FCC Test Report (WLAN_DFS Band)

Report No.:	RF200320E01A
FCC ID:	I88C4000LZ
Test Model:	C4000LZ
Received Date:	Mar. 24, 2020
Test Date:	Apr. 13 to May 02, 2020
Issued Date:	Sep. 11, 2020
Applicant:	Zyxel Communications Corporation
Address:	No.2 Industry East RD. IX, Hsinchu Science Park, Hsinchu 30075, Taiwan
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
Test Location:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
FCC Registration / Designation Number:	723255 / TW2022

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
RF200320E01A	Original release.	Sep. 11, 2020

1 Certificate of Conformity

Product:	Dual-Band Wireless AX VDSL2 Gigabit Gateway
Brand:	CenturyLink, ZYXEL
Test Model:	C4000LZ
Sample Status:	ENGINEERING SAMPLE
Applicant:	Zyxel Communications Corporation
Test Date:	Apr. 13 to May 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 : _____ , **Date:** Sep. 11, 2020

Joyce Kuo / Specialist

Approved by : _____ , **Date:** Sep. 11, 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 -13.99 dB at 0.16172 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 -0.6 dB at 5350.00 MHz and 5354.18 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-2A, U-NII-2C band compliance with rule 15.407(b) of the band-edge items, the test plots were recorded in Annex A. Test Procedures refer to report 4.1.3.
2. 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	5.1 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	5.1 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_DFS Band)

Product	Dual-Band Wireless AX VDSL2 Gigabit Gateway
Brand	CenturyLink, ZYXEL
Test Model	C4000LZ
CPU Model No.	GRX350
RF Chip Model No.	WAV654
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	12Vdc from adapter
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode 1024QAM for OFDMA in 11ax HE mode
Modulation Technology	OFDM, OFDMA
Transfer Rate	802.11a: up to 54 Mbps 802.11n: up to 300 Mbps 802.11ac: up to 1733.3 Mbps 802.11ax: up to 2401.9 Mbps
Operating Frequency	5.26GHz ~ 5.32GHz, 5.5 ~ 5.72GHz
Number of Channel	802.11a, 802.11n (HT20), 802.11ac (VHT20), 80211ax (HE20): 16 802.11n (HT40), 802.11ac (VHT40), 80211ax (HE40): 8 802.11ac (VHT80), 80211ax (HE80): 4 802.11ac (VHT160), 802.11ax (HE160): 2
Output Power	**Non-Beamforming Mode:** **5.26 ~ 5.32 GHz:** 221.25 mW **5.5 ~ 5.72 GHz:** 221.692 mW **Beamforming Mode:** **5.26 ~ 5.32 GHz:** 221.25 mW **5.5 ~ 5.72 GHz:** 221.692 mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	- AC Adaptor, Brand:UMEC, Model:UP0251M-12PA - AC Adaptor, Brand:DVE, Model:DSA-24PFS-12 FUS 120200 - AC Adaptor, Brand:MNC, Model:MAUS-120200 - Ethernet Cable , Non-shielded, 1.8m x1 - DSL cable, Non-shielded, 3.66m x1

Note:

1. This report is prepared for FCC class II change. The difference compared with the Report No.: RF200320E01-1 as the following:
   - ◆ Add DFS band <5.26GHz ~ 5.32GHz, 5.5 ~ 5.72GHz> and VHT/HE160 modes by software.
   - ◆ Correct antenna cable length. (Typo in original report no change in antenna / antenna cables)
2. According to above conditions, for DFS band all of test items need to be performed and all data was verified to meet the requirements.
3. The EUT has below brand names, which are identical to each other in all aspects except for the following table:

Brand	Model	Difference
CenturyLink	C4000LZ	Different brand names are for marketing purpose.
ZYXEL		

4. The EUT has two radios as following table:

Radio 1	Radio 2
WLAN 2.4GHz	WLAN 5GHz

5. Simultaneously transmission condition.

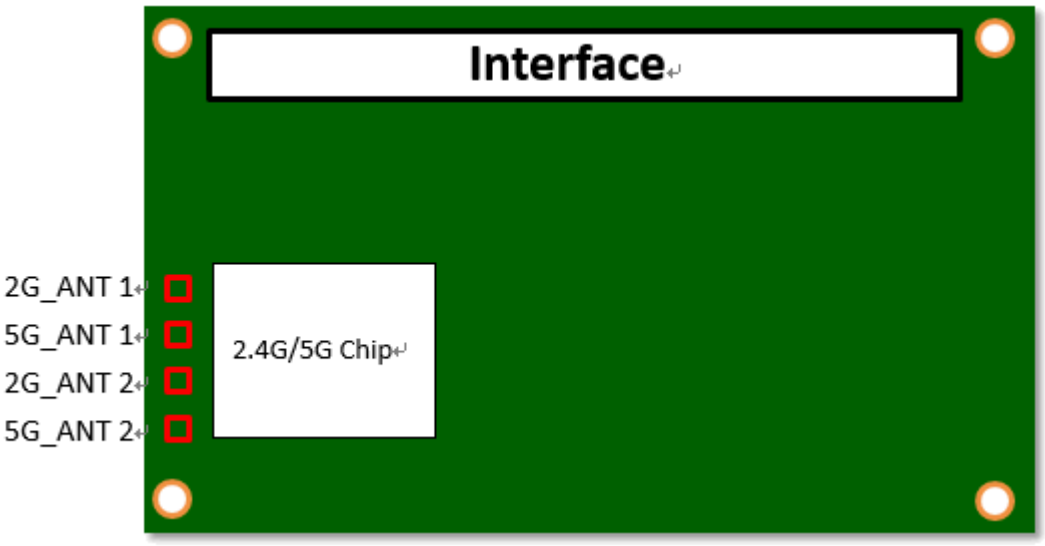
Condition	Technology	
1	WLAN (2.4GHz)	WLAN 5GHz
Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.		

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

No.	Brand	Model No.	Spec.
1	UMEC	UP0251M-12PA	Input: 100-240Vac, 0.6A, 50/60Hz Output: 12V, 2A DC Output cable: Unshielded, 1.8m
2	DVE	DSA-24PFS-12 FUS 120200	Input: 100-240Vac, 0.8A, 50/60Hz Output: 12V, 2A DC Output cable: Unshielded, 1.8m
3	MNC	MAUS-120200	Input: 100-240Vac, 0.7A, 50/60Hz Output: 12V, 2A DC Output cable: Unshielded, 1.8m

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

Antenna NO.	Chain NO.	Brand	Antenna Net Gain(dBi)	Frequency range	Antenna Type	Connector Type	Cable Length(mm)
2G_ANT1	Chain 0	M.gear	2.48	2.4~2.4835GHz	Dipole	i-pex(MHF)	108.5
5G_ANT1	Chain 0	M.gear	3.36	5.15~5.25GHz	Dipole	i-pex(MHF)	113.5
			3.45	5.25~5.35GHz			
			3.44	5.47~5.725GHz			
			3.36	5.725~5.85GHz			
2G_ANT2	Chain 1	M.gear	2.77	2.4~2.4835GHz	Dipole	i-pex(MHF)	148.5
5G_ANT2	Chain 1	M.gear	3.41	5.15~5.25GHz	Dipole	i-pex(MHF)	78.5
			3.18	5.25~5.35GHz			
			3.47	5.47~5.725GHz			
			3.47	5.725~5.85GHz			



* Antenna port location

8. The EUT incorporates a MIMO function:

2.4GHz Band		
MODULATION MODE	**TX & RX CONFIGURATION**	
802.11b	1Tx Fixed Chain 0	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
5GHz Band		
MODULATION MODE	**TX & RX CONFIGURATION**	
802.11a	2TX	2TX
802.11n (HT20)	2TX	2TX
802.11n (HT40)	2TX	2TX
802.11ac (VHT20)	2TX	2TX
802.11ac (VHT40)	2TX	2TX
802.11ac (VHT80)	2TX	2TX
802.11ac (VHT160)	2TX	2TX
802.11ax (HE20)	2TX	2TX
802.11ax (HE40)	2TX	2TX
802.11ax (HE80)	2TX	2TX
802.11ax (HE160)	2TX	2TX

Note:

1. All of modulation mode support beamforming function except 802.11a/b/g modulation mode.
2. The EUT support Beamforming and Non-Beamforming 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, 160MHz) and 802.11ax mode for 20MHz (40MHz, 80MHz, 160MHz), therefore the manufacturer will control the power for 802.11n mode is the same as the 802.11ac or more lower than it and investigated worst case to representative mode in test report. (Final test mode refer to section 3.2.1)

