FCC Test Report (5GHz WLAN)

Report No.:	RFBEMI-WTW-P21070045-1
FCC ID:	NOIKBN778
Test Model:	N778
Received Date:	2021/7/2
Test Date:	2021/7/30 ~ 2021/8/25
Issued Date:	2021/9/30
Applicant:	NETRONIX, INC.
Address:	No 945, Boai St, Jubei City. Hsinchu, 30265 Taiwan
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
Test Location:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
FCC Registration / Designation Number:	723255 / TW2022

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Release Control Record

Issue No.	Description	Date Issued
RFBEMI-WTW-P21070045-1	Original release.	2021/9/30

1 Certificate of Conformity

Product:	Electronic Display Device
Brand:	Rakuten kobo
Test Model:	N778
Sample Status:	Engineering sample
Applicant:	NETRONIX, INC.
Test Date:	2021/7/30 ~ 2021/8/25
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:** 2021/9/30

Cherry Chuo / Specialist

Approved by : , **Date:** 2021/9/30

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)(8)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -11.14 dB at 0.18125 MHz.
15.407(b) (1/2/3/4(i/ii)/8)	Radiated Emissions & Band Edge Measurement*	Pass	Meet the requirement of limit. Minimum passing margin is -0.2 dB at 5150.00 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:
1. For U-NII-3 band compliance with rule part 15.407(b)(4)(i), the OOBE test plots were recorded in Annex A.
2. For U-NII-1 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.
3. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	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	5.0 dB
	18GHz ~ 40GHz	5.3 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT (5GHz WLAN)

Product	Electronic Display Device
Brand	Rakuten kobo
Test Model	N778
Status of EUT	Engineering sample
Power Supply Rating	3.7 Vdc from battery or 5 Vdc from USB interface
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode
Modulation Technology	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 ~ 5.24GHz, 5.745 ~ 5.825GHz
Number of Channel	802.11a, 802.11n (HT20), 802.11ac (VHT20): 9 802.11n (HT40), 802.11ac (VHT40): 4 802.11ac (VHT80): 2
Output Power	**5.18 ~ 5.24 GHz:** 8.81 mW **5.745 ~ 5.825 GHz:** 21.777 mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Cable Supplied	USB Cable x1 (Shielded, 1.0m)

Note:
1. There are WLAN and Bluetooth technology used for the EUT.
2. Simultaneously transmission condition.

Condition	Technology	
1	WLAN 2.4GHz	Bluetooth
2	WLAN 5GHz	Bluetooth
Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.		

3. Two eMMC provided to the EUT, please refer to the following table:

No.	Model	Remark
1	EMMC32G-TX29-GA8A	1st source eMMC
2	MKEMF032GZ1E-C	2nd source eMMC
Note: From the above eMMCs, the worst case was found in **No. 1**. Therefore only the test data of the mode was recorded in this report.		

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

Brand	Model	Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type
INPAQ	ACM3-3216-P1-CC-S	0.6	2.4~2.4835	Chip Antenna	none
		2	5.15~5.85		

5. The EUT was pre-tested under the following modes:

Radiated Emission test	
Test Mode	Description
Mode A	Battery mode
Mode B	USB Adapter mode
Mode C	Battery mode with Leather Sheath
Mode D	**USB Adapter mode with Leather Sheath**
Note: From the above modes, the worst case was found in **Mode D**. Therefore only the test data of the mode was recorded in this report.	
AC Power Conducted Emission test	
Test Mode	Description
Mode A	Power from laptop mode
Mode B	Power from USB Adapter mode
Mode C	**Power from USB Adapter mode with Leather Sheath**
Note: From the above modes, the worst case was found in **Mode C**. Therefore only the test data of the mode was recorded in this report.	

6. 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

7. 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.
8. 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 ~ 5240MHz

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

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

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

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
42	5210 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 **X-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	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)
802.11a	5180-5240 5745-5825	38 to 48 149 to 165	165	OFDM	BPSK	6

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)
802.11a	5180-5240 5745-5825	38 to 48 149 to 165	165	OFDM	BPSK	6

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.

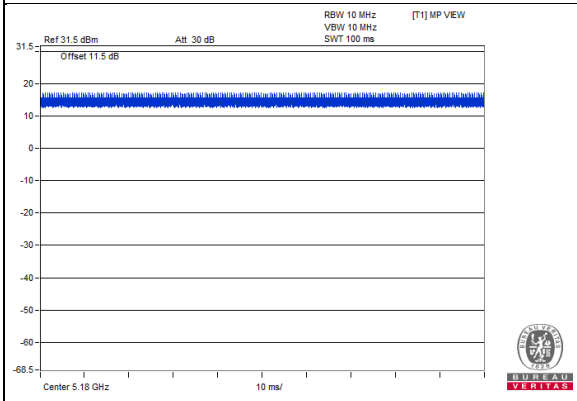
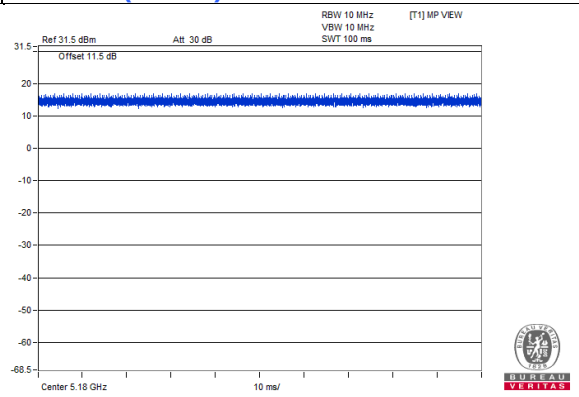
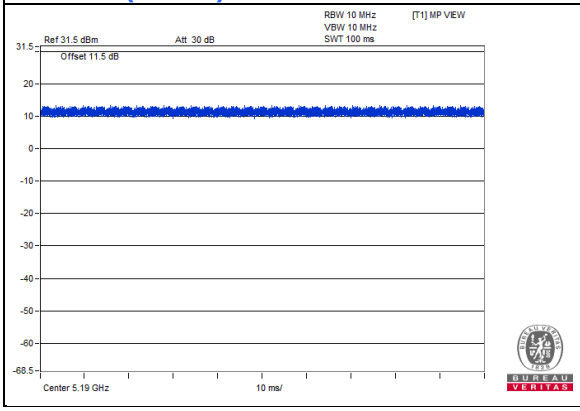
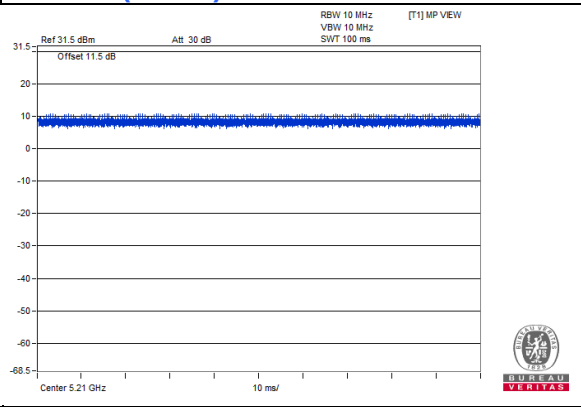
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6
802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	BPSK	6.5
802.11ac (VHT40)		38 to 46	38, 46	OFDM	BPSK	13.5
802.11ac (VHT80)		42	42	OFDM	BPSK	29.3
802.11a	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≥1G	25deg. C, 66%RH	120Vac, 60Hz	Tom Yang
RE<1G	25deg. C, 66%RH	120Vac, 60Hz	Tom Yang
PLC	25deg. C, 66%RH	120Vac, 60Hz	Tom Yang
APCM	25deg. C, 60%RH	120Vac, 60Hz	Kevin Ko

3.3 Duty Cycle of Test Signal

Duty cycle of test signal is 100 %, duty factor is not required.

802.11a	802.11ac (VHT20)
	
802.11ac (VHT40)	**802.11ac (VHT80)**
	

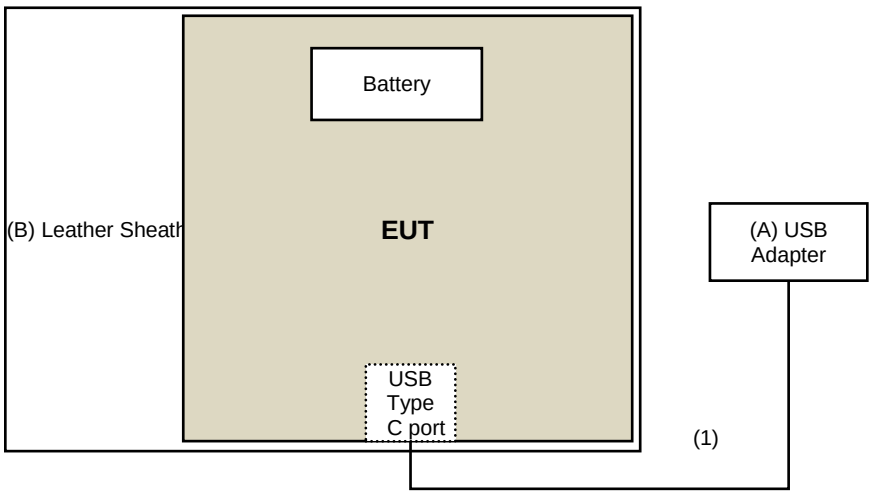
3.4 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. 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.	USB Adapter	ASUS	EXA1205UA	NA	NA	Provided by Lab
B.	Leather Sheath	Rakuten kobo	N779	NA	NA	Supplied by client

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	USB Type A To USB Type C Cable	1	1	Yes	0	Supplied by client

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
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:

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

4.1.2 Test Instruments

For Radiated Emission and Bandedge test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY50010156	2021/7/22	2022/7/21
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	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 Mini-Circuits	ZFL-1000VH2	QA0838008	2020/10/20	2021/10/19
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	2020/11/5	2021/11/4
RF Coaxial Cable COMMATE/PEWC	8D	966-3-1	2021/3/16	2022/3/15
RF Coaxial Cable COMMATE/PEWC	8D	966-3-2	2021/3/16	2022/3/15
RF Coaxial Cable COMMATE/PEWC	8D	966-3-3	2021/3/16	2022/3/15
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-3-01	2020/9/24	2021/9/23
Horn Antenna Schwarzbeck	BBHA9120-D	9120D-406	2020/11/22	2021/11/21
Pre_Amplifier EMCI	EMC12630SE	980384	2021/1/11	2022/1/10
RF Coaxial Cable EMCI	EMC104-SM-SM-1500	180504	2021/4/26	2022/4/25
RF Coaxial Cable EMCI	EMC104-SM-SM-2000	180601	2021/6/8	2022/6/7
RF Coaxial Cable EMCI	EMC104-SM-SM-6000	210201	2021/5/13	2022/5/12
Fix tool for Boresight antenna tower LIOW GUU	FBA-01	FBA_SIP01	NA	NA
Spectrum Analyzer Keysight	N9030A	MY54490679	2021/7/9	2022/7/8
Pre_Amplifier EMCI	EMC184045SE	980387	2021/1/11	2022/1/10
SHF-EHF Horn Schwarzbeck	BBHA 9170	BBHA9170519	2020/11/22	2021/11/21
RF Cable-Frequency range: 1-40GHz EMCI	EMC102-KM-KM-1200	160924	2021/1/11	2022/1/10
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. 3.
3. Tested Date: 2021/7/30 ~ 2021/8/25

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: 2021/8/17

4.1.3 Test Procedure

For Radiated emission below 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

For Radiated emission above 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

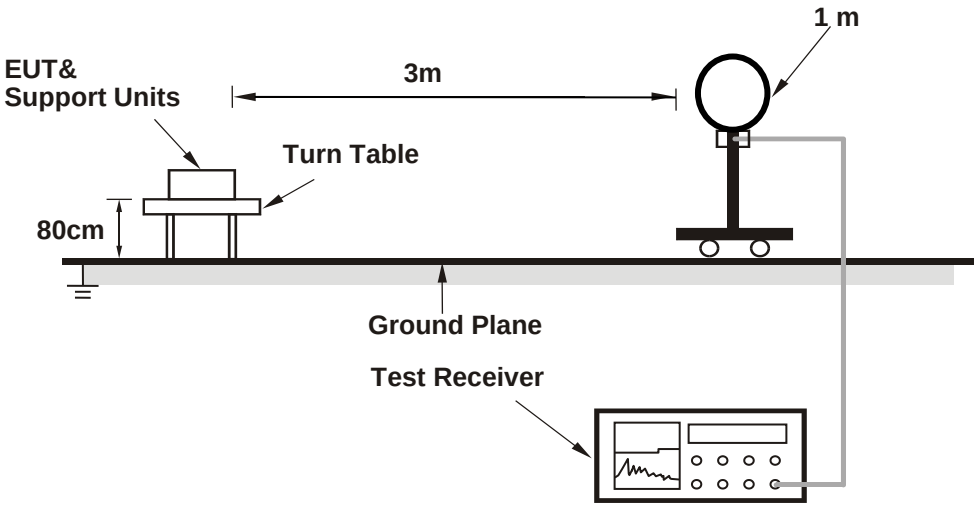
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.1.4 Deviation from Test Standard

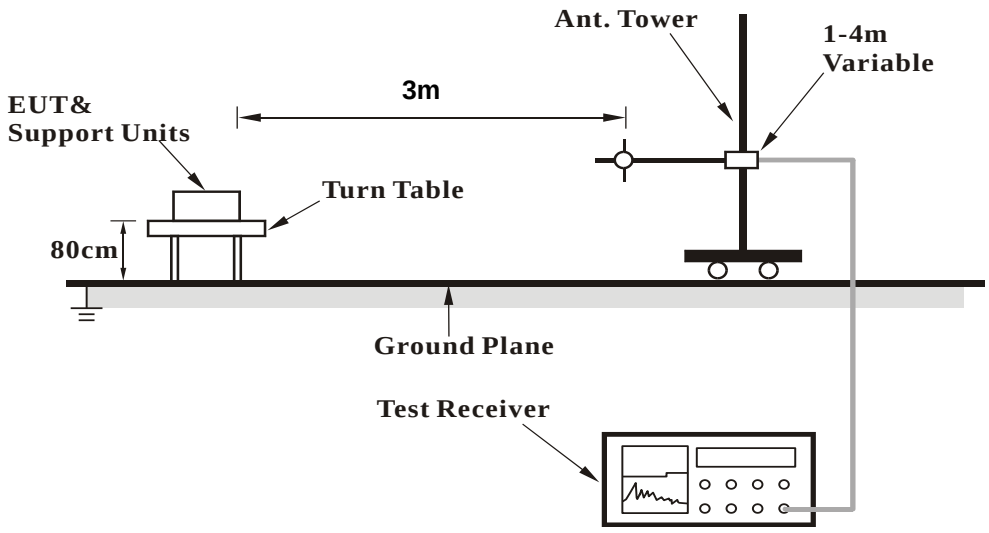
No deviation.

