

FCC Test Report (5GHz WLAN)

Report No.: RFBHKO-WTW-P21091072-1

FCC ID: A94435689

Test Model: 435689

Received Date: 2021/9/29

Test Date: 2021/10/12 ~ 2021/11/19

Issued Date: 2021/12/20

Applicant: Bose Corporation

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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Release Control Record

Issue No.	Description	Date Issued
RFBHKO-WTW-P21091072-1	Original release	2021/12/20

1 Certificate of Conformity

Product: Video Soundbar

Brand: BOSE

Test Model: 435689

Sample Status: Engineering sample

Applicant: Bose Corporation

Test Date: 2021/10/12 ~ 2021/11/19

Standards: 47 CFR FCC Part 15, Subpart E (Section 15.407)
ANSI C63.10:2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

Prepared by :

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Date: 2021/12/20

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Approved by :

Jeremy Lin

Date: 2021/12/20

Jeremy Lin / Project Engineer

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(9)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -17.54dB at 4.49131MHz.
15.407(b)(1/2/3/4(i/ii)/9)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -0.70dB at 5460.00MHz.
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	Antenna connector is ipex not a standard connector.

Note:

1. For U-NII-3 band compliance with rule part 15.407(b)(4)(i), the OOB test plots were recorded in Annex A. Test Procedures refer to report 4.1.3.
2. 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.
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) ($\pm$)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.94 dB
Conducted Emissions	9kHz ~ 40GHz	2.63 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	2.38 dB
	30MHz ~ 1GHz	5.70 dB
Radiated Emissions above 1 GHz	Above 1GHz	5.21 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Video Soundbar
Brand	BOSE
Test Model	435689
Power Supply Rating	24Vdc from Adapter
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	OFDM
Transfer Rate	802.11a: up to 54Mbps 802.11n up to 150Mbps 802.11ac: up to 433.3Mbps
Operating Frequency	5180~5240MHz, 5260~5320MHz, 5500~5700MHz, 5745~5825MHz
Number of Channel	5180~5240MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 4 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1 5260~5320MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 4 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1 5500~5700MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 11 802.11n (HT40), 802.11ac (VHT40): 5 802.11ac (VHT80): 2 5745~5825MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 5 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1
Output Power	5180~5240MHz: 37.411mW 5260~5320MHz: 37.068mW 5500~5700MHz: 38.107mW 5745~5825MHz: 37.757mW
Antenna Type	PCB antenna with 4.93dBi gain
Antenna Connector	ipex
Accessory Device	Adapter, Remote controller, USB Type C to A Adapter
Cable Supplied	Shielded USB Type C to A cable (5.0m)

Note:

1. WLAN 2.4GHz & WLAN 5GHz & Bluetooth technologies cannot transmit at same time.

2. The EUT provides 1 completed transmitter and 1 receiver.

Modulation Mode	TX Function	RX Function
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

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

3. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

4. The EUT uses following adapter.

Brand	BOSE
Model	DT24V-1.8C-DC
Input Power	100-240Vac, 50/60Hz, 1.5A MAX
Output Power	24Vdc, 1.875A, 45W
Power Line	Non-shielded AC 2-Pin cable (1.8m), Non-shielded DC cable (1.5m)

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

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	5210MHz

5260~5320MHz:

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

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

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

Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
58	5290MHz

5500~5700MHz:

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

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

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

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

2 channels are provided for 802.11ac (VHT80):

Channel	Frequency	Channel	Frequency
106	5530 MHz	122	5610MHz

5745~5825MHz:

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

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

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

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
155	5775MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To				Description
	RE $\geq$ 1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where **RE $\geq$ 1G**: Radiated Emission above 1GHz & Bandedge Measurement

RE<1G: Radiated Emission below 1GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

Radiated Emission Test (Above 1GHz):

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

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

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0
	802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	MCS0
	802.11ac (VHT40)		38 to 46	38, 46	OFDM	MCS0
	802.11ac (VHT80)		42	42	OFDM	MCS0
-	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
	802.11ac (VHT20)		52 to 64	52, 60, 64	OFDM	MCS0
	802.11ac (VHT40)		54 to 62	54, 62	OFDM	MCS0
	802.11ac (VHT80)		58	58	OFDM	MCS0
-	802.11a	5500-5700	100 to 140	100, 116, 132, 140	OFDM	6.0
	802.11ac (VHT20)		100 to 140	100, 116, 132, 140	OFDM	MCS0
	802.11ac (VHT40)		102 to 134	102, 110, 134,	OFDM	MCS0
	802.11ac (VHT80)		106 to 122	106, 122	OFDM	MCS0
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0
	802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	MCS0
	802.11ac (VHT40)		151 to 159	151, 159	OFDM	MCS0
	802.11ac (VHT80)		155	155	OFDM	MCS0

Radiated Emission Test (Below 1GHz):

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

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

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
-	802.11ac (VHT20)	5180-5240	36 to 48	140	OFDM	MCS0
-	802.11ac (VHT20)	5260-5320	52 to 64		OFDM	MCS0
-	802.11ac (VHT20)	5500-5700	100 to 140		OFDM	MCS0
-	802.11ac (VHT20)	5745-5825	149 to 165		OFDM	MCS0

Power Line Conducted Emission Test:

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

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
-	802.11ac (VHT20)	5180-5240	36 to 48	140	OFDM	MCS0
-	802.11ac (VHT20)	5260-5320	52 to 64		OFDM	MCS0
-	802.11ac (VHT20)	5500-5700	100 to 140		OFDM	MCS0
-	802.11ac (VHT20)	5745-5825	149 to 165		OFDM	MCS0

Antenna Port Conducted Measurement:

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

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0
	802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	MCS0
	802.11ac (VHT40)		38 to 46	38, 46	OFDM	MCS0
	802.11ac (VHT80)		42	42	OFDM	MCS0
-	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
	802.11ac (VHT20)		52 to 64	52, 60, 64	OFDM	MCS0
	802.11ac (VHT40)		54 to 62	54, 62	OFDM	MCS0
	802.11ac (VHT80)		58	58	OFDM	MCS0
-	802.11a	5500-5700	100 to 140	100, 116, 132, 140	OFDM	6.0
	802.11ac (VHT20)		100 to 140	100, 116, 132, 140	OFDM	MCS0
	802.11ac (VHT40)		102 to 134	102, 110, 134,	OFDM	MCS0
	802.11ac (VHT80)		106 to 122	106, 122	OFDM	MCS0
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0
	802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	MCS0
	802.11ac (VHT40)		151 to 159	151, 159	OFDM	MCS0
	802.11ac (VHT80)		155	155	OFDM	MCS0

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested By
RE≥1G	26deg. C, 60%RH	120Vac, 60Hz	Jed Wu
RE<1G	26deg. C, 60%RH	120Vac, 60Hz	Jed Wu
PLC	25deg. C, 75%RH	120Vac, 60Hz	Pirar Hsieh
APCM	25deg. C, 76%RH	120Vac, 60Hz	Dalen Dai

3.3 Duty Cycle of Test Signal

If duty cycle of test signal is $\geq 98\%$, duty factor is not required.

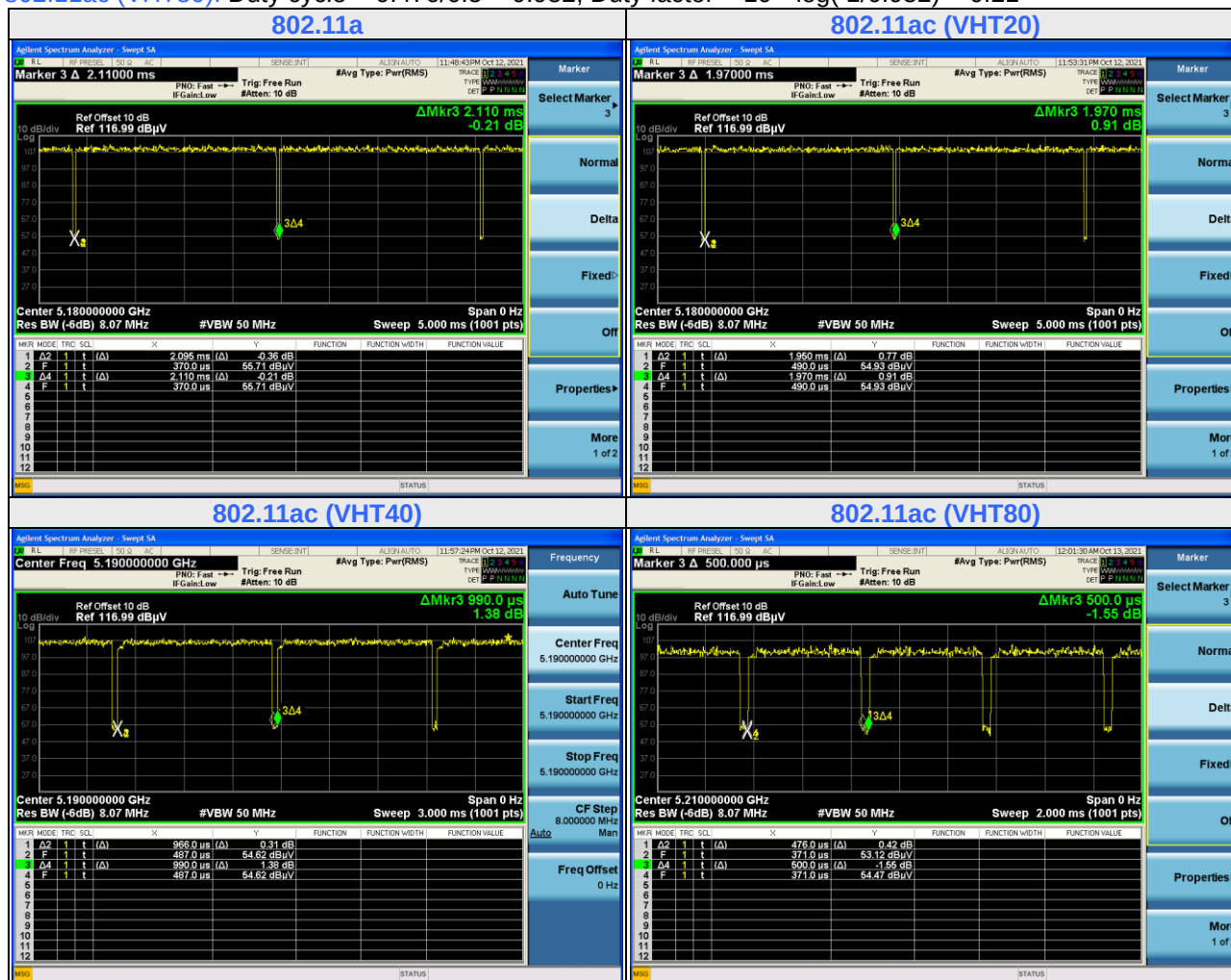
If duty cycle of test signal is $< 98\%$, duty factor shall be considered.

802.11a: Duty cycle = $2.095/2.11 = 0.993$

802.11ac (VHT20): Duty cycle = $1.95/1.97 = 0.99$

802.11ac (VHT40): Duty cycle = $0.966/0.99 = 0.976$, Duty factor = $10 * \log(1/0.976) = 0.11$

802.11ac (VHT80): Duty cycle = $0.476/0.5 = 0.952$, Duty factor = $10 * \log(1/0.952) = 0.21$



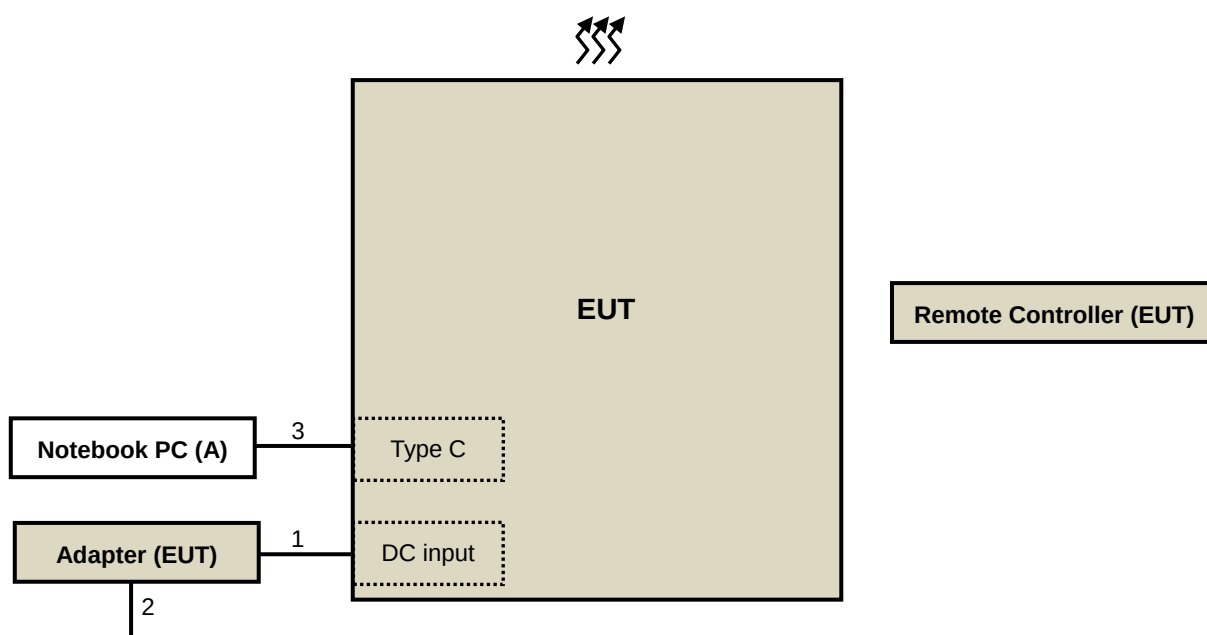
3.4 Description of Support Units

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.	Notebook PC	Lenovo	IdeaPad5 15ITL05	NA	NA	Provided by Lab

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC cable	1	1.5	N	0	Supplied by applicant
2.	AC cable	1	1.8	N	0	Supplied by applicant
3.	USB Type C to A cable	1	5	Y	0	Supplied by applicant

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards and References

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

Test standard:

FCC Part 15, Subpart E (15.407)

ANSI C63.10:2013

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

References Test Guidance:

KDB 789033 D02 General UNII Test 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 (dBuV/m)	AV: 54 (dBuV/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(dBuV/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(dBuV/m) ^{*1} PK: 105.2 (dBuV/m) ^{*2} PK: 110.8(dBuV/m) ^{*3} PK: 122.2 (dBuV/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:

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

4.1.2 Test Instruments

Description & Manufacturer	Model no.	Serial No.	Calibrated Date	Calibrated Until
Test Receiver Agilent	N9038A	MY51210129	2021/3/12	2022/3/11
Software BVADT	ADT_Radiated_V8.7.08	NA	NA	NA
Software BVADT	ADT_RF Test Software V6.6.5.4	NA	NA	NA
Auto Control System(Antenna Tower, Table, Controller) ADT	SC100+AT100+TT100	0306	NA	NA
Pre_Amplifier EMCi	EMC001340	980269	2021/6/29	2022/6/28
LOOP ANTENNA EMCi	LPA600	270	2021/9/2	2023/9/1
RF Coaxial Cable Pacific	8D-FB	Cable-CH6-02	2021/7/13	2022/7/12
Pre_Amplifier HP	8447D	2432A03504	2021/2/18	2022/2/17
Bi-log Broadband Antenna Schwarzbeck	VULB9168	139	2020/11/6	2021/11/5
Attenuator Mini-Circuits	UNAT-5+	PAD-CH6-01	2021/7/13	2022/7/12
RF Coaxial Cable Pacific	8D-FB	Cable-CH6-02	2021/7/13	2022/7/12
Antenna(Horn) EMCO	3115	00028257	2020/11/22	2021/11/21
Test Receiver Agilent	N9038A	MY51210129	2021/3/12	2022/3/11
Pre-amplifier HP	8449B	3008A01201	2021/2/19	2022/2/18
RF Coaxial Cable HUBER SUHNER	SF-102	Cable-CH6-01	2021/7/8	2022/7/7
Highpass filter Wainwright Instruments	WHK 3.1/18G-10SS	SN 8	2021/5/28	2022/5/27
Fix tool for Boresight	BAF-01	5	NA	NA
Pre_Amplifier MITEQ	AMF-6F-260400-33-8P	892164	2021/2/19	2022/2/18
Antenna(Horn) Schwarzbeck	BBHA-9170	BBHA9170190	2020/11/22	2021/11/21
Spectrum Analyzer R&S	FSV40	101544	2021/5/24	2022/5/23
RF Coaxial Cable WOKEN	WC01	Cable-CH10-03	2021/7/8	2022/7/7
RF Coaxial Cable Rosnol	K1K50-UP0279-K1K50-3000	Cable-CH10(3m)-04	2021/7/8	2022/7/7
Highpass filter SUHNER	11SH10-7000/T18000-O/OP	SN 4	2021/5/28	2022/5/27

- NOTE:** 1. The calibration interval of the above test instruments is 12/24 months. And the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in LK - 966 chamber 1.
4. Tested Date: 2021/10/13 ~ 2021/10/28

4.1.3 Test Procedures

For Radiated emission below 30MHz

- 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.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- 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.
- The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

Note:

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

For Radiated emission above 30MHz

- 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.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 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.
- 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.
- 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.
- The test-receiver system was set to peak and average detect 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:

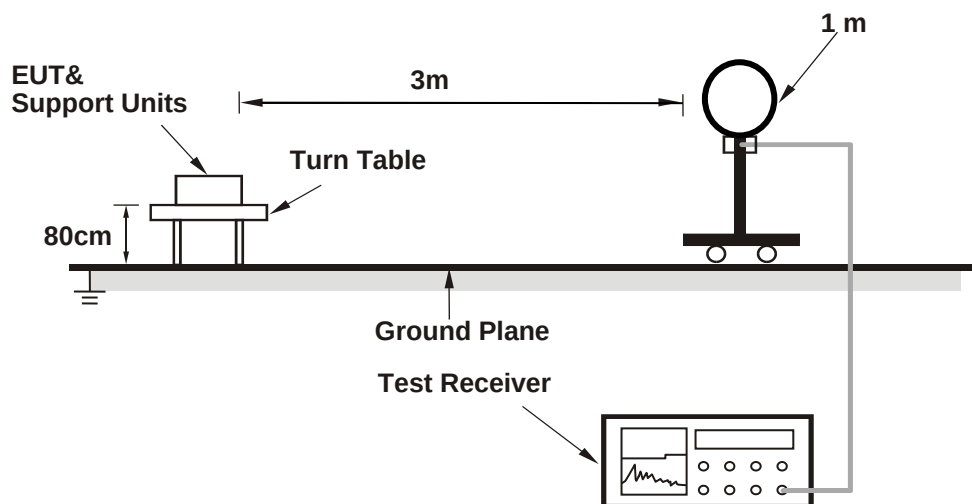
- The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
- The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
- 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.
(802.11a: RBW = 1MHz, VBW = 10Hz; 802.11ac (VHT20): RBW = 1MHz, VBW = 10Hz;
802.11ac (VHT40): RBW = 1MHz, VBW = 1.1kHz; 802.11ac (VHT80): RBW = 1MHz, VBW = 2.2kHz)
- All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

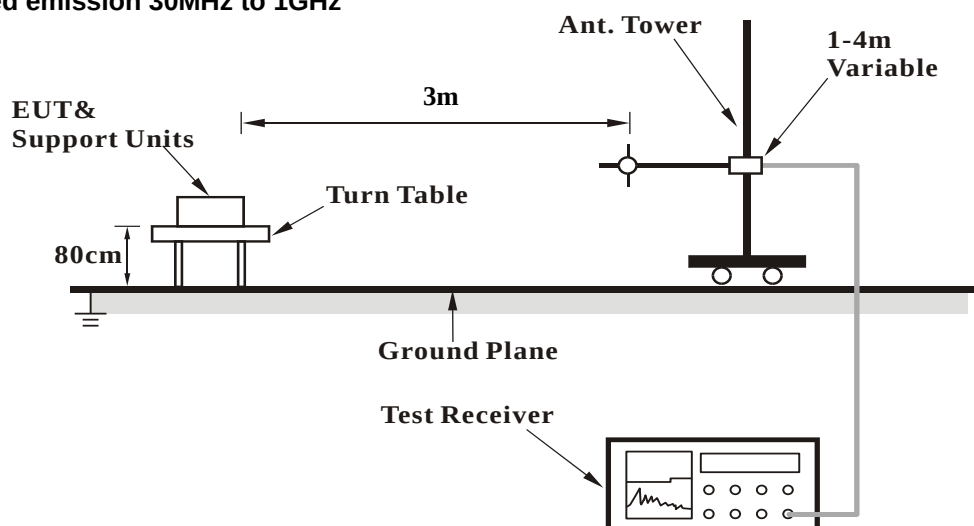
No deviation.

