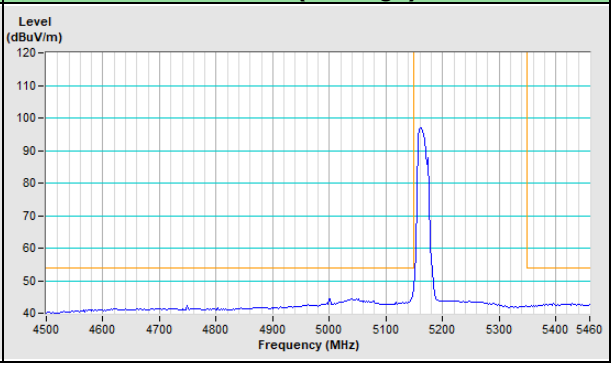
Horizontal (Average)



Vertical (Peak)

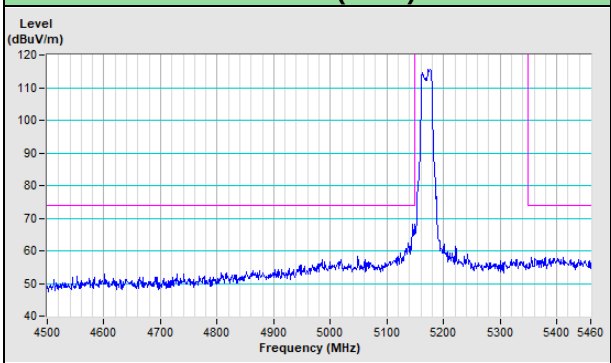


Vertical (Average)

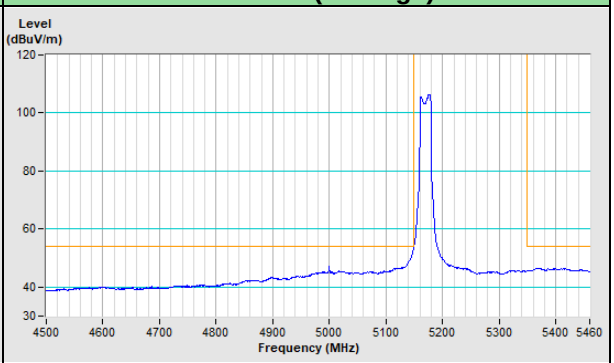


802.11ac (20MHz) Channel 34

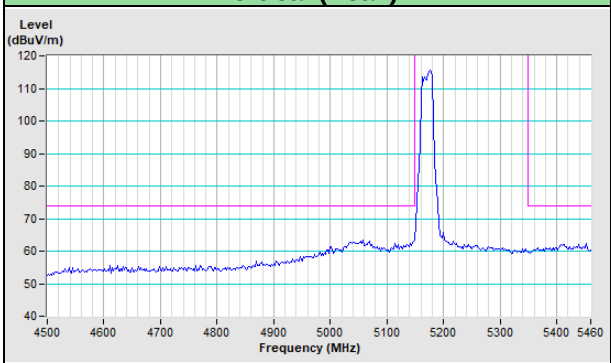
Horizontal (Peak)



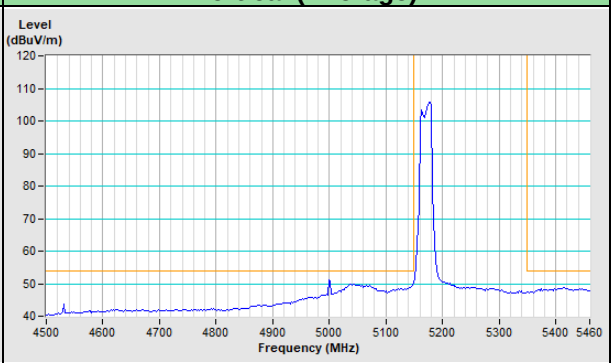
Horizontal (Average)



Vertical (Peak)

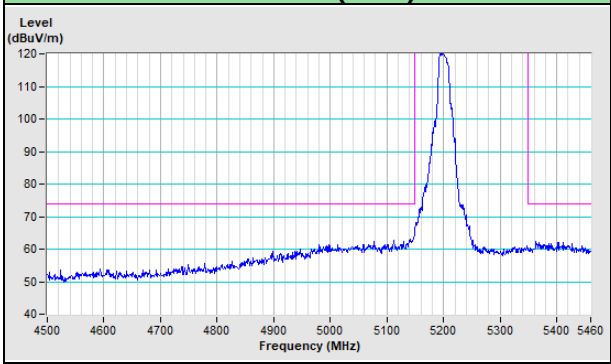


Vertical (Average)

