FCC Test Report (WLAN)

Report No.:	RF200603E15-1
FCC ID:	K7S-03580
Test Model:	MX4200
Series Model:	MX4050, MX4000, MX4200C
Received Date:	June 03, 2020
Test Date:	June 09 to July 02, 2020
Issued Date:	July 17, 2020
Applicant:	Belkin International, Inc.
Address:	12045 East Waterfront Drive Playa Vista, CA. 90094, USA
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
Test Location:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
FCC Registration / Designation Number:	723255 / TW2022

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Release Control Record

Issue No.	Description	Date Issued
RF200603E15-1	Original release.	July 17, 2020

1 Certificate of Conformity

Product:	Velop AX4200 WiFi 6 System
Brand:	Linksys
Test Model:	MX4200
Series Model:	MX4050, MX4000, MX4200C
Sample Status:	ENGINEERING SAMPLE
Applicant:	Belkin International, Inc.
Test Date:	June 09 to July 02, 2020
Standard:	47 CFR FCC Part 15, Subpart E (Section 15.407) ANSI C63.10: 2013

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

Prepared by : Phoenix Huang , **Date:** July 17, 2020

Phoenix Huang / Specialist

Approved by : , **Date:** July 17, 2020

Clark Lin / Technical Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -10.54 dB at 0.15000 MHz.
15.407(b) (1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement*	Pass	Meet the requirement of limit. Minimum passing margin is -0.2 dB at 5150.00 MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is i-pex(MHF) not a standard connector.

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

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.9 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.1 dB
	30MHz ~ 1GHz	5.4 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	5.0 dB
	18GHz ~ 40GHz	5.3 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT (WLAN)

Product	Velop AX4200 WiFi 6 System
Brand	Linksys
Test Model	MX4200
Series Model	MX4050, MX4000, MX4200C
Status of EUT	ENGINEERING SAMPLE
Driver Version	2.2
Power Supply Rating	12Vdc from power adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and VHT (20/40) mode in 2.4GHz 1024QAM for OFDMA in 11ax HE mode
Modulation Technology	DSSS, OFDM, OFDMA
Transfer Rate	802.11b: up to 11 Mbps 802.11a/g: up to 54 Mbps 802.11n: up to 600 Mbps 802.11ac: up to 1733.3 Mbps 802.11ax: up to 2401.9 Mbps
Operating Frequency	**2.4GHz:** 2.412 ~ 2.462 GHz **5GHz:** 5.18~ 5.24 GHz, 5.745 ~ 5.825 GHz
Number of Channel	**2.4GHz:** 802.11b, 802.11g, 802.11n (HT20), VHT20, 802.11ax (HE20): 11 802.11n (HT40), VHT40, 802.11ax (HE40): 7 **5GHz:** 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 9 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 4 802.11ac (VHT80), 802.11ax (HE80): 2
Output Power	**CDD Mode:** **2.412 ~ 2.462 GHz:** 799.923 mW **5.18 ~ 5.24 GHz:** 648.459 mW **5.745 ~ 5.825 GHz:** 961.375 mW **Beamforming Mode:** **2.412 ~ 2.462 GHz:** 650.202 mW **5.18 ~ 5.24 GHz:** 575.535 mW **5.745 ~ 5.825 GHz:** 423.595 mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x 1
Data Cable Supplied	NA

Note:

1. All models are listed as below.

Brand	Model	Difference
Linksys	MX4200	for marketing request
	MX4050	
	MX4000	
	MX4200C	
Note: From the above models, model: MX4200 was selected as representative model for the test and its data was recorded in this report.		

2. There are WLAN and Bluetooth technology used for the EUT. The EUT has four radios as following table:

Radio 1	Radio 2	Radio 3	Radio 4
WLAN 2.4GHz	WLAN 5GHz (low band)	WLAN 5GHz (high band)	Bluetooth

3. Simultaneously transmission condition.

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

4. The EUT must be supplied power adapter and following different models could be chosen as following table:

No.	Brand	Model No.	Spec.	Plug
1	APD	WA-36N12R	Input: 100-240Vac, 0.9A, 50-60Hz Output: 12Vdc, 3.0A DC Output cable: Unshielded, 1.5m	Interchangeable
2	APD	WA-36N12FU	Input: 100-240Vac, 0.9A, 50-60Hz Output: 12Vdc, 3.0A DC Output cable: Unshielded, 1.5m	US
3	LEI	MU36B1120300-A1	Input: 100-240Vac, 1A, 50/60Hz Output: 12Vdc, 3.0A DC Output cable: Unshielded, 1.5m	US
Note: From the above adapters, the worst Radiated Emissions and AC Power Conducted Emission was found in **Adapter 2.** Therefore only the test data of the mode was recorded in this report.				

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

Ant. No.	Transmitter Circuit	Ant.Net Gain (dBi)	Freq. Range (GHz)	Ant. Type	Connector Type
WIFi LB_1	Dual A	3.1	2.4~2.4835	PCB	i-pex(MHF)
		3.5	5.15~5.25		
		5	5.25~5.35		
		3.7	5.47~5.725		
		4.6	5.725~5.85		
WIFi LB_2	Dual B	2.8	2.4~2.4835	PCB	i-pex(MHF)
		4.8	5.15~5.25		
		5.1	5.25~5.35		
		5	5.47~5.725		
		4.7	5.725~5.85		
WIFi HB_1	5/6G A	3	5.15~5.25	PCB	i-pex(MHF)
		3.8	5.25~5.35		
		3.7	5.47~5.725		
		3.7	5.725~5.85		
WIFi HB_2	5/6G B	3.3	5.15~5.25	PCB	i-pex(MHF)
		4.1	5.25~5.35		
		3.3	5.47~5.725		
		3.3	5.725~5.85		
WIFi HB_3	5/6G C	2.6	5.15~5.25	PCB	i-pex(MHF)
		3.6	5.25~5.35		
		4.1	5.47~5.725		
		3.9	5.725~5.85		
WIFi HB_4	5/6G D	2.4	5.15~5.25	PCB	i-pex(MHF)
		2.9	5.25~5.35		
		2.6	5.47~5.725		
		3.8	5.725~5.85		
BT	-	2.1	2.4~2.4835	PCB	i-pex(MHF)

6. The EUT incorporates a MIMO function.

MODULATION MODE	Radio 1 - 2.4GHz Band TX & RX CONFIGURATION	
802.11b	2TX	2RX
802.11g	2TX	2RX
802.11n (HT20)	2TX	2RX
802.11n (HT40)	2TX	2RX
VHT20	2TX	2RX
VHT40	2TX	2RX
802.11ax (HE20)	2TX	2RX
802.11ax (HE40)	2TX	2RX

MODULATION MODE	Radio 2 - 5GHz Band (low band) TX & RX CONFIGURATION		Radio 3 - 5GHz Band (high band) TX & RX CONFIGURATION	
802.11a	2TX	2RX	4TX	4RX
802.11n (HT20)	2TX	2RX	4TX	4RX
802.11n (HT40)	2TX	2RX	4TX	4RX
802.11ac (VHT20)	2TX	2RX	4TX	4RX
802.11ac (VHT40)	2TX	2RX	4TX	4RX
802.11ac (VHT80)	2TX	2RX	4TX	4RX
802.11ax (HE20)	2TX	2RX	4TX	4RX
802.11ax (HE40)	2TX	2RX	4TX	4RX
802.11ax (HE80)	2TX	2RX	4TX	4RX

Note:
1. All of modulation mode support beamforming function except 802.11a/b/g modulation mode.
2. The EUT support Beamforming and CDD mode, therefore both mode were investigated and the worst case scenario was identified. The worst case data were presented in test report.
3. The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz), 802.11ac mode for 20MHz (40MHz, 80MHz) and 802.11ax mode for 20MHz (40MH, 80MHz), therefore the manufacturer will control the power for 802.11n/ac mode is the same as the 802.11ax or more lower than it and investigated worst case to representative mode in test report. (Final test mode refer to section 3.2.1)

7. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.
8. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

3.2 Description of Test Modes

FOR 5180 ~ 5240MHz

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

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

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

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

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

Channel	Frequency
42	5210MHz

FOR 5745 ~ 5825MHz:

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

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

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

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

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

Channel	Frequency
155	5775MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

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

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

Radiated Emission Test (Above 1GHz):

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

CDD Mode						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate Parameter
802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6Mb/s
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
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6Mb/s
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 1GHz):

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

CDD Mode						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11a	5180-5240 5745-5825	36 to 48 149 to 165	40, 165	OFDM	BPSK	6Mb/s

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.

CDD Mode						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11a	5180-5240 5745-5825	36 to 48 149 to 165	40, 165	OFDM	BPSK	6Mb/s

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.

CDD Mode						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate Parameter**
802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6Mb/s
802.11ac (VHT20) (output power only)		36 to 48	36, 40, 48	OFDM	BPSK	MCS0
802.11ac (VHT40) (output power only)		38 to 46	38, 46	OFDM	BPSK	MCS0
802.11ac (VHT80) (output power only)		42	42	OFDM	BPSK	MCS0
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
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6Mb/s
802.11ac (VHT20) (output power only)		149 to 165	149, 157, 165	OFDM	BPSK	MCS0
802.11ac (VHT40) (output power only)		151 to 159	151, 159	OFDM	BPSK	MCS0
802.11ac (VHT80) (output power only)		155	155	OFDM	BPSK	MCS0
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
Beamforming Mode (output power only)						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate Parameter**
802.11ac (VHT20)	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	MCS0
802.11ac (VHT40)		38 to 46	38, 46	OFDM	BPSK	MCS0
802.11ac (VHT80)		42	42	OFDM	BPSK	MCS0
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
802.11ac (VHT20)	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	MCS0
802.11ac (VHT40)		151 to 159	151, 159	OFDM	BPSK	MCS0
802.11ac (VHT80)		155	155	OFDM	BPSK	MCS0
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	25deg. C, 65%RH	120Vac, 60Hz	Nelson Teng
RE<1G	23deg. C, 67%RH	120Vac, 60Hz	Ryan Du
PLC	25deg. C, 75%RH	120Vac, 60Hz	Sampson Chen, Nick Lo
APCM	24deg. C, 60%RH	120Vac, 60Hz	Jyunchun Lin

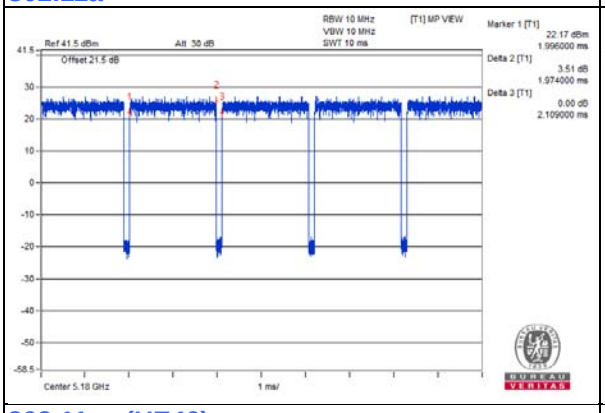
3.3 Duty Cycle of Test Signal

For Radio 2

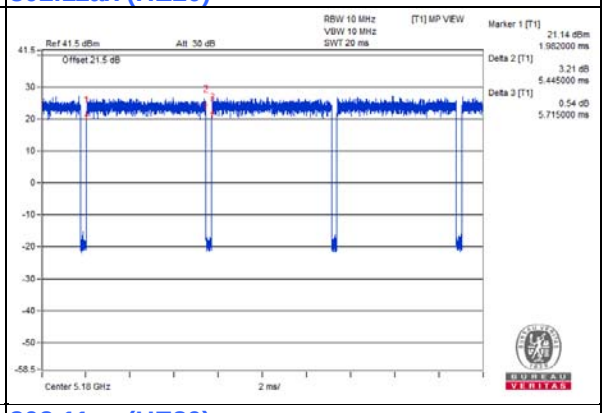
Duty cycle of test signal is < 98%, duty factor shall be considered.

802.11a: Duty cycle = 1.974 ms/2.109 ms = 0.936, Duty factor = 10 * log (1/Duty cycle) = 0.29 dB
802.11ax (HE20): Duty cycle = 5.445 ms/5.715 ms = 0.953, Duty factor = 10 * log (1/Duty cycle) = 0.21 dB
802.11ax (HE40): Duty cycle = 5.438 ms/5.71 ms = 0.952, Duty factor = 10 * log (1/Duty cycle) = 0.21 dB
802.11ax (HE80): Duty cycle = 5.44 ms/5.695 ms = 0.955, Duty factor = 10 * log (1/Duty cycle) = 0.2 dB

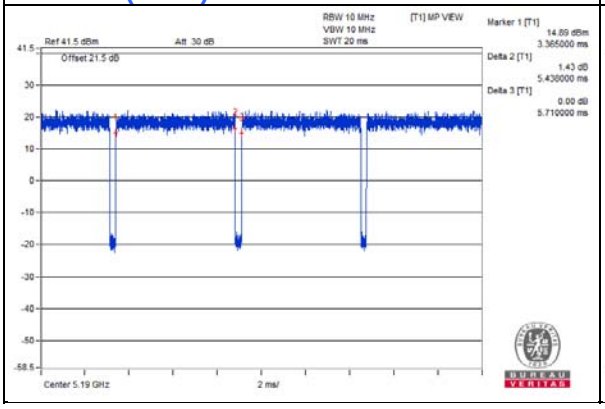
802.11a



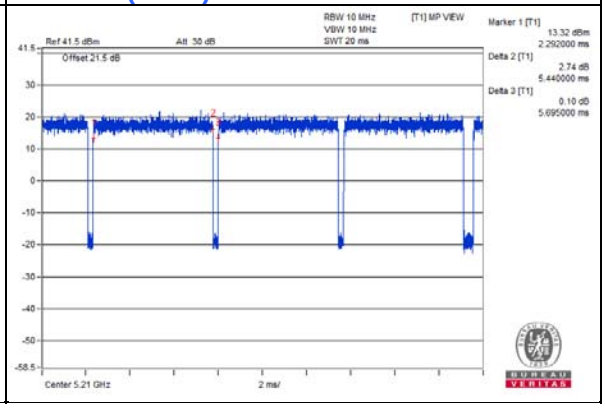
802.11ax (HE20)



802.11ax (HE40)



802.11ax (HE80)

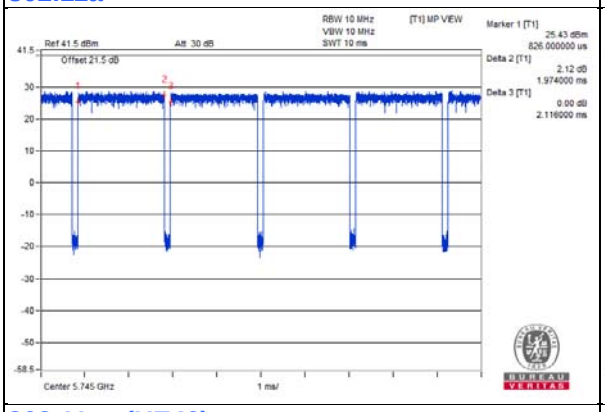


For Radio 3

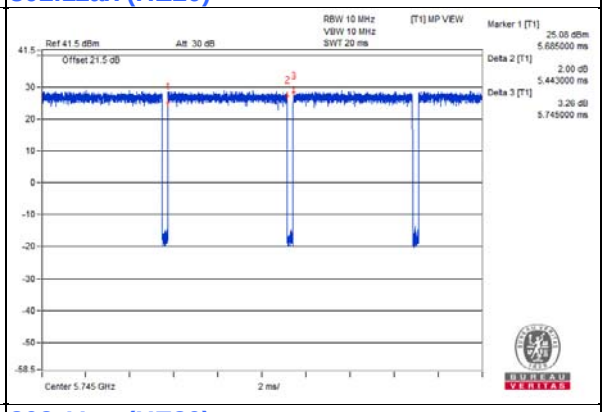
Duty cycle of test signal is < 98%, duty factor shall be considered.

802.11a: Duty cycle = 1.974 ms/2.116 ms = 0.933, Duty factor = 10 * log (1/Duty cycle) = 0.3 dB
802.11ax (HE20): Duty cycle = 5.443 ms/5.745 ms = 0.947, Duty factor = 10 * log (1/Duty cycle) = 0.23 dB
802.11ax (HE40): Duty cycle = 5.437 ms/5.702 ms = 0.954, Duty factor = 10 * log (1/Duty cycle) = 0.21 dB
802.11ax (HE80): Duty cycle = 5.441 ms/5.698 ms = 0.955, Duty factor = 10 * log (1/Duty cycle) = 0.2 dB

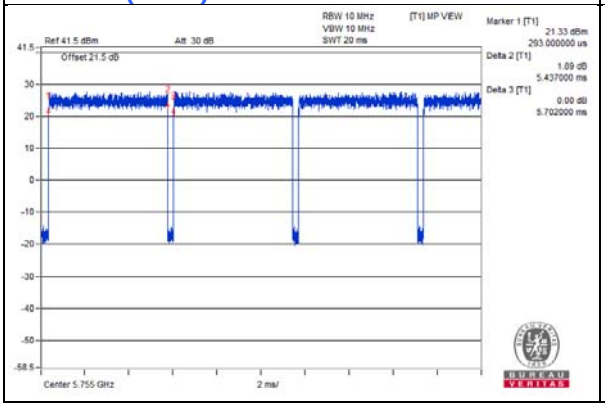
802.11a



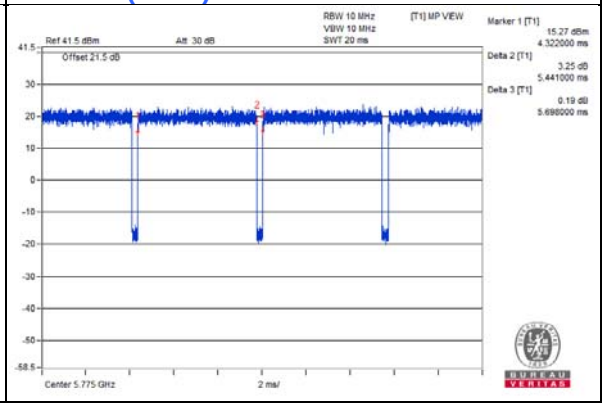
802.11ax (HE20)



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.