4.1.5 Test Setup

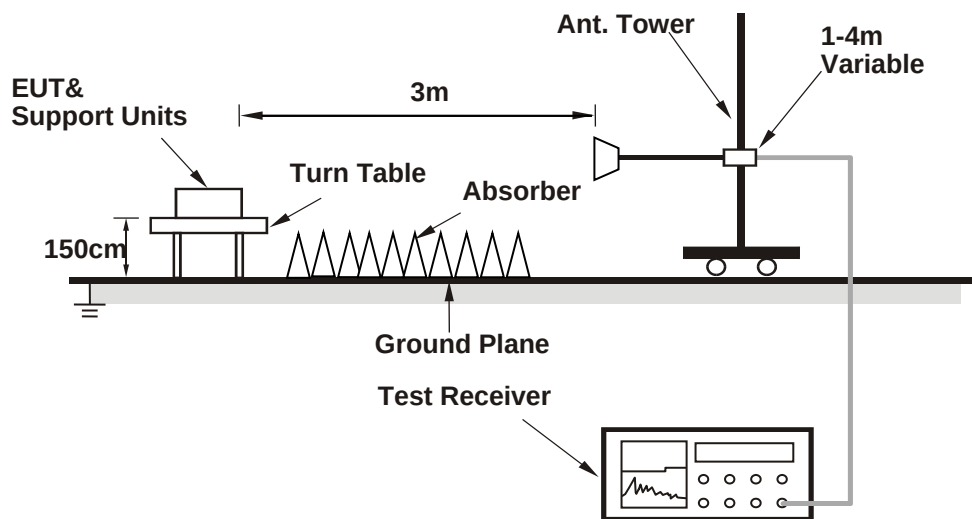
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Conditions

- Placed the EUT on the testing table.
- Notebook sent messages to EUT and the EUT played it out
- The necessary accessories enable the system in full functions.

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	58.92 PK	74.00	-15.08	2.82 H	107	52.11	6.81
2	5150.00	48.25 AV	54.00	-5.75	2.82 H	107	41.44	6.81
3	*5180.00	108.44 PK			2.82 H	107	101.41	7.03
4	*5180.00	100.94 AV			2.82 H	107	93.91	7.03
5	#10360.00	53.72 PK	68.20	-14.48	1.87 H	254	39.16	14.56
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	58.61 PK	74.00	-15.39	2.22 V	115	51.80	6.81
2	5150.00	47.58 AV	54.00	-6.42	2.22 V	115	40.77	6.81
3	*5180.00	106.76 PK			2.22 V	115	99.73	7.03
4	*5180.00	99.13 AV			2.22 V	115	92.10	7.03
5	#10360.00	53.23 PK	68.20	-14.97	2.05 V	166	38.67	14.56

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	108.00 PK			2.80 H	110	100.83	7.17
2	*5200.00	100.53 AV			2.80 H	110	93.36	7.17
3	#10400.00	53.48 PK	68.20	-14.72	1.83 H	250	38.86	14.62
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	106.99 PK			2.32 V	118	99.82	7.17
2	*5200.00	99.42 AV			2.32 V	118	92.25	7.17
3	#10400.00	53.04 PK	68.20	-15.16	2.11 V	158	38.42	14.62

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	107.27 PK			1.49 H	280	99.93	7.34
2	*5240.00	99.27 AV			1.49 H	280	91.93	7.34
3	5350.00	58.94 PK	74.00	-15.06	1.49 H	280	51.10	7.84
4	5350.00	47.52 AV	54.00	-6.48	1.49 H	280	39.68	7.84
5	#10480.00	54.02 PK	68.20	-14.18	1.89 H	261	38.99	15.03
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	106.85 PK			1.90 V	115	99.51	7.34
2	*5240.00	98.42 AV			1.90 V	115	91.08	7.34
3	5350.00	58.51 PK	74.00	-15.49	1.90 V	115	50.67	7.84
4	5350.00	46.48 AV	54.00	-7.52	1.90 V	115	38.64	7.84
5	#10480.00	53.70 PK	68.20	-14.50	2.25 V	162	38.67	15.03

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)

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	58.99 PK	74.00	-15.01	1.15 H	280	52.18	6.81
2	5150.00	47.57 AV	54.00	-6.43	1.15 H	280	40.76	6.81
3	*5260.00	106.95 PK			1.15 H	280	99.50	7.45
4	*5260.00	99.71 AV			1.15 H	280	92.26	7.45
5	#10520.00	54.32 PK	68.20	-13.88	1.79 H	242	39.16	15.16
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	57.63 PK	74.00	-16.37	2.28 V	119	50.82	6.81
2	5150.00	46.68 AV	54.00	-7.32	2.28 V	119	39.87	6.81
3	*5260.00	105.94 PK			2.28 V	119	98.49	7.45
4	*5260.00	98.66 AV			2.28 V	119	91.21	7.45
5	#10520.00	53.18 PK	68.20	-15.02	1.66 V	238	38.02	15.16

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)

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	106.75 PK			1.12 H	280	99.01	7.74
2	*5300.00	99.64 AV			1.12 H	280	91.90	7.74
3	10600.00	53.76 PK	74.00	-20.24	1.76 H	239	38.45	15.31
4	10600.00	41.83 AV	54.00	-12.17	1.76 H	239	26.52	15.31
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	104.92 PK			1.56 V	20	97.18	7.74
2	*5300.00	97.68 AV			1.56 V	20	89.94	7.74
3	10600.00	52.56 PK	74.00	-21.44	1.44 V	235	37.25	15.31
4	10600.00	40.87 AV	54.00	-13.13	1.44 V	235	25.56	15.31

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)

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	105.80 PK			1.51 H	280	98.02	7.78
2	*5320.00	98.71 AV			1.51 H	280	90.93	7.78
3	5350.00	58.69 PK	74.00	-15.31	1.51 H	280	50.85	7.84
4	5350.00	47.90 AV	54.00	-6.10	1.51 H	280	40.06	7.84
5	10640.00	54.16 PK	74.00	-19.84	1.83 H	242	38.75	15.41
6	10640.00	41.89 AV	54.00	-12.11	1.83 H	242	26.48	15.41
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	104.93 PK			1.40 V	19	97.15	7.78
2	*5320.00	97.92 AV			1.40 V	19	90.14	7.78
3	5350.00	57.65 PK	74.00	-16.35	1.40 V	19	49.81	7.84
4	5350.00	46.75 AV	54.00	-7.25	1.40 V	19	38.91	7.84
5	10640.00	52.74 PK	74.00	-21.26	1.55 V	243	37.33	15.41
6	10640.00	40.93 AV	54.00	-13.07	1.55 V	243	25.52	15.41

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)

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	59.91 PK	74.00	-14.09	3.01 H	148	51.96	7.95
2	5460.00	47.94 AV	54.00	-6.06	3.01 H	148	39.99	7.95
3	#5470.00	61.07 PK	68.20	-7.13	3.01 H	148	53.10	7.97
4	*5500.00	106.95 PK			3.01 H	148	98.94	8.01
5	*5500.00	99.65 AV			3.01 H	148	91.64	8.01
6	11000.00	53.62 PK	74.00	-20.38	1.86 H	263	37.73	15.89
7	11000.00	41.45 AV	54.00	-12.55	1.86 H	263	25.56	15.89
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	59.32 PK	74.00	-14.68	1.76 V	120	51.37	7.95
2	5460.00	47.75 AV	54.00	-6.25	1.76 V	120	39.80	7.95
3	#5470.00	60.14 PK	68.20	-8.06	1.76 V	120	52.17	7.97
4	*5500.00	105.25 PK			1.76 V	120	97.24	8.01
5	*5500.00	97.66 AV			1.76 V	120	89.65	8.01
6	11000.00	53.34 PK	74.00	-20.66	1.23 V	227	37.45	15.89
7	11000.00	41.24 AV	54.00	-12.76	1.23 V	227	25.35	15.89

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)

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	104.12 PK			1.60 H	283	96.58	7.54
2	*5580.00	96.65 AV			1.60 H	283	89.11	7.54
3	11160.00	53.91 PK	74.00	-20.09	1.88 H	265	37.86	16.05
4	11160.00	41.66 AV	54.00	-12.34	1.88 H	265	25.61	16.05
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	102.28 PK			1.37 V	118	94.74	7.54
2	*5580.00	94.79 AV			1.37 V	118	87.25	7.54
3	11160.00	53.39 PK	74.00	-20.61	1.25 V	223	37.34	16.05
4	11160.00	41.33 AV	54.00	-12.67	1.25 V	223	25.28	16.05

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 132 : 5660 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	*5660.00	107.25 PK			2.98 H	70	100.03	7.22
2	*5660.00	99.59 AV			2.98 H	70	92.37	7.22
3	11320.00	54.45 PK	74.00	-19.55	1.83 H	260	37.89	16.56
4	11320.00	42.23 AV	54.00	-11.77	1.83 H	260	25.67	16.56
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	*5660.00	106.44 PK			1.42 V	124	99.22	7.22
2	*5660.00	98.30 AV			1.42 V	124	91.08	7.22
3	11320.00	53.85 PK	74.00	-20.15	1.24 V	220	37.29	16.56
4	11320.00	41.73 AV	54.00	-12.27	1.24 V	220	25.17	16.56

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 140 : 5700 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	*5700.00	103.91 PK			1.49 H	287	96.78	7.13
2	*5700.00	96.48 AV			1.49 H	287	89.35	7.13
3	#5725.00	59.39 PK	68.20	-8.81	1.49 H	287	52.22	7.17
4	11400.00	54.60 PK	74.00	-19.40	1.89 H	269	37.95	16.65
5	11400.00	42.49 AV	54.00	-11.51	1.89 H	269	25.84	16.65
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	102.48 PK			1.16 V	126	95.35	7.13
2	*5700.00	94.73 AV			1.16 V	126	87.60	7.13
3	#5725.00	58.74 PK	68.20	-9.46	1.16 V	126	51.57	7.17
4	11400.00	53.90 PK	74.00	-20.10	1.82 V	262	37.25	16.65
5	11400.00	41.74 AV	54.00	-12.26	1.82 V	262	25.09	16.65

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	#5639.77	57.99 PK	68.20	-10.21	3.46 H	77	50.71	7.28
2	*5745.00	107.67 PK			3.46 H	77	100.46	7.21
3	*5745.00	99.95 AV			3.46 H	77	92.74	7.21
4	#5997.93	58.83 PK	68.20	-9.37	3.46 H	77	51.25	7.58
5	11490.00	55.73 PK	74.00	-18.27	1.87 H	124	38.97	16.76
6	11490.00	45.25 AV	54.00	-8.75	1.87 H	124	28.49	16.76
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	#5649.75	58.21 PK	68.20	-9.99	1.57 V	288	50.96	7.25
2	*5745.00	104.18 PK			1.57 V	288	96.97	7.21
3	*5745.00	96.62 AV			1.57 V	288	89.41	7.21
4	#6007.43	58.22 PK	68.20	-9.98	1.57 V	288	50.64	7.58
5	11490.00	55.14 PK	74.00	-18.86	1.13 V	196	38.38	16.76
6	11490.00	45.15 AV	54.00	-8.85	1.13 V	196	28.39	16.76

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	#5630.27	57.81 PK	68.20	-10.39	3.40 H	69	50.50	7.31
2	*5785.00	107.37 PK			3.40 H	69	100.09	7.28
3	*5785.00	99.82 AV			3.40 H	69	92.54	7.28
4	#6014.07	58.81 PK	68.20	-9.39	3.40 H	69	51.22	7.59
5	11570.00	56.11 PK	74.00	-17.89	1.83 H	122	39.12	16.99
6	11570.00	45.75 AV	54.00	-8.25	1.83 H	122	28.76	16.99
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	#5631.70	57.60 PK	68.20	-10.60	1.85 V	283	50.30	7.30
2	*5785.00	105.88 PK			1.85 V	283	98.60	7.28
3	*5785.00	98.46 AV			1.85 V	283	91.18	7.28
4	#6021.68	59.66 PK	68.20	-8.54	1.85 V	283	52.07	7.59
5	11570.00	55.63 PK	74.00	-18.37	1.26 V	199	38.64	16.99
6	11570.00	45.56 AV	54.00	-8.44	1.26 V	199	28.57	16.99

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	#5554.27	58.56 PK	68.20	-9.64	3.11 H	70	50.87	7.69
2	*5825.00	107.94 PK			3.11 H	70	100.66	7.28
3	*5825.00	100.63 AV			3.11 H	70	93.35	7.28
4	#5957.55	58.64 PK	68.20	-9.56	3.11 H	70	51.19	7.45
5	11650.00	56.48 PK	74.00	-17.52	1.88 H	119	39.24	17.24
6	11650.00	46.20 AV	54.00	-7.80	1.88 H	119	28.96	17.24
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	#5588.00	57.63 PK	68.20	-10.57	1.98 V	286	50.15	7.48
2	*5825.00	105.06 PK			1.98 V	286	97.78	7.28
3	*5825.00	97.67 AV			1.98 V	286	90.39	7.28
4	#6007.43	59.10 PK	68.20	-9.10	1.98 V	286	51.52	7.58
5	11650.00	56.13 PK	74.00	-17.87	1.24 V	185	38.89	17.24
6	11650.00	45.99 AV	54.00	-8.01	1.24 V	185	28.75	17.24

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	60.58 PK	74.00	-13.42	2.82 H	109	53.77	6.81
2	5150.00	48.19 AV	54.00	-5.81	2.82 H	109	41.38	6.81
3	*5180.00	109.78 PK			2.82 H	109	102.75	7.03
4	*5180.00	100.69 AV			2.82 H	109	93.66	7.03
5	#10480.00	54.27 PK	68.20	-13.93	1.93 H	263	39.24	15.03
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	59.10 PK	74.00	-14.90	1.76 V	115	52.29	6.81
2	5150.00	47.63 AV	54.00	-6.37	1.76 V	115	40.82	6.81
3	*5180.00	107.73 PK			1.76 V	115	100.70	7.03
4	*5180.00	98.86 AV			1.76 V	115	91.83	7.03
5	#10360.00	52.78 PK	68.20	-15.42	2.36 V	174	38.22	14.56

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	109.43 PK			2.45 H	110	102.26	7.17
2	*5200.00	100.05 AV			2.45 H	110	92.88	7.17
3	#10400.00	54.06 PK	68.20	-14.14	1.85 H	247	39.44	14.62
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	107.47 PK			1.83 V	113	100.30	7.17
2	*5200.00	99.03 AV			1.83 V	113	91.86	7.17
3	#10400.00	53.38 PK	68.20	-14.82	2.41 V	170	38.76	14.62

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	107.61 PK			1.19 H	279	100.27	7.34
2	*5240.00	98.51 AV			1.19 H	279	91.17	7.34
3	5350.00	59.90 PK	74.00	-14.10	1.19 H	279	52.06	7.84
4	5350.00	48.52 AV	54.00	-5.48	1.19 H	279	40.68	7.84
5	#10480.00	54.51 PK	68.20	-13.69	1.79 H	254	39.48	15.03
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	107.30 PK			1.90 V	114	99.96	7.34
2	*5240.00	99.07 AV			1.90 V	114	91.73	7.34
3	5350.00	57.94 PK	74.00	-16.06	1.90 V	114	50.10	7.84
4	5350.00	47.11 AV	54.00	-6.89	1.90 V	114	39.27	7.84
5	#10480.00	53.89 PK	68.20	-14.31	2.39 V	178	38.86	15.03

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)

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	58.89 PK	74.00	-15.11	1.21 H	225	52.08	6.81
2	5150.00	46.83 AV	54.00	-7.17	1.21 H	225	40.02	6.81
3	*5260.00	107.71 PK			1.21 H	225	100.26	7.45
4	*5260.00	98.66 AV			1.21 H	225	91.21	7.45
5	#10520.00	53.01 PK	68.20	-15.19	1.81 H	233	37.85	15.16
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	57.95 PK	74.00	-16.05	2.69 V	113	51.14	6.81
2	5150.00	46.75 AV	54.00	-7.25	2.69 V	113	39.94	6.81
3	*5260.00	106.33 PK			2.69 V	113	98.88	7.45
4	*5260.00	98.20 AV			2.69 V	113	90.75	7.45
5	#10520.00	52.49 PK	68.20	-15.71	2.06 V	159	37.33	15.16

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)

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	111.24 PK			2.69 H	139	103.50	7.74
2	*5300.00	102.16 AV			2.69 H	139	94.42	7.74
3	10600.00	53.27 PK	74.00	-20.73	1.67 H	233	37.96	15.31
4	10600.00	41.64 AV	54.00	-12.36	1.67 H	233	26.33	15.31
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	107.66 PK			1.94 V	118	99.92	7.74
2	*5300.00	99.36 AV			1.94 V	118	91.62	7.74
3	10600.00	52.65 PK	74.00	-21.35	1.52 V	219	37.34	15.31
4	10600.00	40.96 AV	54.00	-13.04	1.52 V	219	25.65	15.31

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)

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	107.81 PK			1.19 H	224	100.03	7.78
2	*5320.00	99.81 AV			1.19 H	224	92.03	7.78
3	5350.00	59.42 PK	74.00	-14.58	1.19 H	224	51.58	7.84
4	5350.00	48.98 AV	54.00	-5.02	1.19 H	224	41.14	7.84
5	10640.00	53.27 PK	74.00	-20.73	1.75 H	246	37.86	15.41
6	10640.00	41.15 AV	54.00	-12.85	1.75 H	246	25.74	15.41
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	106.74 PK			1.85 V	119	98.96	7.78
2	*5320.00	99.47 AV			1.85 V	119	91.69	7.78
3	5350.00	58.65 PK	74.00	-15.35	1.85 V	119	50.81	7.84
4	5350.00	48.15 AV	54.00	-5.85	1.85 V	119	40.31	7.84
5	10640.00	52.70 PK	74.00	-21.30	1.48 V	239	37.29	15.41
6	10640.00	40.84 AV	54.00	-13.16	1.48 V	239	25.43	15.41

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)

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	59.37 PK	74.00	-14.63	3.16 H	66	51.42	7.95
2	5460.00	47.80 AV	54.00	-6.20	3.16 H	66	39.85	7.95
3	#5470.00	60.45 PK	68.20	-7.75	3.16 H	66	52.48	7.97
4	*5500.00	106.77 PK			3.16 H	66	98.76	8.01
5	*5500.00	97.99 AV			3.16 H	66	89.98	8.01
6	11000.00	53.64 PK	74.00	-20.36	1.89 H	261	37.75	15.89
7	11000.00	41.48 AV	54.00	-12.52	1.89 H	261	25.59	15.89
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	58.95 PK	74.00	-15.05	1.76 V	121	51.00	7.95
2	5460.00	47.57 AV	54.00	-6.43	1.76 V	121	39.62	7.95
3	#5470.00	59.83 PK	68.20	-8.37	1.76 V	121	51.86	7.97
4	*5500.00	105.68 PK			1.76 V	121	97.67	8.01
5	*5500.00	96.38 AV			1.76 V	121	88.37	8.01
6	11000.00	53.24 PK	74.00	-20.76	1.93 V	267	37.35	15.89
7	11000.00	41.07 AV	54.00	-12.93	1.93 V	267	25.18	15.89

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)

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	104.76 PK			1.60 H	282	97.22	7.54
2	*5580.00	95.64 AV			1.60 H	282	88.10	7.54
3	11160.00	53.90 PK	74.00	-20.10	1.93 H	268	37.85	16.05
4	11160.00	41.64 AV	54.00	-12.36	1.93 H	268	25.59	16.05
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	104.10 PK			1.10 V	118	96.56	7.54
2	*5580.00	94.98 AV			1.10 V	118	87.44	7.54
3	11160.00	53.57 PK	74.00	-20.43	1.21 V	219	37.52	16.05
4	11160.00	41.53 AV	54.00	-12.47	1.21 V	219	25.48	16.05

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 132 : 5660 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	*5660.00	107.74 PK			3.61 H	67	100.52	7.22
2	*5660.00	98.56 AV			3.61 H	67	91.34	7.22
3	11320.00	54.39 PK	74.00	-19.61	1.88 H	257	37.83	16.56
4	11320.00	42.20 AV	54.00	-11.80	1.88 H	257	25.64	16.56
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	*5660.00	106.34 PK			1.42 V	124	99.12	7.22
2	*5660.00	96.95 AV			1.42 V	124	89.73	7.22
3	11320.00	54.05 PK	74.00	-19.95	1.86 V	259	37.49	16.56
4	11320.00	42.13 AV	54.00	-11.87	1.86 V	259	25.57	16.56

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 140 : 5700 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	*5700.00	106.51 PK			1.49 H	288	99.38	7.13
2	*5700.00	97.29 AV			1.49 H	288	90.16	7.13
3	#5725.00	61.56 PK	68.20	-6.64	1.49 H	288	54.39	7.17
4	11400.00	54.53 PK	74.00	-19.47	1.86 H	266	37.88	16.65
5	11400.00	42.40 AV	54.00	-11.60	1.86 H	266	25.75	16.65
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	106.00 PK			1.42 V	125	98.87	7.13
2	*5700.00	96.83 AV			1.42 V	125	89.70	7.13
3	#5725.00	60.55 PK	68.20	-7.65	1.42 V	125	53.38	7.17
4	11400.00	54.07 PK	74.00	-19.93	1.87 V	258	37.42	16.65
5	11400.00	41.84 AV	54.00	-12.16	1.87 V	258	25.19	16.65

