

FCC Test Report

Report No.: RFBHQC-WTW-P20110170A-1

FCC ID: B3QT99H209

Test Model: T99H209

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**FCC Registration /
Designation Number:** 723255 / TW2022



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Release Control Record

Issue No.	Description	Date Issued
RFBHQC-WTW-P20110170A-1	Original release.	2022/2/23

1 Certificate of Conformity

Product: IEEE802.11a/b/g/n/ac (1x1)+BT 5.0 Combo Module

Brand: Brother

Test Model: T99H209

Sample Status: Engineering sample

Applicant: BROTHER INDUSTRIES, LTD.

Test Date: 2021/12/24 ~ 2022/1/15

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 EMC characteristics under the conditions specified in this report.

Prepared by : Cherry Chuo , **Date:** 2022/2/23
Cherry Chuo / Specialist

Approved by : Clark Lin , **Date:** 2022/2/23
Clark Lin / Technical Manager

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 -13.38dB at 0.57250 MHz.
15.407(b) (1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement*	PASS	Meet the requirement of limit. Minimum passing margin is -0.1 dB at 5150.00 MHz, 5350.00 MHz, 5725.00 MHz and 5467.34 MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	PASS	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only.
15.407(a)(1/2/3)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(e)	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:

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

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as

Measurement	Frequency	Expanded Uncertainty (k=2) (\pm)
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.9 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.1 dB
	30MHz ~ 1GHz	5.4 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	5.1 dB
	18GHz ~ 40GHz	5.3 dB

specified in CISPR 16-4-2:

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	IEEE802.11a/b/g/n/ac (1x1)+BT 5.0 Combo Module
Brand	Brother
Test Model	T99H209
Status of EUT	Engineering sample
Power Supply Rating	3.3Vdc from host equipment
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11a: up to 54 Mbps 802.11n: up to 150 Mbps 802.11ac: up to 433.3 Mbps
Operating Frequency	5.18 ~ 5.32GHz, 5.50 ~ 5.72GHz, 5.745 ~ 5.825GHz
Number of Channel	802.11a, 802.11n (HT20), 802.11ac (VHT20): 25 802.11n (HT40), 802.11ac (VHT40): 12 802.11ac (VHT80): 6
Output Power	5.18 ~ 5.24 GHz: 95.499 mW 5.26 ~ 5.32GHz: 95.94 mW 5.50 ~ 5.72: 97.051 mW 5.745 ~ 5.825 GHz: 103.276 mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	NA

Note:

- This is a supplementary report of Report No.: RFBHQC-WTW-P20110170-1. The differences between them are as below information:
 - ◆ Changed 2nd sources component.
- According to above condition, all test items need to be performed. And all data was verified to meet the requirements.
- The EUT has two type interface, which are identical to each other in all aspects except for the following:

Type No.	Description
Type 1	16 pin
Type 2	8 pin

In the original report, from the above pre-test types, the worse radiated emission was found in **Type 1**. Therefore only the test data of the mode was recorded in this report.

- Simultaneously transmission condition.

Condition	Technology
1	WLAN 5GHz + Bluetooth

Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.

- The antenna provided to the EUT, please refer to the following table:

Antenna No.	Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type
1	3.65	2.4~2.4835	PCB	None
	3.98	5.15~5.85		

6. The EUT has three Matrix as below table:

Matrix	Matrix A	Matrix B	Matrix C
PCB	TRIPOD	AVARY	TRIPOD
Main chip(CYW4373)	CYPRESS	CYPRESS	CYPRESS
Crystal	HOSONIC	TXC	HOSONIC
Power inductor	MAGLAYERS	TAI-TECH	CHILISIN
Shielding cover	FXCN(C7521)	FXCN(C7521)	FXCN(C7521)
RF Swtich connector	MURATA	MURATA	MURATA
RF SPDT	Richwave	Richwave	MAXSCEND
RF diplexer	ACX	ACX	ACX
RF Capacitor	MURATA	WALSIN	MURATA
RF Capacitor(10pF)	MURATA	WALSIN	YAGEO
RF inductor	MURATA	CHILISIN	MURATA
Resistor	WALSIN	TAI/UNI-OHM	YAGEO
Bead	MURATA	CHILISIN	MURATA
Host connector(16pin)	LONG SHONUG	LONG SHONUG	LONGSHNUG
DC Capacitor	22uF(0603/10V/X6S)--MURATA	22uF(0603/10V/X6S) --WALSIN	22uF(0603/10V/X6S) --DARFON
	4.7uF(0402/6.3V/X6S)----MURATA	4.7uF(0402/6.3V/X6S)----TAIYO	4.7uF(0402/6.3V/X6S)---HOLYSTONE
	4.7uF(0603/10V/X6S)----MURATA	4.7uF(0603/10V/X6S)----TAIYO	4.7uF(0603/10V/X6S)----DARFON
	2.2uF(0402/6.3V/X6S)---MURATA	2.2uF(0402/6.3V/X6S) ---WALSIN	2.2uF(0402/6.3V/X6S) ---DARFON
	1uF (0402/6.3V/X6S) -TAIYO	1uF (0402/6.3V/X6S) -MURATA	1uF (0402/6.3V/X6S) -EYANG
	0.47uF(0201/6.3V/X7R) -TAIYO	0.47uF(0201/6.3V/X7R) -YAGEO	0.47uF(0201/6.3V/X7R) -WALSIN
	0.22uF(0201/6.3V/X6S) --MURATA	0.22uF(0201/6.3V/X6S) --TAIYO	0.22uF(0201/6.3V/X6S) --EYANG
	0.1uF(0201/6.3V/X6S) -MURATA	0.1uF(0201/6.3V/X6S) -WALSIN	0.1uF(0201/6.3V/X6S) -EYANG
	22pF(0201)---MURATA	22pF(0201)---WALSIN	22pF(0201)---DARFON
12pF(0201)---MURATA	12pF(0201)---WALSIN	12pF(0201)---MURATA	

Note: From the above Matrix, the worst radiated emissions was found in **Matrix C**. Therefore only the test data of the mode was recorded in this report.

7. The EUT incorporates a SISO function:

5GHz Band		
MODULATION MODE	TX & RX CONFIGURATION	
802.11a	1TX	1RX
802.11n (HT20)	1TX	1RX
802.11n (HT40)	1TX	1RX
802.11ac (VHT20)	1TX	1RX
802.11ac (VHT40)	1TX	1RX
802.11ac (VHT80)	1TX	1RX

Note: The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz) and 802.11ac mode for 20MHz (40MHz), therefore investigated worst case to representative mode in test report.

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

9. 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 5180 ~ 5320MHz

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

Channel	Frequency	Channel	Frequency
36	5180 MHz	52	5260 MHz
40	5200 MHz	56	5280 MHz
44	5220 MHz	60	5300 MHz
48	5240 MHz	64	5320 MHz

4 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
38	5190 MHz	54	5270 MHz
46	5230 MHz	62	5310 MHz

2 channel is provided for 802.11ac (VHT80):

Channel	Frequency	Channel	Frequency
42	5210 MHz	58	5290 MHz

FOR 5500 ~ 5720MHz

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

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

6 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

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

3 channels are provided for 802.11ac (VHT80):

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

FOR 5745 ~ 5825MHz:

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

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

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

Channel	Frequency	Channel	Frequency
151	5755 MHz	159	5795 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
155	5775 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 **RE<1G**: Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **APCM**: Antenna Port Conducted Measurement

Note: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Y-plane**.

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	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6
802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	BPSK	6.5
802.11ac (VHT40)		38 to 46	38, 46	OFDM	BPSK	13.5
802.11ac (VHT80)		42	42	OFDM	BPSK	29.3
802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6
802.11ac (VHT20)		52 to 64	52, 60, 64	OFDM	BPSK	6.5
802.11ac (VHT40)		54 to 62	54, 62	OFDM	BPSK	13.5
802.11ac (VHT80)		58	58	OFDM	BPSK	29.3
802.11a	5500-5720	100 to 144	100, 116, 140, 144	OFDM	BPSK	6
802.11ac (VHT20)		100 to 144	100, 116, 140, 144	OFDM	BPSK	6.5
802.11ac (VHT40)		102 to 142	102, 110, 134, 142	OFDM	BPSK	13.5
802.11ac (VHT80)		106 to 138	106, 122, 138	OFDM	BPSK	29.3
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6
802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	BPSK	6.5
802.11ac (VHT40)		151 to 159	151, 159	OFDM	BPSK	13.5
802.11ac (VHT80)		155	155	OFDM	BPSK	29.3

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	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11ac (VHT40)	5180-5240, 5260-5320, 5500-5720, 5745-5825	38 to 46, 54 to 62, 102 to 142, 151 to 159	151	OFDM	BPSK	13.5

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	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11ac (VHT40)	5180-5240, 5260-5320, 5500-5720, 5745-5825	38 to 46, 54 to 62, 102 to 142, 151 to 159	151	OFDM	BPSK	13.5

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	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6
802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	BPSK	6.5
802.11ac (VHT40)		38 to 46	38, 46	OFDM	BPSK	13.5
802.11ac (VHT80)		42	42	OFDM	BPSK	29.3
802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6
802.11ac (VHT20)		52 to 64	52, 60, 64	OFDM	BPSK	6.5
802.11ac (VHT40)		54 to 62	54, 62	OFDM	BPSK	13.5
802.11ac (VHT80)		58	58	OFDM	BPSK	29.3
802.11a	5500-5720	100 to 144	100, 116, 140, 144	OFDM	BPSK	6
802.11ac (VHT20)		100 to 144	100, 116, 140, 144	OFDM	BPSK	6.5
802.11ac (VHT40)		102 to 142	102, 110, 134, 142	OFDM	BPSK	13.5
802.11ac (VHT80)		106 to 138	106, 122, 138	OFDM	BPSK	29.3
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6
802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	BPSK	6.5
802.11ac (VHT40)		151 to 159	151, 159	OFDM	BPSK	13.5
802.11ac (VHT80)		155	155	OFDM	BPSK	29.3

Test Condition:

Applicable To	Environmental Conditions	Input Power (System)	Tested By
RE \geq 1G	24deg. C, 66%RH	120Vac, 60Hz	Tom Yang
RE $<$ 1G	24deg. C, 66%RH	120Vac, 60Hz	Tom Yang
PLC	25deg. C, 70%RH	120Vac, 60Hz	Sampon Chen
APCM	24deg. C, 66%RH	120Vac, 60Hz	Eric Peng

3.3 Duty Cycle of Test Signal

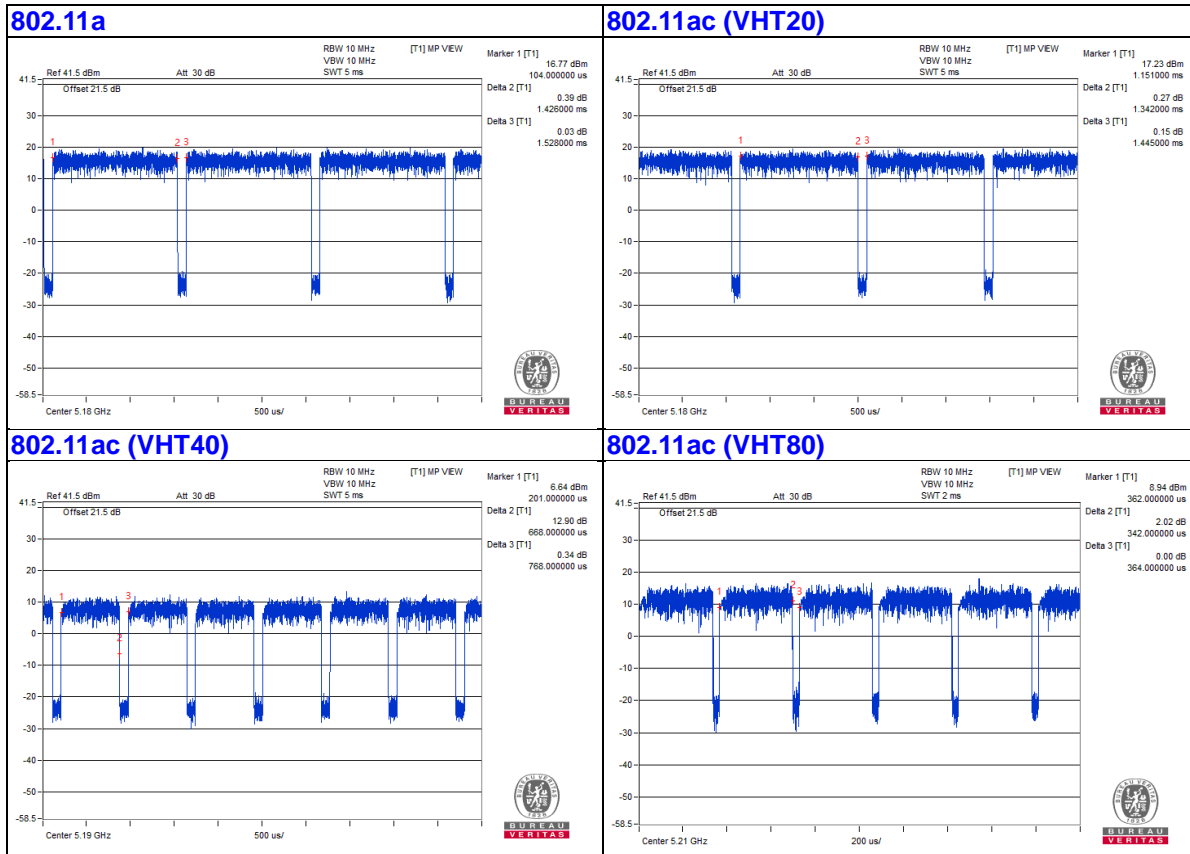
Duty cycle of test signal is < 98 %, duty factor shall be considered.

802.11a: Duty cycle = 1.426 ms/1.528 ms = 0.933, Duty factor = 10 * log (1/Duty cycle) = 0.30 dB

802.11ac (VHT20): Duty cycle = 1.342 ms/1.445 ms = 0.929, Duty factor = 10 * log (1/Duty cycle) = 0.32 dB

802.11ac (VHT40): Duty cycle = 0.668 ms/0.768 ms = 0.87, Duty factor = 10 * log (1/Duty cycle) = 0.61 dB

802.11ac (VHT80): Duty cycle = 0.342 ms/0.364 ms = 0.94, Duty factor = 10 * log (1/Duty cycle) = 0.27 dB



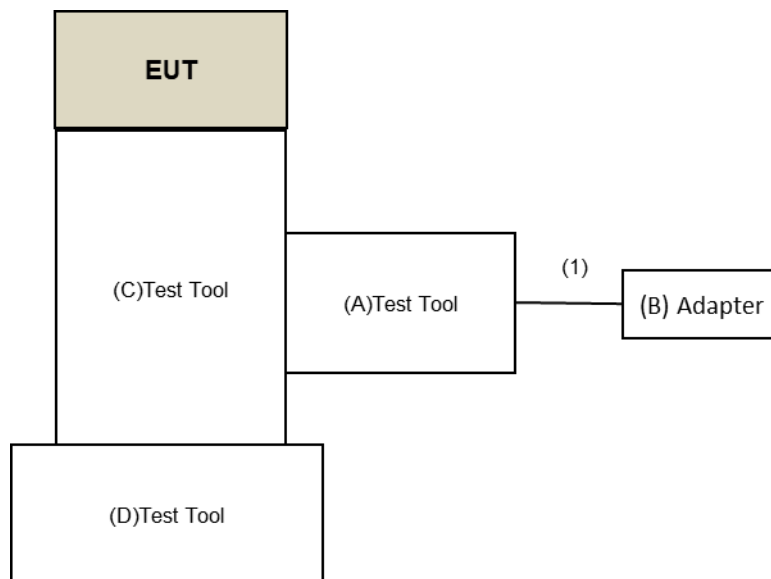
3.4 Description of Support Units

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.	Test Tool	soliton technologies	NA	NA	NA	Supplied by client(for RF Setup)
B.	Adapter	ASUS	EXA1205UA	NA	NA	Provided by Lab
C.	Test Tool	soliton technologies	NA	NA	NA	Supplied by client(for RF Setup)
D.	Test Tool	soliton technologies	NA	NA	NA	Supplied by client(for RF Setup)

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	Micro USB to USB Cable	1	1.4	Yes	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 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

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

Note:

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

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

4.1.2 Test Instruments

For Radiated Emission test (below 1 GHz):

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESR3	102528	2021/3/2	2022/3/1
Spectrum Analyzer KEYSIGHT	N9030B	MY57141948	2021/5/21	2022/5/20
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	NA	NA
Pre_Amplifier EMCI	EMC001340	980142	2021/5/24	2022/5/23
LOOP ANTENNA Electro-Metrics	EM-6879	264	2021/3/5	2022/3/4
RF Coaxial Cable JYEBO	5D-FB	LOOPCAB-001	2021/1/7	2022/1/6
RF Coaxial Cable JYEBO	5D-FB	LOOPCAB-002	2021/1/7	2022/1/6
Pre_Amplifier EMCI	EMC330N	980538	2021/4/26	2022/4/25
Bilog Antenna Schwarzbeck	VULB 9168	9168-0842	2021/10/26	2022/10/25
RF Coaxial Cable COMMATE/PEWC	8D	966-5-1	2021/4/26	2022/4/25
RF Coaxial Cable COMMATE/PEWC	8D	966-5-2	2021/4/26	2022/4/25
RF Coaxial Cable COMMATE/PEWC	8D	966-5-3	2021/4/26	2022/4/25
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-ATT5-02	2021/1/11	2022/1/10

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 966 Chamber No. 5.
3. Tested Date: 2021/12/28

For Radiated Emission (above 1 GHz) & OOB & BandEdge test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESR3	102528	2021/3/2	2022/3/1
Spectrum Analyzer KEYSIGHT	N9030B	MY57141948	2021/5/21	2022/5/20
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	NA	NA
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-1819	2021/11/14	2022/11/13
Pre_Amplifier EMCI	EMC12630SE	980509	2021/4/26	2022/4/25
RF Coaxial Cable EMCI	EMC104-SM-SM-1500	180503	2021/4/26	2022/4/25
RF Coaxial Cable EMCI	EMC104-SM-SM-2000	180501	2021/4/26	2022/4/25
RF Coaxial Cable EMCI	EMC104-SM-SM-6000	180506	2021/4/26	2022/4/25
Pre_Amplifier EMCI	EMC184045SE	980387	2022/1/10	2023/1/9
Horn Antenna Schwarzbeck	BBHA 9170	BBHA9170519	2021/11/14	2022/11/13
RF Cable-Frequency range: 1-40GHz EMCI	EMC102-KM-KM-1200	160924	2022/1/10	2023/1/9
RF cable (40GHz) EMCI	EMC-KM-KM-4000	200214	2021/3/10	2022/3/9

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 966 Chamber No. 5.
3. Tested Date: 2022/1/12 ~ 2022/1/15

For other test items:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSV40	101516	2021/3/8	2022/3/7
Power Meter Anritsu	ML2495A	1529002	2021/6/21	2022/6/20
Pulse Power Sensor Anritsu	MA2411B	1339443	2021/5/31	2022/5/30
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2021/4/13	2022/4/12
Software	ADT_RF Test Software V6.6.5.4	NA	NA	NA
DC POWER SUPPLY Topward	6603D	795558	NA	NA
Temperature & Humidity Chamber Giant Force	GTH-150-40-SP-AR	MAA0812-008	2021/1/14	2022/1/13
True RMS Clamp Meter Fluke	325	31130711WS	2021/6/2	2022/6/1

- NOTE:**
1. The test was performed in Oven room 2.
 2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 3. Tested Date: 2021/12/24

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:

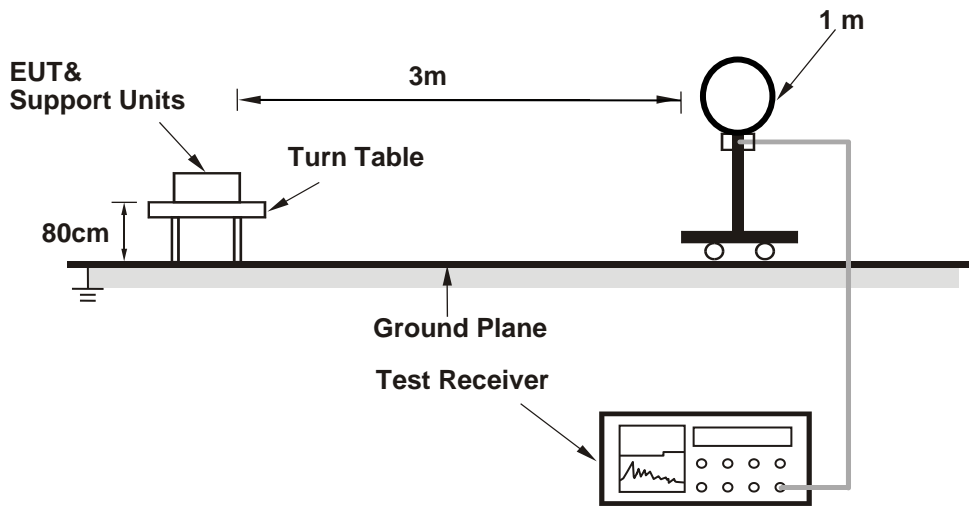
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10Hz (Duty cycle $\geq 98\%$) 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

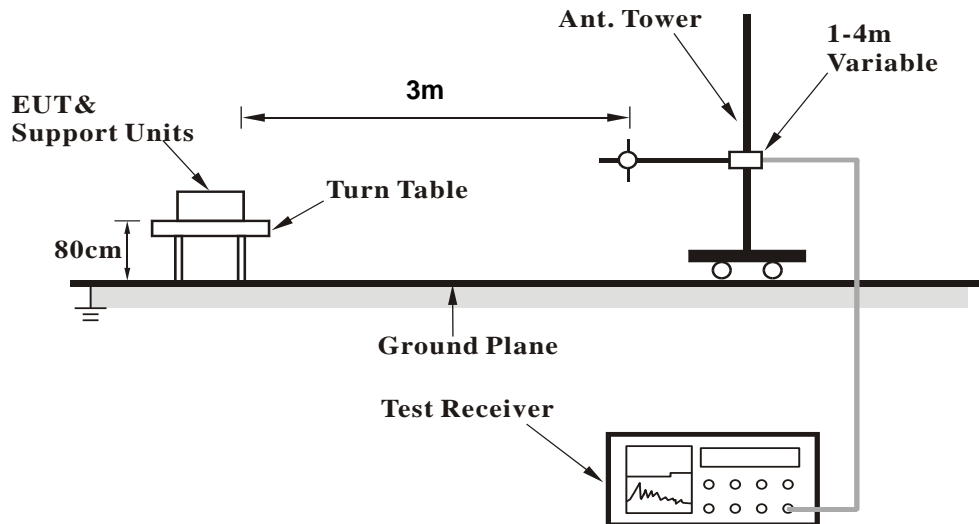
No deviation.

4.1.5 Test Setup

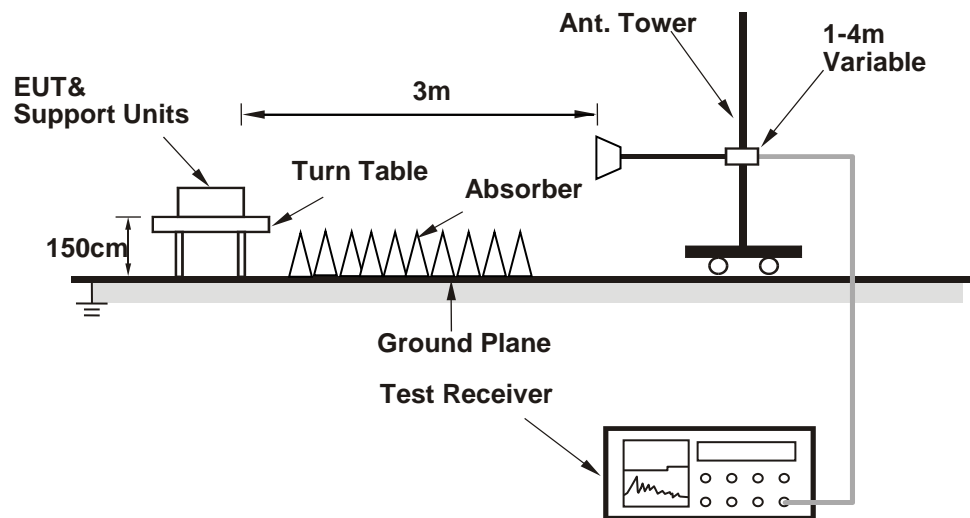
For Radiated emission below 30MHz



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 Condition

- a. Placed the EUT on the testing table.
- b. Controlling software (Terminal paste "TX/RX script command (OS: Fedora)) has been activated to set the EUT under transmission condition continuously.