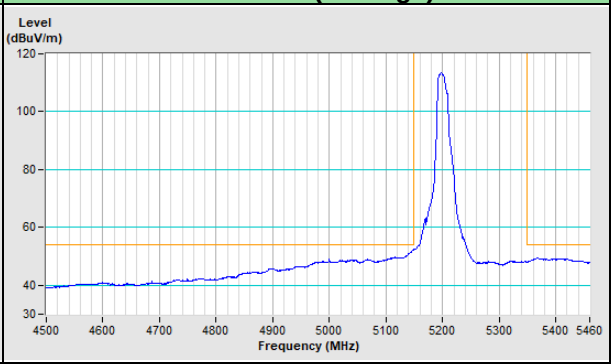


802.11ac (20MHz) Channel 40

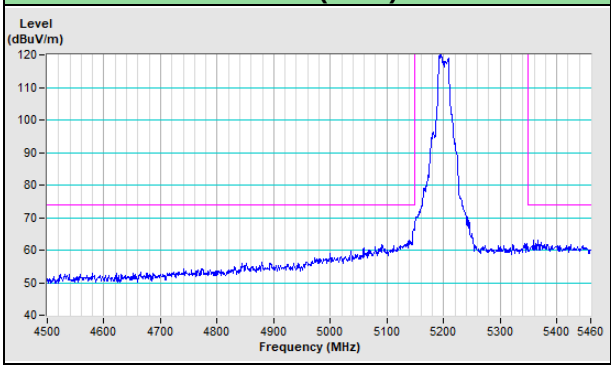
Horizontal (Peak)



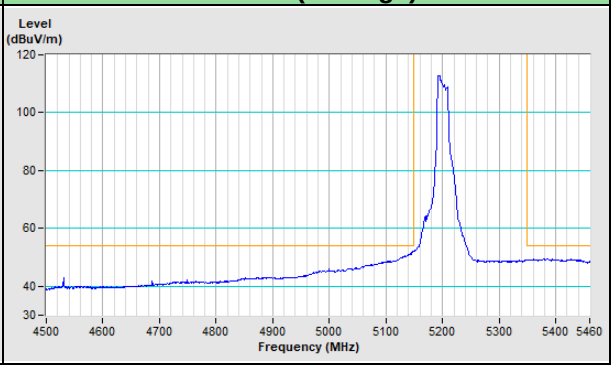
Horizontal (Average)

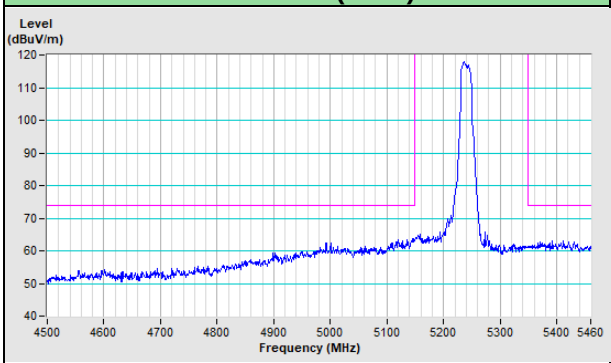
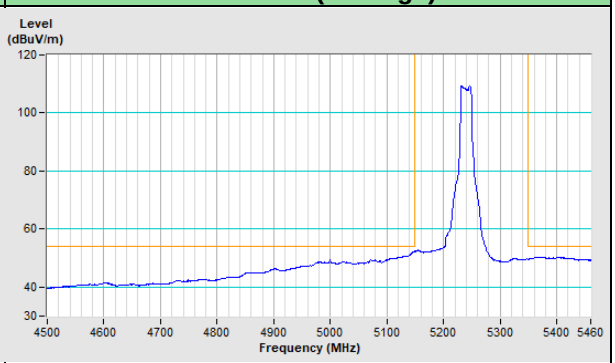
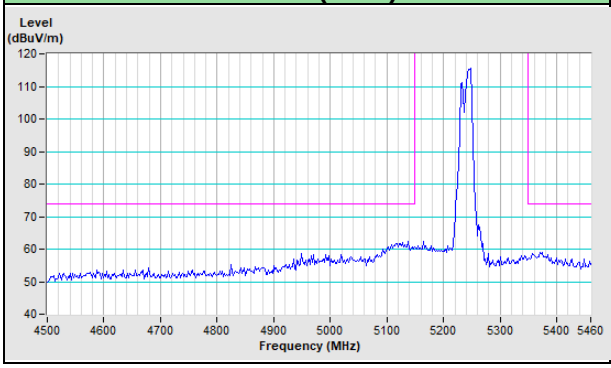
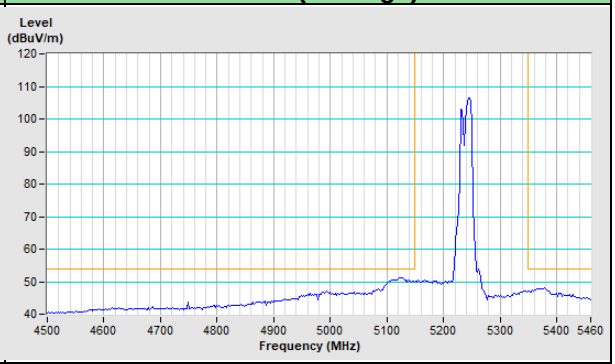