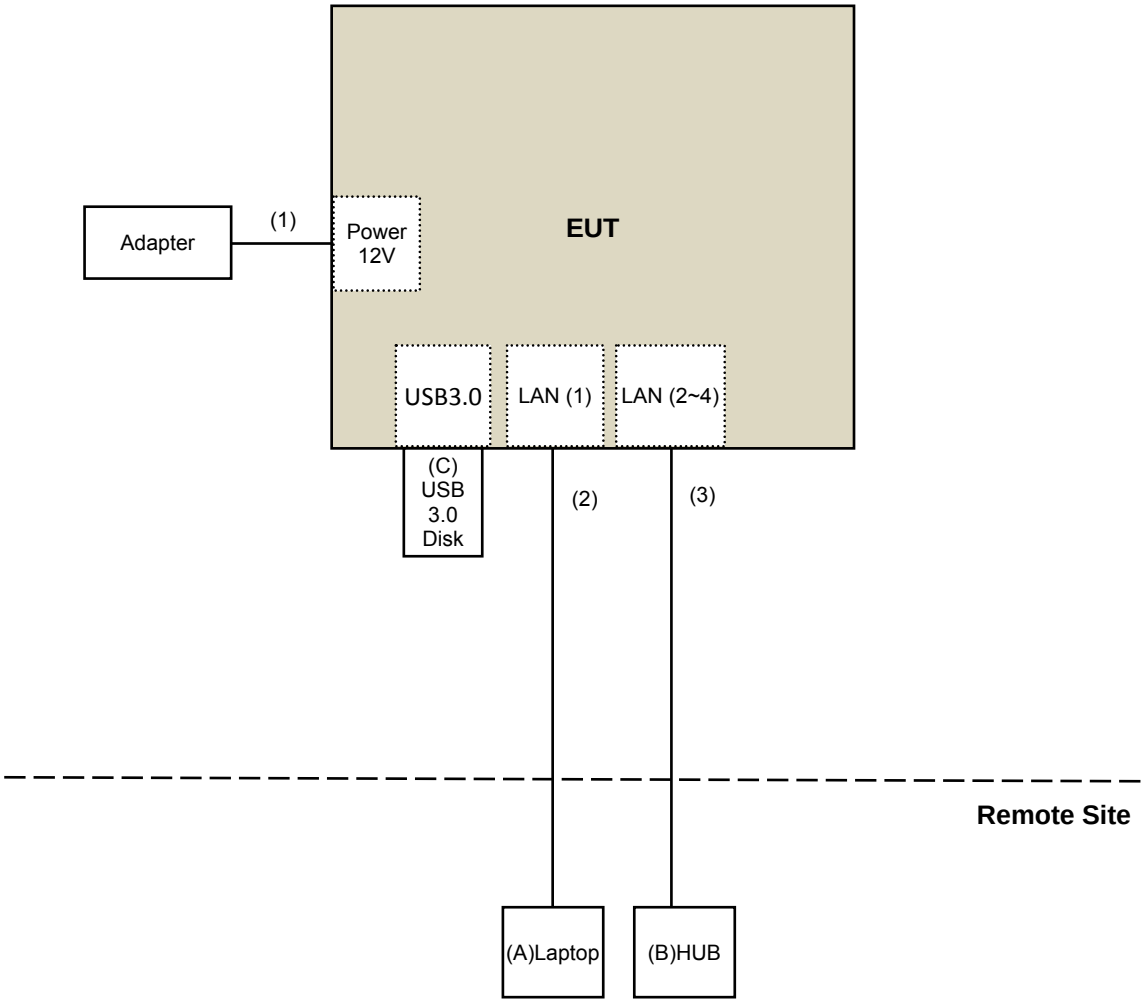
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	Lenovo	81A4	YD02YN76	PD93165NGU	Provided by Lab
B.	HUB	ZyXEL	GS1100-16	S150H44000046	DoC	Provided by Lab
C.	USB 3.0 Disk	SanDisk	Ultra Flalr USB 3.0	NA	NA	Provided by Lab

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC Cable	1	1.5	No	0	Supplied by client
2.	RJ-45 Cable	1	10	No	0	Provided by Lab
3.	RJ-45 Cable	3	10	No	0	Provided by Lab

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards and References

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

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

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

References Test Guidance:
KDB 789033 D02 General UNII Test Procedure New Rules v02r01
KDB 662911 D01 Multiple Transmitter Output v02r01

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

NOTE:

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

Limits of unwanted emission out of the restricted bands

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

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

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

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

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

Note:

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

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

4.1.2 Test Instruments

For Radiated Emission test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Keysight	N9038A	MY54450088	July 03, 2019	July 02, 2020
Pre-Amplifier EMCI	EMC001340	980142	May 25, 2020	May 24, 2021
Loop Antenna Electro-Metrics	EM-6879	264	Feb. 18, 2020	Feb. 17, 2021
RF Cable	NA	LOOPCAB-001	Jan. 08, 2020	Jan. 07, 2021
RF Cable	NA	LOOPCAB-002	Jan. 08, 2020	Jan. 07, 2021
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-05	Apr. 28, 2020	Apr. 27, 2021
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Nov. 11, 2019	Nov. 10, 2020
RF Cable	8D	966-3-1	Mar. 17, 2020	Mar. 16, 2021
RF Cable	8D	966-3-2	Mar. 17, 2020	Mar. 16, 2021
RF Cable	8D	966-3-3	Mar. 17, 2020	Mar. 16, 2021
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-3-01	Sep. 26, 2019	Sep. 25, 2020
Horn_Antenna SCHWARZBECK	BBHA9120-D	9120D-406	Nov. 24, 2019	Nov. 23, 2020
Pre-Amplifier EMCI	EMC12630SE	980384	Jan. 15, 2020	Jan. 14, 2021
RF Cable	EMC104-SM-SM-1200	160922	Jan. 15, 2020	Jan. 14, 2021
RF Cable	EMC104-SM-SM-2000	180601	June 09, 2020	June 08, 2021
RF Cable	EMC104-SM-SM-6000	180602	June 09, 2020	June 08, 2021
Spectrum Analyzer Keysight	N9030A	MY54490679	July 17, 2019	July 16, 2020
Pre-Amplifier EMCI	EMC184045SE	980387	Jan. 15, 2020	Jan. 14, 2021
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170519	Nov. 24, 2019	Nov. 23, 2020
RF Cable	EMC102-KM-KM-1200	160924	Jan. 15, 2020	Jan. 14, 2021
RF Cable	EMC-KM-KM-4000	200214	Mar. 11, 2020	Mar. 10, 2021
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	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 966 Chamber No. 3.
3. Tested Date: June 26, 2020

For Bandedge and OOBE test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Keysight	N9038A	MY54450088	July 03, 2019	July 02, 2020
Horn_Antenna SCHWARZBECK	BBHA9120-D	9120D-406	Nov. 24, 2019	Nov. 23, 2020
Pre-Amplifier EMCI	EMC12630SE	980384	Jan. 15, 2020	Jan. 14, 2021
RF Cable	EMC104-SM-SM-1200	160922	Jan. 15, 2020	Jan. 14, 2021
RF Cable	EMC104-SM-SM-2000	180601	June 09, 2020	June 08, 2021
RF Cable	EMC104-SM-SM-6000	180602	June 09, 2020	June 08, 2021
Spectrum Analyzer Keysight	N9030A	MY54490679	July 17, 2019	July 16, 2020
Pre-Amplifier EMCI	EMC184045SE	980387	Jan. 15, 2020	Jan. 14, 2021
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170519	Nov. 24, 2019	Nov. 23, 2020
RF Cable	EMC102-KM-KM-1200	160924	Jan. 15, 2020	Jan. 14, 2021
RF Cable	EMC-KM-KM-4000	200214	Mar. 11, 2020	Mar. 10, 2021
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	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 966 Chamber No. 3.
3. Tested Date: June 09 to 10, 2020

For other test items:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSV40	100964	May 29, 2020	May 28, 2021
Power meter Anritsu	ML2495A	1529002	July 26, 2019	July 25, 2020
Power sensor Anritsu	MA2411B	1339443	July 26, 2019	July 25, 2020
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 14, 2020	Apr. 13, 2021
AC Power Source Extech Electronics	6205	1440452	NA	NA
Temperature & Humidity Chamber Giant Force	GTH-150-40-SP-AR	MAA0812-008	Jan. 16, 2020	Jan. 15, 2021
Voltage Meter FLUKE	179	89610322	Sep. 25, 2019	Sep. 24, 2020
Software	ADT_RF Test Software V6.6.5.4	NA	NA	NA

NOTE: 1. The test was performed in Oven room 2.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Tested Date: July 02, 2020

4.1.3 Test Procedure

For Radiated emission below 30MHz

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

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

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

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

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

Note:

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

For Radiated emission above 30MHz

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

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

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

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

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

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

Note:

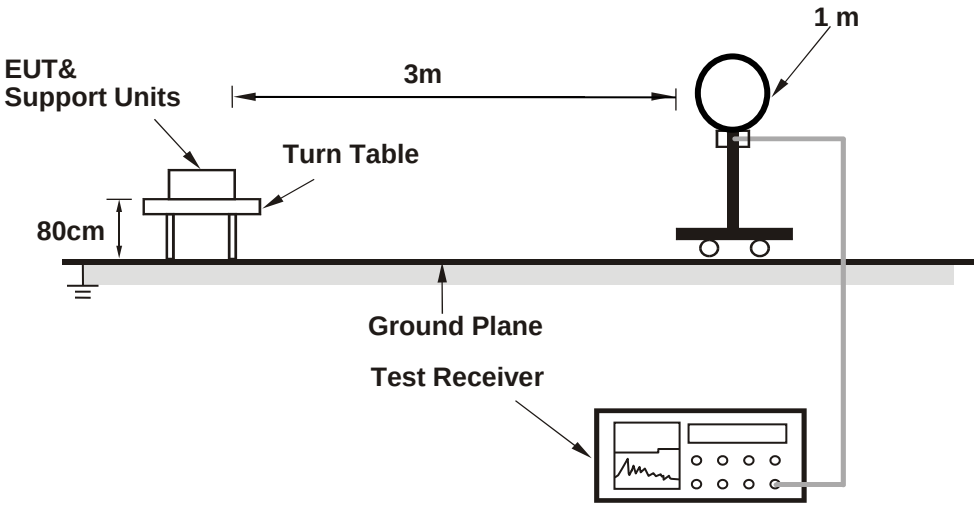
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.1.4 Deviation from Test Standard

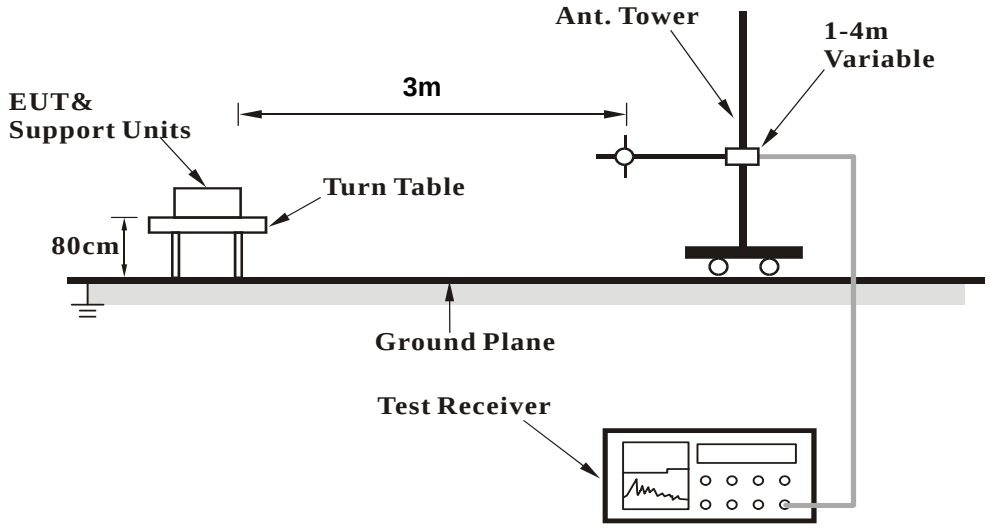
No deviation.

4.1.5 Test Setup

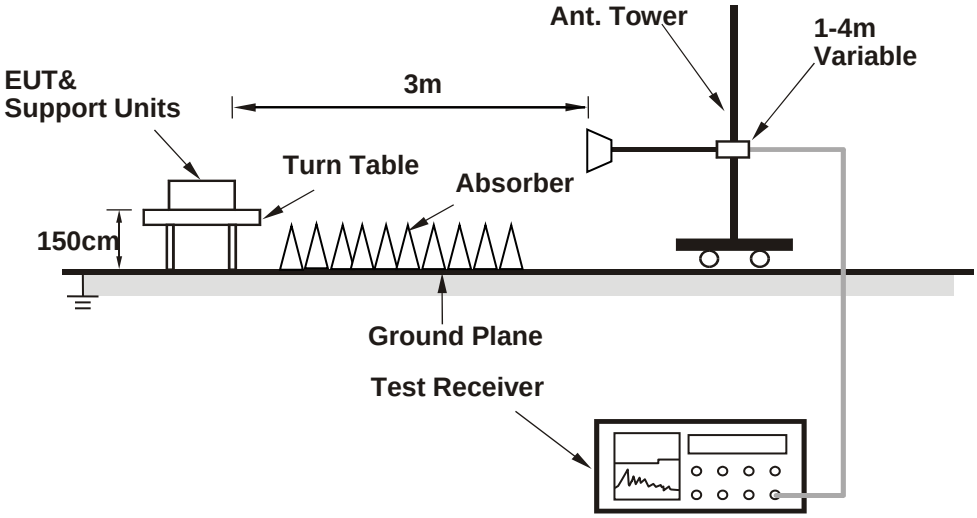
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Condition

a. Placed the EUT on the testing table.
b. Controlling software (QDART-Connectivity1.0-00074.1) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

CDD Mode

Above 1GHz Data:

802.11a

Channel	TX Channel 36	**Detector Function**	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 40GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	5150.00	62.5 PK	74.0	-11.5	1.56 H	85	58.8	3.7
2	5150.00	53.2 AV	54.0	-0.8	1.56 H	85	49.5	3.7
3	*5180.00	112.7 PK			1.56 H	85	109.1	3.6
4	*5180.00	104.6 AV			1.56 H	85	101.0	3.6
5	#10360.00	49.1 PK	68.2	-19.1	1.82 H	345	36.4	12.7
6	15540.00	58.8 PK	74.0	-15.2	1.89 H	360	45.6	13.2
7	15540.00	47.9 AV	54.0	-6.1	1.89 H	360	34.7	13.2
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	5150.00	62.9 PK	74.0	-11.1	1.50 V	129	59.2	3.7
2	5150.00	53.6 AV	54.0	-0.4	1.50 V	129	49.9	3.7
3	*5180.00	115.1 PK			1.50 V	129	111.5	3.6
4	*5180.00	107.6 AV			1.50 V	129	104.0	3.6
5	#10360.00	50.0 PK	68.2	-18.2	1.63 V	0	37.3	12.7
6	15540.00	49.3 PK	74.0	-24.7	1.85 V	251	36.1	13.2
7	15540.00	39.3 AV	54.0	-14.7	1.85 V	251	26.1	13.2

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.

Channel	TX Channel 40	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 40GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	63.9 PK	74.0	-10.1	1.55 H	88	60.2	3.7
2	5150.00	52.6 AV	54.0	-1.4	1.55 H	88	48.9	3.7
3	*5200.00	117.9 PK			1.55 H	88	114.4	3.5
4	*5200.00	108.6 AV			1.55 H	88	105.1	3.5
5	#10400.00	48.4 PK	68.2	-19.8	1.72 H	328	35.6	12.8
6	15600.00	58.4 PK	74.0	-15.6	1.89 H	360	44.9	13.5
7	15600.00	47.8 AV	54.0	-6.2	1.89 H	360	34.3	13.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	65.3 PK	74.0	-8.7	1.50 V	300	61.6	3.7
2	**5150.00**	**53.8 AV**	**54.0**	**-0.2**	**1.50 V**	**300**	**50.1**	**3.7**
3	*5200.00	120.0 PK			1.50 V	300	116.5	3.5
4	*5200.00	111.7 AV			1.50 V	300	108.2	3.5
5	#10400.00	50.2 PK	68.2	-18.0	1.53 V	11	37.4	12.8
6	15600.00	49.2 PK	74.0	-24.8	1.88 V	253	35.7	13.5
7	15600.00	39.5 AV	54.0	-14.5	1.88 V	253	26.0	13.5

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.

Channel	TX Channel 48	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 40GHz		

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	50.5 PK	74.0	-23.5	1.68 H	85	46.8	3.7
2	5150.00	42.0 AV	54.0	-12.0	1.68 H	85	38.3	3.7
3	*5240.00	115.2 PK			1.68 H	85	111.7	3.5
4	*5240.00	107.3 AV			1.68 H	85	103.8	3.5
5	5350.00	48.2 PK	74.0	-25.8	1.68 H	85	44.8	3.4
6	5350.00	39.4 AV	54.0	-14.6	1.68 H	85	36.0	3.4
7	#10480.00	48.6 PK	68.2	-19.6	1.79 H	342	35.5	13.1
8	15720.00	58.2 PK	74.0	-15.8	1.86 H	360	44.4	13.8
9	15720.00	47.8 AV	54.0	-6.2	1.86 H	360	34.0	13.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	51.4 PK	74.0	-22.6	1.51 V	128	47.7	3.7
2	5150.00	42.8 AV	54.0	-11.2	1.51 V	128	39.1	3.7
3	*5240.00	117.4 PK			1.51 V	128	113.9	3.5
4	*5240.00	109.2 AV			1.51 V	128	105.7	3.5
5	5350.00	48.0 PK	74.0	-26.0	1.51 V	128	44.6	3.4
6	5350.00	40.5 AV	54.0	-13.5	1.51 V	128	37.1	3.4
7	#10480.00	49.6 PK	68.2	-18.6	1.55 V	13	36.5	13.1
8	15720.00	49.7 PK	74.0	-24.3	1.95 V	254	35.9	13.8
9	15720.00	40.0 AV	54.0	-14.0	1.95 V	254	26.2	13.8

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.

Channel	TX Channel 149	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 40GHz		

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	#5624.46	56.3 PK	68.2	-11.9	1.44 H	139	52.5	3.8
2	*5745.00	120.8 PK			1.44 H	139	116.8	4.0
3	*5745.00	113.9 AV			1.44 H	139	109.9	4.0
4	#5934.99	52.4 PK	68.2	-15.8	1.44 H	139	47.9	4.5
5	11490.00	48.6 PK	74.0	-25.4	1.76 H	342	35.3	13.3
6	11490.00	39.5 AV	54.0	-14.5	1.76 H	342	26.2	13.3
7	#17235.00	58.3 PK	68.2	-9.9	1.90 H	360	40.7	17.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5560.13	54.3 PK	68.2	-13.9	1.84 V	166	50.5	3.8
2	*5745.00	122.0 PK			1.84 V	166	118.0	4.0
3	*5745.00	114.7 AV			1.84 V	166	110.7	4.0
4	#5939.84	51.9 PK	68.2	-16.3	1.84 V	166	47.2	4.7
5	11490.00	50.0 PK	74.0	-24.0	1.58 V	4	36.7	13.3
6	11490.00	40.8 AV	54.0	-13.2	1.58 V	4	27.5	13.3
7	#17235.00	49.6 PK	68.2	-18.6	1.91 V	250	32.0	17.6

Remarks:

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

Channel	TX Channel 157	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 40GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5615.21	53.3 PK	68.2	-14.9	1.42 H	138	49.5	3.8
2	*5785.00	119.2 PK			1.42 H	138	115.1	4.1
3	*5785.00	111.2 AV			1.42 H	138	107.1	4.1
4	#5960.21	51.9 PK	68.2	-16.3	1.42 H	138	47.3	4.6
5	11570.00	49.1 PK	74.0	-24.9	1.79 H	358	35.9	13.2
6	11570.00	39.8 AV	54.0	-14.2	1.79 H	358	26.6	13.2
7	#17355.00	57.8 PK	68.2	-10.4	1.93 H	360	40.2	17.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5591.70	54.9 PK	68.2	-13.3	1.83 V	165	51.1	3.8
2	*5785.00	120.4 PK			1.83 V	165	116.3	4.1
3	*5785.00	112.1 AV			1.83 V	165	108.0	4.1
4	#5953.29	51.3 PK	68.2	-16.9	1.83 V	165	46.7	4.6
5	11570.00	49.8 PK	74.0	-24.2	1.54 V	14	36.6	13.2
6	11570.00	40.7 AV	54.0	-13.3	1.54 V	14	27.5	13.2
7	#17355.00	58.9 PK	68.2	-9.3	2.31 V	219	41.3	17.6

Remarks:

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

Channel	TX Channel 165	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 40GHz		

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	#5631.02	54.8 PK	68.2	-13.4	1.34 H	123	51.0	3.8
2	*5825.00	118.4 PK			1.44 H	136	114.1	4.3
3	*5825.00	110.9 AV			1.44 H	136	106.6	4.3
4	#5929.02	56.3 PK	68.2	-11.9	1.34 H	123	51.8	4.5
5	11650.00	48.1 PK	74.0	-25.9	1.81 H	343	34.8	13.3
6	11650.00	39.0 AV	54.0	-15.0	1.81 H	343	25.7	13.3
7	#17475.00	57.4 PK	68.2	-10.8	1.96 H	360	39.5	17.9
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5635.71	53.7 PK	68.2	-14.5	1.77 V	152	49.9	3.8
2	*5825.00	119.4 PK			1.85 V	163	115.1	4.3
3	*5825.00	111.6 AV			1.85 V	163	107.3	4.3
4	#5926.51	56.7 PK	68.2	-11.5	1.77 V	152	52.2	4.5
5	11650.00	50.0 PK	74.0	-24.0	1.53 V	2	36.7	13.3
6	11650.00	40.6 AV	54.0	-13.4	1.53 V	2	27.3	13.3
7	#17475.00	49.2 PK	68.2	-19.0	1.86 V	240	31.3	17.9

Remarks:

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

802.11ax (HE20)

Channel	TX Channel 36	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 40GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	63.4 PK	74.0	-10.6	1.62 H	85	59.7	3.7
2	5150.00	52.6 AV	54.0	-1.4	1.62 H	85	48.9	3.7
3	*5180.00	114.0 PK			1.62 H	85	110.4	3.6
4	*5180.00	103.6 AV			1.62 H	85	100.0	3.6
5	#10360.00	48.3 PK	68.2	-19.9	1.70 H	341	35.6	12.7
6	15540.00	58.2 PK	74.0	-15.8	1.91 H	360	45.0	13.2
7	15540.00	47.5 AV	54.0	-6.5	1.91 H	360	34.3	13.2
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	5150.00	60.9 PK	74.0	-13.1	1.50 V	129	57.2	3.7
2	5150.00	53.3 AV	54.0	-0.7	1.50 V	129	49.6	3.7
3	*5180.00	116.8 PK			1.50 V	129	113.2	3.6
4	*5180.00	105.7 AV			1.50 V	129	102.1	3.6
5	#10360.00	49.6 PK	68.2	-18.6	1.58 V	8	36.9	12.7
6	15540.00	49.0 PK	74.0	-25.0	1.87 V	235	35.8	13.2
7	15540.00	39.2 AV	54.0	-14.8	1.87 V	235	26.0	13.2

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.