4.1.7 Test Results

ABOVE 1GHz DATA

RF Mode	TX 802.11a	Channel	CH 36 : 5180 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	73.6 PK	74.0	-0.4	1.83 H	177	71.2	2.4
2	5150.00	53.5 AV	54.0	-0.5	1.83 H	177	51.1	2.4
3	*5180.00	107.6 PK			1.83 H	177	105.4	2.2
4	*5180.00	98.5 AV			1.83 H	177	96.3	2.2
5	#10360.00	47.3 PK	68.2	-20.9	1.26 H	226	35.6	11.7
6	15540.00	45.4 PK	74.0	-28.6	1.97 H	212	33.6	11.8
7	15540.00	34.2 AV	54.0	-19.8	1.97 H	212	22.4	11.8

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	66.1 PK	74.0	-7.9	1.26 V	81	63.7	2.4
2	5150.00	53.9 AV	54.0	-0.1	1.26 V	81	51.5	2.4
3	*5180.00	111.0 PK			1.26 V	81	108.8	2.2
4	*5180.00	101.8 AV			1.26 V	81	99.6	2.2
5	#10360.00	45.9 PK	68.2	-22.3	1.90 V	210	34.2	11.7
6	15540.00	45.6 PK	74.0	-28.4	1.11 V	309	33.8	11.8
7	15540.00	34.1 AV	54.0	-19.9	1.11 V	309	22.3	11.8

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 802.11a	Channel	CH 40 : 5200 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	60.7 PK	74.0	-13.3	1.51 H	223	58.3	2.4
2	5150.00	49.0 AV	54.0	-5.0	1.51 H	223	46.6	2.4
3	*5200.00	108.4 PK			1.51 H	223	106.3	2.1
4	*5200.00	99.2 AV			1.51 H	223	97.1	2.1
5	5350.00	58.4 PK	74.0	-15.6	1.51 H	223	56.4	2.0
6	5350.00	47.7 AV	54.0	-6.3	1.51 H	223	45.7	2.0
7	#10400.00	47.2 PK	68.2	-21.0	1.26 H	233	35.3	11.9
8	15600.00	45.8 PK	74.0	-28.2	1.94 H	208	34.3	11.5
9	15600.00	34.4 AV	54.0	-19.6	1.94 H	208	22.9	11.5

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	72.4 PK	74.0	-1.6	1.29 V	226	70.0	2.4
2	5150.00	53.6 AV	54.0	-0.4	1.29 V	226	51.2	2.4
3	*5200.00	112.9 PK			1.29 V	226	110.8	2.1
4	*5200.00	103.7 AV			1.29 V	226	101.6	2.1
5	5350.00	57.6 PK	74.0	-16.4	1.29 V	226	55.6	2.0
6	5350.00	49.1 AV	54.0	-4.9	1.29 V	226	47.1	2.0
7	#10400.00	46.3 PK	68.2	-21.9	1.87 V	213	34.4	11.9
8	15600.00	45.6 PK	74.0	-28.4	1.07 V	314	34.1	11.5
9	15600.00	34.2 AV	54.0	-19.8	1.07 V	314	22.7	11.5

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 802.11a	Channel	CH 48 : 5240 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	*5240.00	108.7 PK			1.52 H	206	106.8	1.9
2	*5240.00	99.6 AV			1.52 H	206	97.7	1.9
3	5350.00	58.8 PK	74.0	-15.2	1.52 H	206	56.8	2.0
4	5350.00	46.8 AV	54.0	-7.2	1.52 H	206	44.8	2.0
5	#10480.00	47.8 PK	68.2	-20.4	1.30 H	239	35.9	11.9
6	15720.00	45.7 PK	74.0	-28.3	1.88 H	196	34.0	11.7
7	15720.00	34.4 AV	54.0	-19.6	1.88 H	196	22.7	11.7

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	*5240.00	114.1 PK			1.24 V	224	112.2	1.9
2	*5240.00	104.0 AV			1.24 V	224	102.1	1.9
3	5350.00	61.8 PK	74.0	-12.2	1.24 V	224	59.8	2.0
4	5350.00	51.4 AV	54.0	-2.6	1.24 V	224	49.4	2.0
5	#10480.00	46.4 PK	68.2	-21.8	1.92 V	229	34.5	11.9
6	15720.00	45.8 PK	74.0	-28.2	1.06 V	307	34.1	11.7
7	15720.00	34.2 AV	54.0	-19.8	1.06 V	307	22.5	11.7

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 802.11a	Channel	CH 52 : 5260 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	52.9 PK	74.0	-21.1	1.49 H	207	50.5	2.4
2	5150.00	44.2 AV	54.0	-9.8	1.49 H	207	41.8	2.4
3	*5260.00	108.5 PK			1.49 H	207	106.7	1.8
4	*5260.00	99.1 AV			1.49 H	207	97.3	1.8
5	#10520.00	47.5 PK	68.2	-20.7	1.28 H	245	35.5	12.0
6	15780.00	46.2 PK	74.0	-27.8	1.93 H	208	34.7	11.5
7	15780.00	34.7 AV	54.0	-19.3	1.93 H	208	23.2	11.5

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	54.6 PK	74.0	-19.4	1.38 V	224	52.2	2.4
2	5150.00	46.1 AV	54.0	-7.9	1.38 V	224	43.7	2.4
3	*5260.00	113.5 PK			1.38 V	224	111.7	1.8
4	*5260.00	104.3 AV			1.38 V	224	102.5	1.8
5	#10520.00	46.6 PK	68.2	-21.6	1.82 V	204	34.6	12.0
6	15780.00	45.9 PK	74.0	-28.1	1.01 V	311	34.4	11.5
7	15780.00	34.3 AV	54.0	-19.7	1.01 V	311	22.8	11.5

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 802.11a	Channel	CH 60 : 5300 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	*5300.00	108.9 PK			1.45 H	218	107.2	1.7
2	*5300.00	99.2 AV			1.45 H	218	97.5	1.7
3	10600.00	47.2 PK	74.0	-26.8	1.27 H	218	35.5	11.7
4	10600.00	36.0 AV	54.0	-18.0	1.27 H	218	24.3	11.7
5	15900.00	45.9 PK	74.0	-28.1	1.95 H	197	34.8	11.1
6	15900.00	34.6 AV	54.0	-19.4	1.95 H	197	23.5	11.1

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	*5300.00	113.3 PK			1.16 V	216	111.6	1.7
2	*5300.00	103.9 AV			1.16 V	216	102.2	1.7
3	10600.00	45.9 PK	74.0	-28.1	1.86 V	216	34.2	11.7
4	10600.00	35.4 AV	54.0	-18.6	1.86 V	216	23.7	11.7
5	15900.00	45.2 PK	74.0	-28.8	1.03 V	313	34.1	11.1
6	15900.00	33.9 AV	54.0	-20.1	1.03 V	313	22.8	11.1

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.

RF Mode	TX 802.11a	Channel	CH 64 : 5320 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	*5320.00	108.1 PK			1.63 H	194	106.4	1.7
2	*5320.00	99.3 AV			1.63 H	194	97.6	1.7
3	5350.00	59.3 PK	74.0	-14.7	1.63 H	194	57.3	2.0
4	5350.00	48.6 AV	54.0	-5.4	1.63 H	194	46.6	2.0
5	10640.00	47.2 PK	74.0	-26.8	1.31 H	244	35.6	11.6
6	10640.00	35.7 AV	54.0	-18.3	1.31 H	244	24.1	11.6
7	15960.00	45.6 PK	74.0	-28.4	1.97 H	201	34.2	11.4
8	15960.00	34.4 AV	54.0	-19.6	1.97 H	201	23.0	11.4

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	*5320.00	111.1 PK			1.39 V	81	109.4	1.7
2	*5320.00	102.2 AV			1.39 V	81	100.5	1.7
3	5350.00	67.2 PK	74.0	-6.8	1.39 V	81	65.2	2.0
4	5350.00	53.9 AV	54.0	-0.1	1.39 V	81	51.9	2.0
5	10640.00	45.9 PK	74.0	-28.1	1.92 V	205	34.3	11.6
6	10640.00	35.6 AV	54.0	-18.4	1.92 V	205	24.0	11.6
7	15960.00	45.5 PK	74.0	-28.5	1.12 V	327	34.1	11.4
8	15960.00	34.3 AV	54.0	-19.7	1.12 V	327	22.9	11.4

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.

RF Mode	TX 802.11a	Channel	CH 100 : 5500 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	5460.00	57.0 PK	74.0	-17.0	1.74 H	195	54.8	2.2
2	5460.00	44.6 AV	54.0	-9.4	1.74 H	195	42.4	2.2
3	#5468.90	67.0 PK	68.2	-1.2	1.74 H	195	64.8	2.2
4	*5500.00	106.9 PK			1.74 H	195	104.8	2.1
5	*5500.00	97.6 AV			1.74 H	195	95.5	2.1
6	11000.00	47.9 PK	74.0	-26.1	1.27 H	239	35.8	12.1
7	11000.00	36.2 AV	54.0	-17.8	1.27 H	239	24.1	12.1
8	#16500.00	45.5 PK	68.2	-22.7	1.97 H	194	32.1	13.4

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	5460.00	60.7 PK	74.0	-13.3	1.34 V	80	58.5	2.2
2	5460.00	45.2 AV	54.0	-8.8	1.34 V	80	43.0	2.2
3	#5470.00	67.8 PK	68.2	-0.4	1.34 V	80	65.6	2.2
4	*5500.00	107.9 PK			1.34 V	80	105.8	2.1
5	*5500.00	99.3 AV			1.34 V	80	97.2	2.1
6	11000.00	46.7 PK	74.0	-27.3	1.85 V	220	34.6	12.1
7	11000.00	36.0 AV	54.0	-18.0	1.85 V	220	23.9	12.1
8	#16500.00	45.5 PK	68.2	-22.7	1.02 V	323	32.1	13.4

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 802.11a	Channel	CH 116 : 5580 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	*5580.00	108.7 PK			1.46 H	218	106.5	2.2
2	*5580.00	98.8 AV			1.46 H	218	96.6	2.2
3	11160.00	46.8 PK	74.0	-27.2	1.30 H	237	34.9	11.9
4	11160.00	35.6 AV	54.0	-18.4	1.30 H	237	23.7	11.9
5	#16740.00	45.3 PK	68.2	-22.9	1.99 H	201	30.1	15.2

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	*5580.00	113.3 PK			1.09 V	212	111.1	2.2
2	*5580.00	104.0 AV			1.09 V	212	101.8	2.2
3	11160.00	46.3 PK	74.0	-27.7	1.86 V	207	34.4	11.9
4	11160.00	35.4 AV	54.0	-18.6	1.86 V	207	23.5	11.9
5	#16740.00	45.7 PK	68.2	-22.5	1.01 V	309	30.5	15.2

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 802.11a	Channel	CH 140 : 5700 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	*5700.00	109.7 PK			1.45 H	226	107.4	2.3
2	*5700.00	99.1 AV			1.45 H	226	96.8	2.3
3	#5725.00	60.3 PK	68.2	-7.9	1.45 H	226	57.8	2.5
4	11400.00	47.4 PK	74.0	-26.6	1.31 H	246	35.2	12.2
5	11400.00	35.8 AV	54.0	-18.2	1.31 H	246	23.6	12.2
6	#17100.00	45.9 PK	68.2	-22.3	1.99 H	194	29.3	16.6

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	*5700.00	111.7 PK			1.34 V	82	109.4	2.3
2	*5700.00	102.9 AV			1.34 V	82	100.6	2.3
3	#5725.00	68.1 PK	68.2	-0.1	1.34 V	82	65.6	2.5
4	11400.00	46.1 PK	74.0	-27.9	1.88 V	204	33.9	12.2
5	11400.00	35.6 AV	54.0	-18.4	1.88 V	204	23.4	12.2
6	#17100.00	45.9 PK	68.2	-22.3	1.09 V	306	29.3	16.6

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 802.11a	Channel	CH 144 : 5720 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	5460.00	50.2 PK	74.0	-23.8	1.47 H	218	48.0	2.2
2	5460.00	39.4 AV	54.0	-14.6	1.47 H	218	37.2	2.2
3	#5470.00	52.0 PK	68.2	-16.2	1.47 H	218	49.8	2.2
4	*5720.00	108.7 PK			1.47 H	218	106.3	2.4
5	*5720.00	98.9 AV			1.47 H	218	96.5	2.4
6	#5850.00	58.0 PK	68.2	-10.2	1.47 H	218	55.1	2.9
7	11440.00	57.7 PK	74.0	-16.3	1.18 H	232	45.5	12.2
8	11440.00	45.6 AV	54.0	-8.4	1.18 H	232	33.4	12.2
9	#17160.00	49.6 PK	68.2	-18.6	1.91 H	216	33.1	16.5

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	5460.00	49.9 PK	74.0	-24.1	1.33 V	222	47.7	2.2
2	5460.00	38.9 AV	54.0	-15.1	1.33 V	222	36.7	2.2
3	#5470.00	51.5 PK	68.2	-16.7	1.33 V	222	49.3	2.2
4	*5720.00	113.8 PK			1.33 V	222	111.4	2.4
5	*5720.00	104.9 AV			1.33 V	222	102.5	2.4
6	#5850.00	58.3 PK	68.2	-9.9	1.33 V	222	55.4	2.9
7	11440.00	57.3 PK	74.0	-16.7	1.92 V	226	45.1	12.2
8	11440.00	46.9 AV	54.0	-7.1	1.92 V	226	34.7	12.2
9	#17160.00	50.5 PK	68.2	-17.7	1.04 V	288	34.0	16.5

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 802.11a	Channel	CH 149 : 5745 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	#5601.59	54.9 PK	68.2	-13.3	1.20 H	208	52.7	2.2
2	*5745.00	107.8 PK			1.20 H	208	105.3	2.5
3	*5745.00	99.4 AV			1.20 H	208	96.9	2.5
4	#5955.32	51.1 PK	68.2	-17.1	1.20 H	208	48.2	2.9
5	11490.00	57.3 PK	74.0	-16.7	1.23 H	237	44.9	12.4
6	11490.00	44.9 AV	54.0	-9.1	1.23 H	237	32.5	12.4
7	#17235.00	49.7 PK	68.2	-18.5	1.95 H	210	33.0	16.7

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	#5600.88	63.0 PK	68.2	-5.2	1.41 V	225	60.8	2.2
2	*5745.00	114.6 PK			1.41 V	225	112.1	2.5
3	*5745.00	105.1 AV			1.41 V	225	102.6	2.5
4	#5970.67	52.1 PK	68.2	-16.1	1.41 V	225	49.2	2.9
5	11490.00	58.3 PK	74.0	-15.7	1.96 V	232	45.9	12.4
6	11490.00	47.8 AV	54.0	-6.2	1.96 V	232	35.4	12.4
7	#17235.00	50.4 PK	68.2	-17.8	1.08 V	289	33.7	16.7

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 802.11a	Channel	CH 157 : 5785 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	#5639.70	53.9 PK	68.2	-14.3	1.05 H	207	51.6	2.3
2	*5785.00	108.8 PK			1.05 H	207	106.1	2.7
3	*5785.00	99.7 AV			1.05 H	207	97.0	2.7
4	#5941.16	54.3 PK	68.2	-13.9	1.05 H	207	51.4	2.9
5	11570.00	57.5 PK	74.0	-16.5	1.23 H	237	45.1	12.4
6	11570.00	45.2 AV	54.0	-8.8	1.23 H	237	32.8	12.4
7	#17355.00	49.5 PK	68.2	-18.7	1.97 H	223	31.9	17.6

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	#5630.76	62.8 PK	68.2	-5.4	1.48 V	225	60.5	2.3
2	*5785.00	115.2 PK			1.48 V	225	112.5	2.7
3	*5785.00	105.3 AV			1.48 V	225	102.6	2.7
4	#5927.90	60.4 PK	68.2	-7.8	1.48 V	225	57.5	2.9
5	11570.00	57.6 PK	74.0	-16.4	1.91 V	223	45.2	12.4
6	11570.00	47.3 AV	54.0	-6.7	1.91 V	223	34.9	12.4
7	#17355.00	50.1 PK	68.2	-18.1	1.07 V	301	32.5	17.6

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 802.11a	Channel	CH 165 : 5825 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	#5559.56	51.1 PK	68.2	-17.1	1.08 H	207	48.9	2.2
2	*5825.00	108.1 PK			1.08 H	207	105.3	2.8
3	*5825.00	99.3 AV			1.08 H	207	96.5	2.8
4	#5979.32	54.3 PK	68.2	-13.9	1.08 H	207	51.4	2.9
5	11650.00	57.5 PK	74.0	-16.5	1.28 H	248	45.6	11.9
6	11650.00	45.0 AV	54.0	-9.0	1.28 H	248	33.1	11.9
7	#17475.00	49.4 PK	68.2	-18.8	2.00 H	236	30.9	18.5

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	#5602.57	54.9 PK	68.2	-13.3	1.50 V	225	52.7	2.2
2	*5825.00	115.1 PK			1.50 V	225	112.3	2.8
3	*5825.00	104.9 AV			1.50 V	225	102.1	2.8
4	#5967.74	59.7 PK	68.2	-8.5	1.50 V	225	56.8	2.9
5	11650.00	57.5 PK	74.0	-16.5	1.92 V	209	45.6	11.9
6	11650.00	47.0 AV	54.0	-7.0	1.92 V	209	35.1	11.9
7	#17475.00	49.9 PK	68.2	-18.3	1.10 V	293	31.4	18.5

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 (VHT20)	Channel	CH 36 : 5180 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	62.6 PK	74.0	-11.4	1.87 H	186	60.2	2.4
2	5150.00	52.5 AV	54.0	-1.5	1.87 H	186	50.1	2.4
3	*5180.00	106.9 PK			1.87 H	186	104.7	2.2
4	*5180.00	97.4 AV			1.87 H	186	95.2	2.2
5	#10360.00	46.8 PK	68.2	-21.4	1.36 H	249	35.1	11.7
6	15540.00	45.3 PK	74.0	-28.7	1.98 H	202	33.5	11.8
7	15540.00	34.1 AV	54.0	-19.9	1.98 H	202	22.3	11.8

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	70.0 PK	74.0	-4.0	1.18 V	80	67.6	2.4
2	5150.00	53.9 AV	54.0	-0.1	1.18 V	80	51.5	2.4
3	*5180.00	110.2 PK			1.18 V	80	108.0	2.2
4	*5180.00	101.1 AV			1.18 V	80	98.9	2.2
5	#10360.00	45.5 PK	68.2	-22.7	1.89 V	213	33.8	11.7
6	15540.00	46.1 PK	74.0	-27.9	1.01 V	321	34.3	11.8
7	15540.00	34.5 AV	54.0	-19.5	1.01 V	321	22.7	11.8

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 (VHT20)	Channel	CH 40 : 5200 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	57.1 PK	74.0	-16.9	1.25 H	251	54.7	2.4
2	5150.00	43.9 AV	54.0	-10.1	1.25 H	251	41.5	2.4
3	*5200.00	107.4 PK			1.25 H	251	105.3	2.1
4	*5200.00	97.7 AV			1.25 H	251	95.6	2.1
5	#10400.00	47.4 PK	68.2	-20.8	1.24 H	230	35.5	11.9
6	15600.00	45.3 PK	74.0	-28.7	1.95 H	191	33.8	11.5
7	15600.00	34.0 AV	54.0	-20.0	1.95 H	191	22.5	11.5

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	68.9 PK	74.0	-5.1	1.22 V	225	66.5	2.4
2	5150.00	53.9 AV	54.0	-0.1	1.22 V	225	51.5	2.4
3	*5200.00	112.2 PK			1.22 V	225	110.1	2.1
4	*5200.00	102.0 AV			1.22 V	225	99.9	2.1
5	#10400.00	46.1 PK	68.2	-22.1	1.89 V	215	34.2	11.9
6	15600.00	46.0 PK	74.0	-28.0	1.01 V	321	34.5	11.5
7	15600.00	34.4 AV	54.0	-19.6	1.01 V	321	22.9	11.5

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 (VHT20)	Channel	CH 48 : 5240 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	*5240.00	107.7 PK			1.30 H	257	105.8	1.9
2	*5240.00	98.1 AV			1.30 H	257	96.2	1.9
3	5350.00	57.8 PK	74.0	-16.2	1.30 H	257	55.8	2.0
4	5350.00	44.2 AV	54.0	-9.8	1.30 H	257	42.2	2.0
5	#10480.00	46.6 PK	68.2	-21.6	1.28 H	253	34.7	11.9
6	15720.00	45.6 PK	74.0	-28.4	1.95 H	217	33.9	11.7
7	15720.00	34.5 AV	54.0	-19.5	1.95 H	217	22.8	11.7

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	*5240.00	113.6 PK			1.31 V	225	111.7	1.9
2	*5240.00	103.8 AV			1.31 V	225	101.9	1.9
3	5350.00	59.1 PK	74.0	-14.9	1.31 V	225	57.1	2.0
4	5350.00	48.5 AV	54.0	-5.5	1.31 V	225	46.5	2.0
5	#10480.00	46.7 PK	68.2	-21.5	1.87 V	222	34.8	11.9
6	15720.00	45.7 PK	74.0	-28.3	1.00 V	303	34.0	11.7
7	15720.00	34.0 AV	54.0	-20.0	1.00 V	303	22.3	11.7

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 (VHT20)	Channel	CH 52 : 5260 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	57.2 PK	74.0	-16.8	1.31 H	275	54.8	2.4
2	5150.00	44.1 AV	54.0	-9.9	1.31 H	275	41.7	2.4
3	*5260.00	107.0 PK			1.31 H	275	105.2	1.8
4	*5260.00	97.2 AV			1.31 H	275	95.4	1.8
5	#10520.00	46.4 PK	68.2	-21.8	1.33 H	227	34.4	12.0
6	15780.00	45.0 PK	74.0	-29.0	1.99 H	208	33.5	11.5
7	15780.00	34.1 AV	54.0	-19.9	1.99 H	208	22.6	11.5

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	54.1 PK	74.0	-19.9	1.21 V	237	51.7	2.4
2	5150.00	45.2 AV	54.0	-8.8	1.21 V	237	42.8	2.4
3	*5260.00	113.9 PK			1.21 V	237	112.1	1.8
4	*5260.00	103.3 AV			1.21 V	237	101.5	1.8
5	#10520.00	46.3 PK	68.2	-21.9	1.86 V	202	34.3	12.0
6	15780.00	46.2 PK	74.0	-27.8	1.04 V	318	34.7	11.5
7	15780.00	34.6 AV	54.0	-19.4	1.04 V	318	23.1	11.5

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 (VHT20)	Channel	CH 60 : 5300 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	*5300.00	108.4 PK			1.24 H	250	106.7	1.7
2	*5300.00	98.5 AV			1.24 H	250	96.8	1.7
3	10600.00	46.7 PK	74.0	-27.3	1.27 H	227	35.0	11.7
4	10600.00	35.6 AV	54.0	-18.4	1.27 H	227	23.9	11.7
5	15900.00	45.9 PK	74.0	-28.1	2.02 H	186	34.8	11.1
6	15900.00	34.5 AV	54.0	-19.5	2.02 H	186	23.4	11.1

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	*5300.00	114.1 PK			1.21 V	226	112.4	1.7
2	*5300.00	103.0 AV			1.21 V	226	101.3	1.7
3	10600.00	46.7 PK	74.0	-27.3	1.83 V	206	35.0	11.7
4	10600.00	35.6 AV	54.0	-18.4	1.83 V	206	23.9	11.7
5	15900.00	45.2 PK	74.0	-28.8	1.00 V	323	34.1	11.1
6	15900.00	33.9 AV	54.0	-20.1	1.00 V	323	22.8	11.1

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.

RF Mode	TX 802.11ac (VHT20)	Channel	CH 64 : 5320 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	*5320.00	105.1 PK			1.41 H	221	103.4	1.7
2	*5320.00	97.0 AV			1.41 H	221	95.3	1.7
3	5350.00	61.8 PK	74.0	-12.2	1.41 H	221	59.8	2.0
4	5350.00	50.2 AV	54.0	-3.8	1.41 H	221	48.2	2.0
5	10640.00	46.5 PK	74.0	-27.5	1.29 H	241	34.9	11.6
6	10640.00	35.4 AV	54.0	-18.6	1.29 H	241	23.8	11.6
7	15960.00	45.9 PK	74.0	-28.1	2.05 H	200	34.5	11.4
8	15960.00	34.5 AV	54.0	-19.5	2.05 H	200	23.1	11.4

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	*5320.00	110.4 PK			1.19 V	82	108.7	1.7
2	*5320.00	101.5 AV			1.19 V	82	99.8	1.7
3	5350.00	66.6 PK	74.0	-7.4	1.19 V	82	64.6	2.0
4	5350.00	53.8 AV	54.0	-0.2	1.19 V	82	51.8	2.0
5	10640.00	45.8 PK	74.0	-28.2	1.85 V	200	34.2	11.6
6	10640.00	35.0 AV	54.0	-19.0	1.85 V	200	23.4	11.6
7	15960.00	45.2 PK	74.0	-28.8	1.05 V	305	33.8	11.4
8	15960.00	33.8 AV	54.0	-20.2	1.05 V	305	22.4	11.4

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.