Vertical (Peak)



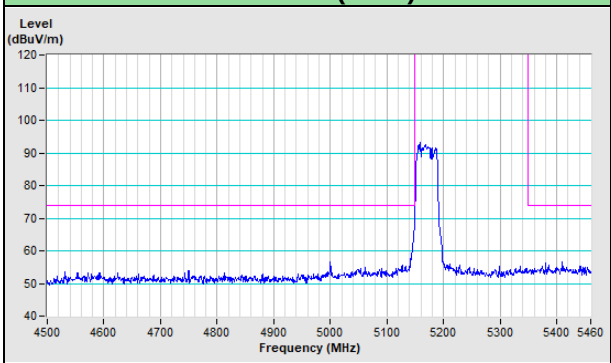
Vertical (Average)



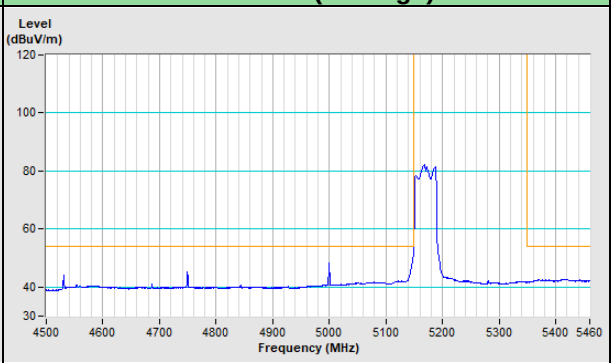
802.11ac (20MHz) Channel 48	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

802.11ac (40MHz) Channel 34

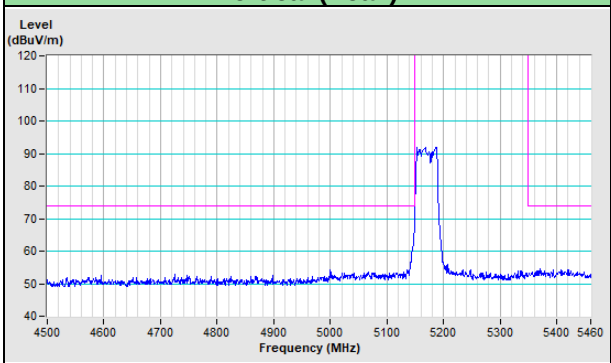
Horizontal (Peak)



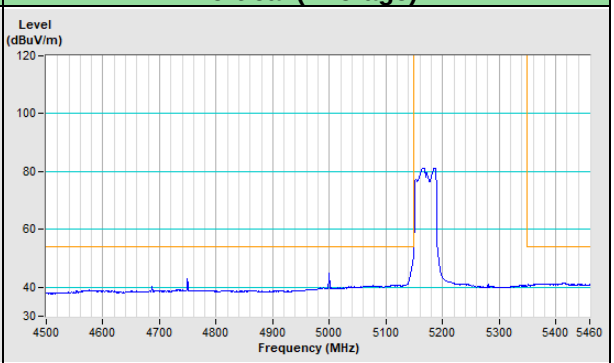
Horizontal (Average)