Channel	TX Channel 40	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 40GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	62.8 PK	74.0	-11.2	1.57 H	72	59.1	3.7
2	5150.00	52.0 AV	54.0	-2.0	1.57 H	72	48.3	3.7
3	*5200.00	119.3 PK			1.57 H	72	115.8	3.5
4	*5200.00	108.7 AV			1.57 H	72	105.2	3.5
5	#10400.00	49.0 PK	68.2	-19.2	1.79 H	329	36.2	12.8
6	15600.00	58.9 PK	74.0	-15.1	1.84 H	359	45.4	13.5
7	15600.00	48.0 AV	54.0	-6.0	1.84 H	359	34.5	13.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	66.1 PK	74.0	-7.9	1.49 V	302	62.4	3.7
2	5150.00	53.5 AV	54.0	-0.5	1.49 V	302	49.8	3.7
3	*5200.00	122.0 PK			1.49 V	302	118.5	3.5
4	*5200.00	110.3 AV			1.49 V	302	106.8	3.5
5	#10400.00	50.0 PK	68.2	-18.2	1.57 V	7	37.2	12.8
6	15600.00	50.1 PK	74.0	-23.9	1.86 V	240	36.6	13.5
7	15600.00	40.1 AV	54.0	-13.9	1.86 V	240	26.6	13.5

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.

Channel	TX Channel 48	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 40GHz		

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	50.5 PK	74.0	-23.5	1.51 H	83	46.8	3.7
2	5150.00	40.4 AV	54.0	-13.6	1.51 H	83	36.7	3.7
3	*5240.00	113.7 PK			1.51 H	83	110.2	3.5
4	*5240.00	103.1 AV			1.51 H	83	99.6	3.5
5	5350.00	49.4 PK	74.0	-24.6	1.51 H	83	46.0	3.4
6	5350.00	38.8 AV	54.0	-15.2	1.51 H	83	35.4	3.4
7	#10480.00	48.8 PK	68.2	-19.4	1.77 H	346	35.7	13.1
8	15720.00	58.3 PK	74.0	-15.7	1.84 H	354	44.5	13.8
9	15720.00	47.3 AV	54.0	-6.7	1.84 H	354	33.5	13.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	50.8 PK	74.0	-23.2	1.48 V	130	47.1	3.7
2	5150.00	41.3 AV	54.0	-12.7	1.48 V	130	37.6	3.7
3	*5240.00	116.6 PK			1.48 V	130	113.1	3.5
4	*5240.00	105.4 AV			1.48 V	130	101.9	3.5
5	5350.00	49.5 PK	74.0	-24.5	1.48 V	130	46.1	3.4
6	5350.00	39.5 AV	54.0	-14.5	1.48 V	130	36.1	3.4
7	#10480.00	50.0 PK	68.2	-18.2	1.63 V	20	36.9	13.1
8	15720.00	49.7 PK	74.0	-24.3	1.96 V	261	35.9	13.8
9	15720.00	40.0 AV	54.0	-14.0	1.96 V	261	26.2	13.8

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.

Channel	TX Channel 149	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 40GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5623.92	56.8 PK	68.2	-11.4	1.48 H	139	53.0	3.8
2	*5745.00	122.3 PK			1.48 H	139	118.3	4.0
3	*5745.00	112.3 AV			1.48 H	139	108.3	4.0
4	#5946.04	52.3 PK	68.2	-15.9	1.48 H	139	47.7	4.6
5	11490.00	48.8 PK	74.0	-25.2	1.79 H	329	35.5	13.3
6	11490.00	39.9 AV	54.0	-14.1	1.79 H	329	26.6	13.3
7	#17235.00	58.4 PK	68.2	-9.8	1.84 H	360	40.8	17.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5647.93	56.3 PK	68.2	-11.9	1.84 V	158	52.3	4.0
2	*5745.00	119.7 PK			1.84 V	158	115.7	4.0
3	*5745.00	111.4 AV			1.84 V	158	107.4	4.0
4	#5941.63	52.6 PK	68.2	-15.6	1.84 V	158	47.9	4.7
5	11490.00	49.9 PK	74.0	-24.1	1.56 V	15	36.6	13.3
6	11490.00	40.6 AV	54.0	-13.4	1.56 V	15	27.3	13.3
7	#17235.00	49.8 PK	68.2	-18.4	1.90 V	248	32.2	17.6

Remarks:

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

Channel	TX Channel 157	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 40GHz		

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	#5585.01	53.8 PK	68.2	-14.4	1.42 H	131	50.0	3.8
2	*5785.00	118.3 PK			1.42 H	131	114.2	4.1
3	*5785.00	110.1 AV			1.42 H	131	106.0	4.1
4	#5928.39	50.8 PK	68.2	-17.4	1.42 H	131	46.3	4.5
5	11570.00	48.3 PK	74.0	-25.7	1.80 H	352	35.1	13.2
6	11570.00	39.0 AV	54.0	-15.0	1.80 H	352	25.8	13.2
7	#17355.00	58.4 PK	68.2	-9.8	1.93 H	360	40.8	17.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5559.55	54.2 PK	68.2	-14.0	1.87 V	158	50.4	3.8
2	*5785.00	119.1 PK			1.87 V	158	115.0	4.1
3	*5785.00	110.5 AV			1.87 V	158	106.4	4.1
4	#5936.03	51.8 PK	68.2	-16.4	1.87 V	158	47.2	4.6
5	11570.00	49.6 PK	74.0	-24.4	1.63 V	5	36.4	13.2
6	11570.00	40.6 AV	54.0	-13.4	1.63 V	5	27.4	13.2
7	#17355.00	49.7 PK	68.2	-18.5	1.90 V	256	32.1	17.6

Remarks:

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

Channel	TX Channel 165	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 40GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5632.02	54.9 PK	68.2	-13.3	1.44 H	133	51.1	3.8
2	*5825.00	118.6 PK			1.44 H	133	114.3	4.3
3	*5825.00	110.5 AV			1.44 H	133	106.2	4.3
4	#5929.01	56.4 PK	68.2	-11.8	1.44 H	133	51.9	4.5
5	11650.00	48.5 PK	74.0	-25.5	1.72 H	347	35.2	13.3
6	11650.00	39.5 AV	54.0	-14.5	1.72 H	347	26.2	13.3
7	#17475.00	58.0 PK	68.2	-10.2	1.95 H	360	40.1	17.9
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5635.70	53.8 PK	68.2	-14.4	1.87 V	162	50.0	3.8
2	*5825.00	119.4 PK			1.87 V	162	115.1	4.3
3	*5825.00	110.9 AV			1.87 V	162	106.6	4.3
4	#5926.52	56.7 PK	68.2	-11.5	1.87 V	162	52.2	4.5
5	11650.00	50.2 PK	74.0	-23.8	1.52 V	3	36.9	13.3
6	11650.00	41.0 AV	54.0	-13.0	1.52 V	3	27.7	13.3
7	#17475.00	49.1 PK	68.2	-19.1	1.88 V	256	31.2	17.9

Remarks:

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

802.11ax (HE40)

Channel	TX Channel 38	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 40GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	56.1 PK	74.0	-17.9	1.49 H	84	52.4	3.7
2	5150.00	47.4 AV	54.0	-6.6	1.49 H	84	43.7	3.7
3	*5190.00	106.3 PK			1.49 H	84	102.7	3.6
4	*5190.00	97.6 AV			1.49 H	84	94.0	3.6
5	#10380.00	49.0 PK	68.2	-19.2	1.67 H	360	36.3	12.7
6	15570.00	54.4 PK	74.0	-19.6	1.89 H	360	41.0	13.4
7	15570.00	43.6 AV	54.0	-10.4	1.89 H	360	30.2	13.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	63.6 PK	74.0	-10.4	1.49 V	131	59.9	3.7
2	5150.00	53.6 AV	54.0	-0.4	1.49 V	131	49.9	3.7
3	*5190.00	110.3 PK			1.49 V	131	106.7	3.6
4	*5190.00	99.2 AV			1.49 V	131	95.6	3.6
5	#10380.00	50.4 PK	68.2	-17.8	1.55 V	16	37.7	12.7
6	15570.00	47.8 PK	74.0	-26.2	1.92 V	264	34.4	13.4
7	15570.00	38.0 AV	54.0	-16.0	1.92 V	264	24.6	13.4

Remarks:

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

Channel	TX Channel 46	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 40GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5230.00	113.1 PK			1.48 H	83	109.6	3.5
2	*5230.00	101.2 AV			1.48 H	83	97.7	3.5
3	5350.00	50.4 PK	74.0	-23.6	1.48 H	83	47.0	3.4
4	5350.00	39.2 AV	54.0	-14.8	1.48 H	83	35.8	3.4
5	#10460.00	48.9 PK	68.2	-19.3	1.62 H	360	35.9	13.0
6	15690.00	54.5 PK	74.0	-19.5	1.86 H	360	40.6	13.9
7	15690.00	43.7 AV	54.0	-10.3	1.86 H	360	29.8	13.9
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5230.00	113.4 PK			1.52 V	128	109.9	3.5
2	*5230.00	102.3 AV			1.52 V	128	98.8	3.5
3	5350.00	53.1 PK	74.0	-20.9	1.52 V	128	49.7	3.4
4	5350.00	40.6 AV	54.0	-13.4	1.52 V	128	37.2	3.4
5	#10460.00	50.5 PK	68.2	-17.7	1.58 V	11	37.5	13.0
6	15690.00	47.5 PK	74.0	-26.5	1.94 V	264	33.6	13.9
7	15690.00	37.6 AV	54.0	-16.4	1.94 V	264	23.7	13.9

Remarks:

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

Channel	TX Channel 151	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 40GHz		

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	#5650.00	61.2 PK	68.2	-7.0	1.95 H	158	57.2	4.0
2	*5755.00	119.5 PK			1.95 H	158	115.5	4.0
3	*5755.00	108.8 AV			1.95 H	158	104.8	4.0
4	#5951.30	52.3 PK	68.2	-15.9	1.95 H	158	47.7	4.6
5	11510.00	49.2 PK	74.0	-24.8	1.63 H	360	35.9	13.3
6	11510.00	40.2 AV	54.0	-13.8	1.63 H	360	26.9	13.3
7	#17265.00	54.7 PK	68.2	-13.5	1.85 H	360	37.2	17.5
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	#5638.97	64.3 PK	68.2	-3.9	1.45 V	160	60.5	3.8
2	*5755.00	120.3 PK			1.45 V	160	116.3	4.0
3	*5755.00	110.6 AV			1.45 V	160	106.6	4.0
4	#5933.63	53.0 PK	68.2	-15.2	1.45 V	160	48.5	4.5
5	11510.00	50.3 PK	74.0	-23.7	1.50 V	4	37.0	13.3
6	11510.00	41.1 AV	54.0	-12.9	1.50 V	4	27.8	13.3
7	#17265.00	48.3 PK	68.2	-19.9	1.92 V	266	30.8	17.5

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.

Channel	TX Channel 159	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 40GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5639.79	60.2 PK	68.2	-8.0	1.96 H	173	56.4	3.8
2	*5795.00	118.4 PK			1.96 H	173	114.2	4.2
3	*5795.00	107.6 AV			1.96 H	173	103.4	4.2
4	#5929.88	60.1 PK	68.2	-8.1	1.96 H	173	55.6	4.5
5	11590.00	48.8 PK	74.0	-25.2	1.68 H	360	35.5	13.3
6	11590.00	39.5 AV	54.0	-14.5	1.68 H	360	26.2	13.3
7	#17385.00	54.2 PK	68.2	-14.0	1.89 H	360	36.5	17.7
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	#5641.19	58.0 PK	68.2	-10.2	1.48 V	163	54.1	3.9
2	*5795.00	119.9 PK			1.48 V	163	115.7	4.2
3	*5795.00	110.2 AV			1.48 V	163	106.0	4.2
4	#5933.37	58.4 PK	68.2	-9.8	1.48 V	163	53.9	4.5
5	11590.00	50.5 PK	74.0	-23.5	1.61 V	2	37.2	13.3
6	11590.00	40.8 AV	54.0	-13.2	1.61 V	2	27.5	13.3
7	#17385.00	47.6 PK	68.2	-20.6	1.93 V	254	29.9	17.7

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.

802.11ax (HE80)

Channel	TX Channel 42	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 40GHz		

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	5144.40	61.9 PK	74.0	-12.1	1.50 H	259	58.2	3.7
2	5144.40	52.8 AV	54.0	-1.2	1.50 H	259	49.1	3.7
3	*5210.00	105.1 PK			1.50 H	259	101.5	3.6
4	*5210.00	94.5 AV			1.50 H	259	90.9	3.6
5	5350.00	48.4 PK	74.0	-25.6	1.50 H	259	45.0	3.4
6	5350.00	39.9 AV	54.0	-14.1	1.50 H	259	36.5	3.4
7	#10420.00	49.5 PK	68.2	-18.7	1.69 H	357	36.7	12.8
8	15630.00	54.4 PK	74.0	-19.6	1.85 H	360	40.7	13.7
9	15630.00	43.5 AV	54.0	-10.5	1.85 H	360	29.8	13.7
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5147.90	63.2 PK	74.0	-10.8	2.26 V	286	59.5	3.7
2	5147.90	53.4 AV	54.0	-0.6	2.26 V	286	49.7	3.7
3	*5210.00	105.2 PK			2.26 V	286	101.6	3.6
4	*5210.00	96.2 AV			2.26 V	286	92.6	3.6
5	5350.00	50.7 PK	74.0	-23.3	2.26 V	286	47.3	3.4
6	5350.00	39.9 AV	54.0	-14.1	2.26 V	286	36.5	3.4
7	#10420.00	49.8 PK	68.2	-18.4	1.51 V	9	37.0	12.8
8	15630.00	47.8 PK	74.0	-26.2	1.92 V	248	34.1	13.7
9	15630.00	37.9 AV	54.0	-16.1	1.92 V	248	24.2	13.7

Remarks:

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

Channel	TX Channel 155	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 40GHz		

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	#5650.00	65.4 PK	68.2	-2.8	1.73 H	128	61.4	4.0
2	*5775.00	111.9 PK			1.73 H	128	107.8	4.1
3	*5775.00	100.2 AV			1.73 H	128	96.1	4.1
4	#5934.82	54.6 PK	68.2	-13.6	1.73 H	128	50.1	4.5
5	11550.00	48.5 PK	74.0	-25.5	1.62 H	360	35.3	13.2
6	11550.00	39.3 AV	54.0	-14.7	1.62 H	360	26.1	13.2
7	#17325.00	54.4 PK	68.2	-13.8	1.90 H	360	36.8	17.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5640.04	67.3 PK	68.2	-0.9	1.75 V	164	63.4	3.9
2	*5775.00	117.7 PK			1.75 V	164	113.6	4.1
3	*5775.00	102.3 AV			1.75 V	164	98.2	4.1
4	#5937.79	54.6 PK	68.2	-13.6	1.75 V	164	49.9	4.7
5	11550.00	50.3 PK	74.0	-23.7	1.55 V	15	37.1	13.2
6	11550.00	40.9 AV	54.0	-13.1	1.55 V	15	27.7	13.2
7	#17325.00	48.2 PK	68.2	-20.0	1.94 V	263	30.6	17.6

Remarks:

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

Below 1GHz Data:

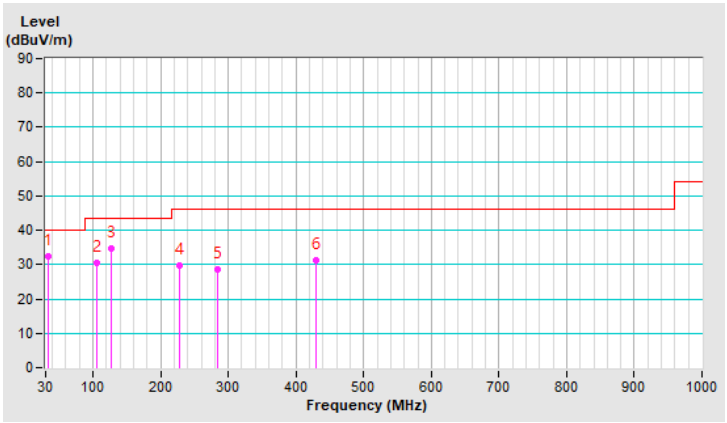
802.11a

Channel	TX Channel 40	Detector Function	Quasi-Peak (QP)
Frequency Range	9kHz ~ 1GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	32.97	32.3 QP	40.0	-7.7	2.50 H	59	41.1	-8.8
2	105.39	30.6 QP	43.5	-12.9	2.50 H	312	41.3	-10.7
3	127.92	34.8 QP	43.5	-8.7	1.50 H	135	43.1	-8.3
4	227.34	29.6 QP	46.0	-16.4	1.50 H	326	39.0	-9.4
5	284.60	28.6 QP	46.0	-17.4	1.00 H	289	35.0	-6.4
6	429.04	31.4 QP	46.0	-14.6	2.50 H	316	33.4	-2.0

Remarks:

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

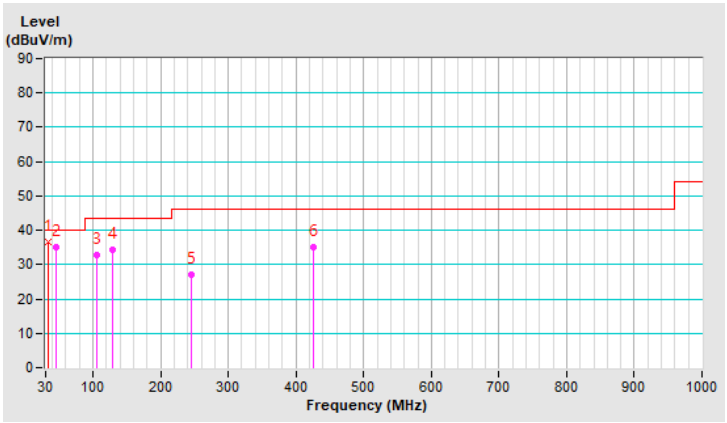


Channel	TX Channel 40	Detector Function	Quasi-Peak (QP)
Frequency Range	9kHz ~ 1GHz		

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	34.34	36.5 QP	40.0	-3.5	1.00 V	351	45.1	-8.6
2	45.01	35.1 QP	40.0	-4.9	1.00 V	23	42.8	-7.7
3	106.33	32.7 QP	43.5	-10.8	1.50 V	303	43.3	-10.6
4	128.07	34.2 QP	43.5	-9.3	1.00 V	93	42.5	-8.3
5	246.03	26.9 QP	46.0	-19.1	2.00 V	13	34.9	-8.0
6	426.29	35.1 QP	46.0	-10.9	1.50 V	141	37.1	-2.0

Remarks:

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

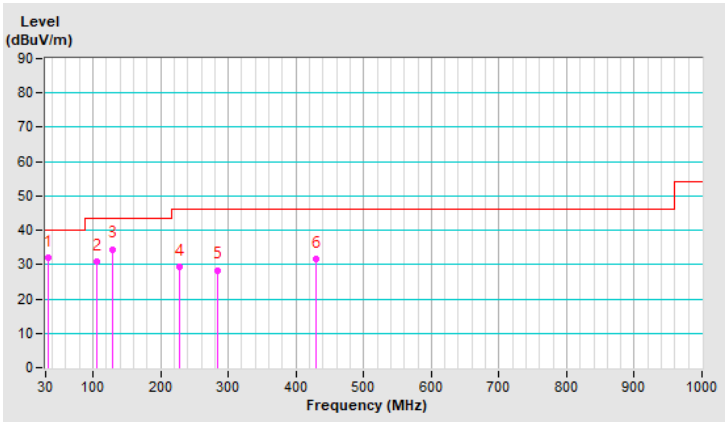


Channel	TX Channel 165	Detector Function	Quasi-Peak (QP)
Frequency Range	9kHz ~ 1GHz		

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	33.05	32.0 QP	40.0	-8.0	2.50 H	75	40.8	-8.8
2	105.46	30.7 QP	43.5	-12.8	2.50 H	325	41.4	-10.7
3	127.97	34.5 QP	43.5	-9.0	1.50 H	117	42.8	-8.3
4	227.43	29.5 QP	46.0	-16.5	1.50 H	311	38.9	-9.4
5	284.67	28.4 QP	46.0	-17.6	1.00 H	304	34.8	-6.4
6	429.13	31.6 QP	46.0	-14.4	2.50 H	308	33.6	-2.0

Remarks:

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

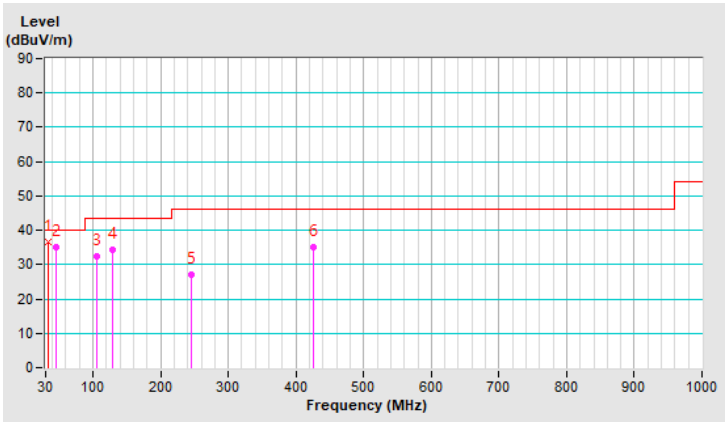


Channel	TX Channel 165	Detector Function	Quasi-Peak (QP)
Frequency Range	9kHz ~ 1GHz		

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	34.28	36.7 QP	40.0	-3.3	1.00 V	357	45.4	-8.7
2	44.98	35.2 QP	40.0	-4.8	1.00 V	19	42.9	-7.7
3	106.24	32.5 QP	43.5	-11.0	1.50 V	287	43.1	-10.6
4	128.03	34.4 QP	43.5	-9.1	1.00 V	79	42.7	-8.3
5	245.97	27.1 QP	46.0	-18.9	2.00 V	23	35.1	-8.0
6	426.21	35.2 QP	46.0	-10.8	1.50 V	127	37.2	-2.0

Remarks:

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



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	847124/029	Oct. 23, 2019	Oct. 22, 2020
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Oct. 23, 2019	Oct. 22, 2020
Line-Impedance Stabilization Network (for Peripheral) R&S	ESH3-Z5	835239/001	Mar. 19, 2020	Mar. 18, 2021
50 ohms Terminator	50	3	Oct. 23, 2019	Oct. 22, 2020
RF Cable	5D-FB	COCCAB-001	Sep. 27, 2019	Sep. 26, 2020
Fixed attenuator EMCI	STI02-2200-10	005	Aug. 30, 2019	Aug. 29, 2020
Software BVADT	BVADT_Cond_ V7.3.7.4	NA	NA	NA

Note:
1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Conduction 1.
3 Tested Date: July 01, 2020

4.2.3 Test Procedure

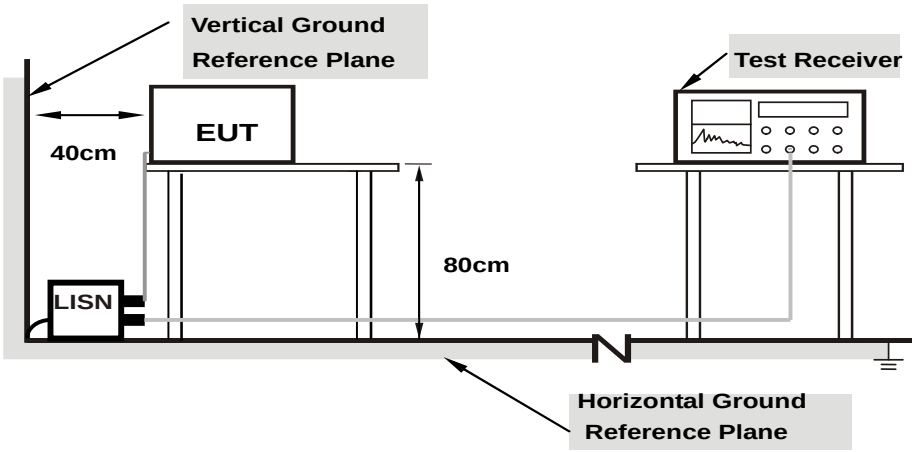
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Condition

Same as 4.1.6.

4.2.7 Test Results

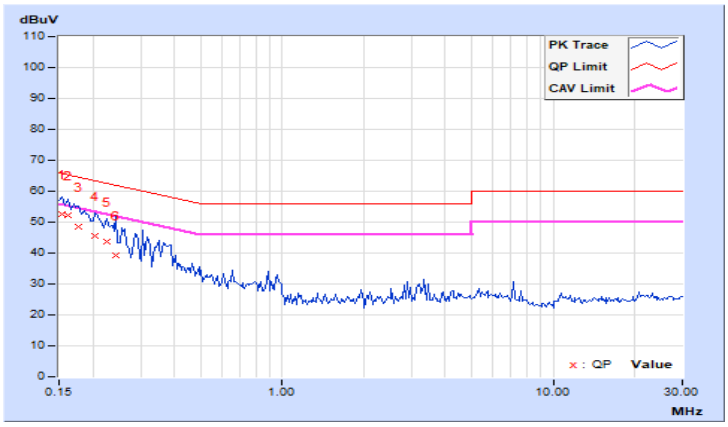
For Radio 2

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.15391	9.98	42.55	30.00	52.53	39.98	65.79	55.79	-13.26	-15.81
2	0.16172	9.98	42.30	29.08	52.28	39.06	65.38	55.38	-13.10	-16.32
3	0.17734	9.99	38.69	25.83	48.68	35.82	64.61	54.61	-15.93	-18.79
4	0.20469	9.99	35.74	24.20	45.73	34.19	63.42	53.42	-17.69	-19.23
5	0.22422	9.99	33.55	22.57	43.54	32.56	62.66	52.66	-19.12	-20.10
6	0.24375	9.99	29.19	14.35	39.18	24.34	61.97	51.97	-22.79	-27.63

Remarks:

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

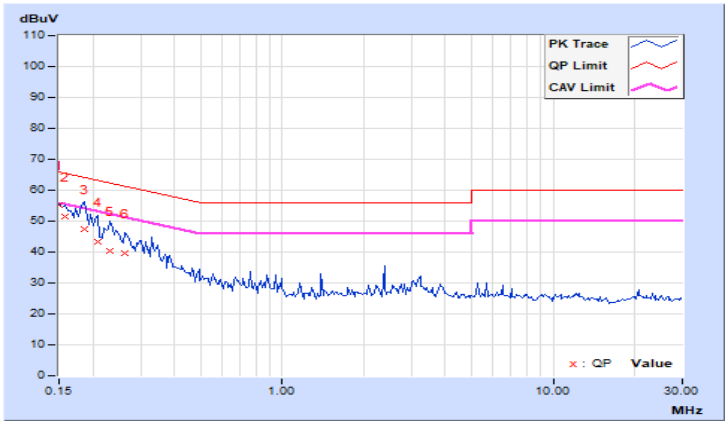


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.15000	9.99	45.05	30.87	55.04	40.86	66.00	56.00	-10.96	-15.14
2	0.15781	9.99	41.64	26.76	51.63	36.75	65.58	55.58	-13.95	-18.83
3	0.18516	10.00	37.29	22.49	47.29	32.49	64.25	54.25	-16.96	-21.76
4	0.20859	10.00	33.24	19.90	43.24	29.90	63.26	53.26	-20.02	-23.36
5	0.23203	10.00	30.38	16.12	40.38	26.12	62.38	52.38	-22.00	-26.26
6	0.26328	10.01	29.50	18.06	39.51	28.07	61.33	51.33	-21.82	-23.26

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



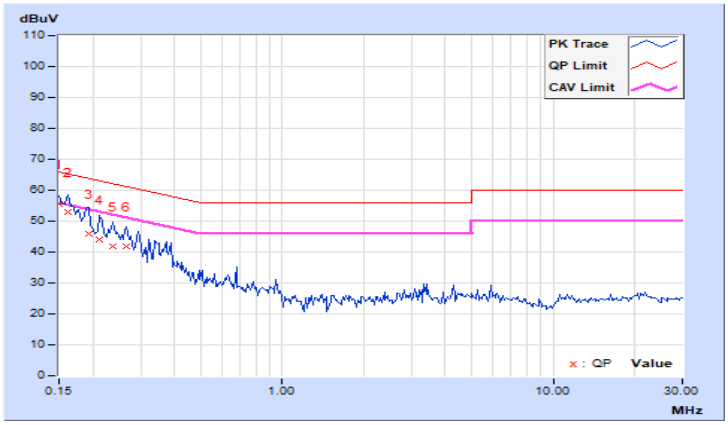
For Radio 3

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	**0.15000**	**9.98**	**45.48**	**31.70**	**55.46**	**41.68**	**66.00**	**56.00**	**-10.54**	**-14.32**
2	0.16172	9.98	43.11	27.76	53.09	37.74	65.38	55.38	-12.29	-17.64
3	0.19297	9.99	36.01	24.45	46.00	34.44	63.91	53.91	-17.91	-19.47
4	0.21250	9.99	34.22	22.68	44.21	32.67	63.11	53.11	-18.90	-20.44
5	0.23594	9.99	31.87	20.20	41.86	30.19	62.24	52.24	-20.38	-22.05
6	0.26719	10.00	31.78	22.40	41.78	32.40	61.20	51.20	-19.42	-18.80

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

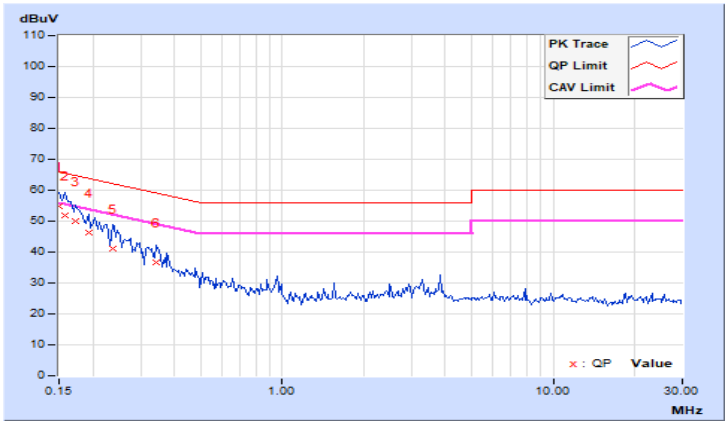


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.15000	9.99	44.77	30.48	54.76	40.47	66.00	56.00	-11.24	-15.53
2	0.15781	9.99	42.01	26.52	52.00	36.51	65.58	55.58	-13.58	-19.07
3	0.17344	9.99	40.13	25.96	50.12	35.95	64.79	54.79	-14.67	-18.84
4	0.19297	10.00	36.33	21.69	46.33	31.69	63.91	53.91	-17.58	-22.22
5	0.23594	10.01	31.20	17.38	41.21	27.39	62.24	52.24	-21.03	-24.85
6	0.34141	10.02	26.47	19.15	36.49	29.17	59.17	49.17	-22.68	-20.00

Remarks:

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



4.3 Transmit Power Measurement

4.3.1 Limits of Transmit Power Measurement

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

*B is the 26 dB emission bandwidth in megahertz

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

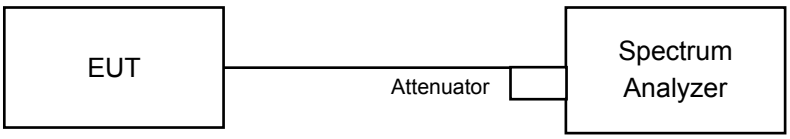
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

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

4.3.2 Test Setup

FOR POWER OUTPUT MEASUREMENT

FOR 26dB OCCUPIED BANDWIDTH



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

FOR POWER OUTPUT MEASUREMENT

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

FOR 26dB OCCUPIED BANDWIDTH

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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Condition

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

4.3.7 Test Results

For Radio 2 (U-NII-1 Band)

CDD Mode

802.11a

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	21.08	20.87	250.413	23.99	30.00	Pass
40	5200	25.28	24.93	648.459	28.12	30.00	Pass
48	5240	23.79	23.73	475.379	26.77	30.00	Pass

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	20.01	19.94	198.858	22.99	30.00	Pass
40	5200	24.43	24.34	548.976	27.40	30.00	Pass
48	5240	19.97	19.83	195.473	22.91	30.00	Pass

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	17.35	17.15	106.205	20.26	30.00	Pass
46	5230	20.94	20.74	242.742	23.85	30.00	Pass

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	19.21	19.07	164.092	22.15	30.00	Pass

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	20.22	20.05	206.354	23.15	30.00	Pass
40	5200	24.65	24.53	575.535	27.60	30.00	Pass
48	5240	20.18	20.02	204.693	23.11	30.00	Pass

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	17.54	17.34	110.955	20.45	30.00	Pass
46	5230	21.02	20.96	251.212	24.00	30.00	Pass

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	19.43	19.28	172.423	22.37	30.00	Pass

Beamforming Mode

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	20.01	19.94	198.858	22.99	28.82	Pass
40	5200	24.43	24.34	548.976	27.40	28.82	Pass
48	5240	19.97	19.83	195.473	22.91	28.82	Pass

Note: The directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 7.18 dBi > 6 dBi, so the power limit shall be reduced to 30-(7.18-6) = 28.82 dBm.

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	17.35	17.15	106.205	20.26	28.82	Pass
46	5230	20.94	20.74	242.742	23.85	28.82	Pass

Note: The directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 7.18 dBi > 6 dBi, so the power limit shall be reduced to 30-(7.18-6) = 28.82 dBm.

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	19.21	19.07	164.092	22.15	28.82	Pass

Note: The directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 7.18 dBi > 6 dBi, so the power limit shall be reduced to 30-(7.18-6) = 28.82 dBm.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	20.22	20.05	206.354	23.15	28.82	Pass
40	5200	24.65	24.53	575.535	27.60	28.82	Pass
48	5240	20.18	20.02	204.693	23.11	28.82	Pass

Note: The directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 7.18 dBi > 6 dBi, so the power limit shall be reduced to 30-(7.18-6) = 28.82 dBm.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	17.54	17.34	110.955	20.45	28.82	Pass
46	5230	21.02	20.96	251.212	24.00	28.82	Pass

Note: The directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 7.18 dBi > 6 dBi, so the power limit shall be reduced to 30-(7.18-6) = 28.82 dBm.

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	19.43	19.28	172.423	22.37	28.82	Pass

Note: The directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 7.18 dBi > 6 dBi, so the power limit shall be reduced to 30-(7.18-6) = 28.82 dBm.

For Radio 3 (U-NII-3 Band)

CDD Mode

802.11a

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
149	5745	24.06	23.81	23.94	23.32	957.645	29.81	30.00	Pass
157	5785	24.02	23.79	23.92	23.27	950.608	29.78	30.00	Pass
165	5825	24.05	23.83	23.97	23.35	961.375	29.83	30.00	Pass

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
149	5745	23.67	23.61	23.59	23.01	890.97	29.50	30.00	Pass
157	5785	23.69	23.64	23.63	23.05	897.602	29.53	30.00	Pass
165	5825	23.62	23.59	23.61	23.04	889.691	29.49	30.00	Pass

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
151	5755	23.76	23.51	23.62	22.98	890.826	29.50	30.00	Pass
159	5795	23.73	23.49	23.59	22.95	885.207	29.47	30.00	Pass

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
155	5775	21.39	21.51	21.53	20.94	545.698	27.37	30.00	Pass

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
149	5745	23.86	23.79	23.78	23.25	932.682	29.70	30.00	Pass
157	5785	23.89	23.82	23.83	23.28	940.257	29.73	30.00	Pass
165	5825	23.81	23.78	23.82	23.31	934.497	29.71	30.00	Pass

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
151	5755	23.97	23.72	23.78	23.15	930.284	29.69	30.00	Pass
159	5795	23.95	23.68	23.77	23.13	925.48	29.66	30.00	Pass

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
155	5775	21.61	21.73	21.75	21.16	574.054	27.59	30.00	Pass

Beamforming Mode

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
149	5745	20.07	20.06	20.16	19.58	397.551	25.99	26.30	Pass
157	5785	20.11	20.14	20.06	19.69	400.343	26.02	26.30	Pass
165	5825	20.06	19.98	20.36	19.36	395.872	25.98	26.30	Pass

Note: The directional gain = 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 4] = 9.7 dBi > 6 dBi, so the power limit shall be reduced to 30-(9.7-6) = 26.3 dBm.

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
151	5755	20.00	20.12	20.13	19.64	397.885	26.00	26.30	Pass
159	5795	19.87	20.01	20.20	19.73	395.967	25.98	26.30	Pass

Note: The directional gain = 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 4] = 9.7 dBi > 6 dBi, so the power limit shall be reduced to 30-(9.7-6) = 26.3 dBm.

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
155	5775	19.98	19.97	20.16	19.77	397.447	25.99	26.30	Pass

Note: The directional gain = 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 4] = 9.7 dBi > 6 dBi, so the power limit shall be reduced to 30-(9.7-6) = 26.3 dBm.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
149	5745	20.27	20.31	20.43	19.84	420.604	26.24	26.30	Pass
157	5785	20.36	20.37	20.33	19.91	423.379	26.27	26.30	Pass
165	5825	20.29	20.25	20.62	19.64	420.221	26.23	26.30	Pass

Note: The directional gain = 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 4] = 9.7 dBi > 6 dBi, so the power limit shall be reduced to 30-(9.7-6) = 26.3 dBm.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
151	5755	20.29	20.39	20.37	19.93	423.595	26.27	26.30	Pass
159	5795	20.13	20.23	20.43	19.95	417.74	26.21	26.30	Pass

Note: The directional gain = 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 4] = 9.7 dBi > 6 dBi, so the power limit shall be reduced to 30-(9.7-6) = 26.3 dBm.

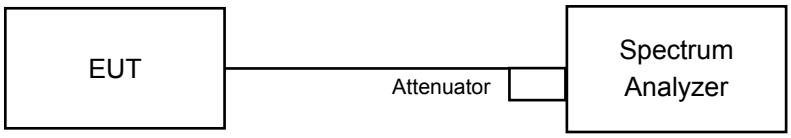
802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
155	5775	20.20	20.18	20.40	19.98	418.133	26.21	26.30	Pass

Note: The directional gain = 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 4] = 9.7 dBi > 6 dBi, so the power limit shall be reduced to 30-(9.7-6) = 26.3 dBm.