9. The power setting are list as below:

Non-Beamforming Mode									
802.11a		802.11ac (VHT20)		802.11ac (VHT40)		802.11ac (VHT80)		802.11ac (VHT160)	
Freq. (MHz)	Power Setting	Freq. (MHz)	Power Setting	Freq. (MHz)	Power Setting	Freq. (MHz)	Power Setting	Freq. (MHz)	Power Setting
52	22.5	52	22	54	22	58	19.5	50	21
60	22.5	60	22	62	20.5	106	21.5	114	20.5
64	22.5	64	22.5	102	22	122	21.5		
100	22	100	22.5	110	19.5	138	22		
116	19.5	116	19	134	22.5				
140	22	140	22.5	142	22.5				
144	20	144	20						

802.11ax (HE20)		802.11ax (HE40)		802.11ax (HE80)		802.11ax (HE160)	
Freq. (MHz)	Power Setting	Freq. (MHz)	Power Setting	Freq. (MHz)	Power Setting	Freq. (MHz)	Power Setting
52	22	54	22	58	19.5	50	21
60	22	62	20.5	106	21.5	114	20.5
64	22.5	102	22	122	21.5		
100	22.5	110	19.5	138	22		
116	19	134	22.5				
140	22.5	142	22.5				
144	20						

Beamforming Mode							
802.11ac (VHT20)		802.11ac (VHT40)		802.11ac (VHT80)		802.11ac (VHT160)	
Freq. (MHz)	Power Setting	Freq. (MHz)	Power Setting	Freq. (MHz)	Power Setting	Freq. (MHz)	Power Setting
52	22	54	22	58	19.5	50	21
60	22	62	20.5	106	21.5	114	20.5
64	22.5	102	22	122	21.5		
100	22.5	110	19.5	138	22		
116	19	134	22.5				
140	22.5	142	22.5				
144	20						

802.11ax (HE20)		802.11ax (HE40)		802.11ax (HE80)		802.11ax (HE160)	
Freq. (MHz)	Power Setting	Freq. (MHz)	Power Setting	Freq. (MHz)	Power Setting	Freq. (MHz)	Power Setting
52	22	54	22	58	19.5	50	21
60	22	62	20.5	106	21.5	114	20.5
64	22.5	102	22	122	21.5		
100	22.5	110	19.5	138	22		
116	19	134	22.5				
140	22.5	142	22.5				
144	20						

10. 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.

11. 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 5260 ~ 5320MHz

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

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

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

Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz

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

Channel	Frequency
58	5290 MHz

1 straddle channel is provided for 802.11ac (VHT160), 802.11ax (HE160):

Channel	Frequency
50	5250 MHz

FOR 5500 ~ 5720MHz

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

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

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

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

3 channels are provided for 802.11ac (VHT80), 802.11ax (HE80):

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

1 straddle channel is provided for 802.11ac (VHT160), 802.11ax (HE160):

Channel	Frequency
114	5570 MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To				Description
	RE≥1G	RE<1G	PLC	APCM	
1	√	√	√	√	Adapter 3
2	-	√	√	-	Adapter 2
3	-	√	√	-	Adapter 1

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.

Non-Beamforming Mode						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate Parameter
802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6Mb/s
802.11ax (HE20)		52 to 64	52, 60, 64	OFDMA	BPSK	MCS0
802.11ax (HE40)		54 to 62	54, 62	OFDMA	BPSK	MCS0
802.11ax (HE80)		58	58	OFDMA	BPSK	MCS0
802.11ax (HE160)		50	50	OFDMA	BPSK	MCS0
802.11a	5500-5720	100 to 144	100, 116, 140, 144	OFDM	BPSK	6Mb/s
802.11ax (HE20)		100 to 144	100, 116, 140, 144	OFDMA	BPSK	MCS0
802.11ax (HE40)		102 to 142	102, 110, 134, 142	OFDMA	BPSK	MCS0
802.11ax (HE80)		106 to 138	106, 122, 138	OFDMA	BPSK	MCS0
802.11ax (HE160)		114	114	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.

Non-Beamforming Mode						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate Parameter
802.11ax (HE80)	5260-5320 5500-5720	58 106 to 138	106	OFDMA	BPSK	MCS0

Power Line Conducted Emission Test:

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

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

Non-Beamforming Mode						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate Parameter**
802.11ax (HE80)	5260-5320 5500-5720	58 106 to 138	106	OFDMA	BPSK	MCS0

Antenna Port Conducted Measurement:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

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

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

Non-Beamforming Mode						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate Parameter**
802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6Mb/s
802.11ac (VHT20) (Output power only)		52 to 64	52, 60, 64	OFDM	BPSK	MCS0
802.11ac (VHT40) (Output power only)		54 to 62	54, 62	OFDM	BPSK	MCS0
802.11ac (VHT80) (Output power only)		58	58	OFDM	BPSK	MCS0
802.11ac (VHT160) (Output power only)		50	50	OFDM	BPSK	MCS0
802.11ax (HE20)		52 to 64	52, 60, 64	OFDMA	BPSK	MCS0
802.11ax (HE40)		54 to 62	54, 62	OFDMA	BPSK	MCS0
802.11ax (HE80)		58	58	OFDMA	BPSK	MCS0
802.11ax (HE160)		50	50	OFDMA	BPSK	MCS0
802.11a	5500-5720	100 to 144	100, 116, 140, 144	OFDM	BPSK	6Mb/s
802.11ac (VHT20) (Output power only)		100 to 144	100, 116, 140, 144	OFDM	BPSK	MCS0
802.11ac (VHT40) (Output power only)		102 to 142	102, 110, 134, 142	OFDM	BPSK	MCS0
802.11ac (VHT80) (Output power only)		106 to 138	106, 122, 138	OFDM	BPSK	MCS0
802.11ac (VHT160) (Output power only)		114	114	OFDM	BPSK	MCS0
802.11ax (HE20)		100 to 144	100, 116, 140, 144	OFDMA	BPSK	MCS0
802.11ax (HE40)		102 to 142	102, 110, 134, 142	OFDMA	BPSK	MCS0
802.11ax (HE80)		106 to 138	106, 122, 138	OFDMA	BPSK	MCS0
802.11ax (HE160)		114	114	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)	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	MCS0
802.11ac (VHT40)		54 to 62	54, 62	OFDM	BPSK	MCS0
802.11ac (VHT80)		58	58	OFDM	BPSK	MCS0
802.11ac (VHT160)		50	50	OFDM	BPSK	MCS0
802.11ax (HE20)		52 to 64	52, 60, 64	OFDMA	BPSK	MCS0
802.11ax (HE40)		54 to 62	54, 62	OFDMA	BPSK	MCS0
802.11ax (HE80)		58	58	OFDMA	BPSK	MCS0
802.11ax (HE160)		50	50	OFDMA	BPSK	MCS0
802.11ac (VHT20)	5500-5720	100 to 144	100, 116, 140, 144	OFDM	BPSK	MCS0
802.11ac (VHT40)		102 to 142	102, 110, 134, 142	OFDM	BPSK	MCS0
802.11ac (VHT80)		106 to 138	106, 122, 138	OFDM	BPSK	MCS0
802.11ac (VHT160)		114	114	OFDM	BPSK	MCS0
802.11ax (HE20)		100 to 144	100, 116, 140, 144	OFDMA	BPSK	MCS0
802.11ax (HE40)		102 to 142	102, 110, 134, 142	OFDMA	BPSK	MCS0
802.11ax (HE80)		106 to 138	106, 122, 138	OFDMA	BPSK	MCS0
802.11ax (HE160)		114	114	OFDMA	BPSK	MCS0

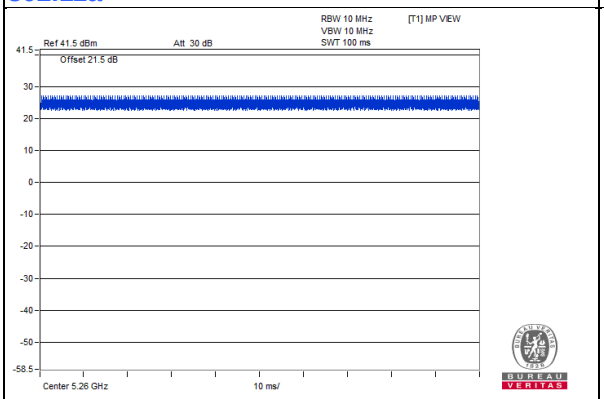
Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested By
RE≥1G	23deg. C, 75%RH	120Vac, 60Hz	Kevien Ko
RE<1G	21deg. C, 65%RH	120Vac, 60Hz	Ryan Du
PLC	25deg. C, 63%RH	120Vac, 60Hz	Sampson Chen
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