RF Mode	TX 802.11ac (VHT20)	Channel	CH 100 : 5500 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	5460.00	56.0 PK	74.0	-18.0	1.82 H	199	53.8	2.2
2	5460.00	44.0 AV	54.0	-10.0	1.82 H	199	41.8	2.2
3	#5467.31	65.9 PK	68.2	-2.3	1.82 H	199	63.7	2.2
4	*5500.00	104.7 PK			1.82 H	199	102.6	2.1
5	*5500.00	95.7 AV			1.82 H	199	93.6	2.1
6	11000.00	47.2 PK	74.0	-26.8	1.34 H	222	35.1	12.1
7	11000.00	35.9 AV	54.0	-18.1	1.34 H	222	23.8	12.1
8	#16500.00	45.8 PK	68.2	-22.4	1.97 H	188	32.4	13.4

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	5460.00	59.3 PK	74.0	-14.7	1.18 V	81	57.1	2.2
2	5460.00	45.6 AV	54.0	-8.4	1.18 V	81	43.4	2.2
3	#5469.25	68.0 PK	68.2	-0.2	1.18 V	81	65.8	2.2
4	*5500.00	107.9 PK			1.18 V	81	105.8	2.1
5	*5500.00	98.9 AV			1.18 V	81	96.8	2.1
6	11000.00	46.8 PK	74.0	-27.2	1.87 V	203	34.7	12.1
7	11000.00	35.8 AV	54.0	-18.2	1.87 V	203	23.7	12.1
8	#16500.00	46.3 PK	68.2	-21.9	1.06 V	325	32.9	13.4

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 (VHT20)	Channel	CH 116 : 5580 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	*5580.00	107.8 PK			1.23 H	250	105.6	2.2
2	*5580.00	98.3 AV			1.23 H	250	96.1	2.2
3	11160.00	46.2 PK	74.0	-27.8	1.25 H	232	34.3	11.9
4	11160.00	35.1 AV	54.0	-18.9	1.25 H	232	23.2	11.9
5	#16740.00	45.2 PK	68.2	-23.0	1.98 H	214	30.0	15.2

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	*5580.00	114.7 PK			1.27 V	211	112.5	2.2
2	*5580.00	103.4 AV			1.27 V	211	101.2	2.2
3	11160.00	46.3 PK	74.0	-27.7	1.88 V	219	34.4	11.9
4	11160.00	35.4 AV	54.0	-18.6	1.88 V	219	23.5	11.9
5	#16740.00	45.9 PK	68.2	-22.3	1.04 V	300	30.7	15.2

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 (VHT20)	Channel	CH 140 : 5700 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	*5700.00	106.0 PK			1.28 H	247	103.7	2.3
2	*5700.00	96.0 AV			1.28 H	247	93.7	2.3
3	#5725.00	62.3 PK	68.2	-5.9	1.28 H	247	59.8	2.5
4	11400.00	46.6 PK	74.0	-27.4	1.32 H	233	34.4	12.2
5	11400.00	35.4 AV	54.0	-18.6	1.32 H	233	23.2	12.2
6	#17100.00	45.3 PK	68.2	-22.9	1.95 H	199	28.7	16.6

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	*5700.00	109.6 PK			1.35 V	83	107.3	2.3
2	*5700.00	100.7 AV			1.35 V	83	98.4	2.3
3	#5725.00	68.1 PK	68.2	-0.1	1.35 V	83	65.6	2.5
4	11400.00	46.4 PK	74.0	-27.6	1.84 V	195	34.2	12.2
5	11400.00	35.4 AV	54.0	-18.6	1.84 V	195	23.2	12.2
6	#17100.00	45.5 PK	68.2	-22.7	1.07 V	301	28.9	16.6

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 (VHT20)	Channel	CH 144 : 5720 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	5460.00	50.0 PK	74.0	-24.0	1.25 H	250	47.8	2.2
2	5460.00	38.8 AV	54.0	-15.2	1.25 H	250	36.6	2.2
3	#5470.00	51.1 PK	68.2	-17.1	1.25 H	250	48.9	2.2
4	*5720.00	108.8 PK			1.25 H	250	106.4	2.4
5	*5720.00	98.9 AV			1.25 H	250	96.5	2.4
6	#5850.00	58.6 PK	68.2	-9.6	1.25 H	250	55.7	2.9
7	11440.00	47.4 PK	74.0	-26.6	1.24 H	243	35.2	12.2
8	11440.00	36.1 AV	54.0	-17.9	1.24 H	243	23.9	12.2
9	#17160.00	45.5 PK	68.2	-22.7	2.03 H	204	29.0	16.5

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	5460.00	49.9 PK	74.0	-24.1	1.29 V	208	47.7	2.2
2	5460.00	39.0 AV	54.0	-15.0	1.29 V	208	36.8	2.2
3	#5470.00	51.7 PK	68.2	-16.5	1.29 V	208	49.5	2.2
4	*5720.00	113.1 PK			1.29 V	208	110.7	2.4
5	*5720.00	102.9 AV			1.29 V	208	100.5	2.4
6	#5850.00	58.8 PK	68.2	-9.4	1.29 V	208	55.9	2.9
7	11440.00	46.5 PK	74.0	-27.5	1.92 V	195	34.3	12.2
8	11440.00	35.4 AV	54.0	-18.6	1.92 V	195	23.2	12.2
9	#17160.00	45.3 PK	68.2	-22.9	1.03 V	310	28.8	16.5

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 (VHT20)	Channel	CH 149 : 5745 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	#5602.88	54.2 PK	68.2	-14.0	1.24 H	208	52.0	2.2
2	*5745.00	108.7 PK			1.24 H	208	106.2	2.5
3	*5745.00	98.5 AV			1.24 H	208	96.0	2.5
4	#5963.56	51.4 PK	68.2	-16.8	1.24 H	208	48.5	2.9
5	11490.00	46.8 PK	74.0	-27.2	1.29 H	230	34.4	12.4
6	11490.00	35.6 AV	54.0	-18.4	1.29 H	230	23.2	12.4
7	#17235.00	45.8 PK	68.2	-22.4	1.97 H	205	29.1	16.7

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	#5587.72	62.0 PK	68.2	-6.2	1.58 V	225	59.8	2.2
2	*5745.00	115.6 PK			1.58 V	225	113.1	2.5
3	*5745.00	104.1 AV			1.58 V	225	101.6	2.5
4	#5971.49	51.6 PK	68.2	-16.6	1.58 V	225	48.7	2.9
5	11490.00	46.1 PK	74.0	-27.9	1.90 V	195	33.7	12.4
6	11490.00	35.4 AV	54.0	-18.6	1.90 V	195	23.0	12.4
7	#17235.00	45.7 PK	68.2	-22.5	1.05 V	295	29.0	16.7

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 (VHT20)	Channel	CH 157 : 5785 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	#5632.47	54.1 PK	68.2	-14.1	1.03 H	207	51.8	2.3
2	*5785.00	108.9 PK			1.03 H	207	106.2	2.7
3	*5785.00	98.6 AV			1.03 H	207	95.9	2.7
4	#5939.77	53.9 PK	68.2	-14.3	1.03 H	207	51.0	2.9
5	11570.00	46.7 PK	74.0	-27.3	1.32 H	248	34.3	12.4
6	11570.00	35.5 AV	54.0	-18.5	1.32 H	248	23.1	12.4
7	#17355.00	45.4 PK	68.2	-22.8	1.99 H	188	27.8	17.6

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	#5630.52	61.0 PK	68.2	-7.2	1.52 V	224	58.7	2.3
2	*5785.00	115.2 PK			1.52 V	224	112.5	2.7
3	*5785.00	104.2 AV			1.52 V	224	101.5	2.7
4	#5940.63	60.7 PK	68.2	-7.5	1.52 V	224	57.8	2.9
5	11570.00	46.1 PK	74.0	-27.9	1.84 V	193	33.7	12.4
6	11570.00	35.2 AV	54.0	-18.8	1.84 V	193	22.8	12.4
7	#17355.00	45.7 PK	68.2	-22.5	1.03 V	309	28.1	17.6

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 (VHT20)	Channel	CH 165 : 5825 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	#5611.63	50.8 PK	68.2	-17.4	1.02 H	206	48.6	2.2
2	*5825.00	109.6 PK			1.02 H	206	106.8	2.8
3	*5825.00	98.9 AV			1.02 H	206	96.1	2.8
4	#5972.86	55.9 PK	68.2	-12.3	1.02 H	206	53.0	2.9
5	11650.00	46.9 PK	74.0	-27.1	1.30 H	223	35.0	11.9
6	11650.00	35.7 AV	54.0	-18.3	1.30 H	223	23.8	11.9
7	#17475.00	45.6 PK	68.2	-22.6	1.99 H	189	27.1	18.5

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	#5602.57	53.7 PK	68.2	-14.5	1.56 V	224	51.5	2.2
2	*5825.00	115.3 PK			1.56 V	224	112.5	2.8
3	*5825.00	103.9 AV			1.56 V	224	101.1	2.8
4	#5972.61	60.2 PK	68.2	-8.0	1.56 V	224	57.3	2.9
5	11650.00	46.2 PK	74.0	-27.8	1.83 V	213	34.3	11.9
6	11650.00	35.2 AV	54.0	-18.8	1.83 V	213	23.3	11.9
7	#17475.00	45.7 PK	68.2	-22.5	1.01 V	300	27.2	18.5

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 (VHT40)	Channel	CH 38 : 5190 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	62.9 PK	74.0	-11.1	2.07 H	191	60.5	2.4
2	5150.00	52.6 AV	54.0	-1.4	2.07 H	191	50.2	2.4
3	*5190.00	101.7 PK			2.07 H	191	99.5	2.2
4	*5190.00	91.6 AV			2.07 H	191	89.4	2.2
5	#10380.00	46.6 PK	68.2	-21.6	1.25 H	233	34.8	11.8
6	15570.00	45.1 PK	74.0	-28.9	2.01 H	187	33.3	11.8
7	15570.00	33.9 AV	54.0	-20.1	2.01 H	187	22.1	11.8

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	66.6 PK	74.0	-7.4	1.32 V	65	64.2	2.4
2	5150.00	53.8 AV	54.0	-0.2	1.32 V	65	51.4	2.4
3	*5190.00	103.9 PK			1.32 V	65	101.7	2.2
4	*5190.00	93.6 AV			1.32 V	65	91.4	2.2
5	#10380.00	46.6 PK	68.2	-21.6	1.91 V	216	34.8	11.8
6	15570.00	45.5 PK	74.0	-28.5	1.04 V	295	33.7	11.8
7	15570.00	34.2 AV	54.0	-19.8	1.04 V	295	22.4	11.8

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 (VHT40)	Channel	CH 46 : 5230 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	60.1 PK	74.0	-13.9	1.11 H	211	57.7	2.4
2	5150.00	48.9 AV	54.0	-5.1	1.11 H	211	46.5	2.4
3	*5230.00	105.2 PK			1.11 H	211	103.2	2.0
4	*5230.00	95.3 AV			1.11 H	211	93.3	2.0
5	5350.00	55.8 PK	74.0	-18.2	1.11 H	211	53.8	2.0
6	5350.00	44.5 AV	54.0	-9.5	1.11 H	211	42.5	2.0
7	#10460.00	47.0 PK	68.2	-21.2	1.25 H	235	35.0	12.0
8	15690.00	45.9 PK	74.0	-28.1	1.96 H	201	34.0	11.9
9	15690.00	34.4 AV	54.0	-19.6	1.96 H	201	22.5	11.9

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	63.2 PK	74.0	-10.8	1.12 V	237	60.8	2.4
2	5150.00	51.5 AV	54.0	-2.5	1.12 V	237	49.1	2.4
3	*5230.00	110.2 PK			1.12 V	237	108.2	2.0
4	*5230.00	99.2 AV			1.12 V	237	97.2	2.0
5	5350.00	58.2 PK	74.0	-15.8	1.12 V	237	56.2	2.0
6	5350.00	46.6 AV	54.0	-7.4	1.12 V	237	44.6	2.0
7	#10460.00	45.9 PK	68.2	-22.3	1.91 V	215	33.9	12.0
8	15690.00	45.4 PK	74.0	-28.6	1.00 V	305	33.5	11.9
9	15690.00	33.8 AV	54.0	-20.2	1.00 V	305	21.9	11.9

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 (VHT40)	Channel	CH 54 : 5270 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	56.2 PK	74.0	-17.8	1.16 H	204	53.8	2.4
2	5150.00	43.5 AV	54.0	-10.5	1.16 H	204	41.1	2.4
3	*5270.00	105.2 PK			1.16 H	204	103.4	1.8
4	*5270.00	95.3 AV			1.16 H	204	93.5	1.8
5	#10540.00	47.3 PK	68.2	-20.9	1.31 H	245	35.4	11.9
6	15810.00	45.4 PK	74.0	-28.6	2.04 H	200	34.0	11.4
7	15810.00	34.4 AV	54.0	-19.6	2.04 H	200	23.0	11.4

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	57.0 PK	74.0	-17.0	1.27 V	237	54.6	2.4
2	5150.00	44.2 AV	54.0	-9.8	1.27 V	237	41.8	2.4
3	*5270.00	110.7 PK			1.27 V	237	108.9	1.8
4	*5270.00	99.6 AV			1.27 V	237	97.8	1.8
5	#10540.00	46.2 PK	68.2	-22.0	1.86 V	203	34.3	11.9
6	15810.00	45.7 PK	74.0	-28.3	1.07 V	308	34.3	11.4
7	15810.00	34.0 AV	54.0	-20.0	1.07 V	308	22.6	11.4

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 (VHT40)	Channel	CH 62 : 5310 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	*5310.00	101.4 PK			1.41 H	223	99.7	1.7
2	*5310.00	92.8 AV			1.41 H	223	91.1	1.7
3	5350.00	65.8 PK	74.0	-8.2	1.41 H	223	63.8	2.0
4	5350.00	53.0 AV	54.0	-1.0	1.41 H	223	51.0	2.0
5	10620.00	46.1 PK	74.0	-27.9	1.28 H	251	34.5	11.6
6	10620.00	35.2 AV	54.0	-18.8	1.28 H	251	23.6	11.6
7	15930.00	44.8 PK	74.0	-29.2	1.98 H	200	33.5	11.3
8	15930.00	33.7 AV	54.0	-20.3	1.98 H	200	22.4	11.3

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	*5310.00	104.7 PK			1.17 V	68	103.0	1.7
2	*5310.00	95.5 AV			1.17 V	68	93.8	1.7
3	5350.00	67.6 PK	74.0	-6.4	1.17 V	68	65.6	2.0
4	5350.00	53.7 AV	54.0	-0.3	1.17 V	68	51.7	2.0
5	10620.00	46.0 PK	74.0	-28.0	1.87 V	203	34.4	11.6
6	10620.00	35.0 AV	54.0	-19.0	1.87 V	203	23.4	11.6
7	15930.00	45.3 PK	74.0	-28.7	1.06 V	299	34.0	11.3
8	15930.00	34.0 AV	54.0	-20.0	1.06 V	299	22.7	11.3

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.

RF Mode	TX 802.11ac (VHT40)	Channel	CH 102 : 5510 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	5460.00	60.8 PK	74.0	-13.2	1.38 H	230	58.6	2.2
2	5460.00	48.8 AV	54.0	-5.2	1.38 H	230	46.6	2.2
3	#5463.10	65.2 PK	68.2	-3.0	1.38 H	230	63.0	2.2
4	*5510.00	100.8 PK			1.38 H	230	98.7	2.1
5	*5510.00	91.6 AV			1.38 H	230	89.5	2.1
6	11020.00	46.6 PK	74.0	-27.4	1.32 H	252	34.5	12.1
7	11020.00	35.4 AV	54.0	-18.6	1.32 H	252	23.3	12.1
8	#16530.00	45.8 PK	68.2	-22.4	2.05 H	212	32.1	13.7

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	5460.00	61.0 PK	74.0	-13.0	1.13 V	69	58.8	2.2
2	5460.00	48.3 AV	54.0	-5.7	1.13 V	69	46.1	2.2
3	#5467.34	68.1 PK	68.2	-0.1	1.13 V	69	65.9	2.2
4	*5510.00	102.9 PK			1.13 V	69	100.8	2.1
5	*5510.00	94.2 AV			1.13 V	69	92.1	2.1
6	11020.00	46.0 PK	74.0	-28.0	1.88 V	218	33.9	12.1
7	11020.00	35.0 AV	54.0	-19.0	1.88 V	218	22.9	12.1
8	#16530.00	45.5 PK	68.2	-22.7	1.03 V	302	31.8	13.7

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 (VHT40)	Channel	CH 110 : 5550 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	5460.00	60.4 PK	74.0	-13.6	1.12 H	204	58.2	2.2
2	5460.00	46.7 AV	54.0	-7.3	1.12 H	204	44.5	2.2
3	#5470.00	62.1 PK	68.2	-6.1	1.12 H	204	59.9	2.2
4	*5550.00	105.1 PK			1.12 H	204	102.9	2.2
5	*5550.00	95.4 AV			1.12 H	204	93.2	2.2
6	11100.00	46.7 PK	74.0	-27.3	1.24 H	232	34.8	11.9
7	11100.00	35.6 AV	54.0	-18.4	1.24 H	232	23.7	11.9
8	#16650.00	45.0 PK	68.2	-23.2	1.96 H	203	30.3	14.7

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	5460.00	66.5 PK	74.0	-7.5	1.30 V	229	64.3	2.2
2	5460.00	51.1 AV	54.0	-2.9	1.30 V	229	48.9	2.2
3	#5470.00	68.0 PK	68.2	-0.2	1.30 V	229	65.8	2.2
4	*5550.00	111.0 PK			1.30 V	229	108.8	2.2
5	*5550.00	99.8 AV			1.30 V	229	97.6	2.2
6	11100.00	46.6 PK	74.0	-27.4	1.87 V	202	34.7	11.9
7	11100.00	35.8 AV	54.0	-18.2	1.87 V	202	23.9	11.9
8	#16650.00	46.1 PK	68.2	-22.1	1.00 V	302	31.4	14.7

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 (VHT40)	Channel	CH 134 : 5670 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	*5670.00	105.0 PK			1.16 H	202	102.8	2.2
2	*5670.00	95.2 AV			1.16 H	202	93.0	2.2
3	#5725.00	62.7 PK	68.2	-5.5	1.16 H	202	60.2	2.5
4	11340.00	47.1 PK	74.0	-26.9	1.30 H	247	35.0	12.1
5	11340.00	35.8 AV	54.0	-18.2	1.30 H	247	23.7	12.1
6	#17010.00	46.1 PK	68.2	-22.1	1.96 H	206	29.6	16.5

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	*5670.00	107.7 PK			1.29 V	68	105.5	2.2
2	*5670.00	98.9 AV			1.29 V	68	96.7	2.2
3	#5725.00	67.9 PK	68.2	-0.3	1.29 V	68	65.4	2.5
4	11340.00	45.8 PK	74.0	-28.2	1.84 V	194	33.7	12.1
5	11340.00	35.1 AV	54.0	-18.9	1.84 V	194	23.0	12.1
6	#17010.00	45.4 PK	68.2	-22.8	1.05 V	318	28.9	16.5

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 (VHT40)	Channel	CH 142 : 5710 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	5460.00	49.8 PK	74.0	-24.2	1.07 H	209	47.6	2.2
2	5460.00	38.6 AV	54.0	-15.4	1.07 H	209	36.4	2.2
3	#5470.00	52.1 PK	68.2	-16.1	1.07 H	209	49.9	2.2
4	*5710.00	105.6 PK			1.07 H	209	103.2	2.4
5	*5710.00	95.6 AV			1.07 H	209	93.2	2.4
6	#5850.00	58.7 PK	68.2	-9.5	1.07 H	209	55.8	2.9
7	11420.00	47.4 PK	74.0	-26.6	1.34 H	251	35.1	12.3
8	11420.00	36.0 AV	54.0	-18.0	1.34 H	251	23.7	12.3
9	#17130.00	45.4 PK	68.2	-22.8	1.94 H	201	28.8	16.6

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	5460.00	50.3 PK	74.0	-23.7	1.24 V	208	48.1	2.2
2	5460.00	39.5 AV	54.0	-14.5	1.24 V	208	37.3	2.2
3	#5470.00	52.1 PK	68.2	-16.1	1.24 V	208	49.9	2.2
4	*5710.00	110.6 PK			1.24 V	208	108.2	2.4
5	*5710.00	99.6 AV			1.24 V	208	97.2	2.4
6	#5850.00	58.3 PK	68.2	-9.9	1.24 V	208	55.4	2.9
7	11420.00	46.4 PK	74.0	-27.6	1.85 V	214	34.1	12.3
8	11420.00	35.3 AV	54.0	-18.7	1.85 V	214	23.0	12.3
9	#17130.00	45.9 PK	68.2	-22.3	1.00 V	320	29.3	16.6

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 (VHT40)	Channel	CH 151 : 5755 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	#5646.38	57.2 PK	68.2	-11.0	1.11 H	208	54.9	2.3
2	*5755.00	107.6 PK			1.11 H	208	105.0	2.6
3	*5755.00	96.9 AV			1.11 H	208	94.3	2.6
4	#5975.08	50.7 PK	68.2	-17.5	1.11 H	208	47.8	2.9
5	11510.00	46.5 PK	74.0	-27.5	1.29 H	248	34.1	12.4
6	11510.00	35.5 AV	54.0	-18.5	1.29 H	248	23.1	12.4
7	#17265.00	45.6 PK	68.2	-22.6	1.95 H	207	28.8	16.8

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	#5645.95	67.4 PK	68.2	-0.8	1.52 V	225	65.1	2.3
2	*5755.00	112.1 PK			1.52 V	225	109.5	2.6
3	*5755.00	100.9 AV			1.52 V	225	98.3	2.6
4	#5934.48	53.5 PK	68.2	-14.7	1.52 V	225	50.6	2.9
5	11510.00	46.7 PK	74.0	-27.3	1.91 V	194	34.3	12.4
6	11510.00	35.7 AV	54.0	-18.3	1.91 V	194	23.3	12.4
7	#17265.00	45.6 PK	68.2	-22.6	1.00 V	307	28.8	16.8

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 (VHT40)	Channel	CH 159 : 5795 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	#5648.65	56.2 PK	68.2	-12.0	1.06 H	207	53.9	2.3
2	*5795.00	108.5 PK			1.06 H	207	105.8	2.7
3	*5795.00	97.2 AV			1.06 H	207	94.5	2.7
4	#5928.11	57.0 PK	68.2	-11.2	1.06 H	207	54.1	2.9
5	11590.00	46.8 PK	74.0	-27.2	1.32 H	243	34.5	12.3
6	11590.00	35.9 AV	54.0	-18.1	1.32 H	243	23.6	12.3
7	#17385.00	45.7 PK	68.2	-22.5	2.05 H	200	27.9	17.8

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	#5634.68	60.7 PK	68.2	-7.5	1.14 V	225	58.4	2.3
2	*5795.00	112.6 PK			1.44 V	225	109.9	2.7
3	*5795.00	100.0 AV			1.44 V	225	97.3	2.7
4	#5932.96	60.1 PK	68.2	-8.1	1.44 V	225	57.2	2.9
5	11590.00	46.8 PK	74.0	-27.2	1.84 V	207	34.5	12.3
6	11590.00	35.7 AV	54.0	-18.3	1.84 V	207	23.4	12.3
7	#17385.00	45.7 PK	68.2	-22.5	1.00 V	300	27.9	17.8

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 (VHT80)	Channel	CH 42 : 5210 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	62.1 PK	74.0	-11.9	1.80 H	222	59.7	2.4
2	5150.00	53.0 AV	54.0	-1.0	1.80 H	222	50.6	2.4
3	*5210.00	96.0 PK			1.80 H	222	94.0	2.0
4	*5210.00	86.1 AV			1.80 H	222	84.1	2.0
5	5350.00	52.5 PK	74.0	-21.5	1.80 H	222	50.5	2.0
6	5350.00	42.9 AV	54.0	-11.1	1.80 H	222	40.9	2.0
7	#10420.00	46.2 PK	68.2	-22.0	1.24 H	234	34.2	12.0
8	15630.00	45.2 PK	74.0	-28.8	1.97 H	191	33.5	11.7
9	15630.00	34.2 AV	54.0	-19.8	1.97 H	191	22.5	11.7

