FCC Test Report

Report No.:	RFBBQZ-WTW-P20120983-1
FCC ID:	PY321100533
Test Model:	WAX206
Received Date:	Dec. 30, 2020
Test Date:	Feb. 25 ~ May 03, 2021
Issued Date:	May 27, 2021
Applicant and Manufacturer:	NETGEAR INC.
Address:	350 East Plumeria Drive, San Jose, CA 95134, USA
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location:	No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan
FCC Registration / Designation Number:	788550 / TW0003

Testing Laboratory
2021

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Release Control Record

Issue No.	Description	Date Issued
RFBBQZ-WTW-P20120983-1	Original Release	May 27, 2021

1 Certificate of Conformity

Product:	NETGEAR WiFi 6 AX3200 Dual Band Access Point
Brand:	NETGEAR
Test Model:	WAX206
Sample Status:	Engineering Sample
Applicant:	NETGEAR INC.
Test Date:	Feb. 25 ~ May 03, 2021
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 : Lena Wang , **Date:** May 27, 2021

Lena Wang / Specialist

Approved by : , **Date:** May 27, 2021

Dylan Chiou / Senior Project Engineer

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	**Test Item**	**Result**	**Remarks**
15.407(b)(8)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -16.76 dB at 0.15400 MHz.
15.407(b) (1/2/3/4(i/ii)/8)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -0.1 dB at 11490.00 MHz, 11570.00 MHz, 5148.00 MHz, 15720.00 MHz, 11650.00 MHz, 11510.00 MHz and 11590.00 MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6 dB Bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is i-pex(MHF).

Note:

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

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150 kHz ~ 30 MHz	2.79 dB
Radiated Emissions up to 1 GHz	9 kHz ~ 30 MHz	3.04 dB
	30 MHz ~ 200 MHz	2.93 dB
	200 MHz ~ 1000 MHz	2.95 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	NETGEAR WiFi 6 AX3200 Dual Band Access Point
Brand	NETGEAR
Test Model	WAX206
Status of EUT	Engineering Sample
Power Supply Rating	12.0 Vdc (adapter)
Modulation Type	1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK
Modulation Technology	OFDM, OFDMA
Transfer Rate	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0 Mbps 802.11ac: up to 800Mbps 802.11ax: up to 4803.9Mbps
Operating Frequency	5180 ~ 5240 MHz, 5745 ~ 5825 MHz
Number of Channel	5180 ~ 5240 MHz: 4 for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20) 2 for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40) 1 for 802.11ac (VHT80) , 802.11ax (HE80) 5745 ~ 5825 MHz: 5 for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20) 2 for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40) 1 for 802.11ac (VHT80) , 802.11ax (HE80)
Output Power	CDD Mode: 787.986 mW for 5180 ~ 5240 MHz 821.107 mW for 5745 ~ 5825 MHz Beamforming Mode: 787.986 mW for 5180 ~ 5240 MHz 775.175 mW for 5745 ~ 5825 MHz
Antenna Type	Refer to Note as below
Antenna Connector	Refer to Note as below
Accessory Device	Refer to Note as below
Data Cable Supplied	Refer to Note as below

Note:

1. The EUT incorporates a MIMO function. Physically, the EUT provides 4 completed transmitters and 4 receivers.

Modulation Mode	Tx Function	Beamforming Mode
802.11a	4TX	Not Support
802.11n (HT20)	4TX	Support
802.11n (HT40)	4TX	Support
802.11ac (VHT20)	4TX	Support
802.11ac (VHT40)	4TX	Support
802.11ac (VHT80)	4TX	Support
802.11ax (HE20)	4TX	Support
802.11ax (HE40)	4TX	Support
802.11ax (HE80)	4TX	Support

* The bandwidth and modulation are similar for VHT20/VHT40/VHT80 on 802.11ac mode and HE20/HE40/HE80 on 802.11ax mode. Therefore the investigated worst case is the representative mode in test report. (Final test mode refer section 3.2.1)

* For 802.11n, 802.11ac and 802.11ax, CDD mode and Beamforming mode are presented in power output test item. For other test items, CDD mode is the worst case for final tests after pretesting.

2. The EUT contains following accessory devices.

Adapter 1	
Brand	NETGEAR
Model	ADS-40FPA-12 12030EPCU-L ADS-40FPA-12 12030EPC-L
P/N	332-11525-01
Input Power	100-120Vac~60Hz
Output Power	12Vdc, 2.5A
Power line	1.8m non-shielded DC cable without core

Adapter 2	
Brand	NETGEAR
Model	AD2067F10
P/N	332-10797-01
Input Power	100-120Vac~50/60Hz
Output Power	12Vdc, 2.5A
Power line	1.8m non-shielded DC cable without core

* Adapter 1 was chosen for final test and presented in the test report.

3. The following antennas were provided to the EUT.

Ant. Type	Metal	
Connecter Type	i-pex(MHF)	
Directional Gain (dBi)		
2400-2500	5180-5240	5745-5825
6.81	6.85	7.02

* For detailed antenna information, please refer to the Operational Description-Antenna Specification report.

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

3.2 Description of Test Modes

For 5180 ~ 5240 MHz

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

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

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

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

1 channel is provided for 802.11ac (VHT80), 802.11ax (HE80):

Channel	Frequency (MHz)
42	5210

For 5745 ~ 5825 MHz:

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

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

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

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

1 channel is provided for 802.11ac (VHT80), 802.11ax (HE80):

Channel	Frequency (MHz)
155	5775

3.2.1 Test Mode Applicability and Tested Channel Detail

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

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

Note:
1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-plane**.
2. "-" means no effect.
3. Radiated emission test (below 1GHz) and power line conducted emission test items chosen the worst maximum power.

Radiated Emission Test (Above 1 GHz):

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

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

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5180-5240	802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6.0
-		802.11ax (HE20)	36 to 48	36, 40, 48	OFDMA	BPSK	MCS0
-		802.11ax (HE40)	38 to 46	38, 46	OFDMA	BPSK	MCS0
-		802.11ax (HE80)	42	42	OFDMA	BPSK	MCS0
-	5745-5825	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-		802.11ax (HE20)	149 to 165	149, 157, 165	OFDMA	BPSK	MCS0
-		802.11ax (HE40)	151 to 159	151, 159	OFDMA	BPSK	MCS0
-		802.11ax (HE80)	155	155	OFDMA	BPSK	MCS0

Radiated Emission Test (Below 1 GHz):

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

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

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5745-5825	802.11ax (HE40)	151 to 159	159	OFDMA	BPSK	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	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5745-5825	802.11ax (HE40)	151 to 159	159	OFDM	BPSK	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	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5180-5240	802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6.0
-		802.11ax (HE20)	36 to 48	36, 40, 48	OFDMA	BPSK	MCS0
-		802.11ax (HE40)	38 to 46	38, 46	OFDMA	BPSK	MCS0
-		802.11ax (HE80)	42	42	OFDMA	BPSK	MCS0
-	5745-5825	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-		802.11ax (HE20)	149 to 165	149, 157, 165	OFDMA	BPSK	MCS0
-		802.11ax (HE40)	151 to 159	151, 159	OFDMA	BPSK	MCS0
-		802.11ax (HE80)	155	155	OFDMA	BPSK	MCS0

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested by
RE≥1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Hans Wu
RE<1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Hans Wu
PLC	25 deg. C, 65 % RH	120 Vac, 60 Hz	Rex Wang
APCM	25 deg. C, 65 % RH	3.8 Vdc	Ivan Tseng

3.3 Duty Cycle of Test Signal

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

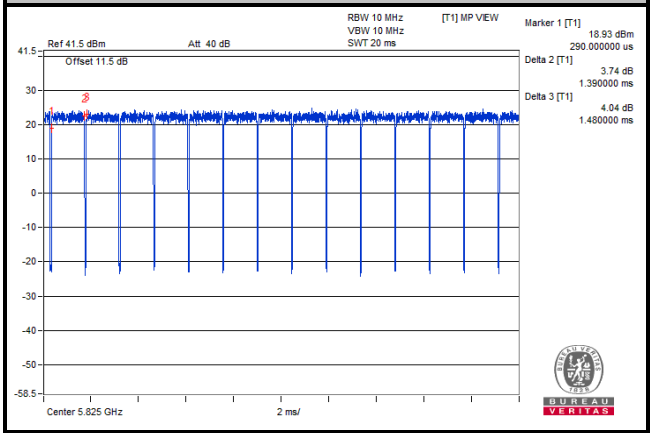
802.11a: Duty cycle = 1.39/1.48 = 0.939, Duty factor = 10 * log(1/0.939) = 0.27

802.11ax (HE20): Duty cycle = 1.014/1.074 = 0.944, Duty factor = 10 * log(1/0.944) = 0.25

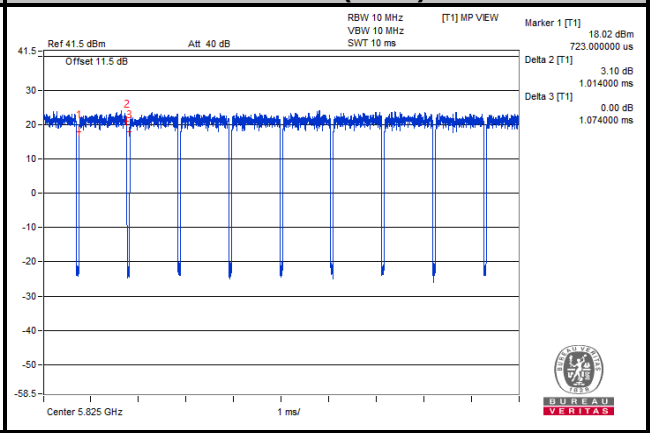
802.11ax (HE40): Duty cycle = 0.537/0.597 = 0.899, Duty factor = 10 * log(1/0.899) = 0.46

802.11ax (HE80): Duty cycle = 0.286/0.353 = 0.81, Duty factor = 10 * log(1/0.81) = 0.91

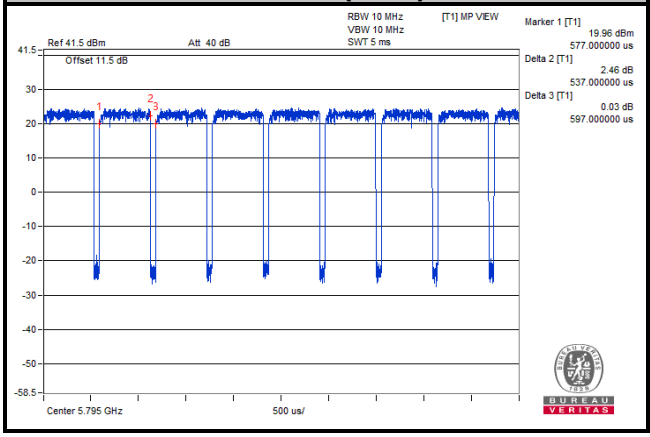
802.11a



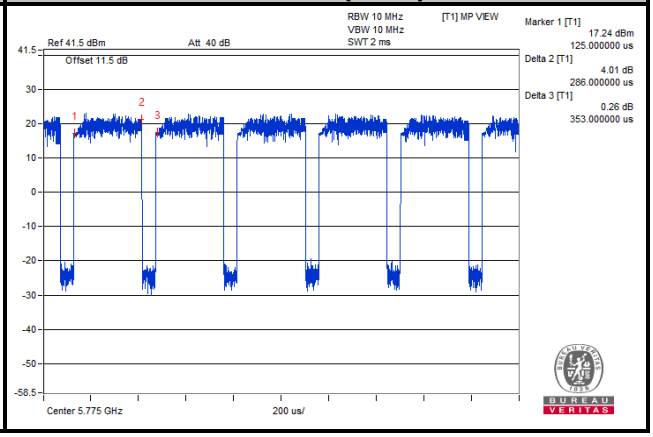
802.11ax (HE20)



802.11ax (HE40)



802.11ax (HE80)



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.

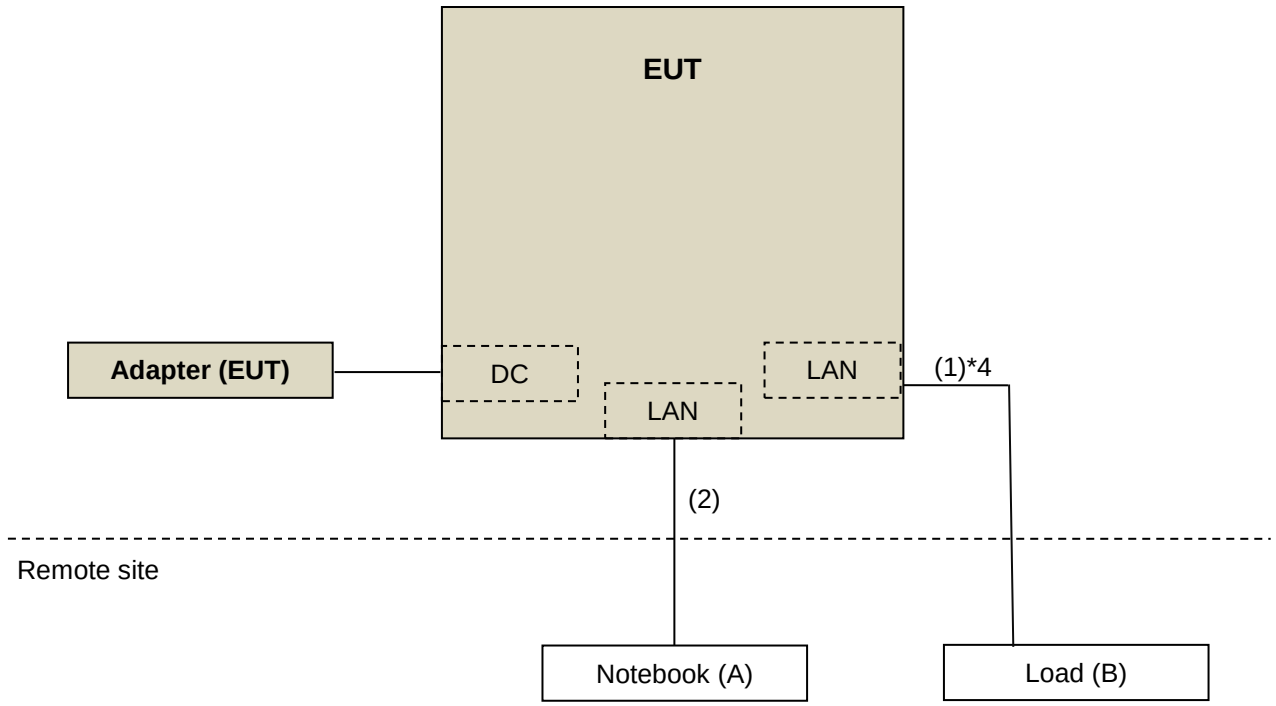
No.	Product	Brand	Model No.	Serial No.	FCC ID
A	Notebook	DELL	E5410	1HC2XM1	N/A
B	Load	N/A	N/A	N/A	N/A

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	LAN	4	1.5	N	0	RJ45, Cat5e
2.	LAN	1	10	N	0	RJ45, Cat5e

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Items A acted as communication partners to transfer data.

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards and References

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

Test Standard:

FCC Part 15, Subpart E (15.407)
ANSI C63.10-2013

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

References Test Guidance:

KDB 789033 D02 General UNII Test Procedures New Rules v02r01
KDB 662911 D01 Multiple Transmitter Output v02r01

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

Note:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

Limits of Unwanted Emission Out of the Restricted Bands

Applicable To			Limit	
789033 D02 General UNII Test Procedures New Rules v02r01			Field Strength at 3 m	
			PK: 74 (dBμV/m)	AV: 54 (dBμV/m)
Frequency Band	**Applicable To**		**EIRP Limit**	**Equivalent Field Strength at 3 m**
5150~5250 MHz	15.407(b)(1)		PK: -27 (dBm/MHz)	PK: 68.2 (dBμV/m)
5250~5350 MHz	15.407(b)(2)			
5470~5725 MHz	15.407(b)(3)			
5725~5850 MHz	☒	15.407(b)(4)(i)	PK:-27 (dBm/MHz) *1 PK:10 (dBm/MHz) *2 PK:15.6 (dBm/MHz) *3 PK:27 (dBm/MHz) *4	PK: 68.2 (dBμV/m) *1 PK:105.2 (dBμV/m) *2 PK: 110.8 (dBμV/m) *3 PK:122.2 (dBμV/m) *4
	☐	15.407(b)(4)(ii)	Emission limits in section 15.247(d)	

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

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

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

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

Note:

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

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

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Dec. 31, 2020	Dec. 30, 2021
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Sep. 16, 2020	Sep. 15, 2021
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Nov. 03, 2020	Nov. 02, 2021
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-1170	Nov. 22, 2020	Nov. 21, 2021
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 22, 2020	Nov. 21, 2021
Loop Antenna TESEQ	HLA 6121	45745	Jul. 06, 2020	Jul. 05, 2021
Preamplifier Agilent (Below 1GHz)	8447D	2944A10631	Jun. 08, 2020	Jun. 07, 2021
Preamplifier KEYSIGHT (Above 1GHz)	83017A	MY53270295	Jun. 08, 2020	Jun. 07, 2021
RF Coaxial Cable WORKEN With 5dB PAD	8D-FB	Cable-CH4-01	Aug. 16, 2020	Aug. 15, 2021
RF Coaxial Cable EMCI	EMC102-KM-KM-3000	150929	Aug. 16, 2020	Aug. 15, 2021
RF Coaxial Cable EMCI	EMC102-KM-KM-600	150928	Aug. 16, 2020	Aug. 15, 2021
RF signal cable HUBER+SUHNER	SUCOFLEX 104	MY 13380+295012/04	Jun. 08, 2020	Jun. 07, 2021
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH4-03 (250724)	Jun. 08, 2020	Jun. 07, 2021
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021703	NA	NA
Turn Table BV ADT	TT100	TT93021703	NA	NA
Turn Table Controller BV ADT	SC100	SC93021703	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Pre-amplifier (18GHz-40GHz) EMC	EMC184045B	980175	Sep. 04, 2020	Sep. 03, 2021
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY55190004/MY55190007/MY55210005	Jul. 13, 2020	Jul. 12, 2021

Note: 1. The calibration interval of the above test instruments is 12 / 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 10.

4.1.3 Test Procedures

For Radiated Emission below 30 MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

Note:

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

For Radiated Emission above 30 MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 1 GHz) / 1.5 meters (for above 1 GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
f. The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

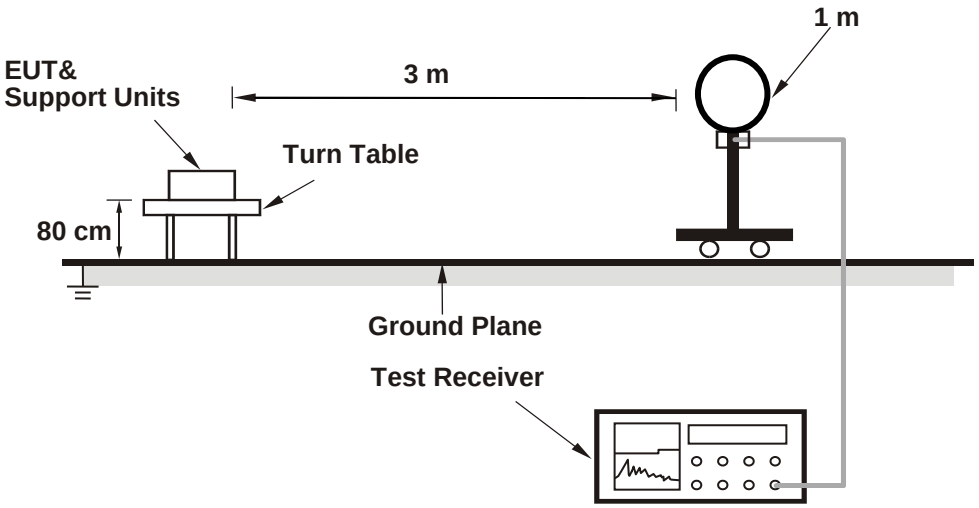
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98 %) or 10 Hz (Duty cycle ≥ 98 %) for Average detection (AV) at frequency above 1 GHz.
   (11a: RBW = 1 MHz, VBW = 1 kHz ; 11ax (HE20): RBW = 1 MHz, VBW = 1 kHz ;
   11ax (HE40): RBW = 1 MHz, VBW = 2 kHz ; 11ax (HE80): RBW = 1 MHz, VBW = 5.1 kHz)
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

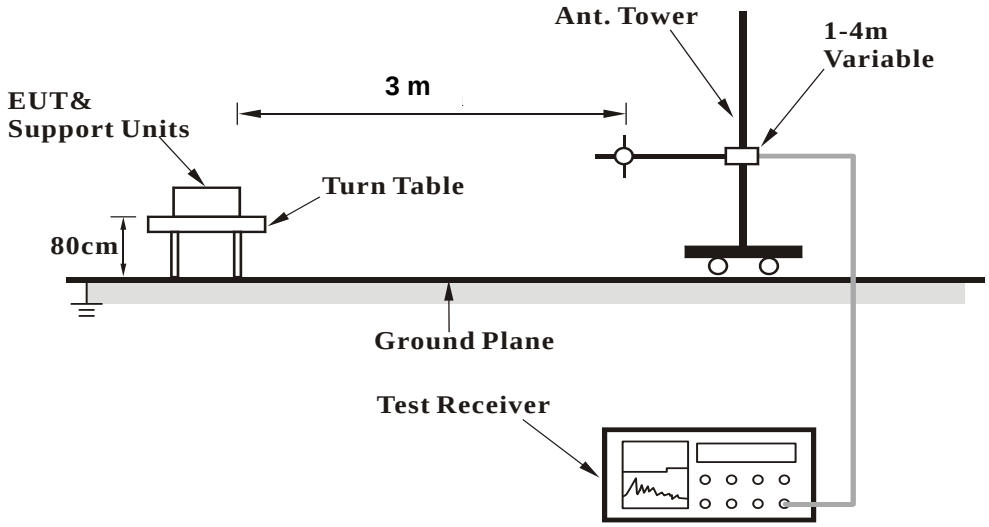
No deviation.