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	#5576.60	57.37 PK	68.20	-10.83	3.03 H	69	49.81	7.56
2	*5745.00	109.22 PK			3.03 H	69	102.01	7.21
3	*5745.00	100.39 AV			3.03 H	69	93.18	7.21
4	#6000.30	58.89 PK	68.20	-9.31	3.03 H	69	51.31	7.58
5	11490.00	56.04 PK	74.00	-17.96	1.89 H	117	39.28	16.76
6	11490.00	45.83 AV	54.00	-8.17	1.89 H	117	29.07	16.76
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	#5625.05	58.25 PK	68.20	-9.95	1.58 V	325	50.93	7.32
2	*5745.00	105.41 PK			1.58 V	325	98.20	7.21
3	*5745.00	98.33 AV			1.58 V	325	91.12	7.21
4	#5981.77	59.09 PK	68.20	-9.11	1.58 V	325	51.57	7.52
5	11490.00	55.73 PK	74.00	-18.27	1.11 V	192	38.97	16.76
6	11490.00	45.60 AV	54.00	-8.40	1.11 V	192	28.84	16.76

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	#5646.90	58.72 PK	68.20	-9.48	3.15 H	72	51.46	7.26
2	*5785.00	109.70 PK			3.15 H	72	102.42	7.28
3	*5785.00	101.00 AV			3.15 H	72	93.72	7.28
4	#6012.65	59.62 PK	68.20	-8.58	3.15 H	72	52.03	7.59
5	11570.00	56.45 PK	74.00	-17.55	1.86 H	127	39.46	16.99
6	11570.00	45.98 AV	54.00	-8.02	1.86 H	127	28.99	16.99
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	#5631.23	57.81 PK	68.20	-10.39	1.84 V	283	50.50	7.31
2	*5785.00	106.80 PK			1.84 V	283	99.52	7.28
3	*5785.00	98.81 AV			1.84 V	283	91.53	7.28
4	#5961.35	59.44 PK	68.20	-8.76	1.84 V	283	51.99	7.45
5	11570.00	56.03 PK	74.00	-17.97	1.29 V	203	39.04	16.99
6	11570.00	45.86 AV	54.00	-8.14	1.29 V	203	28.87	16.99

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	#5559.50	58.71 PK	68.20	-9.49	3.13 H	64	51.05	7.66
2	*5825.00	108.97 PK			3.13 H	64	101.69	7.28
3	*5825.00	100.42 AV			3.13 H	64	93.14	7.28
4	#5997.45	59.67 PK	68.20	-8.53	3.13 H	64	52.09	7.58
5	11650.00	56.45 PK	74.00	-17.55	1.79 H	134	39.21	17.24
6	11650.00	46.21 AV	54.00	-7.79	1.79 H	134	28.97	17.24
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	#5588.95	57.52 PK	68.20	-10.68	1.51 V	216	50.04	7.48
2	*5825.00	105.17 PK			1.51 V	216	97.89	7.28
3	*5825.00	95.99 AV			1.51 V	216	88.71	7.28
4	#5965.62	58.49 PK	68.20	-9.71	1.51 V	216	51.01	7.48
5	11650.00	56.11 PK	74.00	-17.89	1.29 V	189	38.87	17.24
6	11650.00	45.99 AV	54.00	-8.01	1.29 V	189	28.75	17.24

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	62.88 PK	74.00	-11.12	2.44 H	107	56.07	6.81
2	5150.00	51.21 AV	54.00	-2.79	2.44 H	107	44.40	6.81
3	*5190.00	103.75 PK			2.44 H	107	96.64	7.11
4	*5190.00	96.37 AV			2.44 H	107	89.26	7.11
5	#10380.00	53.38 PK	68.20	-14.82	1.54 H	268	38.79	14.59
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	62.78 PK	74.00	-11.22	1.84 V	114	55.97	6.81
2	5150.00	50.33 AV	54.00	-3.67	1.84 V	114	43.52	6.81
3	*5190.00	102.80 PK			1.84 V	114	95.69	7.11
4	*5190.00	95.37 AV			1.84 V	114	88.26	7.11
5	#10380.00	53.00 PK	68.20	-15.20	2.33 V	175	38.41	14.59

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	104.15 PK			2.91 H	110	96.85	7.30
2	*5230.00	96.76 AV			2.91 H	110	89.46	7.30
3	5350.00	58.87 PK	74.00	-15.13	2.91 H	110	51.03	7.84
4	5350.00	48.10 AV	54.00	-5.90	2.91 H	110	40.26	7.84
5	#10460.00	53.61 PK	68.20	-14.59	1.69 H	257	38.68	14.93
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	103.70 PK			2.18 V	117	96.40	7.30
2	*5230.00	96.47 AV			2.18 V	117	89.17	7.30
3	5350.00	58.80 PK	74.00	-15.20	2.18 V	117	50.96	7.84
4	5350.00	47.95 AV	54.00	-6.05	2.18 V	117	40.11	7.84
5	#10460.00	53.45 PK	68.20	-14.75	2.26 V	172	38.52	14.93

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)

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	59.61 PK	74.00	-14.39	1.23 H	225	52.80	6.81
2	5150.00	48.44 AV	54.00	-5.56	1.23 H	225	41.63	6.81
3	*5270.00	101.70 PK			1.23 H	225	94.18	7.52
4	*5270.00	94.41 AV			1.23 H	225	86.89	7.52
5	#10540.00	52.81 PK	68.20	-15.39	1.81 H	254	37.61	15.20
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	58.25 PK	74.00	-15.75	2.68 V	114	51.44	6.81
2	5150.00	47.45 AV	54.00	-6.55	2.68 V	114	40.64	6.81
3	*5270.00	101.50 PK			2.68 V	114	93.98	7.52
4	*5270.00	93.47 AV			2.68 V	114	85.95	7.52
5	#10540.00	52.68 PK	68.20	-15.52	1.36 V	227	37.48	15.20

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)

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	105.24 PK			3.06 H	144	97.48	7.76
2	*5310.00	96.75 AV			3.06 H	144	88.99	7.76
3	5350.00	62.44 PK	74.00	-11.56	3.06 H	144	54.60	7.84
4	5350.00	53.23 AV	54.00	-0.77	3.06 H	144	45.39	7.84
5	10620.00	53.15 PK	74.00	-20.85	1.78 H	252	37.79	15.36
6	10620.00	40.99 AV	54.00	-13.01	1.78 H	252	25.63	15.36
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	103.20 PK			1.60 V	115	95.44	7.76
2	*5310.00	95.97 AV			1.60 V	115	88.21	7.76
3	5350.00	61.72 PK	74.00	-12.28	1.60 V	115	53.88	7.84
4	5350.00	52.10 AV	54.00	-1.90	1.60 V	115	44.26	7.84
5	10620.00	52.67 PK	74.00	-21.33	1.46 V	237	37.31	15.36
6	10620.00	40.49 AV	54.00	-13.51	1.46 V	237	25.13	15.36

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)

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	61.40 PK	74.00	-12.60	3.14 H	81	53.45	7.95
2	5460.00	50.05 AV	54.00	-3.95	3.14 H	81	42.10	7.95
3	#5470.00	63.71 PK	68.20	-4.49	3.14 H	81	55.74	7.97
4	*5510.00	101.29 PK			3.14 H	81	93.34	7.95
5	*5510.00	94.14 AV			3.14 H	81	86.19	7.95
6	11020.00	53.95 PK	74.00	-20.05	1.78 H	246	38.05	15.90
7	11020.00	41.86 AV	54.00	-12.14	1.78 H	246	25.96	15.90
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	61.20 PK	74.00	-12.80	1.39 V	119	53.25	7.95
2	5460.00	49.29 AV	54.00	-4.71	1.39 V	119	41.34	7.95
3	#5470.00	66.87 PK	68.20	-1.33	1.39 V	119	58.90	7.97
4	*5510.00	100.57 PK			1.39 V	119	92.62	7.95
5	*5510.00	93.11 AV			1.39 V	119	85.16	7.95
6	11020.00	53.54 PK	74.00	-20.46	1.85 V	253	37.64	15.90
7	11020.00	41.47 AV	54.00	-12.53	1.85 V	253	25.57	15.90

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)

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	*5550.00	102.28 PK			3.10 H	86	94.56	7.72
2	*5550.00	94.60 AV			3.10 H	86	86.88	7.72
3	11100.00	53.82 PK	74.00	-20.18	1.76 H	251	37.87	15.95
4	11100.00	41.67 AV	54.00	-12.33	1.76 H	251	25.72	15.95
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	*5550.00	100.74 PK			1.05 V	121	93.02	7.72
2	*5550.00	93.23 AV			1.05 V	121	85.51	7.72
3	11100.00	53.47 PK	74.00	-20.53	1.87 V	257	37.52	15.95
4	11100.00	41.38 AV	54.00	-12.62	1.87 V	257	25.43	15.95

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 134 : 5670 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	*5670.00	100.63 PK			1.49 H	287	93.43	7.20
2	*5670.00	92.93 AV			1.49 H	287	85.73	7.20
3	#5725.00	59.87 PK	68.20	-8.33	1.49 H	287	52.70	7.17
4	11340.00	54.69 PK	74.00	-19.31	1.73 H	254	38.12	16.57
5	11340.00	42.62 AV	54.00	-11.38	1.73 H	254	26.05	16.57
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	99.76 PK			1.43 V	125	92.56	7.20
2	*5670.00	91.98 AV			1.43 V	125	84.78	7.20
3	#5725.00	58.87 PK	68.20	-9.33	1.43 V	125	51.70	7.17
4	11340.00	54.33 PK	74.00	-19.67	1.68 V	251	37.76	16.57
5	11340.00	42.24 AV	54.00	-11.76	1.68 V	251	25.67	16.57

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	#5591.80	57.55 PK	68.20	-10.65	3.03 H	68	50.09	7.46
2	*5755.00	105.71 PK			3.03 H	68	98.49	7.22
3	*5755.00	97.39 AV			3.03 H	68	90.17	7.22
4	#5996.02	58.48 PK	68.20	-9.72	3.03 H	68	50.90	7.58
5	11510.00	55.57 PK	74.00	-18.43	1.84 H	133	38.76	16.81
6	11510.00	44.53 AV	54.00	-9.47	1.84 H	133	27.72	16.81
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	#5611.27	57.67 PK	68.20	-10.53	1.79 V	288	50.30	7.37
2	*5755.00	103.74 PK			1.79 V	284	96.52	7.22
3	*5755.00	96.30 AV			1.79 V	284	89.08	7.22
4	#5939.02	58.81 PK	68.20	-9.39	1.79 V	288	51.44	7.37
5	11510.00	55.36 PK	74.00	-18.64	1.19 V	205	38.55	16.81
6	11510.00	44.32 AV	54.00	-9.68	1.19 V	205	27.51	16.81

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	#5560.45	57.51 PK	68.20	-10.69	3.11 H	71	49.85	7.66
2	*5795.00	104.95 PK			3.11 H	71	97.65	7.30
3	*5795.00	97.00 AV			3.11 H	71	89.70	7.30
4	#5971.80	59.32 PK	68.20	-8.88	3.11 H	71	51.83	7.49
5	11590.00	55.93 PK	74.00	-18.07	1.86 H	130	38.89	17.04
6	11590.00	44.85 AV	54.00	-9.15	1.86 H	130	27.81	17.04
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	#5576.60	57.07 PK	68.20	-11.13	1.49 V	331	49.51	7.56
2	*5795.00	100.72 PK			1.49 V	331	93.42	7.30
3	*5795.00	92.93 AV			1.49 V	331	85.63	7.30
4	#5982.73	57.86 PK	68.20	-10.34	1.49 V	331	50.34	7.52
5	11590.00	55.50 PK	74.00	-18.50	1.29 V	216	38.46	17.04
6	11590.00	44.39 AV	54.00	-9.61	1.29 V	216	27.35	17.04

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	63.66 PK	74.00	-10.34	1.53 H	280	56.85	6.81
2	5150.00	51.33 AV	54.00	-2.67	1.53 H	280	44.52	6.81
3	*5210.00	99.11 PK			1.53 H	280	91.90	7.21
4	*5210.00	91.44 AV			1.53 H	280	84.23	7.21
5	5350.00	59.56 PK	74.00	-14.44	1.53 H	280	51.72	7.84
6	5350.00	49.46 AV	54.00	-4.54	1.53 H	280	41.62	7.84
7	#10420.00	52.84 PK	68.20	-15.36	1.94 H	243	38.12	14.72
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	60.52 PK	74.00	-13.48	1.49 V	114	53.71	6.81
2	5150.00	48.67 AV	54.00	-5.33	1.49 V	114	41.86	6.81
3	*5210.00	98.95 PK			1.49 V	114	91.74	7.21
4	*5210.00	91.00 AV			1.49 V	114	83.79	7.21
5	5350.00	58.00 PK	74.00	-16.00	1.49 V	114	50.16	7.84
6	5350.00	47.45 AV	54.00	-6.55	1.49 V	114	39.61	7.84
7	#10420.00	52.63 PK	68.20	-15.57	2.55 V	161	37.91	14.72

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)

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	59.49 PK	74.00	-14.51	3.25 H	107	52.68	6.81
2	5150.00	48.80 AV	54.00	-5.20	3.25 H	107	41.99	6.81
3	*5290.00	101.91 PK			3.25 H	107	94.24	7.67
4	*5290.00	93.04 AV			3.25 H	107	85.37	7.67
5	5350.00	62.67 PK	74.00	-11.33	3.25 H	107	54.83	7.84
6	5350.00	52.81 AV	54.00	-1.19	3.25 H	107	44.97	7.84
7	#10580.00	52.54 PK	68.20	-15.66	1.79 H	247	37.26	15.28
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	58.20 PK	74.00	-15.80	2.68 V	113	51.39	6.81
2	5150.00	47.71 AV	54.00	-6.29	2.68 V	113	40.90	6.81
3	*5290.00	100.58 PK			2.68 V	113	92.91	7.67
4	*5290.00	92.57 AV			2.68 V	113	84.90	7.67
5	5350.00	60.87 PK	74.00	-13.13	2.68 V	113	53.03	7.84
6	5350.00	51.85 AV	54.00	-2.15	2.68 V	113	44.01	7.84
7	#10580.00	52.14 PK	68.20	-16.06	1.49 V	241	36.86	15.28

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)

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	64.01 PK	74.00	-9.99	2.98 H	147	56.06	7.95
2	5460.00	53.30 AV	54.00	-0.70	2.98 H	147	45.35	7.95
3	#5470.00	64.47 PK	68.20	-3.73	2.98 H	147	56.50	7.97
4	*5530.00	98.70 PK			2.98 H	147	90.87	7.83
5	*5530.00	91.03 AV			2.98 H	147	83.20	7.83
6	11060.00	53.99 PK	74.00	-20.01	1.75 H	250	38.07	15.92
7	11060.00	41.90 AV	54.00	-12.10	1.75 H	250	25.98	15.92
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	61.78 PK	74.00	-12.22	1.53 V	117	53.83	7.95
2	5460.00	51.53 AV	54.00	-2.47	1.53 V	117	43.58	7.95
3	#5470.00	62.37 PK	68.20	-5.83	1.53 V	117	54.40	7.97
4	*5530.00	96.45 PK			1.53 V	117	88.62	7.83
5	*5530.00	88.94 AV			1.53 V	117	81.11	7.83
6	11060.00	53.54 PK	74.00	-20.46	1.64 V	256	37.62	15.92
7	11060.00	41.41 AV	54.00	-12.59	1.64 V	256	25.49	15.92

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)

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	95.77 PK			1.49 H	283	88.40	7.37
2	*5610.00	88.10 AV			1.49 H	283	80.73	7.37
3	#5725.00	59.41 PK	68.20	-8.79	1.49 H	283	52.24	7.17
4	11220.00	54.22 PK	74.00	-19.78	1.79 H	258	38.01	16.21
5	11220.00	42.07 AV	54.00	-11.93	1.79 H	258	25.86	16.21
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	95.66 PK			1.44 V	122	88.29	7.37
2	*5610.00	87.95 AV			1.44 V	122	80.58	7.37
3	#5725.00	59.28 PK	68.20	-8.92	1.44 V	122	52.11	7.17
4	11220.00	54.08 PK	74.00	-19.92	1.80 V	254	37.87	16.21
5	11220.00	41.95 AV	54.00	-12.05	1.80 V	254	25.74	16.21

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	#5615.55	57.69 PK	68.20	-10.51	3.02 H	66	50.33	7.36
2	*5775.00	100.90 PK			3.02 H	66	93.64	7.26
3	*5775.00	93.08 AV			3.02 H	66	85.82	7.26
4	#5998.87	58.83 PK	68.20	-9.37	3.02 H	66	51.25	7.58
5	11550.00	55.54 PK	74.00	-18.46	1.89 H	128	38.62	16.92
6	11550.00	45.31 AV	54.00	-8.69	1.89 H	128	28.39	16.92
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	#5580.87	57.70 PK	68.20	-10.50	1.57 V	329	50.17	7.53
2	*5775.00	96.66 PK			1.57 V	329	89.40	7.26
3	*5775.00	88.73 AV			1.57 V	329	81.47	7.26
4	#6016.93	58.28 PK	68.20	-9.92	1.57 V	329	50.69	7.59
5	11550.00	55.34 PK	74.00	-18.66	1.20 V	208	38.42	16.92
6	11550.00	44.28 AV	54.00	-9.72	1.20 V	208	27.36	16.92

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.

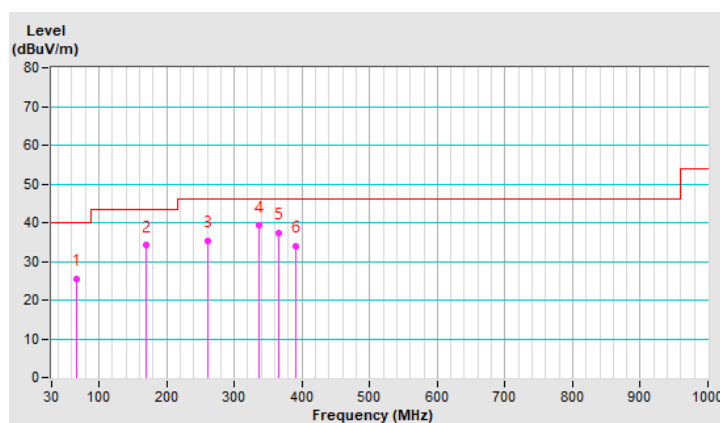
BELOW 1GHz WORST-CASE DATA

RF Mode	TX 802.11ac (VHT20)	Channel	CH 140 : 5700 MHz
Frequency Range	30MHz ~ 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	67.30	25.49 QP	40.00	-14.51	2.33 H	82	33.85	-8.36
2	169.05	34.08 QP	43.50	-9.42	2.15 H	164	39.97	-5.89
3	261.05	35.31 QP	46.00	-10.69	1.56 H	332	41.17	-5.86
4	335.89	39.20 QP	46.00	-6.80	1.75 H	60	42.42	-3.22
5	364.80	37.21 QP	46.00	-8.79	2.79 H	327	40.15	-2.94
6	390.55	34.01 QP	46.00	-11.99	2.93 H	19	36.22	-2.21

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.

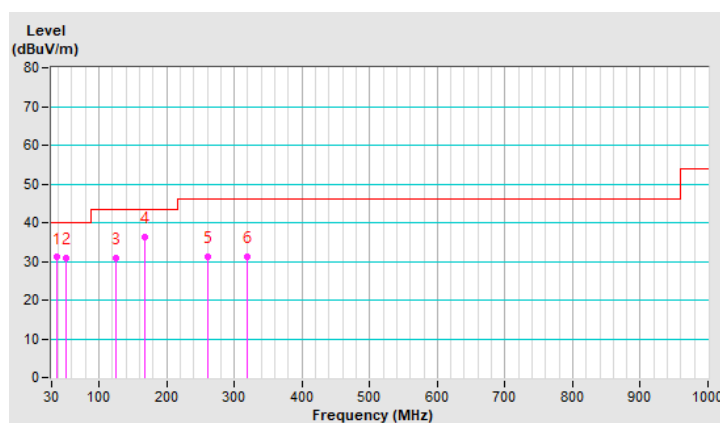


RF Mode	TX 802.11ac (VHT20)	Channel	CH 140 : 5700 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	38.58	31.10 QP	40.00	-8.90	1.57 V	134	38.46	-7.36
2	52.21	30.78 QP	40.00	-9.22	1.42 V	36	37.42	-6.64
3	124.28	30.87 QP	43.50	-12.63	1.18 V	152	38.79	-7.92
4	166.82	36.35 QP	43.50	-7.15	1.39 V	83	42.11	-5.76
5	259.89	31.29 QP	46.00	-14.71	2.05 V	131	37.21	-5.92
6	318.96	31.33 QP	46.00	-14.67	2.36 V	346	34.86	-3.53

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	ESR3	102414	2021/1/5	2022/1/4
LISN R&S	ENV216	101195	2021/5/25	2022/5/24
LISN R&S	ENV216	101197	2021/6/23	2022/6/22
LISN SCHWARZBECK	NNLK8129	8129229	2021/5/20	2022/5/19
DC LISN SCHWARZBECK	NNLK 8121	8121-808	2021/4/18	2022/4/17
LISN SCHWARZBECK	NNLK 8121	8121-731	2021/4/28	2022/4/27
LISN R&S	ESH3-Z5	100218	2020/12/2	2021/12/1
LISN R&S	ENV216	101196	2021/4/26	2022/4/25
LISN R&S	ESH3-Z6	844950/018	2021/7/25	2022/7/24
DC LISN R&S	ESH3-Z6	100219	2021/7/25	2022/7/24
RF Coaxial Cable Commate	5D-FB	Cable-CO10-01	2021/2/10	2022/2/9
Attenuator STI	STI02-2200-10	NO.1	2021/9/15	2022/9/14
50 ohm terminal LYNICS	0900510	E1-011484	2021/5/25	2022/5/24
Isolation Transformer Erika Fiedler	D-65396	017	2021/9/9	2022/9/8
Software BVADT	Cond_V7.3.7.4	NA	NA	NA

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

2. The test was performed in Linkou Conduction10

3. The VCCI Site Registration No. C-11852.

4. Tested Date: 2021/11/19

4.2.3 Test Procedures

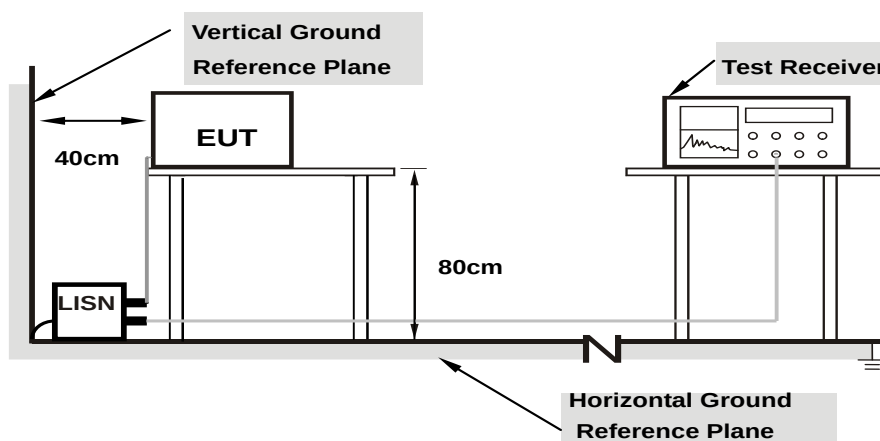
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

Same as Item 4.1.6.