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	65.2 PK	74.0	-8.8	1.20 V	63	62.8	2.4
2	5150.00	53.9 AV	54.0	-0.1	1.20 V	63	51.5	2.4
3	*5210.00	100.7 PK			1.20 V	63	98.7	2.0
4	*5210.00	91.9 AV			1.20 V	63	89.9	2.0
5	5350.00	54.5 PK	74.0	-19.5	1.20 V	63	52.5	2.0
6	5350.00	43.2 AV	54.0	-10.8	1.20 V	63	41.2	2.0
7	#10420.00	46.6 PK	68.2	-21.6	1.84 V	197	34.6	12.0
8	15630.00	46.1 PK	74.0	-27.9	1.00 V	316	34.4	11.7
9	15630.00	34.7 AV	54.0	-19.3	1.00 V	316	23.0	11.7

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 (VHT80)	Channel	CH 58 : 5290 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	52.6 PK	74.0	-21.4	1.50 H	221	50.2	2.4
2	5150.00	42.9 AV	54.0	-11.1	1.50 H	221	40.5	2.4
3	*5290.00	96.5 PK			1.50 H	221	94.8	1.7
4	*5290.00	87.5 AV			1.50 H	221	85.8	1.7
5	5350.00	63.8 PK	74.0	-10.2	1.50 H	221	61.8	2.0
6	5350.00	53.1 AV	54.0	-0.9	1.50 H	221	51.1	2.0
7	#10580.00	46.4 PK	68.2	-21.8	1.33 H	249	34.7	11.7
8	15870.00	45.1 PK	74.0	-28.9	2.04 H	192	34.0	11.1
9	15870.00	33.9 AV	54.0	-20.1	2.04 H	192	22.8	11.1

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	5150.00	53.4 PK	74.0	-20.6	1.07 V	65	51.0	2.4
2	5150.00	43.2 AV	54.0	-10.8	1.07 V	65	40.8	2.4
3	*5290.00	99.0 PK			1.07 V	65	97.3	1.7
4	*5290.00	90.4 AV			1.07 V	65	88.7	1.7
5	5350.00	63.2 PK	74.0	-10.8	1.07 V	65	61.2	2.0
6	5350.00	53.5 AV	54.0	-0.5	1.07 V	65	51.5	2.0
7	#10580.00	45.8 PK	68.2	-22.4	1.90 V	219	34.1	11.7
8	15870.00	46.0 PK	74.0	-28.0	1.03 V	324	34.9	11.1
9	15870.00	34.4 AV	54.0	-19.6	1.03 V	324	23.3	11.1

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 (VHT80)	Channel	CH 106 : 5530 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	5460.00	62.6 PK	74.0	-11.4	1.34 H	230	60.4	2.2
2	5460.00	52.2 AV	54.0	-1.8	1.34 H	230	50.0	2.2
3	#5470.00	63.7 PK	68.2	-4.5	1.34 H	230	61.5	2.2
4	*5530.00	95.3 PK			1.34 H	230	93.2	2.1
5	*5530.00	86.4 AV			1.34 H	230	84.3	2.1
6	#5849.40	52.4 PK	68.2	-15.8	1.34 H	230	49.5	2.9
7	11060.00	47.0 PK	74.0	-27.0	1.27 H	232	35.0	12.0
8	11060.00	35.7 AV	54.0	-18.3	1.27 H	232	23.7	12.0
9	#16590.00	45.2 PK	68.2	-23.0	1.99 H	198	30.9	14.3

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	5460.00	63.7 PK	74.0	-10.3	1.02 V	62	61.5	2.2
2	5460.00	53.8 AV	54.0	-0.2	1.02 V	62	51.6	2.2
3	#5470.00	66.3 PK	68.2	-1.9	1.02 V	62	64.1	2.2
4	*5530.00	100.5 PK			1.02 V	62	98.4	2.1
5	*5530.00	90.5 AV			1.02 V	62	88.4	2.1
6	#5807.65	53.3 PK	68.2	-14.9	1.02 V	62	50.6	2.7
7	11060.00	46.6 PK	74.0	-27.4	1.80 V	209	34.6	12.0
8	11060.00	35.8 AV	54.0	-18.2	1.80 V	209	23.8	12.0
9	#16590.00	45.3 PK	68.2	-22.9	1.00 V	298	31.0	14.3

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 (VHT80)	Channel	CH 122 : 5610 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	*5610.00	100.2 PK			1.55 H	249	98.0	2.2
2	*5610.00	89.5 AV			1.55 H	249	87.3	2.2
3	#5725.00	65.2 PK	68.2	-3.0	1.55 H	249	62.7	2.5
4	11220.00	47.1 PK	74.0	-26.9	1.32 H	247	35.0	12.1
5	11220.00	36.1 AV	54.0	-17.9	1.32 H	247	24.0	12.1
6	#16830.00	44.9 PK	68.2	-23.3	2.04 H	206	29.2	15.7

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	*5610.00	104.2 PK			1.06 V	65	102.0	2.2
2	*5610.00	95.3 AV			1.06 V	65	93.1	2.2
3	#5725.00	68.1 PK	68.2	-0.1	1.06 V	65	65.6	2.5
4	11220.00	46.3 PK	74.0	-27.7	1.85 V	208	34.2	12.1
5	11220.00	35.6 AV	54.0	-18.4	1.85 V	208	23.5	12.1
6	#16830.00	45.8 PK	68.2	-22.4	1.04 V	307	30.1	15.7

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 (VHT80)	Channel	CH 138 : 5690 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	5460.00	57.9 PK	74.0	-16.1	1.53 H	271	55.7	2.2
2	5460.00	42.8 AV	54.0	-11.2	1.53 H	271	40.6	2.2
3	#5470.00	62.5 PK	68.2	-5.7	1.53 H	271	60.3	2.2
4	*5690.00	102.4 PK			1.53 H	271	100.1	2.3
5	*5690.00	91.7 AV			1.53 H	271	89.4	2.3
6	#5850.00	64.7 PK	68.2	-3.5	1.53 H	271	61.8	2.9
7	11380.00	47.5 PK	74.0	-26.5	1.33 H	243	35.3	12.2
8	11380.00	36.1 AV	54.0	-17.9	1.33 H	243	23.9	12.2
9	#17070.00	45.8 PK	68.2	-22.4	1.97 H	203	29.2	16.6

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	5460.00	58.8 PK	74.0	-15.2	1.09 V	232	56.6	2.2
2	5460.00	44.7 AV	54.0	-9.3	1.09 V	232	42.5	2.2
3	#5470.00	65.1 PK	68.2	-3.1	1.09 V	232	62.9	2.2
4	*5690.00	107.9 PK			1.09 V	232	105.6	2.3
5	*5690.00	96.9 AV			1.09 V	232	94.6	2.3
6	#5850.00	68.0 PK	68.2	-0.2	1.09 V	232	65.1	2.9
7	11380.00	46.9 PK	74.0	-27.1	1.87 V	196	34.7	12.2
8	11380.00	35.8 AV	54.0	-18.2	1.87 V	196	23.6	12.2
9	#17070.00	45.5 PK	68.2	-22.7	1.06 V	294	28.9	16.6

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 (VHT80)	Channel	CH 155 : 5775 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	#5642.95	64.1 PK	68.2	-4.1	1.41 H	204	61.8	2.3
2	*5775.00	99.8 PK			1.41 H	204	97.2	2.6
3	*5775.00	89.3 AV			1.41 H	204	86.7	2.6
4	#5932.59	56.0 PK	68.2	-12.2	1.41 H	204	53.1	2.9
5	11550.00	47.0 PK	74.0	-27.0	1.32 H	241	34.7	12.3
6	11550.00	35.9 AV	54.0	-18.1	1.32 H	241	23.6	12.3
7	#17325.00	44.8 PK	68.2	-23.4	2.02 H	201	27.6	17.2

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	#5646.75	67.5 PK	68.2	-0.7	1.47 V	224	65.2	2.3
2	*5775.00	104.4 PK			1.47 V	224	101.8	2.6
3	*5775.00	94.4 AV			1.47 V	224	91.8	2.6
4	#5927.16	63.5 PK	68.2	-4.7	1.47 V	224	60.6	2.9
5	11550.00	46.4 PK	74.0	-27.6	1.91 V	203	34.1	12.3
6	11550.00	35.6 AV	54.0	-18.4	1.91 V	203	23.3	12.3
7	#17325.00	45.6 PK	68.2	-22.6	1.02 V	300	28.4	17.2

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.

BELOW 1GHz WORST-CASE DATA

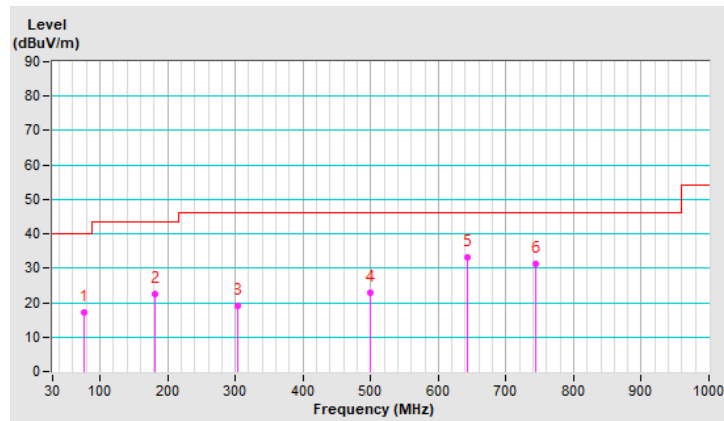
RF Mode	TX 802.11ac (VHT40)	Channel	CH 151 : 5755 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	77.34	17.2 QP	40.0	-22.8	2.00 H	42	34.1	-16.9
2	182.10	22.4 QP	43.5	-21.1	1.50 H	153	37.1	-14.7
3	304.33	19.0 QP	46.0	-27.0	1.00 H	175	31.1	-12.1
4	499.36	22.9 QP	46.0	-23.1	1.00 H	360	30.5	-7.6
5	642.97	33.3 QP	46.0	-12.7	1.00 H	360	37.7	-4.4
6	743.03	31.1 QP	46.0	-14.9	1.00 H	342	34.1	-3.0

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.

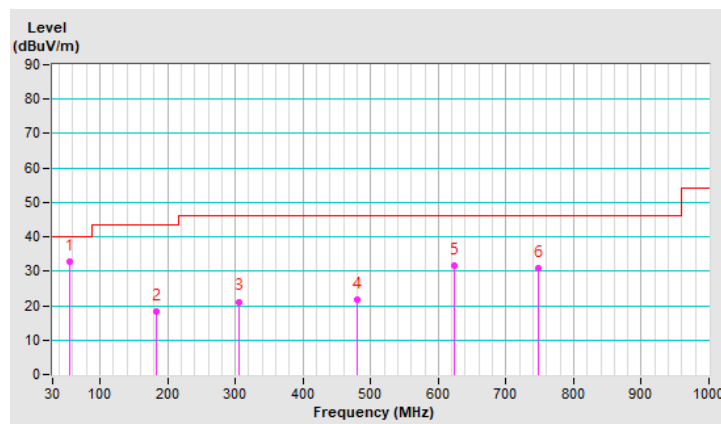


RF Mode	TX 802.11ac (VHT40)	Channel	CH 151 : 5755 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	55.42	32.9 QP	40.0	-7.1	1.50 V	360	45.8	-12.9
2	182.39	18.4 QP	43.5	-25.1	1.00 V	107	33.1	-14.7
3	305.78	21.2 QP	46.0	-24.8	2.00 V	146	33.3	-12.1
4	480.54	21.7 QP	46.0	-24.3	1.00 V	144	29.5	-7.8
5	623.91	31.6 QP	46.0	-14.4	1.00 V	334	36.4	-4.8
6	747.54	30.7 QP	46.0	-15.3	2.00 V	1	33.5	-2.8

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 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.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	847124/029	2021/10/13	2022/10/12
LISN R&S	ESH3-Z5	848773/004	2021/10/29	2022/10/28
LISN R & S	ESH3-Z5	835239/001	2021/3/26	2022/3/25
50 ohms Terminator NA	50	3	2021/10/27	2022/10/26
RF Coaxial Cable JYEBO	5D-FB	COCCAB-001	2021/9/25	2022/9/24
Fixed attenuator STI	STI02-2200-10	005	2021/8/27	2022/8/26
Software BVADT	BVADT_Cond_V7.3.7.4	NA	NA	NA

Note:

1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Conduction 1.
3. Tested Date: 2021/12/28

4.2.3 Test Procedure

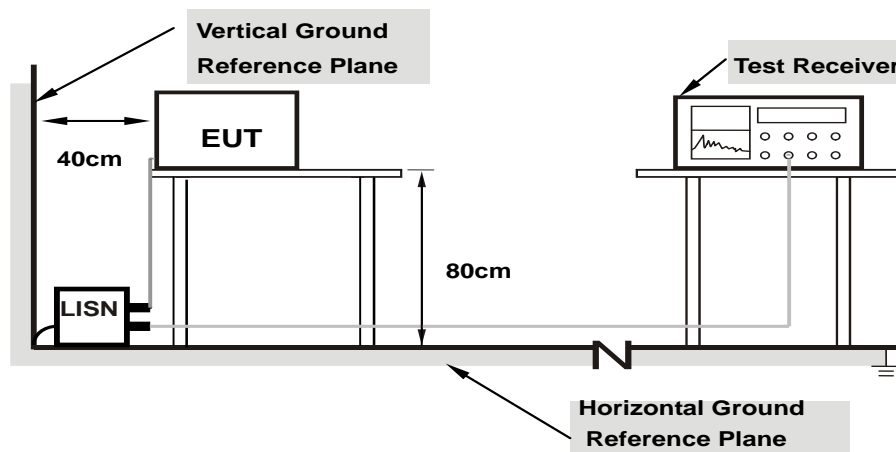
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling 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: All modes of operation were investigated and the worst-case emissions are reported.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



Note: 1.Support units were connected to second LISN.

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

4.2.6 EUT Operating Condition

Same as 4.1.6.

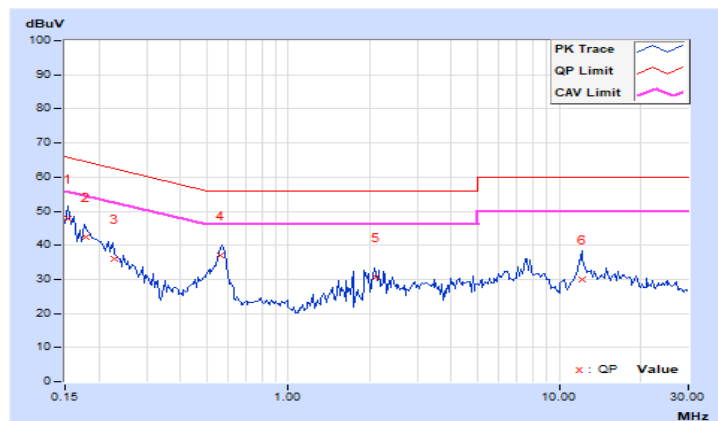
4.2.7 Test Results

RF Mode	TX 802.11ac (VHT40)	Channel	CH 151 : 5755 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	0.15437	10.07	37.74	21.26	47.81	31.33	65.76	55.76	-17.95	-24.43
2	0.17964	10.08	32.51	17.89	42.59	27.97	64.50	54.50	-21.91	-26.53
3	0.22677	10.08	25.90	10.23	35.98	20.31	62.57	52.57	-26.59	-32.26
4	0.56463	10.12	26.76	19.75	36.88	29.87	56.00	46.00	-19.12	-16.13
5	2.09571	10.22	20.56	8.63	30.78	18.85	56.00	46.00	-25.22	-27.15
6	12.14074	10.95	19.16	12.10	30.11	23.05	60.00	50.00	-29.89	-26.95

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

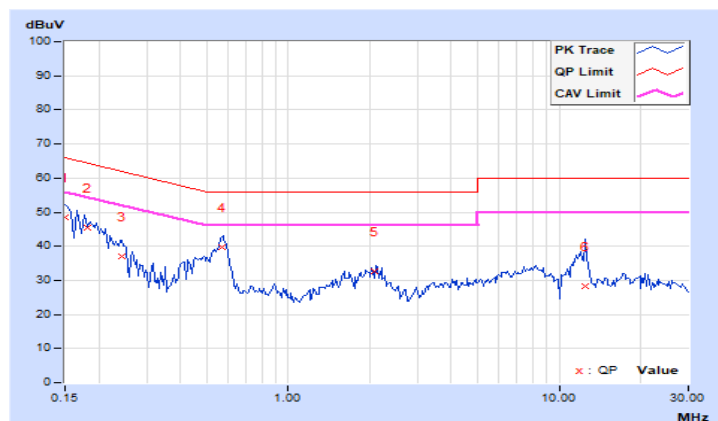


RF Mode	TX 802.11ac (VHT40)	Channel	CH 151 : 5755 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 66 % RH
Tested By	Tom Yang		

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	0.15054	10.05	38.33	22.19	48.38	32.24	65.97	55.97	-17.59	-23.73
2	0.18077	10.07	35.43	19.60	45.50	29.67	64.45	54.45	-18.95	-24.78
3	0.24170	10.08	26.80	11.26	36.88	21.34	62.04	52.04	-25.16	-30.70
4	0.57250	10.11	29.74	22.51	39.85	32.62	56.00	46.00	-16.15	-13.38
5	2.09287	10.23	22.37	13.26	32.60	23.49	56.00	46.00	-23.40	-22.51
6	12.53560	10.83	17.53	10.54	28.36	21.37	60.00	50.00	-31.64	-28.63

Remarks:

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



4.3 Transmit Power Measurement

4.3.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p \leq 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)
	√	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)

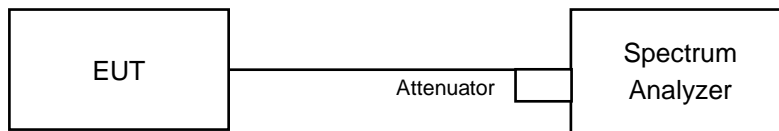
*B is the 26 dB emission bandwidth in megahertz

Note: This device can support different category application which switched by access point mode and client mode by software.

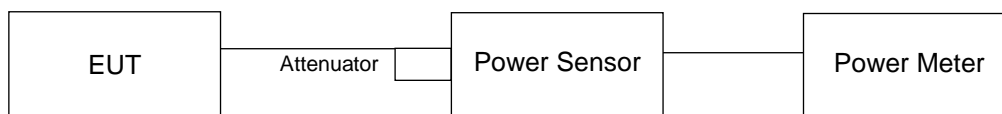
4.3.2 Test Setup

FOR POWER OUTPUT MEASUREMENT

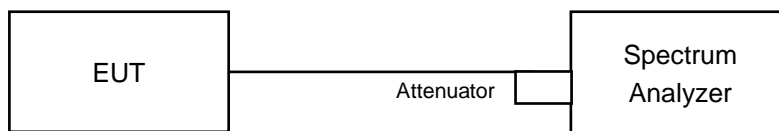
For channel straddling 5725MHz:



For other channels:



FOR 26dB OCCUPIED BANDWIDTH



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

FOR POWER OUTPUT MEASUREMENT

For channel straddling 5725MHz:

Method SA-2

1. Set span to encompass the emission bandwidth (EBW) of the signal.
2. Set RBW =1MHz.
3. Set the VBW $\geq 3 \times$ RBW.
4. Number of points in sweep ≥ 2 Span / RBW.
5. Sweep time = auto.
6. Detector = RMS.
7. Trace average at least 100 traces in power averaging mode
8. Compute power by integrating the spectrum across the 26 dB EBW of the signal.
9. Duty factor need added to measured value (duty cycle < 98 percent).

For other channels:

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.

FOR 26dB OCCUPIED BANDWIDTH

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set the VBW > RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Condition

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

4.3.7 Test Results

POWER OUTPUT
802.11a

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
36	5180	75.509	18.78	24	Pass
40	5200	83.753	19.23	24	Pass
48	5240	79.799	19.02	24	Pass
52	5260	77.446	18.89	24	Pass
60	5300	76.56	18.84	24	Pass
64	5320	69.984	18.45	24	Pass
100	5500	43.351	16.37	24	Pass
116	5580	94.624	19.76	24	Pass
140	5700	75.683	18.79	24	Pass
*144 (U-NII-2C Band)	5720	70.958	18.51	24	Pass
*144 (U-NII-3 Band)	5720	14.289	11.55	30	Pass
149	5745	82.794	19.18	30	Pass
157	5785	79.616	19.01	30	Pass
165	5825	77.268	18.88	30	Pass

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-2 and use spectrum analyzer test. The duty factor was included in the total power.

1. For UNII-1 & UNII-2A & UNII-2C & UNII-3: The maximum gain = 3.98 dBi < 6 dBi, therefore the limit needs to reduce, so the power limit shall not be reduced.

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	42.68	27.3 > 24
60	5300	42.58	27.29 > 24
64	5320	22.12	24.44 > 24
100	5500	22.03	24.43 > 24
116	5580	44.46	27.47 > 24
140	5700	22.11	24.44 > 24
144 (U-NII-2C Band)	5720	19.96	24 = 24

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
36	5180	76.56	18.84	24	Pass
40	5200	77.804	18.91	24	Pass
48	5240	81.47	19.11	24	Pass
52	5260	81.096	19.09	24	Pass
60	5300	80.168	19.04	24	Pass
64	5320	71.779	18.56	24	Pass
100	5500	42.954	16.33	24	Pass
116	5580	97.051	19.87	24	Pass
140	5700	63.533	18.03	24	Pass
*144 (U-NII-2C Band)	5720	71.633	18.55	23.13	Pass
*144 (U-NII-3 Band)	5720	15.672	11.95	30	Pass
149	5745	81.096	19.09	30	Pass
157	5785	79.616	19.01	30	Pass
165	5825	77.446	18.89	30	Pass

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-2 and use spectrum analyzer test. The duty factor was included in the total power.

1. For UNII-1 & UNII-2A & UNII-2C & UNII-3: The maximum gain = 3.98 dBi < 6 dBi, therefore the limit needs to reduce, so the power limit shall not be reduced.

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	45.52	27.58 > 24
60	5300	46.52	27.67 > 24
64	5320	22.37	24.49 > 24
100	5500	22.21	24.46 > 24
116	5580	46.47	27.67 > 24
140	5700	22.24	24.47 > 24
144 (U-NII-2C Band)	5720	16.35	23.13 < 24

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
38	5190	49.431	16.94	24	Pass
46	5230	95.499	19.80	24	Pass
54	5270	95.94	19.82	24	Pass
62	5310	50.003	16.99	24	Pass
102	5510	39.174	15.93	24	Pass
110	5550	73.282	18.65	24	Pass
134	5670	85.704	19.33	24	Pass
*142 (U-NII-2C Band)	5710	81.957	19.14	24	Pass
*142 (U-NII-3 Band)	5710	6.692	8.26	30	Pass
151	5755	103.276	20.14	30	Pass
159	5795	100.693	20.03	30	Pass

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-2 and use spectrum analyzer test. The duty factor was included in the total power.

1. For UNII-1 & UNII-2A & UNII-2C & UNII-3: The maximum gain = 3.98 dBi < 6 dBi, therefore the limit needs to reduce, so the power limit shall not be reduced.