4.1.5 Test Setup

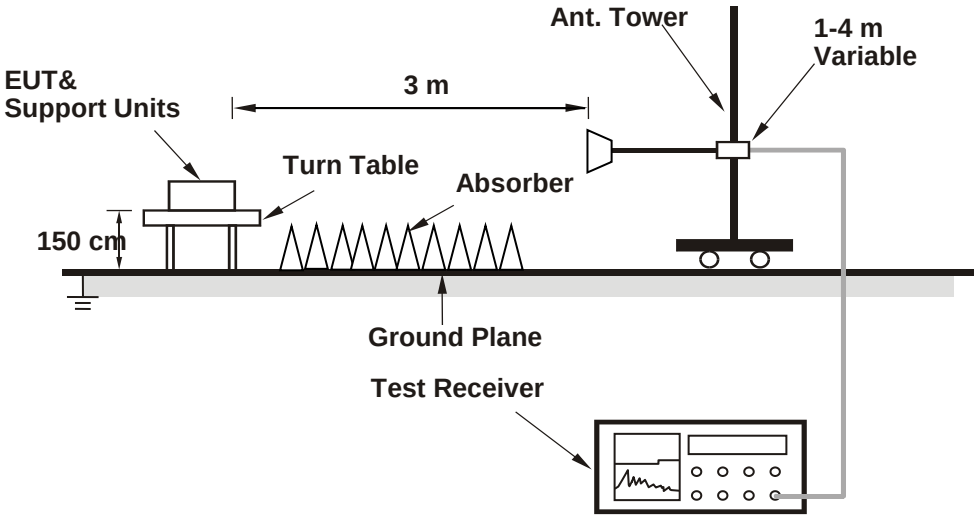
<Radiated Emission below 30 MHz>



<Radiated Emission 30 MHz to 1 GHz>



<Radiated Emission above 1 GHz>



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

4.1.6 EUT Operating Conditions

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

4.1.7 Test Results

Above 1 GHz Data：

802.11a

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	67.2 PK	74.0	-6.8	1.48 H	97	56.6	10.6
2	5150.00	49.8 AV	54.0	-4.2	1.48 H	97	39.2	10.6
3	*5180.00	115.0 PK			1.48 H	97	75.3	39.7
4	*5180.00	106.9 AV			1.48 H	97	67.2	39.7
5	#10360.00	60.8 PK	68.2	-7.4	1.68 H	305	39.7	21.1
6	15540.00	63.4 PK	74.0	-10.6	1.54 H	261	40.0	23.4
7	15540.00	51.7 AV	54.0	-2.3	1.54 H	261	28.3	23.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	5150.00	69.0 PK	74.0	-5.0	1.65 V	0	58.4	10.6
2	5150.00	53.7 AV	54.0	-0.3	1.65 V	0	43.1	10.6
3	*5180.00	117.9 PK			1.65 V	0	78.2	39.7
4	*5180.00	109.6 AV			1.65 V	0	69.9	39.7
5	#10360.00	59.2 PK	68.2	-9.0	1.58 V	162	38.1	21.1
6	15540.00	61.8 PK	74.0	-12.2	2.74 V	264	38.4	23.4
7	15540.00	51.3 AV	54.0	-2.7	2.74 V	264	27.9	23.4

Remarks:

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

RF Mode	TX 802.11a	Channel	CH 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	116.6 PK			1.52 H	100	76.9	39.7
2	*5200.00	108.5 AV			1.52 H	100	68.8	39.7
3	#10400.00	60.3 PK	68.2	-7.9	1.65 H	312	38.6	21.7
4	15600.00	63.9 PK	74.0	-10.1	1.55 H	254	40.6	23.3
5	15600.00	53.3 AV	54.0	-0.7	1.55 H	254	30.0	23.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5200.00	120.4 PK			1.51 V	291	80.7	39.7
2	*5200.00	112.3 AV			1.51 V	291	72.6	39.7
3	#10400.00	60.7 PK	68.2	-7.5	1.36 V	94	39.0	21.7
4	15600.00	64.4 PK	74.0	-9.6	1.48 V	292	41.1	23.3
5	15600.00	53.7 AV	54.0	-0.3	1.48 V	292	30.4	23.3

Remarks:

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

RF Mode	TX 802.11a	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	119.8 PK			1.46 H	95	80.2	39.6
2	*5240.00	111.3 AV			1.46 H	95	71.7	39.6
3	5350.00	56.0 PK	74.0	-18.0	1.46 H	95	45.8	10.2
4	5350.00	45.4 AV	54.0	-8.6	1.46 H	95	35.2	10.2
5	#10480.00	59.6 PK	68.2	-8.6	1.70 H	314	38.7	20.9
6	15720.00	63.0 PK	74.0	-11.0	1.50 H	265	40.3	22.7
7	15720.00	53.3 AV	54.0	-0.7	1.50 H	265	30.6	22.7
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	120.6 PK			1.50 V	288	81.0	39.6
2	*5240.00	112.1 AV			1.50 V	288	72.5	39.6
3	5350.00	56.7 PK	74.0	-17.3	1.50 V	288	46.5	10.2
4	5350.00	46.3 AV	54.0	-7.7	1.50 V	288	36.1	10.2
5	#10480.00	60.2 PK	68.2	-8.0	1.33 V	102	39.3	20.9
6	15720.00	63.4 PK	74.0	-10.6	1.55 V	264	40.7	22.7
7	15720.00	53.8 AV	54.0	-0.2	1.55 V	264	31.1	22.7

Remarks:

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

RF Mode	TX 802.11a	Channel	CH 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	#5648.00	59.8 PK	68.2	-8.4	1.50 H	267	49.1	10.7
2	*5745.00	114.2 PK			1.50 H	267	73.5	40.7
3	*5745.00	106.5 AV			1.50 H	267	65.8	40.7
4	#5950.40	60.7 PK	68.2	-7.5	1.50 H	267	49.2	11.5
5	11490.00	63.8 PK	74.0	-10.2	2.72 H	218	40.3	23.5
6	11490.00	53.9 AV	54.0	-0.1	2.72 H	218	30.4	23.5
7	#17235.00	67.8 PK	68.2	-0.4	1.69 H	220	38.5	29.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5639.20	60.3 PK	68.2	-7.9	1.43 V	266	49.6	10.7
2	*5745.00	120.1 PK			1.43 V	266	79.4	40.7
3	*5745.00	109.5 AV			1.43 V	266	68.8	40.7
4	#5944.40	61.3 PK	68.2	-6.9	1.43 V	266	49.8	11.5
5	11490.00	62.7 PK	74.0	-11.3	1.50 V	226	39.2	23.5
6	11490.00	52.8 AV	54.0	-1.2	1.50 V	226	29.3	23.5
7	#17235.00	67.4 PK	68.2	-0.8	1.66 V	271	38.1	29.3

Remarks:

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

RF Mode	TX 802.11a	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	#5607.60	59.1 PK	68.2	-9.1	1.47 H	289	48.4	10.7
2	*5785.00	114.4 PK			1.47 H	289	73.5	40.9
3	*5785.00	106.3 AV			1.47 H	289	65.4	40.9
4	#5964.00	60.6 PK	68.2	-7.6	1.47 H	289	49.1	11.5
5	11570.00	64.7 PK	74.0	-9.3	1.77 H	143	41.4	23.3
6	11570.00	53.9 AV	54.0	-0.1	1.77 H	143	30.6	23.3
7	#17355.00	67.5 PK	68.2	-0.7	1.89 H	279	37.8	29.7
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5632.80	60.0 PK	68.2	-8.2	1.38 V	271	49.3	10.7
2	*5785.00	119.8 PK			1.38 V	271	78.9	40.9
3	*5785.00	108.6 AV			1.38 V	271	67.7	40.9
4	#5941.20	62.0 PK	68.2	-6.2	1.38 V	271	50.5	11.5
5	11570.00	63.9 PK	74.0	-10.1	1.55 V	214	40.6	23.3
6	11570.00	53.2 AV	54.0	-0.8	1.55 V	214	29.9	23.3
7	#17355.00	67.1 PK	68.2	-1.1	1.62 V	285	37.4	29.7

Remarks:

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

RF Mode	TX 802.11a	Channel	CH 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	#5600.00	59.1 PK	68.2	-9.1	1.41 H	274	48.4	10.7
2	*5825.00	111.3 PK			1.41 H	274	70.3	41.0
3	*5825.00	102.9 AV			1.41 H	274	61.9	41.0
4	#5927.60	59.6 PK	68.2	-8.6	1.41 H	274	48.0	11.6
5	11650.00	64.8 PK	74.0	-9.2	2.63 H	217	41.8	23.0
6	11650.00	53.7 AV	54.0	-0.3	2.63 H	217	30.7	23.0
7	#17475.00	67.6 PK	68.2	-0.6	1.64 H	215	37.1	30.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5637.20	60.3 PK	68.2	-7.9	1.33 V	265	49.6	10.7
2	*5825.00	117.8 PK			1.33 V	265	76.8	41.0
3	*5825.00	107.2 AV			1.33 V	265	66.2	41.0
4	#5996.80	61.5 PK	68.2	-6.7	1.33 V	265	50.1	11.4
5	11650.00	63.2 PK	74.0	-10.8	1.44 V	203	40.2	23.0
6	11650.00	53.4 AV	54.0	-0.6	1.44 V	203	30.4	23.0
7	#17475.00	67.0 PK	68.2	-1.2	1.72 V	293	36.5	30.5

Remarks:

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

802.11ax (HE20)

RF Mode	TX 802.11ax (HE20)	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	67.4 PK	74.0	-6.6	1.50 H	263	56.8	10.6
2	5150.00	53.1 AV	54.0	-0.9	1.50 H	263	42.5	10.6
3	*5180.00	115.1 PK			1.50 H	263	75.4	39.7
4	*5180.00	105.0 AV			1.50 H	263	65.3	39.7
5	#10360.00	58.2 PK	68.2	-10.0	1.64 H	308	37.1	21.1
6	15540.00	61.5 PK	74.0	-12.5	1.56 H	257	38.1	23.4
7	15540.00	51.7 AV	54.0	-2.3	1.56 H	257	28.3	23.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	68.2 PK	74.0	-5.8	1.61 V	286	57.6	10.6
2	5150.00	53.8 AV	54.0	-0.2	1.61 V	286	43.2	10.6
3	*5180.00	118.6 PK			1.61 V	286	78.9	39.7
4	*5180.00	108.3 AV			1.61 V	286	68.6	39.7
5	#10360.00	59.7 PK	68.2	-8.5	1.40 V	87	38.6	21.1
6	15540.00	62.1 PK	74.0	-11.9	1.81 V	247	38.7	23.4
7	15540.00	52.1 AV	54.0	-1.9	1.81 V	247	28.7	23.4

Remarks:

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

RF Mode	TX 802.11ax (HE20)	Channel	CH 40：5200 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	66.8 PK	74.0	-7.2	1.52 H	260	56.2	10.6
2	5150.00	52.4 AV	54.0	-1.6	1.52 H	260	41.8	10.6
3	*5200.00	116.9 PK			1.52 H	260	77.2	39.7
4	*5200.00	106.6 AV			1.52 H	260	66.9	39.7
5	#10400.00	59.1 PK	68.2	-9.1	1.66 H	296	37.4	21.7
6	15600.00	61.3 PK	74.0	-12.7	1.53 H	271	38.0	23.3
7	15600.00	52.5 AV	54.0	-1.5	1.53 H	271	29.2	23.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5148.00	68.0 PK	74.0	-6.0	1.51 V	290	57.4	10.6
2	5148.00	53.9 AV	54.0	-0.1	1.51 V	290	43.3	10.6
3	*5200.00	123.0 PK			1.51 V	290	83.3	39.7
4	*5200.00	112.0 AV			1.51 V	290	72.3	39.7
5	#10400.00	59.5 PK	68.2	-8.7	1.43 V	120	37.8	21.7
6	15600.00	62.0 PK	74.0	-12.0	1.61 V	244	38.7	23.3
7	15600.00	53.1 AV	54.0	-0.9	1.61 V	244	29.8	23.3

Remarks:

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

RF Mode	TX 802.11ax (HE20)	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	117.6 PK			1.53 H	261	78.0	39.6
2	*5240.00	107.4 AV			1.53 H	261	67.8	39.6
3	5350.00	56.2 PK	74.0	-17.8	1.53 H	261	46.0	10.2
4	5350.00	45.6 AV	54.0	-8.4	1.53 H	261	35.4	10.2
5	#10480.00	60.4 PK	68.2	-7.8	1.57 H	304	39.5	20.9
6	15720.00	63.0 PK	74.0	-11.0	1.52 H	260	40.3	22.7
7	15720.00	53.1 AV	54.0	-0.9	1.52 H	260	30.4	22.7
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	119.9 PK			1.64 V	282	80.3	39.6
2	*5240.00	110.4 AV			1.64 V	282	70.8	39.6
3	5350.00	56.5 PK	74.0	-17.5	1.64 V	282	46.3	10.2
4	5350.00	46.4 AV	54.0	-7.6	1.64 V	282	36.2	10.2
5	#10480.00	61.5 PK	68.2	-6.7	1.24 V	95	40.6	20.9
6	15720.00	63.7 PK	74.0	-10.3	1.51 V	286	41.0	22.7
7	15720.00	53.9 AV	54.0	-0.1	1.51 V	286	31.2	22.7

Remarks:

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

RF Mode	TX 802.11ax (HE20)	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	#5628.00	60.5 PK	68.2	-7.7	1.70 H	266	49.8	10.7
2	*5745.00	114.3 PK			1.70 H	266	73.6	40.7
3	*5745.00	105.1 AV			1.70 H	266	64.4	40.7
4	#5946.80	60.2 PK	68.2	-8.0	1.70 H	266	48.7	11.5
5	11490.00	66.5 PK	74.0	-7.5	2.60 H	215	43.0	23.5
6	11490.00	53.9 AV	54.0	-0.1	2.60 H	215	30.4	23.5
7	#17235.00	67.6 PK	68.2	-0.6	3.17 H	246	38.3	29.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5620.00	60.2 PK	68.2	-8.0	1.42 V	263	49.5	10.7
2	*5745.00	119.4 PK			1.42 V	263	78.7	40.7
3	*5745.00	109.6 AV			1.42 V	263	68.9	40.7
4	#5938.80	60.8 PK	68.2	-7.4	1.42 V	263	49.3	11.5
5	11490.00	64.5 PK	74.0	-9.5	1.99 V	230	41.0	23.5
6	11490.00	52.5 AV	54.0	-1.5	1.99 V	230	29.0	23.5
7	#17235.00	67.4 PK	68.2	-0.8	1.64 V	296	38.1	29.3

Remarks:

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

RF Mode	TX 802.11ax (HE20)	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	#5602.80	50.1 PK	68.2	-18.1	1.64 H	270	39.4	10.7
2	*5785.00	114.4 PK			1.64 H	270	73.5	40.9
3	*5785.00	104.8 AV			1.64 H	270	63.9	40.9
4	#5927.60	50.0 PK	68.2	-18.2	1.64 H	270	38.4	11.6
5	11570.00	65.2 PK	74.0	-8.8	2.59 H	215	41.9	23.3
6	11570.00	53.9 AV	54.0	-0.1	2.59 H	215	30.6	23.3
7	#17375.00	67.7 PK	68.2	-0.5	2.39 H	226	38.0	29.7
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5624.40	59.7 PK	68.2	-8.5	1.45 V	258	48.9	10.8
2	*5785.00	119.5 PK			1.45 V	258	78.6	40.9
3	*5785.00	110.0 AV			1.45 V	258	69.1	40.9
4	#5928.80	60.7 PK	68.2	-7.5	1.45 V	258	49.1	11.6
5	11570.00	64.4 PK	74.0	-9.6	2.03 V	226	41.1	23.3
6	11570.00	52.9 AV	54.0	-1.1	2.03 V	226	29.6	23.3
7	#17375.00	67.3 PK	68.2	-0.9	1.72 V	308	37.6	29.7

Remarks:

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

RF Mode	TX 802.11ax (HE20)	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	#5636.80	59.6 PK	68.2	-8.6	2.03 H	283	48.9	10.7
2	*5825.00	112.8 PK			2.03 H	283	71.8	41.0
3	*5825.00	103.3 AV			2.03 H	283	62.3	41.0
4	#5944.00	59.9 PK	68.2	-8.3	2.03 H	283	48.4	11.5
5	11650.00	63.7 PK	74.0	-10.3	2.77 H	214	40.7	23.0
6	11650.00	53.9 AV	54.0	-0.1	2.77 H	214	30.9	23.0
7	#17475.00	67.5 PK	68.2	-0.7	2.76 H	226	37.0	30.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5629.60	60.0 PK	68.2	-8.2	1.50 V	269	49.3	10.7
2	*5825.00	117.5 PK			1.50 V	269	76.5	41.0
3	*5825.00	108.2 AV			1.50 V	269	67.2	41.0
4	#5938.80	60.8 PK	68.2	-7.4	1.50 V	269	49.3	11.5
5	11650.00	63.2 PK	74.0	-10.8	2.03 V	248	40.2	23.0
6	11650.00	52.3 AV	54.0	-1.7	2.03 V	248	29.3	23.0
7	#17475.00	67.1 PK	68.2	-1.1	1.70 V	281	36.6	30.5

Remarks:

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

802.11ax (HE40)

RF Mode	TX 802.11ax (HE40)	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	65.9 PK	74.0	-8.1	1.48 H	261	55.3	10.6
2	5150.00	51.4 AV	54.0	-2.6	1.48 H	261	40.8	10.6
3	*5190.00	109.0 PK			1.48 H	261	69.3	39.7
4	*5190.00	98.9 AV			1.48 H	261	59.2	39.7
5	#10380.00	59.9 PK	68.2	-8.3	1.68 H	213	38.5	21.4
6	15570.00	59.7 PK	74.0	-14.3	1.50 H	269	36.4	23.3
7	15570.00	51.2 AV	54.0	-2.8	1.50 H	269	27.9	23.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	68.2 PK	74.0	-5.8	1.35 V	272	57.6	10.6
2	5150.00	53.8 AV	54.0	-0.2	1.35 V	272	43.2	10.6
3	*5190.00	115.0 PK			1.35 V	272	75.3	39.7
4	*5190.00	105.8 AV			1.35 V	272	66.1	39.7
5	#10380.00	60.1 PK	68.2	-8.1	1.58 V	325	38.7	21.4
6	15570.00	60.2 PK	74.0	-13.8	1.50 V	13	36.9	23.3
7	15570.00	51.0 AV	54.0	-3.0	1.50 V	13	27.7	23.3

Remarks:

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

RF Mode	TX 802.11ax (HE40)	Channel	CH 46：5230 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	61.8 PK	74.0	-12.2	1.45 H	264	51.2	10.6
2	5150.00	49.1 AV	54.0	-4.9	1.45 H	264	38.5	10.6
3	*5230.00	111.8 PK			1.45 H	264	72.2	39.6
4	*5230.00	101.9 AV			1.45 H	264	62.3	39.6
5	#10460.00	59.3 PK	68.2	-8.9	1.62 H	208	38.2	21.1
6	15690.00	60.4 PK	74.0	-13.6	1.56 H	277	37.6	22.8
7	15690.00	50.3 AV	54.0	-3.7	1.56 H	277	27.5	22.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5146.00	67.0 PK	74.0	-7.0	1.58 V	79	56.4	10.6
2	5146.00	53.8 AV	54.0	-0.2	1.58 V	79	43.2	10.6
3	*5230.00	115.5 PK			1.58 V	79	75.9	39.6
4	*5230.00	106.5 AV			1.58 V	79	66.9	39.6
5	#10460.00	59.8 PK	68.2	-8.4	1.98 V	17	38.7	21.1
6	15690.00	60.9 PK	74.0	-13.1	1.62 V	58	38.1	22.8
7	15690.00	50.8 AV	54.0	-3.2	1.62 V	58	28.0	22.8

Remarks:

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

RF Mode	TX 802.11ax (HE40)	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	#5601.60	59.5 PK	68.2	-8.7	1.99 H	271	48.8	10.7
2	*5755.00	111.8 PK			1.99 H	271	71.0	40.8
3	*5755.00	103.5 AV			1.99 H	271	62.7	40.8
4	#5926.80	60.8 PK	68.2	-7.4	1.99 H	271	49.2	11.6
5	11510.00	64.0 PK	74.0	-10.0	2.66 H	215	40.6	23.4
6	11510.00	53.9 AV	54.0	-0.1	2.66 H	215	30.5	23.4
7	#17265.00	67.7 PK	68.2	-0.5	3.26 H	245	38.5	29.2
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5644.80	59.4 PK	68.2	-8.8	1.50 V	257	48.7	10.7
2	*5755.00	115.1 PK			1.50 V	257	74.3	40.8
3	*5755.00	107.3 AV			1.50 V	257	66.5	40.8
4	#5952.00	60.0 PK	68.2	-8.2	1.50 V	257	48.5	11.5
5	11510.00	61.5 PK	74.0	-12.5	1.63 V	332	38.1	23.4
6	11510.00	53.1 AV	54.0	-0.9	1.63 V	332	29.7	23.4
7	#17265.00	67.0 PK	68.2	-1.2	1.62 V	128	37.8	29.2

Remarks:

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

RF Mode	TX 802.11ax (HE40)	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	#5636.80	59.6 PK	68.2	-8.6	2.13 H	265	48.9	10.7
2	*5795.00	112.0 PK			2.13 H	265	71.0	41.0
3	*5795.00	103.5 AV			2.13 H	265	62.5	41.0
4	#5960.40	60.5 PK	68.2	-7.7	2.13 H	265	49.0	11.5
5	11590.00	64.8 PK	74.0	-9.2	2.56 H	214	41.6	23.2
6	**11590.00**	**53.9 AV**	**54.0**	**-0.1**	**2.56 H**	**214**	**30.7**	**23.2**
7	#17385.00	67.5 PK	68.2	-0.7	3.24 H	255	37.7	29.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5642.80	60.3 PK	68.2	-7.9	1.47 V	255	49.6	10.7
2	*5795.00	115.2 PK			1.47 V	255	74.2	41.0
3	*5795.00	107.7 AV			1.47 V	255	66.7	41.0
4	#5949.20	61.0 PK	68.2	-7.2	1.47 V	255	49.5	11.5
5	11590.00	61.8 PK	74.0	-12.2	1.65 V	326	38.6	23.2
6	11590.00	53.0 AV	54.0	-1.0	1.65 V	326	29.8	23.2
7	#17385.00	66.3 PK	68.2	-1.9	1.59 V	122	36.5	29.8

Remarks:

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

802.11ax (HE80)

RF Mode	TX 802.11ax (HE80)	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	59.2 PK	74.0	-14.8	1.53 H	265	48.6	10.6
2	5150.00	51.6 AV	54.0	-2.4	1.53 H	265	41.0	10.6
3	*5210.00	104.9 PK			1.53 H	265	65.2	39.7
4	*5210.00	96.0 AV			1.53 H	265	56.3	39.7
5	#10420.00	58.0 PK	68.2	-10.2	1.63 H	214	36.5	21.5
6	15630.00	61.7 PK	74.0	-12.3	1.62 H	276	38.5	23.2
7	15630.00	51.0 AV	54.0	-3.0	1.62 H	276	27.8	23.2
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5145.00	63.1 PK	74.0	-10.9	1.46 V	293	52.5	10.6
2	5145.00	53.8 AV	54.0	-0.2	1.46 V	293	43.2	10.6
3	*5210.00	109.8 PK			1.46 V	293	70.1	39.7
4	*5210.00	101.4 AV			1.46 V	293	61.7	39.7
5	#10420.00	58.3 PK	68.2	-9.9	1.56 V	354	36.8	21.5
6	15630.00	61.5 PK	74.0	-12.5	1.42 V	86	38.3	23.2
7	15630.00	51.4 AV	54.0	-2.6	1.42 V	86	28.2	23.2

Remarks:

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

RF Mode	TX 802.11ax (HE80)	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	#5618.00	66.0 PK	68.2	-2.2	1.90 H	258	55.3	10.7
2	*5775.00	112.6 PK			1.90 H	258	71.8	40.8
3	*5775.00	101.0 AV			1.90 H	258	60.2	40.8
4	#5927.60	65.4 PK	68.2	-2.8	1.90 H	258	53.8	11.6
5	11550.00	66.1 PK	74.0	-7.9	2.55 H	212	42.8	23.3
6	11550.00	53.6 AV	54.0	-0.4	2.55 H	212	30.3	23.3
7	#17325.00	67.5 PK	68.2	-0.7	2.97 H	247	38.0	29.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5640.40	67.9 PK	68.2	-0.3	1.53 V	262	57.2	10.7
2	#5755.00	114.4 PK			1.53 V	262	73.6	40.8
3	#5755.00	103.1 AV			1.53 V	262	62.3	40.8
4	#5933.20	60.6 PK	68.2	-7.6	1.53 V	262	49.1	11.5
5	11550.00	65.2 PK	74.0	-8.8	1.60 V	314	41.9	23.3
6	11550.00	52.6 AV	54.0	-1.4	1.60 V	314	29.3	23.3
7	#17235.00	66.9 PK	68.2	-1.3	1.82 V	209	37.6	29.3

Remarks:

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

9 kHz ~ 30 MHz Data:

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

30 MHz ~ 1 GHz Worst-Case Data:

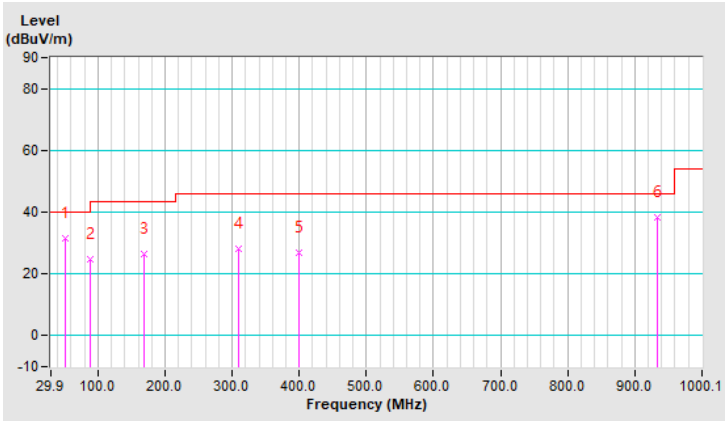
802.11ax (HE40)

RF Mode	TX 802.11ax (HE40)	Channel	CH 159：5795 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	51.24	31.4 QP	40.0	-8.6	1.50 H	262	40.3	-8.9
2	88.11	24.8 QP	43.5	-18.7	1.01 H	356	39.3	-14.5
3	169.61	26.3 QP	43.5	-17.2	1.50 H	303	35.5	-9.2
4	309.32	28.0 QP	46.0	-18.0	1.01 H	67	35.4	-7.4
5	400.52	26.8 QP	46.0	-19.2	1.50 H	124	32.7	-5.9
6	934.13	38.5 QP	46.0	-7.5	2.00 H	332	31.6	6.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit 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.

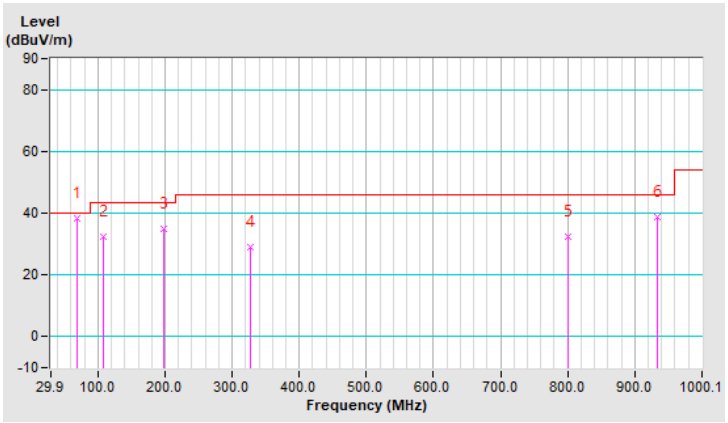


RF Mode	TX 802.11ax (HE40)	Channel	CH 159：5795 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	68.71	38.4 QP	40.0	-1.6	1.99 V	323	49.3	-10.9
2	108.49	32.4 QP	43.5	-11.1	1.99 V	291	44.5	-12.1
3	197.74	35.0 QP	43.5	-8.5	1.99 V	323	46.8	-11.8
4	327.75	28.9 QP	46.0	-17.1	1.00 V	301	35.8	-6.9
5	800.24	32.4 QP	46.0	-13.6	1.00 V	10	28.6	3.8
6	934.13	38.7 QP	46.0	-7.3	1.49 V	208	31.8	6.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit 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 0.50 MHz.

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Dec. 04, 2020	Dec. 03, 2021
RF signal cable Woken	5D-FB	Cable-cond1-01	Sep. 04, 2020	Sep. 03, 2021
LISN/AMN ROHDE & SCHWARZ (EUT)	ENV216	101826	Sep. 07, 2020	Sep. 06, 2021
LISN/AMN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 28, 2020	Aug. 27, 2021
Software ADT	BV ADT_Cond_ V7.3.7.4	NA	NA	NA

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

4.2.3 Test Procedures

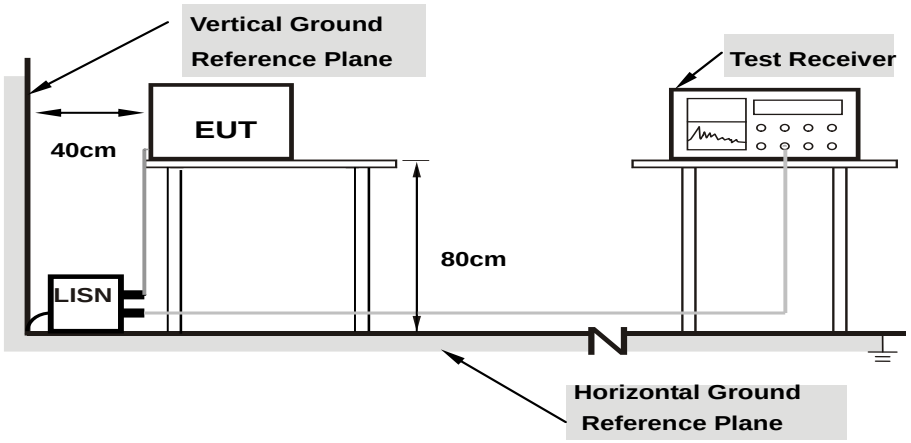
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

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

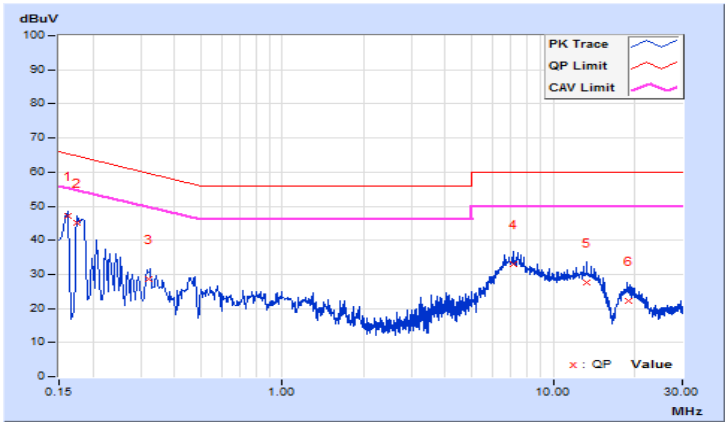
4.2.7 Test Results

Frequency Range	150kHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	**Environmental Conditions**	25℃, 75%RH
Tested by	Rex Wang	**Test Date**	2021/2/25

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	0.16105	10.09	37.14	22.82	47.23	32.91	65.41	55.41	-18.18	-22.50
2	0.17384	10.10	35.10	17.20	45.20	27.30	64.77	54.77	-19.57	-27.47
3	0.32288	10.16	18.48	9.64	28.64	19.80	59.63	49.63	-30.99	-29.83
4	7.09400	10.66	22.45	17.21	33.11	27.87	60.00	50.00	-26.89	-22.13
5	13.25000	10.98	16.75	9.65	27.73	20.63	60.00	50.00	-32.27	-29.37
6	18.90200	11.26	11.01	5.42	22.27	16.68	60.00	50.00	-37.73	-33.32

Remarks:

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

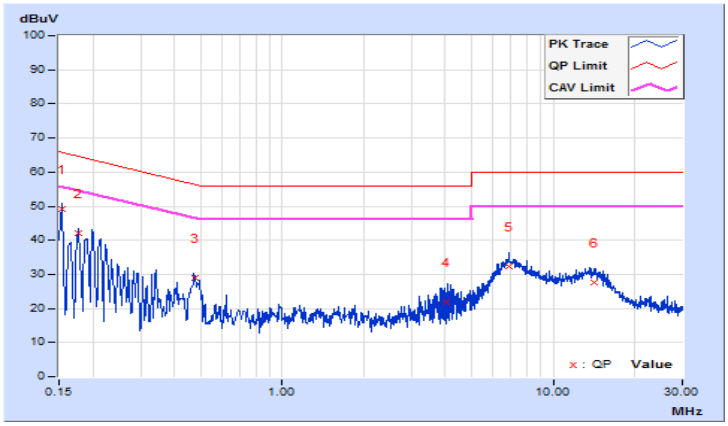


Frequency Range	150kHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	**Environmental Conditions**	25℃, 75%RH
Tested by	Rex Wang	**Test Date**	2021/2/25

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	**0.15400**	**10.08**	**38.94**	**21.66**	**49.02**	**31.74**	**65.78**	**55.78**	**-16.76**	**-24.04**
2	0.17615	10.09	32.15	17.09	42.24	27.18	64.67	54.67	-22.43	-27.49
3	0.47559	10.20	18.92	14.59	29.12	24.79	56.42	46.42	-27.30	-21.63
4	4.01400	10.45	11.31	2.73	21.76	13.18	56.00	46.00	-34.24	-32.82
5	6.83800	10.57	21.79	16.79	32.36	27.36	60.00	50.00	-27.64	-22.64
6	14.15000	10.85	16.91	10.47	27.76	21.32	60.00	50.00	-32.24	-28.68

Remarks:

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



4.3 Transmit Power Measurement

4.3.1 Limits of Transmit Power Measurement

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

*B is the 26 dB emission bandwidth in megahertz

Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

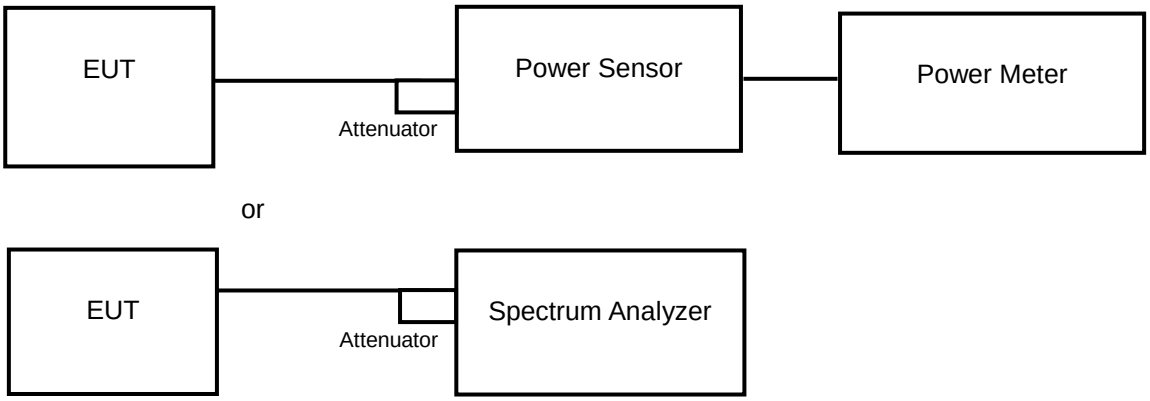
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};

Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20 MHz channel widths with $N_{ANT} \geq 5$.

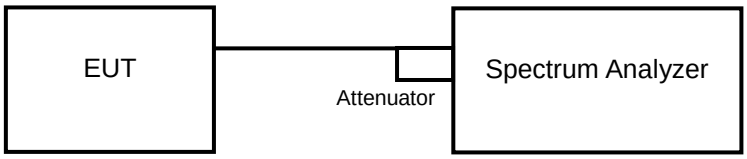
For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

4.3.2 Test Setup

<Power Output Measurement>



<26 dB Bandwidth>



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

Average Power Measurement

<802.11a, 802.11n (HT20), 802.11n (HT40)>

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

<802.11ac (VHT80)>

a. Set span to encompass the entire 26 dB EBW (or, alternatively, the entire 99 % occupied bandwidth) of the signal.
b. Set sweep trigger to “free run”.
c. Set RBW = 1 MHz.
d. Set VBW ≥ 3 MHz
e. Number of points in sweep ≥ 2 Span / RBW.
f. Sweep time ≤ (number of points in sweep) * T
g. Using emission bandwidth to determine the frequency span for integration the channel bandwidth.
h. Detector = RMS.
i. Trace mode = max hold.
j. Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.
k. Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument’s band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum

26 dB Bandwidth

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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Results

Power Output:

CDD Mode

802.11a

Channel	Frequency (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	20.38	19.69	19.60	20.54	406.696	26.09	30	Pass
40	5200	21.77	21.52	21.23	21.74	574.239	27.59	30	Pass
48	5240	23.00	22.86	22.64	22.84	768.686	28.86	30	Pass
149	5745	20.21	20.93	20.62	19.78	439.24	26.43	30	Pass
157	5785	19.86	20.17	20.26	19.88	404.264	26.07	30	Pass
165	5825	17.59	18.50	17.87	17.52	245.935	23.91	30	Pass

802.11ac (VHT20)

Channel	Frequency (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	20.62	19.60	19.63	19.79	393.659	25.95	30	Pass
40	5200	21.14	21.08	21.02	21.05	512.074	27.09	30	Pass
48	5240	23.08	23.16	22.55	22.73	777.636	28.91	30	Pass
149	5745	19.97	20.42	20.05	19.74	404.812	26.07	30	Pass
157	5785	19.65	20.33	20.31	19.82	403.491	26.06	30	Pass
165	5825	17.10	18.46	17.76	17.17	233.255	23.68	30	Pass

802.11ac (VHT40)

Channel	Frequency (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
38	5190	19.08	18.39	18.11	18.77	289.983	24.62	30	Pass
46	5230	21.54	20.92	20.81	21.07	514.597	27.11	30	Pass
151	5755	20.14	20.18	20.15	19.98	410.563	26.13	30	Pass
159	5795	23.06	23.11	23.14	22.89	807.545	29.07	30	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
42	5210	18.12	17.39	17.08	18.03	234.275	23.70	30	Pass
155	5775	22.60	22.86	22.79	22.80	755.821	28.78	30	Pass

802.11ax (HE20)

Channel	Frequency (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	20.68	19.67	19.75	19.81	399.758	26.02	30	Pass
40	5200	21.25	21.15	21.13	21.13	523.105	27.19	30	Pass
48	5240	23.13	23.23	22.64	22.75	787.986	28.97	30	Pass
149	5745	19.93	20.47	20.24	19.92	413.687	26.17	30	Pass
157	5785	19.80	20.45	20.02	19.85	403.483	26.06	30	Pass
165	5825	17.21	18.52	17.83	17.26	237.608	23.76	30	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
38	5190	19.16	18.45	18.12	18.78	292.771	24.67	30	Pass
46	5230	21.65	20.93	20.92	21.12	523.112	27.19	30	Pass
151	5755	20.15	20.25	20.25	20.05	416.523	26.20	30	Pass
159	5795	23.16	23.13	23.22	22.98	821.107	29.14	30	Pass

802.11ax (HE80)

Channel	Frequency (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
42	5210	18.21	17.50	17.14	18.12	239.08	23.79	30	Pass
155	5775	22.62	22.94	22.91	22.81	766.018	28.84	30	Pass

Beamforming Mode

802.11ac (VHT20)

Channel	Frequency (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	20.62	19.60	19.63	19.79	393.659	25.95	29.15	Pass
40	5200	21.14	21.08	21.02	21.05	512.074	27.09	29.15	Pass
48	5240	23.08	23.16	22.55	22.73	777.636	28.91	29.15	Pass
149	5745	19.97	20.42	20.05	19.74	404.812	26.07	28.98	Pass
157	5785	19.65	20.33	20.31	19.82	403.491	26.06	28.98	Pass
165	5825	17.10	18.46	17.76	17.17	233.255	23.68	28.98	Pass

Note:

1. 5180-5240MHz: Directional gain = 6.85 dBi > 6 dBi, so the power density limit shall be reduced to 30-(6.85-6) = 29.15 dBm.
2. 5745-5825MHz: Directional gain = 7.02 dBi > 6 dBi, so the power density limit shall be reduced to 30-(7.02-6) = 28.98 dBm.