Vertical (Peak)

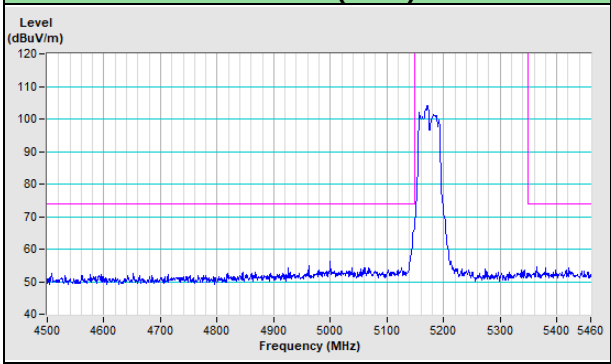


Vertical (Average)

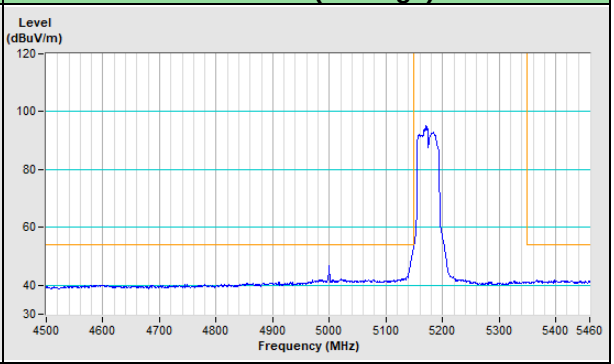


802.11ac (40MHz) Channel 35

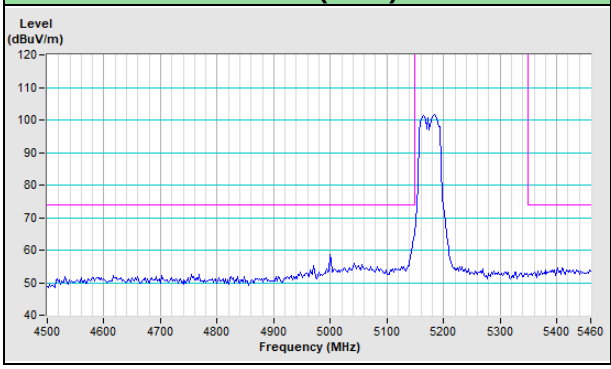
Horizontal (Peak)



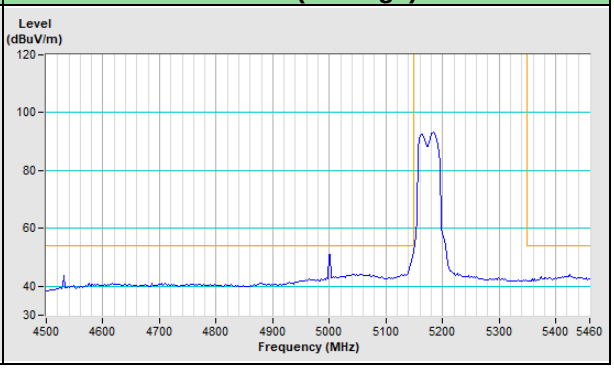
Horizontal (Average)



Vertical (Peak)

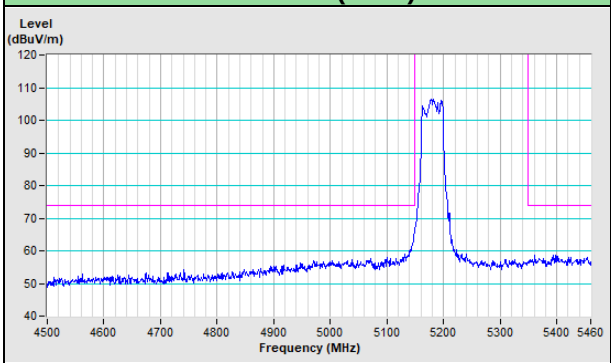


Vertical (Average)