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

For Radio 2 (U-NII-1 Band)

CDD Mode

802.11a

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	16.56	16.44
40	5200	24.12	21.96
48	5240	18	17.04

802.11ax (HE20)

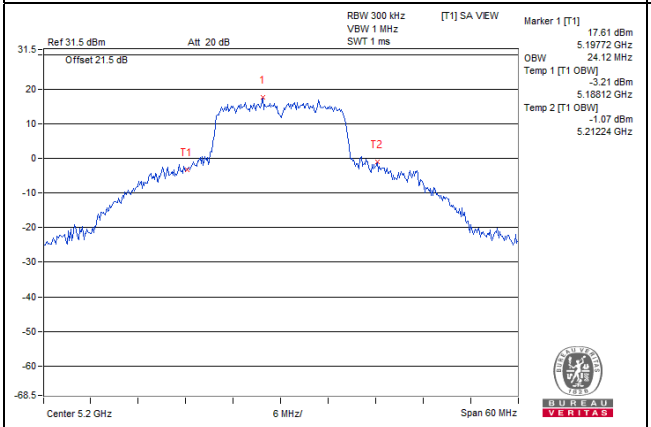
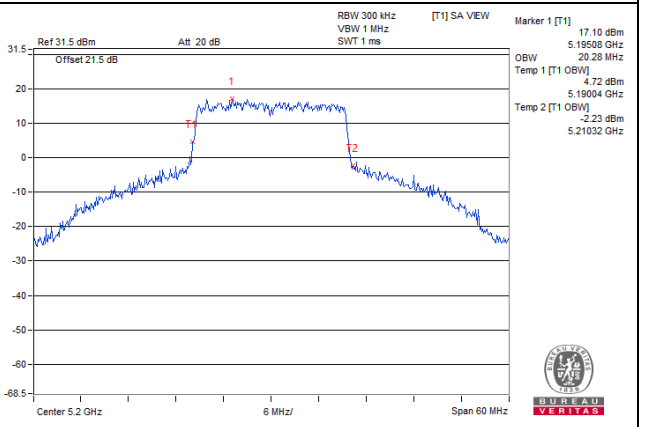
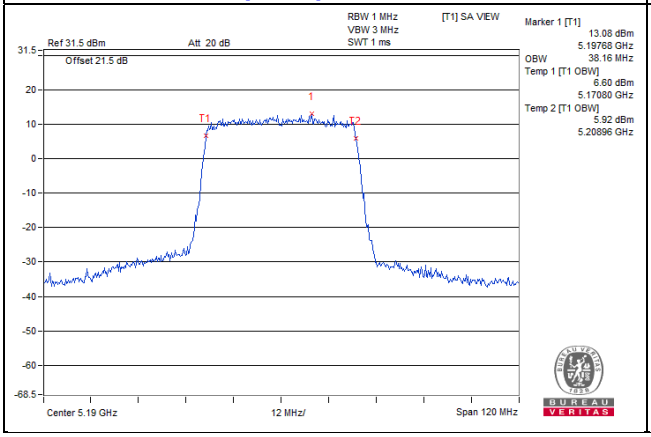
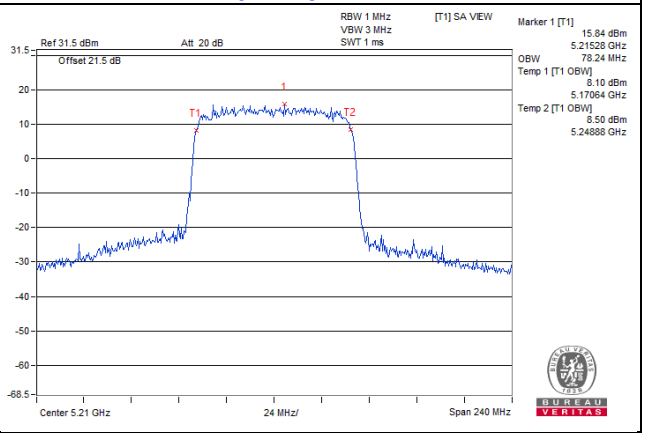
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	18.96	18.96
40	5200	20.28	19.68
48	5240	19.08	18.96

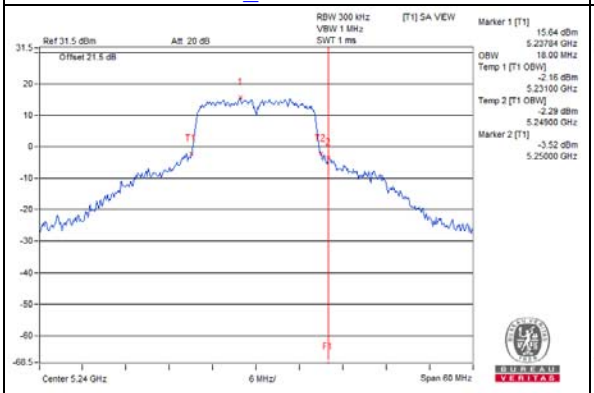
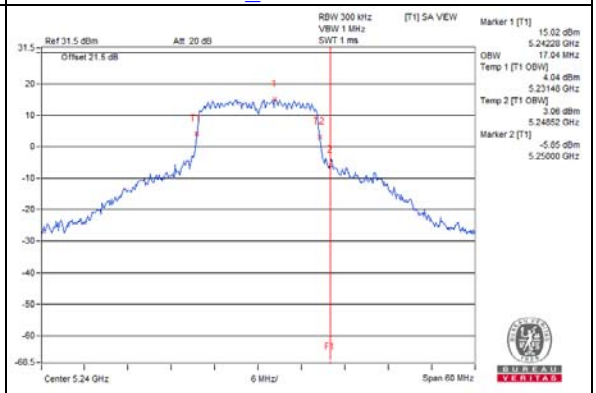
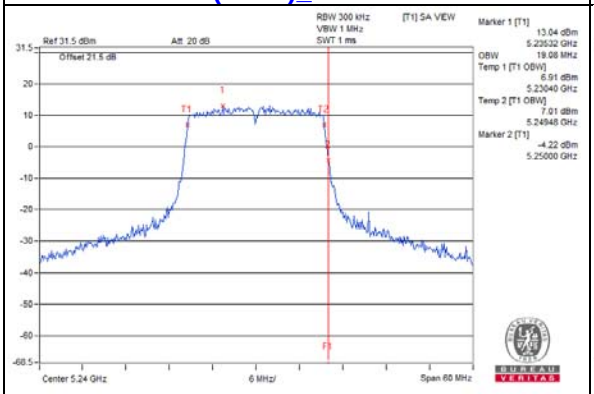
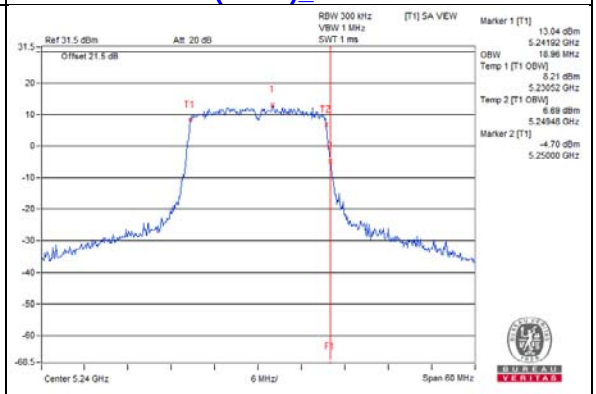
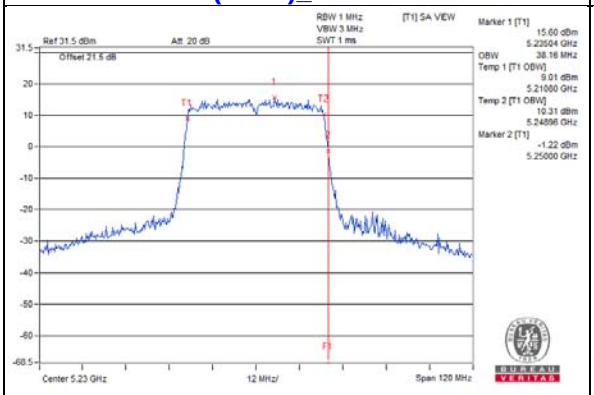
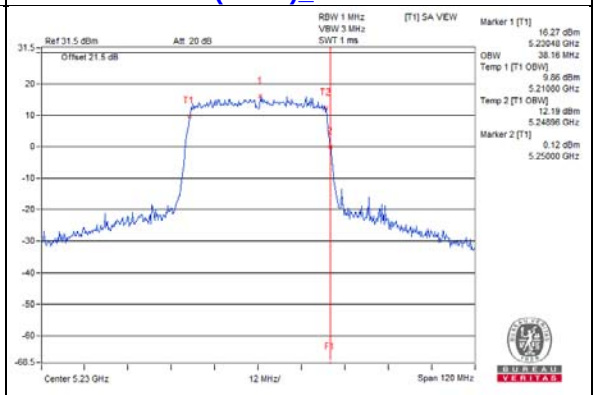
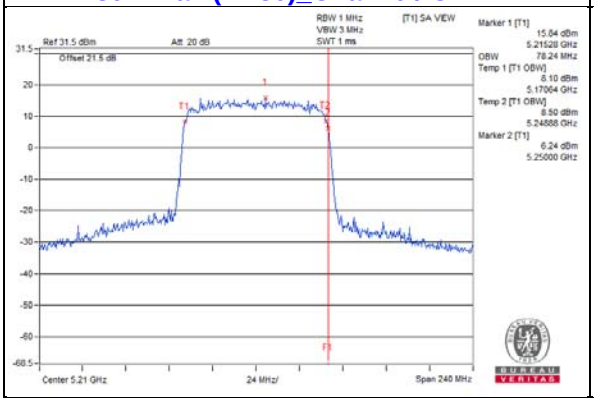
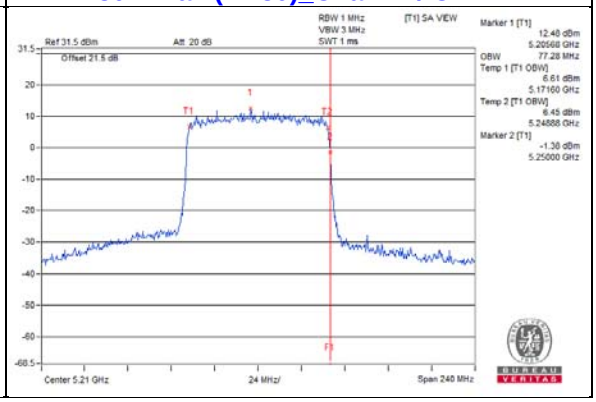
802.11ax (HE40)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	38.16	37.92
46	5230	38.16	38.16

802.11ax (HE80)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	78.24	77.28

Spectrum Plot of Max. Value	
802.11a_Chain 0 / CH40	**802.11ax (HE20)_Chain 0 / CH40**
	
802.11ax (HE40)_Chain 0 / CH38	**802.11ax (HE80)_Chain 0 / CH42**
	

Spectrum Plot for near by DFS band (DFS is required, if 99% OCP straddle into U-NII-2A band)	
802.11a_Chain 0 / CH48	**802.11a_Chain 1 / CH48**
	
802.11ax (HE20)_Chain 0 / CH48	**802.11ax (HE20)_Chain 1 / CH48**
	
802.11ax (HE40)_Chain 0 / CH46	**802.11ax (HE40)_Chain 1 / CH46**
	
802.11ax (HE80)_Chain 0 / CH42	**802.11ax (HE80)_Chain 1 / CH42**
	

For Radio 3 (U-NII-3 Band)

CDD Mode

802.11a

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
149	5745	16.61	16.69	16.69	16.61
157	5785	17.64	18	17.4	16.92
165	5825	29.52	29.4	28.68	22.68

802.11ax (HE20)

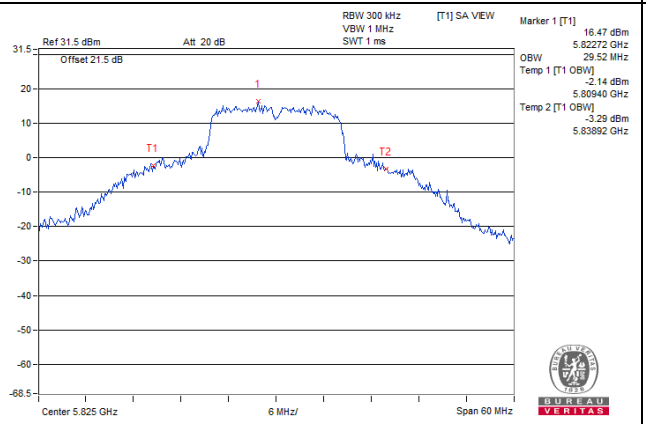
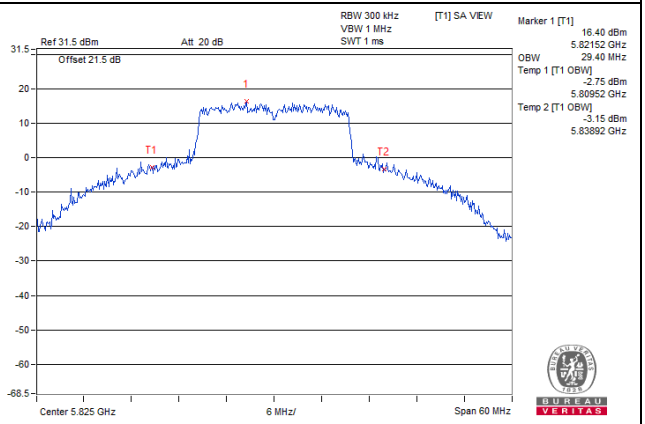
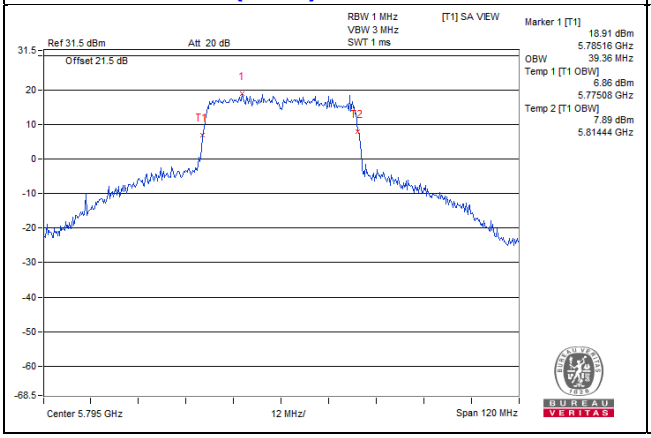
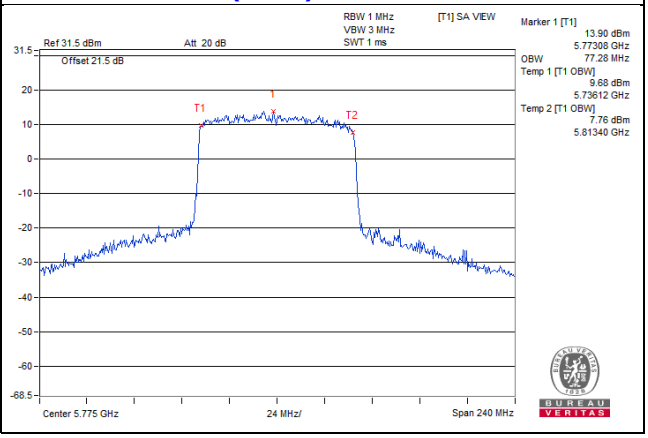
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
149	5745	19.08	19.08	19.08	19.08
157	5785	19.20	19.44	19.08	19.08
165	5825	29.04	29.28	29.40	22.44

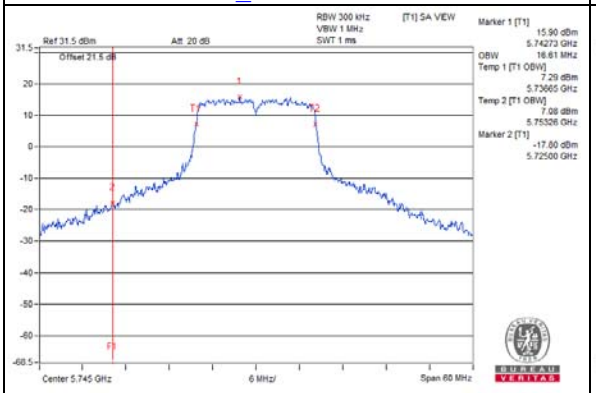
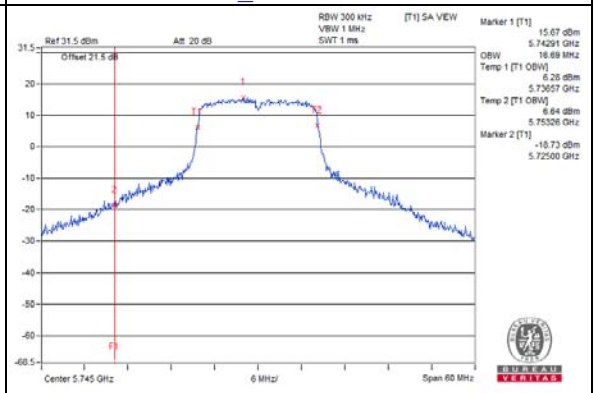
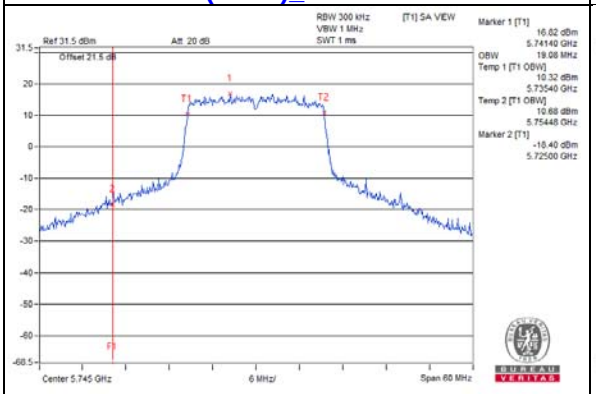
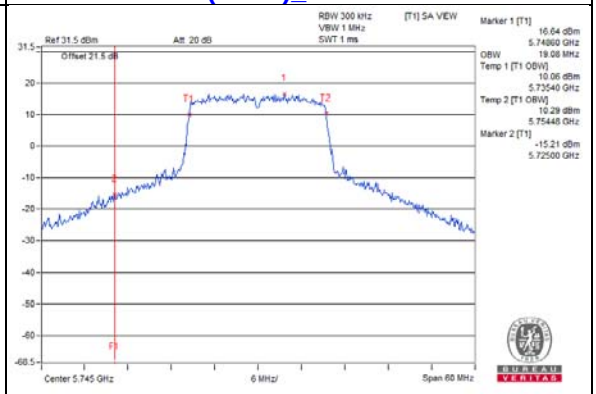
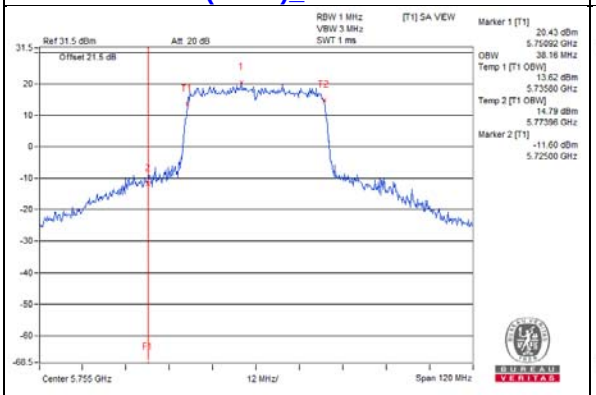
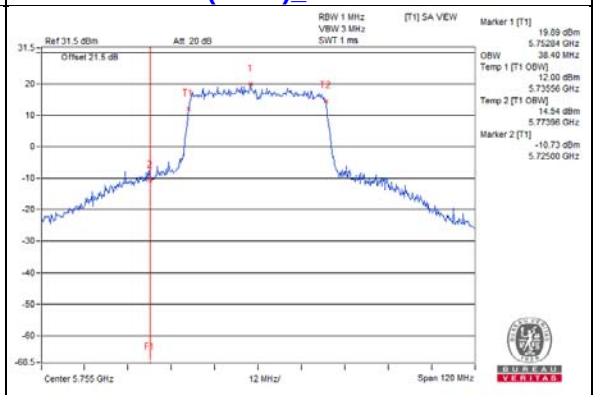
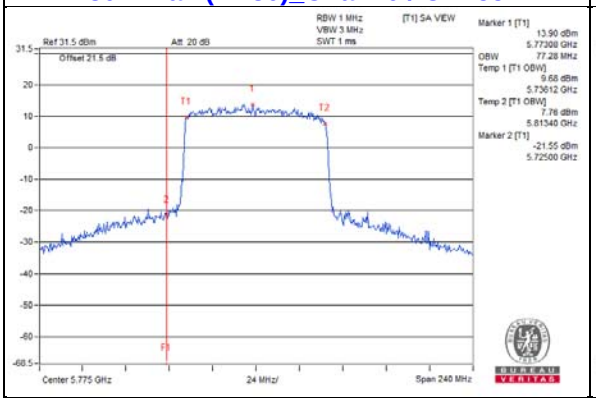
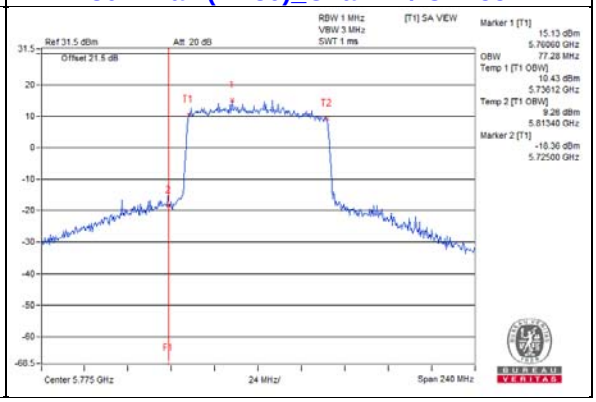
802.11ax (HE40)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
151	5755	38.16	38.40	38.16	38.16
159	5795	38.64	39.36	38.88	38.16

802.11ax (HE80)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
155	5775	77.28	77.28	77.28	77.28

Spectrum Plot of Max. Value	
802.11a_Chain 0 / CH165	**802.11ax (HE20)_Chain 2 / CH165**
	
802.11ax (HE40)_Chain 1 / CH159	**802.11ax (HE80)_Chain 0 / CH155**
	

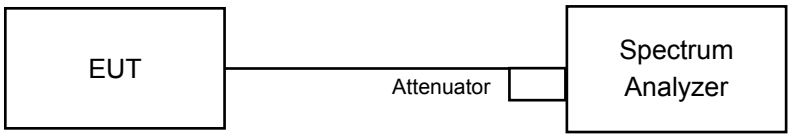
Spectrum Plot for near by DFS band (DFS is required, if 99% OCP straddle into U-NII-2C band)	
802.11a_Chain 0 / CH149	**802.11a_Chain 1 / CH149**
	
802.11ax (HE20)_Chain 0 / CH149	**802.11ax (HE20)_Chain 1 / CH149**
	
802.11ax (HE40)_Chain 0 / CH151	**802.11ax (HE40)_Chain 1 / CH151**
	
802.11ax (HE80)_Chain 0 / CH155	**802.11ax (HE80)_Chain 1 / CH155**
	

4.5 Peak Power Spectral Density Measurement

4.5.1 Limits of Peak Power Spectral Density Measurement

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

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

For U-NII-1 band:

Using method SA-2

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

For U-NII-3 band:

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

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as Item 4.3.6.