4.1.5 Test Setup

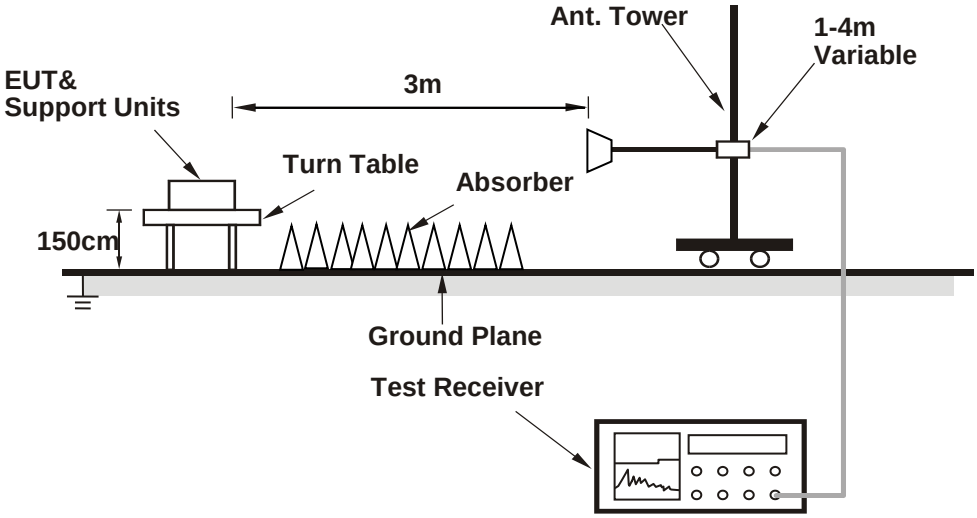
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Condition

a. Placed the EUT on the testing table.
b. Controlling software (Tera Term paste N778_Wifi SOP command) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

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)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	65.0 PK	74.0	-9.0	2.87 H	130	60.3	4.7
2	**5150.00**	**53.8 AV**	**54.0**	**-0.2**	**2.87 H**	**130**	**49.1**	**4.7**
3	*5180.00	108.4 PK			2.87 H	130	103.8	4.6
4	*5180.00	101.8 AV			2.87 H	130	97.2	4.6
5	#10360.00	51.4 PK	68.2	-16.8	2.35 H	164	38.0	13.4
6	15540.00	49.7 PK	74.0	-24.3	1.91 H	263	35.2	14.5
7	15540.00	37.8 AV	54.0	-16.2	1.91 H	263	23.3	14.5
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	64.5 PK	74.0	-9.5	2.66 V	299	59.8	4.7
2	5150.00	52.4 AV	54.0	-1.6	2.66 V	299	47.7	4.7
3	*5180.00	108.2 PK			2.66 V	299	103.6	4.6
4	*5180.00	101.2 AV			2.66 V	299	96.6	4.6
5	#10360.00	50.8 PK	68.2	-17.4	2.61 V	105	37.4	13.4
6	15540.00	48.4 PK	74.0	-25.6	2.43 V	52	33.9	14.5
7	15540.00	36.9 AV	54.0	-17.1	2.43 V	52	22.4	14.5

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 40：5200 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5200.00	111.8 PK			2.97 H	130	107.4	4.4
2	*5200.00	104.9 AV			2.97 H	130	100.5	4.4
3	#10400.00	51.6 PK	68.2	-16.6	1.64 H	238	38.0	13.6
4	15600.00	49.9 PK	74.0	-24.1	1.92 H	270	35.4	14.5
5	15600.00	37.7 AV	54.0	-16.3	1.92 H	270	23.2	14.5
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	*5200.00	111.1 PK			2.59 V	128	106.7	4.4
2	*5200.00	103.9 AV			2.59 V	128	99.5	4.4
3	#10400.00	50.6 PK	68.2	-17.6	2.15 V	241	37.0	13.6
4	15600.00	48.5 PK	74.0	-25.5	2.42 V	57	34.0	14.5
5	15600.00	37.1 AV	54.0	-16.9	2.42 V	57	22.6	14.5

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)

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	111.2 PK			2.95 H	129	106.8	4.4
2	*5240.00	104.6 AV			2.95 H	129	100.2	4.4
3	5443.50	58.5 PK	74.0	-15.5	2.95 H	129	54.1	4.4
4	5443.50	47.4 AV	54.0	-6.6	2.95 H	129	43.0	4.4
5	#10480.00	51.9 PK	68.2	-16.3	1.69 H	154	38.2	13.7
6	15720.00	49.0 PK	74.0	-25.0	1.96 H	252	34.6	14.4
7	15720.00	37.3 AV	54.0	-16.7	1.96 H	252	22.9	14.4
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	*5240.00	109.9 PK			2.58 V	303	105.5	4.4
2	*5240.00	105.3 AV			2.58 V	303	100.9	4.4
3	5450.70	57.7 PK	74.0	-16.3	2.58 V	303	53.3	4.4
4	5450.70	46.9 AV	54.0	-7.1	2.58 V	303	42.5	4.4
5	#10480.00	51.0 PK	68.2	-17.2	2.24 V	197	37.3	13.7
6	15720.00	48.6 PK	74.0	-25.4	2.38 V	62	34.2	14.4
7	15720.00	36.8 AV	54.0	-17.2	2.38 V	62	22.4	14.4

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 149：5745 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5649.73	58.6 PK	68.2	-9.6	3.59 H	211	54.1	4.5
2	*5745.00	114.5 PK			3.59 H	211	109.5	5.0
3	*5745.00	107.2 AV			3.59 H	211	102.2	5.0
4	#5934.73	57.8 PK	68.2	-10.4	3.59 H	211	52.7	5.1
5	11490.00	54.0 PK	74.0	-20.0	2.36 H	251	39.4	14.6
6	11490.00	43.4 AV	54.0	-10.6	2.36 H	251	28.8	14.6
7	#17235.00	48.4 PK	68.2	-19.8	1.96 H	267	30.4	18.0
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5649.57	59.7 PK	68.2	-8.5	2.62 V	303	55.2	4.5
2	*5745.00	113.5 PK			2.62 V	303	108.5	5.0
3	*5745.00	106.5 AV			2.62 V	303	101.5	5.0
4	#5943.29	58.5 PK	68.2	-9.7	2.62 V	303	53.4	5.1
5	11490.00	53.6 PK	74.0	-20.4	1.85 V	241	39.0	14.6
6	11490.00	42.2 AV	54.0	-11.8	1.85 V	241	27.6	14.6
7	#17235.00	47.9 PK	68.2	-20.3	2.48 V	49	29.9	18.0

Remarks:

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

RF Mode	TX 802.11a	Channel	CH 157：5785 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5637.11	57.8 PK	68.2	-10.4	3.54 H	220	53.3	4.5
2	*5785.00	114.8 PK			3.54 H	220	109.7	5.1
3	*5785.00	107.5 AV			3.54 H	220	102.4	5.1
4	#5967.81	58.0 PK	68.2	-10.2	3.54 H	220	52.8	5.2
5	11570.00	54.1 PK	74.0	-19.9	2.96 H	222	39.5	14.6
6	11570.00	43.4 AV	54.0	-10.6	2.96 H	222	28.8	14.6
7	#17355.00	48.3 PK	68.2	-19.9	1.96 H	260	30.1	18.2
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	#5646.89	57.6 PK	68.2	-10.6	2.54 V	301	53.1	4.5
2	*5785.00	113.6 PK			2.54 V	301	108.5	5.1
3	*5785.00	106.8 AV			2.54 V	301	101.7	5.1
4	#5964.25	58.6 PK	68.2	-9.6	2.54 V	301	53.4	5.2
5	11570.00	53.2 PK	74.0	-20.8	2.01 V	134	38.6	14.6
6	11570.00	42.5 AV	54.0	-11.5	2.01 V	134	27.9	14.6
7	#17355.00	47.9 PK	68.2	-20.3	2.53 V	38	29.7	18.2

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 165：5825 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5647.24	57.8 PK	68.2	-10.4	3.17 H	213	53.3	4.5
2	*5825.00	114.4 PK			3.17 H	213	109.4	5.0
3	*5825.00	107.4 AV			3.17 H	213	102.4	5.0
4	#5933.66	59.8 PK	68.2	-8.4	3.17 H	213	54.7	5.1
5	11650.00	54.7 PK	74.0	-19.3	1.45 H	217	40.3	14.4
6	11650.00	43.5 AV	54.0	-10.5	1.45 H	217	29.1	14.4
7	#17475.00	48.2 PK	68.2	-20.0	1.92 H	278	29.4	18.8
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	#5641.53	57.1 PK	68.2	-11.1	2.61 V	305	52.6	4.5
2	*5825.00	113.5 PK			2.61 V	305	108.5	5.0
3	*5825.00	107.1 AV			2.61 V	305	102.1	5.0
4	#5943.19	59.4 PK	68.2	-8.8	2.61 V	305	54.3	5.1
5	11650.00	53.6 PK	74.0	-20.4	1.23 V	35	39.2	14.4
6	11650.00	42.4 AV	54.0	-11.6	1.23 V	35	28.0	14.4
7	#17475.00	47.7 PK	68.2	-20.5	2.44 V	39	28.9	18.8

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 36：5180 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	66.5 PK	74.0	-7.5	3.46 H	213	61.8	4.7
2	5150.00	53.7 AV	54.0	-0.3	3.46 H	213	49.0	4.7
3	*5180.00	108.4 PK			3.46 H	213	103.8	4.6
4	*5180.00	101.6 AV			3.46 H	213	97.0	4.6
5	#10360.00	51.5 PK	68.2	-16.7	2.21 H	251	38.1	13.4
6	15540.00	49.3 PK	74.0	-24.7	1.96 H	252	34.8	14.5
7	15540.00	37.5 AV	54.0	-16.5	1.96 H	252	23.0	14.5
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	64.7 PK	74.0	-9.3	2.58 V	306	60.0	4.7
2	5150.00	52.5 AV	54.0	-1.5	2.58 V	306	47.8	4.7
3	*5180.00	107.4 PK			2.58 V	306	102.8	4.6
4	*5180.00	100.5 AV			2.58 V	306	95.9	4.6
5	#10360.00	50.6 PK	68.2	-17.6	2.26 V	321	37.2	13.4
6	15540.00	49.0 PK	74.0	-25.0	2.36 V	63	34.5	14.5
7	15540.00	37.1 AV	54.0	-16.9	2.36 V	63	22.6	14.5

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 40：5200 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5200.00	111.0 PK			3.25 H	227	106.6	4.4
2	*5200.00	103.9 AV			3.25 H	227	99.5	4.4
3	#10400.00	51.0 PK	68.2	-17.2	2.64 H	138	37.4	13.6
4	15600.00	48.5 PK	74.0	-25.5	1.99 H	264	34.0	14.5
5	15600.00	37.0 AV	54.0	-17.0	1.99 H	264	22.5	14.5
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	*5200.00	109.8 PK			2.61 V	291	105.4	4.4
2	*5200.00	103.0 AV			2.61 V	291	98.6	4.4
3	#10400.00	50.5 PK	68.2	-17.7	1.18 V	134	36.9	13.6
4	15600.00	48.6 PK	74.0	-25.4	2.41 V	47	34.1	14.5
5	15600.00	37.3 AV	54.0	-16.7	2.41 V	47	22.8	14.5

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)

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	111.8 PK			3.19 H	227	107.4	4.4
2	*5240.00	105.1 AV			3.19 H	227	100.7	4.4
3	5433.40	58.8 PK	74.0	-15.2	3.19 H	227	54.4	4.4
4	5433.40	47.5 AV	54.0	-6.5	3.19 H	227	43.1	4.4
5	#10480.00	51.9 PK	68.2	-16.3	1.97 H	145	38.2	13.7
6	15720.00	49.0 PK	74.0	-25.0	2.00 H	240	34.6	14.4
7	15720.00	37.3 AV	54.0	-16.7	2.00 H	240	22.9	14.4
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	*5240.00	110.9 PK			2.58 V	295	106.5	4.4
2	*5240.00	104.2 AV			2.58 V	295	99.8	4.4
3	5444.50	58.3 PK	74.0	-15.7	2.58 V	295	53.9	4.4
4	5444.50	46.9 AV	54.0	-7.1	2.58 V	295	42.5	4.4
5	#10480.00	51.1 PK	68.2	-17.1	2.36 V	251	37.4	13.7
6	15720.00	49.1 PK	74.0	-24.9	2.33 V	60	34.7	14.4
7	15720.00	37.5 AV	54.0	-16.5	2.33 V	60	23.1	14.4