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
54	5270	89.3	30.5 > 24
62	5310	42.06	27.23 > 24
102	5510	41.92	27.22 > 24
110	5550	88.54	30.47 > 24
134	5670	93.43	30.7 > 24
142 (U-NII-2C Band)	5710	53.95	28.31 > 24

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
42	5210	31.117	14.93	24	PASS
58	5290	43.351	16.37	24	PASS
106	5530	33.42	15.24	24	PASS
122	5610	86.896	19.39	24	PASS
*138 (U-NII-2C Band)	5690	76.926	18.86	24	PASS
*138 (U-NII-3 Band)	5690	2.761	4.41	30	PASS
155	5775	58.21	17.65	30	PASS

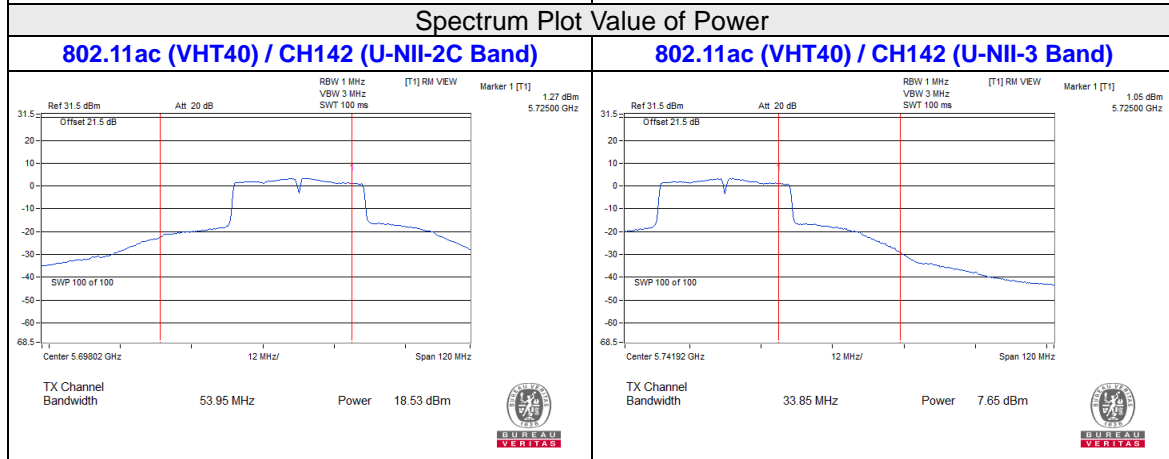
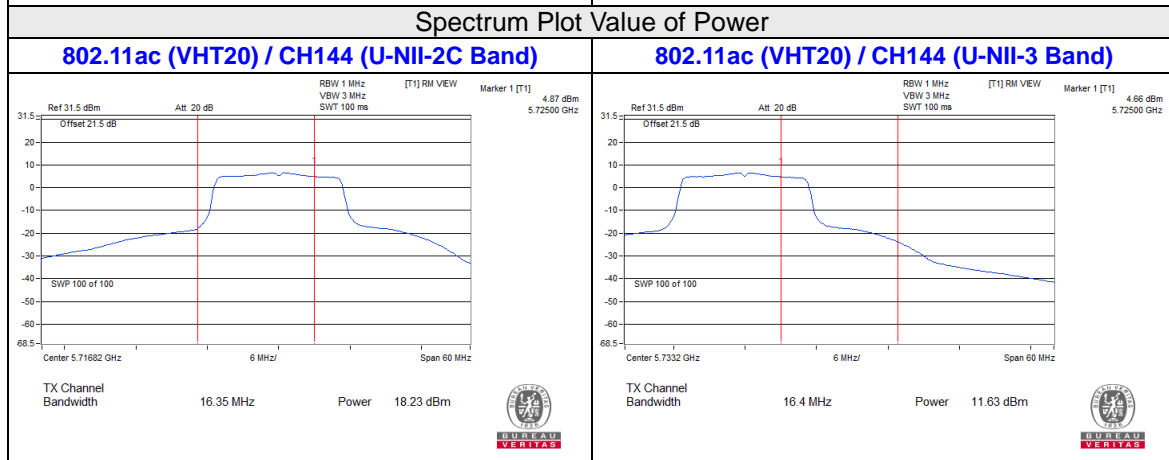
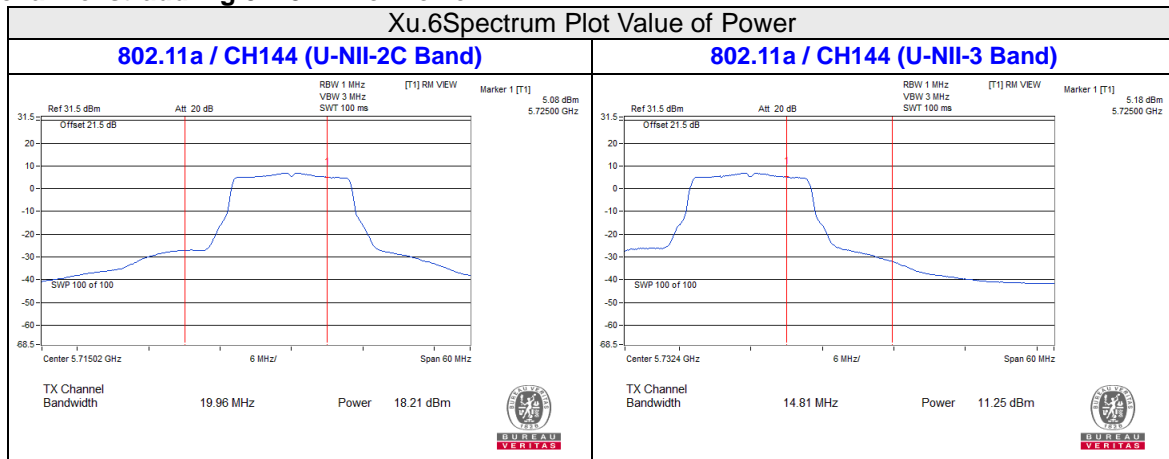
Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-2 and use spectrum analyzer test. The duty factor was included in the total power.

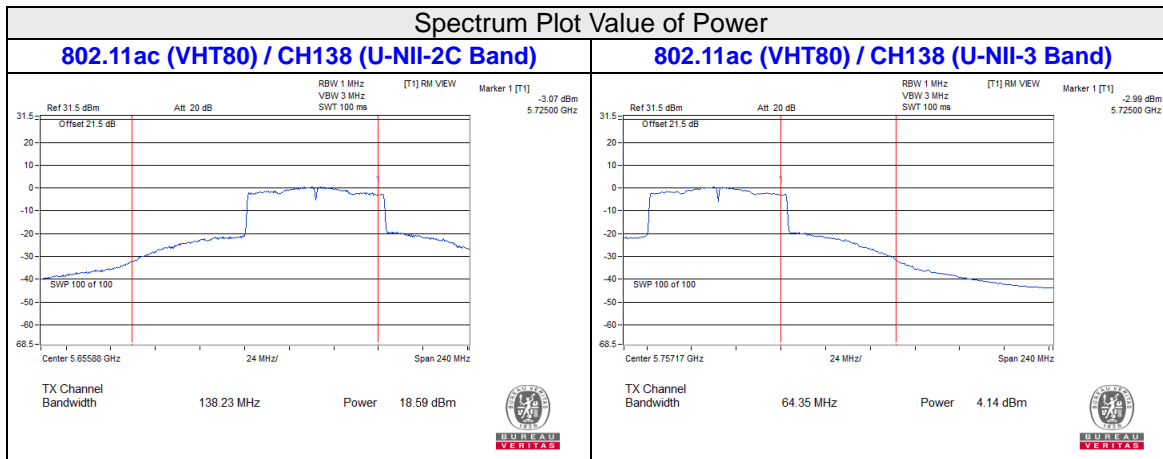
1. For UNII-1 & UNII-2A & UNII-2C & UNII-3: The maximum gain = 3.98 dBi < 6 dBi, therefore the limit needs to reduce, so the power limit shall not be reduced.

Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
58	5290	82.82	30.18 > 24
106	5530	83.63	30.22 > 24
122	5610	84.5	30.26 > 24
138 (U-NII-2C Band)	5690	138.23	32.4 > 24

For channel straddling 5725MHz of Power





26dB OCCUPIED BANDWIDTH

802.11a

Channel	Frequency (MHz)	26dB Bandwidth (MHz)
36	5180	42.68
40	5200	42.58
48	5240	22.12
52	5260	22.03
60	5300	44.46
64	5320	22.11
100	5500	19.96
116	5580	42.68
140	5700	42.58
144 (U-NII-2C Band)	5720	22.12
144 (U-NII-3 Band)	5720	22.03
149	5745	44.46
157	5785	22.11
165	5825	19.96

802.11ac (VHT20)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)
36	5180	45.52
40	5200	46.52
48	5240	22.37
52	5260	22.21
60	5300	46.47
64	5320	22.24
100	5500	16.35
116	5580	45.52
140	5700	46.52
144 (U-NII-2C Band)	5720	22.37
144 (U-NII-3 Band)	5720	22.21
149	5745	46.47
157	5785	22.24
165	5825	16.35

802.11ac (VHT40)

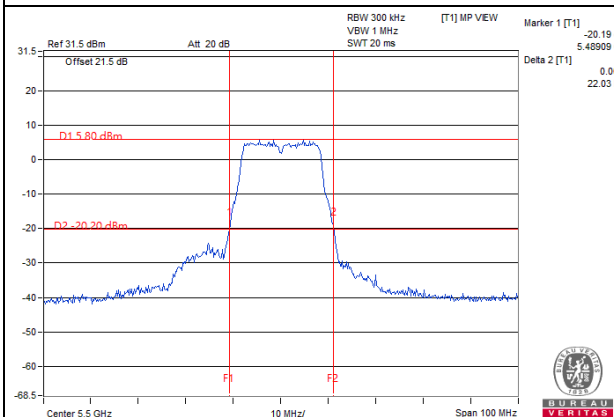
Channel	Frequency (MHz)	26dB Bandwidth (MHz)
38	5190	89.3
46	5230	42.06
54	5270	41.92
62	5310	88.54
102	5510	93.43
110	5550	53.95
134	5670	89.3
142 (U-NII-2C Band)	5710	42.06
142 (U-NII-3 Band)	5710	41.92
151	5755	88.54
159	5795	93.43

802.11ac (VHT80)

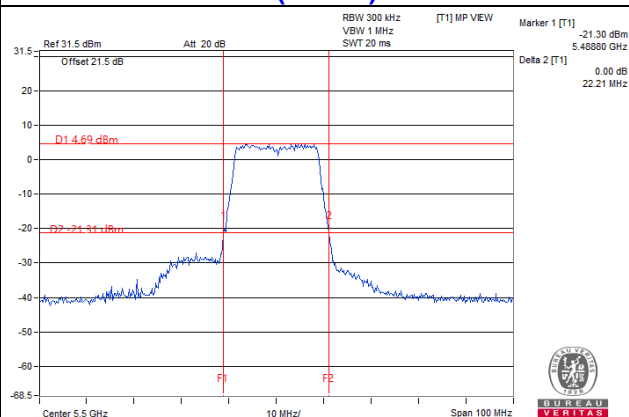
Channel	Frequency (MHz)	26dB Bandwidth (MHz)
42	5210	82.82
58	5290	83.63
106	5530	84.5
122	5610	138.23
138 (U-NII-2C Band)	5690	82.82
138 (U-NII-3 Band)	5690	83.63
155	5775	84.5

Spectrum Plot of Worst Value

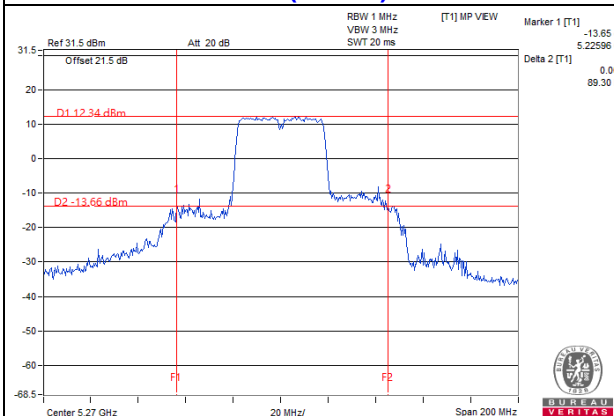
802.11a / CH100



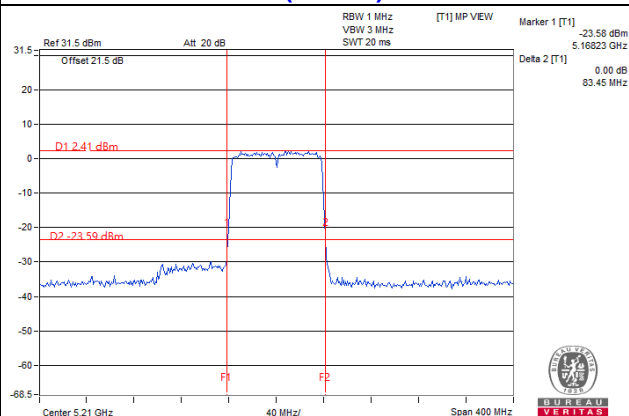
802.11ac (VHT20) / CH100



802.11ac (VHT40) / CH54



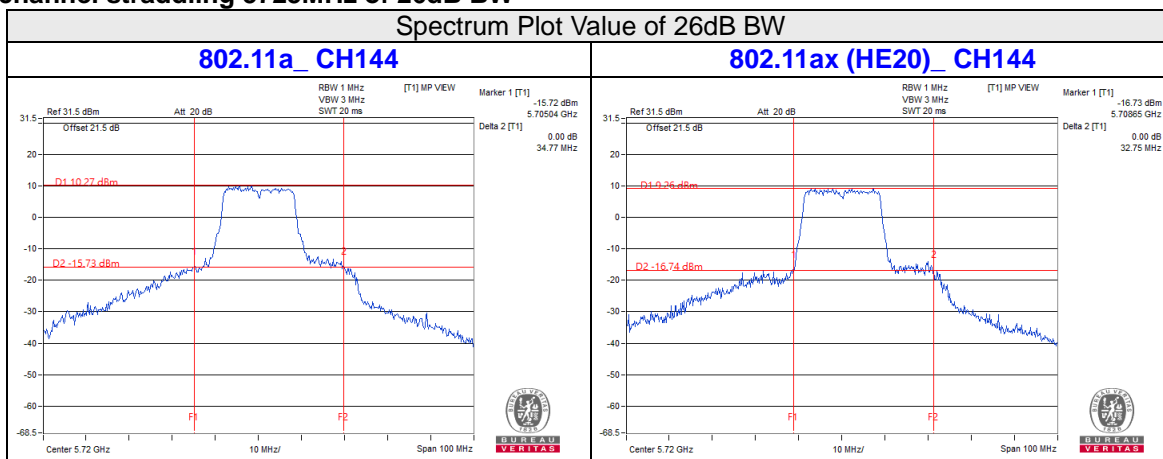
802.11ac (VHT80) / CH42



Note:

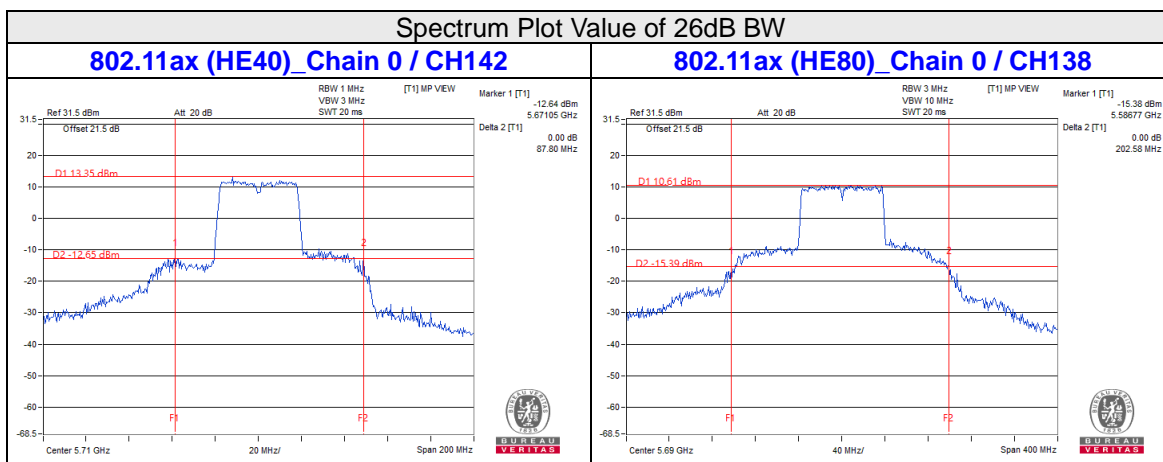
- For CH144 (U-NII-3) = Delta 2 - (5725MHz - Marker 1)
- For CH142 (U-NII-3) = Delta 2 - (5725MHz - Marker 1)
- For CH138 (U-NII-3) = Delta 2 - (5725MHz - Marker 1)

For channel straddling 5725MHz of 26dB BW



Note:

For CH144 (U-NII-2C) = 5725MHz - Marker 1



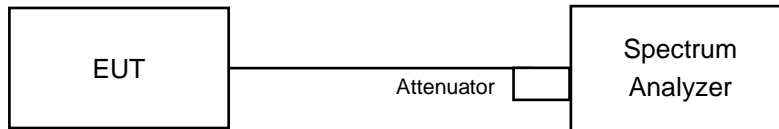
Note:

For CH142 (U-NII-2C) = 5725MHz - Marker 1

For CH138 (U-NII-2C) = 5725MHz - Marker 1

4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

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

4.4.4 Test Results

802.11a

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	Pass / Fail
36	5180	17.04	PASS
40	5200	20.4	PASS
48	5240	17.64	PASS
52	5260	18.24	PASS
60	5300	18	PASS
64	5320	17.04	PASS
100	5500	17.28	PASS
116	5580	18	PASS
140	5700	17.16	PASS
144 (U-NII-2C Band)	5720	14	PASS
144 (U-NII-3 Band)	5720	4	PASS
149	5745	19.8	PASS
157	5785	20.64	PASS
165	5825	19.92	PASS

802.11ac (VHT20)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	Pass / Fail
36	5180	18	PASS
40	5200	19.56	PASS
48	5240	18.48	PASS
52	5260	18.48	PASS
60	5300	18.36	PASS
64	5320	18.24	PASS
100	5500	18.12	PASS
116	5580	18.36	PASS
140	5700	18	PASS
144 (U-NII-2C Band)	5720	14.12	PASS
144 (U-NII-3 Band)	5720	4.24	PASS
149	5745	20.4	PASS
157	5785	20.88	PASS
165	5825	19.92	PASS

802.11ac (VHT40)

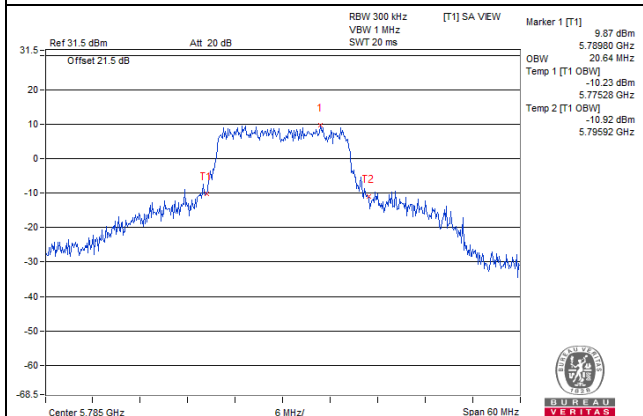
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	Pass / Fail
38	5190	36.72	PASS
46	5230	36.96	PASS
54	5270	37.2	PASS
62	5310	36.72	PASS
102	5510	36.96	PASS
110	5550	36.96	PASS
134	5670	37.2	PASS
142 (U-NII-2C Band)	5710	33.48	PASS
142 (U-NII-3 Band)	5710	3.72	PASS
151	5755	44.88	PASS
159	5795	46.56	PASS

802.11ac (VHT80)

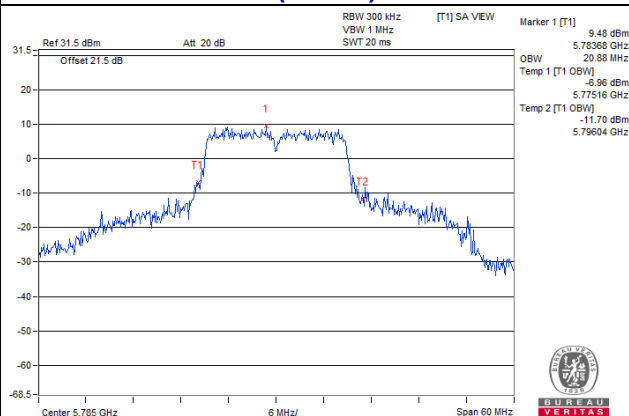
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	Pass / Fail
42	5210	75.84	PASS
58	5290	76.32	PASS
106	5530	76.32	PASS
122	5610	76.32	PASS
138 (U-NII-2C Band)	5690	73.88	PASS
138 (U-NII-3 Band)	5690	4.36	PASS
155	5775	76.32	PASS

Spectrum Plot of Max. Value

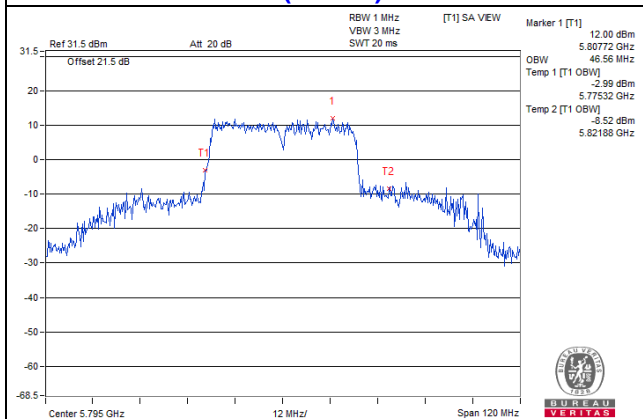
802.11a / CH157



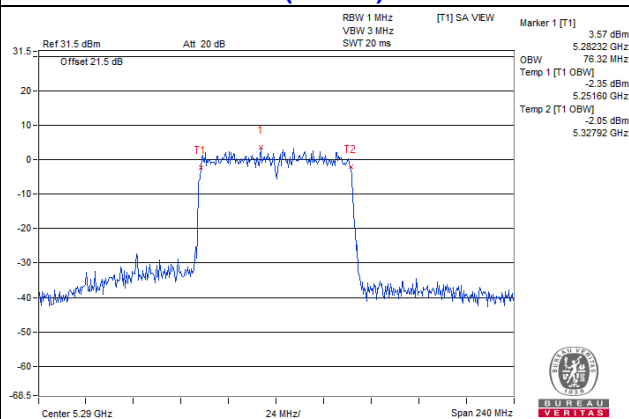
802.11ac (VHT20) / CH157



802.11ac (VHT40) / CH159

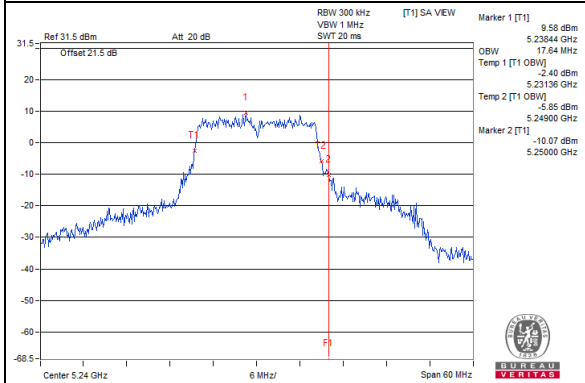


802.11ac (VHT80) / CH58

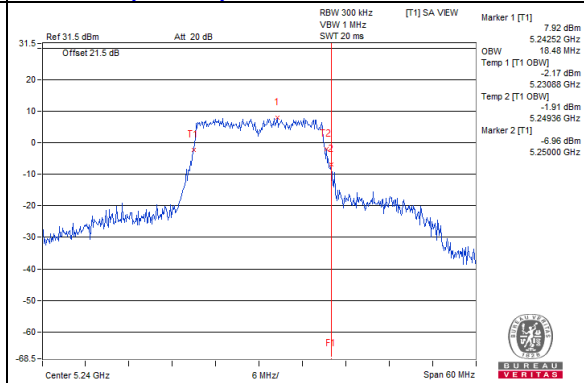


**Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2A band)**

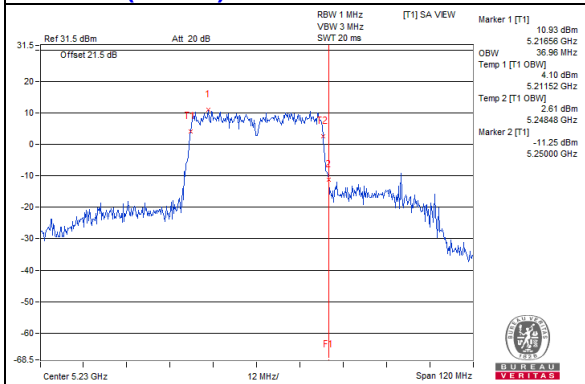
802.11a / CH48



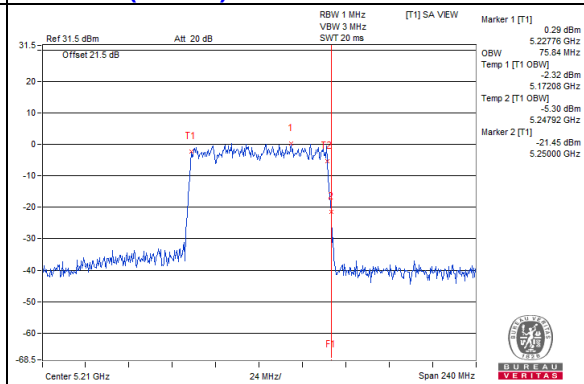
802.11ac (VHT20) / CH48



802.11ac (VHT40) / CH46

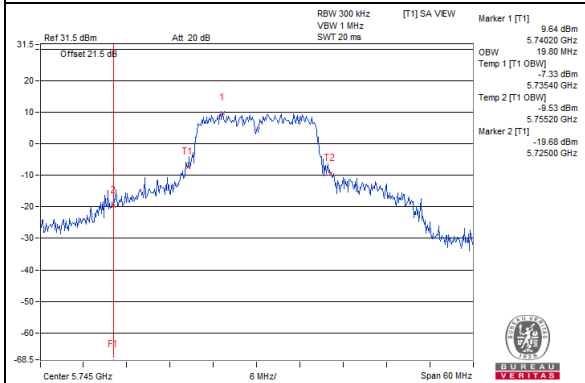


802.11ac (VHT80) / CH42

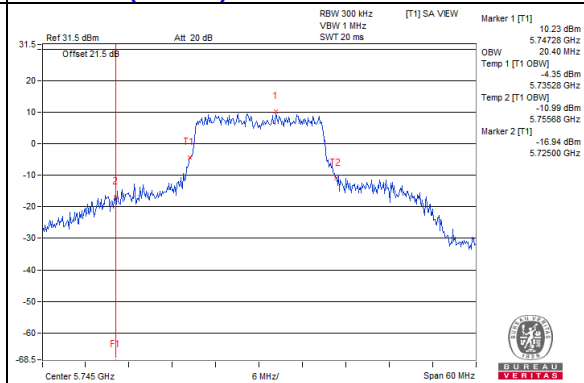


**Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2C band)**

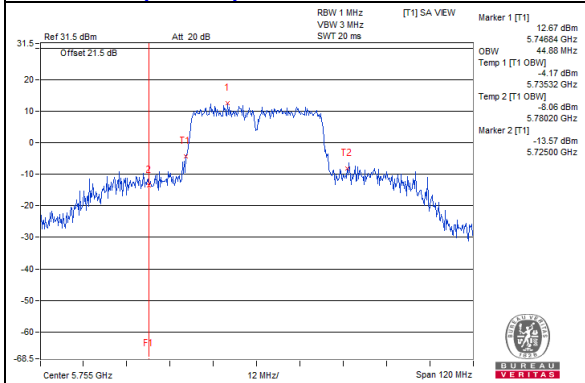
802.11a / CH149



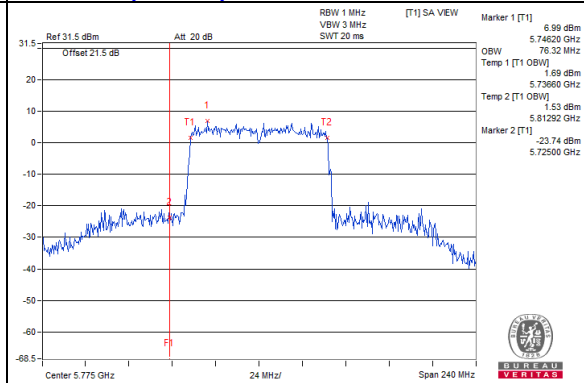
802.11ac (VHT20) / CH149



802.11ac (VHT40) / CH151



802.11ac (VHT80) / CH155



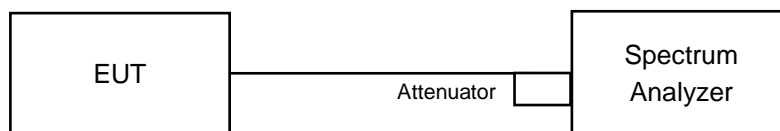
4.5 Peak Power Spectral Density Measurement

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	
	√	Client device	11dBm/ MHz
U-NII-2A		√	11dBm/ MHz
U-NII-2C		√	11dBm/ MHz
U-NII-3		√	30dBm/ 500kHz

Note: This device can support different category application which switched by access point mode and client mode by software.