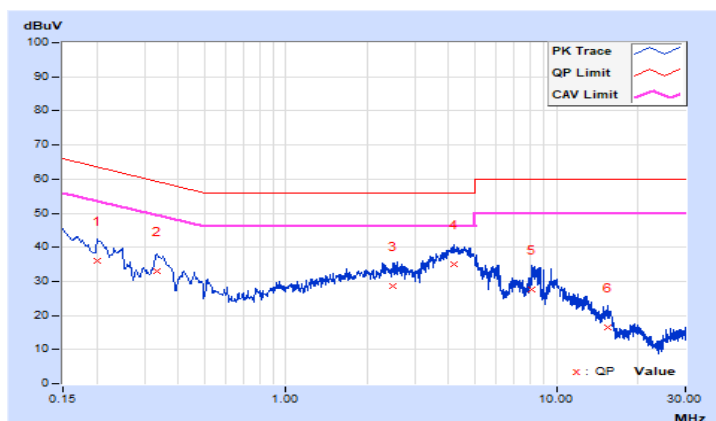
4.2.7 Test Results

RF Mode	TX 802.11ac (VHT20)	Channel	CH 140 : 5700 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	0.20084	9.63	26.54	16.58	36.17	26.21	63.58	53.58	-27.41	-27.37
2	0.33309	9.64	23.49	10.83	33.13	20.47	59.37	49.37	-26.24	-28.90
3	2.48496	9.72	18.76	9.03	28.48	18.75	56.00	46.00	-27.52	-27.25
4	4.16278	9.77	25.20	16.36	34.97	26.13	56.00	46.00	-21.03	-19.87
5	8.12489	9.82	17.83	10.63	27.65	20.45	60.00	50.00	-32.35	-29.55
6	15.41108	9.91	6.61	1.60	16.52	11.51	60.00	50.00	-43.48	-38.49

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

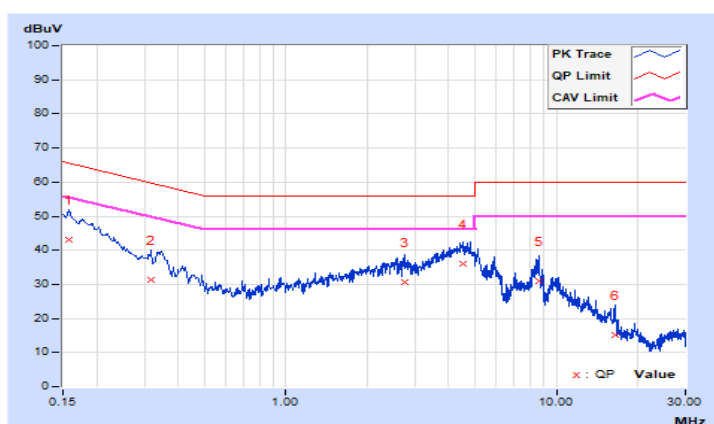


RF Mode	TX 802.11ac (VHT20)	Channel	CH 140 : 5700 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

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	0.15782	9.63	33.62	16.80	43.25	26.43	65.58	55.58	-22.33	-29.15
2	0.31766	9.64	21.79	12.08	31.43	21.72	59.77	49.77	-28.34	-28.05
3	2.74309	9.74	20.81	9.62	30.55	19.36	56.00	46.00	-25.45	-26.64
4	4.49131	9.79	26.15	18.67	35.94	28.46	56.00	46.00	-20.06	-17.54
5	8.60203	9.85	21.13	13.86	30.98	23.71	60.00	50.00	-29.02	-26.29
6	16.47487	9.99	5.18	0.58	15.17	10.57	60.00	50.00	-44.83	-39.43

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

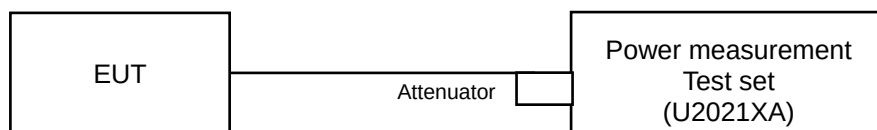
4.3.1 Limits of Transmit Power Measurement

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)
	√	Mobile and Portable client device	250mW (23.97 dBm)
U-NII-2A		√	250mW (23.97 dBm) or 11 dBm+10 log B*
U-NII-2C		√	250mW (23.97 dBm) or 11 dBm+10 log B*
U-NII-3		√	1 Watt (30 dBm)

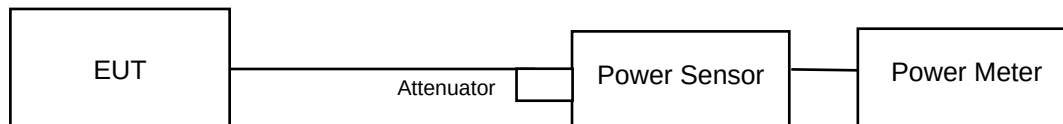
*B is the 26 dB emission bandwidth in megahertz

4.3.2 Test Setup

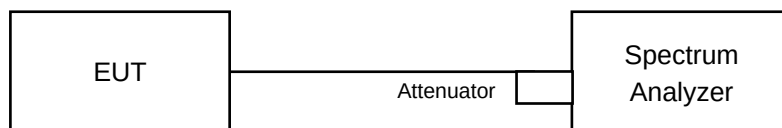
For Power Output Measurement



Or



For 26dB Bandwidth Measurement



4.3.3 Test Instruments

Description & Manufacturer	Model no.	Serial No.	Calibrated Date	Calibrated Until
Pulse Power Sensor Anritsu	MA2411B	0738404	2021/4/15	2022/4/14
Peak Power meter Anritsu	ML2495A	0842014	2021/4/15	2022/4/14
Spectrum Analyzer R&S	FSV40	101042	2021/9/9	2022/9/8
MIMO Power measurement Test set KEYSIGHT	U2021XA	U2021XA_001	2021/6/16	2022/6/15

- 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 LK - Oven
3. Tested Date: 2021/11/2

4.3.4 Test Procedure

For Average Power Measurement

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 and set the detector to AVERAGE. Duty factor is not added to measured value.

For 26dB Bandwidth Measurement

1. Set RBW = approximately 1% to 5% of the emission bandwidth.
2. Set the VBW $\geq 3 \times$ 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 Conditions

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

4.3.7 Test Result

Power Output: 802.11a

Channel	Channel Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass/Fail
36	5180	35.892	15.55	23.97	Pass
40	5200	35.237	15.47	23.97	Pass
48	5240	37.239	15.71	23.97	Pass
52	5260	37.068	15.69	23.97	Pass
60	5300	34.914	15.43	23.97	Pass
64	5320	34.674	15.40	23.97	Pass
100	5500	35.810	15.54	23.97	Pass
116	5580	34.834	15.42	23.97	Pass
132	5660	36.475	15.62	23.97	Pass
140	5700	35.075	15.45	23.97	Pass
149	5745	35.563	15.51	30	Pass
157	5785	35.727	15.53	30	Pass
165	5825	34.834	15.42	30	Pass

NOTE:

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

1. $11\text{dBm} + 10\log(25.26) = 25.02\text{ dBm} > 23.97\text{dBm}$.
2. $11\text{dBm} + 10\log(25.03) = 24.98\text{ dBm} > 23.97\text{dBm}$.
3. $11\text{dBm} + 10\log(24.25) = 24.84\text{ dBm} > 23.97\text{dBm}$.
4. $11\text{dBm} + 10\log(24.54) = 24.89\text{ dBm} > 23.97\text{dBm}$.
5. $11\text{dBm} + 10\log(24.62) = 24.91\text{ dBm} > 23.97\text{dBm}$.
6. $11\text{dBm} + 10\log(25.40) = 25.04\text{ dBm} > 23.97\text{dBm}$.
7. $11\text{dBm} + 10\log(24.99) = 24.97\text{ dBm} > 23.97\text{dBm}$.

802.11ac (VHT20)

Channel	Channel Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass/Fail
36	5180	35.400	15.49	23.97	Pass
40	5200	34.995	15.44	23.97	Pass
48	5240	37.411	15.73	23.97	Pass
52	5260	36.728	15.65	23.97	Pass
60	5300	35.156	15.46	23.97	Pass
64	5320	34.674	15.40	23.97	Pass
100	5500	36.983	15.68	23.97	Pass
116	5580	35.645	15.52	23.97	Pass
132	5660	36.308	15.60	23.97	Pass
140	5700	38.107	15.81	23.97	Pass
149	5745	35.563	15.51	30.00	Pass
157	5785	36.058	15.57	30.00	Pass
165	5825	37.757	15.77	30.00	Pass

NOTE:

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

1. $11\text{dBm} + 10\log(25.55) = 25.07\text{ dBm} > 23.97\text{dBm}$.
2. $11\text{dBm} + 10\log(26.05) = 25.15\text{ dBm} > 23.97\text{dBm}$.
3. $11\text{dBm} + 10\log(25.78) = 25.11\text{ dBm} > 23.97\text{dBm}$.
4. $11\text{dBm} + 10\log(25.64) = 25.08\text{ dBm} > 23.97\text{dBm}$.
5. $11\text{dBm} + 10\log(25.56) = 25.07\text{ dBm} > 23.97\text{dBm}$.
6. $11\text{dBm} + 10\log(25.33) = 25.03\text{ dBm} > 23.97\text{dBm}$.
7. $11\text{dBm} + 10\log(26.26) = 25.19\text{ dBm} > 23.97\text{dBm}$.

802.11ac (VHT40)

Channel	Channel Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass/Fail
38	5190	29.309	14.67	23.97	Pass
46	5230	29.040	14.63	23.97	Pass
54	5270	28.774	14.59	23.97	Pass
62	5310	23.988	13.80	23.97	Pass
102	5510	30.130	14.79	23.97	Pass
110	5550	29.242	14.66	23.97	Pass
134	5670	28.379	14.53	23.97	Pass
151	5755	28.708	14.58	30.00	Pass
159	5795	29.174	14.65	30.00	Pass

NOTE:

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

1. $11\text{dBm} + 10\log(42.59) = 27.29\text{ dBm} > 23.97\text{dBm}$.
2. $11\text{dBm} + 10\log(42.36) = 27.26\text{ dBm} > 23.97\text{dBm}$.
3. $11\text{dBm} + 10\log(42.42) = 27.27\text{ dBm} > 23.97\text{dBm}$.
4. $11\text{dBm} + 10\log(42.56) = 27.29\text{ dBm} > 23.97\text{dBm}$.
5. $11\text{dBm} + 10\log(42.29) = 27.26\text{ dBm} > 23.97\text{dBm}$.

802.11ac (VHT80)

Channel	Channel Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass/Fail
42	5210	23.227	13.66	23.97	Pass
58	5290	22.029	13.43	23.97	Pass
106	5530	18.836	12.75	23.97	Pass
122	5610	23.121	13.64	23.97	Pass
155	5775	24.044	13.81	30.00	Pass

NOTE:

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

1. $11\text{dBm} + 10\log(85.27) = 30.30\text{ dBm} > 23.97\text{dBm}$.
2. $11\text{dBm} + 10\log(84.84) = 30.28\text{ dBm} > 23.97\text{dBm}$.
3. $11\text{dBm} + 10\log(84.61) = 30.27\text{ dBm} > 23.97\text{dBm}$.

26dB Bandwidth:

802.11a

Channel	Channel Frequency (MHz)	26dBc Bandwidth (MHz)
52	5260	25.26
60	5300	25.03
64	5320	24.25
100	5500	24.54
116	5580	24.62
132	5660	25.40
140	5700	24.99

802.11ac (VHT20)

Channel	Channel Frequency (MHz)	26dBc Bandwidth (MHz)
52	5260	25.55
60	5300	26.05
64	5320	25.78
100	5500	25.64
116	5580	25.56
132	5660	25.33
140	5700	26.26

802.11ac (VHT40)

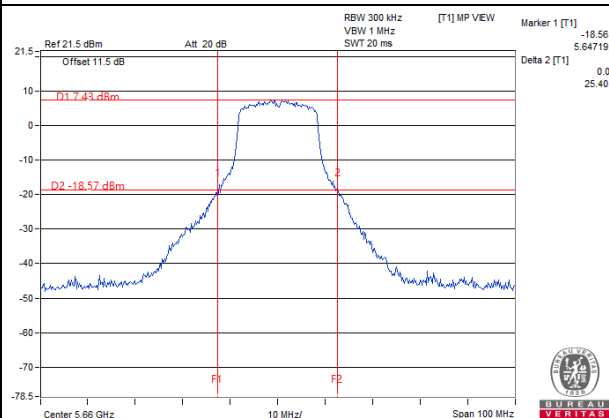
Channel	Channel Frequency (MHz)	26dBc Bandwidth (MHz)
54	5270	42.59
62	5310	42.36
102	5510	42.42
110	5550	42.56
134	5670	42.29

802.11ac (VHT80)

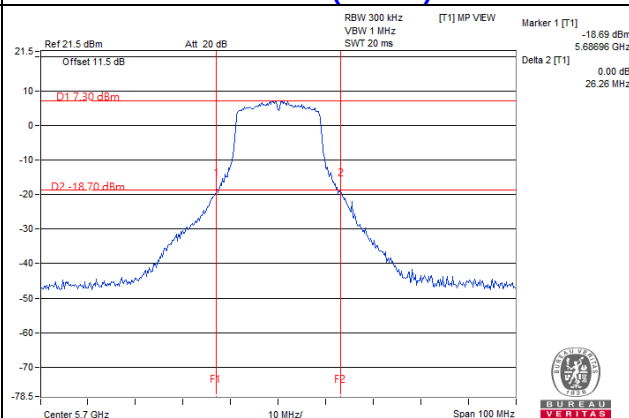
Channel	Channel Frequency (MHz)	26dBc Bandwidth (MHz)
58	5290	85.27
106	5530	84.84
122	5610	84.61

Spectrum Plot of Worst Value

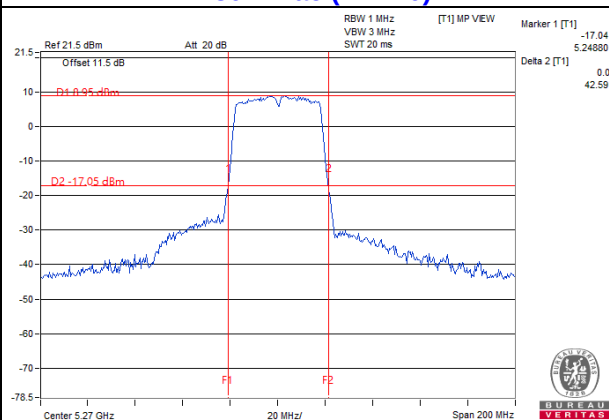
802.11a



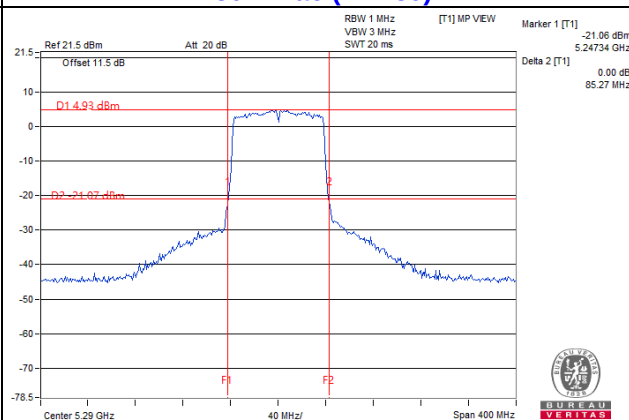
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)



EUT Maximum Conducted Power

802.11a

Frequency Band (MHz)	MAX. Power	
	Output Power(mW)	Output Power(dBm)
5250~5350	37.068	15.69
5470~5725	36.475	15.62

802.11ac (VHT20)

Frequency Band (MHz)	MAX. Power	
	Output Power(mW)	Output Power(dBm)
5250~5350	36.728	15.65
5470~5725	38.107	15.81

802.11ac (VHT40)

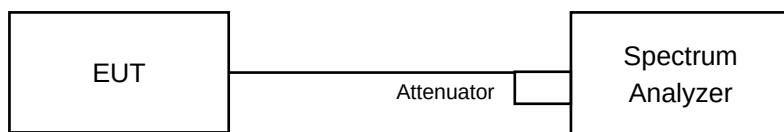
Frequency Band (MHz)	MAX. Power	
	Output Power(mW)	Output Power(dBm)
5250~5350	28.774	14.59
5470~5725	30.130	14.79

802.11ac (VHT80)

Frequency Band (MHz)	MAX. Power	
	Output Power(mW)	Output Power(dBm)
5250~5350	22.029	13.43
5470~5725	23.121	13.64

4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.3.3 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 Result

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
36	5180	16.92
40	5200	16.80
48	5240	16.80
52	5260	16.80
60	5300	16.80
64	5320	16.80
100	5500	16.92
116	5580	16.92
132	5660	16.80
140	5700	16.92
149	5745	16.86
157	5785	16.92
165	5825	16.80

802.11ac (VHT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
36	5180	18.00
40	5200	18.00
48	5240	18.00
52	5260	18.00
60	5300	18.12
64	5320	18.00
100	5500	18.00
116	5580	18.00
132	5660	18.00
140	5700	18.00
149	5745	18.00
157	5785	18.00
165	5825	18.00

802.11ac (VHT40)

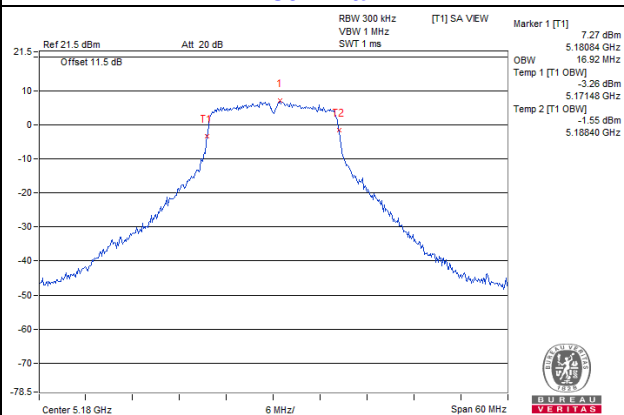
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
38	5190	36.72
46	5230	36.48
54	5270	36.48
62	5310	36.48
102	5510	36.48
110	5550	36.72
134	5670	36.72
151	5755	36.72
159	5795	36.72

802.11ac (VHT80)

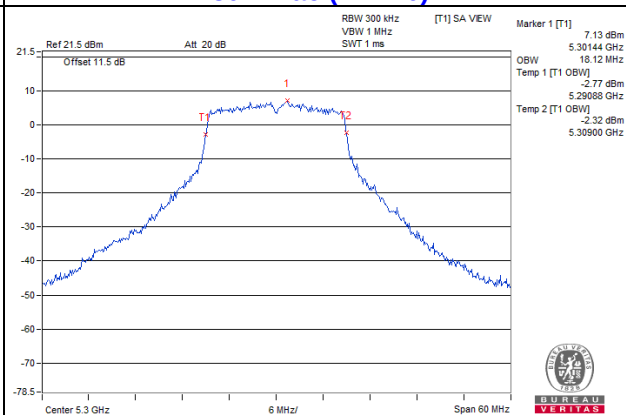
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
42	5210	75.84
58	5290	75.84
106	5530	75.84
122	5610	75.84
155	5775	75.84