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 149：5745 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5643.55	61.0 PK	68.2	-7.2	3.26 H	215	56.5	4.5
2	*5745.00	114.2 PK			3.26 H	215	109.2	5.0
3	*5745.00	106.6 AV			3.26 H	215	101.6	5.0
4	#5954.27	58.5 PK	68.2	-9.7	3.26 H	215	53.3	5.2
5	11490.00	54.3 PK	74.0	-19.7	2.08 H	199	39.7	14.6
6	11490.00	43.0 AV	54.0	-11.0	2.08 H	199	28.4	14.6
7	#17235.00	48.1 PK	68.2	-20.1	1.93 H	278	30.1	18.0
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5630.90	60.3 PK	68.2	-7.9	2.55 V	306	55.8	4.5
2	*5745.00	112.5 PK			2.55 V	306	107.5	5.0
3	*5745.00	105.6 AV			2.55 V	306	100.6	5.0
4	#5929.82	58.2 PK	68.2	-10.0	2.55 V	306	53.1	5.1
5	11490.00	53.1 PK	74.0	-20.9	2.36 V	269	38.5	14.6
6	11490.00	42.6 AV	54.0	-11.4	2.36 V	269	28.0	14.6
7	#17235.00	49.0 PK	68.2	-19.2	1.94 V	255	31.0	18.0

Remarks:

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

RF Mode	TX 802.11ac (VHT20)	Channel	CH 157：5785 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5617.09	58.4 PK	68.2	-9.8	3.10 H	215	53.9	4.5
2	*5785.00	114.2 PK			3.10 H	215	109.1	5.1
3	*5785.00	106.9 AV			3.10 H	215	101.8	5.1
4	#5934.35	58.5 PK	68.2	-9.7	3.10 H	215	53.4	5.1
5	11570.00	54.4 PK	74.0	-19.6	1.34 H	162	39.8	14.6
6	11570.00	43.8 AV	54.0	-10.2	1.34 H	162	29.2	14.6
7	#17355.00	48.1 PK	68.2	-20.1	1.96 H	258	29.9	18.2
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	#5631.85	57.3 PK	68.2	-10.9	2.66 V	306	52.8	4.5
2	*5785.00	112.5 PK			2.66 V	306	107.4	5.1
3	*5785.00	105.6 AV			2.66 V	306	100.5	5.1
4	#5953.37	58.4 PK	68.2	-9.8	2.66 V	306	53.2	5.2
5	11570.00	53.5 PK	74.0	-20.5	1.97 V	188	38.9	14.6
6	11570.00	42.8 AV	54.0	-11.2	1.97 V	188	28.2	14.6
7	#17355.00	48.2 PK	68.2	-20.0	1.96 V	266	30.0	18.2

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 165：5825 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5591.09	58.5 PK	68.2	-9.7	2.93 H	215	54.0	4.5
2	*5825.00	113.8 PK			2.93 H	215	108.8	5.0
3	*5825.00	106.8 AV			2.93 H	215	101.8	5.0
4	#5948.88	59.0 PK	68.2	-9.2	2.93 H	215	53.9	5.1
5	11650.00	54.9 PK	74.0	-19.1	2.36 H	292	40.5	14.4
6	11650.00	43.4 AV	54.0	-10.6	2.36 H	292	29.0	14.4
7	#17475.00	48.5 PK	68.2	-19.7	1.95 H	260	29.7	18.8
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	#5625.28	57.3 PK	68.2	-10.9	2.51 V	302	52.8	4.5
2	*5825.00	112.6 PK			2.51 V	302	107.6	5.0
3	*5825.00	105.4 AV			2.51 V	302	100.4	5.0
4	#5952.11	59.0 PK	68.2	-9.2	2.51 V	302	53.8	5.2
5	11650.00	53.6 PK	74.0	-20.4	2.25 V	210	39.2	14.4
6	11650.00	42.7 AV	54.0	-11.3	2.25 V	210	28.3	14.4
7	#17475.00	48.5 PK	68.2	-19.7	1.94 V	254	29.7	18.8

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 38：5190 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	66.0 PK	74.0	-8.0	3.26 H	226	61.3	4.7
2	5150.00	53.7 AV	54.0	-0.3	3.26 H	226	49.0	4.7
3	*5190.00	101.5 PK			3.26 H	226	97.0	4.5
4	*5190.00	94.1 AV			3.26 H	226	89.6	4.5
5	#10380.00	51.4 PK	68.2	-16.8	2.21 H	134	38.0	13.4
6	15570.00	48.0 PK	74.0	-26.0	2.04 H	272	33.4	14.6
7	15570.00	36.8 AV	54.0	-17.2	2.04 H	272	22.2	14.6
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	5150.00	65.0 PK	74.0	-9.0	2.59 V	294	60.3	4.7
2	5150.00	52.0 AV	54.0	-2.0	2.59 V	294	47.3	4.7
3	*5190.00	100.3 PK			2.59 V	294	95.8	4.5
4	*5190.00	93.4 AV			2.59 V	294	88.9	4.5
5	#10380.00	50.7 PK	68.2	-17.5	1.69 V	356	37.3	13.4
6	15570.00	49.0 PK	74.0	-25.0	2.40 V	62	34.4	14.6
7	15570.00	37.3 AV	54.0	-16.7	2.40 V	62	22.7	14.6

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 46：5230 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5230.00	108.6 PK			3.09 H	229	104.2	4.4
2	*5230.00	101.0 AV			3.09 H	229	96.6	4.4
3	5350.00	59.2 PK	74.0	-14.8	3.09 H	229	54.9	4.3
4	5350.00	48.2 AV	54.0	-5.8	3.09 H	229	43.9	4.3
5	#10460.00	51.7 PK	68.2	-16.5	1.87 H	164	38.1	13.6
6	15690.00	48.5 PK	74.0	-25.5	1.97 H	262	34.0	14.5
7	15690.00	37.2 AV	54.0	-16.8	1.97 H	262	22.7	14.5
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	*5230.00	107.3 PK			2.61 V	292	102.9	4.4
2	*5230.00	100.1 AV			2.61 V	292	95.7	4.4
3	5350.00	58.3 PK	74.0	-15.7	2.61 V	292	54.0	4.3
4	5350.00	47.5 AV	54.0	-6.5	2.61 V	292	43.2	4.3
5	#10460.00	51.0 PK	68.2	-17.2	2.05 V	229	37.4	13.6
6	15690.00	48.4 PK	74.0	-25.6	2.32 V	54	33.9	14.5
7	15690.00	36.7 AV	54.0	-17.3	2.32 V	54	22.2	14.5

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 151：5755 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5649.11	67.6 PK	68.2	-0.6	3.38 H	212	63.1	4.5
2	*5755.00	112.2 PK			3.38 H	212	107.2	5.0
3	*5755.00	104.3 AV			3.38 H	212	99.3	5.0
4	#5927.83	58.4 PK	68.2	-9.8	3.38 H	212	53.3	5.1
5	11510.00	53.9 PK	74.0	-20.1	2.12 H	20	39.3	14.6
6	11510.00	43.3 AV	54.0	-10.7	2.12 H	20	28.7	14.6
7	#17265.00	47.5 PK	68.2	-20.7	1.96 H	245	29.6	17.9
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	#5649.93	66.9 PK	68.2	-1.3	2.58 V	305	62.4	4.5
2	*5755.00	110.8 PK			2.58 V	305	105.8	5.0
3	*5755.00	103.5 AV			2.58 V	305	98.5	5.0
4	#5934.85	58.7 PK	68.2	-9.5	2.58 V	305	53.6	5.1
5	11510.00	53.2 PK	74.0	-20.8	2.01 V	222	38.6	14.6
6	11510.00	42.0 AV	54.0	-12.0	2.01 V	222	27.4	14.6
7	#17265.00	48.6 PK	68.2	-19.6	1.89 V	258	30.7	17.9

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 159：5795 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5647.30	60.8 PK	68.2	-7.4	3.35 H	213	56.3	4.5
2	*5795.00	111.9 PK			3.35 H	213	106.8	5.1
3	*5795.00	104.2 AV			3.35 H	213	99.1	5.1
4	#5925.00	66.2 PK	68.2	-2.0	3.35 H	213	61.1	5.1
5	11590.00	54.8 PK	74.0	-19.2	1.52 H	266	40.2	14.6
6	11590.00	43.3 AV	54.0	-10.7	1.52 H	266	28.7	14.6
7	#17385.00	48.4 PK	68.2	-19.8	1.94 H	248	30.1	18.3
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	#5650.00	62.0 PK	68.2	-6.2	2.66 V	308	57.5	4.5
2	*5795.00	110.3 PK			2.66 V	308	105.2	5.1
3	*5795.00	103.2 AV			2.66 V	308	98.1	5.1
4	#5925.00	65.0 PK	68.2	-3.2	2.66 V	308	59.9	5.1
5	11590.00	53.5 PK	74.0	-20.5	1.95 V	27	38.9	14.6
6	11590.00	42.1 AV	54.0	-11.9	1.95 V	27	27.5	14.6
7	#17385.00	48.4 PK	68.2	-19.8	1.89 V	254	30.1	18.3

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 42：5210 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	64.9 PK	74.0	-9.1	3.08 H	228	60.2	4.7
2	**5150.00**	**53.8 AV**	**54.0**	**-0.2**	**3.08 H**	**228**	**49.1**	**4.7**
3	*5210.00	99.7 PK			3.08 H	228	95.3	4.4
4	*5210.00	92.4 AV			3.08 H	228	88.0	4.4
5	5350.00	58.9 PK	74.0	-15.1	3.08 H	228	54.6	4.3
6	5350.00	47.4 AV	54.0	-6.6	3.08 H	228	43.1	4.3
7	#10420.00	51.6 PK	68.2	-16.6	1.85 H	264	38.1	13.5
8	15630.00	47.7 PK	74.0	-26.3	2.06 H	271	33.1	14.6
9	15630.00	36.7 AV	54.0	-17.3	2.06 H	271	22.1	14.6
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	5150.00	63.9 PK	74.0	-10.1	2.63 V	298	59.2	4.7
2	5150.00	52.7 AV	54.0	-1.3	2.63 V	298	48.0	4.7
3	*5210.00	98.6 PK			2.63 V	298	94.2	4.4
4	*5210.00	91.4 AV			2.63 V	298	87.0	4.4
5	5455.90	58.1 PK	74.0	-15.9	2.63 V	298	53.7	4.4
6	5455.90	46.9 AV	54.0	-7.1	2.63 V	298	42.5	4.4
7	#10420.00	50.9 PK	68.2	-17.3	2.22 V	136	37.4	13.5
8	15630.00	48.9 PK	74.0	-25.1	2.43 V	47	34.3	14.6
9	15630.00	37.3 AV	54.0	-16.7	2.43 V	47	22.7	14.6

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)

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	#5644.19	67.6 PK	68.2	-0.6	3.25 H	212	63.1	4.5
2	*5775.00	106.2 PK			3.25 H	212	101.1	5.1
3	*5775.00	98.1 AV			3.25 H	212	93.0	5.1
4	#5930.53	67.9 PK	68.2	-0.3	3.25 H	212	62.8	5.1
5	11550.00	54.5 PK	74.0	-19.5	1.38 H	124	39.9	14.6
6	11550.00	43.2 AV	54.0	-10.8	1.38 H	124	28.6	14.6
7	#17325.00	48.0 PK	68.2	-20.2	1.86 H	293	29.9	18.1
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	#5629.99	64.8 PK	68.2	-3.4	2.63 V	305	60.3	4.5
2	*5775.00	105.1 PK			2.63 V	305	100.0	5.1
3	*5775.00	97.0 AV			2.63 V	305	91.9	5.1
4	#5930.27	64.9 PK	68.2	-3.3	2.63 V	305	59.8	5.1
5	11550.00	53.5 PK	74.0	-20.5	1.82 V	277	38.9	14.6
6	11550.00	42.3 AV	54.0	-11.7	1.82 V	277	27.7	14.6
7	#17325.00	48.7 PK	68.2	-19.5	1.92 V	247	30.6	18.1

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.