802.11ac (VHT40)

Channel	Frequency (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
38	5190	19.08	18.39	18.11	18.77	289.983	24.62	29.15	Pass
46	5230	21.54	20.92	20.81	21.07	514.597	27.11	29.15	Pass
151	5755	20.14	20.18	20.15	19.98	410.563	26.13	28.98	Pass
159	5795	22.81	22.86	22.89	22.64	762.372	28.82	28.98	Pass

Note:

1. 5180-5240MHz: Directional gain = 6.85 dBi > 6 dBi, so the power density limit shall be reduced to 30-(6.85-6) = 29.15 dBm.
2. 5745-5825MHz: Directional gain = 7.02 dBi > 6 dBi, so the power density limit shall be reduced to 30-(7.02-6) = 28.98 dBm.

802.11ac (VHT80)

Channel	Frequency (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
42	5210	18.12	17.39	17.08	18.03	234.275	23.70	29.15	Pass
155	5775	22.60	22.86	22.79	22.80	755.821	28.78	28.98	Pass

Note:

1. 5180-5240MHz: Directional gain = 6.85 dBi > 6 dBi, so the power density limit shall be reduced to 30-(6.85-6) = 29.15 dBm.
2. 5745-5825MHz: Directional gain = 7.02 dBi > 6 dBi, so the power density limit shall be reduced to 30-(7.02-6) = 28.98 dBm.

802.11ax (HE20)

Channel	Frequency (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	20.68	19.67	19.75	19.81	399.758	26.02	29.15	Pass
40	5200	21.25	21.15	21.13	21.13	523.105	27.19	29.15	Pass
48	5240	23.13	23.23	22.64	22.75	787.986	28.97	29.15	Pass
149	5745	19.93	20.47	20.24	19.92	413.687	26.17	28.98	Pass
157	5785	19.80	20.45	20.02	19.85	403.483	26.06	28.98	Pass
165	5825	17.21	18.52	17.83	17.26	237.608	23.76	28.98	Pass

Note:

1. 5180-5240MHz: Directional gain = 6.85 dBi > 6 dBi, so the power density limit shall be reduced to 30-(6.85-6) = 29.15 dBm.
2. 5745-5825MHz: Directional gain = 7.02 dBi > 6 dBi, so the power density limit shall be reduced to 30-(7.02-6) = 28.98 dBm.

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802.11ax (HE40)

Channel	Frequency (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
38	5190	19.16	18.45	18.12	18.78	292.771	24.67	29.15	Pass
46	5230	21.65	20.93	20.92	21.12	523.112	27.19	29.15	Pass
151	5755	20.15	20.25	20.25	20.05	416.523	26.20	28.98	Pass
159	5795	22.91	22.88	22.97	22.73	775.175	28.89	28.98	Pass

Note:

1. 5180-5240MHz: Directional gain = 6.85 dBi > 6 dBi, so the power density limit shall be reduced to 30-(6.85-6) = 29.15 dBm.
2. 5745-5825MHz: Directional gain = 7.02 dBi > 6 dBi, so the power density limit shall be reduced to 30-(7.02-6) = 28.98 dBm.

802.11ax (HE80)

Channel	Frequency (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
42	5210	18.21	17.50	17.14	18.12	239.08	23.79	29.15	Pass
155	5775	22.62	22.94	22.91	22.81	766.018	28.84	28.98	Pass

Note:

1. 5180-5240MHz: Directional gain = 6.85 dBi > 6 dBi, so the power density limit shall be reduced to 30-(6.85-6) = 29.15 dBm.
2. 5745-5825MHz: Directional gain = 7.02 dBi > 6 dBi, so the power density limit shall be reduced to 30-(7.02-6) = 28.98 dBm.

26 dB Bandwidth:

802.11a

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
36	5180	20.45	20.27	20.31	20.25
40	5200	20.53	22.29	20.23	20.28
48	5240	28.21	26.92	24.80	27.07

802.11ax (HE20)

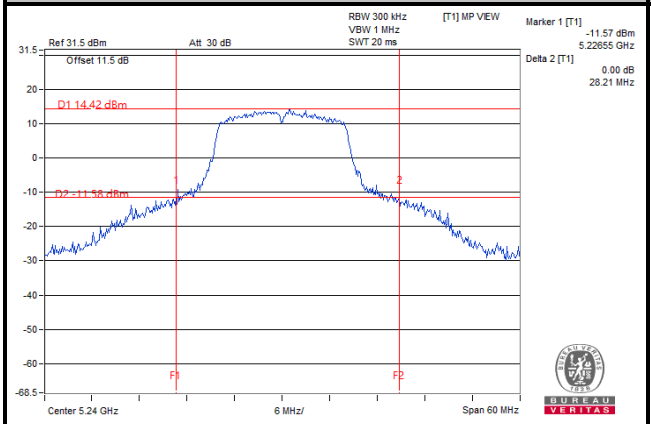
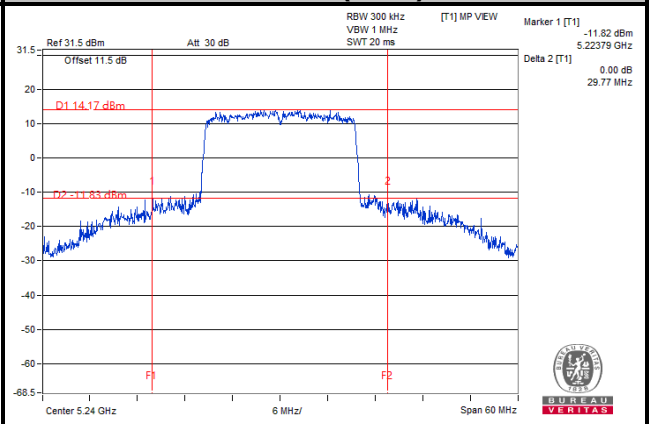
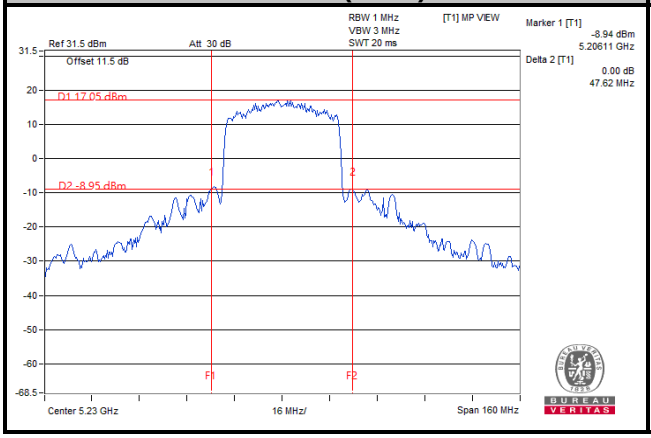
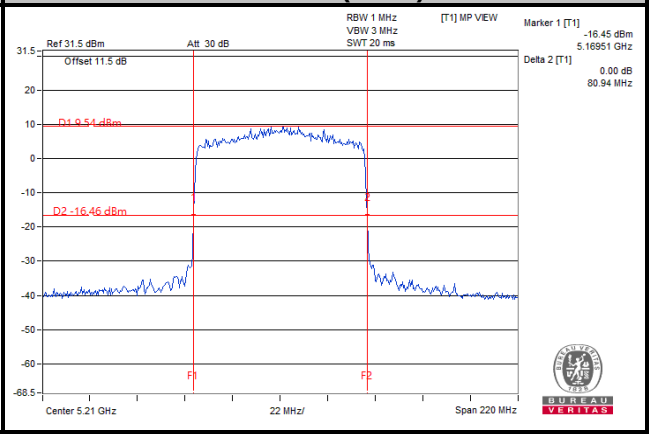
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
36	5180	26.44	25.74	22.46	22.67
40	5200	23.71	24.71	24.66	27.75
48	5240	24.84	23.32	28.34	29.77

802.11ax (HE40)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
38	5190	40.57	40.55	40.63	40.61
46	5230	44.20	40.62	45.33	47.62

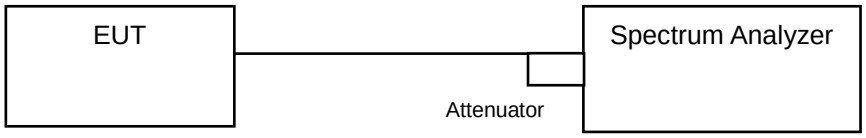
802.11ax (HE80)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
42	5210	80.73	80.75	80.94	80.77

Spectrum Plot of Worst Value	
802.11a	802.11ax (HE20)
	
802.11ax (HE40)	802.11ax (HE80)
	

4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

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

4.4.4 Test Results

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
36	5180	16.80	16.68	16.56	16.56
40	5200	16.92	16.80	16.68	16.80
48	5240	17.16	16.92	16.80	16.92
149	5745	16.92	16.98	16.92	16.92
157	5785	16.92	16.68	16.92	16.80
165	5825	16.80	16.68	16.80	16.68

802.11ax (HE20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
36	5180	19.08	19.08	19.20	19.08
40	5200	19.20	19.20	19.20	19.08
48	5240	19.08	19.20	19.08	19.08
149	5745	19.20	19.20	19.20	19.20
157	5785	19.20	19.20	19.20	19.32
165	5825	19.20	19.08	19.20	19.08

802.11ax (HE40)

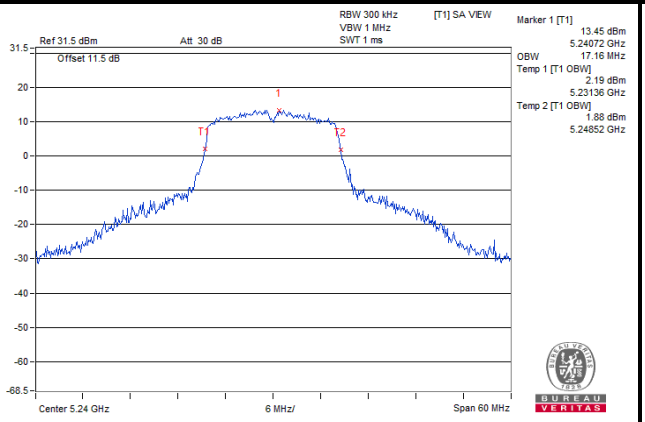
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
38	5190	37.68	37.56	37.56	37.68
46	5230	37.80	37.68	37.92	37.80
151	5755	37.80	37.92	37.92	37.92
159	5795	42.84	41.16	45.72	43.92

802.11ax (HE80)

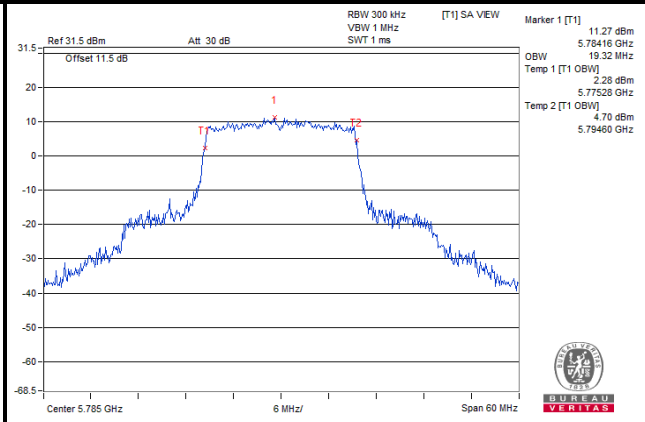
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
42	5210	77.04	76.56	76.56	76.56
155	5775	78.24	78.00	79.92	78.96

Spectrum Plot of Worst Value

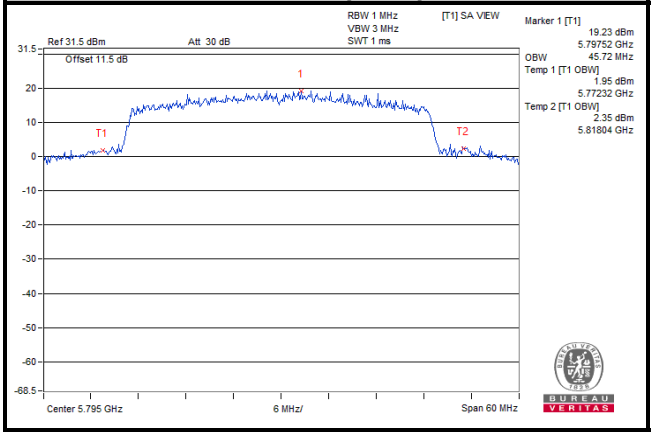
802.11a



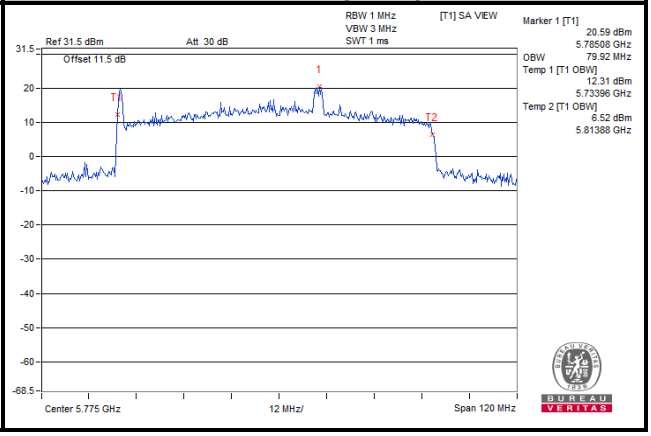
802.11ax (HE20)



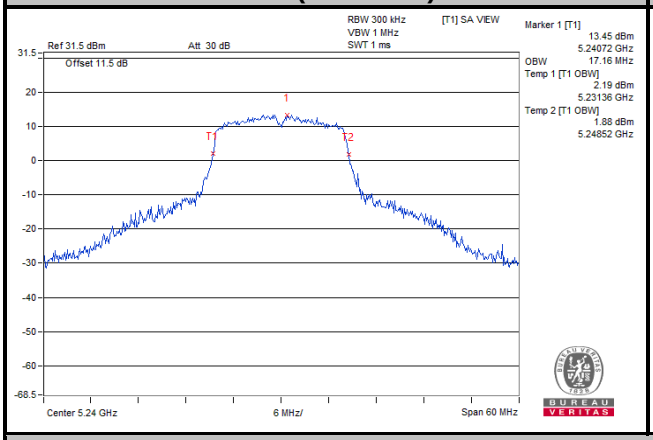
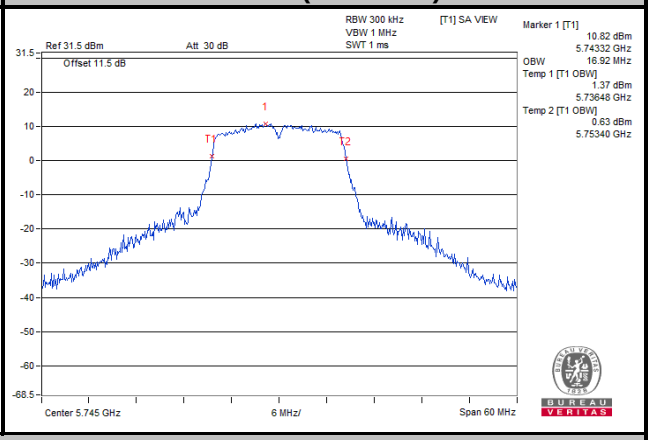
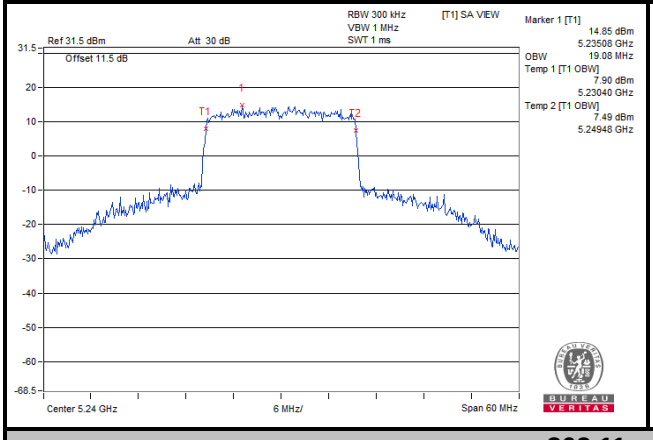
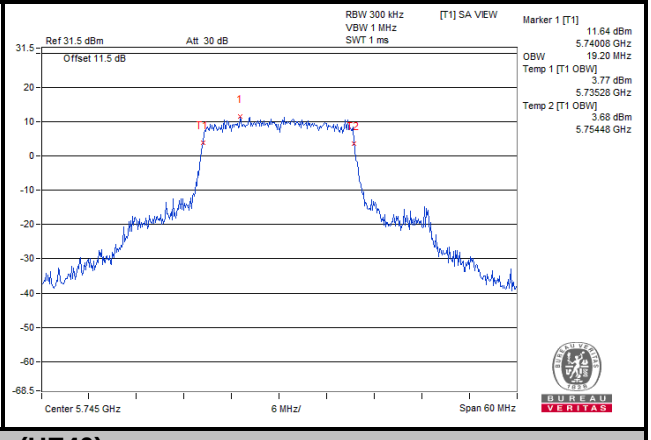
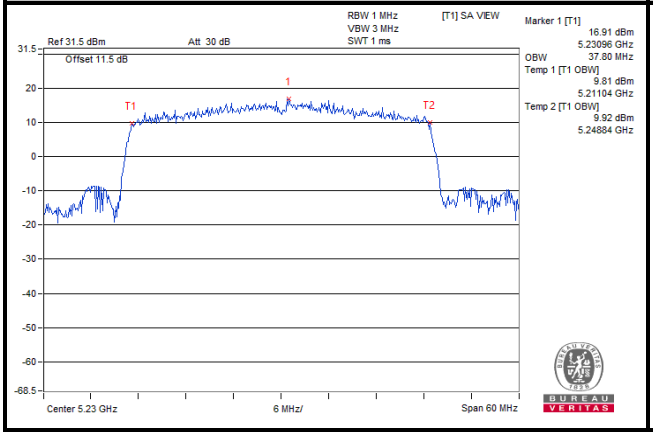
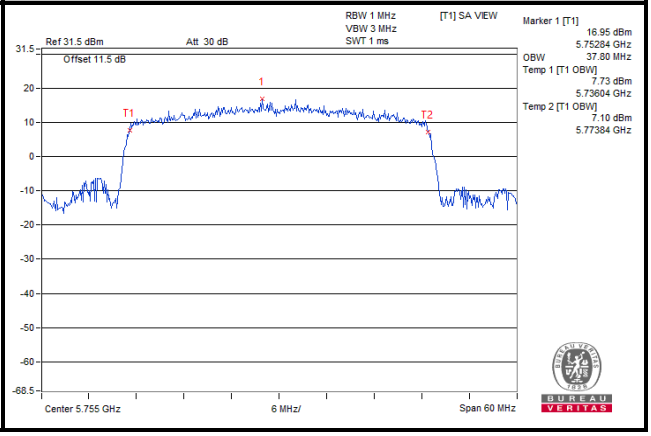
802.11ax (HE40)

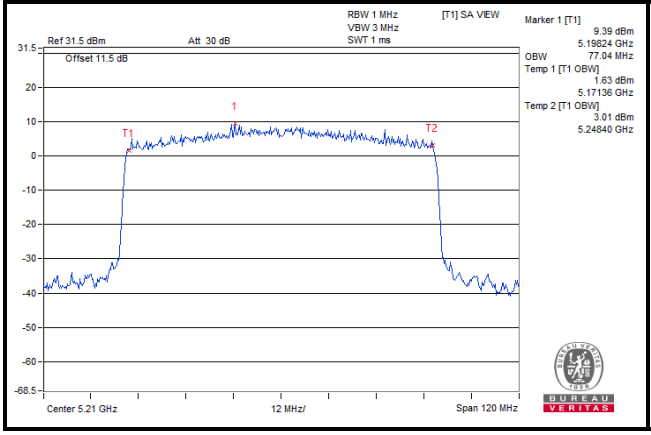
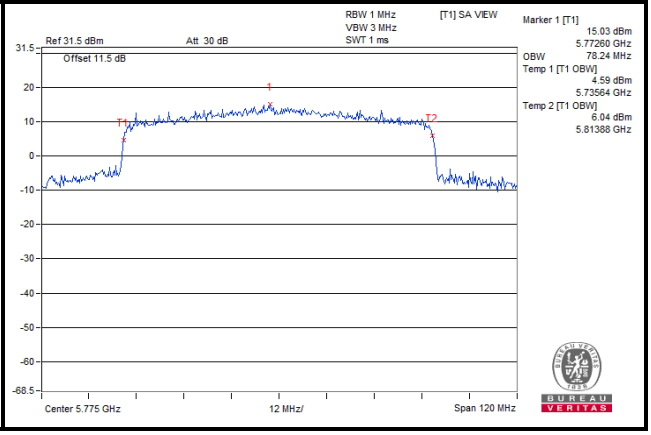


802.11ax (HE80)