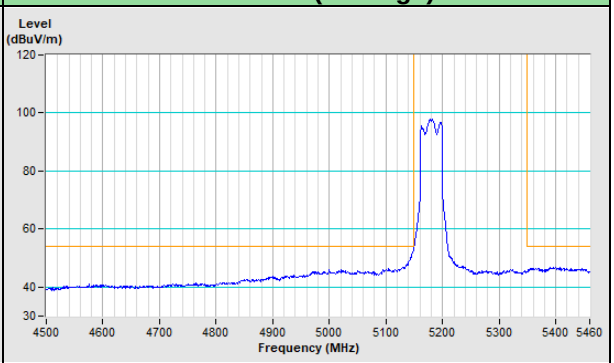


802.11ac (40MHz) Channel 36

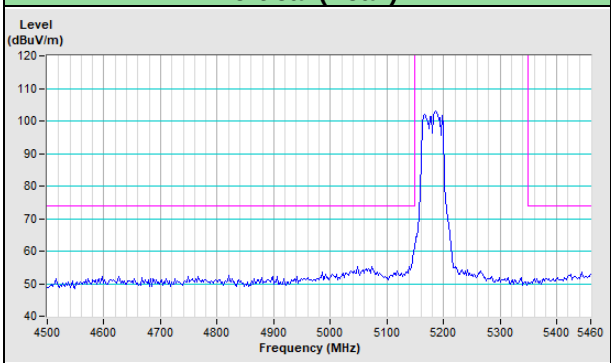
Horizontal (Peak)



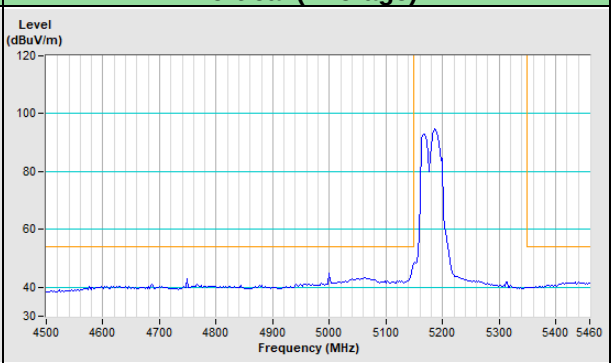
Horizontal (Average)



Vertical (Peak)

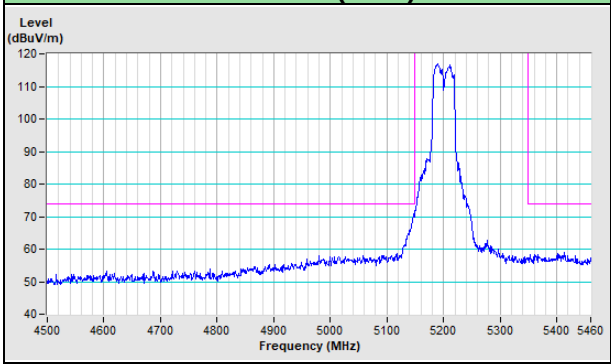


Vertical (Average)

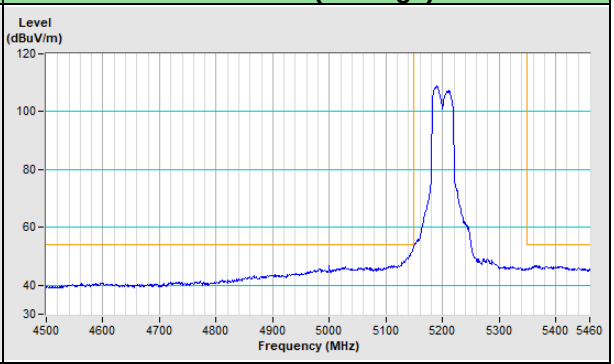


802.11ac (40MHz) Channel 40

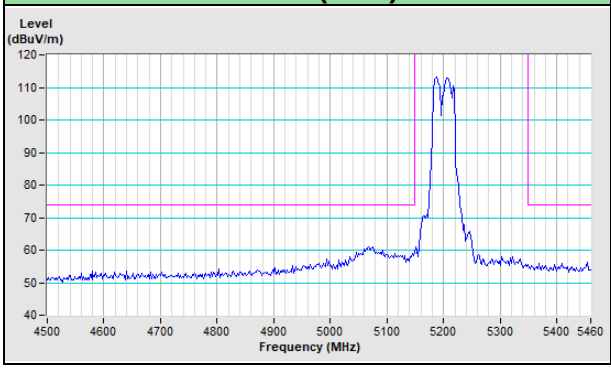
Horizontal (Peak)