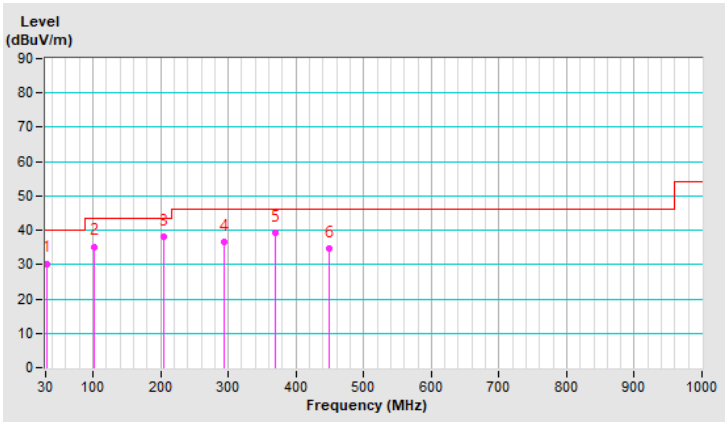
Below 1GHz Data:

RF Mode	TX 802.11a	Channel	CH 165：5825 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	32.67	30.3 QP	40.0	-9.7	1.00 H	0	39.7	-9.4
2	101.46	35.3 QP	43.5	-8.2	2.00 H	76	47.3	-12.0
3	205.01	38.2 QP	43.5	-5.3	2.00 H	73	48.9	-10.7
4	294.01	36.5 QP	46.0	-9.5	1.00 H	286	43.3	-6.8
5	368.99	39.3 QP	46.0	-6.7	1.00 H	360	43.8	-4.5
6	449.99	34.7 QP	46.0	-11.3	2.00 H	131	36.8	-2.1

Remarks:

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

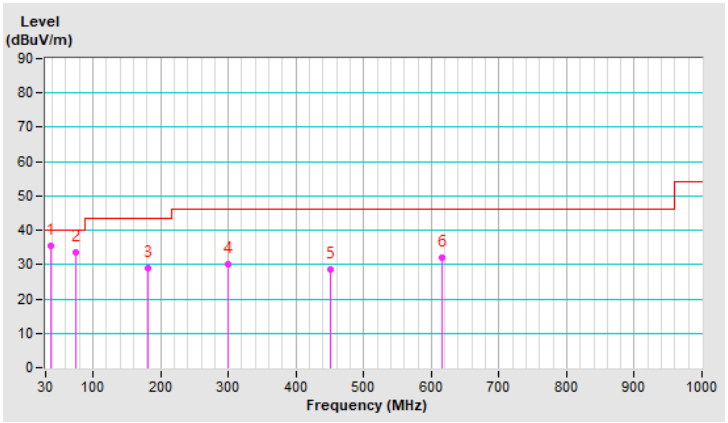


RF Mode	TX 802.11a	Channel	CH 165：5825 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	38.54	35.6 QP	40.0	-4.4	1.00 V	55	44.3	-8.7
2	74.11	33.7 QP	40.0	-6.3	1.00 V	104	45.2	-11.5
3	181.97	28.9 QP	43.5	-14.6	1.00 V	282	38.3	-9.4
4	300.02	30.2 QP	46.0	-15.8	1.50 V	0	36.8	-6.6
5	450.01	28.7 QP	46.0	-17.3	1.00 V	62	30.7	-2.0
6	615.01	31.9 QP	46.0	-14.1	3.00 V	0	30.1	1.8

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	2020/10/20	2021/10/19
LISN R&S	ESH3-Z5	848773/004	2020/10/27	2021/10/26
LISN R & S	ESH3-Z5	835239/001	2021/3/26	2022/3/25
50 ohms Terminator	50	3	2020/10/26	2021/10/25
RF Coaxial Cable JYEBO	5D-FB	COCCAB-001	2020/9/26	2021/9/25
Fixed attenuator STI	STI02-2200-10	005	2020/8/29	2021/8/28
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: 2021/8/25

4.2.3 Test Procedure

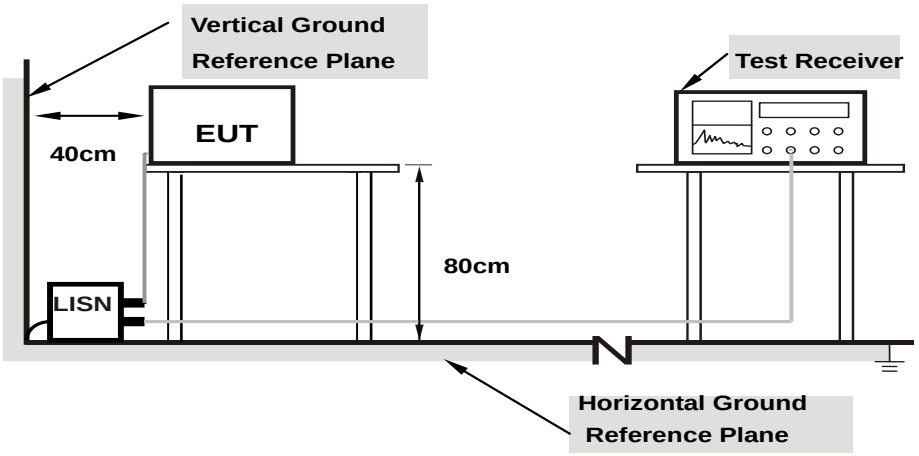
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling 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.

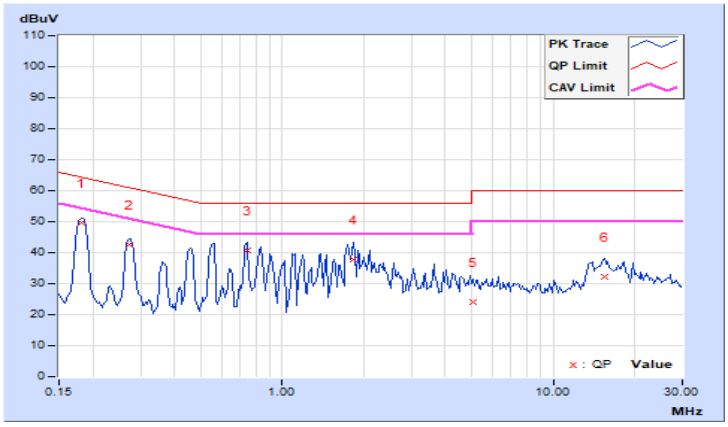
4.2.7 Test Results

RF Mode	TX 802.11a	Channel	CH 165：5825 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.18125**	**9.99**	**39.74**	**33.30**	**49.73**	**43.29**	**64.43**	**54.43**	**-14.70**	**-11.14**
2	0.27109	10.01	32.66	23.87	42.67	33.88	61.08	51.08	-18.41	-17.20
3	0.73984	10.05	30.65	19.16	40.70	29.21	56.00	46.00	-15.30	-16.79
4	1.82422	10.11	27.53	15.67	37.64	25.78	56.00	46.00	-18.36	-20.22
5	5.05859	10.34	13.83	3.62	24.17	13.96	60.00	50.00	-35.83	-36.04
6	15.39844	11.12	21.04	13.71	32.16	24.83	60.00	50.00	-27.84	-25.17

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

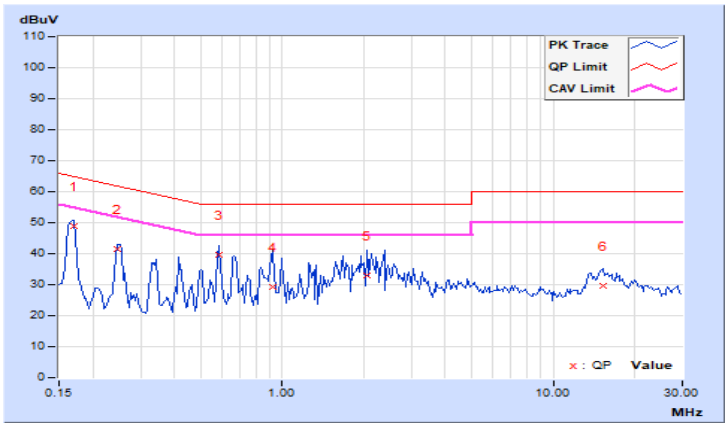


RF Mode	TX 802.11a	Channel	CH 165：5825 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16953	9.97	38.94	29.69	48.91	39.66	64.98	54.98	-16.07	-15.32
2	0.24766	10.00	31.62	22.80	41.62	32.80	61.84	51.84	-20.22	-19.04
3	0.58359	10.03	29.42	24.17	39.45	34.20	56.00	46.00	-16.55	-11.80
4	0.91953	10.05	19.07	11.06	29.12	21.11	56.00	46.00	-26.88	-24.89
5	2.05078	10.13	22.92	12.56	33.05	22.69	56.00	46.00	-22.95	-23.31
6	15.25391	10.91	18.89	13.05	29.80	23.96	60.00	50.00	-30.20	-26.04

Remarks:

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



4.3 Transmit Power Measurement

4.3.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p ≦ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
		Indoor Access Point	1 Watt (30 dBm)
	√	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

4.3.2 Test Setup

4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating 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

802.11a

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
36	5180	8.531	9.31	24	Pass
40	5200	8.57	9.33	24	Pass
48	5240	8.71	9.40	24	Pass
149	5745	21.478	13.32	30	Pass
157	5785	21.727	13.37	30	Pass
165	5825	21.777	13.38	30	Pass

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
36	5180	8.69	9.39	24	Pass
40	5200	8.81	9.45	24	Pass
48	5240	8.61	9.35	24	Pass
149	5745	21.727	13.37	30	Pass
157	5785	21.281	13.28	30	Pass
165	5825	20.989	13.22	30	Pass

802.11ac (VHT40)

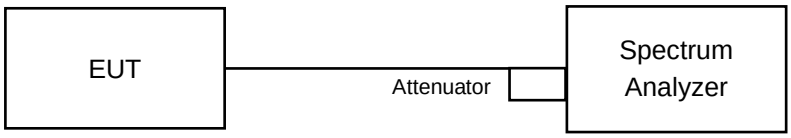
Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
38	5190	8.79	9.44	24	Pass
46	5230	8.57	9.33	24	Pass
151	5755	20.559	13.13	30	Pass
159	5795	21.429	13.31	30	Pass

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
42	5210	8.73	9.41	24	Pass
155	5775	21.184	13.26	30	Pass

4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

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

4.4.4 Test Results

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
36	5180	16.68
40	5200	16.61
48	5240	16.69
149	5745	27.57
157	5785	25.31
165	5825	22.96

802.11ac (VHT20)

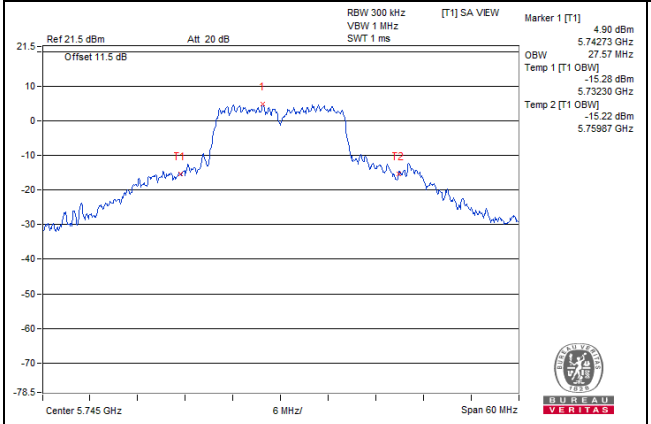
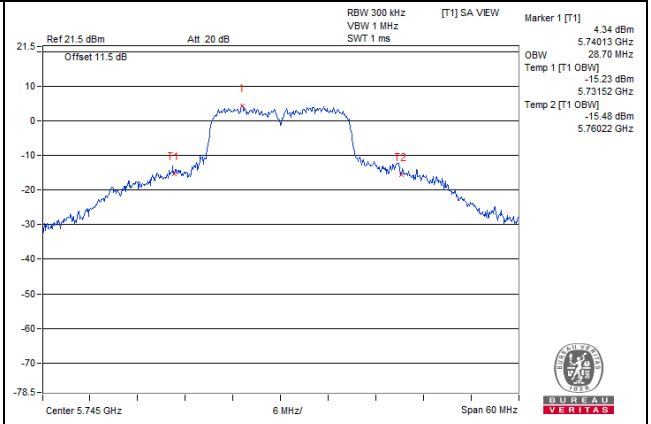
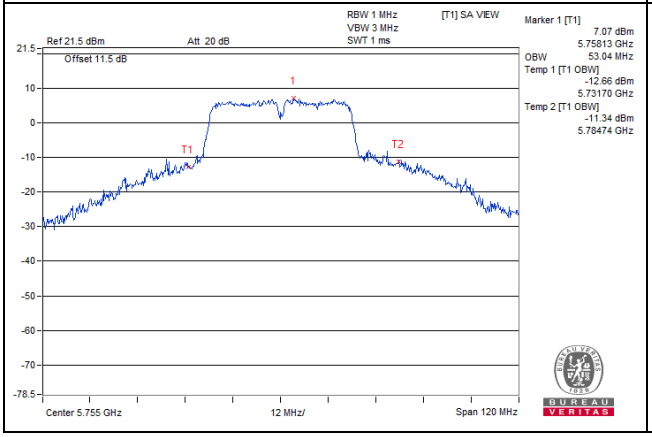
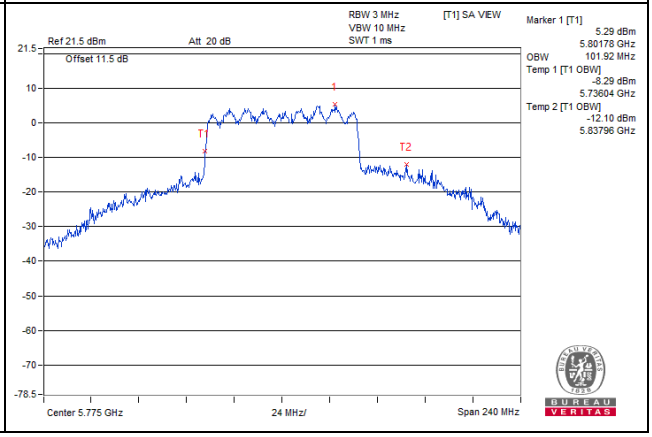
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
36	5180	17.65
40	5200	17.65
48	5240	17.65
149	5745	28.7
157	5785	26.28
165	5825	23.16