Chain 0

Spectrum Plot for Nearby DFS Band	
802.11a	
Ch 48 (5240 MHz)	**Ch 149 (5745 MHz)**
	
802.11ax (HE20)	
Ch 48 (5240 MHz)	**Ch 149 (5745 MHz)**
	
802.11ax (HE40)	
Ch 46 (5230 MHz)	**Ch 151 (5755 MHz)**
	

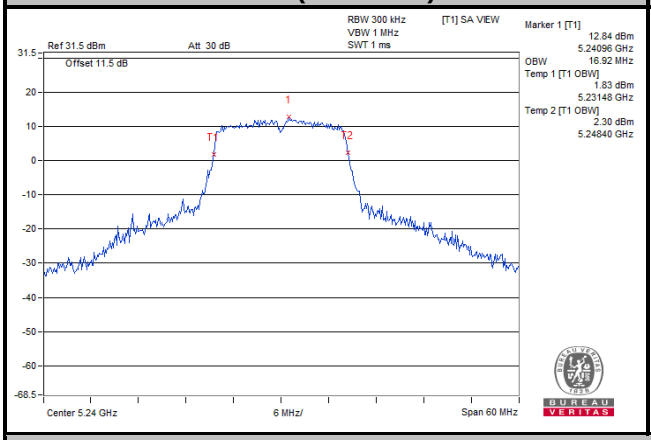
802.11ax (HE80)	
Ch 42 (5210 MHz)	Ch 155 (5775 MHz)
	

Chain 1

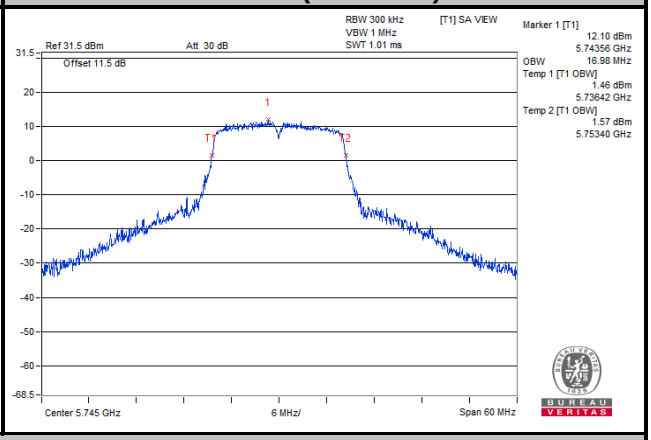
Spectrum Plot for Nearby DFS Band

802.11a

Ch 48 (5240 MHz)

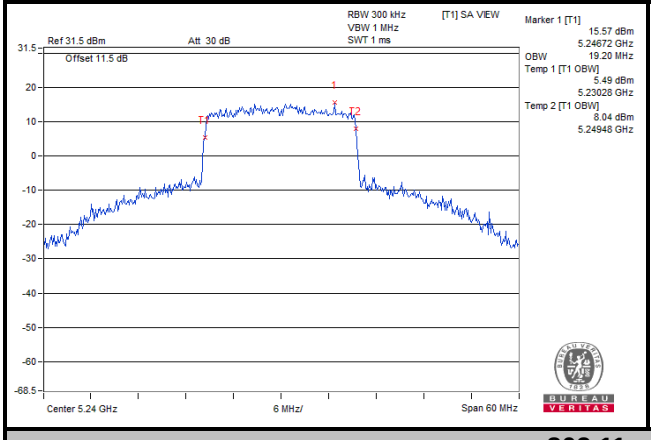


Ch 149 (5745 MHz)

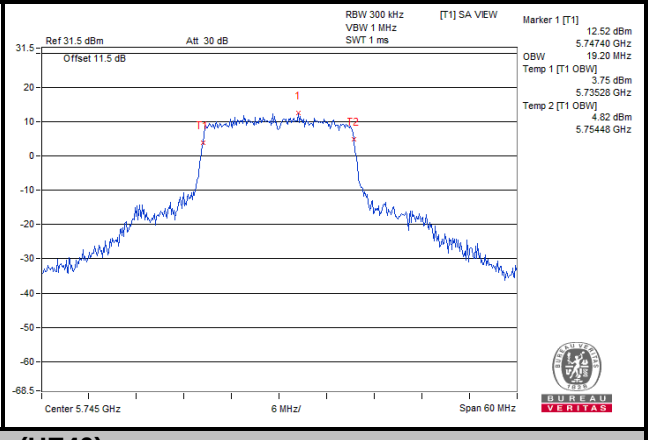


802.11ax (HE20)

Ch 48 (5240 MHz)

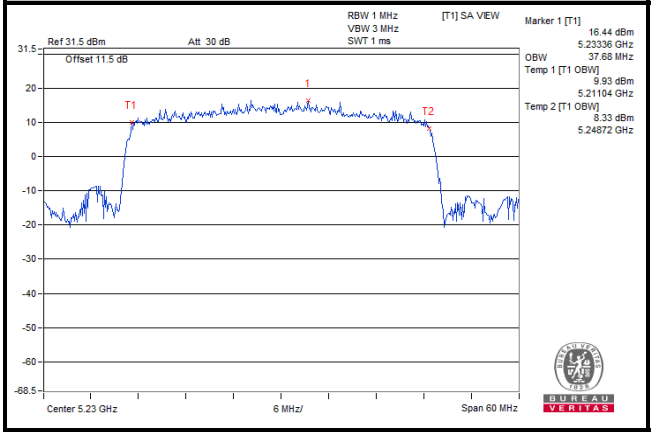


Ch 149 (5745 MHz)

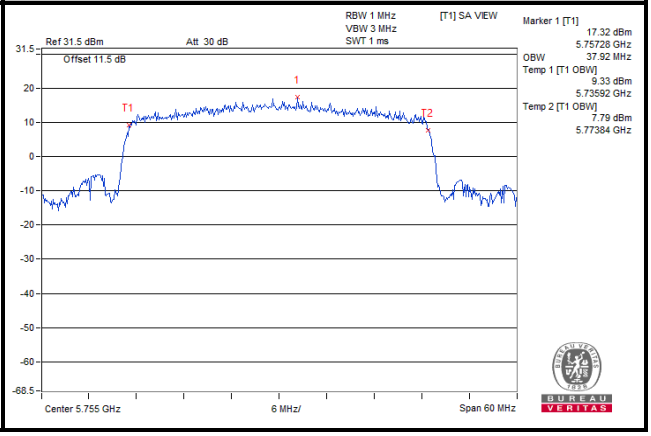


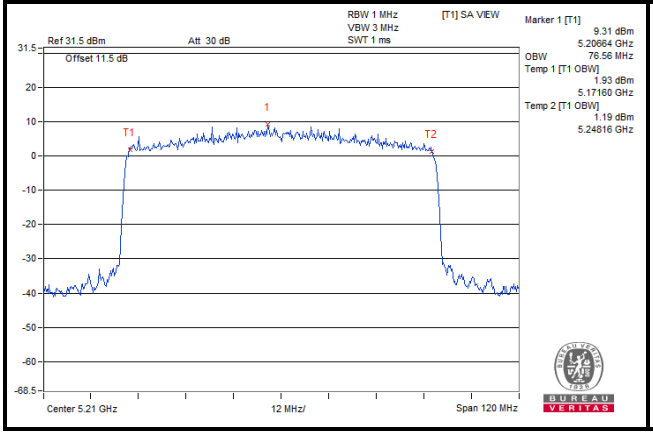
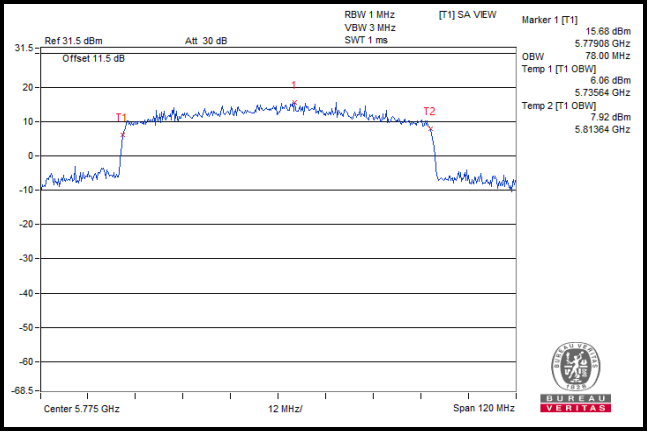
802.11ax (HE40)

Ch 46 (5230 MHz)



Ch 151 (5755 MHz)



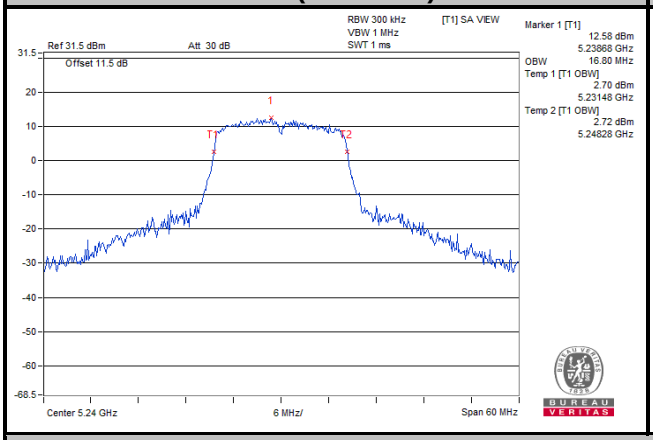
802.11ax (HE80)	
Ch 42 (5210 MHz)	Ch 155 (5775 MHz)
	

Chain 2

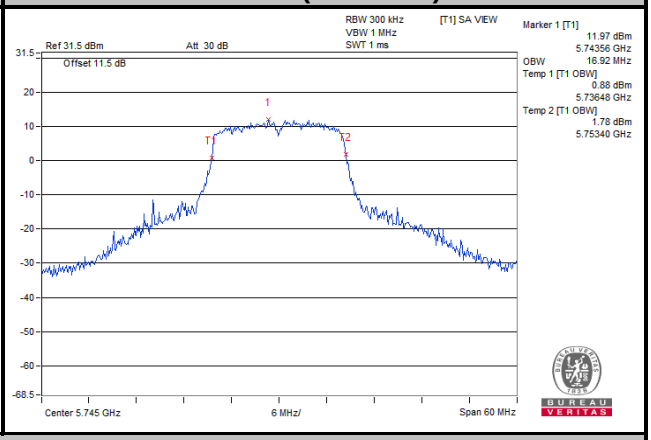
Spectrum Plot for Nearby DFS Band

802.11a

Ch 48 (5240 MHz)

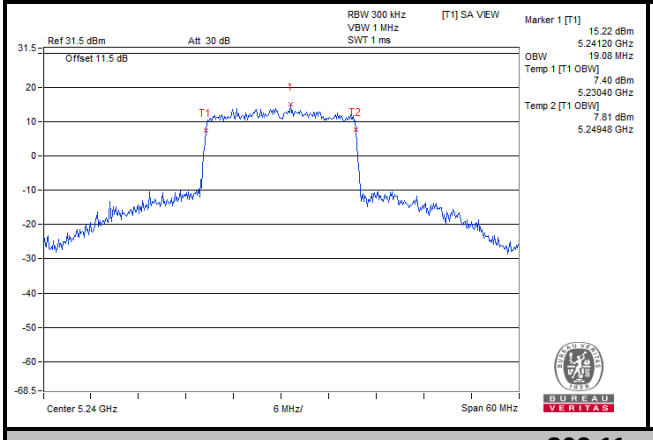


Ch 149 (5745 MHz)

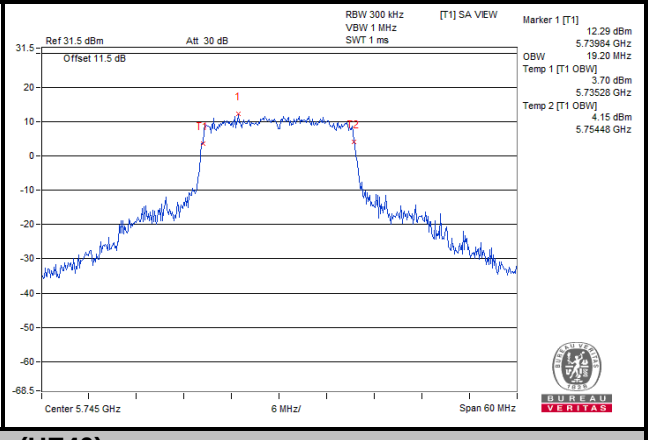


802.11ax (HE20)

Ch 48 (5240 MHz)

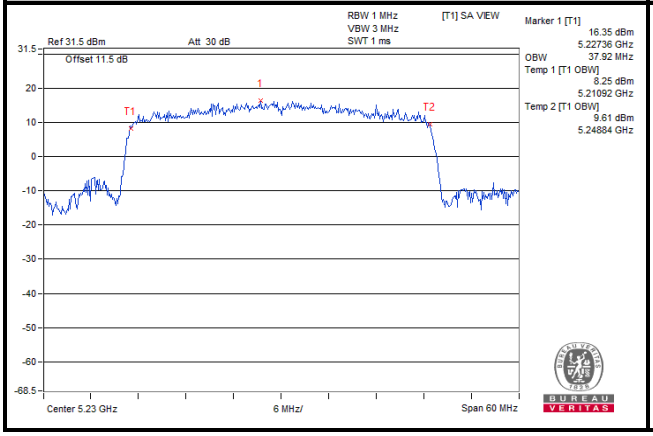


Ch 149 (5745 MHz)

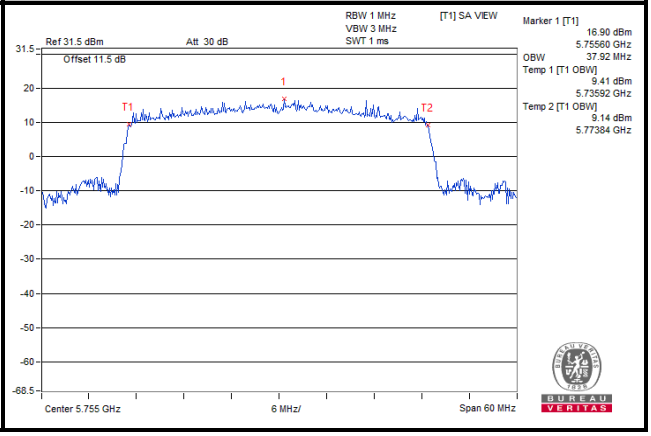


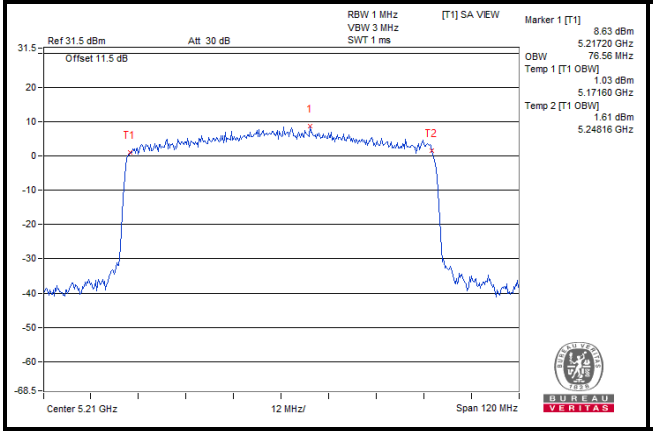
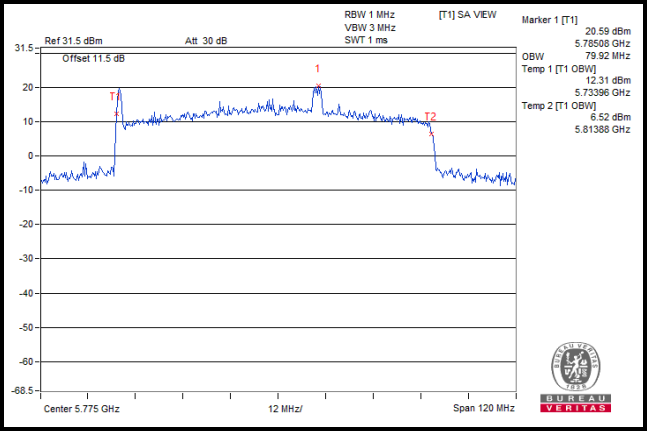
802.11ax (HE40)

Ch 46 (5230 MHz)



Ch 151 (5755 MHz)



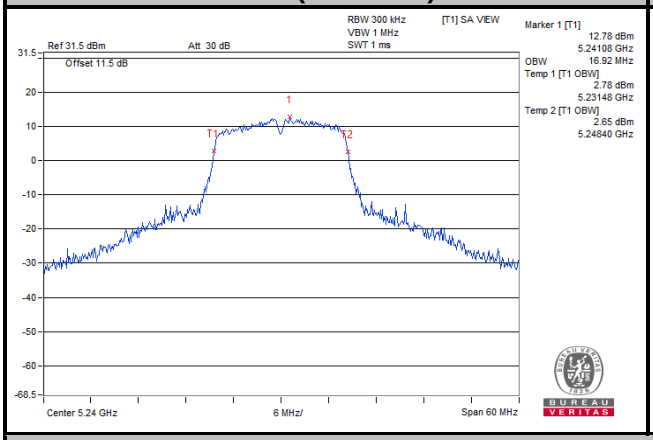
802.11ax (HE80)	
Ch 42 (5210 MHz)	Ch 155 (5775 MHz)
	

Chain 3

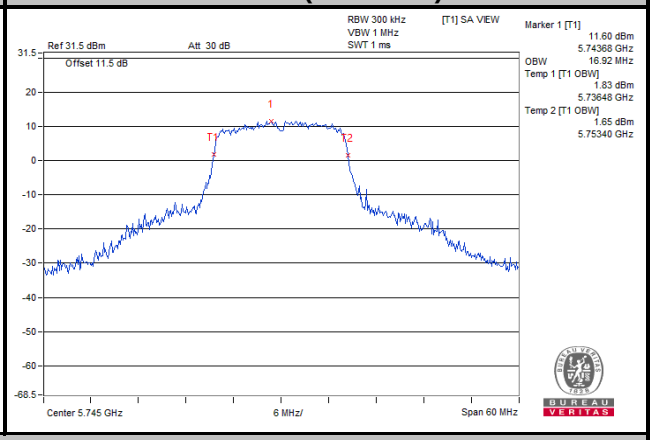
Spectrum Plot for Nearby DFS Band

802.11a

Ch 48 (5240 MHz)

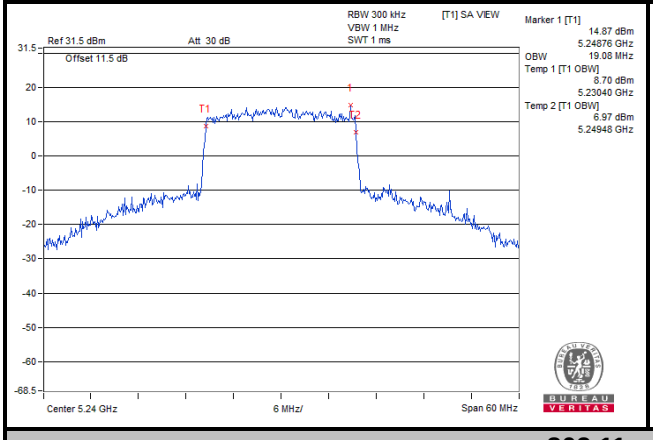


Ch 149 (5745 MHz)

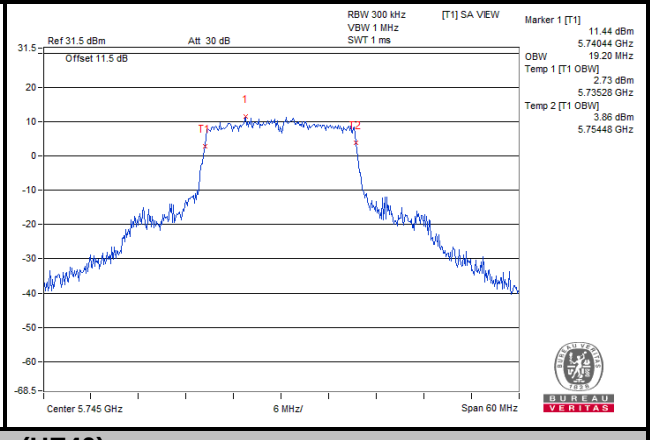


802.11ax (HE20)

Ch 48 (5240 MHz)

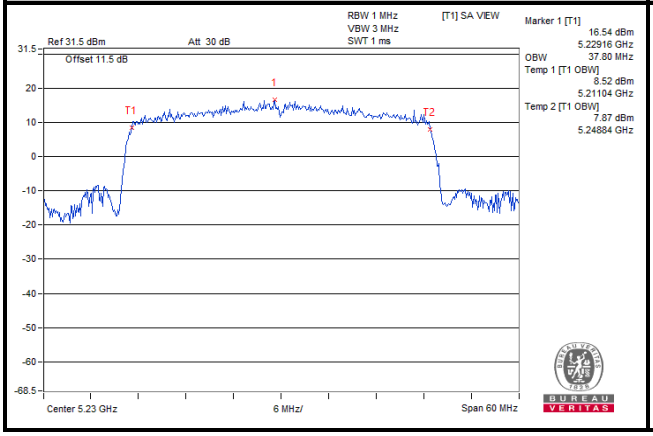


Ch 149 (5745 MHz)