Spectrum Plot of Worst Value

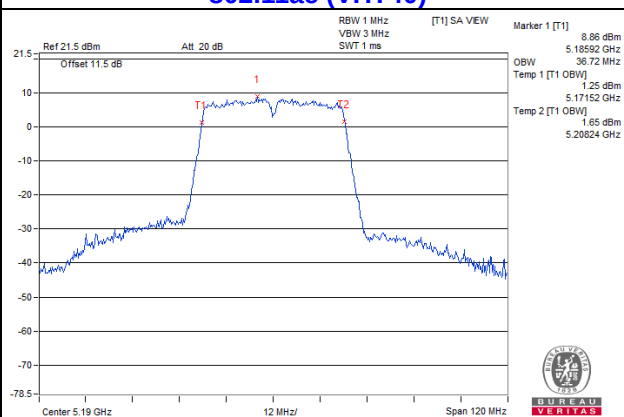
802.11a



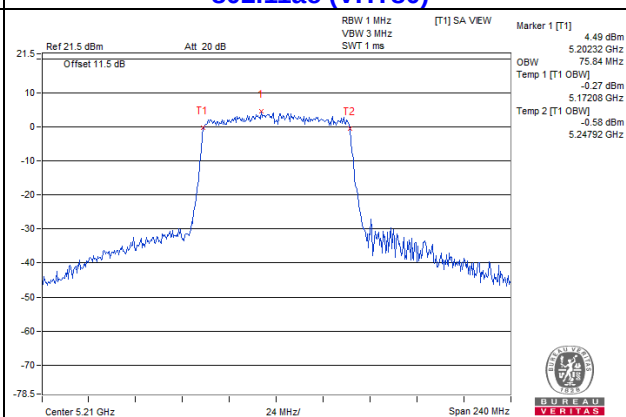
802.11ac (VHT20)



802.11ac (VHT40)

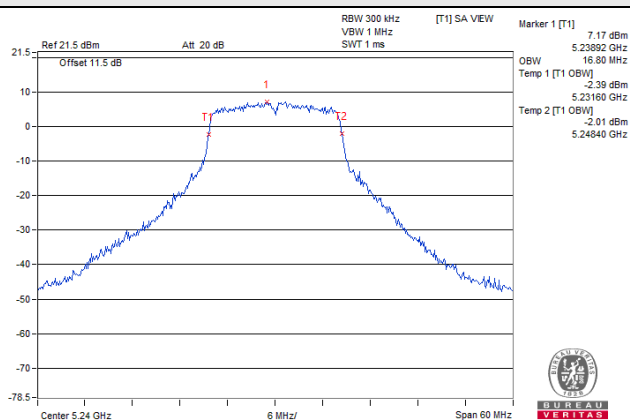


802.11ac (VHT80)

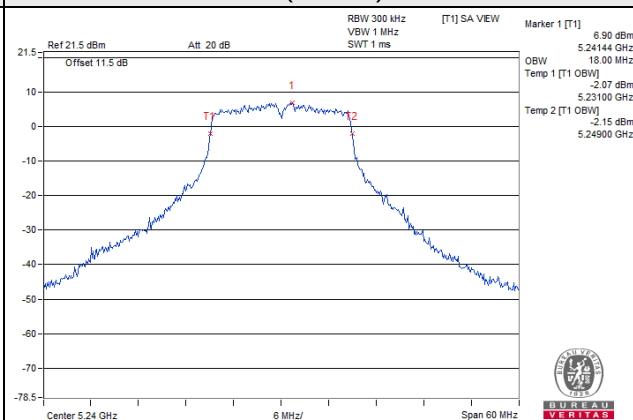


Spectrum Plot for near By DFS Band

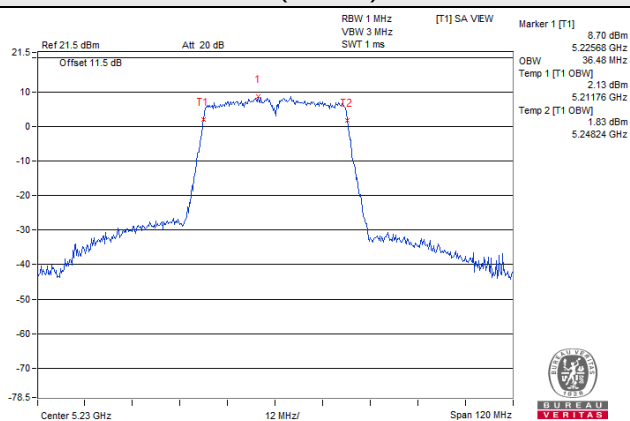
802.11a / CH 48



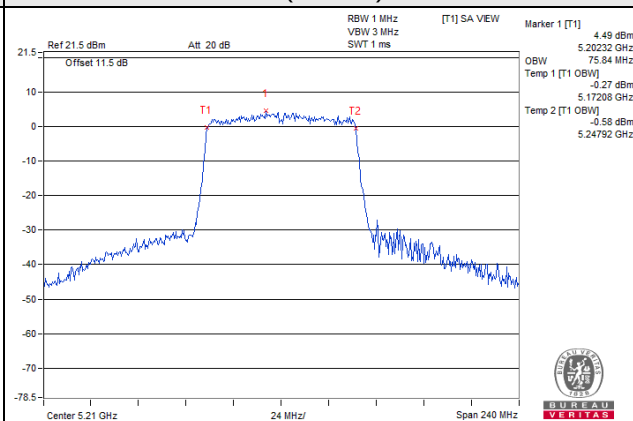
802.11ac (VHT20) / CH 48



802.11ac (VHT40) / CH 46

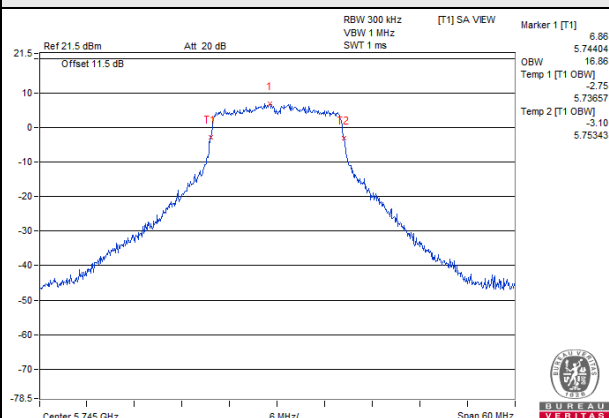


802.11ac (VHT80) / CH 42

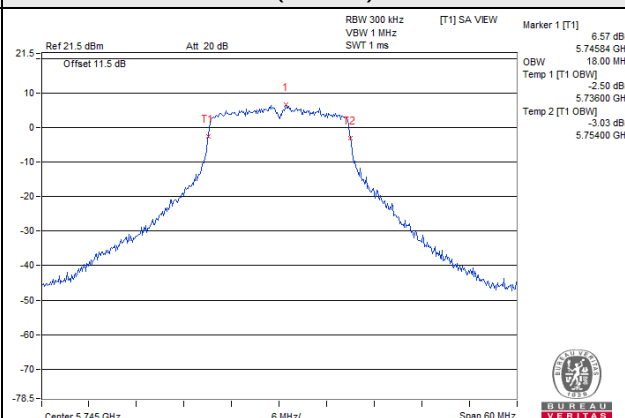


Spectrum Plot for near By DFS Band

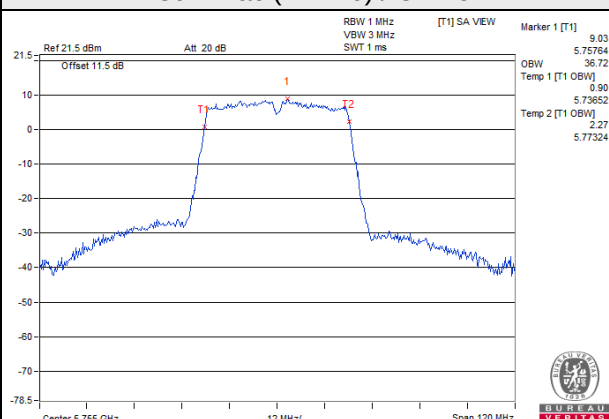
802.11a / CH 149



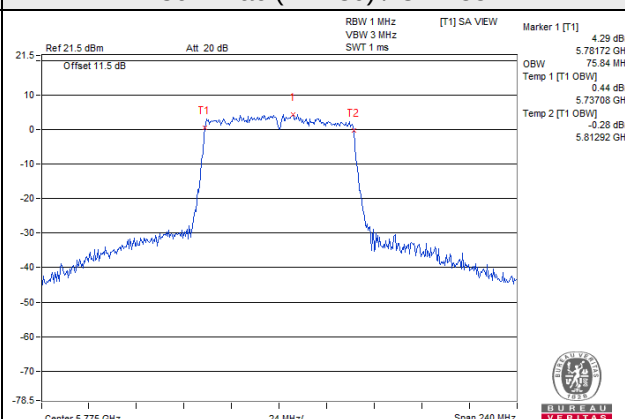
802.11ac (VHT20) / CH 149



802.11ac (VHT40) / CH 151



802.11ac (VHT80) / CH 155

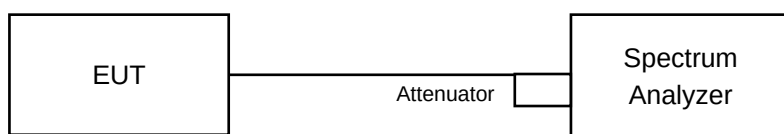


4.5 Peak Power Spectral Density Measurement

4.5.1 Limits of Peak Power Spectral Density Measurement

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

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.3.3 to get information of above instrument.

4.5.4 Test Procedures

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

Using method SA-1 (Duty cycle >98%)

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

Using method SA-2 (Duty cycle <98%)

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

Duty cycle >98%

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 300 kHz, Set VBW $\geq$ 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.

Duty cycle <98%

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 300 kHz, Set VBW $\geq$ 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 and add $10 \log (1/\text{duty cycle})$

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

Same as 4.3.6.

4.5.7 Test Results

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

802.11a

Channel	Channel Frequency (MHz)	PSD (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
36	5180	2.80	11.00	Pass
40	5200	2.68	11.00	Pass
48	5240	3.24	11.00	Pass
52	5260	3.26	11.00	Pass
60	5300	3.01	11.00	Pass
64	5320	3.19	11.00	Pass
100	5500	2.86	11.00	Pass
116	5580	2.67	11.00	Pass
132	5660	3.12	11.00	Pass
140	5700	2.74	11.00	Pass

802.11ac (VHT20)

Channel	Channel Frequency (MHz)	PSD (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
36	5180	2.34	11.00	Pass
40	5200	2.29	11.00	Pass
48	5240	2.73	11.00	Pass
52	5260	2.83	11.00	Pass
60	5300	2.49	11.00	Pass
64	5320	2.61	11.00	Pass
100	5500	2.85	11.00	Pass
116	5580	2.68	11.00	Pass
132	5660	2.71	11.00	Pass
140	5700	2.70	11.00	Pass

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
38	5190	-1.36	0.11	-1.25	11.00	Pass
46	5230	-1.39	0.11	-1.28	11.00	Pass
54	5270	-1.45	0.11	-1.34	11.00	Pass
62	5310	-2.12	0.11	-2.01	11.00	Pass
102	5510	-1.16	0.11	-1.05	11.00	Pass
110	5550	-1.28	0.11	-1.17	11.00	Pass
134	5670	-1.43	0.11	-1.32	11.00	Pass

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

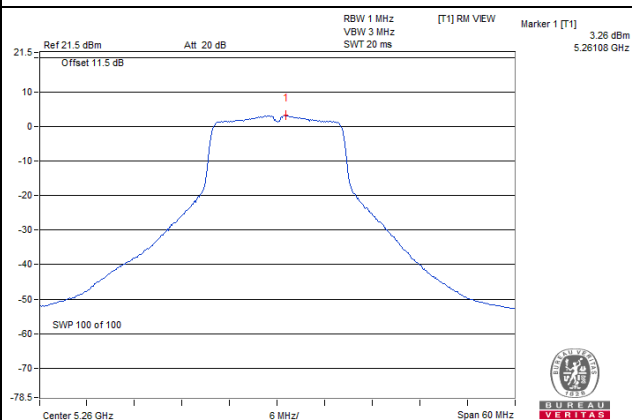
802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
42	5210	-5.96	0.21	-5.75	11.00	Pass
58	5290	-5.81	0.21	-5.60	11.00	Pass
106	5530	-6.86	0.21	-6.65	11.00	Pass
122	5610	-5.79	0.21	-5.58	11.00	Pass

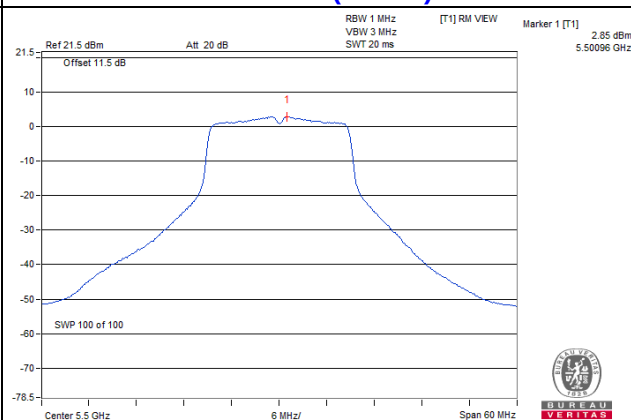
Note: Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

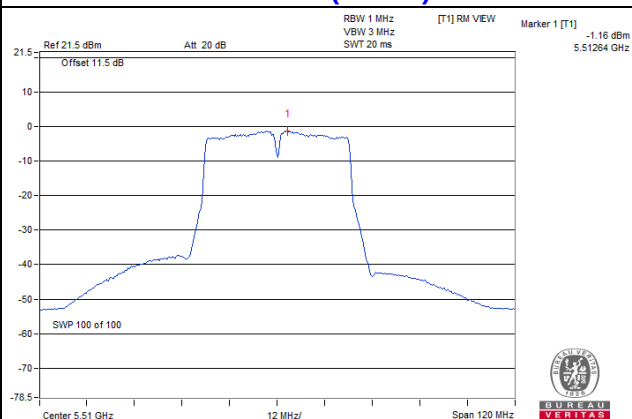
802.11a



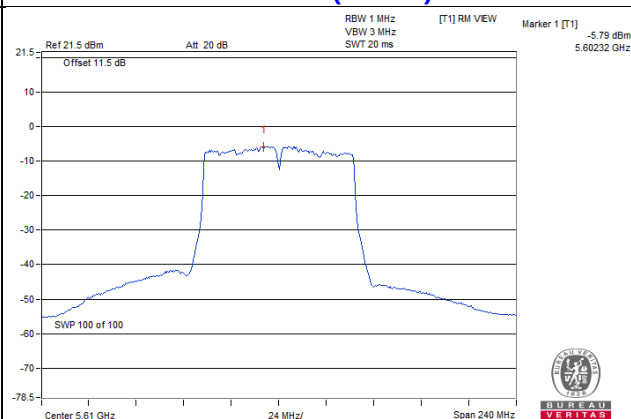
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)



For U-NII-3 band:

802.11a

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
149	5745	-6.12	-3.90	30	Pass
157	5785	-5.92	-3.70	30	Pass
165	5825	-6.14	-3.92	30	Pass

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
149	5745	-6.44	-4.22	30	Pass
157	5785	-6.40	-4.18	30	Pass
165	5825	-5.69	-3.47	30	Pass

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
		(dBm/300kHz)	(dBm/500kHz)				
151	5755	-10.62	-8.40	0.11	-8.29	30	Pass
159	5795	-10.61	-8.39	0.11	-8.28	30	Pass

Note: Refer to section 3.3 for duty cycle spectrum plot

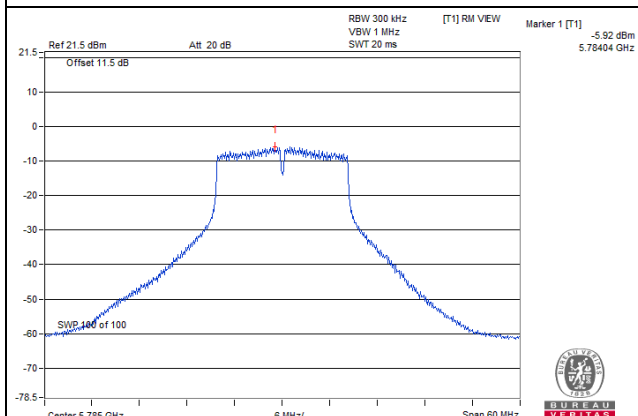
802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
		(dBm/300kHz)	(dBm/500kHz)				
155	5775	-14.93	-12.71	0.21	-12.5	30	Pass

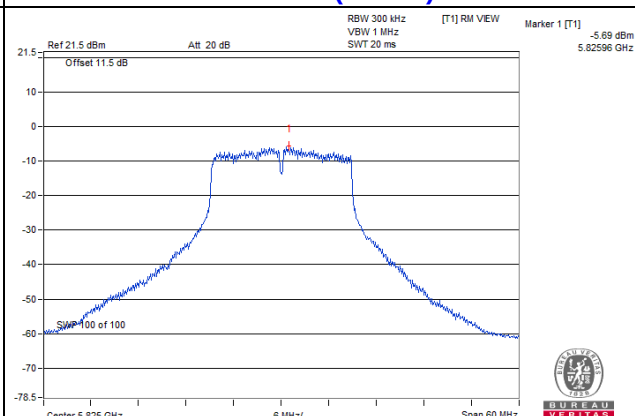
Note: Refer to section 3.3 for duty cycle spectrum plot

Spectrum Plot of Worst Value

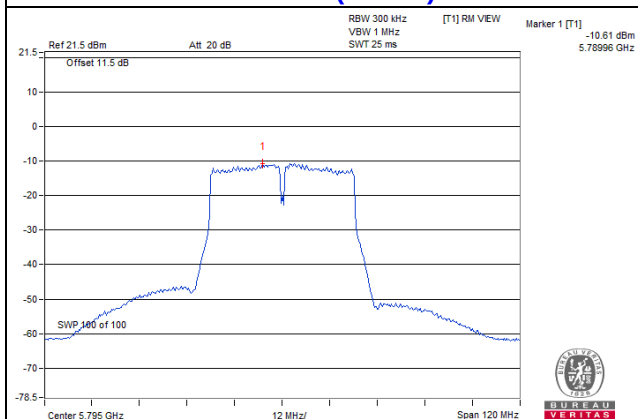
802.11a



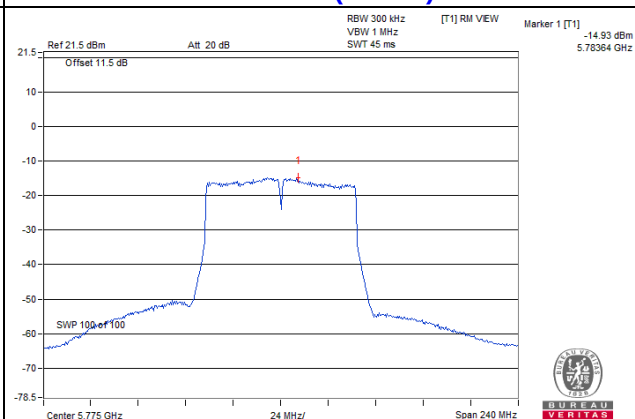
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)

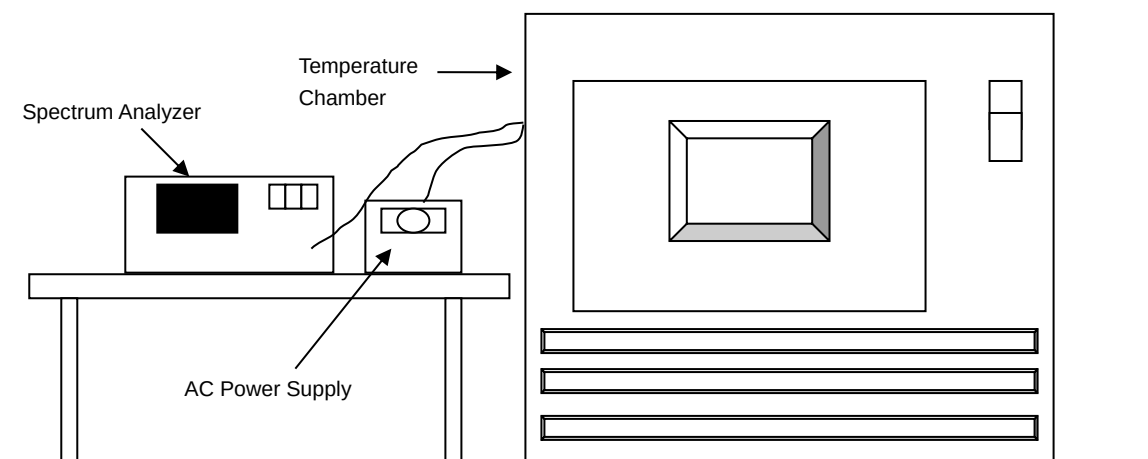


4.6 Frequency Stability

4.6.1 Limits of Frequency Stability Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Description & Manufacturer	Model no.	Serial No.	Calibrated Date	Calibrated Until
Temperature & Humidity Chamber TERCHY	MHU-225AU	920409	2021/7/2	2022/7/1
Spectrum Analyzer R&S	FSV40	101042	2021/9/9	2022/9/8
Digital Multimeter Fluke	87-III	70360742	2021/6/24	2022/6/23
AC Power Source Preen	AFC-500W	F103040004	NA	NA

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested Date: 2021/11/2

4.6.4 Test Procedure

- The EUT was placed inside the environmental test chamber and powered by nominal AC 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.
- 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: 5180MHz									
Temp. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
50	120	5180.0013	Pass	5179.9985	Pass	5179.9979	Pass	5179.9989	Pass
40	120	5179.9901	Pass	5179.9905	Pass	5179.9892	Pass	5179.9879	Pass
30	120	5179.9777	Pass	5179.9804	Pass	5179.9787	Pass	5179.9815	Pass
20	120	5180.0221	Pass	5180.022	Pass	5180.0203	Pass	5180.0178	Pass
10	120	5180.0039	Pass	5180.0045	Pass	5180.0019	Pass	5180.0055	Pass
0	120	5179.9827	Pass	5179.9821	Pass	5179.986	Pass	5179.9836	Pass
-10	120	5180.0098	Pass	5180.0089	Pass	5180.0097	Pass	5180.0088	Pass
-20	120	5179.984	Pass	5179.98	Pass	5179.9833	Pass	5179.9813	Pass
-30	120	5180.0104	Pass	5180.0131	Pass	5180.0092	Pass	5180.0119	Pass

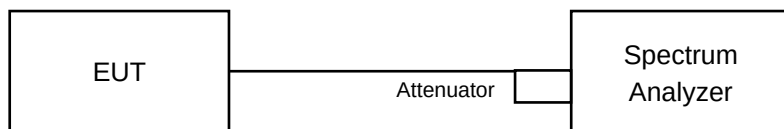
Frequency Stability Versus Voltage									
Operating Frequency: 5180MHz									
Temp. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
20	138	5180.0159	Pass	5180.0158	Pass	5180.0174	Pass	5180.0186	Pass
	120	5180.0221	Pass	5180.022	Pass	5180.0203	Pass	5180.0178	Pass
	102	5180.0269	Pass	5180.0266	Pass	5180.0292	Pass	5180.0276	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 4.3.3 to get information of above instrument.