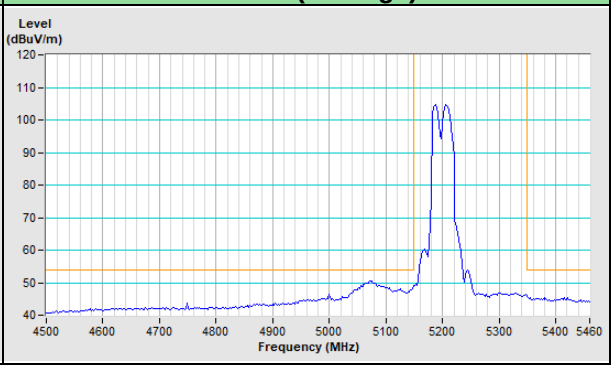
Horizontal (Average)

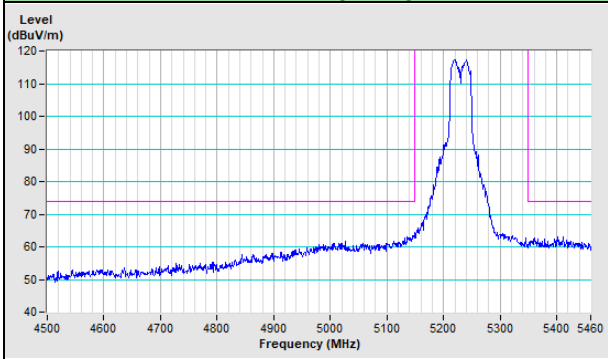
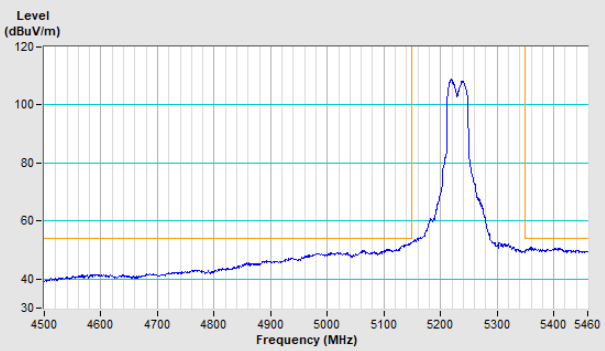
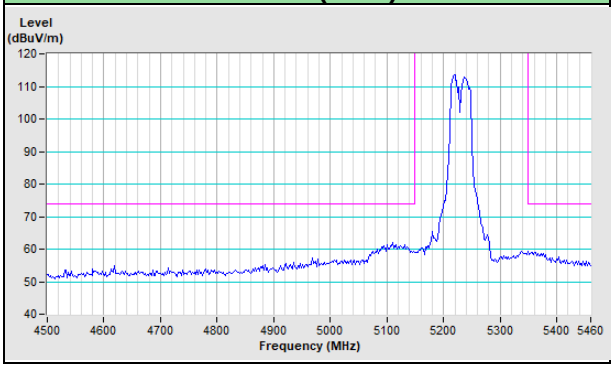
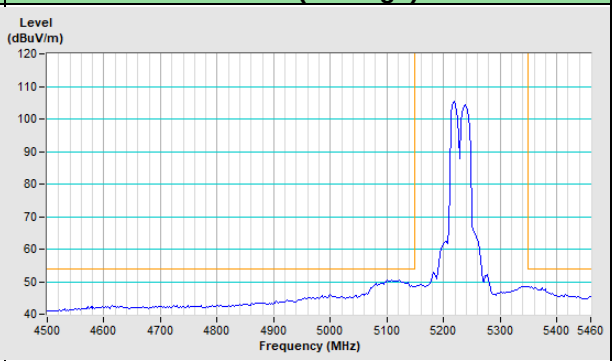


Vertical (Peak)



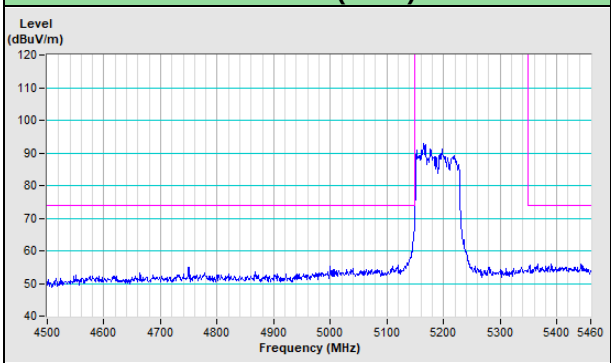
Vertical (Average)