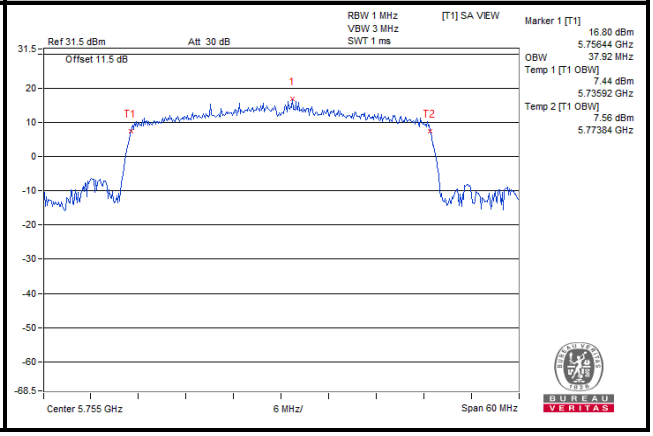


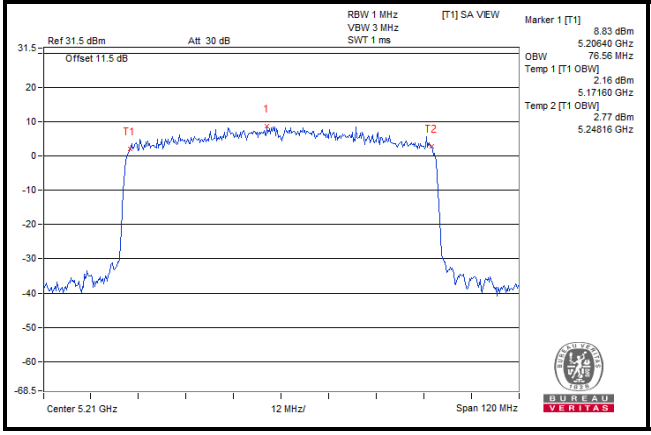
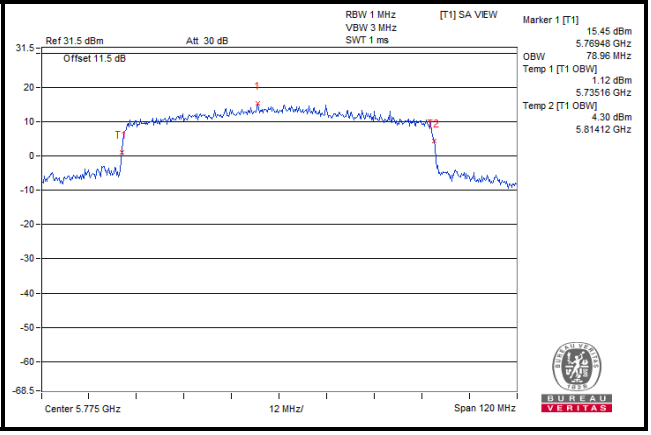
802.11ax (HE40)

Ch 46 (5230 MHz)



Ch 151 (5755 MHz)



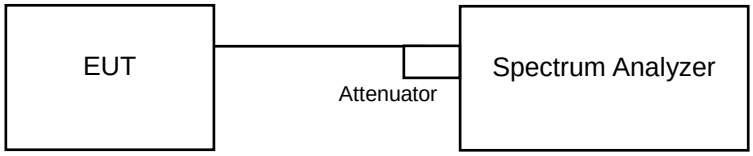
802.11ax (HE80)	
Ch 42 (5210 MHz)	Ch 155 (5775 MHz)
	

4.5 Peak Power Spectral Density Measurement

4.5.1 Limits of Peak Power Spectral Density Measurement

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

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedures

For U-NII-1 band:

Using method SA-2

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

※For U-NII-3:

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

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

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

4.5.7 Test Results

For U-NII-1 Band

802.11a

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/MHz)				Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	7.63	7.58	7.32	7.67	0.27	13.85	16.15	Pass
40	5200	8.94	8.72	8.33	8.60	0.27	14.95	16.15	Pass
48	5240	9.97	9.78	9.62	9.47	0.27	16.01	16.15	Pass

Note:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1 Band:**
   Directional gain = 6.85 dBi < 6 dBi, so the power density limit shall be reduced to 17-(6.85-6) = 16.15 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE20)

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/MHz)				Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	6.36	6.52	6.70	6.75	0.25	12.86	16.15	Pass
40	5200	7.52	7.38	7.81	7.97	0.25	13.95	16.15	Pass
48	5240	10.25	9.23	9.94	9.87	0.25	16.11	16.15	Pass

Note:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1 Band:**
   Directional gain = 6.85 dBi < 6 dBi, so the power density limit shall be reduced to 17-(6.85-6) = 16.15 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE40)

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/MHz)				Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
38	5190	2.70	2.99	2.15	3.12	0.46	9.24	16.15	Pass
46	5230	6.22	5.44	5.74	5.84	0.46	12.30	16.15	Pass

Note:

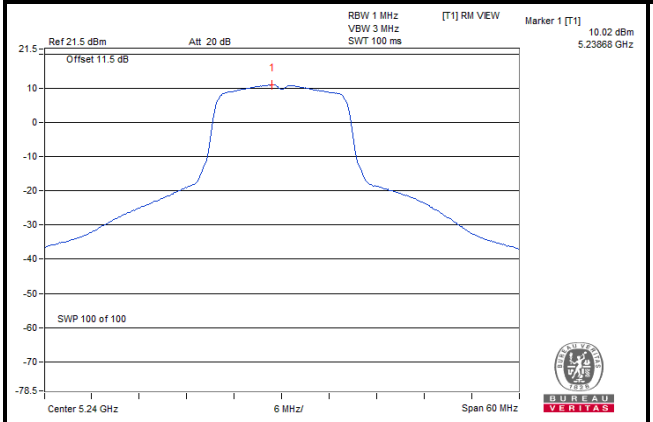
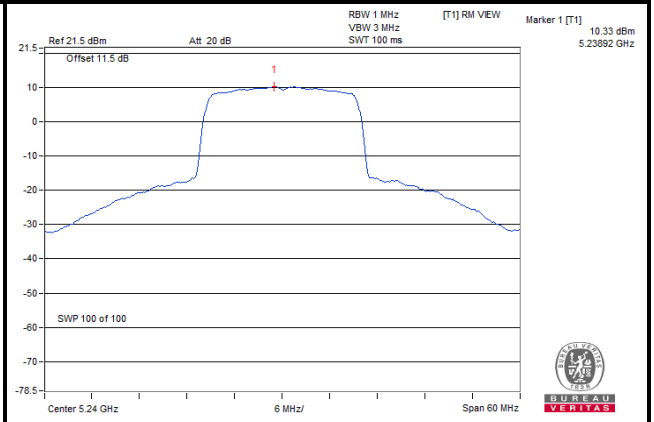
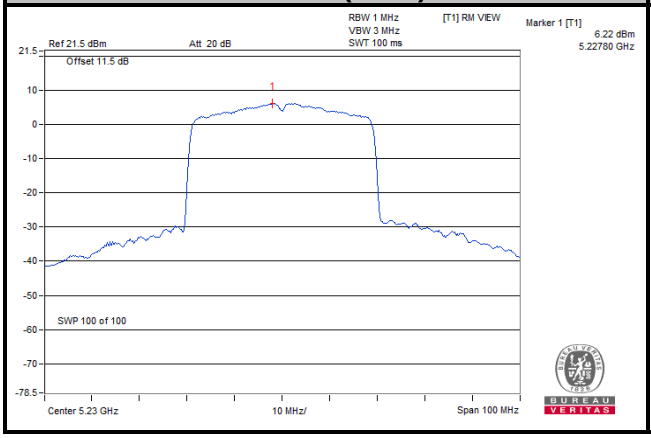
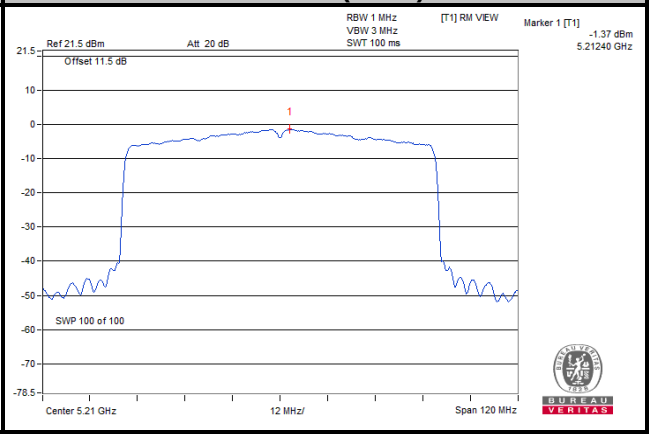
1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1 Band:**
   Directional gain = 6.85 dBi < 6 dBi, so the power density limit shall be reduced to 17-(6.85-6) = 16.15 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE80)

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/MHz)				Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
42	5210	-1.47	-2.46	-2.28	-1.37	0.91	5.07	16.15	Pass

Note:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1 Band:**
   Directional gain = 6.85 dBi < 6 dBi, so the power density limit shall be reduced to 17-(6.85-6) = 16.15 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value	
802.11a	802.11ax (HE20)
	
802.11ax (HE40)	802.11ax (HE80)
	

For U-NII-3 Band

802.11a

TX Chain	Channel	Frequency (MHz)	PSD w/o Duty Factor		10 log (N=4) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300 kHz)	(dBm/500 kHz)					
0	149	5745	3.37	5.59	6.02	0.27	11.88	28.98	Pass
	157	5785	2.69	4.91	6.02	0.27	11.2	28.98	Pass
	165	5825	1.7	3.92	6.02	0.27	10.21	28.98	Pass
1	149	5745	3.88	6.1	6.02	0.27	12.39	28.98	Pass
	157	5785	3.25	5.47	6.02	0.27	11.76	28.98	Pass
	165	5825	1.95	4.17	6.02	0.27	10.46	28.98	Pass
2	149	5745	4.05	6.27	6.02	0.27	12.56	28.98	Pass
	157	5785	3.16	5.38	6.02	0.27	11.67	28.98	Pass
	165	5825	1.67	3.89	6.02	0.27	10.18	28.98	Pass
3	149	5745	4.22	6.44	6.02	0.27	12.73	28.98	Pass
	157	5785	3.46	5.68	6.02	0.27	11.97	28.98	Pass
	165	5825	1.86	4.08	6.02	0.27	10.37	28.98	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 7.02 > 6 dBi , so the power density limit shall be reduced to 30-(7.06-6) = 28.98 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE20)

TX Chain	Channel	Frequency (MHz)	PSD		10 log (N=4) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300 kHz)	(dBm/500 kHz)					
0	149	5745	1.71	3.93	6.02	0.25	10.2	28.98	Pass
	157	5785	1.6	3.82	6.02	0.25	10.09	28.98	Pass
	165	5825	0.78	3	6.02	0.25	9.27	28.98	Pass
1	149	5745	2.68	4.9	6.02	0.25	11.17	28.98	Pass
	157	5785	2.47	4.69	6.02	0.25	10.96	28.98	Pass
	165	5825	0.88	3.1	6.02	0.25	9.37	28.98	Pass
2	149	5745	2.85	5.07	6.02	0.25	11.34	28.98	Pass
	157	5785	2.65	4.87	6.02	0.25	11.14	28.98	Pass
	165	5825	1.37	3.59	6.02	0.25	9.86	28.98	Pass
3	149	5745	1.88	4.1	6.02	0.25	10.37	28.98	Pass
	157	5785	1.53	3.75	6.02	0.25	10.02	28.98	Pass
	165	5825	0.66	2.88	6.02	0.25	9.15	28.98	Pass

Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 7.02 > 6 dBi , so the power density limit shall be reduced to 30-(7.06-6) = 28.98 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE40)

TX Chain	Channel	Frequency (MHz)	PSD		10 log (N=4) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300 kHz)	(dBm/500 kHz)					
0	151	5755	0.42	2.64	6.02	0.46	9.12	28.98	Pass
	159	5795	-1.22	1	6.02	0.46	7.48	28.98	Pass
1	151	5755	1.23	3.45	6.02	0.46	9.93	28.98	Pass
	159	5795	3.63	5.85	6.02	0.46	12.33	28.98	Pass
2	151	5755	1.23	3.45	6.02	0.46	9.93	28.98	Pass
	159	5795	4.34	6.56	6.02	0.46	13.04	28.98	Pass
3	151	5755	0.41	2.63	6.02	0.46	9.11	28.98	Pass
	159	5795	3.31	5.53	6.02	0.46	12.01	28.98	Pass

Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 7.02 > 6 dBi , so the power density limit shall be reduced to 30-(7.06-6) = 28.98 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE80)

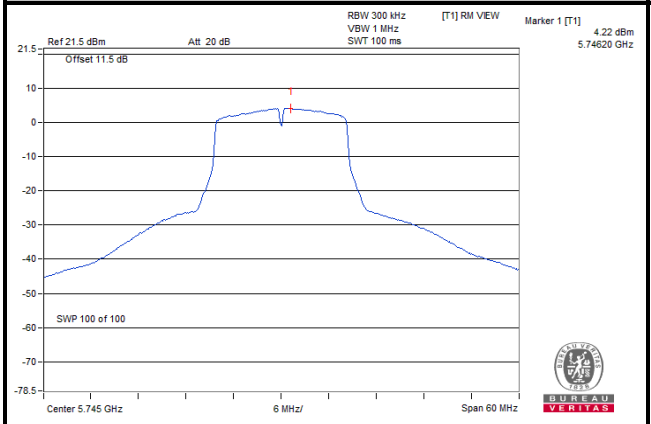
TX Chain	Channel	Frequency (MHz)	PSD		10 log (N=4) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300 kHz)	(dBm/500 kHz)					
0	155	5775	-0.15	2.07	6.02	0.91	9	28.98	Pass
1	155	5775	-4.42	-2.2	6.02	0.91	4.73	28.98	Pass
2	155	5775	0.56	2.78	6.02	0.91	9.71	28.98	Pass
3	155	5775	0.24	2.46	6.02	0.91	9.39	28.98	Pass

Note:

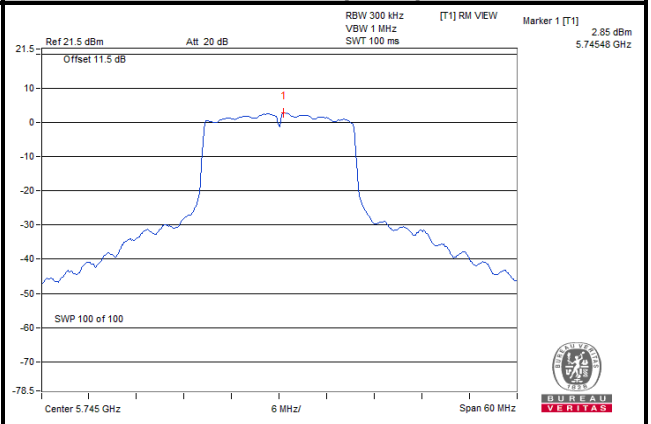
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 7.02 > 6 dBi , so the power density limit shall be reduced to 30-(7.06-6) = 28.98 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

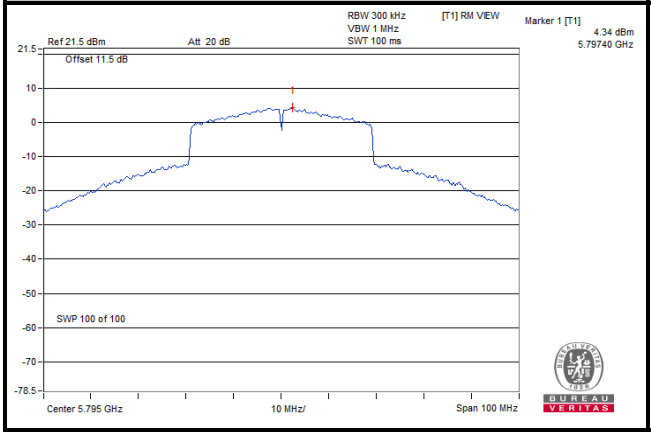
802.11a



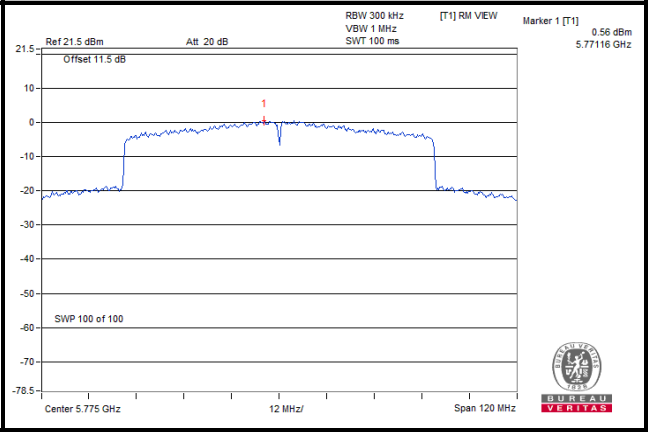
802.11ax (HE20)



802.11ax (HE40)



802.11ax (HE80)

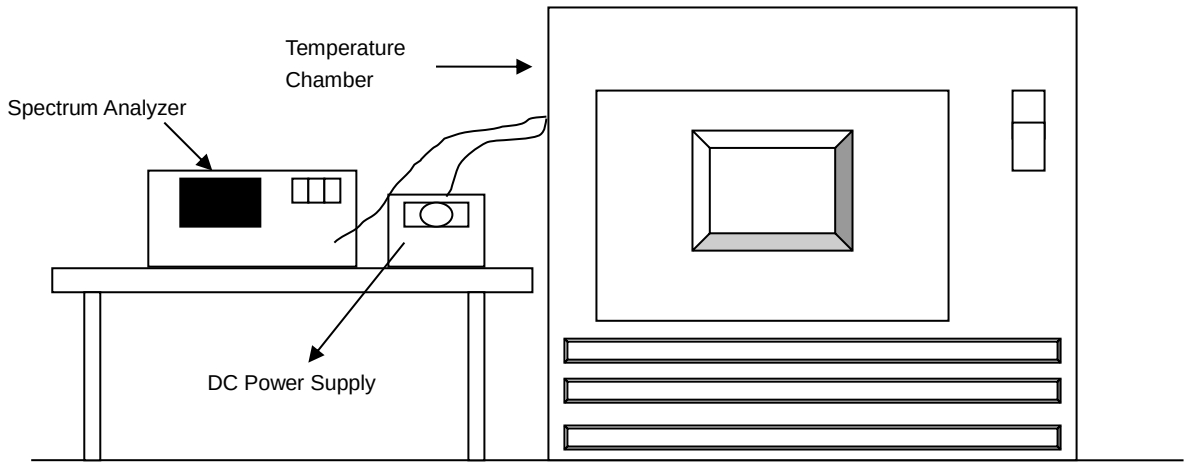


4.6 Frequency Stability

4.6.1 Limit of Frequency Stability Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

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

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

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

4.6.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5180 MHz									
Temp. (℃)	Power Supply (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
40	120	5180.0221	PASS	5180.0187	PASS	5180.0211	PASS	5180.0203	PASS
30	120	5179.9851	PASS	5179.9861	PASS	5179.9853	PASS	5179.9861	PASS
20	120	5179.9751	PASS	5179.9782	PASS	5179.9787	PASS	5179.9795	PASS
10	120	5179.9985	PASS	5179.9962	PASS	5179.9956	PASS	5179.9961	PASS
0	120	5180.0009	PASS	5180.0026	PASS	5180.0028	PASS	5180.0004	PASS

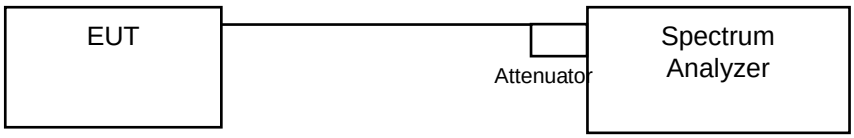
Frequency Stability Versus Voltage									
Operating Frequency: 5180 MHz									
Temp. (℃)	Power Supply (Vdc)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
20	138	5179.9751	PASS	5179.9791	PASS	5179.9795	PASS	5179.9801	PASS
	120	5179.9751	PASS	5179.9782	PASS	5179.9787	PASS	5179.9795	PASS
	102	5179.9743	PASS	5179.9776	PASS	5179.9789	PASS	5179.9786	PASS

4.7 6 dB Bandwidth Measurement

4.7.1 Limits of 6 dB Bandwidth Measurement

The minimum of 6 dB Bandwidth Measurement is 0.5 MHz.