4.5.7 Test Results

For Radio 2 (U-NII-1 Band)

CDD Mode

802.11a

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
36	5180	7.57	6.17	0.29	10.23	15.82	Pass
40	5200	10.77	12.00	0.29	14.73	15.82	Pass
48	5240	8.98	10.23	0.29	12.95	15.82	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. The directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 7.18 dBi > 6 dBi, so the power density limit shall be reduced to 17-(7.18-6) = 15.82 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
36	5180	5.93	6.27	0.21	9.32	15.82	Pass
40	5200	10.88	10.31	0.21	13.82	15.82	Pass
48	5240	5.26	6.38	0.21	9.08	15.82	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. The directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 7.18 dBi > 6 dBi, so the power density limit shall be reduced to 17-(7.18-6) = 15.82 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
38	5190	0.57	-0.52	0.21	3.28	15.82	Pass
46	5230	2.28	3.06	0.21	5.91	15.82	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. The directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 7.18 dBi > 6 dBi, so the power density limit shall be reduced to 17-(7.18-6) = 15.82 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
42	5210	0.04	-0.15	0.20	3.16	15.82	Pass

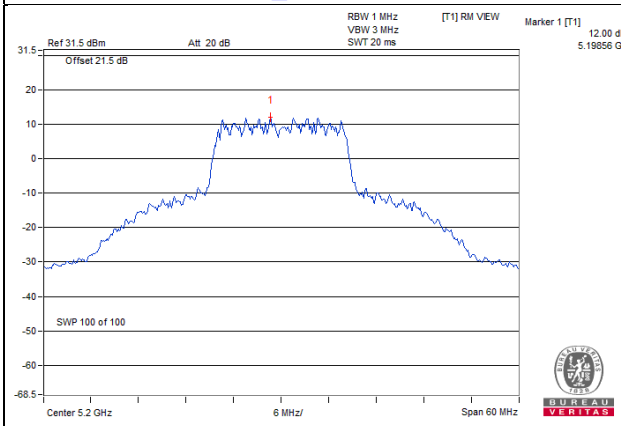
Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

2. The directional gain = 10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 7.18 dBi > 6 dBi, so the power density limit shall be reduced to 17-(7.18-6) = 15.82 dBm.

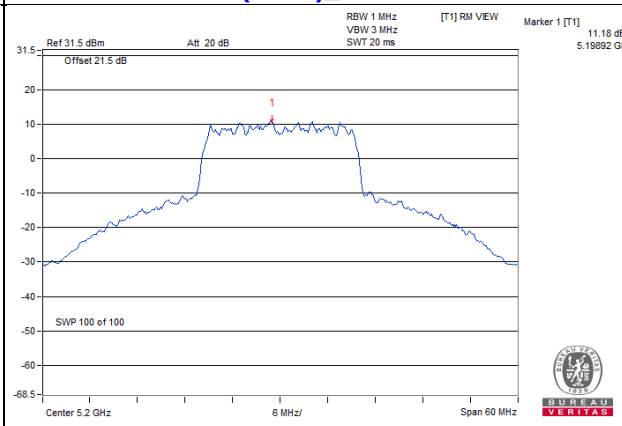
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

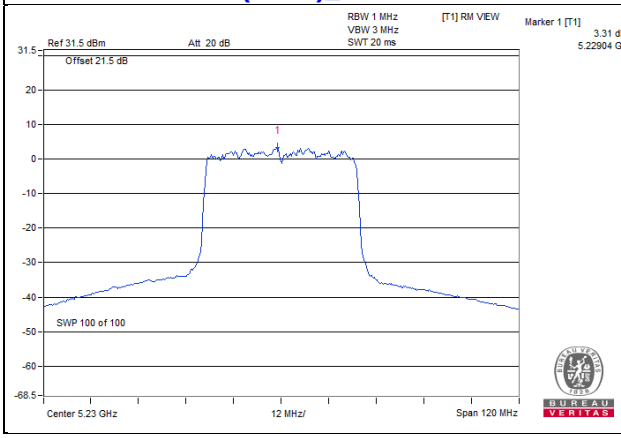
802.11a_Chain 1 / CH40



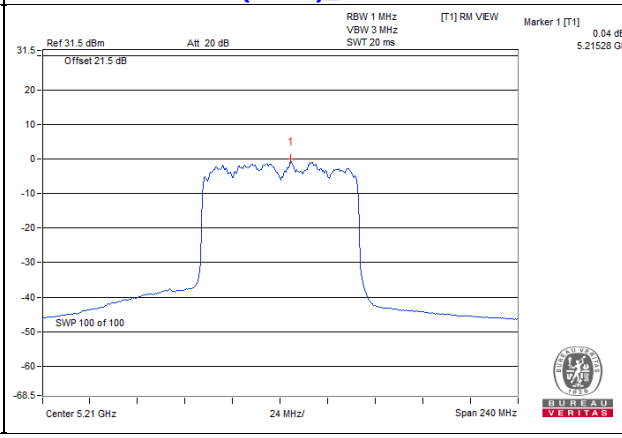
802.11ax (HE20)_Chain 0 / CH40



802.11ax (HE40)_Chain 1 / CH46



802.11ax (HE80)_Chain 0 / CH42



For Radio 3 (U-NII-3 Band)

CDD Mode

802.11a

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)				Duty Factor (dB)	Total PSD (dBm/300kHz)	Total PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3					
149	5745	1.62	1.63	1.63	2.01	0.30	8.05	10.27	26.30	Pass
157	5785	1.57	1.40	2.09	0.81	0.30	7.81	10.03	26.30	Pass
165	5825	2.04	1.63	1.22	1.08	0.30	7.83	10.05	26.30	Pass

Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. The directional gain = 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 4] = 9.7 dBi > 6 dBi, so the power density limit shall be reduced to 30-(9.7-6) = 26.3 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)				Duty Factor (dB)	Total PSD (dBm/300kHz)	Total PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3					
149	5745	0.22	0.39	0.62	-0.42	0.23	6.47	8.69	26.30	Pass
157	5785	0.66	1.16	-0.03	-0.35	0.23	6.65	8.87	26.30	Pass
165	5825	0.30	-0.21	0.71	0.04	0.23	6.47	8.69	26.30	Pass

Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. The directional gain = 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 4] = 9.7 dBi > 6 dBi, so the power density limit shall be reduced to 30-(9.7-6) = 26.3 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)				Duty Factor (dB)	Total PSD (dBm/300kHz)	Total PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3					
151	5755	-3.00	-2.83	-2.08	-2.86	0.21	3.55	5.77	26.30	Pass
159	5795	-1.57	-2.97	-2.87	-3.28	0.21	3.61	5.83	26.30	Pass

Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. The directional gain = 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 4] = 9.7 dBi > 6 dBi, so the power density limit shall be reduced to 30-(9.7-6) = 26.3 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

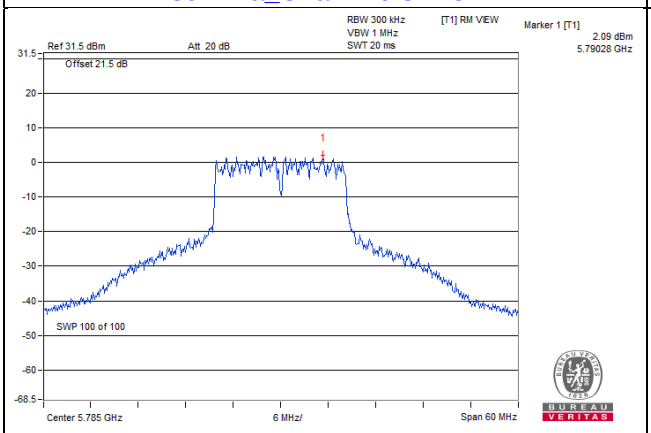
802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)				Duty Factor (dB)	Total PSD (dBm/300kHz)	Total PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3					
155	5775	-7.81	-7.33	-7.89	-8.12	0.20	-1.56	0.66	26.30	Pass

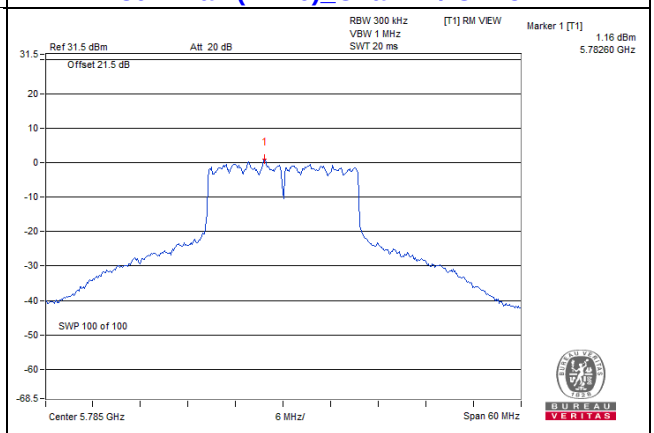
Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. The directional gain = 10 log[($10^{G0/20}$ + $10^{G1/20}$+ $10^{G2/20}$+ $10^{G3/20}$)^2 / 4] = 9.7 dBi > 6 dBi, so the power density limit shall be reduced to 30-(9.7-6) = 26.3 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

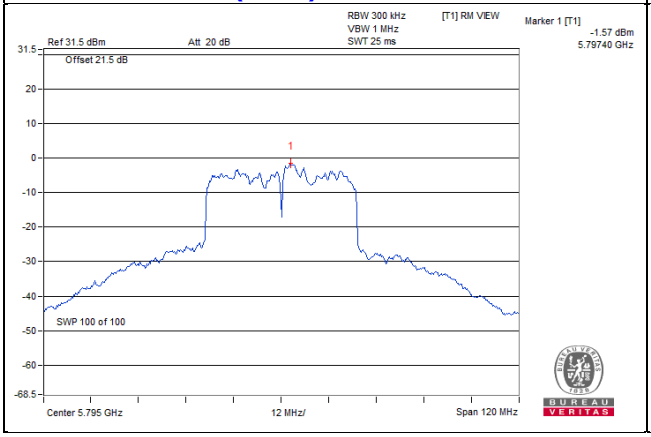
802.11a_Chain 2 / CH157



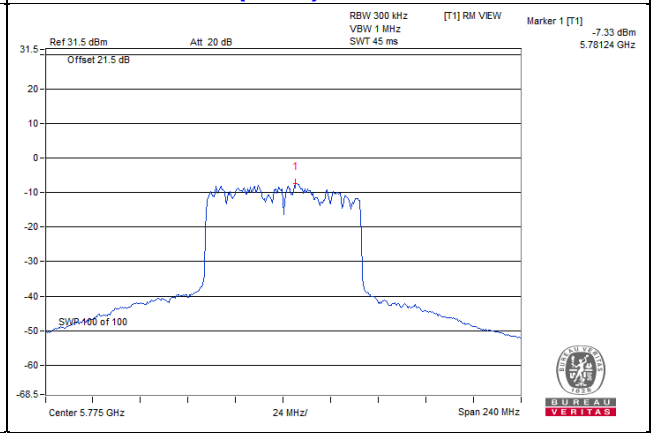
802.11ax (HE20)_Chain 1 / CH157



802.11ax (HE40)_Chain 0 / CH159



802.11ax (HE80)_Chain 1 / CH155

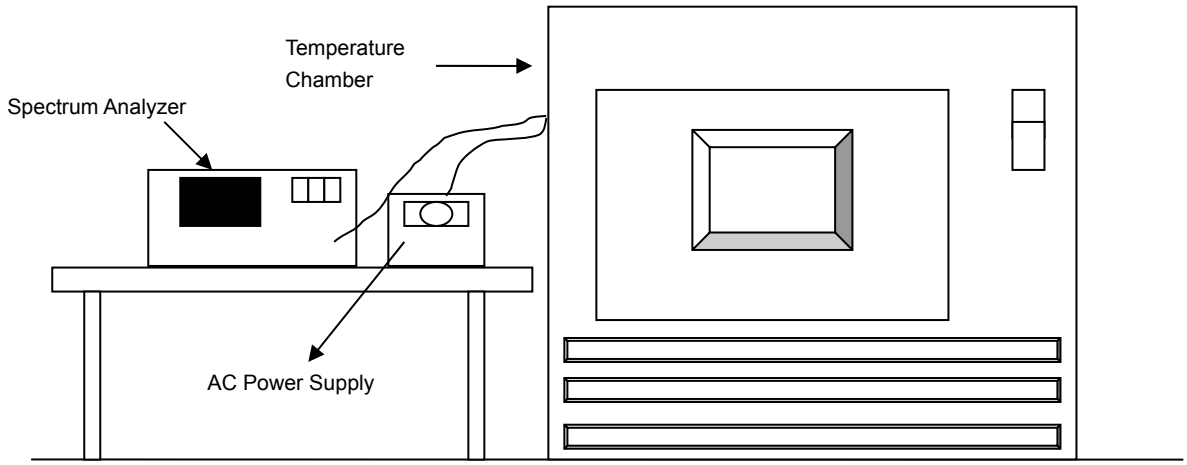


4.6 Frequency Stability Measurement

4.6.1 Limits of Frequency Stability Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

a. The EUT was placed inside the environmental test chamber and powered by nominal AC 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

For Radio 2 (U-NII-1 Band)

Frequency Stability Versus Temp.									
Operating Frequency: 5180 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
40	120	5179.9817	Pass	5179.9795	Pass	5179.9827	Pass	5179.9818	Pass
30	120	5179.9831	Pass	5179.9836	Pass	5179.9812	Pass	5179.9809	Pass
20	120	5179.9776	Pass	5179.9762	Pass	5179.9742	Pass	5179.9744	Pass
10	120	5180.0224	Pass	5180.0178	Pass	5180.0209	Pass	5180.02	Pass
0	120	5180.0239	Pass	5180.0204	Pass	5180.0199	Pass	5180.0213	Pass

Frequency Stability Versus Voltage									
Operating Frequency: 5180 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	138	5179.9779	Pass	5179.9761	Pass	5179.9736	Pass	5179.9734	Pass
	120	5179.9776	Pass	5179.9762	Pass	5179.9742	Pass	5179.9744	Pass
	102	5179.9776	Pass	5179.9767	Pass	5179.975	Pass	5179.9752	Pass

For Radio 3 (U-NII-3 Band)

Frequency Stability Versus Temp.									
Operating Frequency: 5745 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
40	120	5745.0226	Pass	5745.0205	Pass	5745.0242	Pass	5745.0192	Pass
30	120	5744.9928	Pass	5744.9905	Pass	5744.9932	Pass	5744.9922	Pass
20	120	5744.9949	Pass	5744.9939	Pass	5744.9937	Pass	5744.9932	Pass
10	120	5745.0065	Pass	5745.0068	Pass	5745.0052	Pass	5745.0088	Pass
0	120	5744.9835	Pass	5744.9845	Pass	5744.9821	Pass	5744.9803	Pass

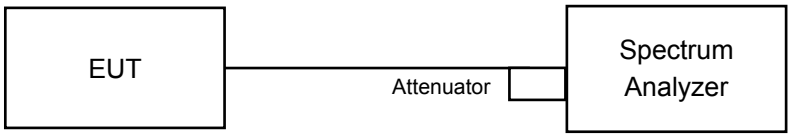
Frequency Stability Versus Voltage									
Operating Frequency: 5745 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	138	5744.9952	Pass	5744.9932	Pass	5744.9927	Pass	5744.9922	Pass
	120	5744.9949	Pass	5744.9939	Pass	5744.9937	Pass	5744.9932	Pass
	102	5744.9942	Pass	5744.9946	Pass	5744.9931	Pass	5744.9929	Pass

4.7 6dB Bandwidth Measurement

4.7.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.4 Test Procedure

MEASUREMENT PROCEDURE REF

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

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

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

4.7.7 Test Results

For Radio 3 (U-NII-3 Band)

CDD Mode

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
149	5745	16.35	16.32	16.34	16.35	0.5	Pass
157	5785	16.1	16.35	16.37	16.38	0.5	Pass
165	5825	15.96	16.39	16.38	16.38	0.5	Pass

802.11ax (HE20)