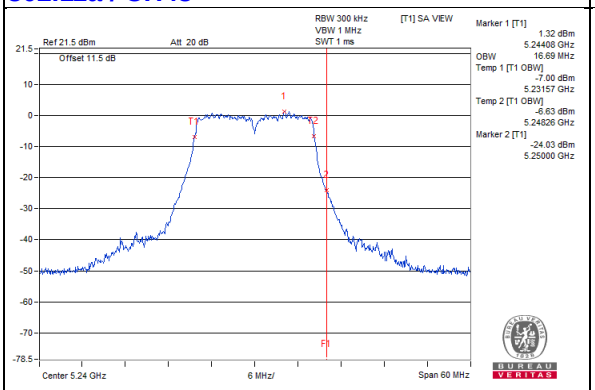
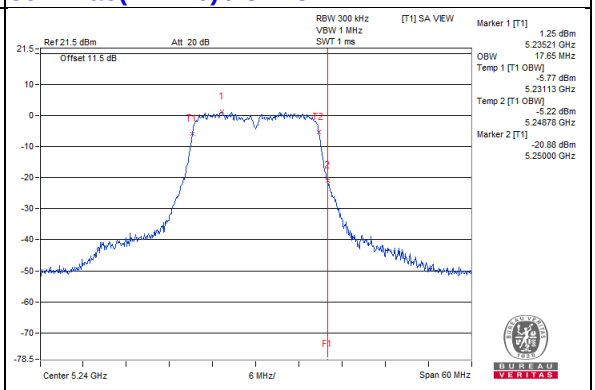
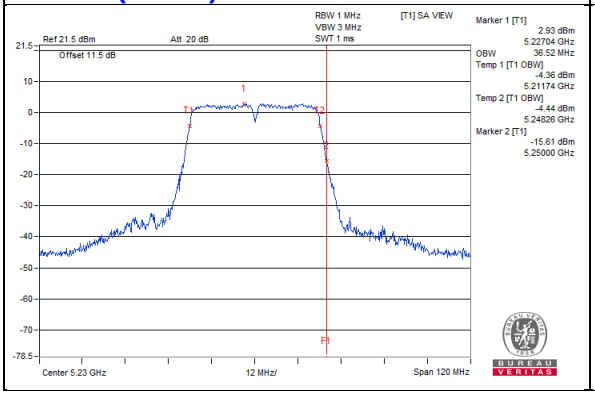
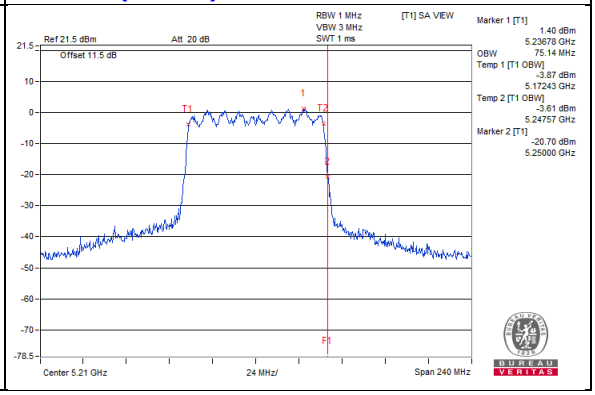
802.11ac (VHT40)

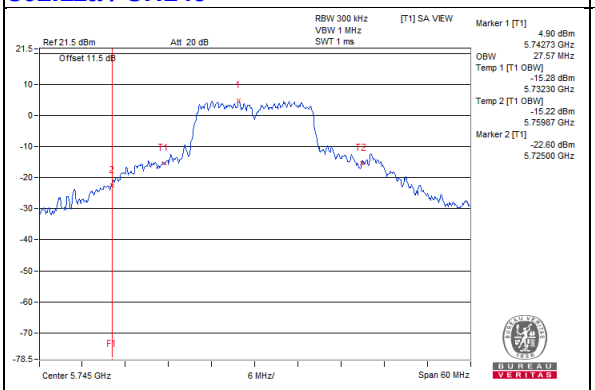
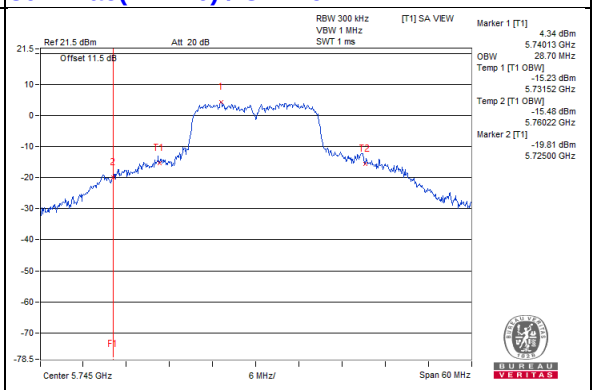
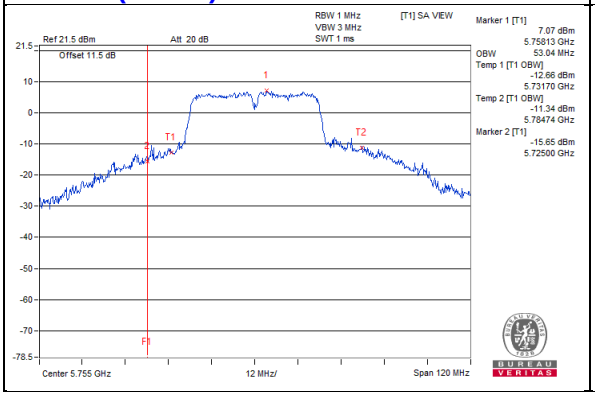
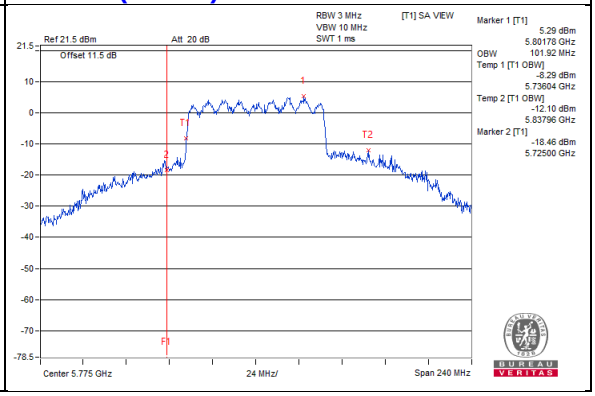
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
38	5190	36.72
46	5230	36.52
151	5755	53.04
159	5795	50.26

802.11ac (VHT80)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
42	5210	75.14
155	5775	101.92

Spectrum Plot of Max. Value	
802.11a / CH149	**802.11ac (VHT20) / CH149**
	
802.11ac (VHT40) / CH151	**802.11ac (VHT80) / CH155**
	

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**
	

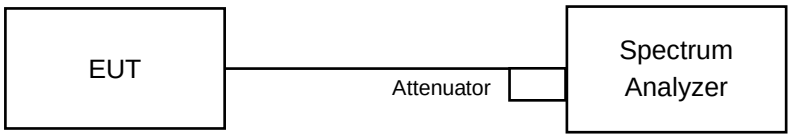
Spectrum Plot for near by DFS band (DFS is required, if 99% OCP straddle into U-NII-2C band)	
802.11a / CH149	**802.11ac(VHT20) / CH149**
	
802.11ac(VHT40) / CH151	**802.11ac(VHT80) / CH155**
	

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

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 band:

Using method SA-1

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

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

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:

802.11a

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
36	5180	-3.11	11.00	Pass
40	5200	-2.92	11.00	Pass
48	5240	-2.76	11.00	Pass

802.11ac (VHT20)

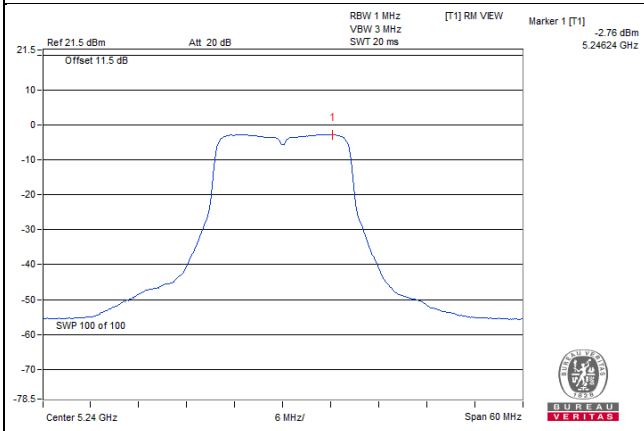
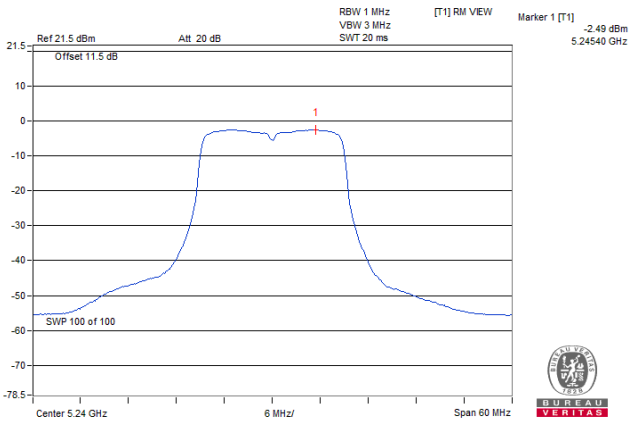
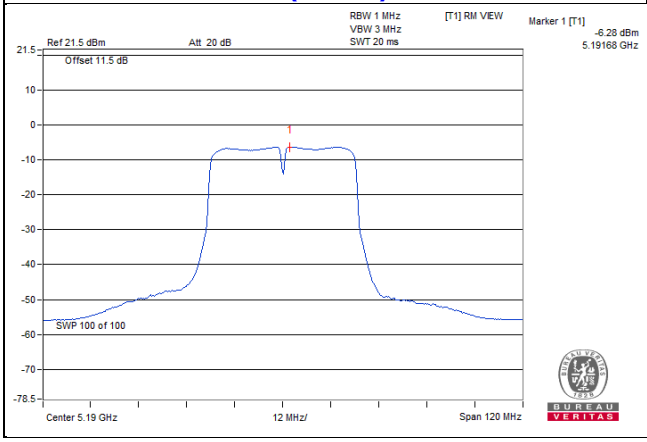
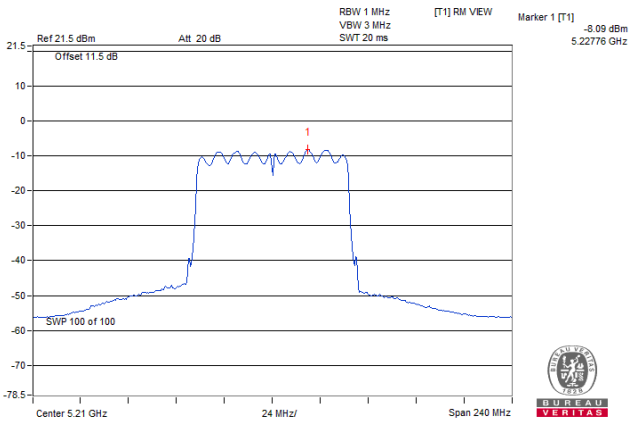
Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
36	5180	-2.86	11.00	Pass
40	5200	-2.68	11.00	Pass
48	5240	-2.49	11.00	Pass

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
38	5190	-6.28	11.00	Pass
46	5230	-6.40	11.00	Pass

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
42	5210	-8.09	11.00	Pass

Spectrum Plot of Worst Value	
802.11a / CH48	**802.11ac (VHT20) / CH48**
	
802.11ac (VHT40) / CH38	**802.11ac (VHT80) / CH42**
	

For U-NII-3:

802.11a

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Pass / Fail
149	5745	-7.99	-5.77	30.00	Pass
157	5785	-7.90	-5.68	30.00	Pass
165	5825	-7.40	-5.18	30.00	Pass

802.11ac (VHT20)

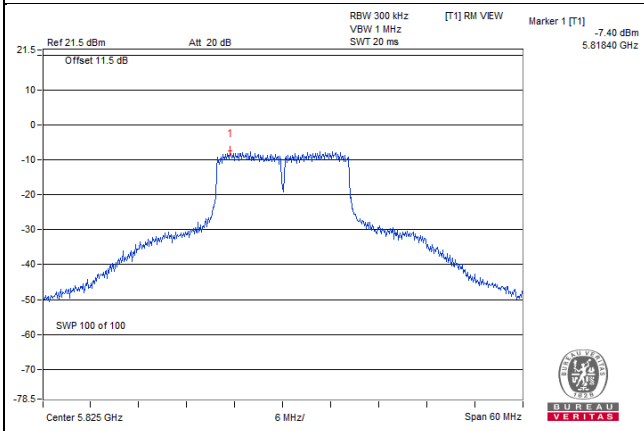
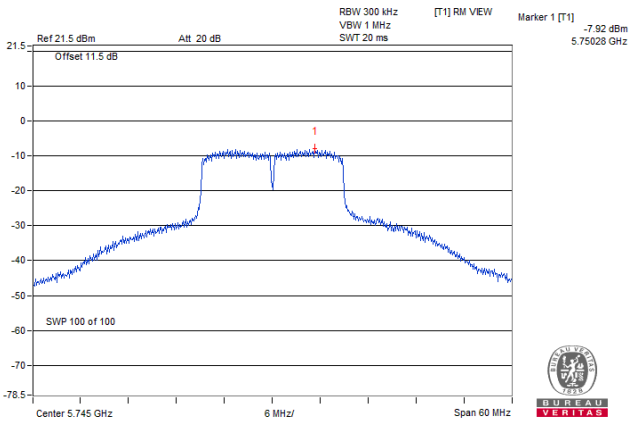
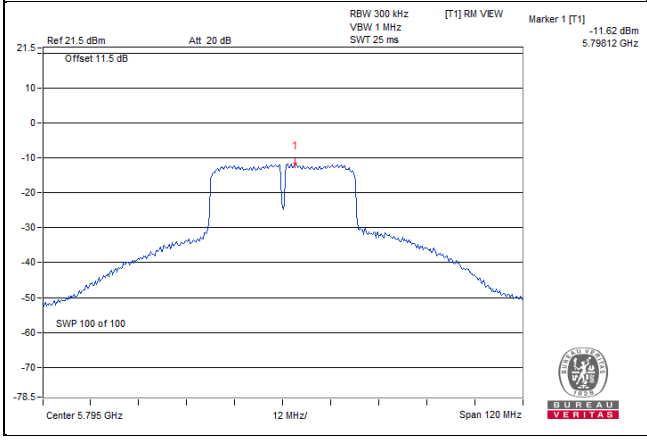
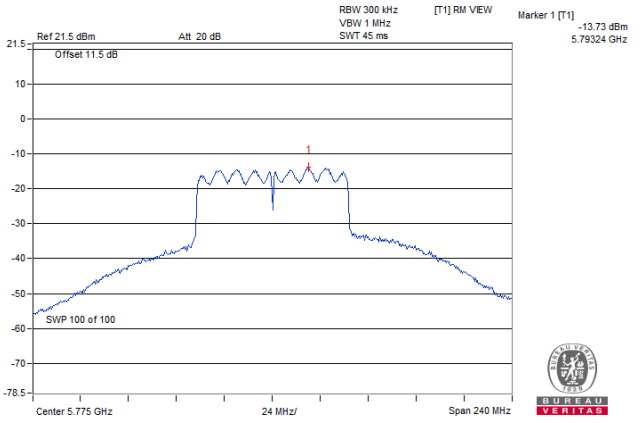
Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Pass / Fail
149	5745	-7.92	-5.70	30.00	Pass
157	5785	-8.34	-6.12	30.00	Pass
165	5825	-8.44	-6.22	30.00	Pass