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, U-NII-2A, U-NII-2C band:

Using method SA-2

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW ≥ 3 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 band:

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 $BWCF = 10\log(500\text{kHz}/300\text{kHz})$
5. Sweep time = auto, trigger set to "free run".
6. Trace average at least 100 traces in power averaging mode.
7. Record the max value

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as Item 4.3.6.

4.5.7 Test Results

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

802.11a

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
36	5180	5.84	0.30	6.14	11.00	PASS
40	5200	6.38	0.30	6.68	11.00	PASS
48	5240	6.57	0.30	6.87	11.00	PASS
52	5260	6.31	0.30	6.61	11.00	PASS
60	5300	6.86	0.30	7.16	11.00	PASS
64	5320	5.51	0.30	5.81	11.00	PASS
100	5500	3.03	0.30	3.33	11.00	PASS
116	5580	6.88	0.30	7.18	11.00	PASS
140	5700	5.41	0.30	5.71	11.00	PASS
144 (U-NII-2C Band)	5720	6.51	0.30	6.81	11.00	PASS

Note: 1. For UNII-1 & UNII-2A & UNII-2C: The maximum gain = 3.98 dBi < 6 dBi, so the so the power density limit shall not be reduced.

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
36	5180	5.43	0.32	5.75	11.00	PASS
40	5200	6.12	0.32	6.44	11.00	PASS
48	5240	6.40	0.32	6.72	11.00	PASS
52	5260	6.22	0.32	6.54	11.00	PASS
60	5300	6.37	0.32	6.69	11.00	PASS
64	5320	5.07	0.32	5.39	11.00	PASS
100	5500	2.73	0.32	3.05	11.00	PASS
116	5580	6.45	0.32	6.77	11.00	PASS
140	5700	3.86	0.32	4.18	11.00	PASS
144 (U-NII-2C Band)	5720	6.11	0.32	6.43	11.00	PASS

Note: 1. For UNII-1 & UNII-2A & UNII-2C: The maximum gain = 3.98 dBi < 6 dBi, so the so the power density limit shall not be reduced.

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
38	5190	0.16	0.61	0.77	11.00	PASS
46	5230	2.88	0.61	3.49	11.00	PASS
54	5270	2.45	0.61	3.06	11.00	PASS
62	5310	-0.38	0.61	0.23	11.00	PASS
102	5510	-1.18	0.61	-0.57	11.00	PASS
110	5550	1.74	0.61	2.35	11.00	PASS
134	5670	2.82	0.61	3.43	11.00	PASS
142 (U-NII-2C Band)	5710	3.40	0.61	4.01	11.00	PASS

Note: 1. For UNII-1 & UNII-2A & UNII-2C: The maximum gain = 3.98 dBi < 6 dBi, so the so the power density limit shall not be reduced.

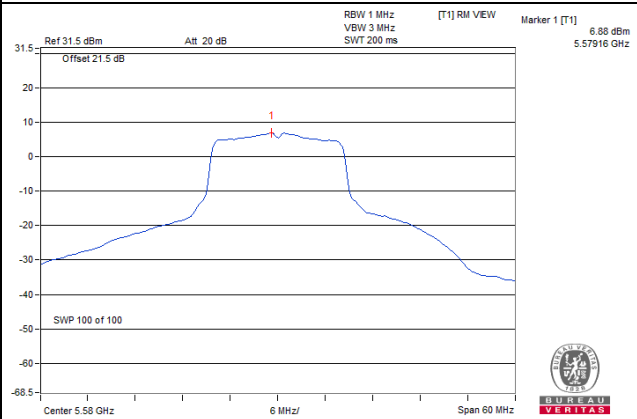
802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
42	5210	-5.43	0.27	-5.16	11.00	PASS
58	5290	-3.98	0.27	-3.71	11.00	PASS
106	5530	-4.93	0.27	-4.66	11.00	PASS
122	5610	-0.29	0.27	-0.02	11.00	PASS
138 (U-NII-2C Band)	5690	0.06	0.27	0.33	11.00	PASS

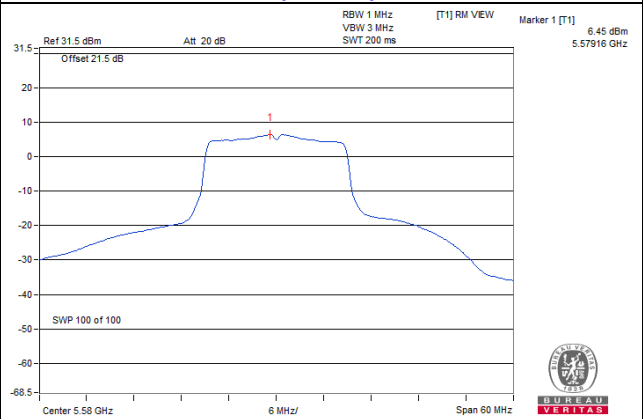
Note: 1. For UNII-1 & UNII-2A & UNII-2C: The maximum gain = 3.98 dBi < 6 dBi, so the so the power density limit shall not be reduced.

Spectrum Plot of Worst Value

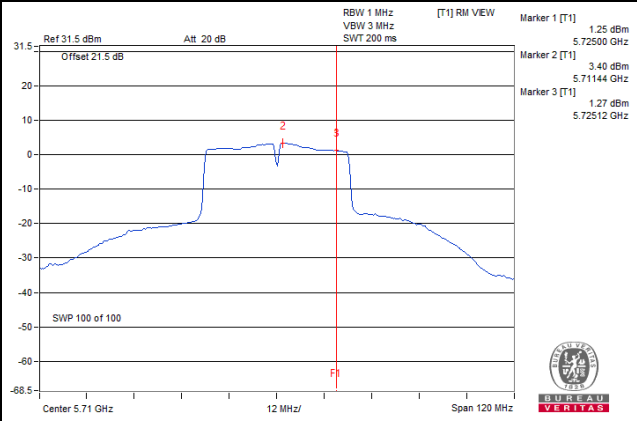
802.11a / CH116



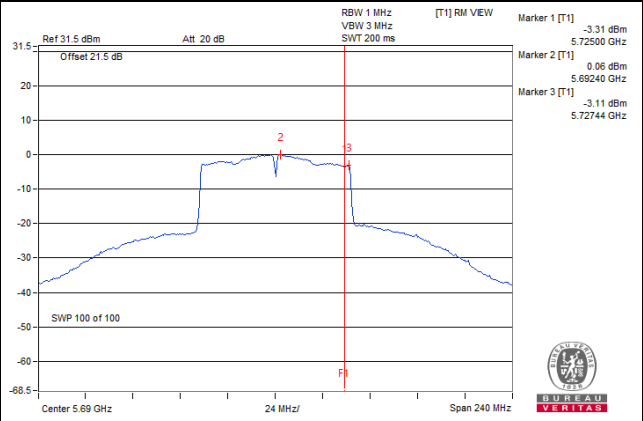
802.11ac (VHT20) / CH116



802.11ac (VHT40) / CH142



802.11ac (VHT80) / CH138



For U-NII-3 band:

802.11a

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)	Duty Factor (dB)	PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Pass / Fail
144 (U-NII-3 Band)	5720	-3.63	0.3	-1.11	30.00	PASS
149	5745	2.9	0.3	5.42	30.00	PASS
157	5785	2.86	0.3	5.38	30.00	PASS
165	5825	2.84	0.3	5.36	30.00	PASS

Note:

1. The maximum gain = 3.98 dBi < 6 dBi, so the so the power density limit shall not be reduced.

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)	Duty Factor (dB)	PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Pass / Fail
144 (U-NII-3 Band)	5720	-3.86	0.32	-1.32	30.00	PASS
149	5745	2.69	0.32	5.23	30.00	PASS
157	5785	2.58	0.32	5.12	30.00	PASS
165	5825	2.55	0.32	5.09	30.00	PASS

Note:

1. The maximum gain = 3.98 dBi < 6 dBi, so the so the power density limit shall not be reduced.

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)	Duty Factor (dB)	PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Pass / Fail
142 (U-NII-3 Band)	5710	-7.64	0.61	-4.81	30.00	PASS
151	5755	-5.55	0.61	-2.72	30.00	PASS
159	5795	-5.51	0.61	-2.68	30.00	PASS

Note:

1. The maximum gain = 3.98 dBi < 6 dBi, so the so the power density limit shall not be reduced.

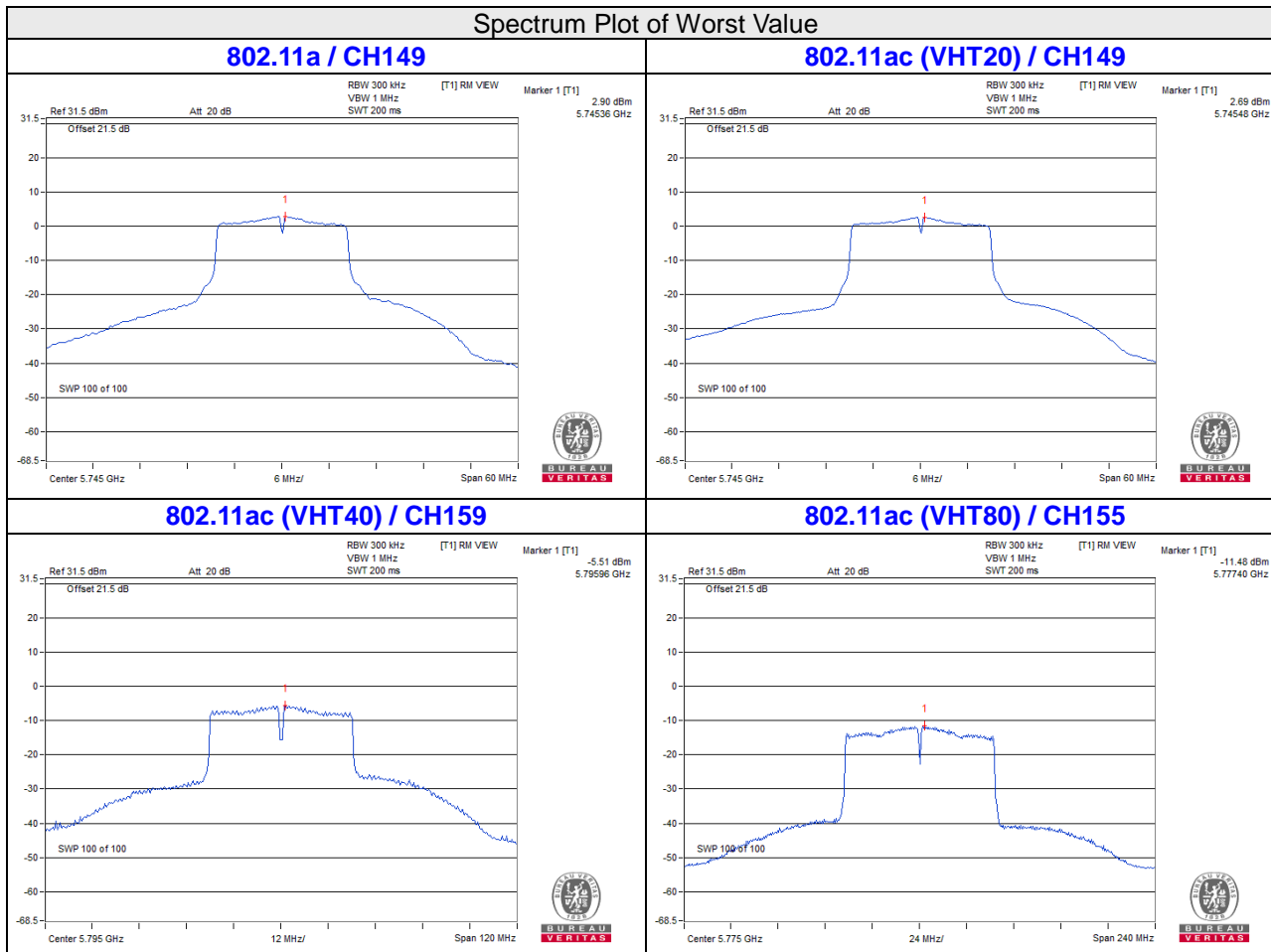
802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)	Duty Factor (dB)	PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Pass / Fail
138 (U-NII-3 Band)	5690	-11.87	0.27	-9.38	30.00	PASS
155	5775	-11.48	0.27	-8.99	30.00	PASS

Note:

1. The maximum gain = 3.98 dBi < 6 dBi, so the so the power density limit shall not be reduced.

Spectrum Plot of Worst Value

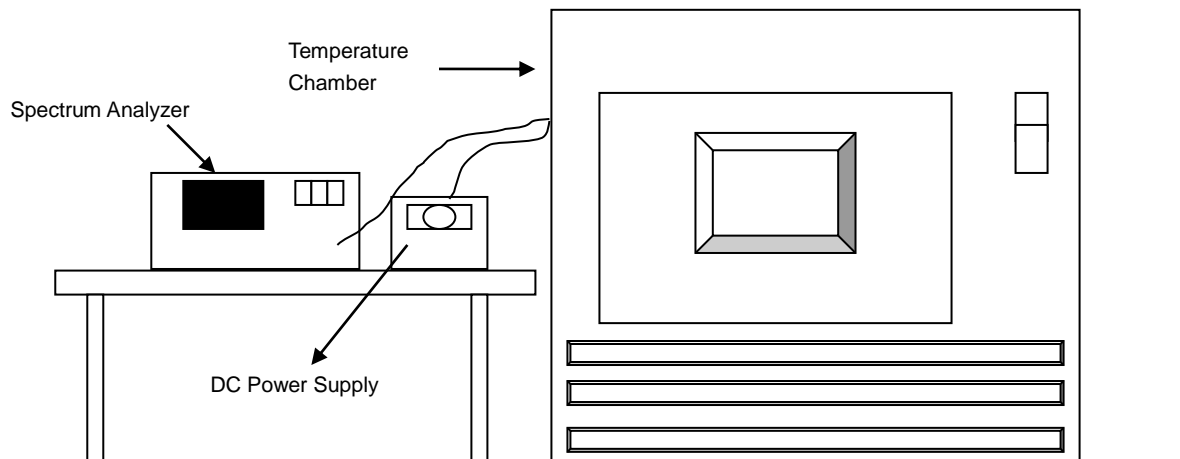


4.6 Frequency Stability Measurement

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

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

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

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

4.6.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5180 MHz									
TEMP. (°C)	Power Supply (Vdc)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result
60	3.3	5180.0122	Pass	5180.0126	Pass	5180.0139	Pass	5180.0145	Pass
50	3.3	5179.9887	Pass	5179.9895	Pass	5179.9865	Pass	5179.9905	Pass
40	3.3	5179.9991	Pass	5179.997	Pass	5180.0011	Pass	5180.0005	Pass
30	3.3	5180.0032	Pass	5180.0056	Pass	5180.0063	Pass	5180.002	Pass
20	3.3	5179.9912	Pass	5179.9888	Pass	5179.989	Pass	5179.9909	Pass
10	3.3	5179.9795	Pass	5179.9796	Pass	5179.979	Pass	5179.9798	Pass
0	3.3	5179.9901	Pass	5179.9925	Pass	5179.9938	Pass	5179.9897	Pass
-10	3.3	5180.0208	Pass	5180.017	Pass	5180.0186	Pass	5180.0184	Pass
-15	3.3	5179.9922	Pass	5179.994	Pass	5179.9947	Pass	5179.9925	Pass

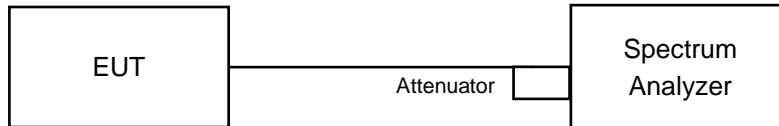
Frequency Stability Versus Voltage									
Operating Frequency: 5180 MHz									
TEMP. (°C)	Power Supply (Vdc)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result	Measured Frequency (MHz)	Test Result
20	3.795	5179.987	Pass	5179.9857	Pass	5179.9879	Pass	5179.9897	Pass
	3.3	5179.9912	Pass	5179.9888	Pass	5179.989	Pass	5179.9909	Pass
	2.805	5180.002	Pass	5180.001	Pass	5180.0014	Pass	5180.0024	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

MEASUREMENT PROCEDURE REF

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

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

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

4.7.7 Test Results

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Pass / Fail
144 (U-NII-3 Band)	5720	3.21	0.5	PASS
149	5745	16.43	0.5	PASS
157	5785	16.38	0.5	PASS
165	5825	16.38	0.5	PASS

802.11ac (VHT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Pass / Fail
144 (U-NII-3 Band)	5720	3.85	0.5	PASS
149	5745	17.62	0.5	PASS
157	5785	17.63	0.5	PASS
165	5825	17.65	0.5	PASS

802.11ac (VHT40)

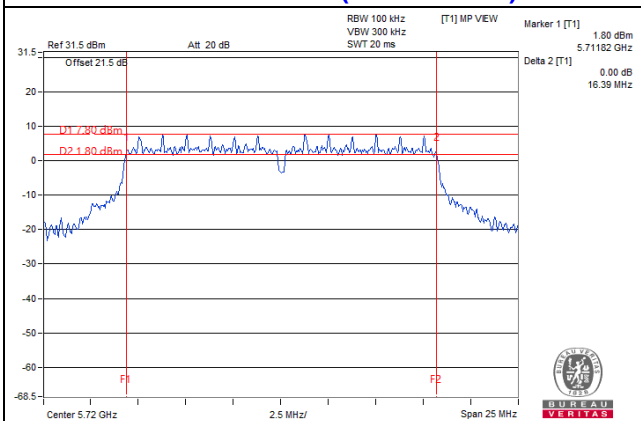
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Pass / Fail
142 (U-NII-3 Band)	5710	3.22	0.5	PASS
151	5755	36.38	0.5	PASS
159	5795	36.47	0.5	PASS

802.11ac (VHT80)

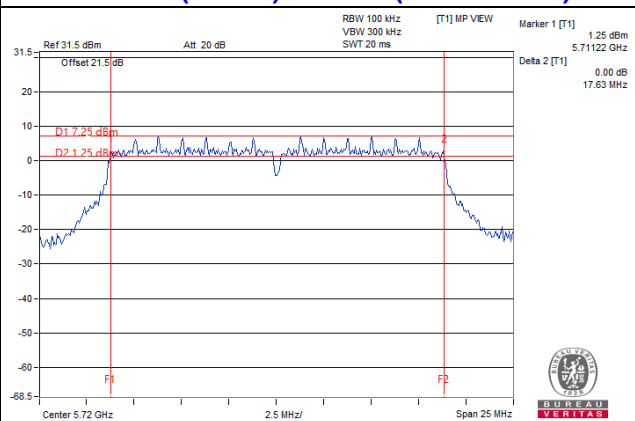
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Pass / Fail
138 (U-NII-3 Band)	5690	2.76	0.5	PASS
155	5775	76.02	0.5	PASS

Spectrum Plot of Worst Value

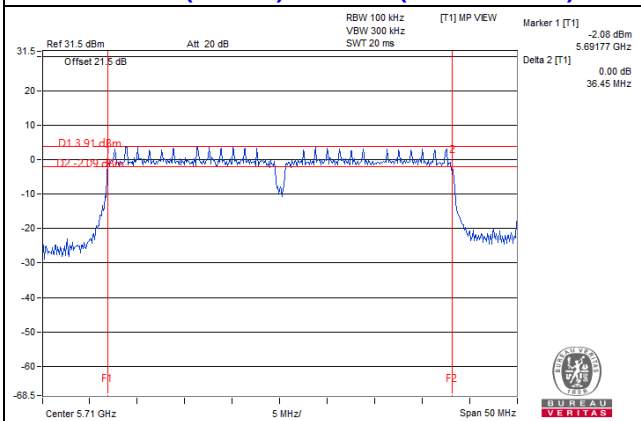
802.11a / CH144 (U-NII-3 Band)



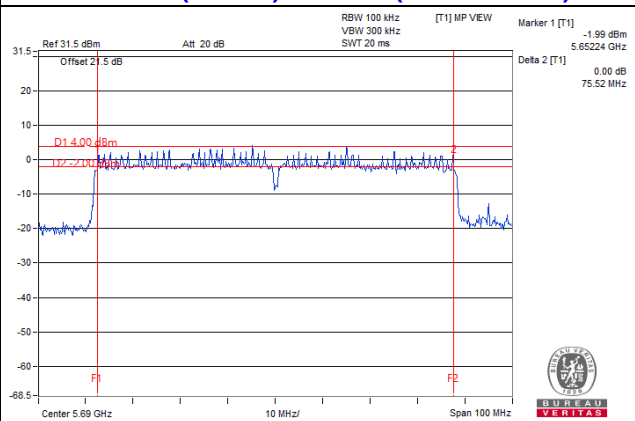
802.11ac (VHT20) / CH144 (U-NII-3 Band)



802.11ac (VHT40) / CH142 (U-NII-3 Band)



802.11ac (VHT80) / CH138 (U-NII-3 Band)