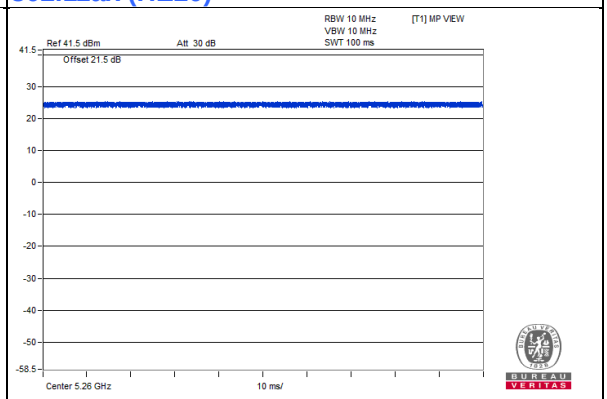
3.3 Duty Cycle of Test Signal

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

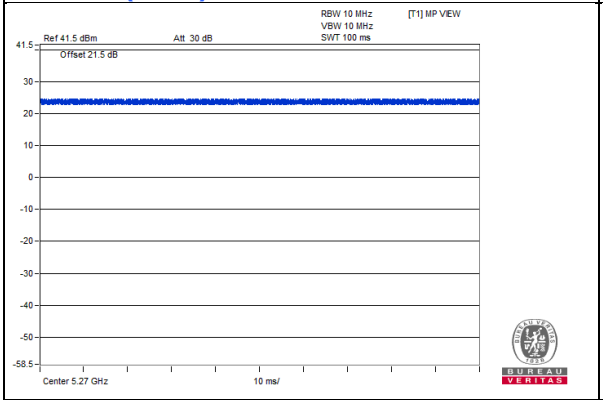
802.11a



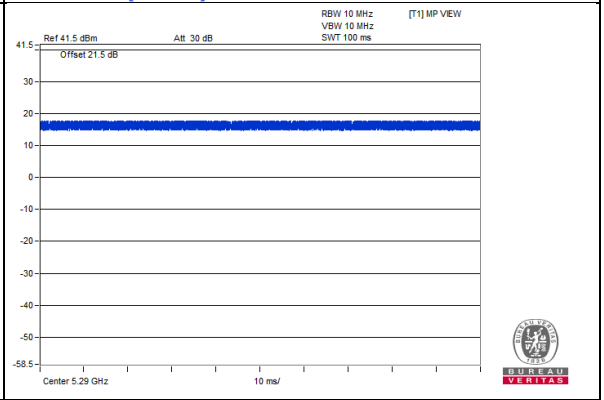
802.11ax (HE20)



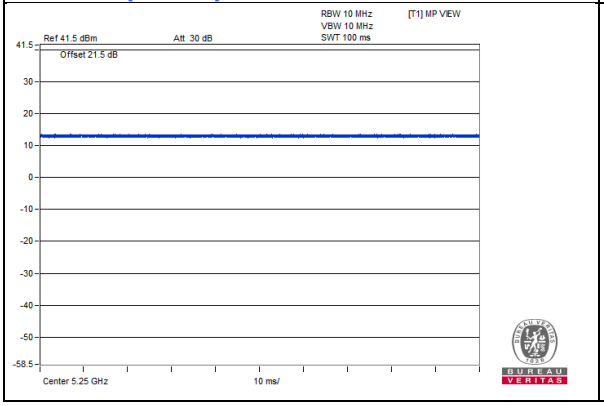
802.11ax (HE40)



802.11ax (HE80)



802.11ax (HE160)



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.

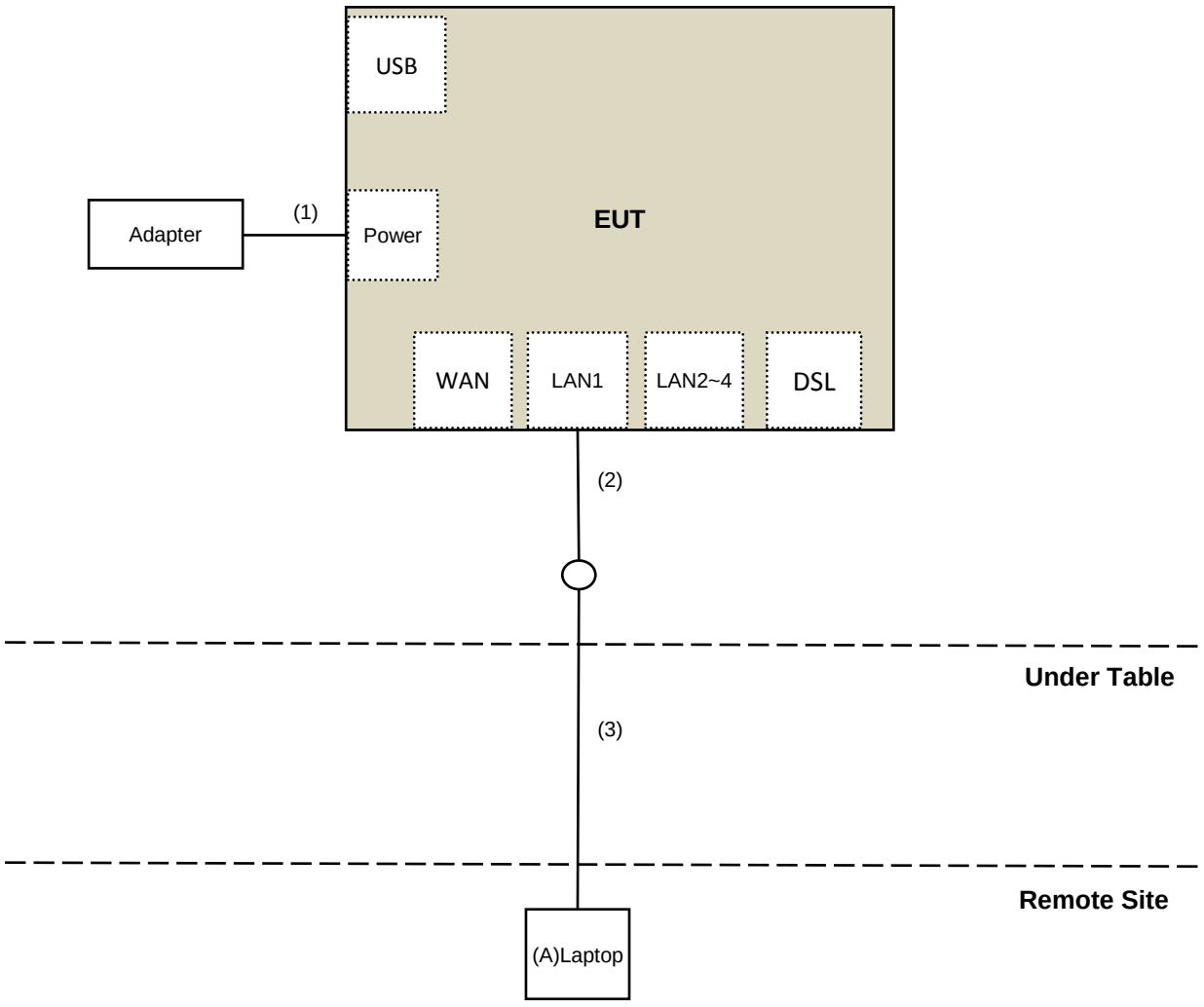
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab

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	1.8	No	0	Supplied by client
2.	RJ-45 Cable	1	1.8	No	0	Supplied by client
3.	RJ-45 Cable	1	10	No	0	Provided by Lab

3.4.1 Configuration of System under Test



NOTE: The test configuration was defined by the applicant requirement.