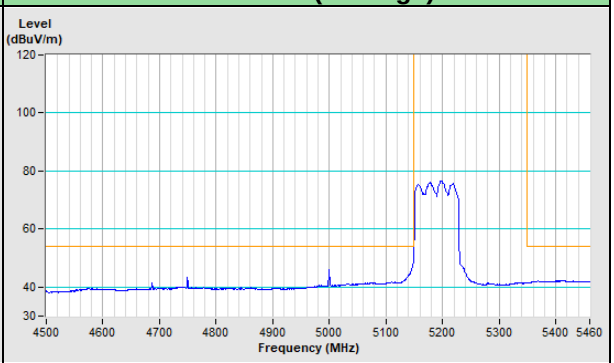
802.11ac (40MHz) Channel 46	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

802.11ac (80MHz) Channel 38

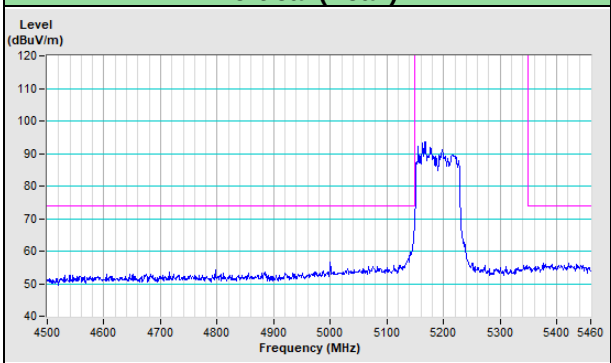
Horizontal (Peak)



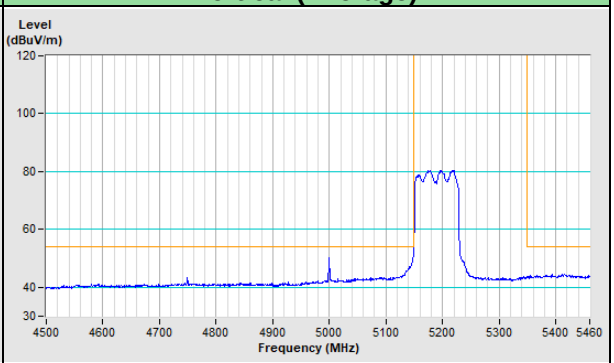
Horizontal (Average)



Vertical (Peak)

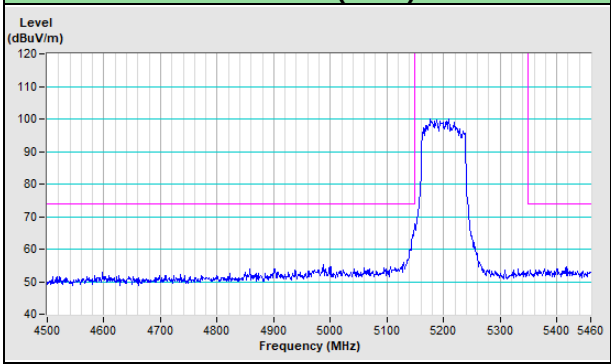


Vertical (Average)

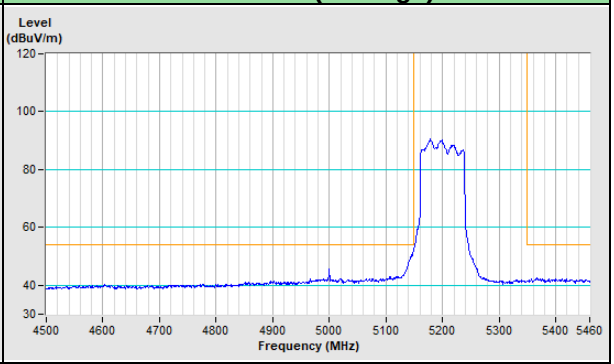


802.11ac (80MHz) Channel 40

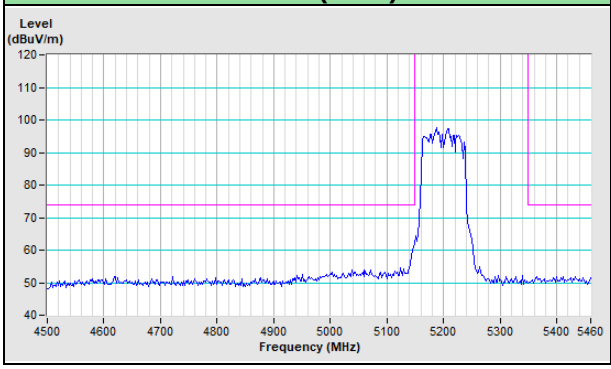
Horizontal (Peak)