Note: The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz

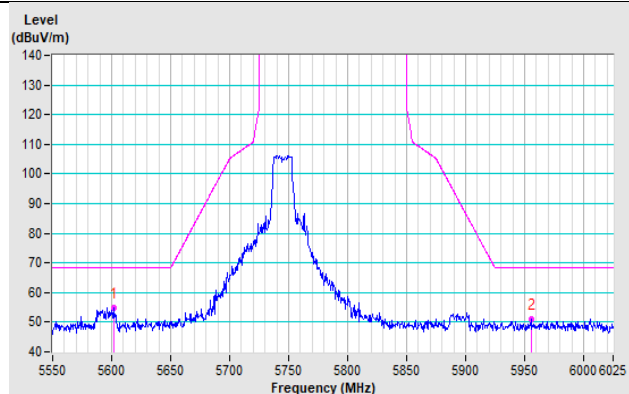
5 Pictures of Test Arrangements

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

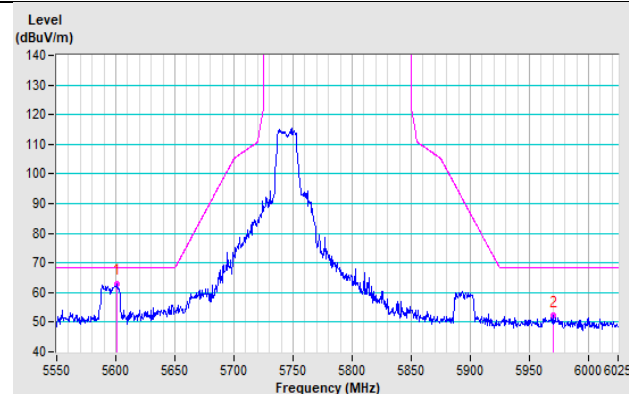
Annex A - Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band)

802.11a CH 149 : 5745 MHz

Horizontal

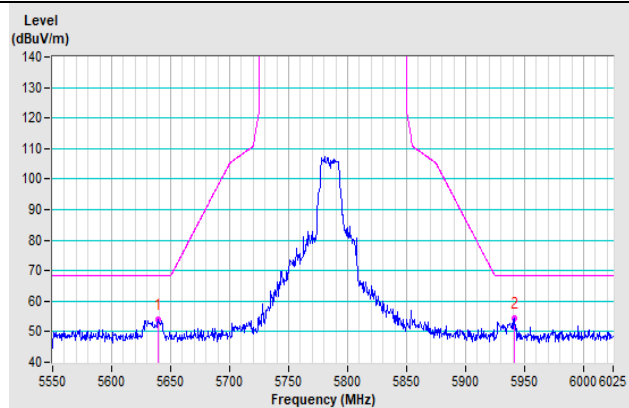


Vertical

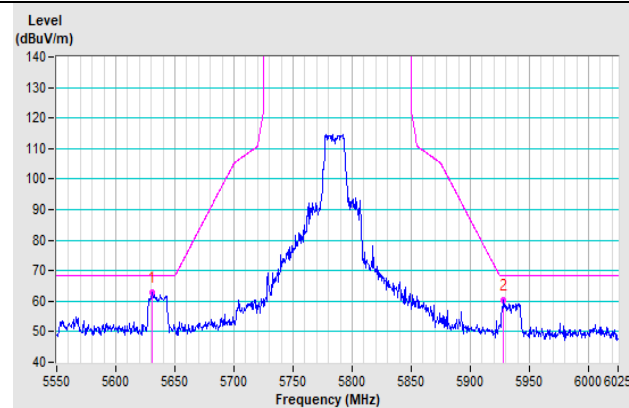


802.11a CH 157 : 5785 MHz

Horizontal

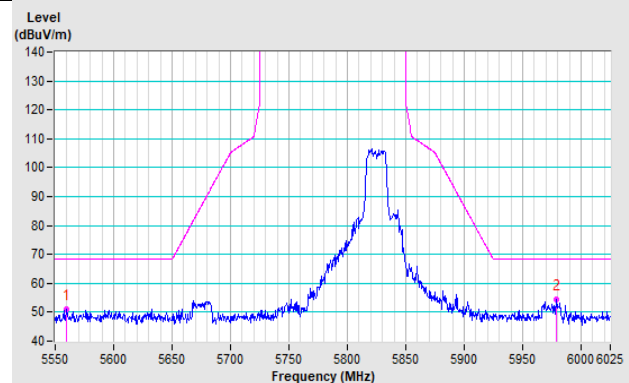


Vertical

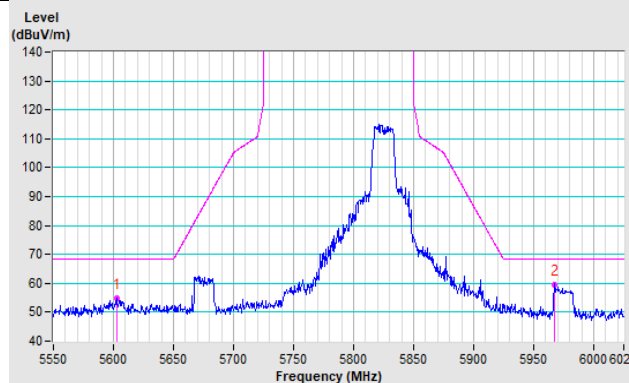


802.11a CH 165 : 5825 MHz

Horizontal

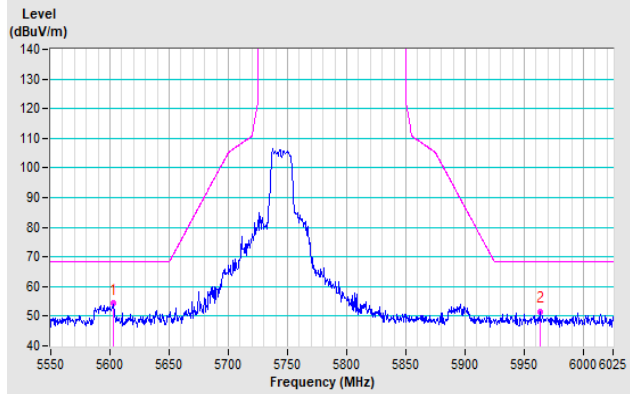


Vertical

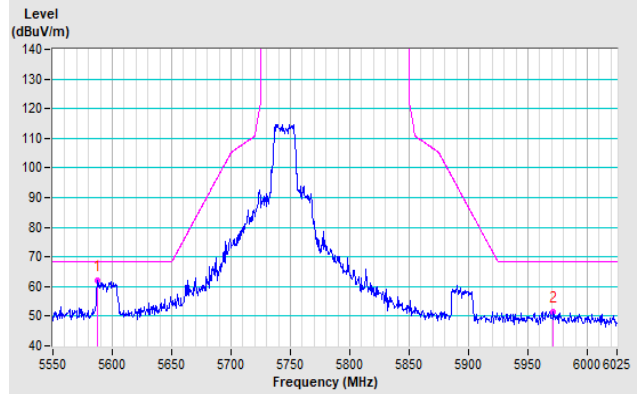


802.11ac (VHT20) CH 149 : 5745 MHz

Horizontal

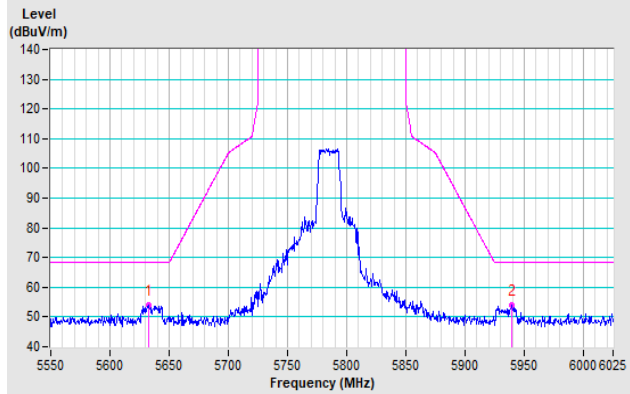


Vertical

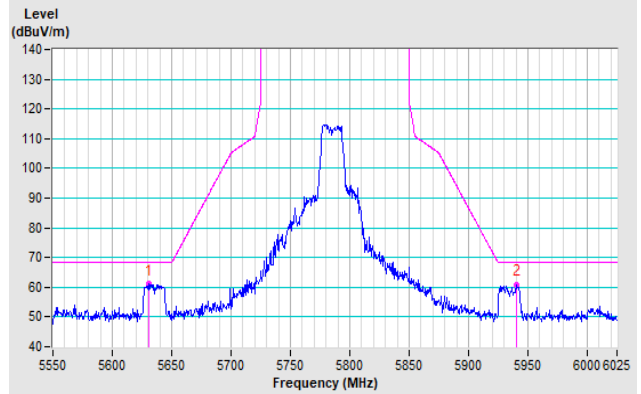


802.11ac (VHT20) CH 157 : 5785 MHz

Horizontal

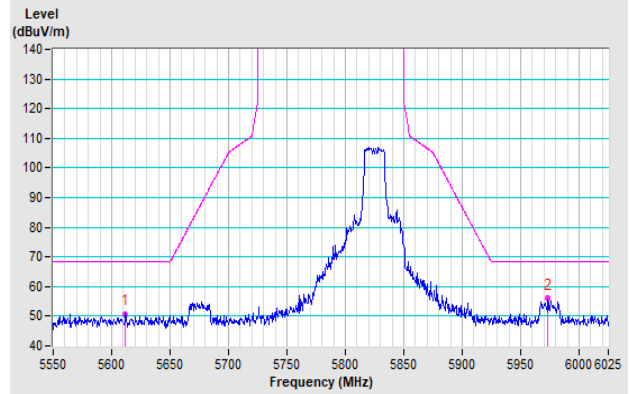


Vertical

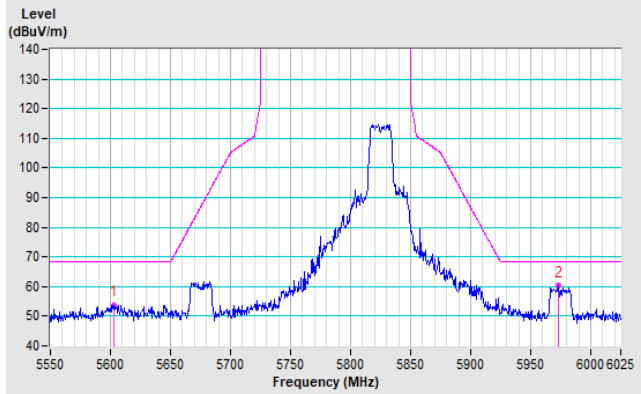


802.11ac (VHT20) CH 165 : 5825 MHz

Horizontal

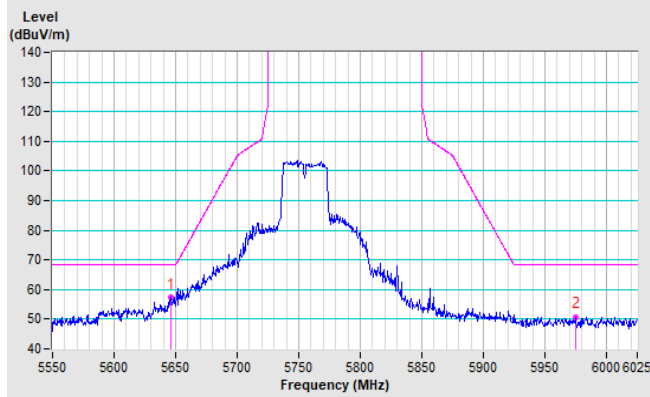


Vertical

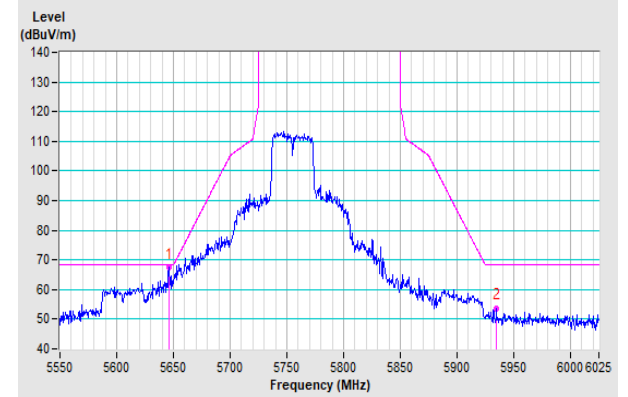


802.11ac (VHT40) CH 151 : 5755 MHz

Horizontal

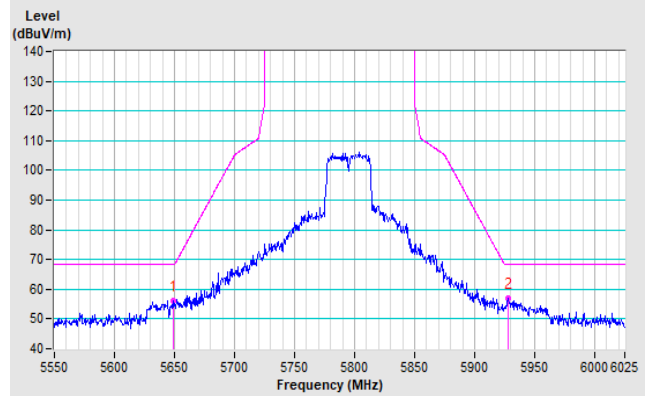


Vertical

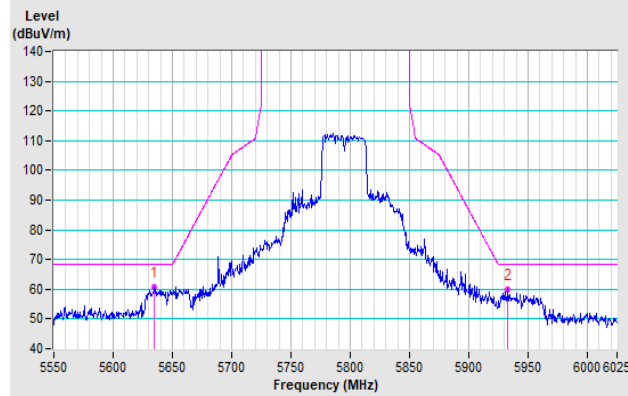


802.11ac (VHT40) CH 159 : 5795 MHz

Horizontal

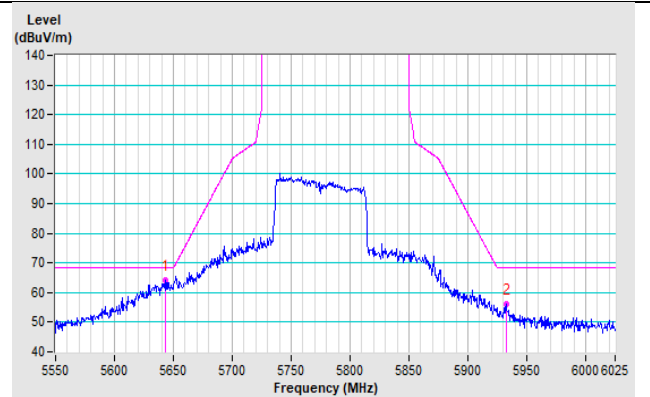


Vertical

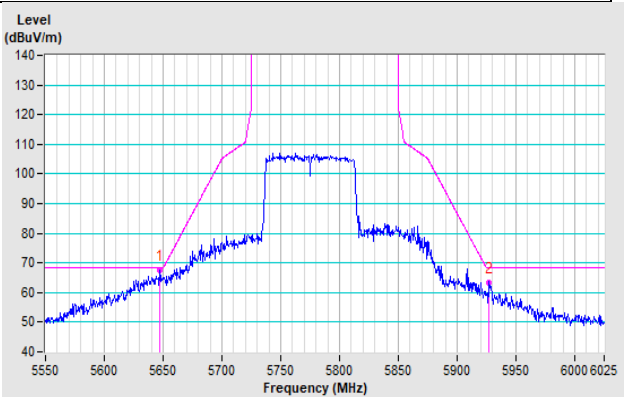


802.11ac (VHT80) CH 155 : 5775 MHz

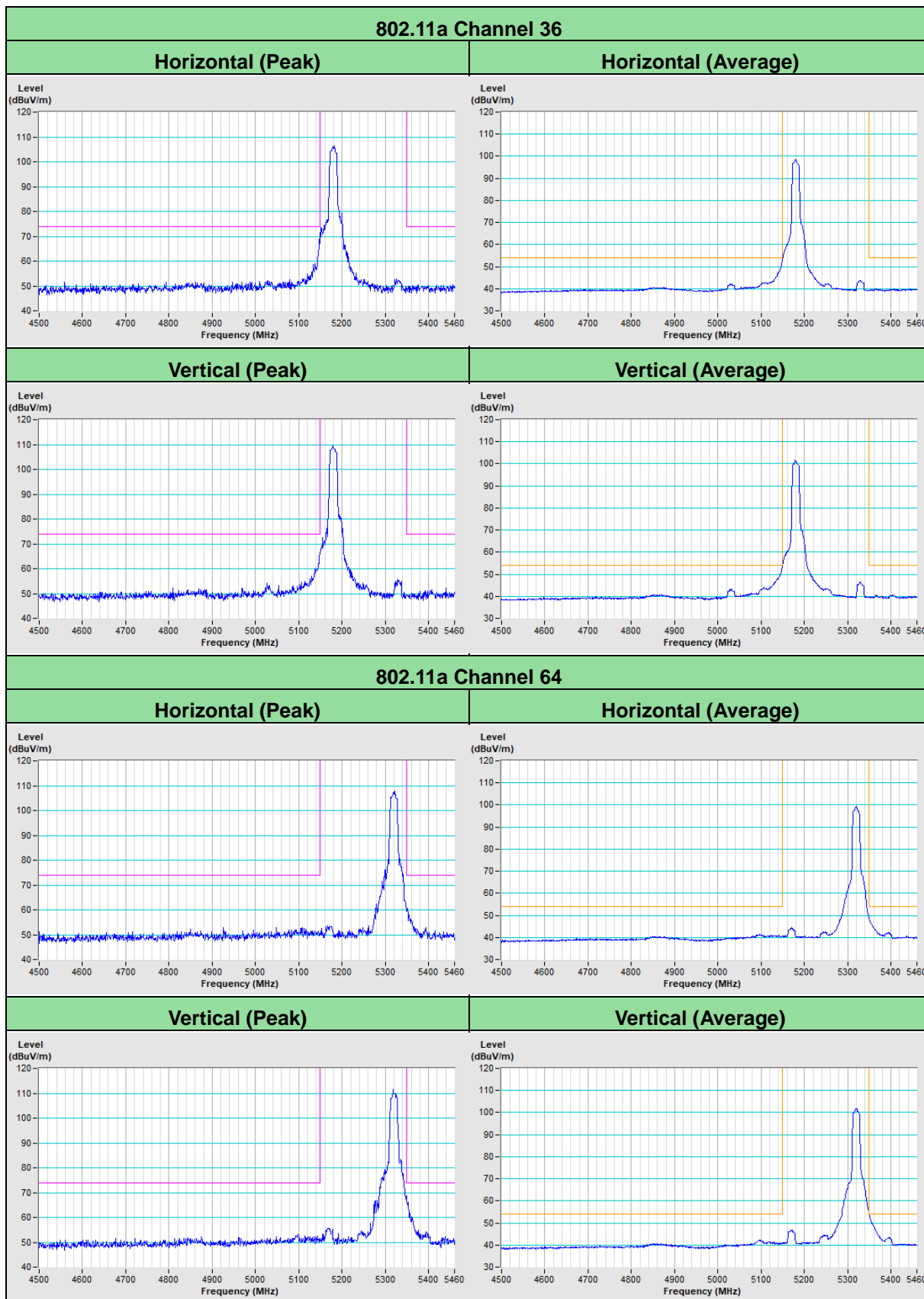
Horizontal

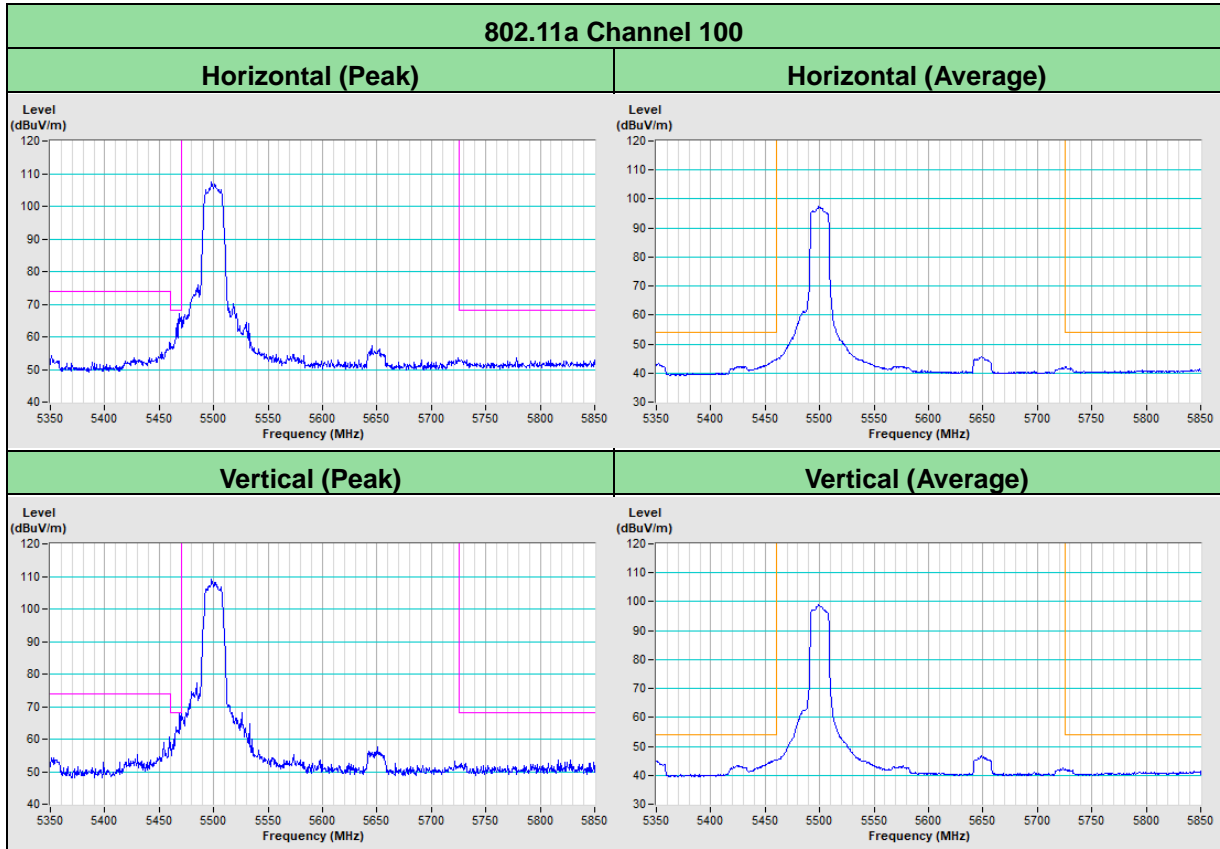


Vertical



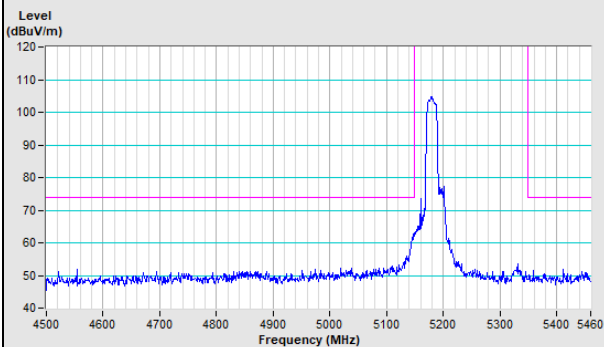
Annex B - Band-Edge Measurement (For U-NII-1, U-NII-2A, U-NII-2C band)



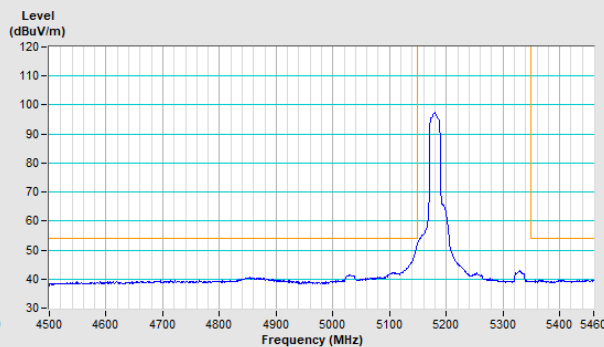


802.11ac (VHT20) Channel 36

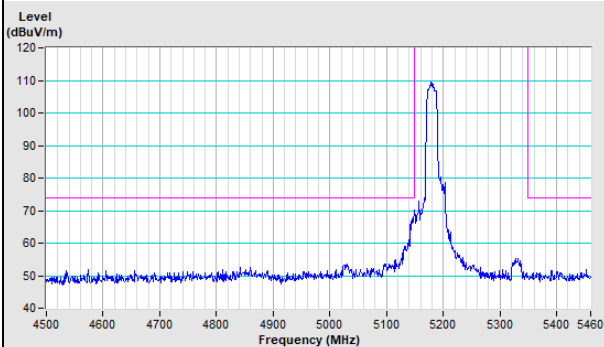
Horizontal (Peak)