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.4 Test Procedure

MEASUREMENT PROCEDURE REF

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

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

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

4.7.7 Test Results

802.11a

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
149	5745	15.89	16.31	15.76	16.07	0.5	Pass
157	5785	15.88	15.95	15.96	16.31	0.5	Pass
165	5825	15.85	15.95	15.79	15.79	0.5	Pass

802.11ax (HE20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
149	5745	19.01	18.98	19.01	18.99	0.5	Pass
157	5785	18.97	19.07	18.84	19.02	0.5	Pass
165	5825	18.99	18.93	18.96	18.96	0.5	Pass

802.11ax (HE40)

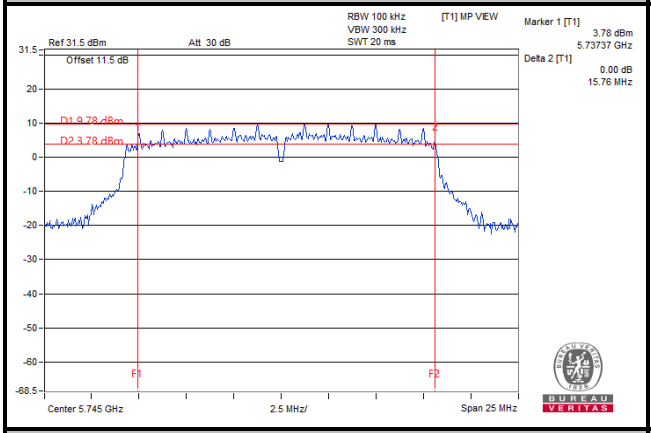
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
151	5755	35.38	35.28	35.20	35.74	0.5	Pass
159	5795	34.37	35.20	35.37	34.80	0.5	Pass

802.11ax (HE80)

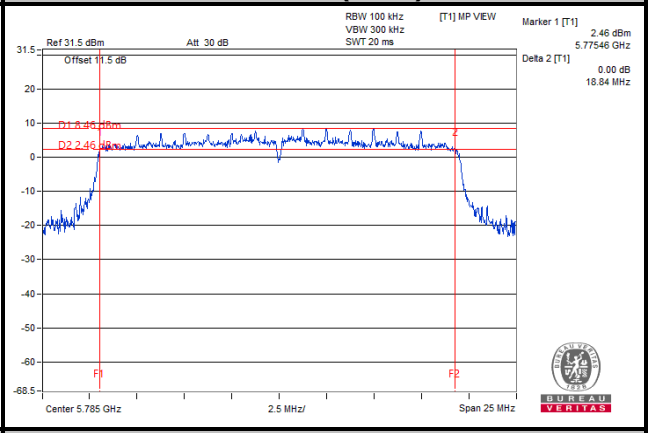
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
155	5775	75.44	75.29	72.71	75.24	0.5	Pass

Spectrum Plot of Worst Value

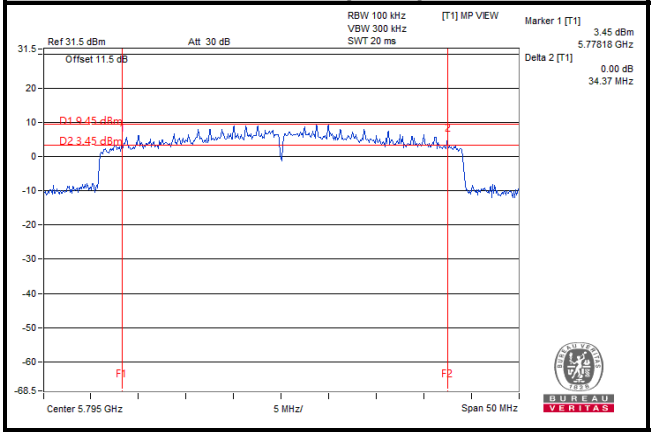
802.11a



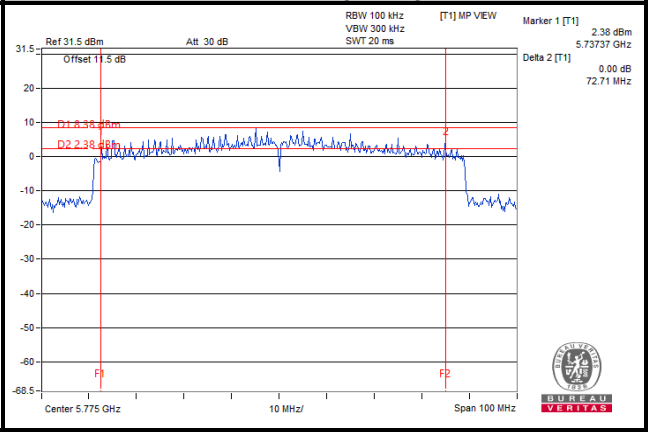
802.11ax (HE20)



802.11ax (HE40)



802.11ax (HE80)



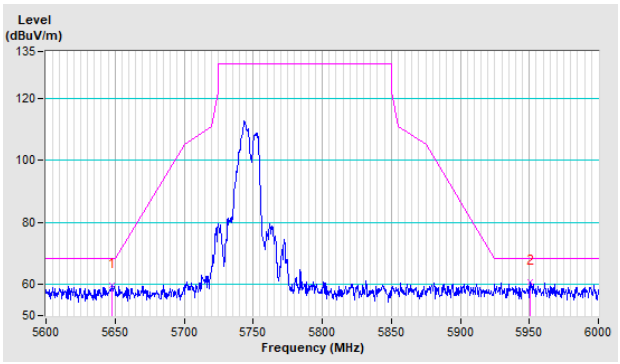
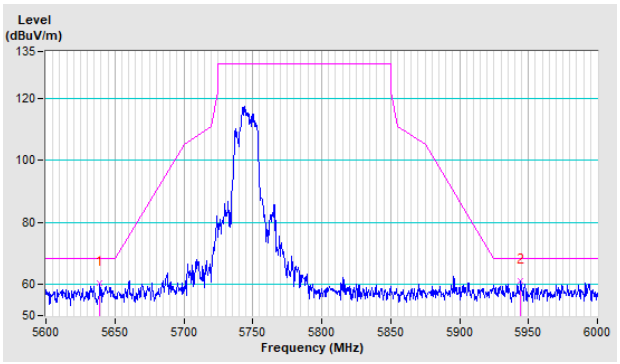
5 Pictures of Test Arrangements

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

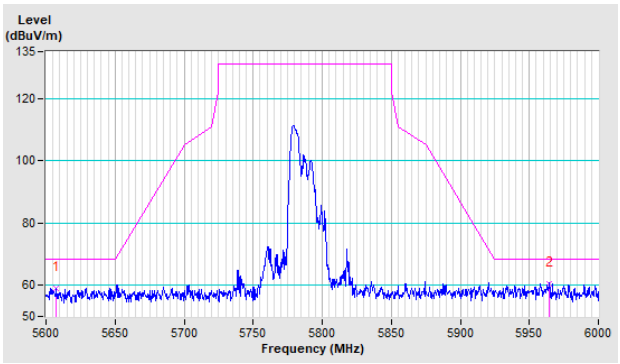
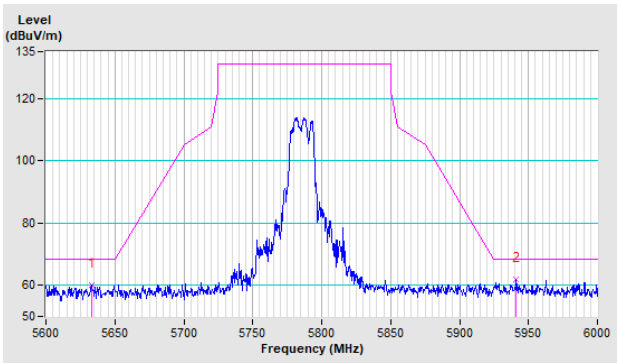
Annex A- Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band)

802.11a

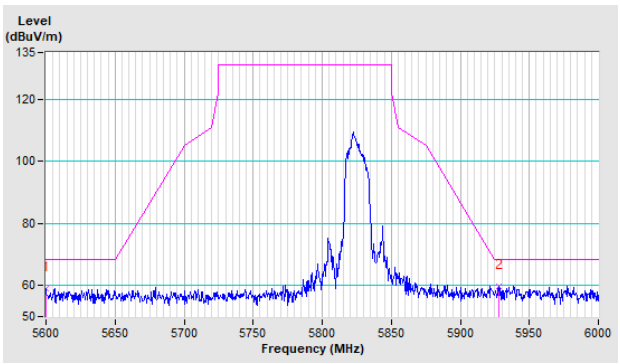
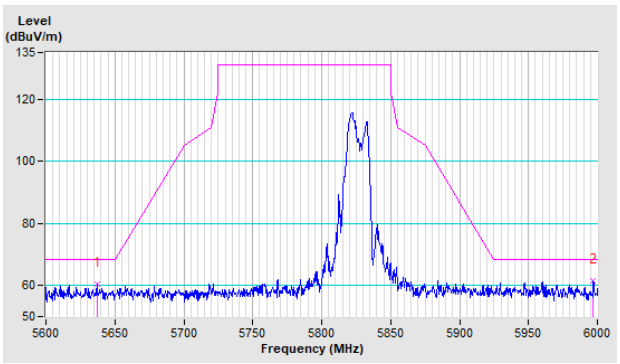
CH 149 5745 MHz

Horizontal	Vertical
	

CH 157 5785 MHz

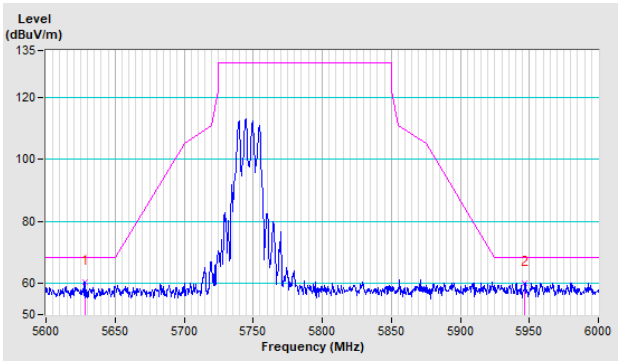
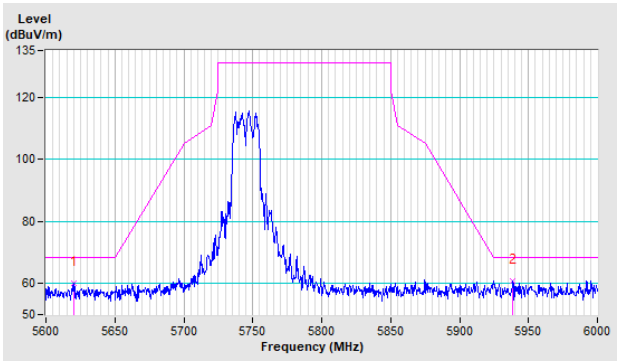
Horizontal	Vertical
	

CH 165 5825 MHz

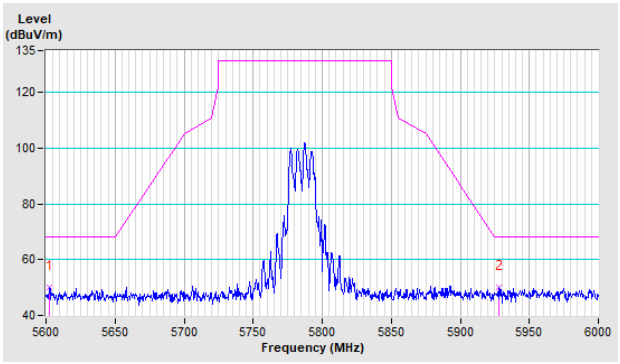
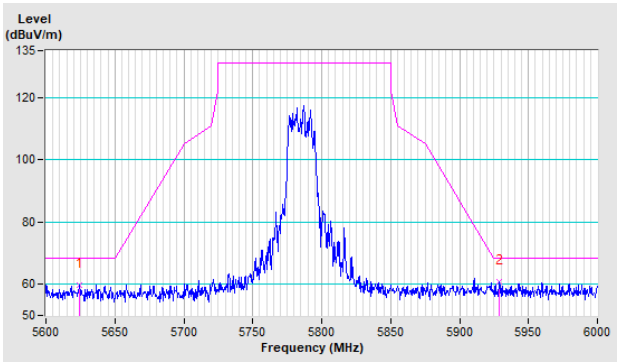
Horizontal	Vertical
	

802.11ax (HE20)

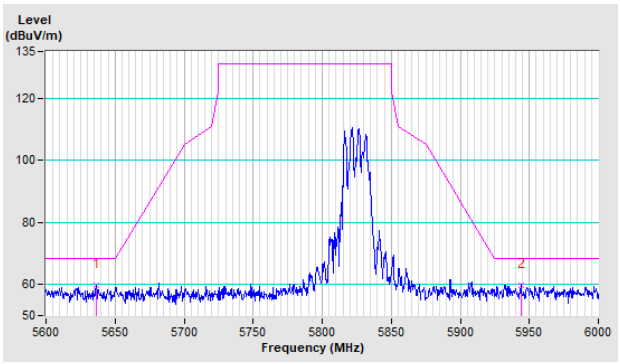
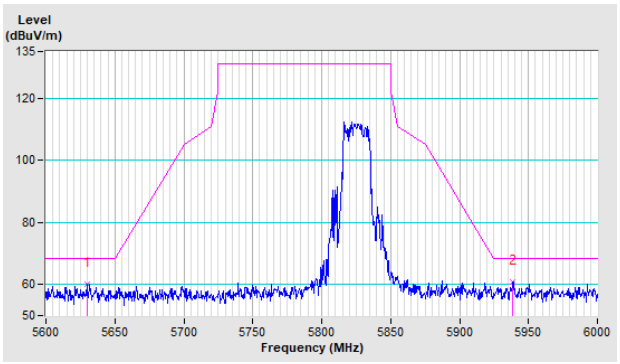
CH 149 5745 MHz

Horizontal	Vertical
	

CH 157 5785 MHz

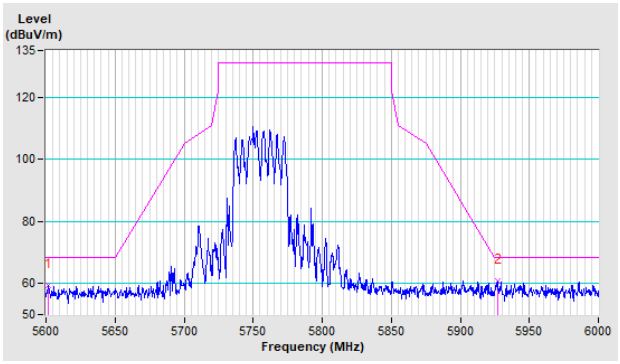
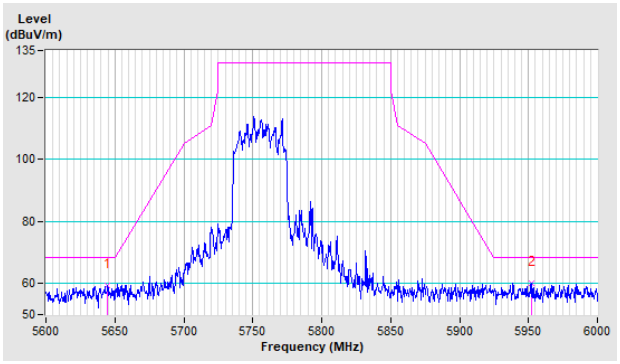
Horizontal	Vertical
	

CH 165 5825 MHz

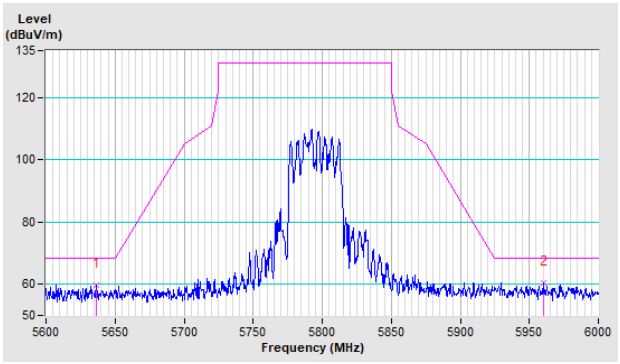
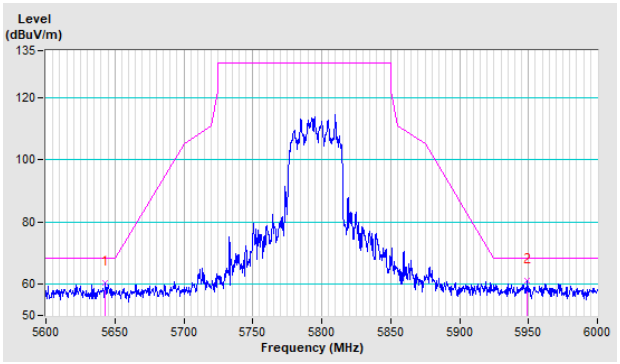
Horizontal	Vertical
	

802.11ax (HE40)

CH 151 5755 MHz

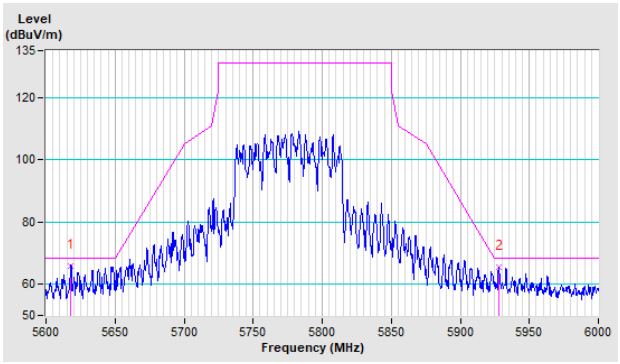
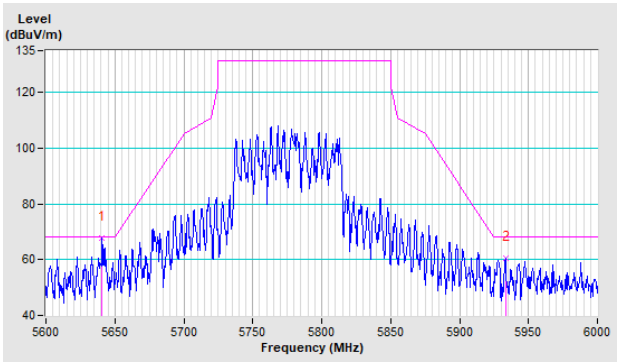
Horizontal	Vertical
	

CH 159 5795 MHz

Horizontal	Vertical
	

802.11ax (HE80)

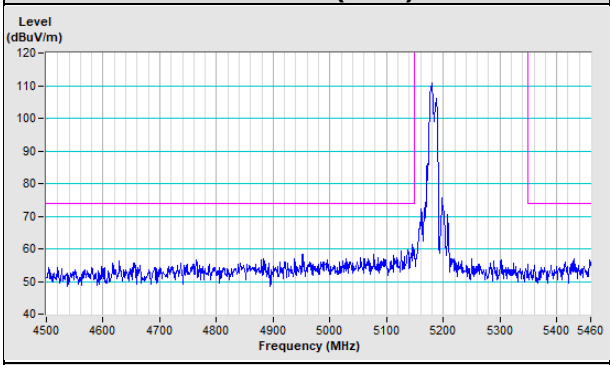
CH 155 5775 MHz

Horizontal	Vertical
	

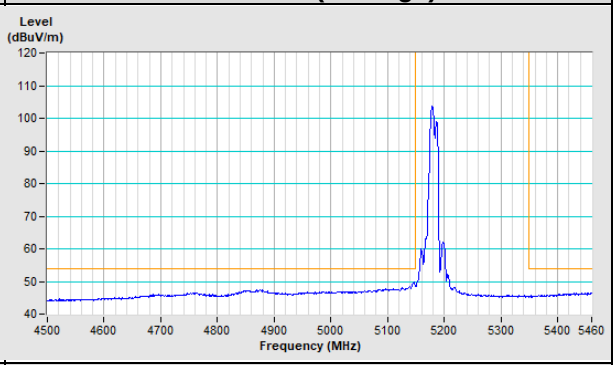
Annex B- Band Edge Measurement

802.11a Channel 36

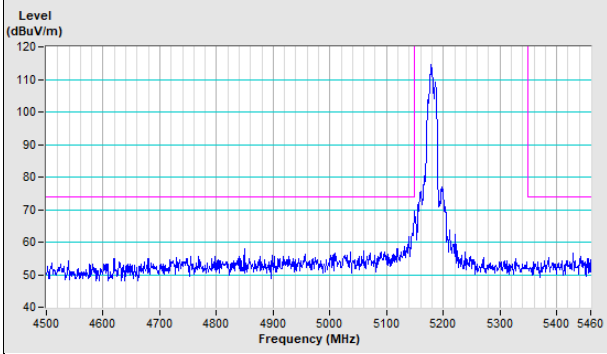
Horizontal (Peak)