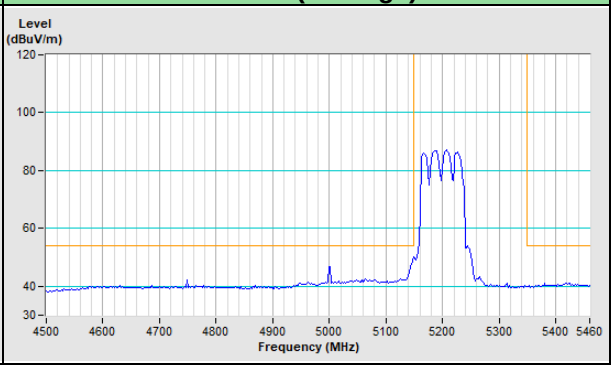
Horizontal (Average)

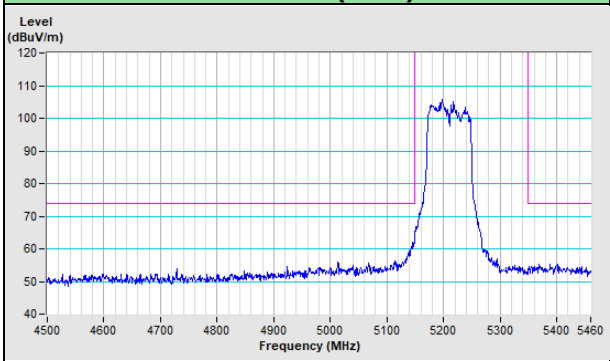
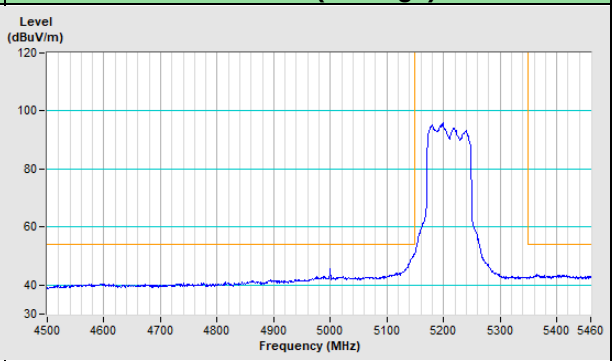
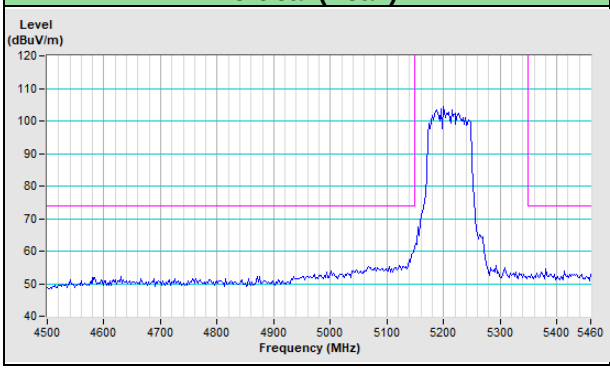
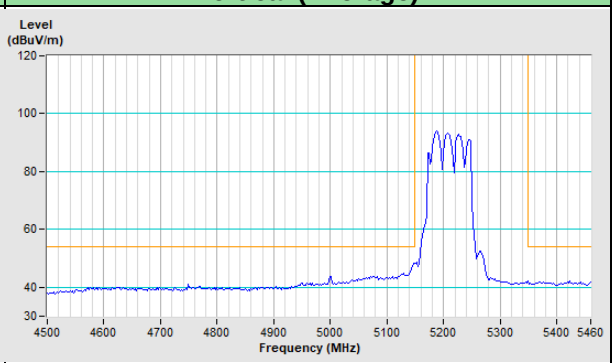


Vertical (Peak)



Vertical (Average)



802.11ac (80MHz) Channel 42	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

Appendix – Information of the Testing Laboratories

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

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

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Web Site: www.bureauveritas-adt.com

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

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