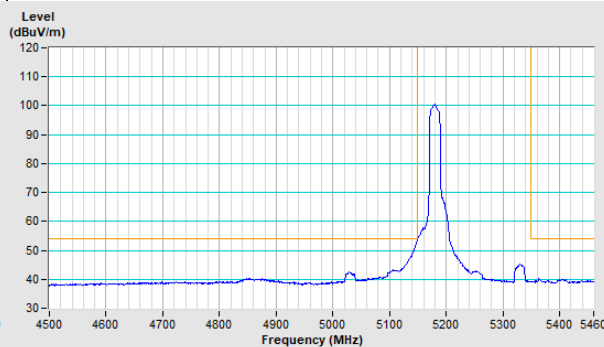
Horizontal (Average)



Vertical (Peak)

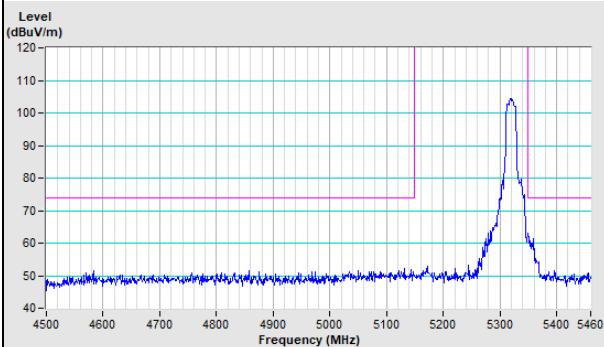


Vertical (Average)

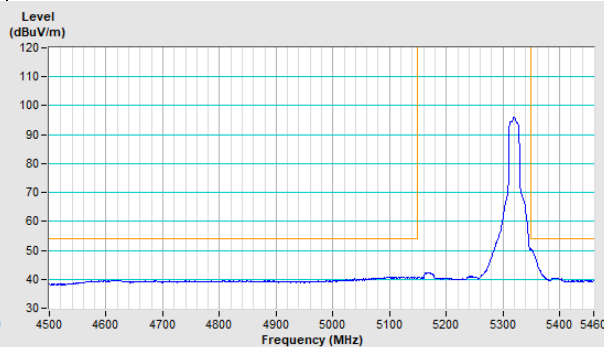


802.11ac (VHT20) Channel 64

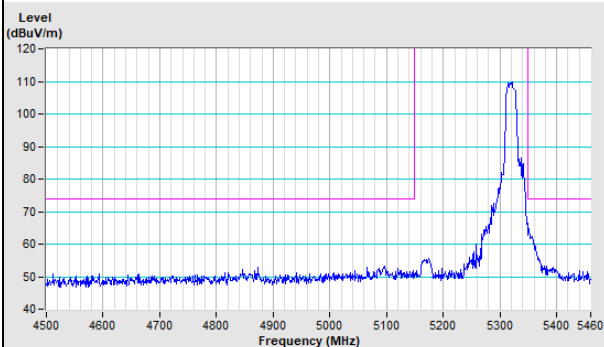
Horizontal (Peak)



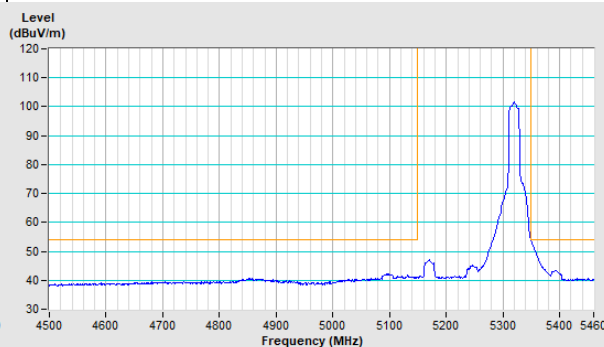
Horizontal (Average)



Vertical (Peak)

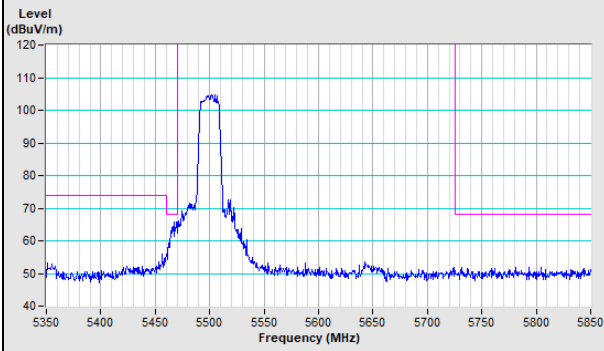


Vertical (Average)

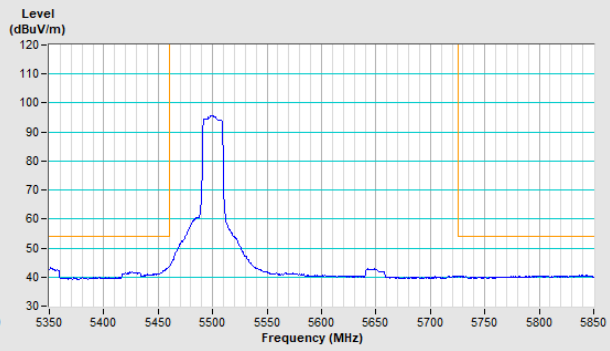


802.11ac (VHT20) Channel 100

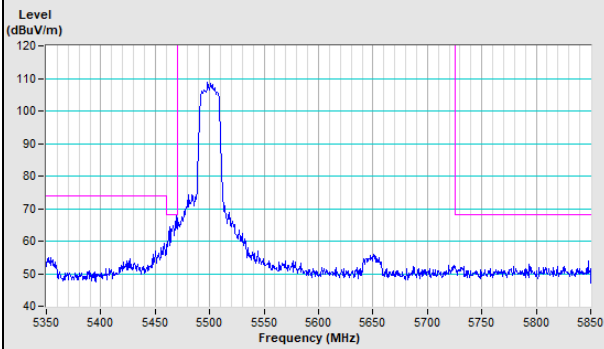
Horizontal (Peak)



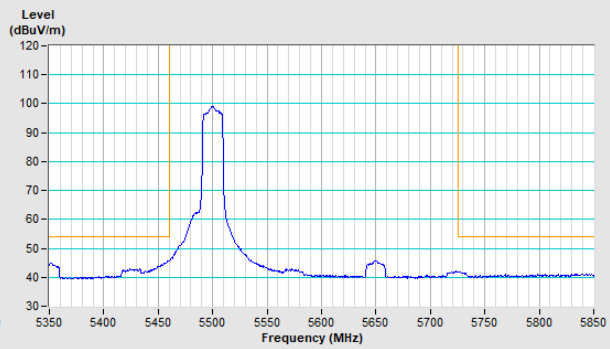
Horizontal (Average)



Vertical (Peak)

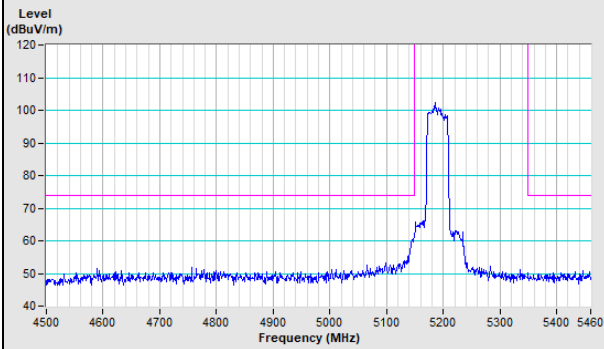


Vertical (Average)

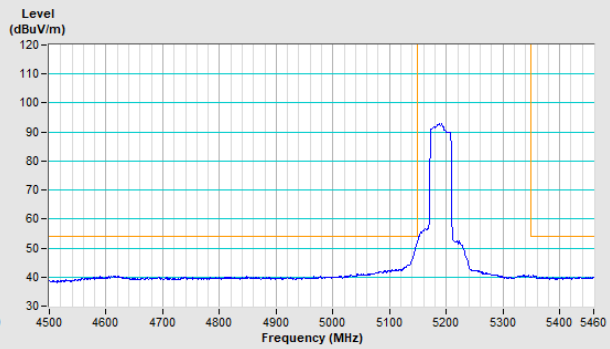


802.11ac (VHT40) Channel 38

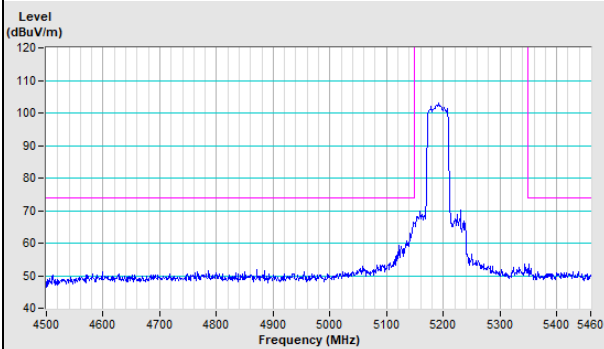
Horizontal (Peak)



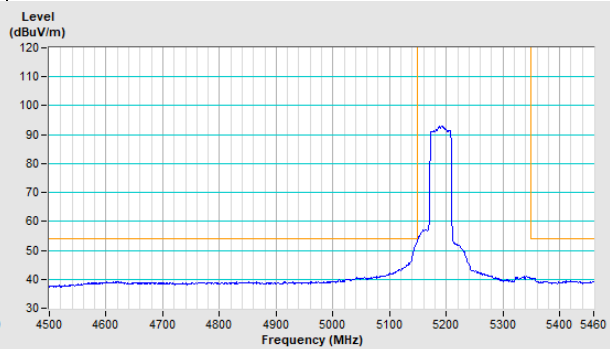
Horizontal (Average)



Vertical (Peak)

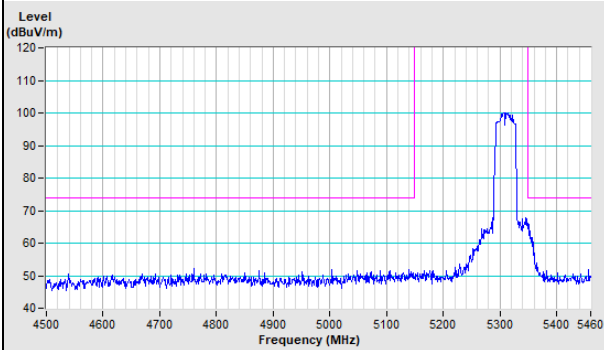


Vertical (Average)

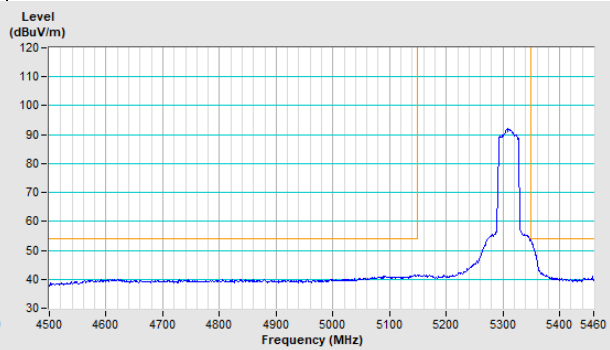


802.11ac (VHT40) Channel 62

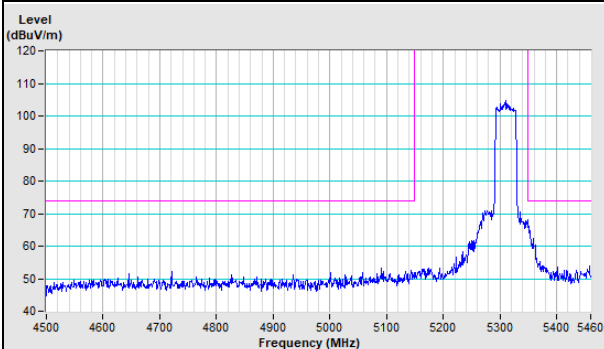
Horizontal (Peak)



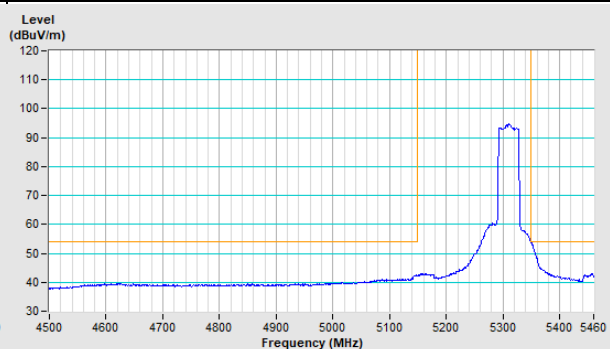
Horizontal (Average)



Vertical (Peak)

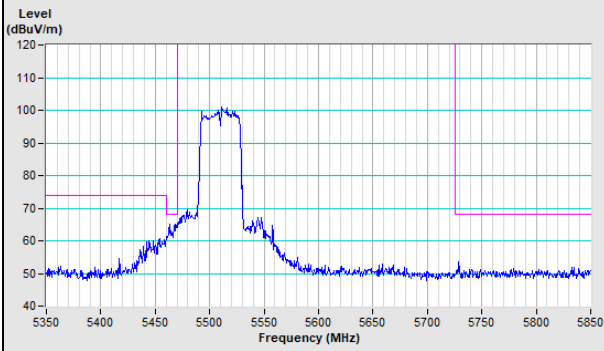


Vertical (Average)

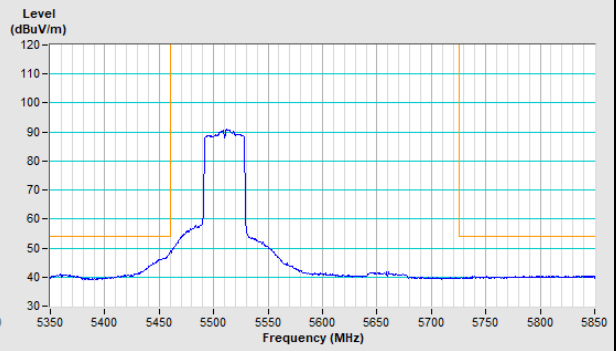


802.11ac (VHT40) Channel 102

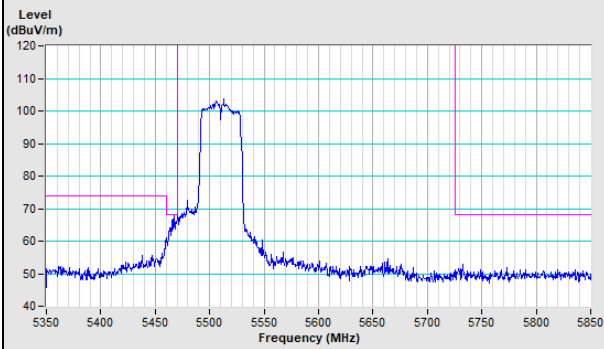
Horizontal (Peak)



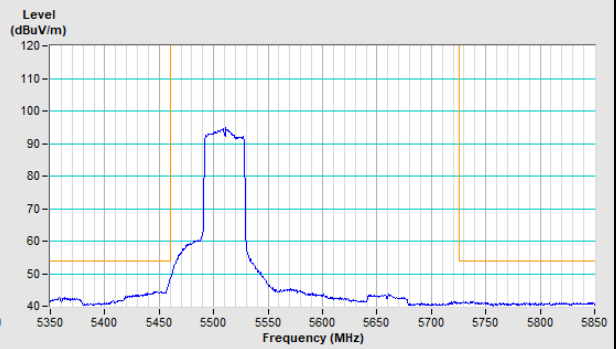
Horizontal (Average)



Vertical (Peak)

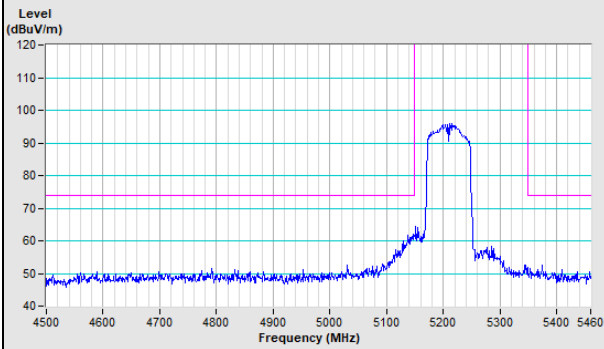


Vertical (Average)

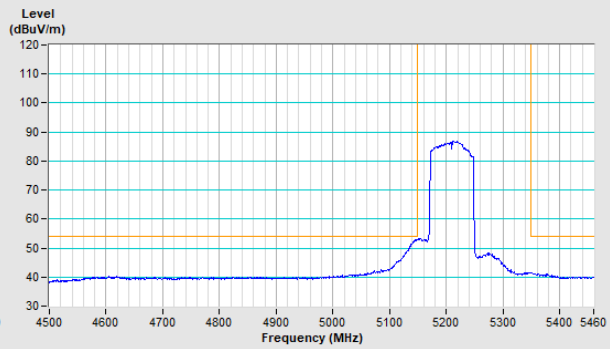


802.11ac (VHT80) Channel 42

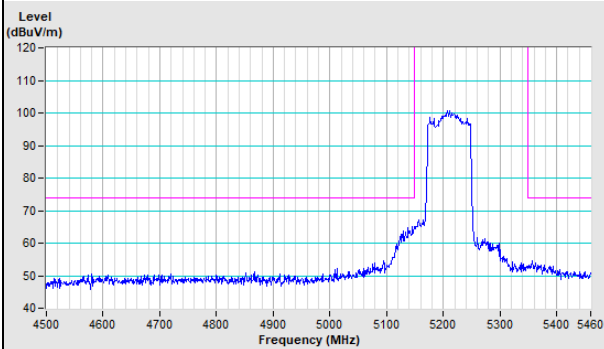
Horizontal (Peak)



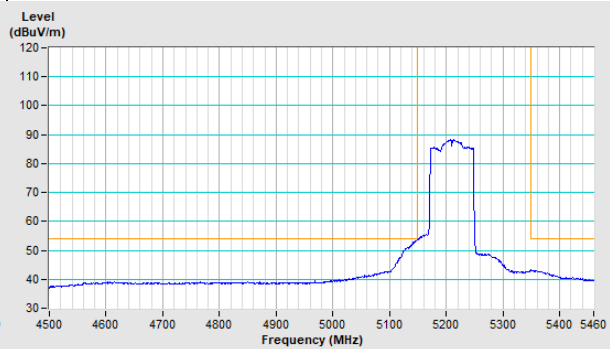
Horizontal (Average)



Vertical (Peak)

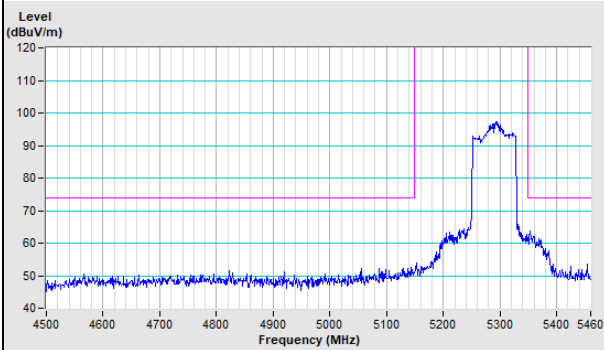


Vertical (Average)

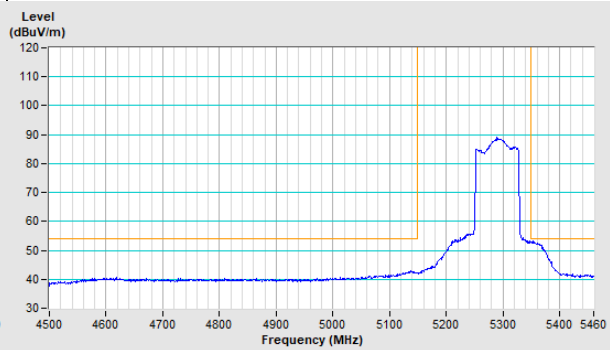


802.11ac (VHT80) Channel 58

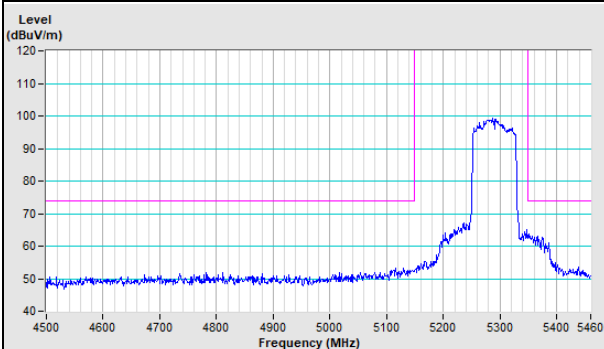
Horizontal (Peak)



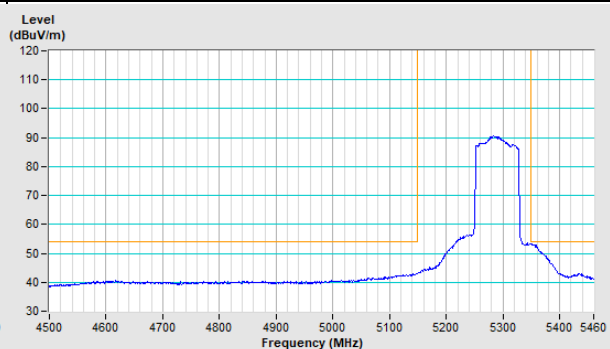
Horizontal (Average)



Vertical (Peak)

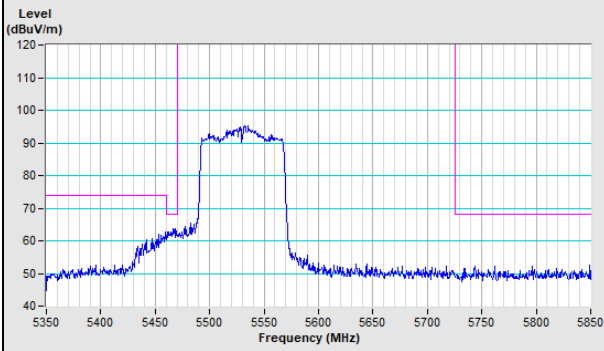


Vertical (Average)

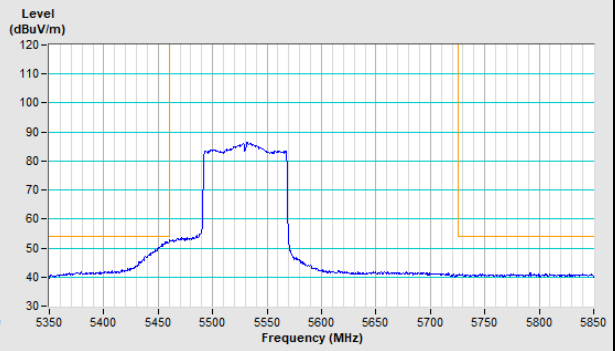


802.11ac (VHT80) Channel 106

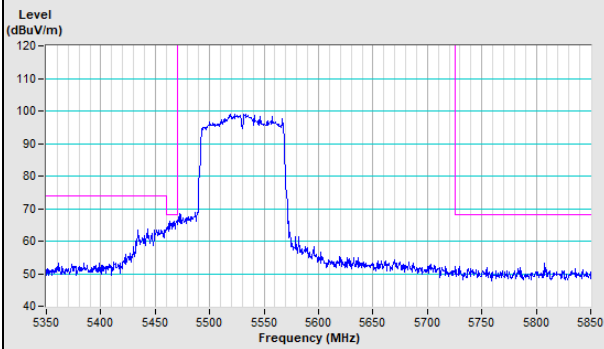
Horizontal (Peak)



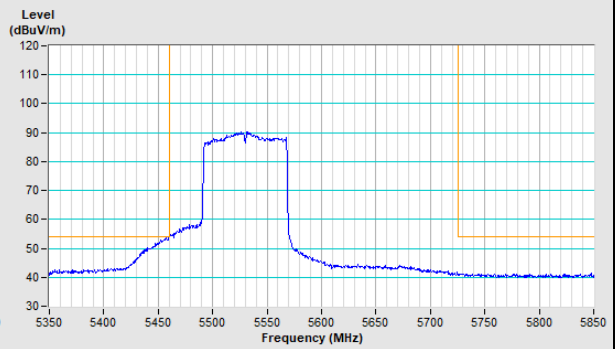
Horizontal (Average)



Vertical (Peak)



Vertical (Average)



Appendix – Information of the Testing Laboratories

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

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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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