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 Band-Edge test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESR7	102026	Apr. 24, 2019	Apr. 23, 2020
Spectrum Analyzer Keysight	N9030B	MY57141948	May 25, 2019	May 24, 2020
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-1819	Nov. 24, 2019	Nov. 23, 2020
Pre-Amplifier EMCI	EMC12630SE	980509	May 03, 2019	May 02, 2020
RF Cable EMCI	EMC104-SM-SM-1500	180503	May 03, 2019	May 02, 2020
RF Cable EMCI	EMC104-SM-SM-2000	180501	May 03, 2019	May 02, 2020
RF Cable EMCI	EMC104-SM-SM-6000	180506	May 03, 2019	May 02, 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
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	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. 5.
3. Tested Date: Apr. 20 to 21, 2020

For Radiated emission (Above 1GHz) test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESR7	102026	Apr. 22, 2020	Apr. 21, 2021
Spectrum Analyzer Keysight	N9030B	MY57141948	May 25, 2019	May 24, 2020
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-1819	Nov. 24, 2019	Nov. 23, 2020
Pre-Amplifier EMCI	EMC12630SE	980509	Apr. 29, 2020	Apr. 28, 2021
RF Cable EMCI	EMC104-SM-SM-1500	180503	Apr. 29, 2020	Apr. 28, 2021
RF Cable EMCI	EMC104-SM-SM-2000	180501	Apr. 29, 2020	Apr. 28, 2021
RF Cable EMCI	EMC104-SM-SM-6000	180506	Apr. 29, 2020	Apr. 28, 2021
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
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	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. 5.
3. Tested Date: Apr. 29, 2020

For Radiated emission (Below 1GHz) test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESR7	102026	Apr. 24, 2019	Apr. 23, 2020
Spectrum Analyzer Keysight	N9030B	MY57141948	May 25, 2019	May 24, 2020
Pre-Amplifier EMCI	EMC001340	980142	May 30, 2019	May 29, 2020
Loop Antenna Electro-Metrics	EM-6879	269	Sep. 16, 2019	Sep. 15, 2020
RF Cable	NA	LOOPCAB-001	Jan. 08, 2020	Jan. 07, 2021
RF Cable	NA	LOOPCAB-002	Jan. 08, 2020	Jan. 07, 2021
Pre-Amplifier EMCI	EMC330N	980538	Apr. 30, 2019	Apr. 29, 2020
Trilog Broadband Antenna SCHWARZBECK	VULB9168	9168-0842	Nov. 08, 2019	Nov. 07, 2020
RF Cable	8D	966-5-1	May 03, 2019	May 02, 2020
RF Cable	8D	966-5-2	May 03, 2019	May 02, 2020
RF Cable	8D	966-5-3	May 03, 2019	May 02, 2020
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-ATT5-02	Jan. 14, 2020	Jan. 13, 2021
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	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. 5.
3. Tested Date: Apr. 15, 2020

For other test items:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSV40	100964	June 04, 2019	June 03, 2020
Power meter Anritsu	ML2495A	1014008	May 13, 2019	May 12, 2020
Power sensor Anritsu	MA2411B	0917122	May 13, 2019	May 12, 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
True RMS Clamp Meter FLUKE	325	31130711WS	May 21, 2019	May 20, 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: May 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:

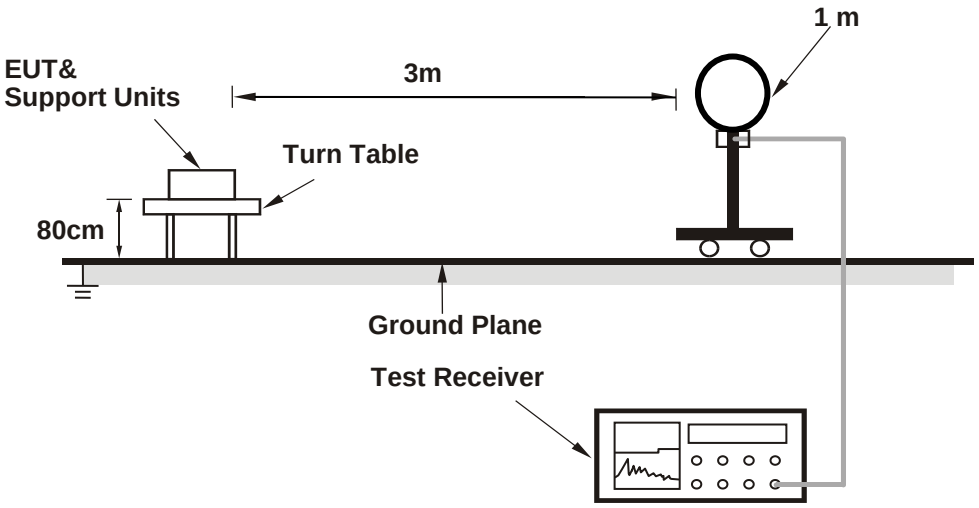
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
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

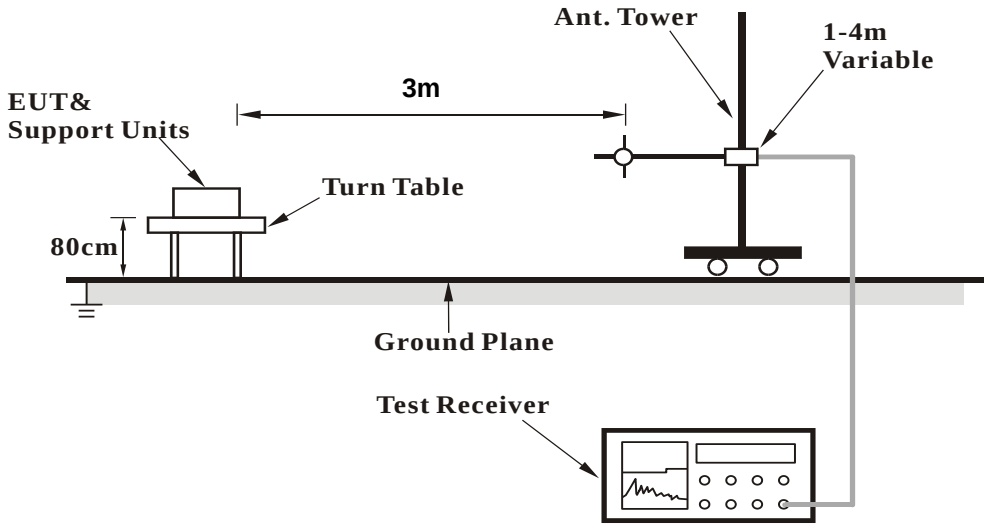
No deviation.

4.1.5 Test Setup

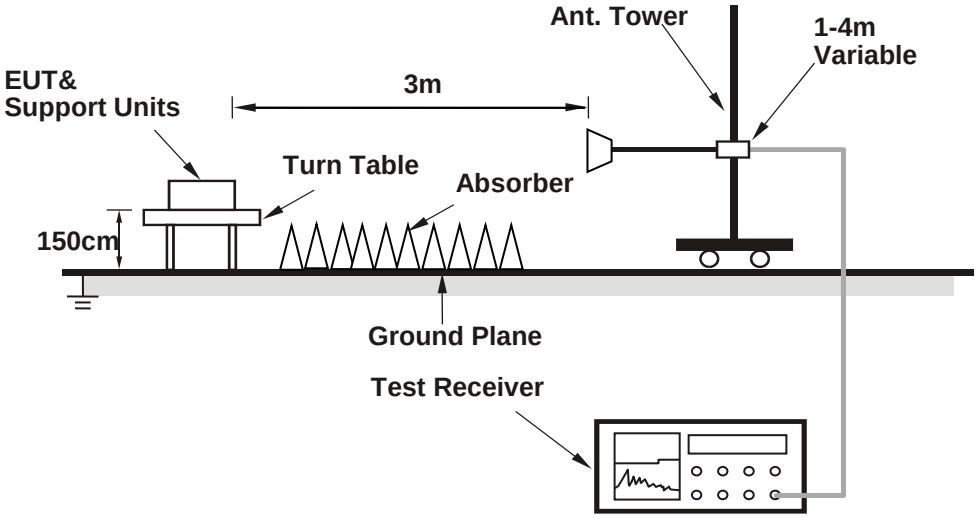
For Radiated emission below 30MHz



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. Connected the EUT with the Laptop which is placed on remote site.
b. Controlling software (DUT_setup.610.26) has been activated to set the EUT under transmission condition continuously at specific channel frenquency.