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Pass / Fail
151	5755	-11.92	-9.70	30.00	Pass
159	5795	-11.62	-9.40	30.00	Pass

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Pass / Fail
155	5775	-13.73	-11.51	30.00	Pass

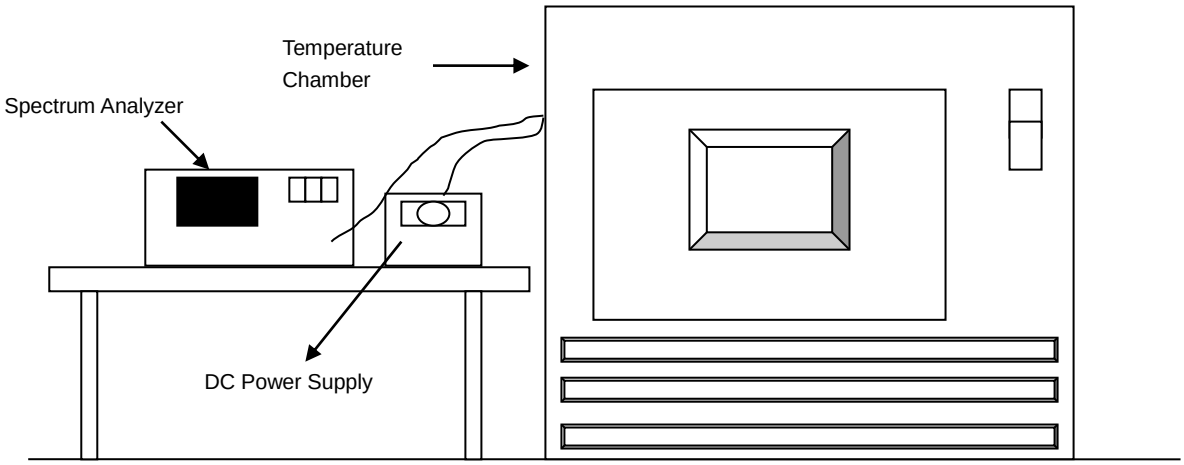
Spectrum Plot of Worst Value	
802.11a / CH165	**802.11ac (VHT20) / CH149**
	
802.11ac (VHT40) / CH159	**802.11ac (VHT80) / CH155**
	

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

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

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

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

4.6.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5180 MHz									
TEMP. (℃)	Power Supply (Vdc)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
45	3.7	5180.0088	Pass	5180.0082	Pass	5180.0043	Pass	5180.0054	Pass
40	3.7	5180.0118	Pass	5180.0104	Pass	5180.0152	Pass	5180.0143	Pass
30	3.7	5180.0097	Pass	5180.0086	Pass	5180.0112	Pass	5180.012	Pass
20	3.7	5180.0221	Pass	5180.024	Pass	5180.0223	Pass	5180.0232	Pass
10	3.7	5180.0016	Pass	5179.9997	Pass	5180.0026	Pass	5180.0008	Pass

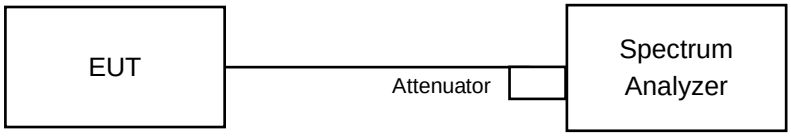
Frequency Stability Versus Voltage									
Operating Frequency: 5180 MHz									
TEMP. (℃)	Power Supply (Vdc)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	4.255	5180.0227	Pass	5180.0237	Pass	5180.0228	Pass	5180.024	Pass
	3.7	5180.0221	Pass	5180.024	Pass	5180.0223	Pass	5180.0232	Pass
	3.6	5180.0227	Pass	5180.0248	Pass	5180.0219	Pass	5180.023	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

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

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

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

4.7.7 Test Results

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	16.56	0.5	Pass
157	5785	16.54	0.5	Pass
165	5825	16.55	0.5	Pass

802.11ac (VHT20)

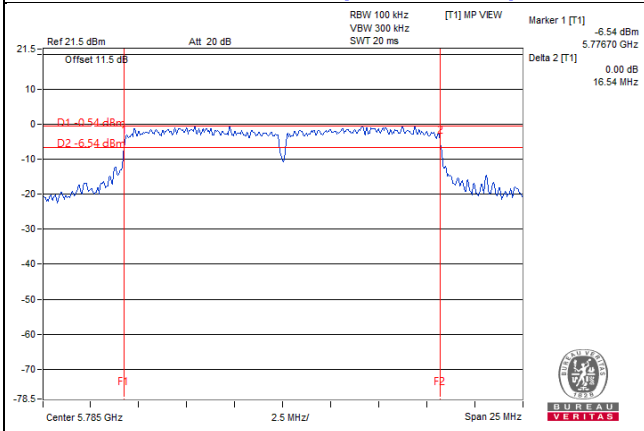
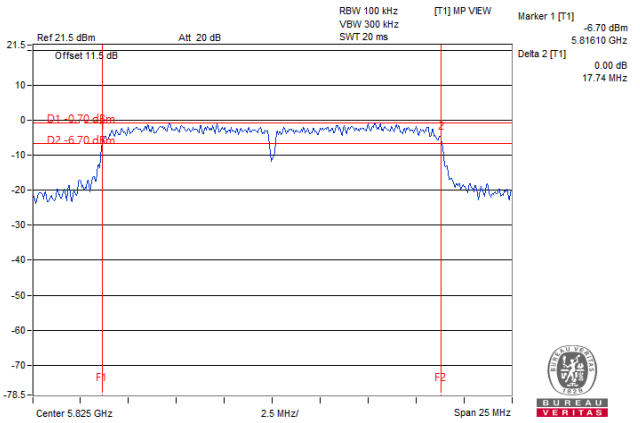
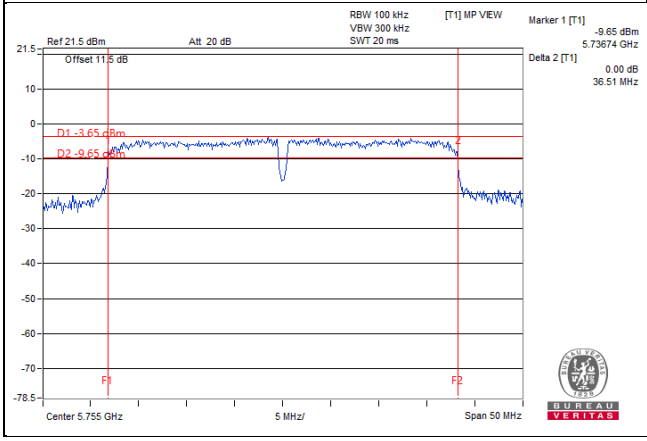
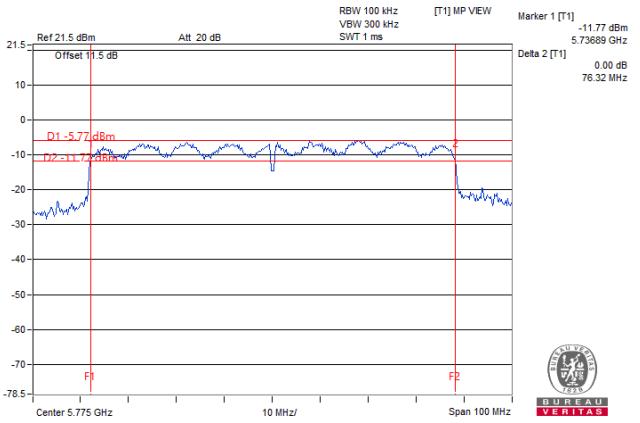
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	17.77	0.5	Pass
157	5785	17.75	0.5	Pass
165	5825	17.74	0.5	Pass

802.11ac (VHT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
151	5755	36.51	0.5	Pass
159	5795	36.52	0.5	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
155	5775	76.32	0.5	Pass

Spectrum Plot of Worst Value	
802.11a / CH157 (U-NII-3 Band)	**802.11ac (VHT20) / CH165 (U-NII-3 Band)**
	
802.11ac (VHT40) / CH151 (U-NII-3 Band)	**802.11ac (VHT80) / CH155 (U-NII-3 Band)**
	

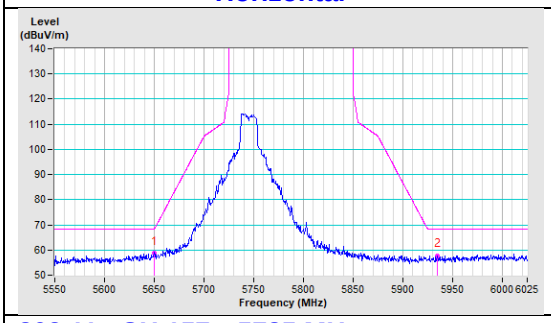
5 Pictures of Test Arrangements

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

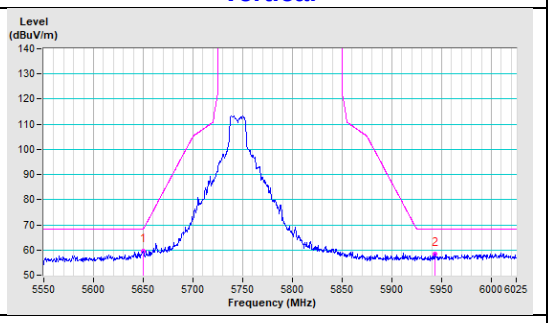
Annex A - Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band)

802.11a CH 149：5745 MHz

Horizontal

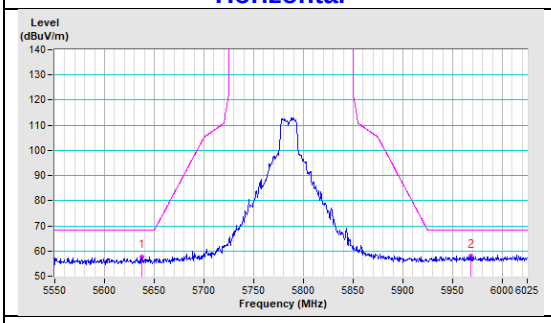


Vertical

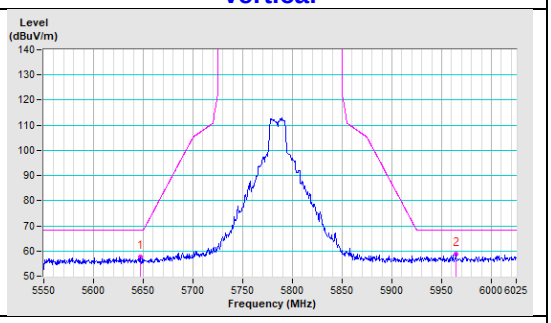


802.11a CH 157：5785 MHz

Horizontal

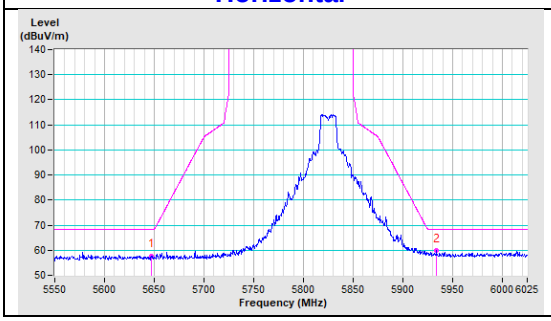


Vertical

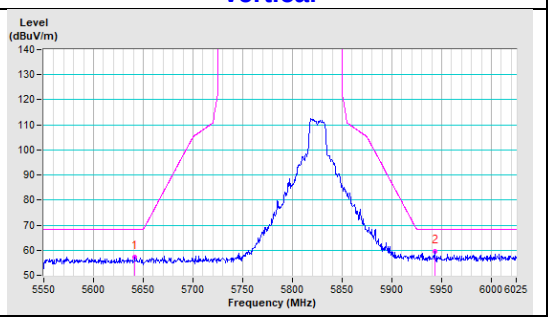


802.11a CH 165：5825 MHz

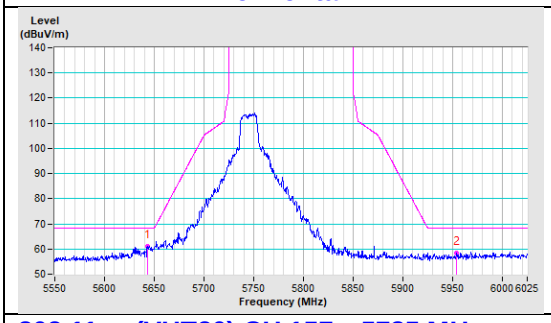
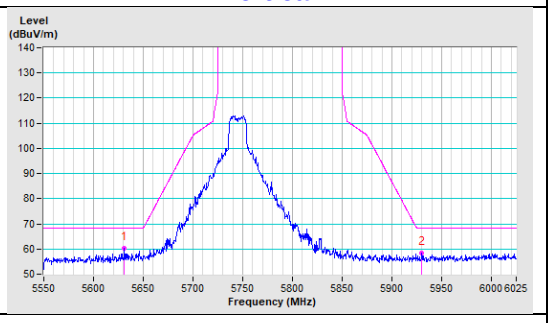
Horizontal