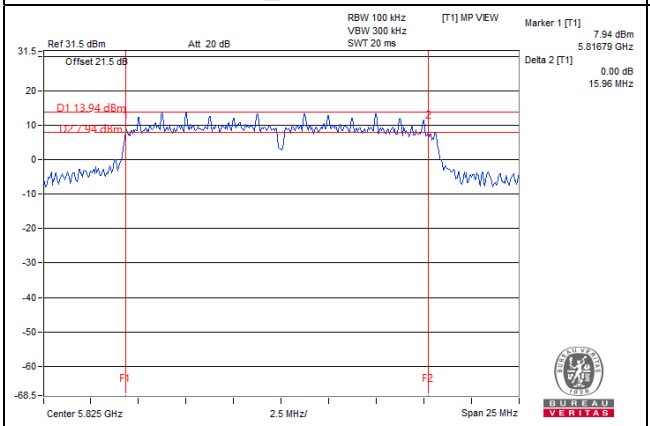
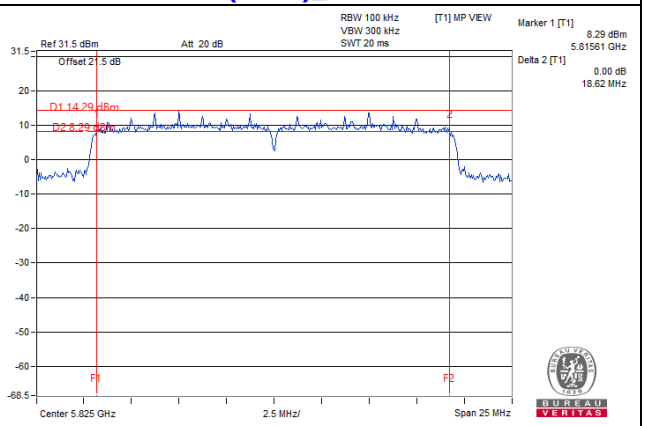
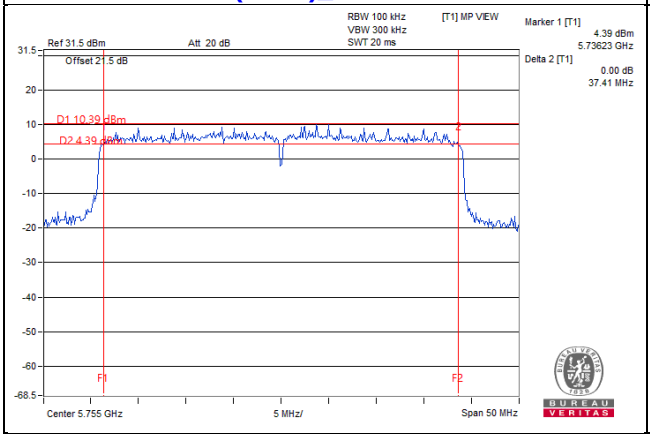
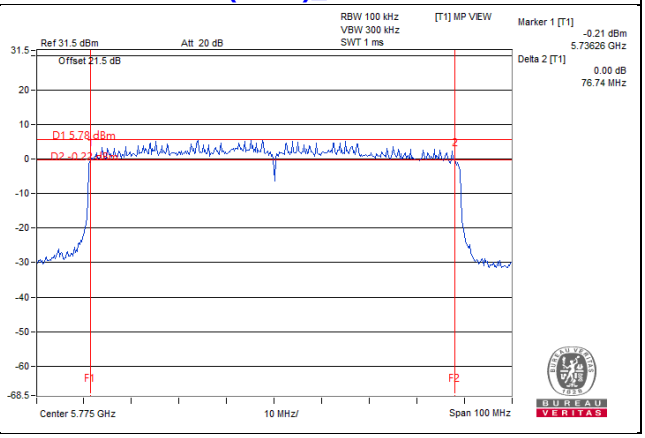
Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
149	5745	18.89	18.8	18.89	18.7	0.5	Pass
157	5785	18.63	18.85	18.96	18.91	0.5	Pass
165	5825	18.8	18.85	18.62	18.77	0.5	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
151	5755	37.84	37.84	37.41	37.61	0.5	Pass
159	5795	37.96	37.77	37.42	37.97	0.5	Pass

802.11ax (HE80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
155	5775	77.52	77.57	76.74	77.53	0.5	Pass

Spectrum Plot of Worst Value	
802.11a_Chain 0 / CH165	**802.11ax (HE20)_Chain 2 / CH165**
	
802.11ax (HE40)_Chain 2 / CH151	**802.11ax (HE80)_Chain 2 / CH155**
	

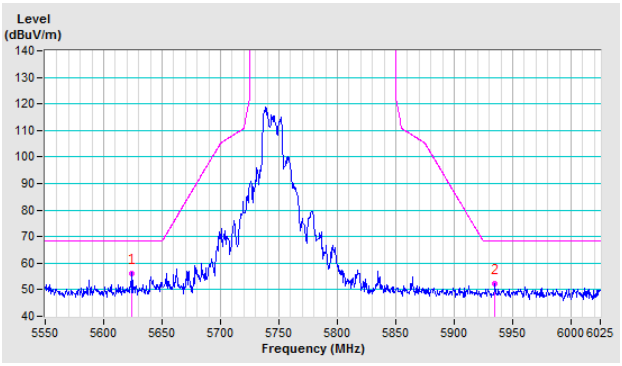
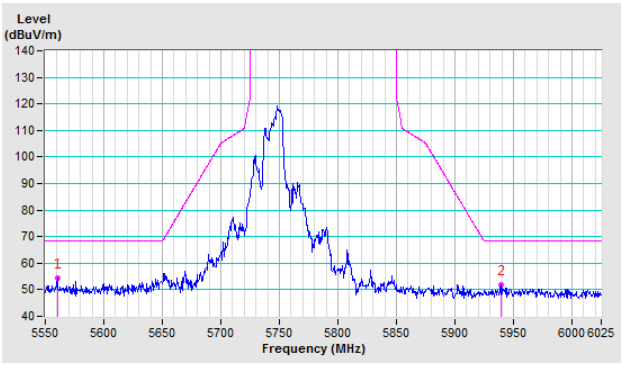
5 Pictures of Test Arrangements

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

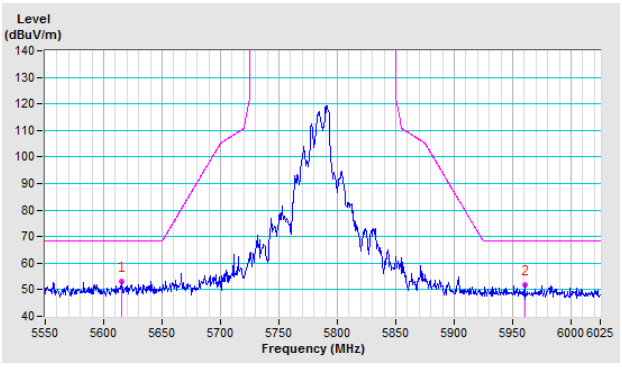
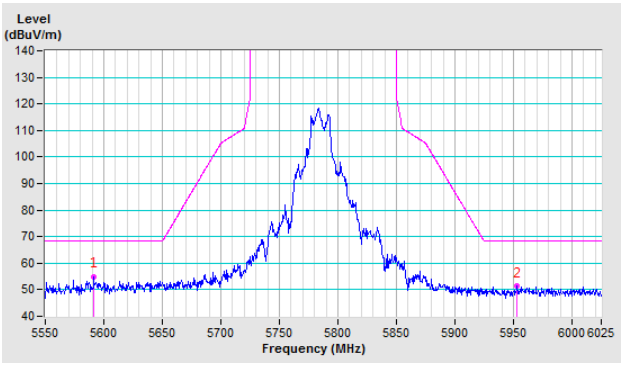
Annex A - Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band)

802.11a

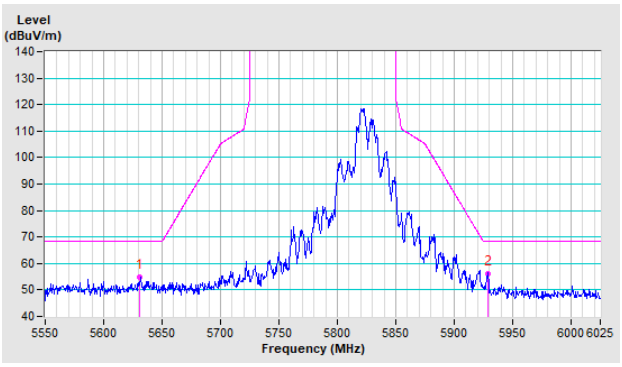
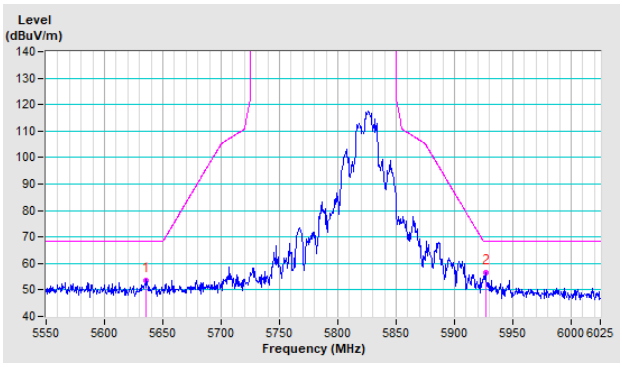
CH 149 5745 MHz

Horizontal	Vertical
	

CH 157 5785 MHz

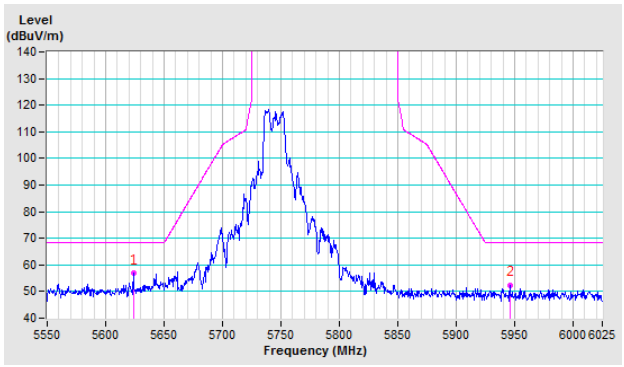
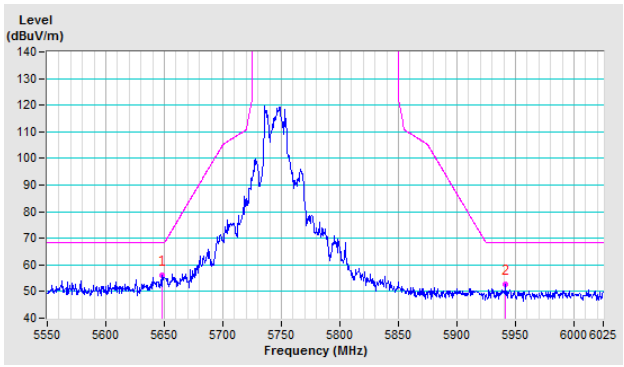
Horizontal	Vertical
	

CH 165 5825 MHz

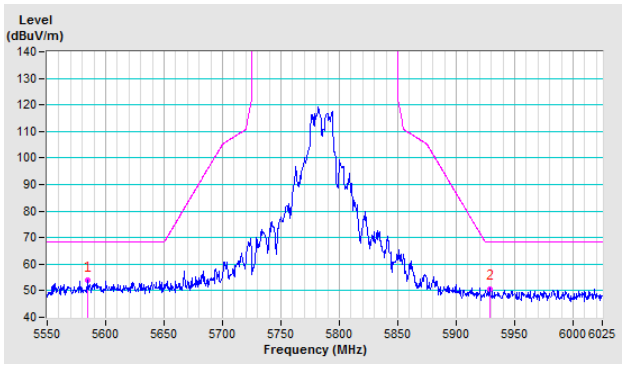
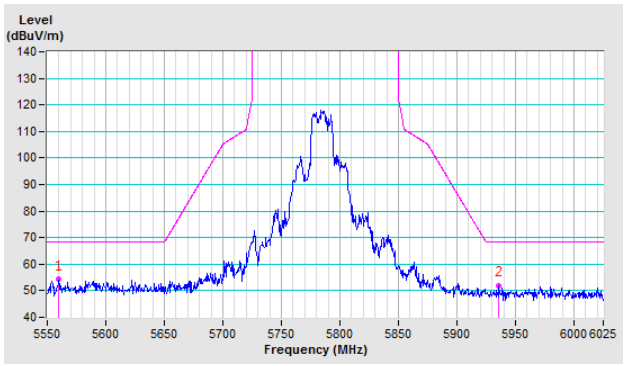
Horizontal	Vertical
	

802.11ax (HE20)

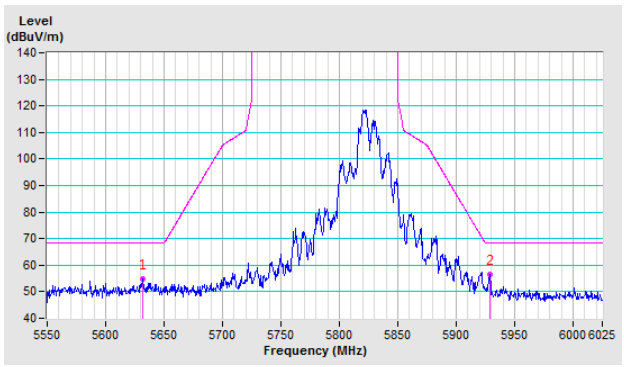
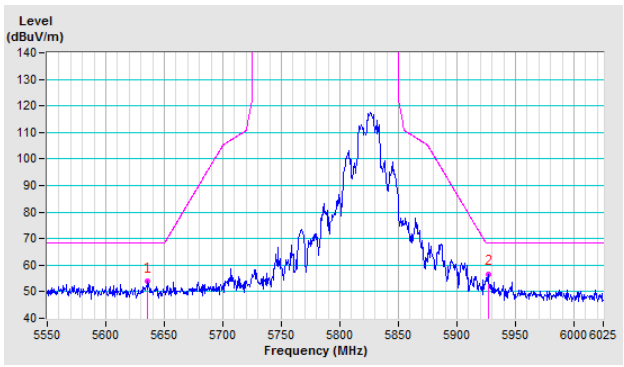
CH 149 5745 MHz

Horizontal	Vertical
	

CH 157 5785 MHz

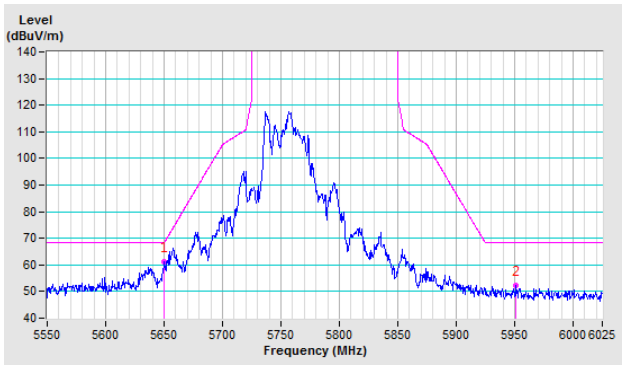
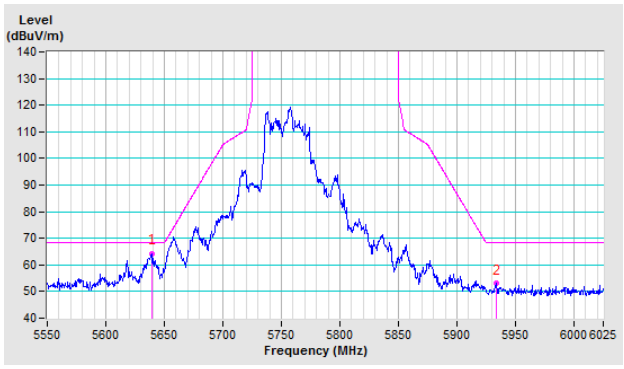
Horizontal	Vertical
	

CH 165 5825 MHz

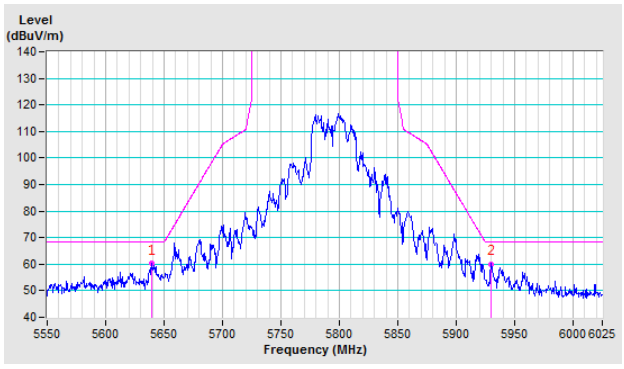
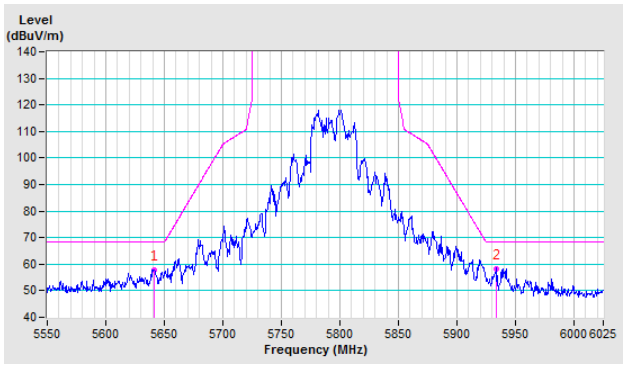
Horizontal	Vertical
	

802.11ax (HE40)

CH 151 5755 MHz

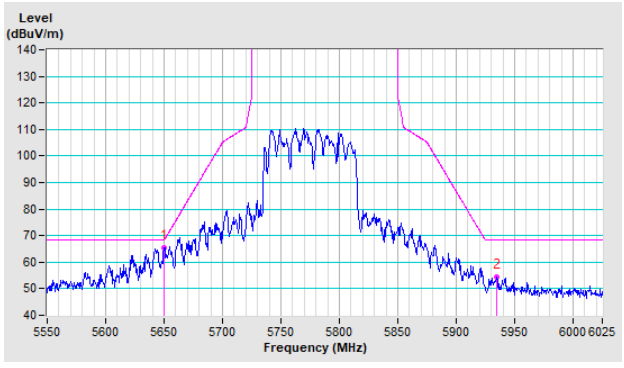
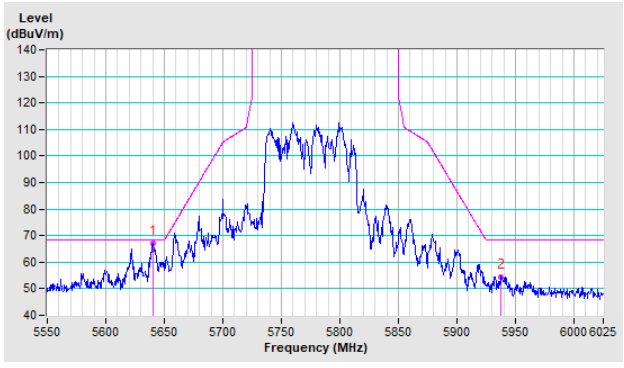
Horizontal	Vertical
	

CH 159 5795 MHz

Horizontal	Vertical
	

802.11ax (HE80)

CH 155 5775 MHz

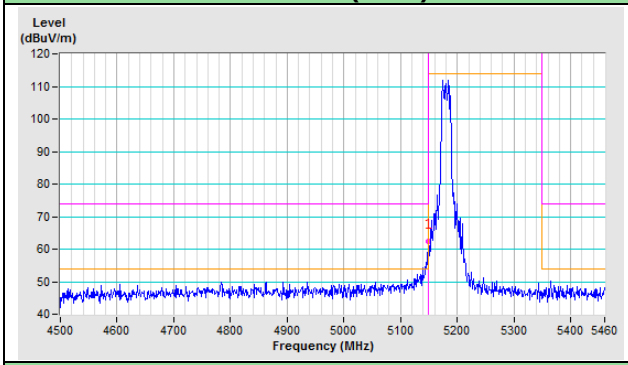
Horizontal	Vertical
	

Annex B - Band-Edge Measurement (For U-NII-1 band)

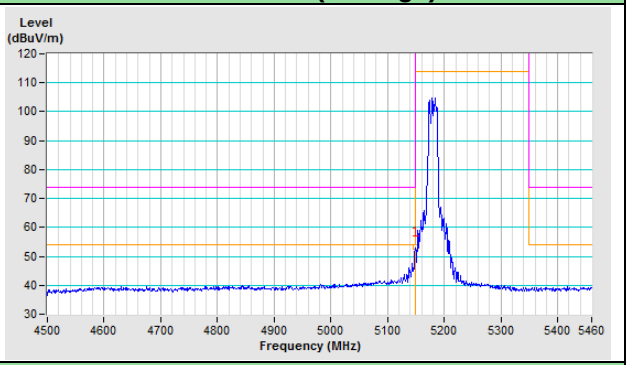
802.11a

Channel 36

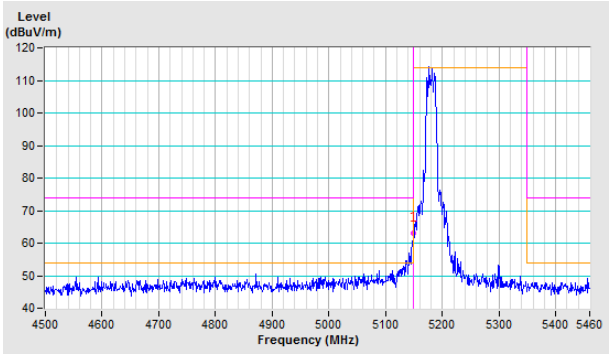
Horizontal (Peak)