4.7.4 Test Procedure

- 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)	Minimum Limit (MHz)	Pass / Fail
149	5745	16.08	0.5	Pass
157	5785	15.82	0.5	Pass
165	5825	16.09	0.5	Pass

802.11ac (VHT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	16.58	0.5	Pass
157	5785	16.17	0.5	Pass
165	5825	16.57	0.5	Pass

802.11ac (VHT40)

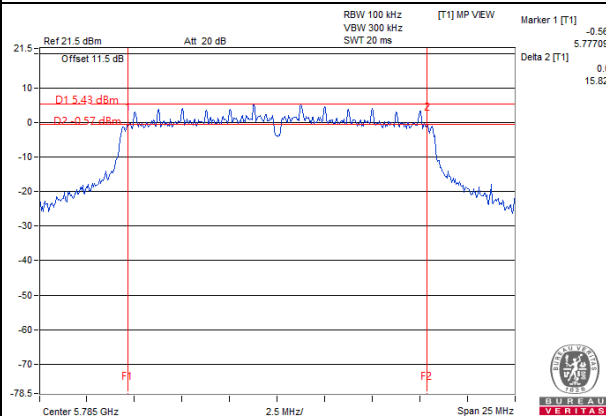
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
151	5755	36.07	0.5	Pass
159	5795	35.82	0.5	Pass

802.11ac (VHT80)

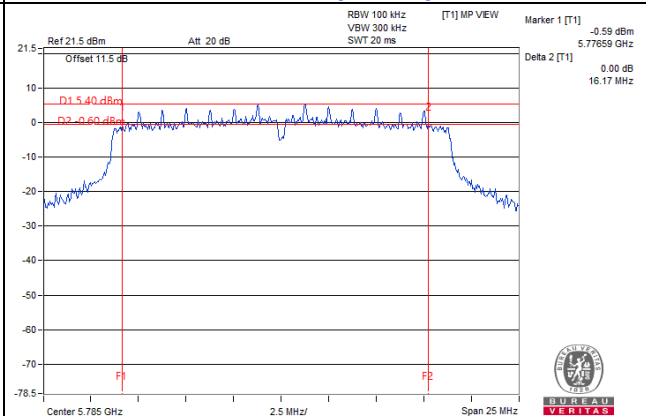
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
155	5775	75.47	0.5	Pass

Spectrum Plot of Worst Value

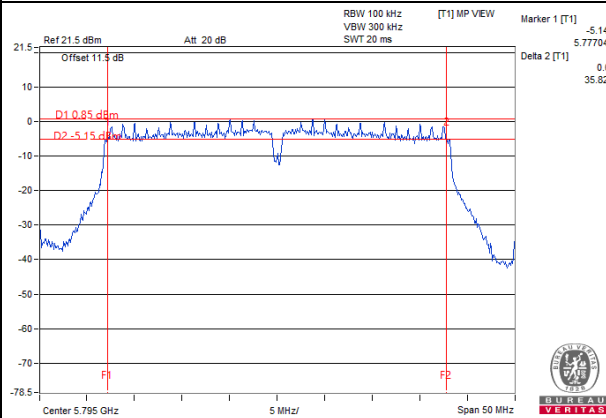
802.11a



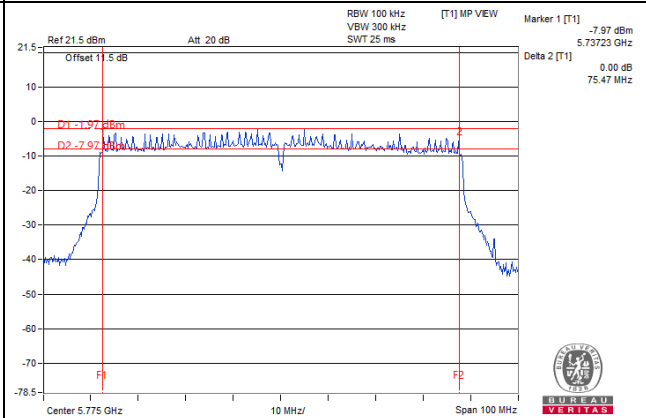
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)



5 Pictures of Test Arrangements

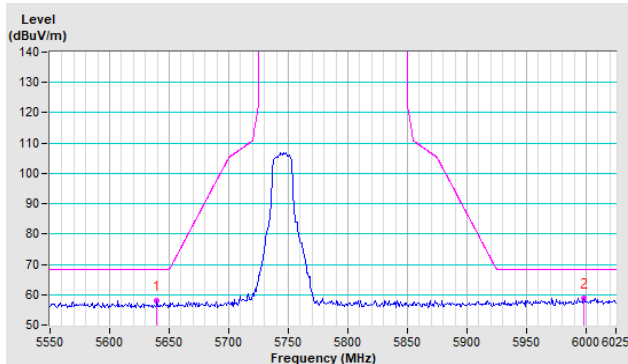
Please refer to the attached file (Test Setup Photo).

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

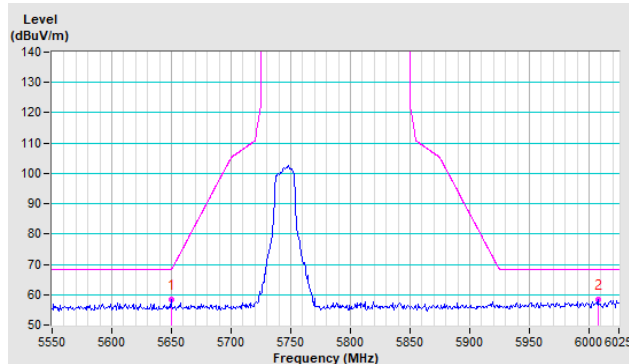
802.11a

CH 149 5745 MHz

Horizontal

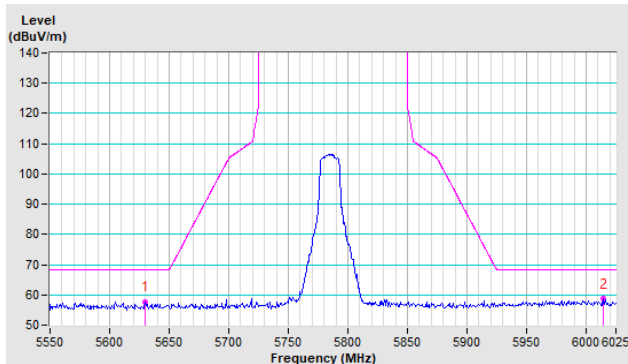


Vertical

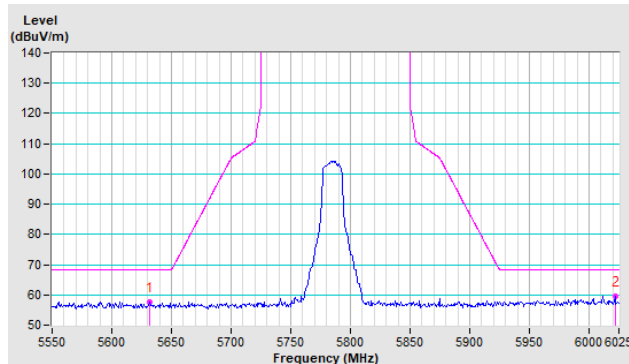


CH 157 5785 MHz

Horizontal

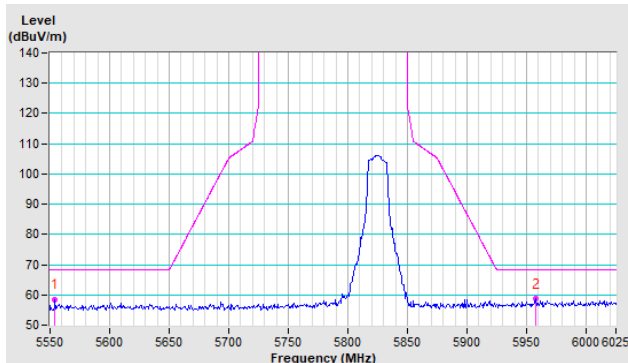


Vertical

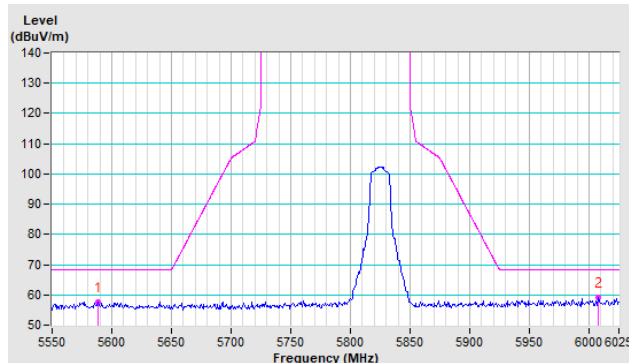


CH 165 5825 MHz

Horizontal



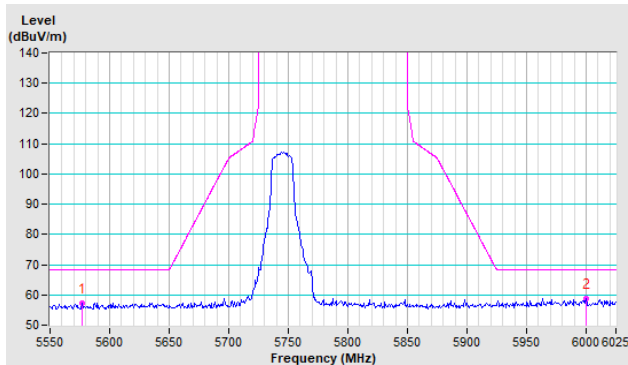
Vertical



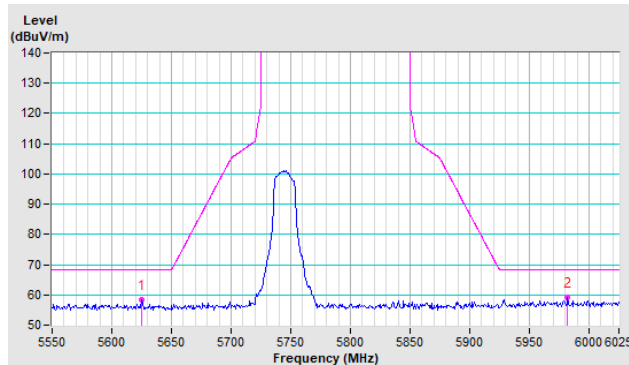
802.11ac (VHT20)

CH 149 5745 MHz

Horizontal

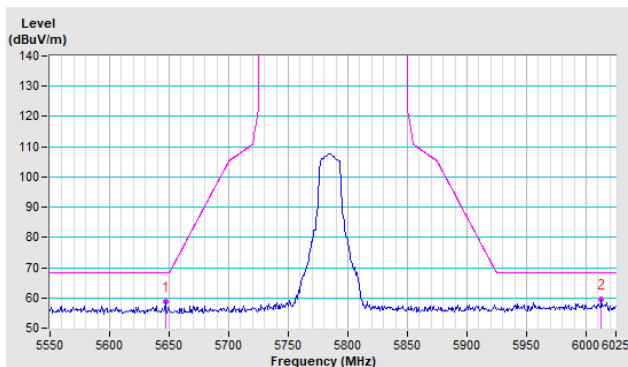


Vertical

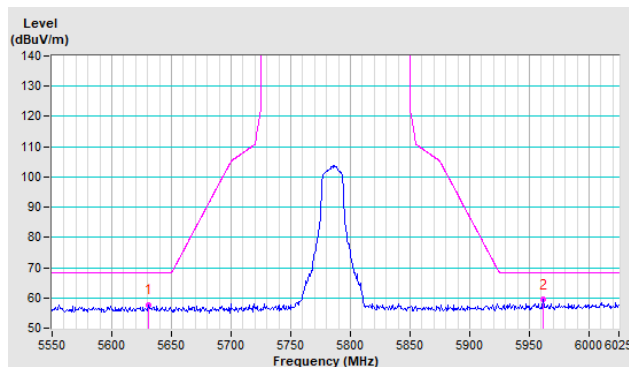


CH 157 5785 MHz

Horizontal

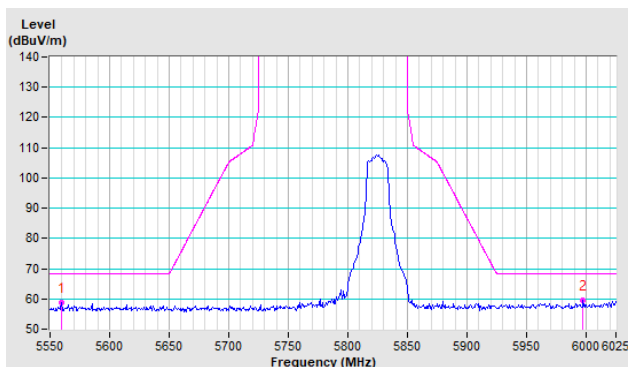


Vertical

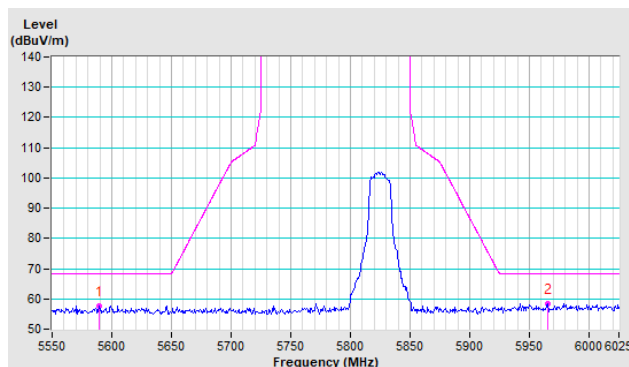


CH 165 5825 MHz

Horizontal



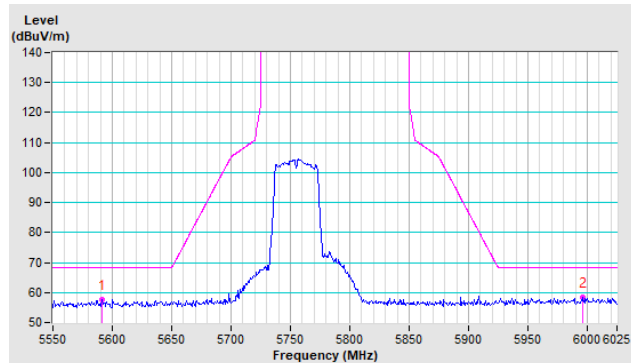
Vertical



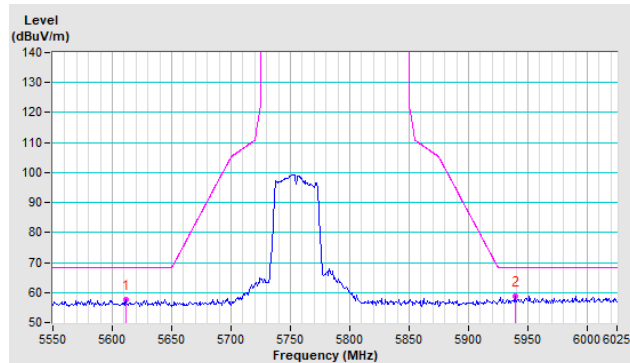
802.11ac (VHT40)

CH 151 5755 MHz

Horizontal

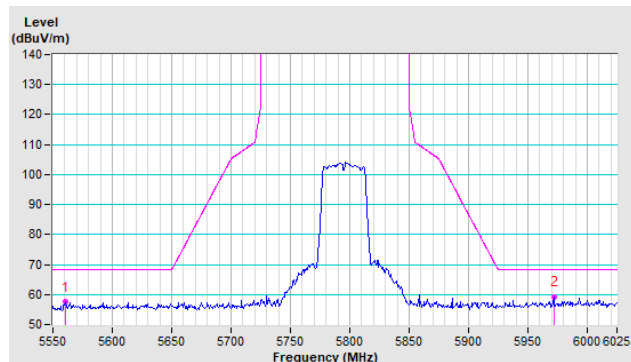


Vertical

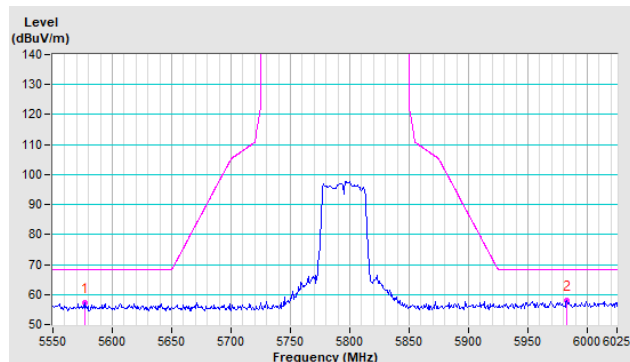


CH 159 5795 MHz

Horizontal



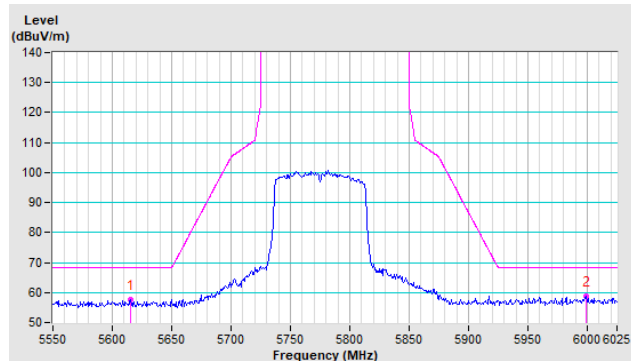
Vertical



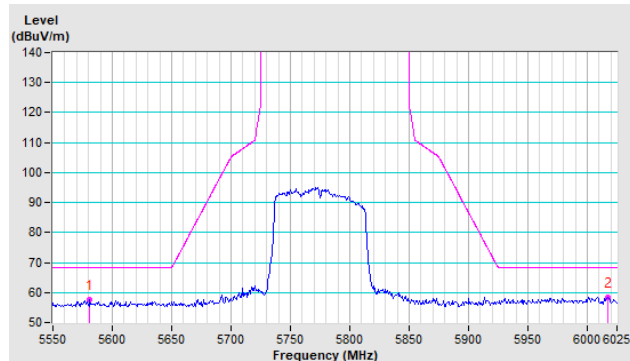
802.11ac (VHT80)