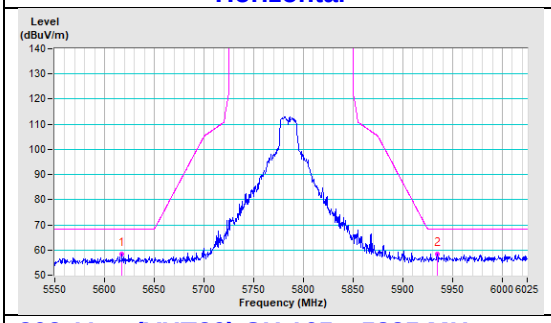
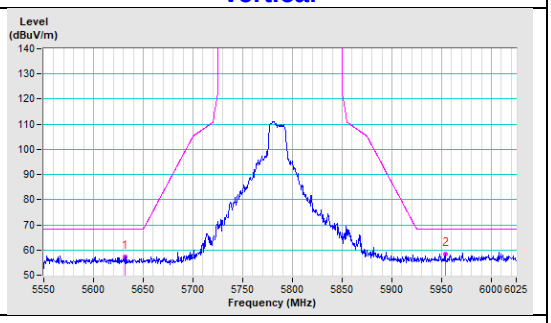
Vertical



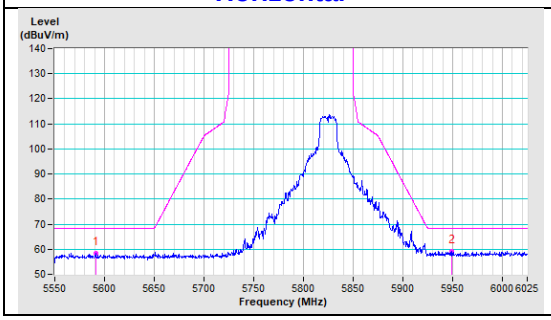
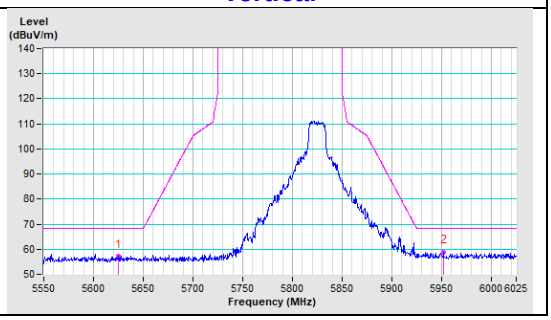
802.11ac (VHT20) CH 149：5745 MHz

Horizontal	Vertical
	

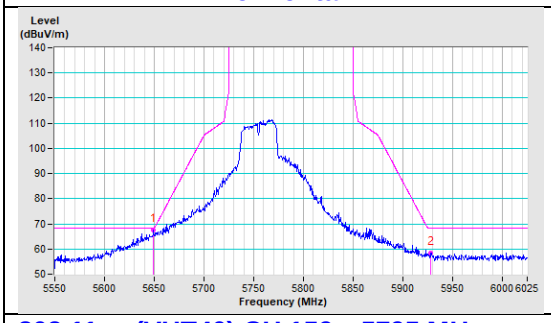
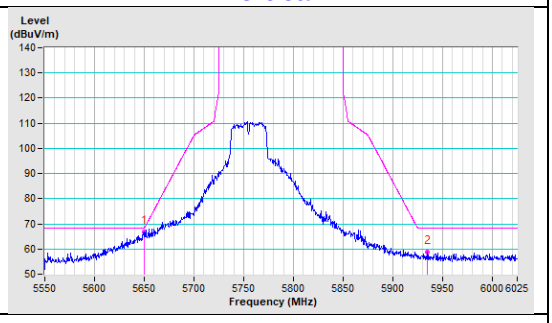
802.11ac (VHT20) CH 157：5785 MHz

Horizontal	Vertical
	

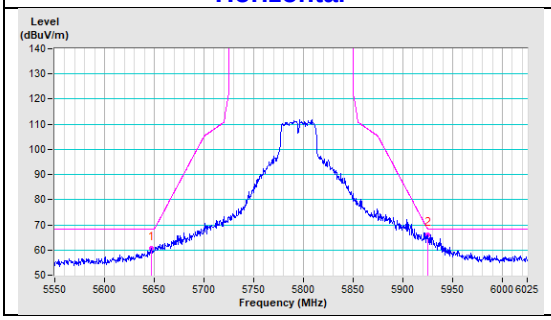
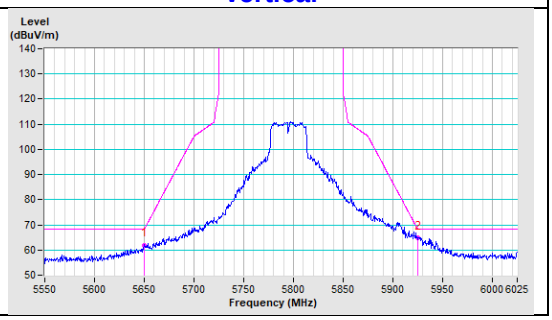
802.11ac (VHT20) CH 165：5825 MHz

Horizontal	Vertical
	

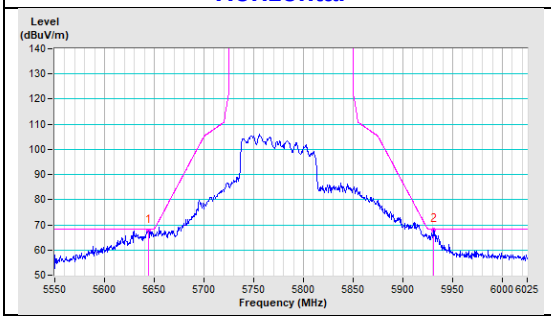
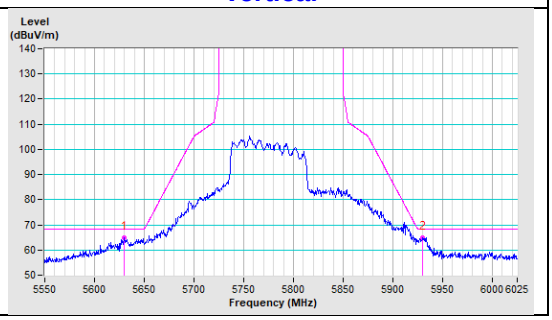
802.11ac (VHT40) CH 151：5755 MHz

Horizontal	Vertical
	

802.11ac (VHT40) CH 159：5795 MHz

Horizontal	Vertical
	

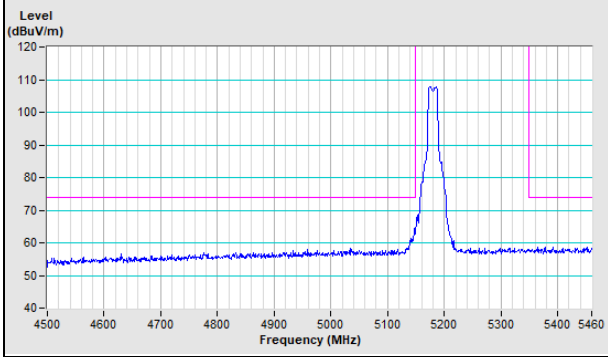
802.11ac (VHT80) CH 155：5775 MHz

Horizontal	Vertical
	

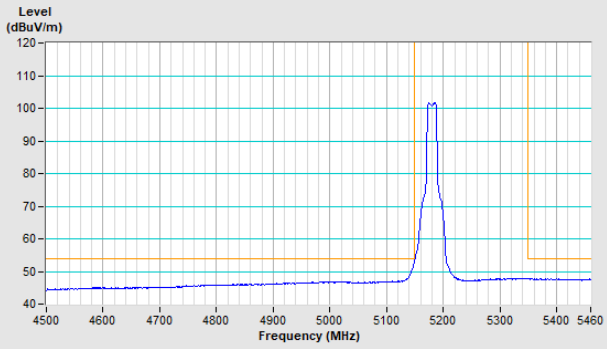
Annex B- Band-edge measurement (For U-NII-1 band)

802.11a Channel 36

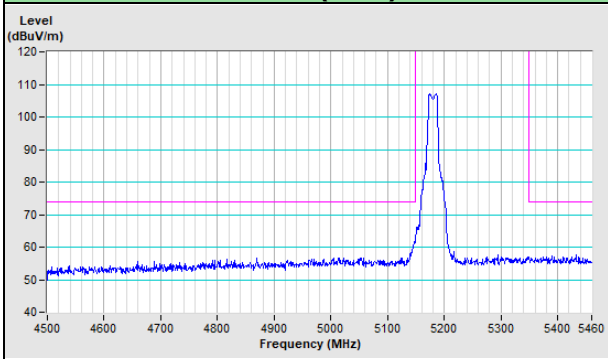
Horizontal (Peak)



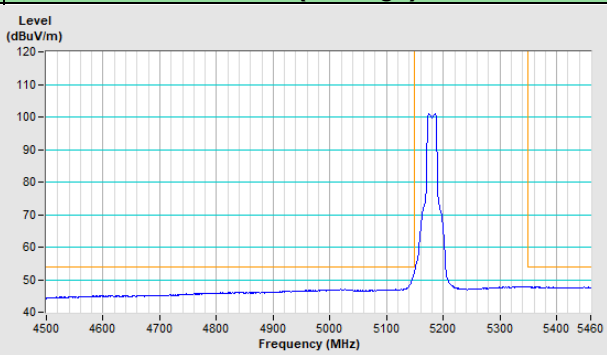
Horizontal (Average)



Vertical (Peak)

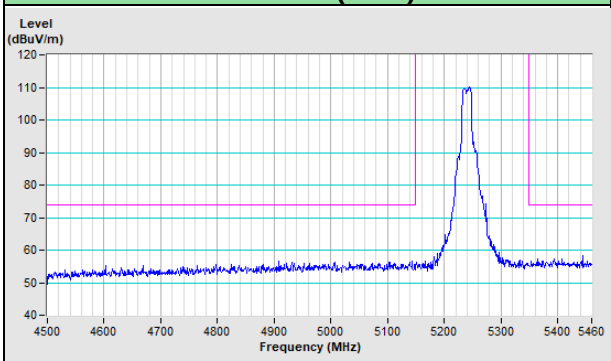


Vertical (Average)

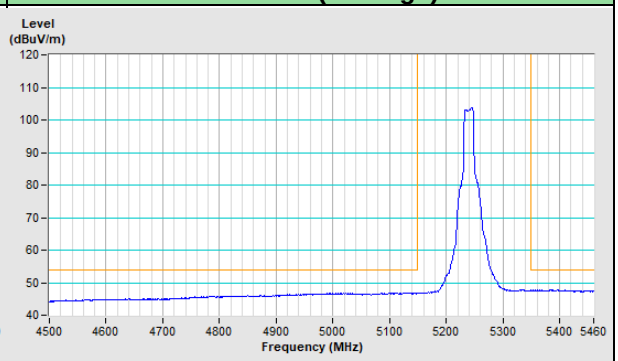


802.11a Channel 48

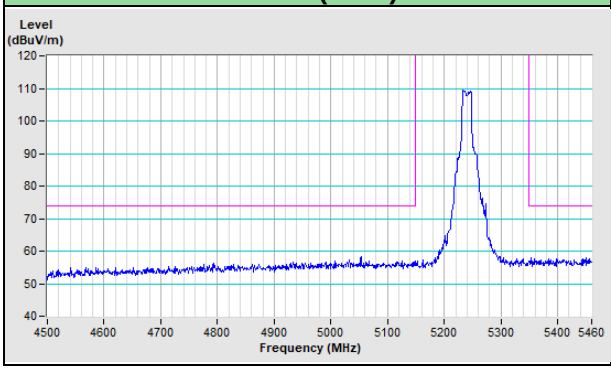
Horizontal (Peak)



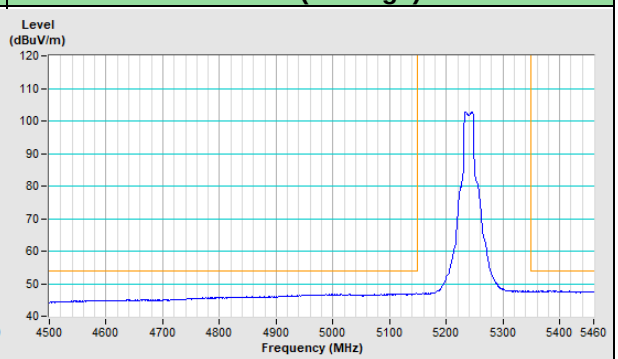
Horizontal (Average)



Vertical (Peak)

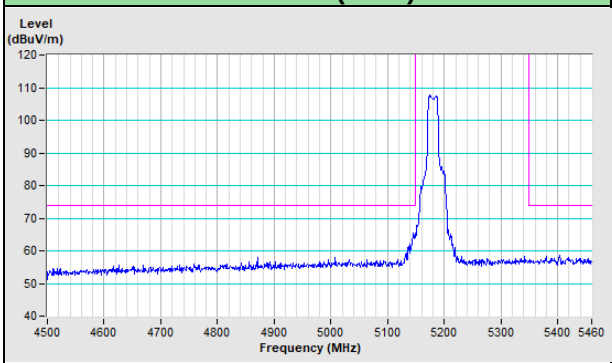


Vertical (Average)