4.1.7 Test Results (Mode 1)

Above 1GHz Data:

Adapter: MAUS-120200

802.11a

CHANNEL	TX Channel 52	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*5260.00	117.6 PK			1.15 H	17	116.3	1.3
2	*5260.00	107.9 AV			1.15 H	17	106.6	1.3
3	5350.00	50.1 PK	74.0	-23.9	1.15 H	17	48.7	1.4
4	5350.00	43.8 AV	54.0	-10.2	1.15 H	17	42.4	1.4
5	#10520.00	58.8 PK	68.2	-9.4	1.87 H	50	46.1	12.7
6	15780.00	50.6 PK	74.0	-23.4	2.23 H	249	39.0	11.6
7	15780.00	38.2 AV	54.0	-15.8	2.23 H	249	26.6	11.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*5260.00	117.4 PK			1.37 V	245	116.1	1.3
2	*5260.00	110.3 AV			1.37 V	245	109.0	1.3
3	5350.00	56.1 PK	74.0	-17.9	1.37 V	245	54.7	1.4
4	5350.00	48.1 AV	54.0	-5.9	1.37 V	245	46.7	1.4
5	#10520.00	57.8 PK	68.2	-10.4	2.34 V	174	45.1	12.7
6	15780.00	50.7 PK	74.0	-23.3	1.96 V	97	39.1	11.6
7	15780.00	37.8 AV	54.0	-16.2	1.96 V	97	26.2	11.6

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 60	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	115.4 PK			1.12 H	12	114.1	1.3
2	*5300.00	108.3 AV			1.12 H	12	107.0	1.3
3	10600.00	57.5 PK	74.0	-16.5	1.19 H	200	44.4	13.1
4	10600.00	45.2 AV	54.0	-8.8	1.19 H	200	32.1	13.1
5	15900.00	51.7 PK	74.0	-22.3	2.32 H	22	40.3	11.4
6	15900.00	37.9 AV	54.0	-16.1	2.32 H	22	26.5	11.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	117.6 PK			1.70 V	248	116.3	1.3
2	*5300.00	110.5 AV			1.70 V	248	109.2	1.3
3	10600.00	58.9 PK	74.0	-15.1	2.36 V	146	45.8	13.1
4	10600.00	45.3 AV	54.0	-8.7	2.36 V	146	32.2	13.1
5	15900.00	50.5 PK	74.0	-23.5	1.33 V	125	39.1	11.4
6	15900.00	37.6 AV	54.0	-16.4	1.33 V	125	26.2	11.4

REMARKS:

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

CHANNEL	TX Channel 64	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	115.6 PK			1.14 H	19	114.2	1.4
2	*5320.00	106.7 AV			1.14 H	19	105.3	1.4
3	5350.00	62.7 PK	74.0	-11.3	1.14 H	19	61.3	1.4
4	5350.00	49.1 AV	54.0	-4.9	1.14 H	19	47.7	1.4
5	10640.00	58.5 PK	74.0	-15.5	2.23 H	244	45.4	13.1
6	10640.00	45.1 AV	54.0	-8.9	2.23 H	244	32.0	13.1
7	15960.00	51.8 PK	74.0	-22.2	1.78 H	220	40.5	11.3
8	15960.00	38.0 AV	54.0	-16.0	1.78 H	220	26.7	11.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	116.3 PK			1.80 V	242	114.9	1.4
2	*5320.00	109.4 AV			1.80 V	242	108.0	1.4
3	5350.00	60.7 PK	74.0	-13.3	1.80 V	242	59.3	1.4
4	5350.00	53.2 AV	54.0	-0.8	1.80 V	242	51.8	1.4
5	10640.00	57.1 PK	74.0	-16.9	1.14 V	142	44.0	13.1
6	10640.00	44.3 AV	54.0	-9.7	1.14 V	142	31.2	13.1
7	15960.00	51.1 PK	74.0	-22.9	1.39 V	211	39.8	11.3
8	15960.00	38.0 AV	54.0	-16.0	1.39 V	211	26.7	11.3

REMARKS:

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

CHANNEL	TX Channel 100	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	56.4 PK	74.0	-17.6	1.15 H	12	54.6	1.8
2	5460.00	45.1 AV	54.0	-8.9	1.15 H	12	43.3	1.8
3	#5470.00	63.9 PK	68.2	-4.3	1.15 H	12	62.1	1.8
4	*5500.00	115.1 PK			1.15 H	12	113.2	1.9
5	*5500.00	105.4 AV			1.15 H	12	103.5	1.9
6	11000.00	57.9 PK	74.0	-16.1	1.75 H	195	44.7	13.2
7	11000.00	45.7 AV	54.0	-8.3	1.75 H	195	32.5	13.2
8	#16500.00	51.3 PK	68.2	-16.9	1.18 H	318	37.2	14.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	58.9 PK	74.0	-15.1	1.84 V	244	57.1	1.8
2	5460.00	48.4 AV	54.0	-5.6	1.84 V	244	46.6	1.8
3	#5470.00	67.3 PK	68.2	-0.9	1.84 V	244	65.5	1.8
4	*5500.00	116.4 PK			1.84 V	244	114.5	1.9
5	*5500.00	109.6 AV			1.84 V	244	107.7	1.9
6	11000.00	57.8 PK	74.0	-16.2	2.19 V	56	44.6	13.2
7	11000.00	44.6 AV	54.0	-9.4	2.19 V	56	31.4	13.2
8	#16500.00	51.2 PK	68.2	-17.0	2.30 V	164	37.1	14.1

REMARKS:

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

CHANNEL	TX Channel 116	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	115.6 PK			1.14 H	33	113.6	2.0
2	*5580.00	108.6 AV			1.14 H	33	106.6	2.0
3	11160.00	57.8 PK	74.0	-16.2	1.14 H	40	45.3	12.5
4	11160.00	44.8 AV	54.0	-9.2	1.14 H	40	32.3	12.5
5	#16740.00	50.3 PK	68.2	-17.9	2.28 H	204	34.4	15.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	118.2 PK			1.89 V	248	116.2	2.0
2	*5580.00	111.2 AV			1.89 V	248	109.2	2.0
3	11160.00	57.9 PK	74.0	-16.1	1.96 V	202	45.4	12.5
4	11160.00	45.0 AV	54.0	-9.0	1.96 V	202	32.5	12.5
5	#16740.00	51.0 PK	68.2	-17.2	2.60 V	19	35.1	15.9

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 140	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	113.6 PK			1.11 H	23	111.5	2.1
2	*5700.00	107.3 AV			1.11 H	23	105.2	2.1
3	#5725.00	63.2 PK	68.2	-5.0	1.11 H	23	61.1	2.1
4	11400.00	57.5 PK	74.0	-16.5	1.41 H	208	44.2	13.3
5	11400.00	45.4 AV	54.0	-8.6	1.41 H	208	32.1	13.3
6	#17100.00	50.0 PK	68.2	-18.2	2.06 H	309	33.2	16.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	116.4 PK			1.99 V	252	114.3	2.1
2	*5700.00	109.6 AV			1.99 V	252	107.5	2.1
3	#5725.00	66.2 PK	68.2	-2.0	1.99 V	252	64.1	2.1
4	11400.00	58.3 PK	74.0	-15.7	1.53 V	159	45.0	13.3
5	11400.00	44.7 AV	54.0	-9.3	1.53 V	159	31.4	13.3
6	#17100.00	50.4 PK	68.2	-17.8	1.10 V	40	33.6	16.8

REMARKS:

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

CHANNEL	TX Channel 144	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	50.9 PK	74.0	-23.1	1.11 H	21	49.1	1.8
2	5460.00	41.5 AV	54.0	-12.5	1.11 H	21	39.7	1.8
3	#5470.00	52.3 PK	68.2	-15.9	1.11 H	21	50.5	1.8
4	*5720.00	117.2 PK			1.11 H	21	115.1	2.1
5	*5720.00	110.0 AV			1.11 H	21	107.9	2.1
6	#5850.00	51.9 PK	68.2	-16.3	1.11 H	21	49.3	2.6
7	11440.00	58.1 PK	74.0	-15.9	1.59 H	52	44.6	13.5
8	11440.00	45.9 AV	54.0	-8.1	1.59 H	52	32.4	13.5
9	#17160.00	51.2 PK	68.2	-17.0	2.63 H	183	34.2	17.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	53.4 PK	74.0	-20.6	2.00 V	249	51.6	1.8
2	5460.00	43.9 AV	54.0	-10.1	2.00 V	249	42.1	1.8
3	#5470.00	54.9 PK	68.2	-13.3	2.00 V	249	53.1	1.8
4	*5720.00	119.5 PK			2.00 V	249	117.4	2.1
5	*5720.00	112.1 AV			2.00 V	249	110.0	2.1
6	#5850.00	54.2 PK	68.2	-14.0	2.00 V	249	51.6	2.6
7	11440.00	58.8 PK	74.0	-15.2	1.90 V	14	45.3	13.5
8	11440.00	44.6 AV	54.0	-9.4	1.90 V	14	31.1	13.5
9	#17160.00	50.6 PK	68.2	-17.6	1.32 V	297	33.6	17.0