CH 155 5775 MHz

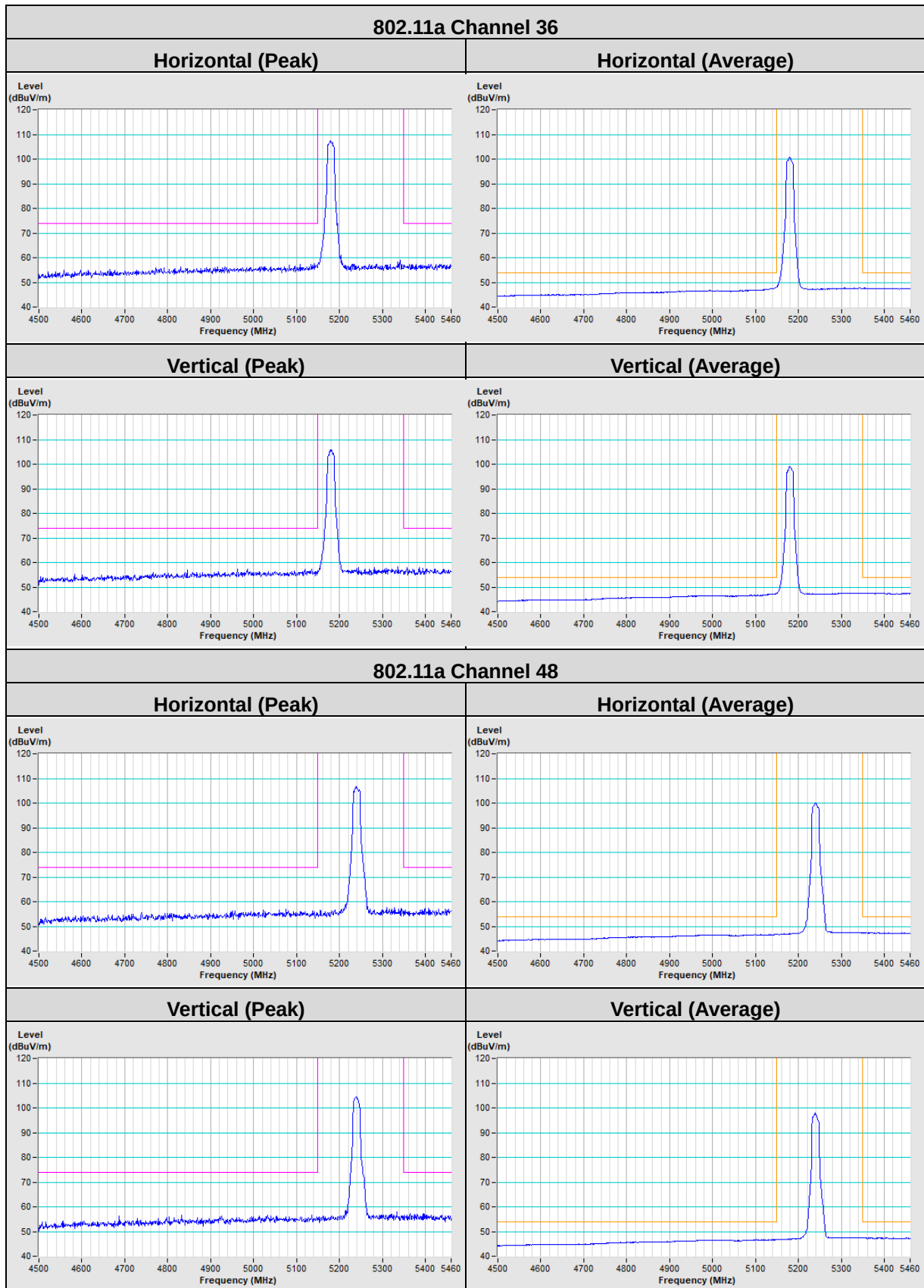
Horizontal

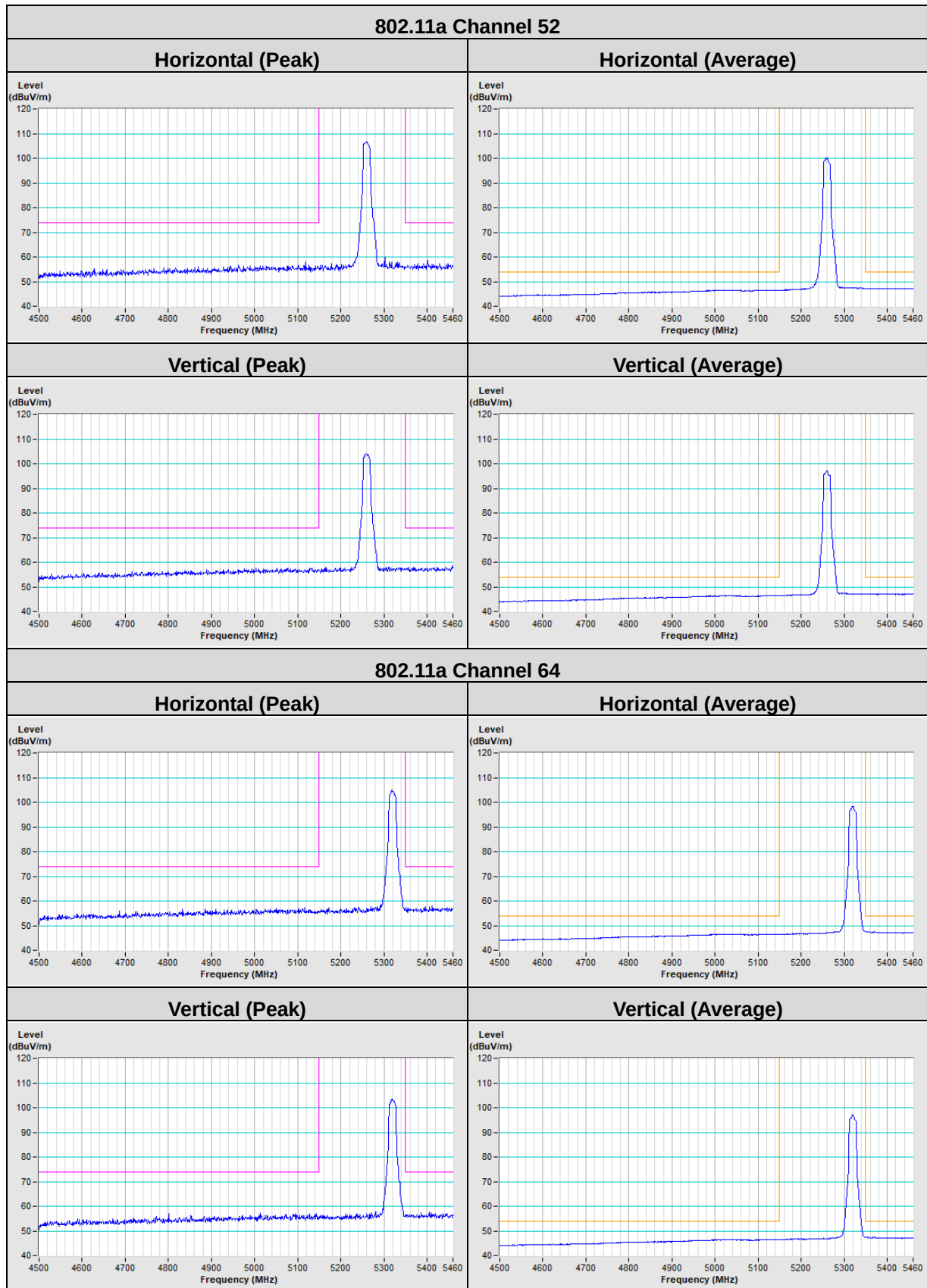


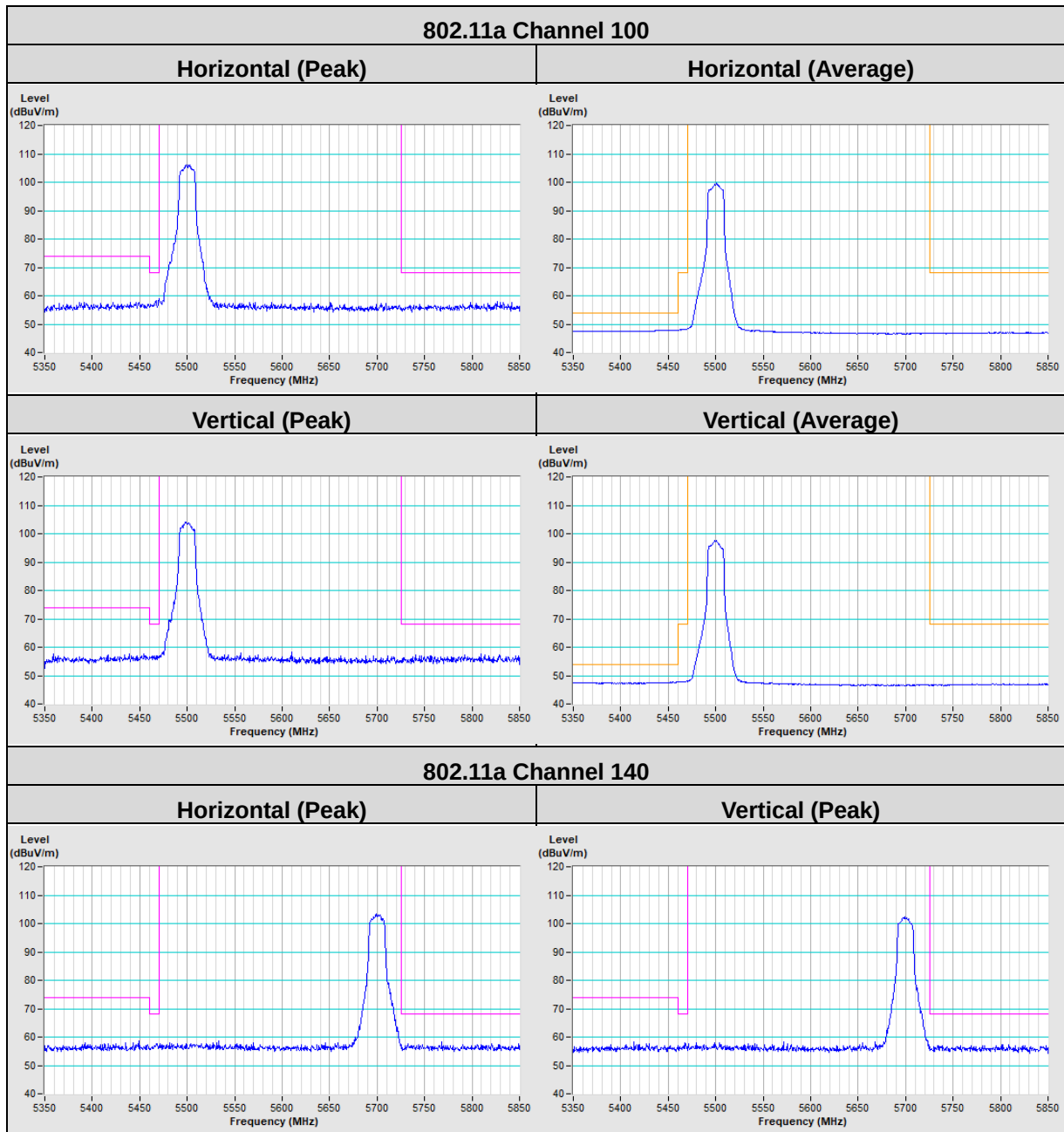
Vertical

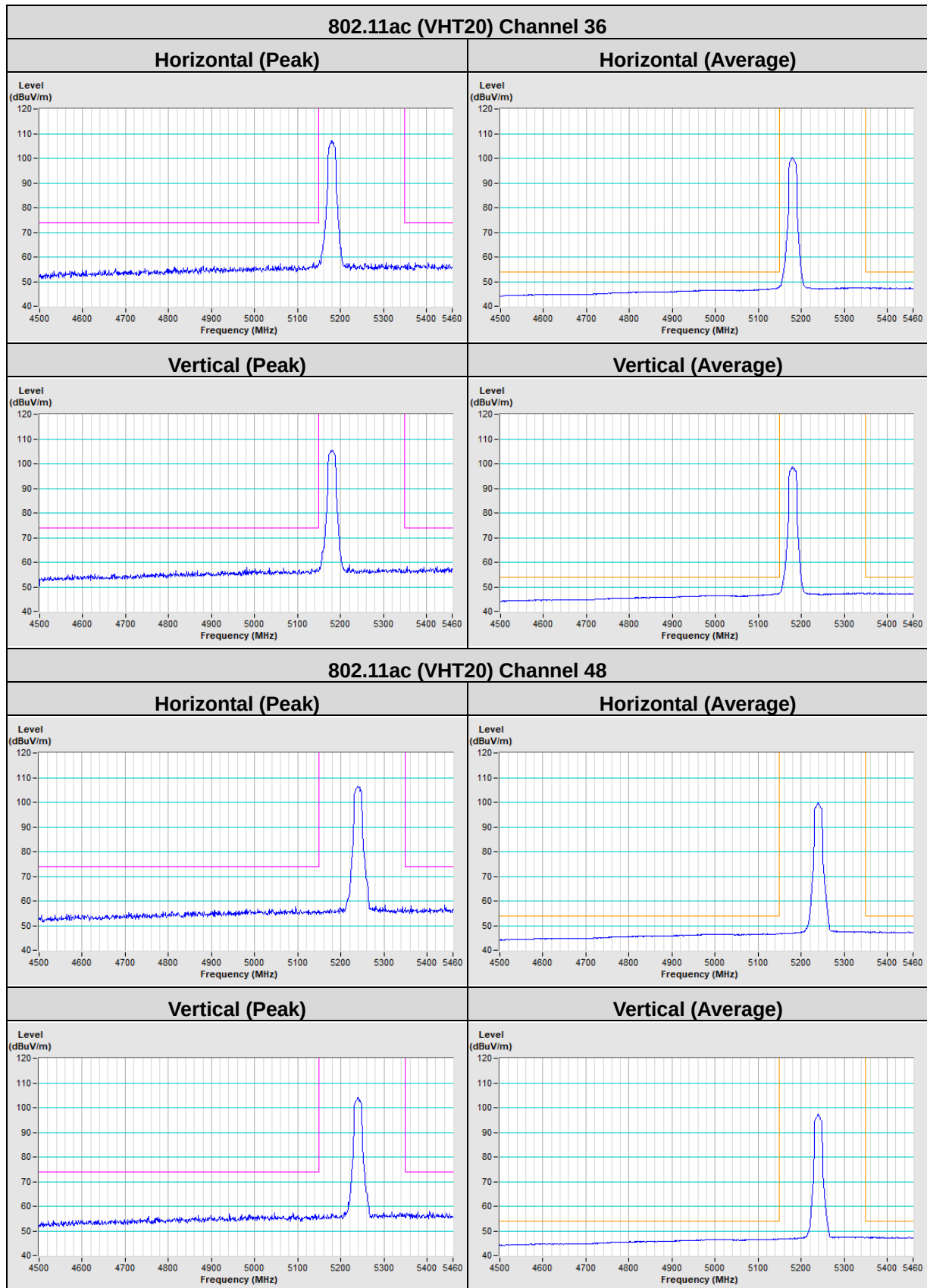


Annex B- Band Edge Measurement



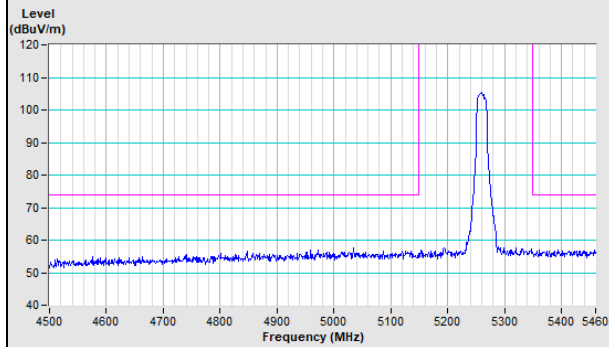




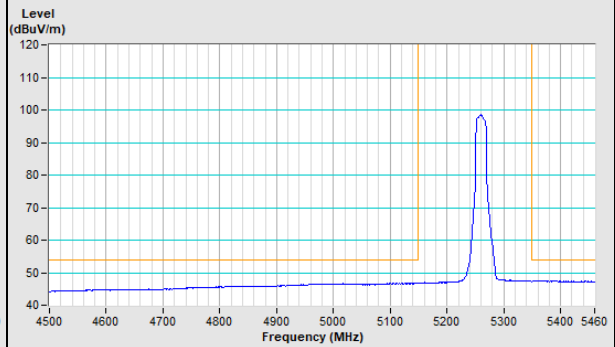


802.11ac (VHT20) Channel 52

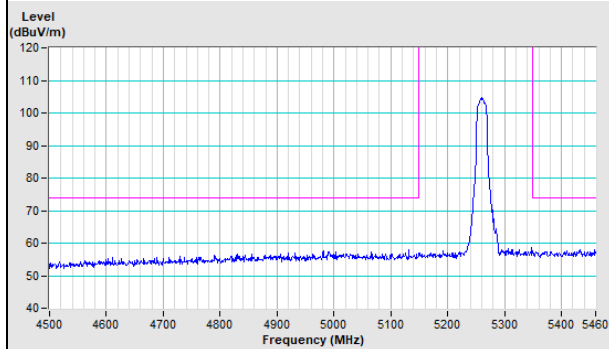
Horizontal (Peak)



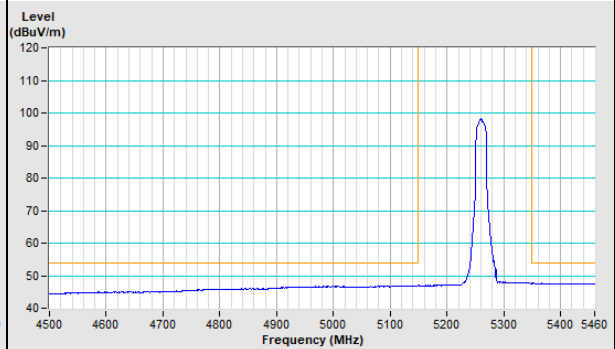
Horizontal (Average)



Vertical (Peak)

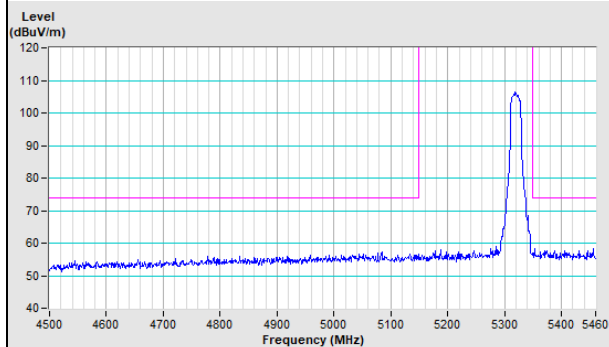


Vertical (Average)

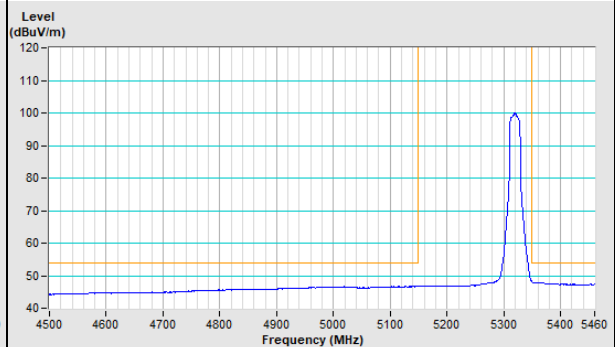


802.11ac (VHT20) Channel 64

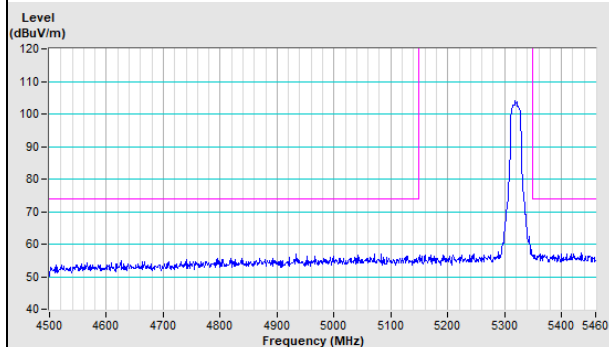
Horizontal (Peak)



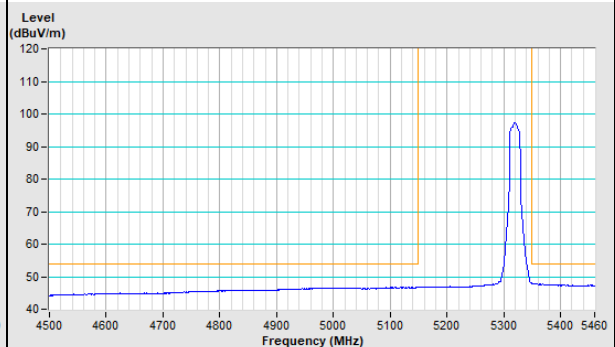
Horizontal (Average)