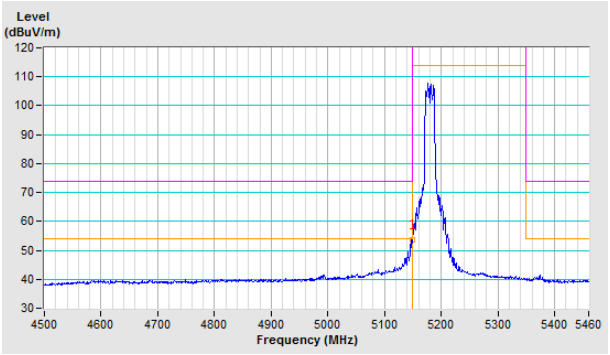
Horizontal (Average)



Vertical (Peak)

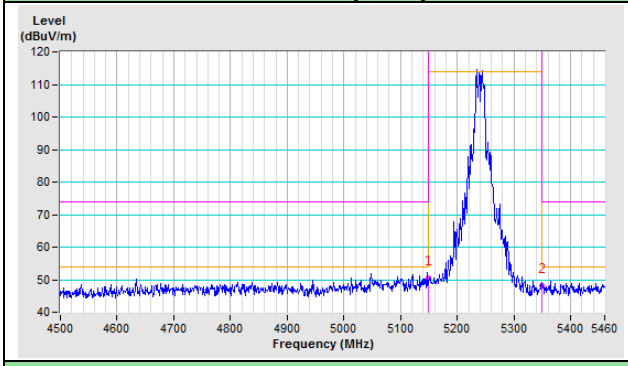


Vertical (Average)

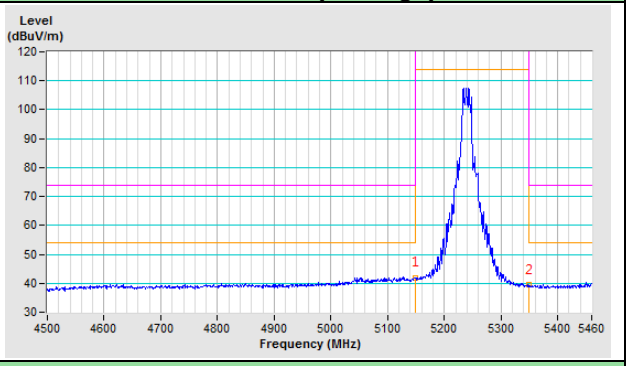


Channel 48

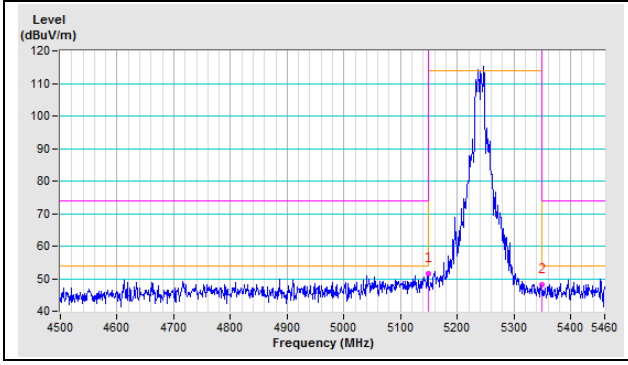
Horizontal (Peak)



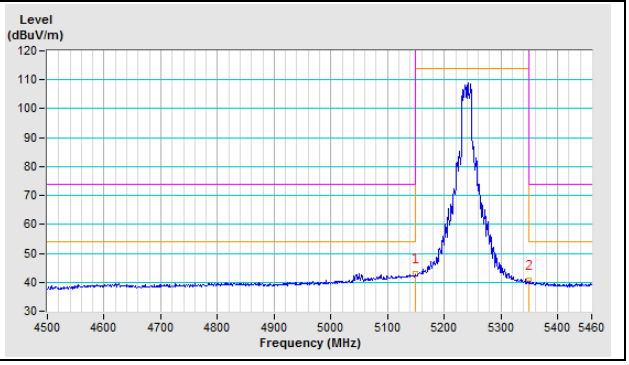
Horizontal (Average)



Vertical (Peak)



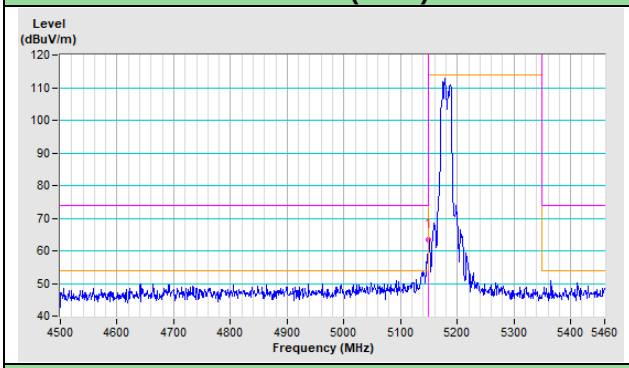
Vertical (Average)



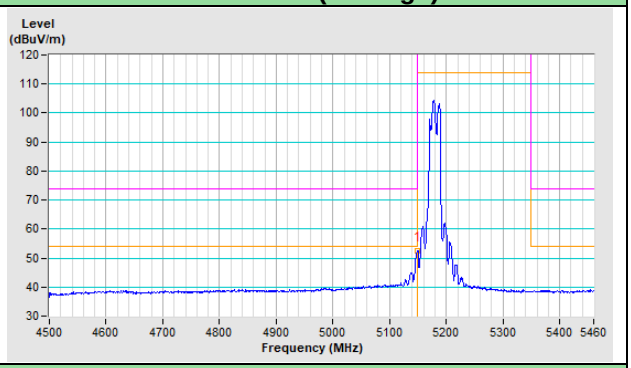
802.11ax (HE20)

Channel 36

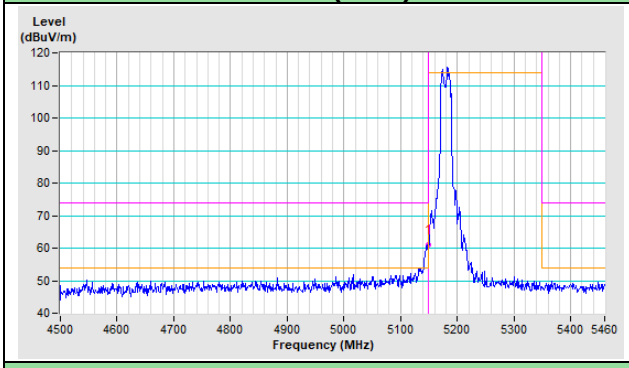
Horizontal (Peak)



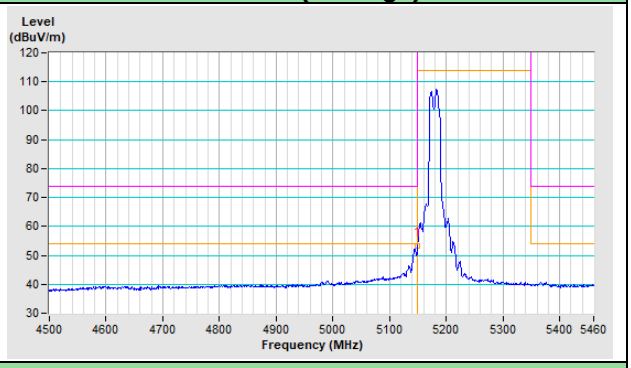
Horizontal (Average)



Vertical (Peak)

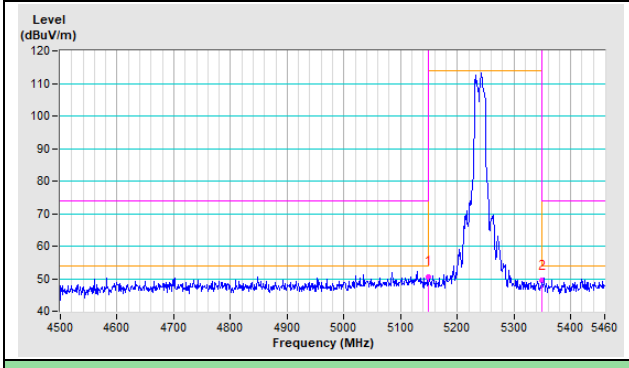


Vertical (Average)

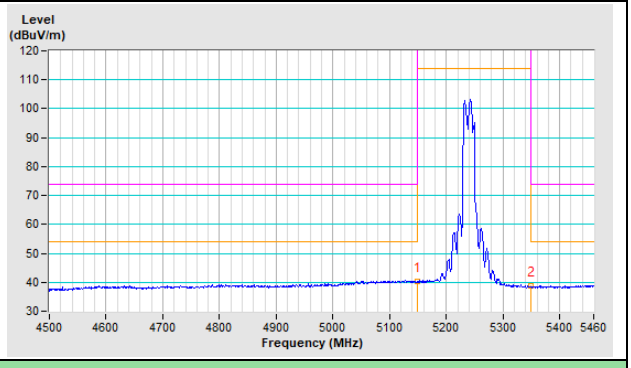


Channel 48

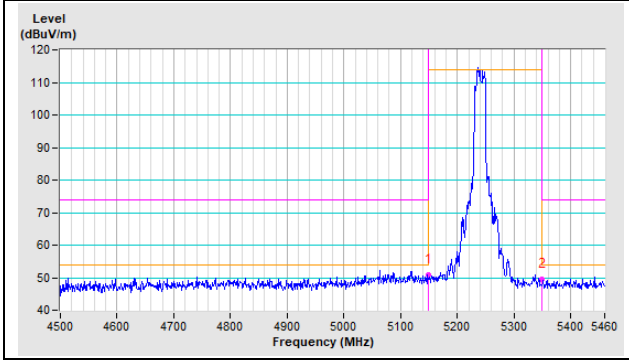
Horizontal (Peak)



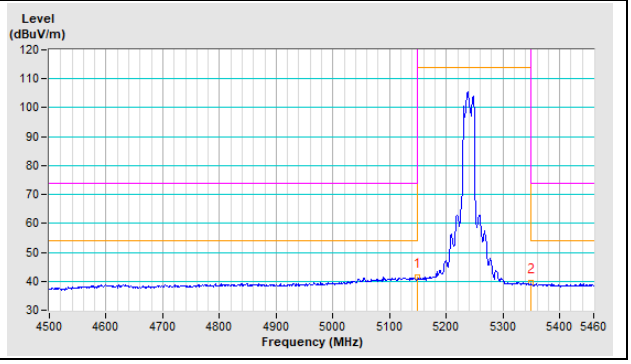
Horizontal (Average)



Vertical (Peak)



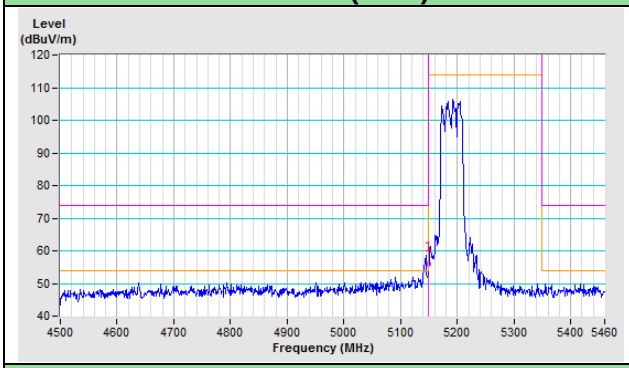
Vertical (Average)



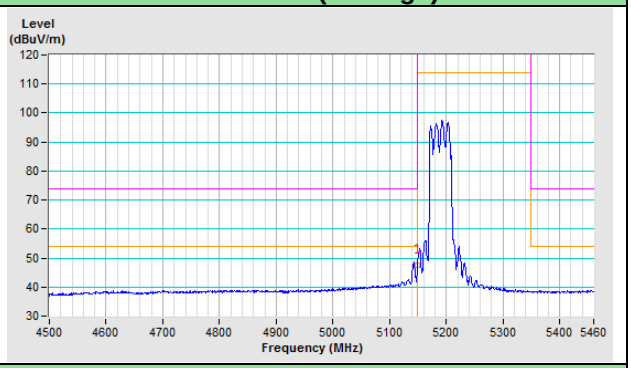
802.11ax (HE40)

Channel 38

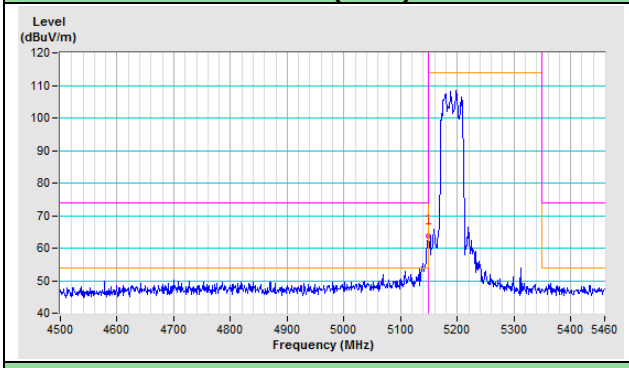
Horizontal (Peak)



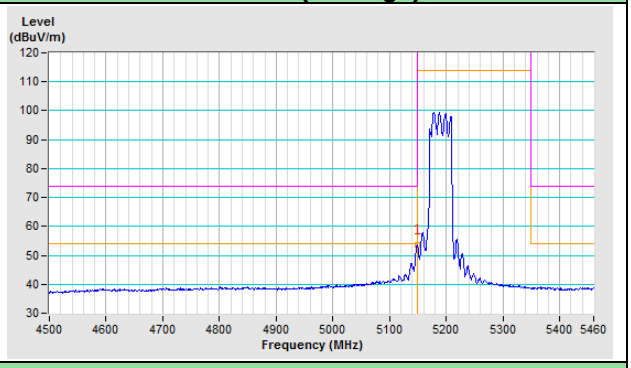
Horizontal (Average)



Vertical (Peak)

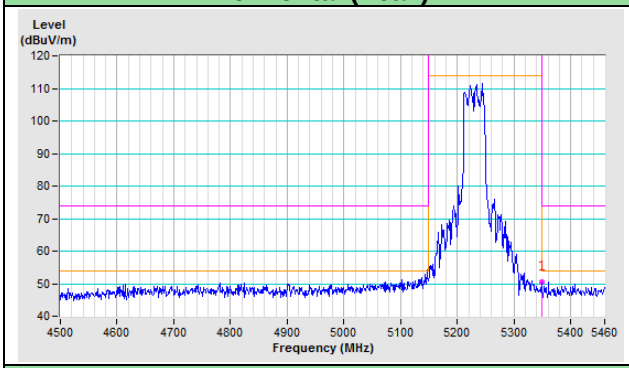


Vertical (Average)

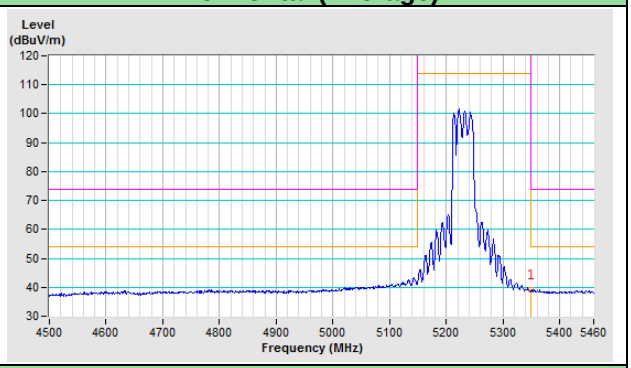


Channel 46

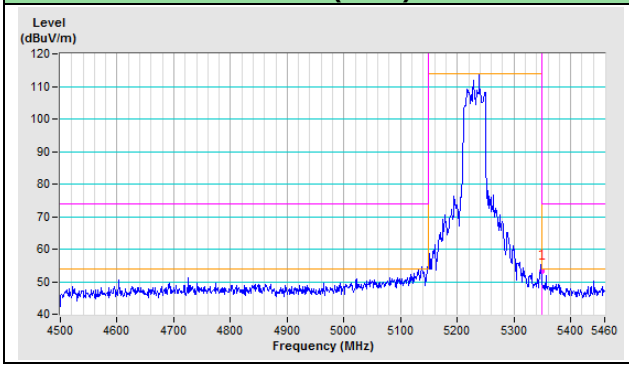
Horizontal (Peak)



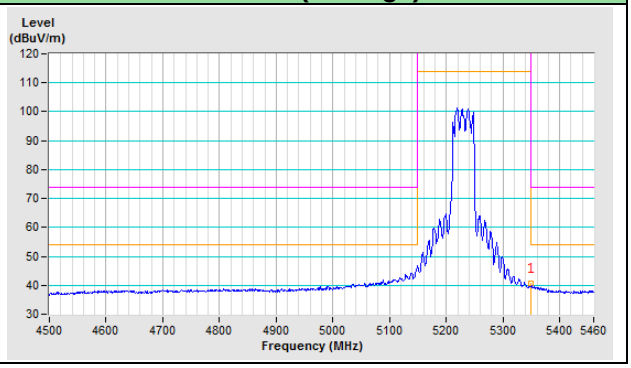
Horizontal (Average)



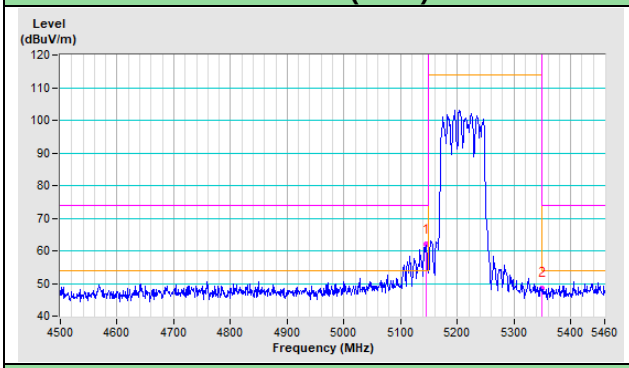
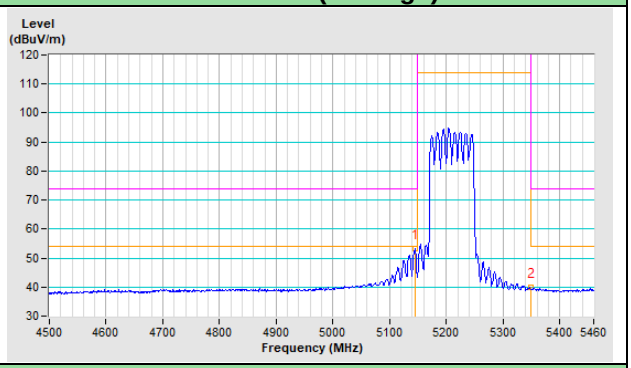
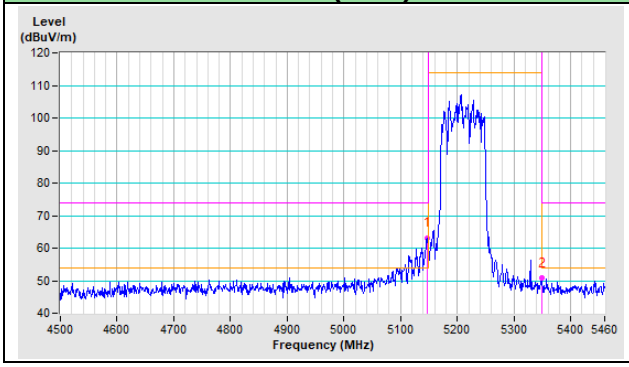
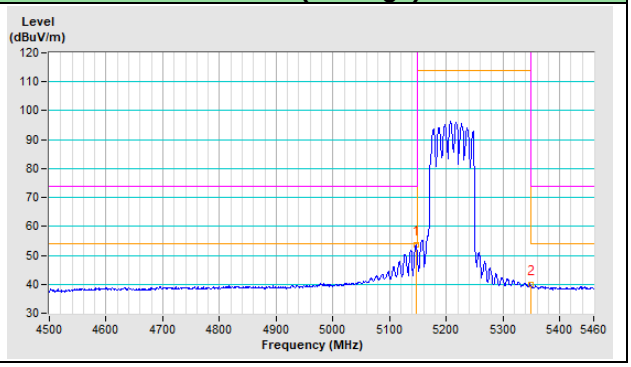
Vertical (Peak)



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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Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

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

--- END ---