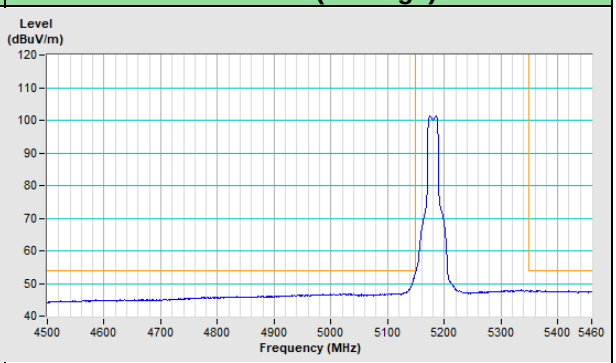


802.11ac (VHT20) Channel 36

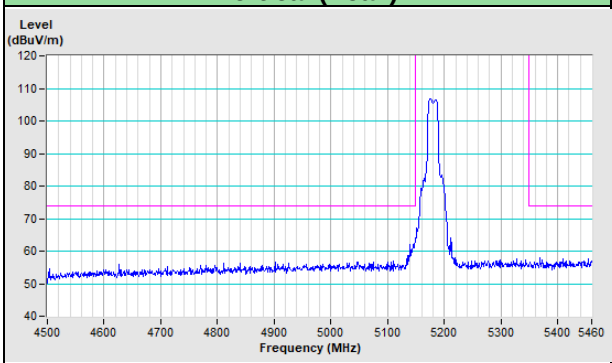
Horizontal (Peak)



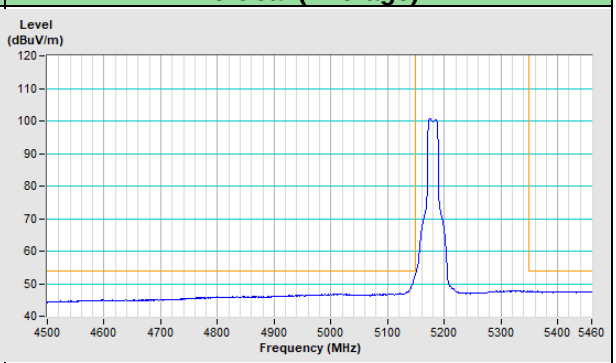
Horizontal (Average)



Vertical (Peak)

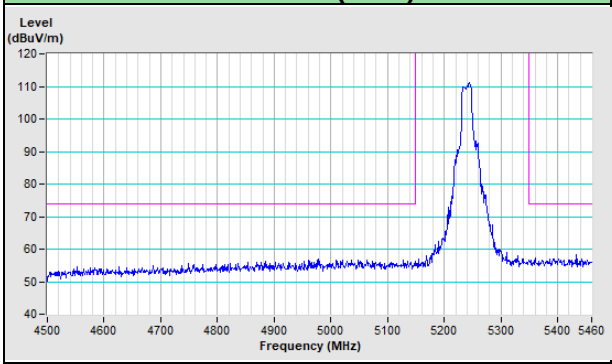


Vertical (Average)

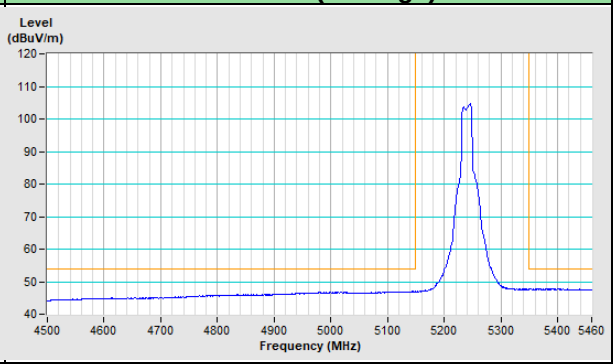


802.11ac (VHT20) Channel 48

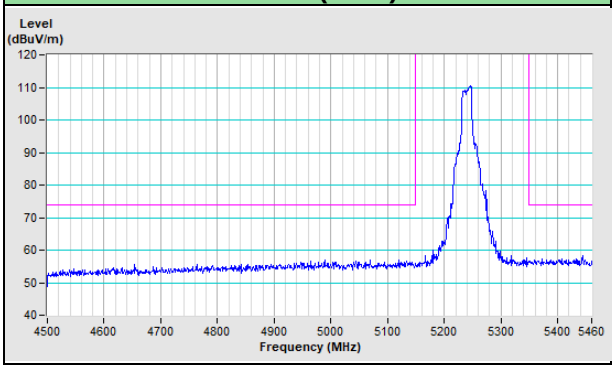
Horizontal (Peak)



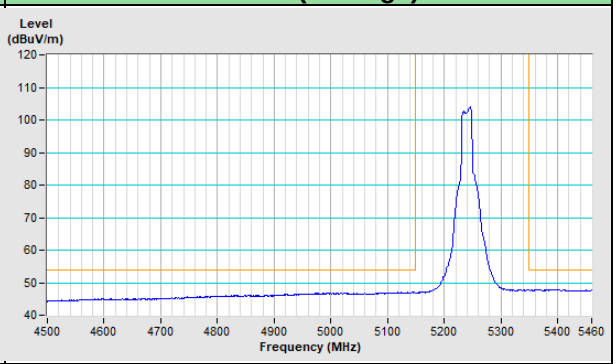
Horizontal (Average)



Vertical (Peak)

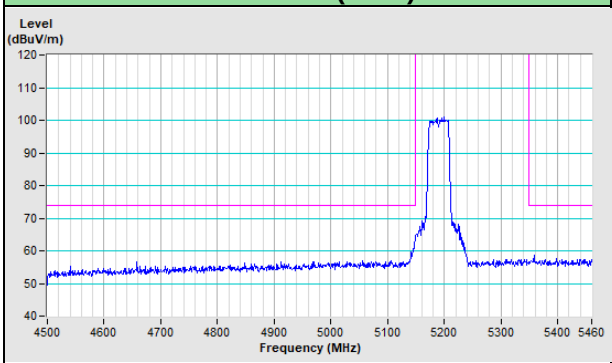


Vertical (Average)

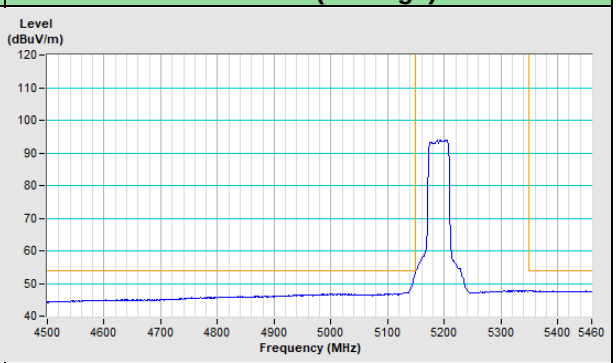


802.11ac (VHT40) Channel 38

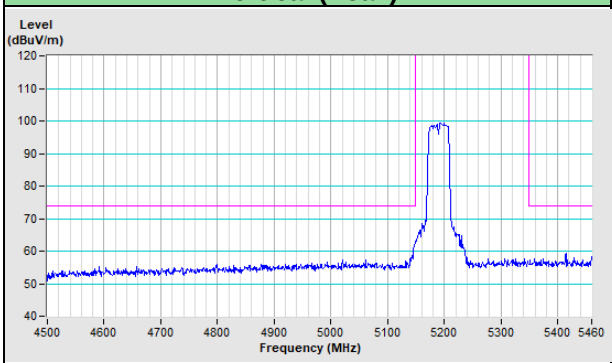
Horizontal (Peak)



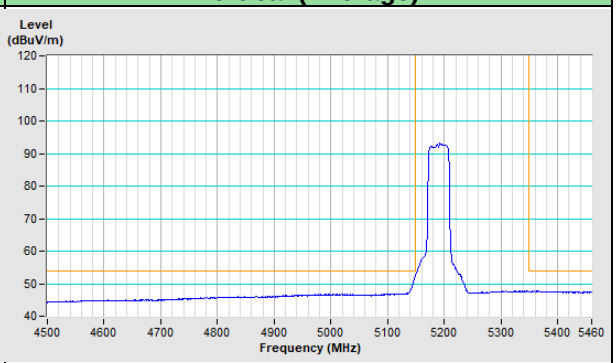
Horizontal (Average)



Vertical (Peak)

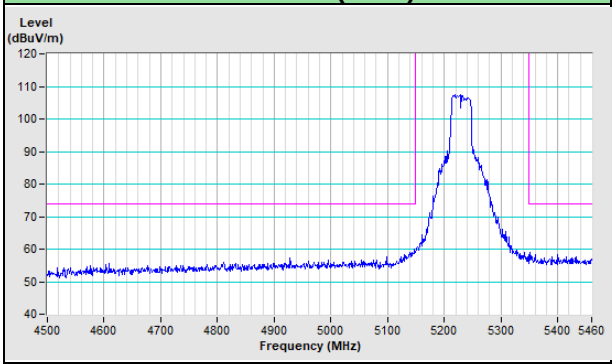


Vertical (Average)

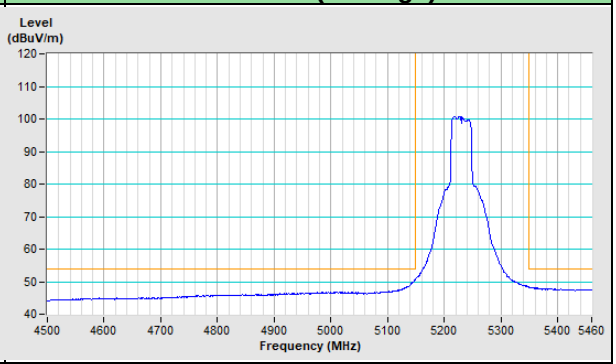


802.11ac (VHT40) Channel 46

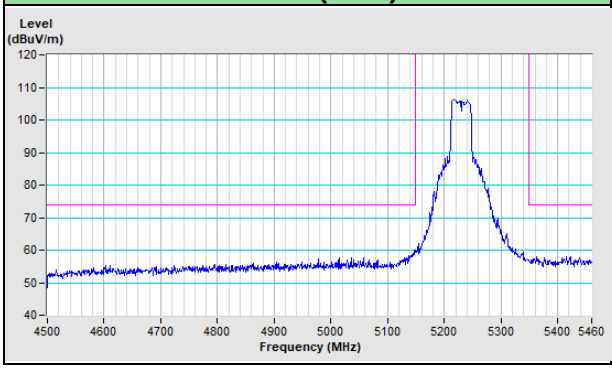
Horizontal (Peak)



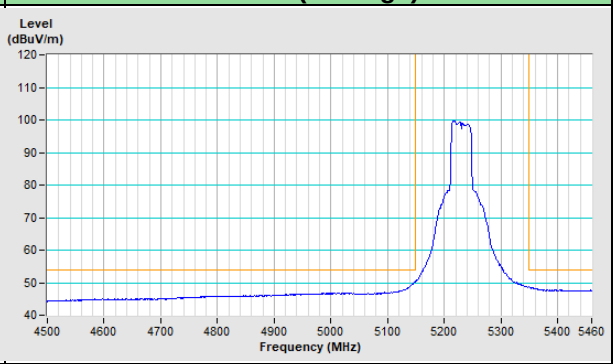
Horizontal (Average)

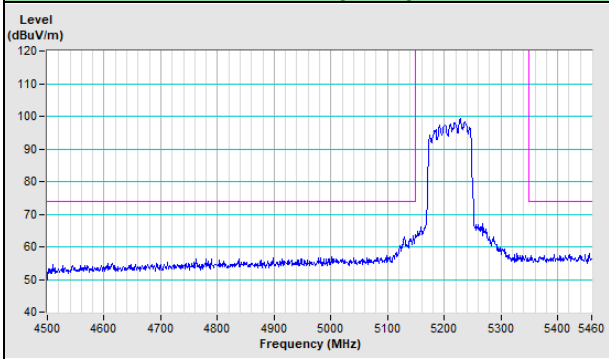
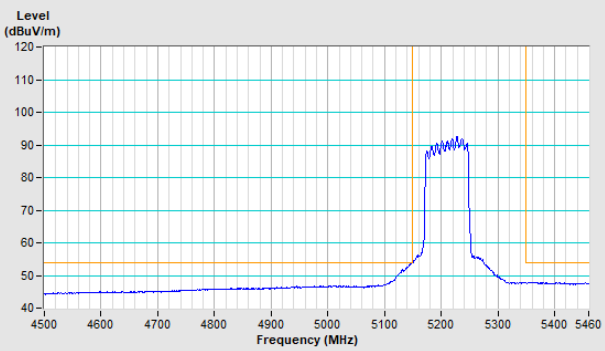
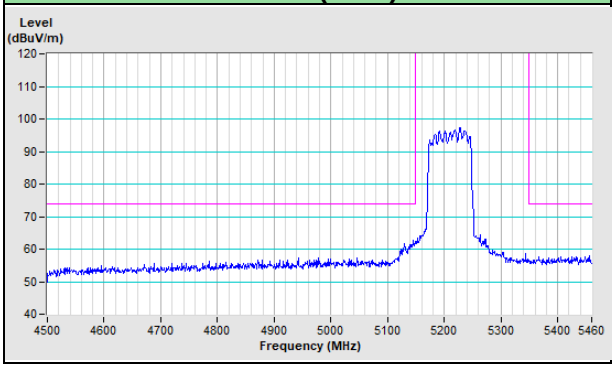
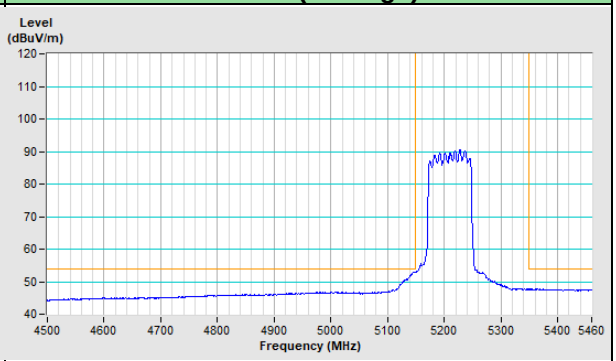


Vertical (Peak)



Vertical (Average)



802.11ac (VHT80) Channel 42	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

Appendix – Information of the Testing Laboratories

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

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

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