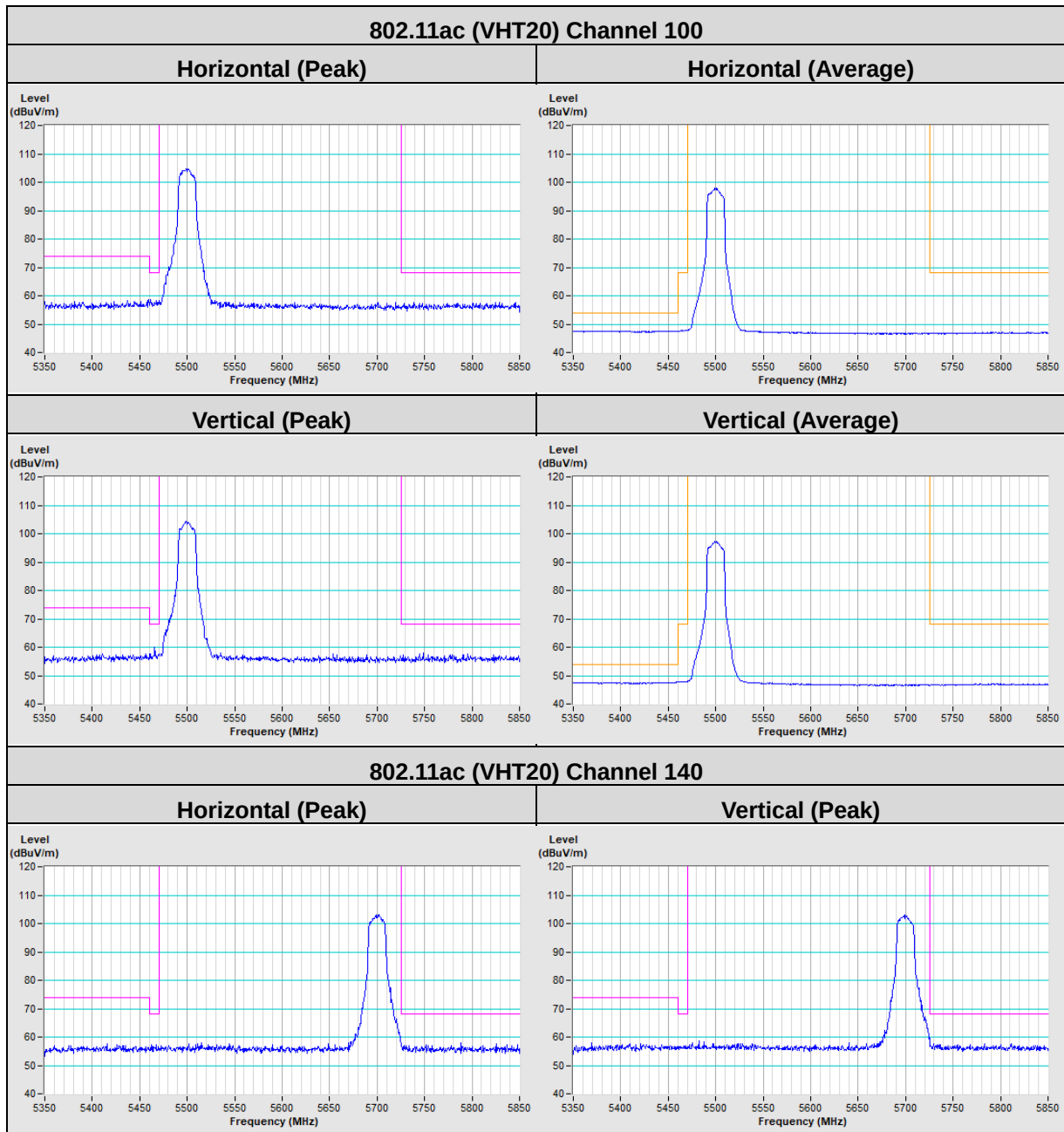


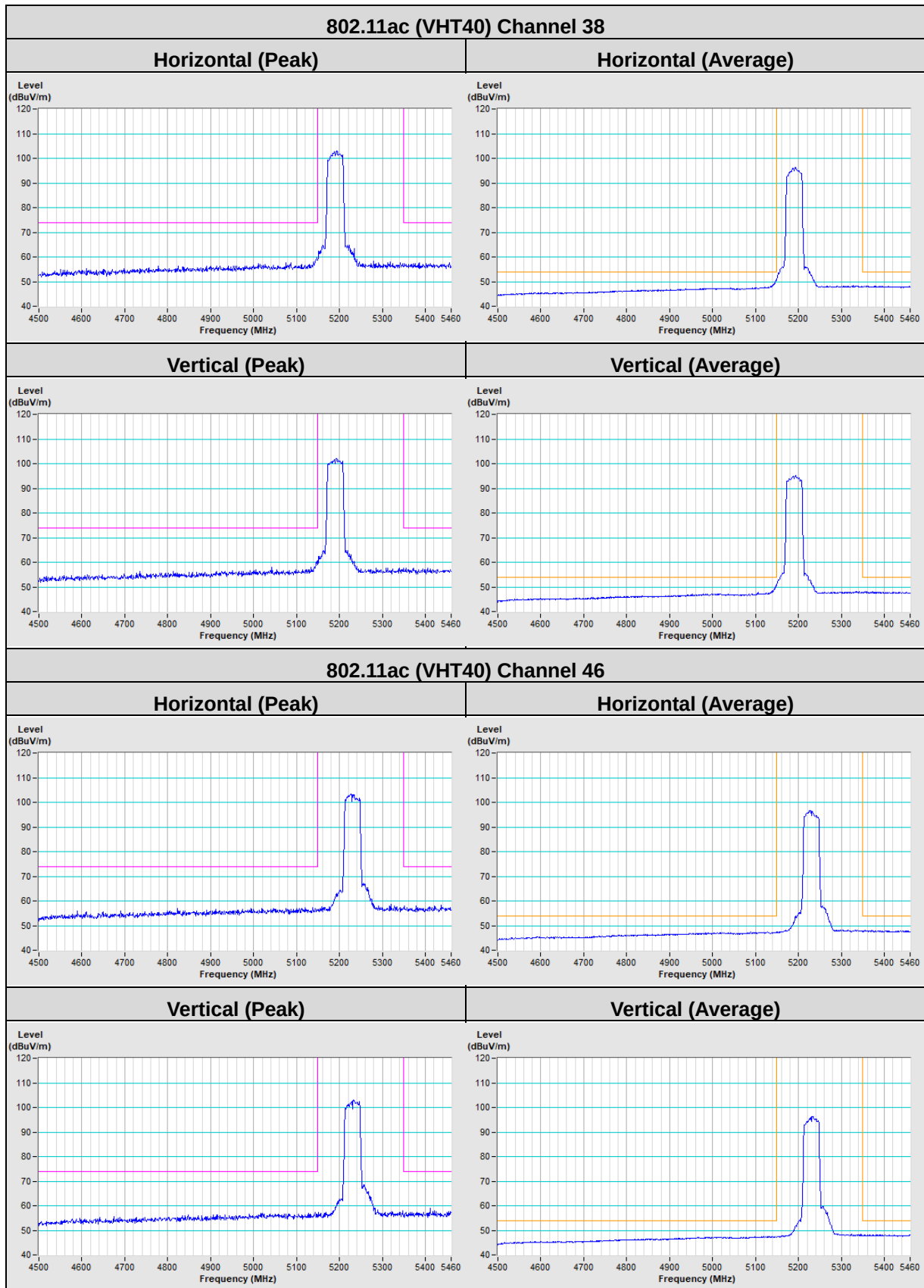
Vertical (Peak)

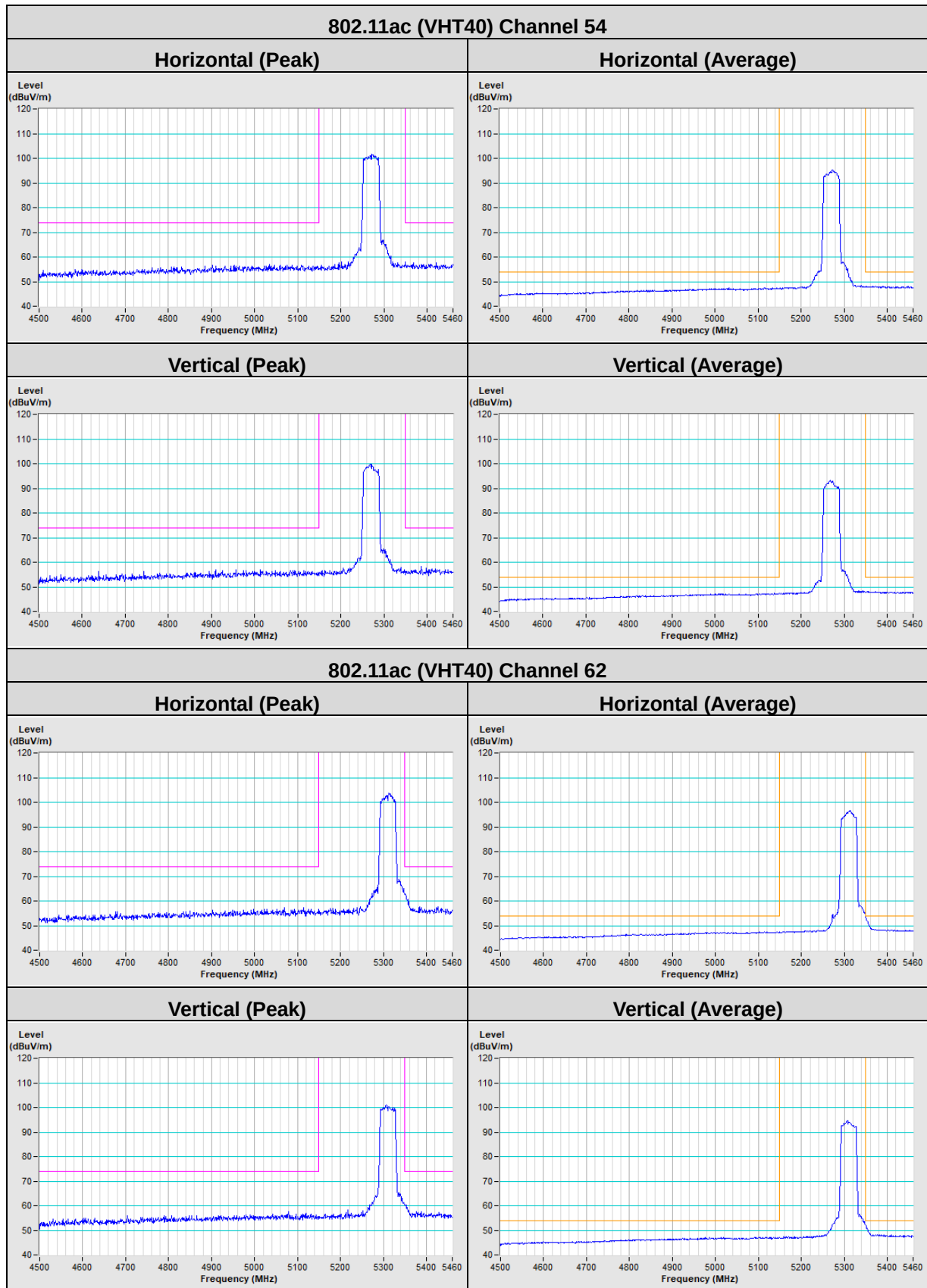


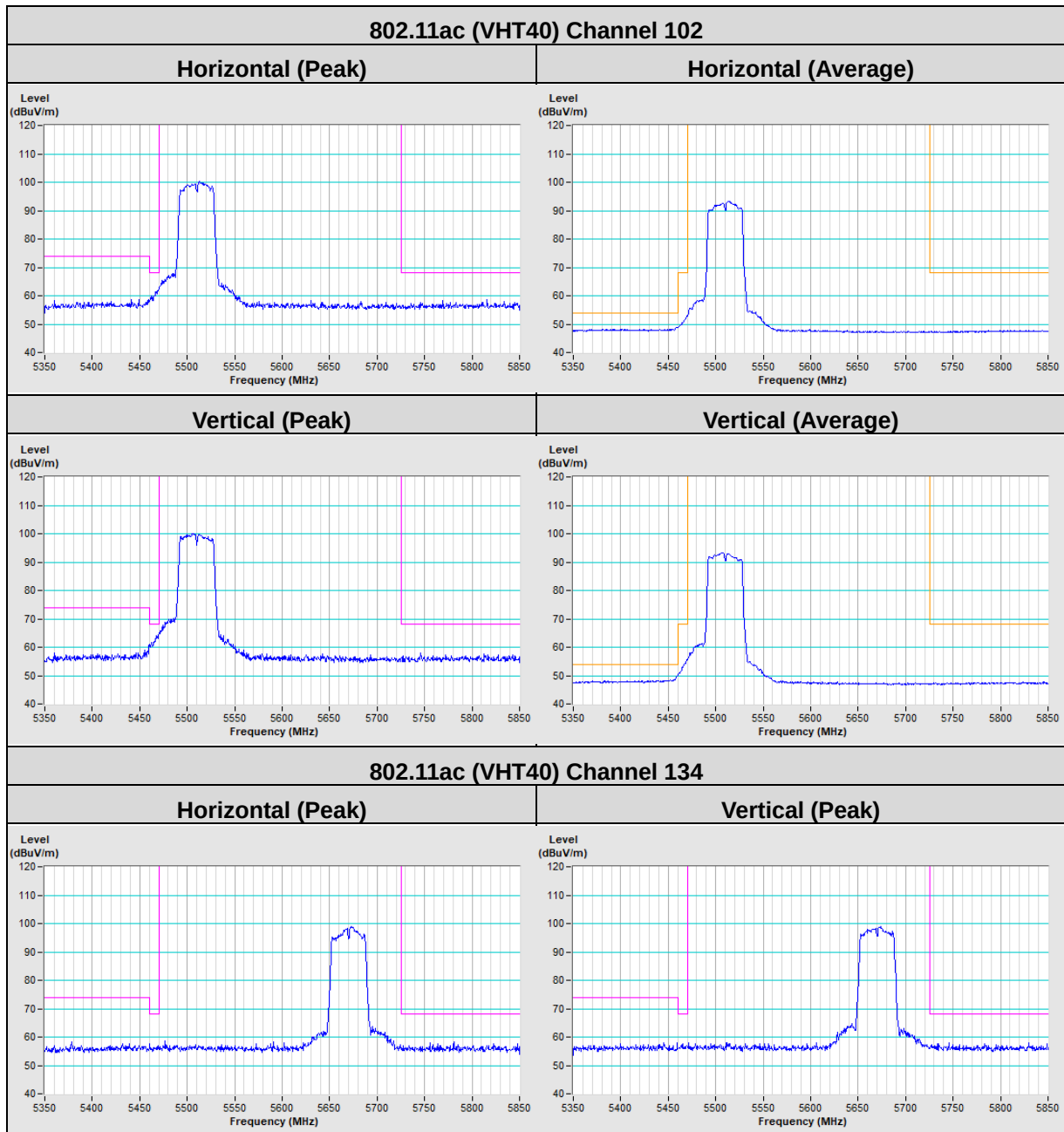
Vertical (Average)

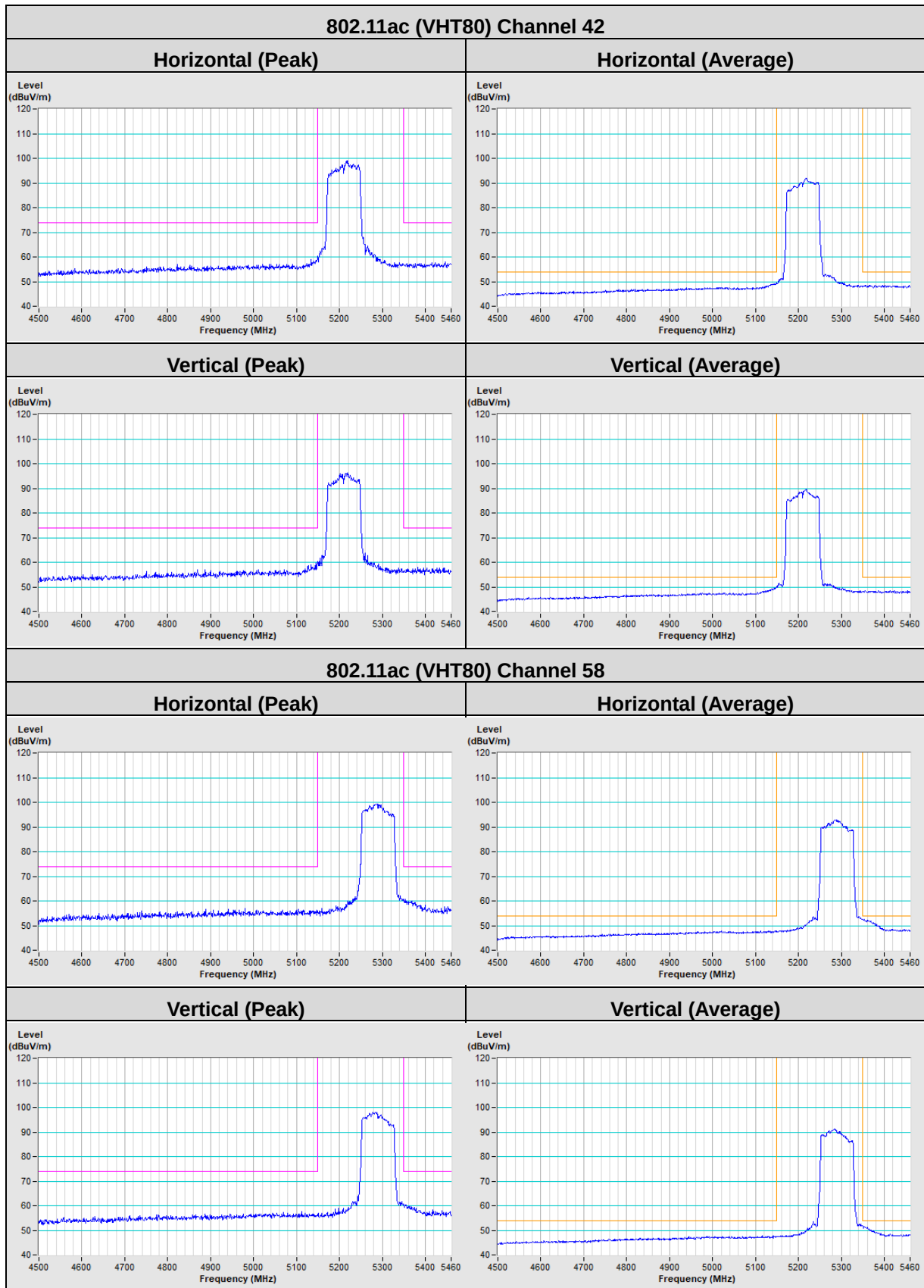


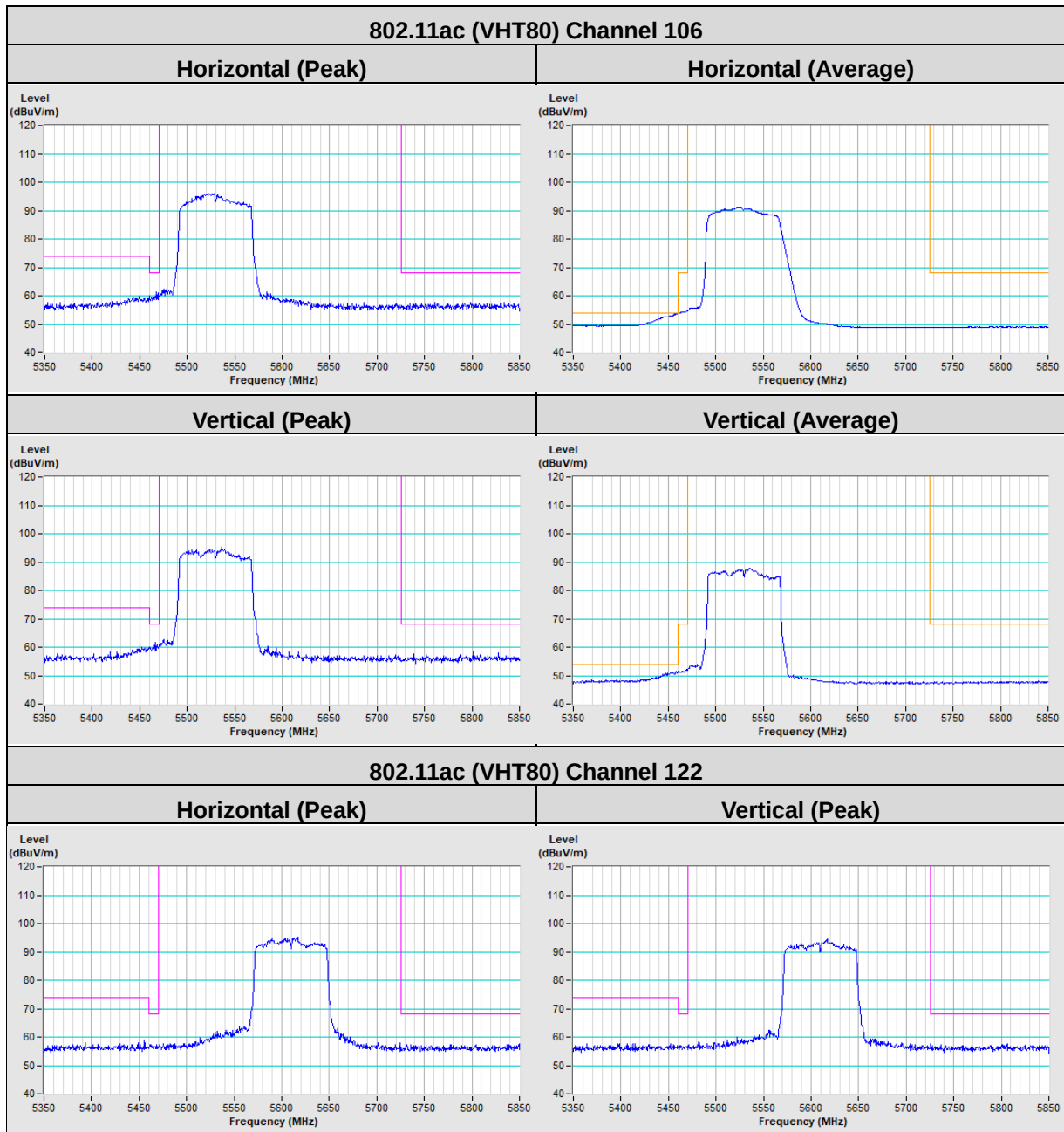












Appendix – Information of the Testing Laboratories

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 and approved according to ISO/IEC 17025.

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

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Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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

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