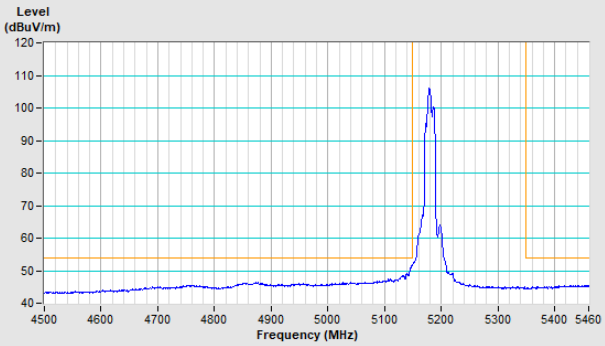
Horizontal (Average)



Vertical (Peak)

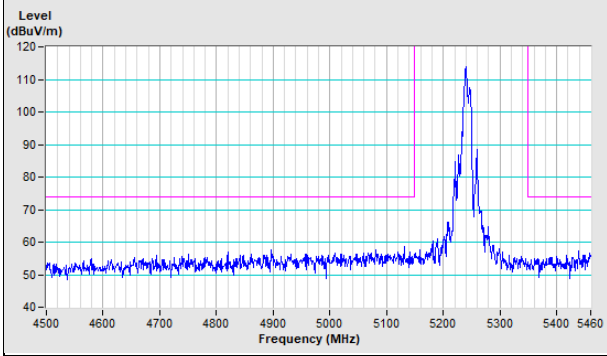


Vertical (Average)

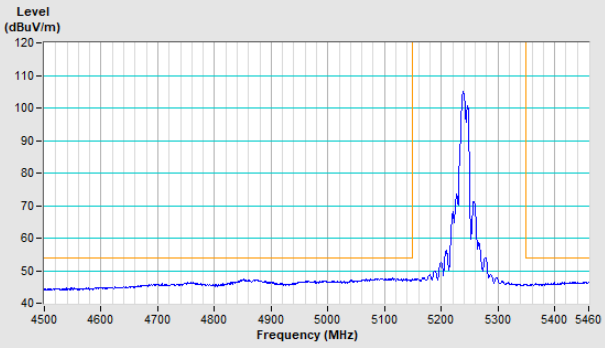


802.11a Channel 48

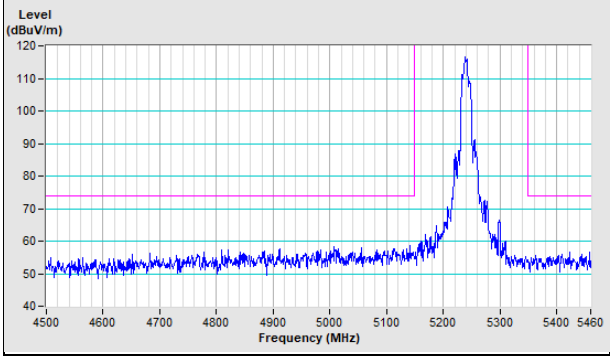
Horizontal (Peak)



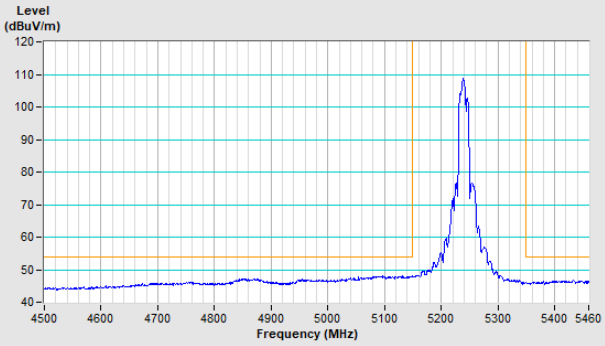
Horizontal (Average)

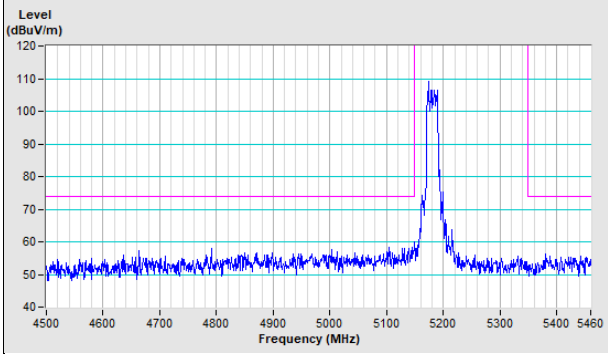
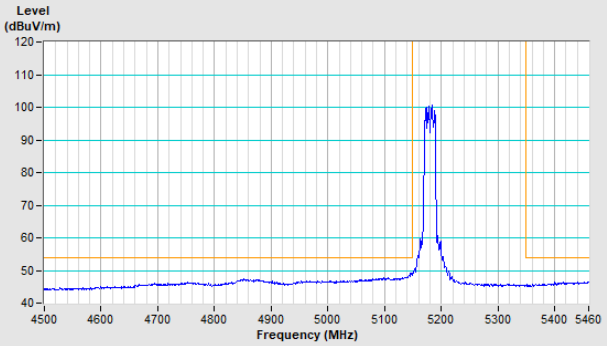
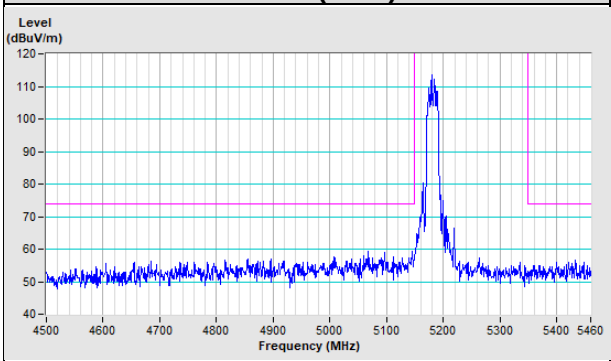
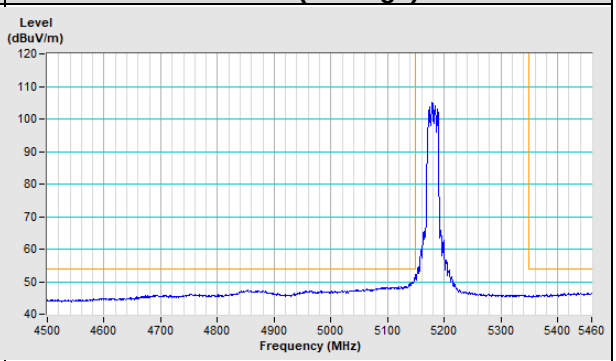
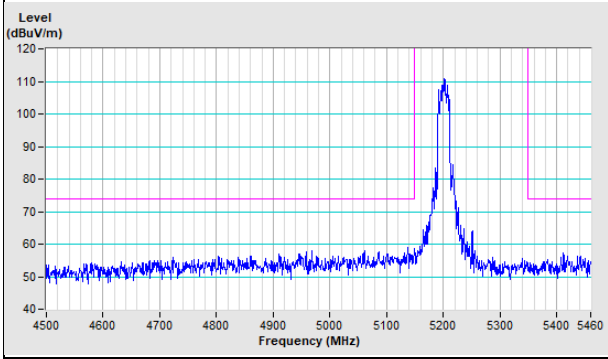
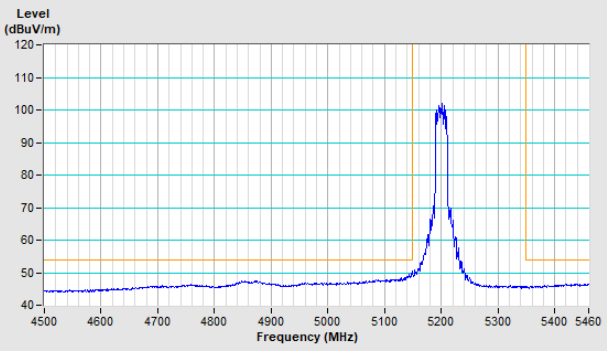
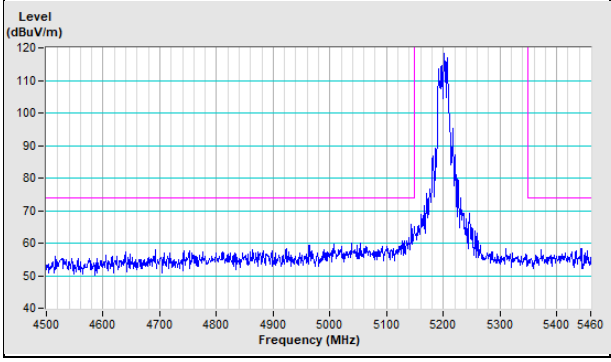
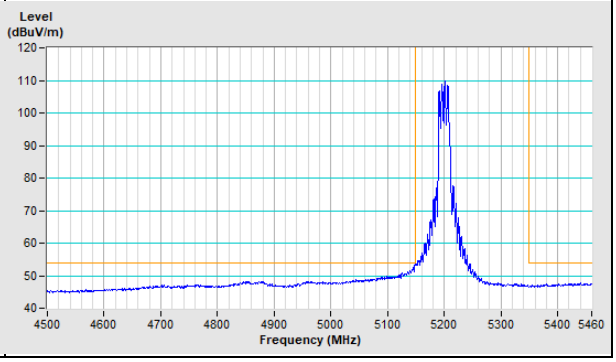


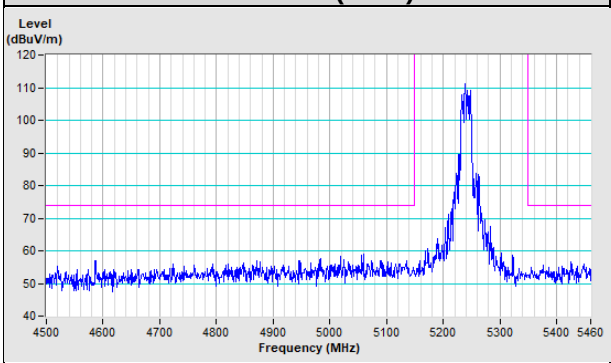
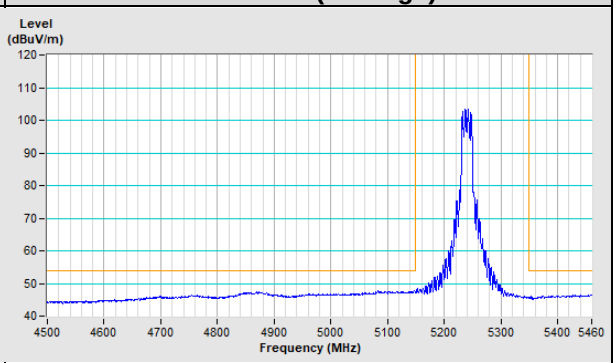
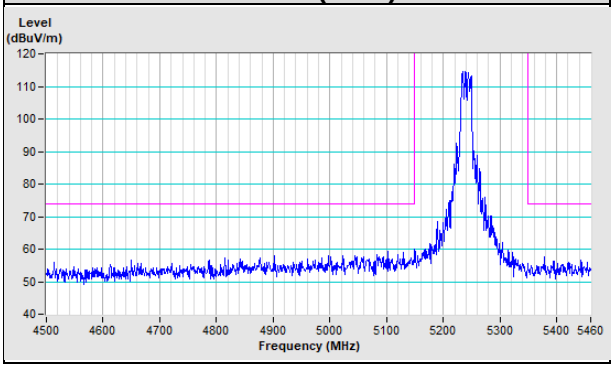
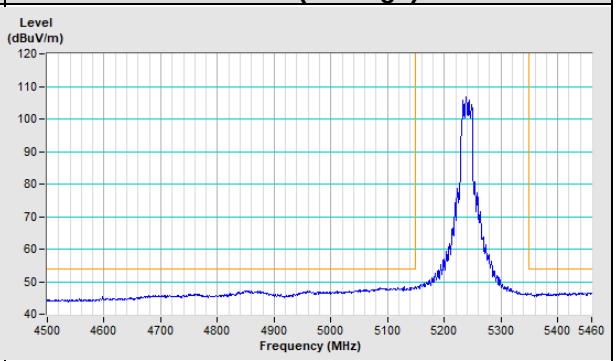
Vertical (Peak)



Vertical (Average)

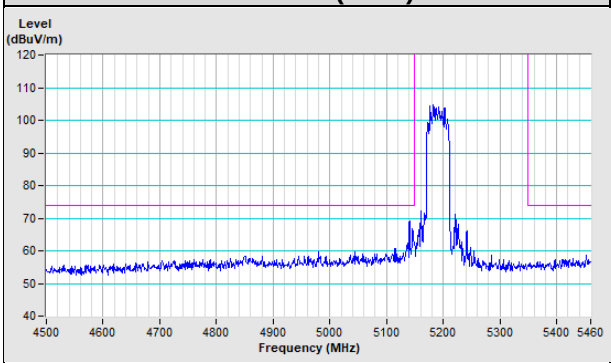


802.11ax (HE20) Channel 36	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	
802.11ax (HE20) Channel 40	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

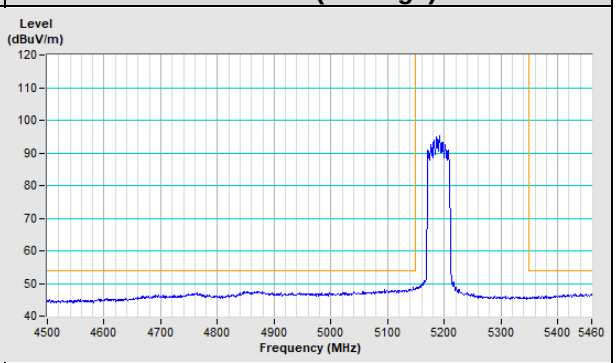
802.11ax (HE20) Channel 48	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

802.11ax (HE40) Channel 38

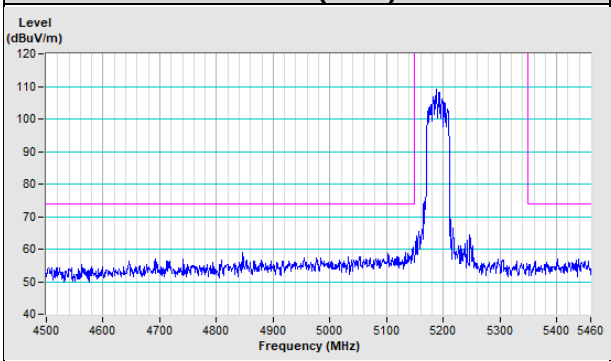
Horizontal (Peak)



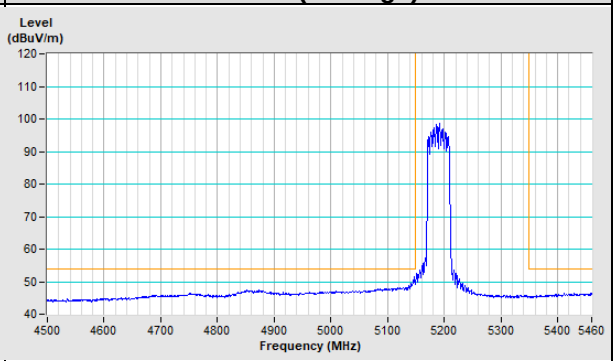
Horizontal (Average)



Vertical (Peak)

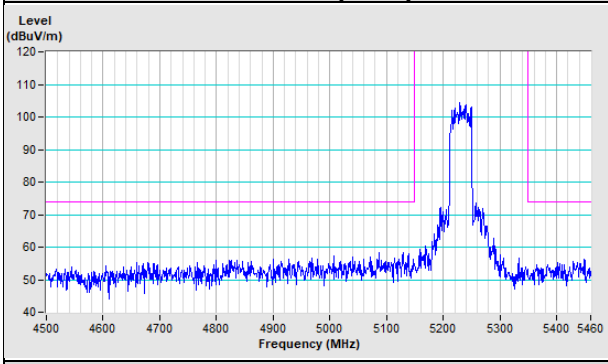


Vertical (Average)

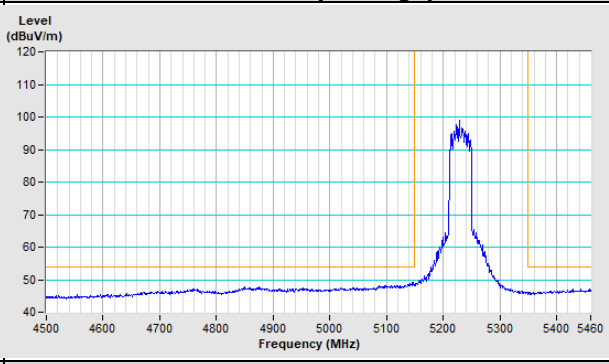


802.11ax (HE40) Channel 46

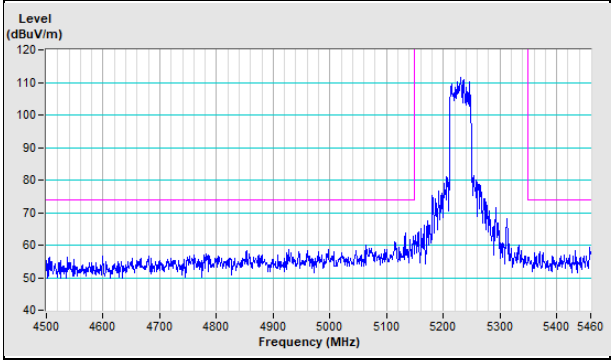
Horizontal (Peak)



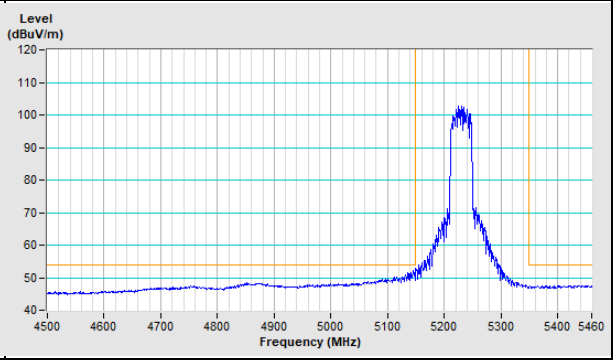
Horizontal (Average)

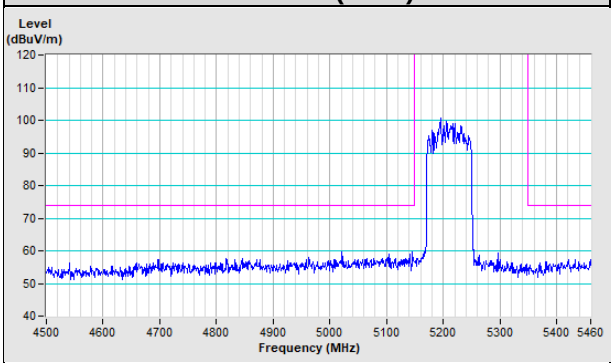
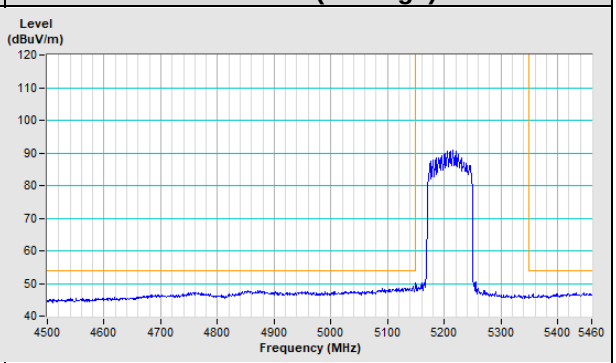
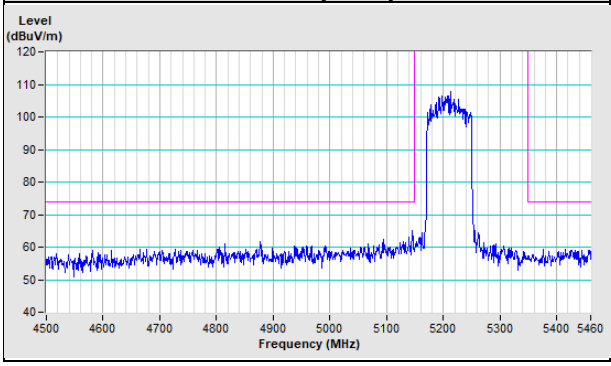
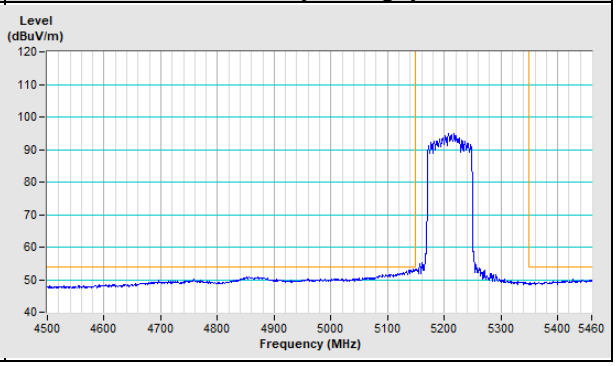


Vertical (Peak)



Vertical (Average)



802.11ax (HE80) Channel 42	
Horizontal (Peak)	**Horizontal (Average)**
	
Vertical (Peak)	**Vertical (Average)**
	

Appendix – Information of the Testing Laboratories

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

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

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Web Site: www.bureauveritas-adt.com

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

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