REMARKS:

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

802.11ax (HE20)

CHANNEL	TX Channel 52	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5260.00	117.4 PK			1.28 H	18	116.1	1.3
2	*5260.00	108.9 AV			1.28 H	18	107.6	1.3
3	5350.00	53.4 PK	74.0	-20.6	1.28 H	18	52.0	1.4
4	5350.00	43.9 AV	54.0	-10.1	1.28 H	18	42.5	1.4
5	#10520.00	58.2 PK	68.2	-10.0	1.63 H	53	45.5	12.7
6	15780.00	50.9 PK	74.0	-23.1	2.69 H	178	39.3	11.6
7	15780.00	37.6 AV	54.0	-16.4	2.69 H	178	26.0	11.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5260.00	117.9 PK			1.80 V	246	116.6	1.3
2	*5260.00	110.4 AV			1.80 V	246	109.1	1.3
3	5350.00	54.7 PK	74.0	-19.3	1.80 V	246	53.3	1.4
4	5350.00	48.6 AV	54.0	-5.4	1.80 V	246	47.2	1.4
5	#10520.00	59.0 PK	68.2	-9.2	2.32 V	160	46.3	12.7
6	15780.00	50.8 PK	74.0	-23.2	1.30 V	125	39.2	11.6
7	15780.00	38.1 AV	54.0	-15.9	1.30 V	125	26.5	11.6

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 60	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	114.4 PK			1.09 H	26	113.1	1.3
2	*5300.00	107.8 AV			1.09 H	26	106.5	1.3
3	10600.00	57.4 PK	74.0	-16.6	2.49 H	160	44.3	13.1
4	10600.00	45.6 AV	54.0	-8.4	2.49 H	160	32.5	13.1
5	15900.00	51.9 PK	74.0	-22.1	2.07 H	52	40.5	11.4
6	15900.00	38.5 AV	54.0	-15.5	2.07 H	52	27.1	11.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	117.1 PK			1.84 V	245	115.8	1.3
2	*5300.00	110.1 AV			1.84 V	245	108.8	1.3
3	10600.00	57.3 PK	74.0	-16.7	1.76 V	86	44.2	13.1
4	10600.00	44.2 AV	54.0	-9.8	1.76 V	86	31.1	13.1
5	15900.00	51.0 PK	74.0	-23.0	1.90 V	325	39.6	11.4
6	15900.00	37.8 AV	54.0	-16.2	1.90 V	325	26.4	11.4

REMARKS:

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

CHANNEL	TX Channel 64	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	116.5 PK			1.20 H	16	115.1	1.4
2	*5320.00	106.3 AV			1.20 H	16	104.9	1.4
3	5350.00	61.3 PK	74.0	-12.7	1.20 H	16	59.9	1.4
4	5350.00	51.1 AV	54.0	-2.9	1.20 H	16	49.7	1.4
5	10640.00	59.1 PK	74.0	-14.9	1.19 H	22	46.0	13.1
6	10640.00	45.4 AV	54.0	-8.6	1.19 H	22	32.3	13.1
7	15960.00	50.5 PK	74.0	-23.5	1.01 H	171	39.2	11.3
8	15960.00	37.9 AV	54.0	-16.1	1.01 H	171	26.6	11.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	116.6 PK			1.77 V	243	115.2	1.4
2	*5320.00	108.6 AV			1.77 V	243	107.2	1.4
3	5350.00	65.1 PK	74.0	-8.9	1.77 V	243	63.7	1.4
4	5350.00	53.3 AV	54.0	-0.7	1.77 V	243	51.9	1.4
5	10640.00	57.7 PK	74.0	-16.3	2.32 V	69	44.6	13.1
6	10640.00	44.4 AV	54.0	-9.6	2.32 V	69	31.3	13.1
7	15960.00	50.7 PK	74.0	-23.3	1.22 V	330	39.4	11.3
8	15960.00	38.3 AV	54.0	-15.7	1.22 V	330	27.0	11.3

REMARKS:

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

CHANNEL	TX Channel 100	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	54.5 PK	74.0	-19.5	1.08 H	14	52.7	1.8
2	5460.00	44.9 AV	54.0	-9.1	1.08 H	14	43.1	1.8
3	#5470.00	60.5 PK	68.2	-7.7	1.08 H	14	58.7	1.8
4	*5500.00	114.4 PK			1.08 H	14	112.5	1.9
5	*5500.00	103.4 AV			1.08 H	14	101.5	1.9
6	11000.00	57.8 PK	74.0	-16.2	2.51 H	4	44.6	13.2
7	11000.00	44.6 AV	54.0	-9.4	2.51 H	4	31.4	13.2
8	#16500.00	50.5 PK	68.2	-17.7	2.49 H	271	36.4	14.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	59.8 PK	74.0	-14.2	1.83 V	246	58.0	1.8
2	5460.00	48.9 AV	54.0	-5.1	1.83 V	246	47.1	1.8
3	#5470.00	67.5 PK	68.2	-0.7	1.83 V	246	65.7	1.8
4	*5500.00	117.1 PK			1.83 V	246	115.2	1.9
5	*5500.00	108.4 AV			1.83 V	246	106.5	1.9
6	11000.00	57.1 PK	74.0	-16.9	1.53 V	49	43.9	13.2
7	11000.00	44.4 AV	54.0	-9.6	1.53 V	49	31.2	13.2
8	#16500.00	51.5 PK	68.2	-16.7	2.50 V	321	37.4	14.1

REMARKS:

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

CHANNEL	TX Channel 116	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	118.0 PK			1.17 H	6	116.0	2.0
2	*5580.00	110.5 AV			1.17 H	6	108.5	2.0
3	11160.00	58.9 PK	74.0	-15.1	1.20 H	210	46.4	12.5
4	11160.00	45.1 AV	54.0	-8.9	1.20 H	210	32.6	12.5
5	#16740.00	51.3 PK	68.2	-16.9	2.35 H	247	35.4	15.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	120.9 PK			1.88 V	248	118.9	2.0
2	*5580.00	112.8 AV			1.88 V	248	110.8	2.0
3	11160.00	59.0 PK	74.0	-15.0	1.93 V	144	46.5	12.5
4	11160.00	44.7 AV	54.0	-9.3	1.93 V	144	32.2	12.5
5	#16740.00	51.2 PK	68.2	-17.0	1.87 V	141	35.3	15.9

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 140	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	113.9 PK			1.29 H	18	111.8	2.1
2	*5700.00	105.7 AV			1.29 H	18	103.6	2.1
3	#5725.00	64.7 PK	68.2	-3.5	1.29 H	18	62.6	2.1
4	11400.00	57.8 PK	74.0	-16.2	1.12 H	260	44.5	13.3
5	11400.00	45.3 AV	54.0	-8.7	1.12 H	260	32.0	13.3
6	#17100.00	50.7 PK	68.2	-17.5	1.60 H	57	33.9	16.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	116.5 PK			1.78 V	251	114.4	2.1
2	*5700.00	107.8 AV			1.78 V	251	105.7	2.1
3	#5725.00	67.1 PK	68.2	-1.1	1.78 V	251	65.0	2.1
4	11400.00	57.5 PK	74.0	-16.5	1.02 V	311	44.2	13.3
5	11400.00	45.3 AV	54.0	-8.7	1.02 V	311	32.0	13.3
6	#17100.00	52.0 PK	68.2	-16.2	2.37 V	222	35.2	16.8

REMARKS:

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

CHANNEL	TX Channel 144	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	51.3 PK	74.0	-22.7	1.20 H	6	49.5	1.8
2	5460.00	40.9 AV	54.0	-13.1	1.20 H	6	39.1	1.8
3	#5470.00	54.2 PK	68.2	-14.0	1.20 H	6	52.4	1.8
4	*5720.00	116.7 PK			1.20 H	6	114.6	2.1
5	*5720.00	109.0 AV			1.20 H	6	106.9	2.1
6	#5850.00	50.8 PK	68.2	-17.4	1.20 H	6	48.2	2.6
7	11440.00	57.1 PK	74.0	-16.9	2.24 H	186	43.6	13.5
8	11440.00	44.6 AV	54.0	-9.4	2.24 H	186	31.1	13.5
9	#17160.00	50.9 PK	68.2	-17.3	2.11 H	35	33.9	17.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	53.5 PK	74.0	-20.5	1.89 V	248	51.7	1.8
2	5460.00	43.9 AV	54.0	-10.1	1.89 V	248	42.1	1.8
3	#5470.00	56.2 PK	68.2	-12.0	1.89 V	248	54.4	1.8
4	*5720.00	118.8 PK			1.89 V	248	116.7	2.1
5	*5720.00	111.9 AV			1.89 V	248	109.8	2.1
6	#5850.00	53.5 PK	68.2	-14.7	1.89 V	248	50.9	2.6
7	11440.00	57.8 PK	74.0	-16.2	2.31 V	134	44.3	13.5
8	11440.00	45.9 AV	54.0	-8.1	2.31 V	134	32.4	13.5
9	#17160.00	51.1 PK	68.2	-17.1	1.76 V	172	34.1	17.0

REMARKS:

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

802.11ax (HE40)

CHANNEL	TX Channel 54	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5270.00	114.5 PK			1.21 H	20	113.2	1.3
2	*5270.00	105.6 AV			1.21 H	20	104.3	1.3
3	5357.00	57.5 PK	74.0	-16.5	1.21 H	20	56.1	1.4
4	5357.00	46.9 AV	54.0	-7.1	1.21 H	20	45.5	1.4
5	#10540.00	58.8 PK	68.2	-9.4	1.71 H	334	46.0	12.8
6	15810.00	50.7 PK	74.0	-23.3	2.47 H	44	39.2	11.5
7	15810.00	38.1 AV	54.0	-15.9	2.47 H	44	26.6	11.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5270.00	117.9 PK			1.90 V	246	116.6	1.3
2	*5270.00	109.3 AV			1.90 V	246	108.0	1.3
3	5357.00	64.3 PK	74.0	-9.7	1.90 V	246	62.9	1.4
4	5357.00	53.2 AV	54.0	-0.8	1.90 V	246	51.8	1.4
5	5460.00	59.1 PK	74.0	-14.9	2.08 V	58	57.3	1.8
6	5460.00	48.2 AV	54.0	-5.8	2.08 V	58	46.4	1.8
7	15810.00	51.7 PK	74.0	-22.3	1.58 V	306	40.2	11.5
8	15810.00	37.6 AV	54.0	-16.4	1.58 V	306	26.1	11.5

REMARKS:

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

CHANNEL	TX Channel 62	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	110.5 PK			1.30 H	20	109.1	1.4
2	*5310.00	100.7 AV			1.30 H	20	99.3	1.4
3	5354.18	62.1 PK	74.0	-11.9	1.30 H	20	60.7	1.4
4	5354.18	49.6 AV	54.0	-4.4	1.30 H	20	48.2	1.4
5	10620.00	57.7 PK	74.0	-16.3	2.19 H	322	44.6	13.1
6	10620.00	44.9 AV	54.0	-9.1	2.19 H	322	31.8	13.1
7	15930.00	50.4 PK	74.0	-23.6	2.50 H	15	39.0	11.4
8	15930.00	38.1 AV	54.0	-15.9	2.50 H	15	26.7	11.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	111.0 PK			1.75 V	245	109.6	1.4
2	*5310.00	102.4 AV			1.75 V	245	101.0	1.4
3	5354.18	63.9 PK	74.0	-10.1	1.75 V	245	62.5	1.4
4	**5354.18**	**53.4 AV**	**54.0**	**-0.6**	**1.75 V**	**245**	**52.0**	**1.4**
5	10620.00	58.4 PK	74.0	-15.6	1.51 V	148	45.3	13.1
6	10620.00	44.6 AV	54.0	-9.4	1.51 V	148	31.5	13.1
7	15930.00	50.4 PK	74.0	-23.6	1.67 V	229	39.0	11.4
8	15930.00	37.6 AV	54.0	-16.4	1.67 V	229	26.2	11.4

REMARKS:

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

CHANNEL	TX Channel 102	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	55.5 PK	74.0	-18.5	1.19 H	13	53.7	1.8
2	5460.00	46.5 AV	54.0	-7.5	1.19 H	13	44.7	1.8
3	#5470.00	60.7 PK	68.2	-7.5	1.19 H	13	58.9	1.8
4	*5510.00	108.8 PK			1.19 H	13	107.0	1.8
5	*5510.00	99.9 AV			1.19 H	13	98.1	1.8
6	11020.00	58.8 PK	74.0	-15.2	2.18 H	253	45.7	13.1
7	11020.00	45.0 AV	54.0	-9.0	2.18 H	253	31.9	13.1
8	#16530.00	51.0 PK	68.2	-17.2	2.09 H	63	36.7	14.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	63.7 PK	74.0	-10.3	1.86 V	244	61.9	1.8
2	5460.00	51.3 AV	54.0	-2.7	1.86 V	244	49.5	1.8
3	#5470.00	67.1 PK	68.2	-1.1	1.86 V	244	65.3	1.8
4	*5510.00	112.6 PK			1.86 V	244	110.8	1.8
5	*5510.00	104.5 AV			1.86 V	244	102.7	1.8
6	11020.00	57.5 PK	74.0	-16.5	1.78 V	18	44.4	13.1
7	11020.00	45.4 AV	54.0	-8.6	1.78 V	18	32.3	13.1
8	#16530.00	51.7 PK	68.2	-16.5	1.19 V	116	37.4	14.3

REMARKS:

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

CHANNEL	TX Channel 110	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	65.1 PK	68.2	-3.1	1.16 H	7	63.3	1.8
2	*5550.00	114.2 PK			1.16 H	7	112.3	1.9
3	*5550.00	106.1 AV			1.16 H	7	104.2	1.9
4	11100.00	59.1 PK	74.0	-14.9	2.42 H	158	46.5	12.6
5	11100.00	44.4 AV	54.0	-9.6	2.42 H	158	31.8	12.6
6	#16650.00	51.3 PK	68.2	-16.9	1.97 H	53	36.1	15.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	67.4 PK	68.2	-0.8	1.89 V	248	65.6	1.8
2	*5550.00	116.6 PK			1.89 V	248	114.7	1.9
3	*5550.00	108.7 AV			1.89 V	248	106.8	1.9
4	11100.00	57.3 PK	74.0	-16.7	1.44 V	102	44.7	12.6
5	11100.00	45.8 AV	54.0	-8.2	1.44 V	102	33.2	12.6
6	#16650.00	50.4 PK	68.2	-17.8	1.02 V	83	35.2	15.2

REMARKS:

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

CHANNEL	TX Channel 134	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5670.00	112.7 PK			1.27 H	33	110.6	2.1
2	*5670.00	104.3 AV			1.27 H	33	102.2	2.1
3	#5725.00	64.9 PK	68.2	-3.3	1.27 H	33	62.8	2.1
4	11340.00	56.9 PK	74.0	-17.1	1.50 H	121	44.1	12.8
5	11340.00	45.9 AV	54.0	-8.1	1.50 H	121	33.1	12.8
6	#17010.00	51.0 PK	68.2	-17.2	1.27 H	305	34.2	16.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5670.00	115.1 PK			1.94 V	246	113.0	2.1
2	*5670.00	107.3 AV			1.94 V	246	105.2	2.1
3	#5725.00	67.3 PK	68.2	-0.9	1.94 V	246	65.2	2.1
4	11340.00	57.6 PK	74.0	-16.4	2.47 V	139	44.8	12.8
5	11340.00	44.9 AV	54.0	-9.1	2.47 V	139	32.1	12.8
6	#17010.00	51.6 PK	68.2	-16.6	1.57 V	270	34.8	16.8

REMARKS:

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

CHANNEL	TX Channel 142	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	52.3 PK	74.0	-21.7	1.37 H	25	50.5	1.8
2	5460.00	42.7 AV	54.0	-11.3	1.37 H	25	40.9	1.8
3	#5470.00	54.3 PK	68.2	-13.9	1.37 H	25	52.5	1.8
4	*5710.00	112.8 PK			1.37 H	25	110.7	2.1
5	*5710.00	105.3 AV			1.37 H	25	103.2	2.1
6	#5850.00	58.7 PK	68.2	-9.5	1.37 H	25	56.1	2.6
7	11420.00	58.1 PK	74.0	-15.9	2.27 H	172	44.7	13.4
8	11420.00	44.2 AV	54.0	-9.8	2.27 H	172	30.8	13.4
9	#17130.00	51.4 PK	68.2	-16.8	1.58 H	7	34.5	16.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	54.9 PK	74.0	-19.1	1.95 V	246	53.1	1.8
2	5460.00	45.6 AV	54.0	-8.4	1.95 V	246	43.8	1.8
3	#5470.00	56.6 PK	68.2	-11.6	1.95 V	246	54.8	1.8
4	*5710.00	115.8 PK			1.95 V	246	113.7	2.1
5	*5710.00	108.2 AV			1.95 V	246	106.1	2.1
6	#5850.00	61.0 PK	68.2	-7.2	1.95 V	246	58.4	2.6
7	11420.00	58.6 PK	74.0	-15.4	1.69 V	49	45.2	13.4
8	11420.00	44.8 AV	54.0	-9.2	1.69 V	49	31.4	13.4
9	#17130.00	50.7 PK	68.2	-17.5	2.48 V	21	33.8	16.9

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 (HE80)

CHANNEL	TX Channel 58	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5290.00	106.1 PK			1.42 H	18	104.8	1.3
2	*5290.00	97.8 AV			1.42 H	18	96.5	1.3
3	5353.90	57.5 PK	74.0	-16.5	1.42 H	18	56.1	1.4
4	5353.90	49.6 AV	54.0	-4.4	1.42 H	18	48.2	1.4
5	#10580.00	58.9 PK	68.2	-9.3	2.04 H	30	46.0	12.9
6	15870.00	51.8 PK	74.0	-22.2	2.52 H	230	40.4	11.4
7	15870.00	37.7 AV	54.0	-16.3	2.52 H	230	26.3	11.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5290.00	107.1 PK			1.83 V	242	105.8	1.3
2	*5290.00	98.9 AV			1.83 V	242	97.6	1.3
3	5353.90	61.4 PK	74.0	-12.6	1.83 V	242	60.0	1.4
4	5353.90	53.3 AV	54.0	-0.7	1.83 V	242	51.9	1.4
5	#10580.00	58.4 PK	68.2	-9.8	1.70 V	196	45.5	12.9
6	15870.00	51.1 PK	74.0	-22.9	1.21 V	269	39.7	11.4
7	15870.00	38.3 AV	54.0	-15.7	1.21 V	269	26.9	11.4

REMARKS:

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

CHANNEL	TX Channel 106	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	55.7 PK	74.0	-18.3	1.05 H	18	53.9	1.8
2	5460.00	48.3 AV	54.0	-5.7	1.05 H	18	46.5	1.8
3	#5470.00	58.3 PK	68.2	-9.9	1.05 H	18	56.5	1.8
4	*5530.00	105.5 PK			1.05 H	18	103.6	1.9
5	*5530.00	96.6 AV			1.05 H	18	94.7	1.9
6	#5725.00	52.8 PK	68.2	-15.4	1.05 H	18	50.7	2.1
7	11060.00	58.2 PK	74.0	-15.8	1.88 H	358	45.3	12.9
8	11060.00	45.2 AV	54.0	-8.8	1.88 H	358	32.3	12.9
9	#16590.00	50.6 PK	68.2	-17.6	2.69 H	188	35.8	14.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	61.2 PK	74.0	-12.8	1.82 V	246	59.4	1.8
2	5460.00	53.2 AV	54.0	-0.8	1.82 V	246	51.4	1.8
3	#5470.00	64.3 PK	68.2	-3.9	1.82 V	246	62.5	1.8
4	*5530.00	108.9 PK			1.82 V	246	107.0	1.9
5	*5530.00	100.6 AV			1.82 V	246	98.7	1.9
6	#5725.00	60.8 PK	68.2	-7.4	1.82 V	246	58.7	2.1
7	11060.00	57.3 PK	74.0	-16.7	2.68 V	335	44.4	12.9
8	11060.00	44.1 AV	54.0	-9.9	2.68 V	335	31.2	12.9
9	#16590.00	51.4 PK	68.2	-16.8	2.04 V	105	36.6	14.8

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 122	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5610.00	109.5 PK			1.31 H	13	107.5	2.0
2	*5610.00	101.7 AV			1.31 H	13	99.7	2.0
3	#5725.00	65.0 PK	68.2	-3.2	1.31 H	13	62.9	2.1
4	11220.00	58.6 PK	74.0	-15.4	2.66 H	170	46.2	12.4
5	11220.00	45.3 AV	54.0	-8.7	2.66 H	170	32.9	12.4
6	#16830.00	50.8 PK	68.2	-17.4	1.05 H	209	34.4	16.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5610.00	111.9 PK			1.98 V	246	109.9	2.0
2	*5610.00	104.1 AV			1.98 V	246	102.1	2.0
3	#5725.00	67.4 PK	68.2	-0.8	1.98 V	246	65.3	2.1
4	11220.00	58.3 PK	74.0	-15.7	2.14 V	39	45.9	12.4
5	11220.00	45.6 AV	54.0	-8.4	2.14 V	39	33.2	12.4
6	#16830.00	51.3 PK	68.2	-16.9	1.43 V	270	34.9	16.4

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 138	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	56.6 PK	74.0	-17.4	1.20 H	42	54.8	1.8
2	5460.00	48.4 AV	54.0	-5.6	1.20 H	42	46.6	1.8
3	#5470.00	59.0 PK	68.2	-9.2	1.20 H	42	57.2	1.8
4	*5690.00	113.2 PK			1.20 H	42	111.2	2.0
5	*5690.00	103.3 AV			1.20 H	42	101.3	2.0
6	#5850.00	64.0 PK	68.2	-4.2	1.20 H	42	61.4	2.6
7	11380.00	57.2 PK	74.0	-16.8	2.34 H	243	44.1	13.1
8	11380.00	44.2 AV	54.0	-9.8	2.34 H	243	31.1	13.1
9	#17070.00	50.6 PK	68.2	-17.6	1.68 H	14	33.7	16.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	59.3 PK	74.0	-14.7	1.92 V	246	57.5	1.8
2	5460.00	50.4 AV	54.0	-3.6	1.92 V	246	48.6	1.8
3	#5470.00	61.7 PK	68.2	-6.5	1.92 V	246	59.9	1.8
4	*5690.00	115.2 PK			1.92 V	246	113.2	2.0
5	*5690.00	106.1 AV			1.92 V	246	104.1	2.0
6	#5850.00	66.7 PK	68.2	-1.5	1.92 V	246	64.1	2.6
7	11380.00	58.3 PK	74.0	-15.7	1.17 V	44	45.2	13.1
8	11380.00	45.9 AV	54.0	-8.1	1.17 V	44	32.8	13.1
9	#17070.00	51.3 PK	68.2	-16.9	1.92 V	73	34.4	16.9

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 (HE160)

CHANNEL	TX Channel 50	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.8 PK	74.0	-16.2	1.34 H	19	55.9	1.9
2	5150.00	49.1 AV	54.0	-4.9	1.34 H	19	47.2	1.9
3	*5250.00	104.7 PK			1.34 H	19	103.4	1.3
4	*5250.00	95.5 AV			1.34 H	19	94.2	1.3
5	5350.00	60.1 PK	74.0	-13.9	1.34 H	19	58.7	1.4
6	5350.00	50.8 AV	54.0	-3.2	1.34 H	19	49.4	1.4
7	#10500.00	57.1 PK	68.2	-11.1	2.46 H	192	44.4	12.7
8	15750.00	51.2 PK	74.0	-22.8	1.89 H	223	39.6	11.6
9	15750.00	38.2 AV	54.0	-15.8	1.89 H	223	26.6	11.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	58.9 PK	74.0	-15.1	1.97 V	245	57.0	1.9
2	5150.00	51.7 AV	54.0	-2.3	1.97 V	245	49.8	1.9
3	*5250.00	104.7 PK			1.97 V	245	103.4	1.3
4	*5250.00	96.9 AV			1.97 V	245	95.6	1.3
5	5350.00	62.1 PK	74.0	-11.9	1.97 V	245	60.7	1.4
6	**5350.00**	**53.4 AV**	**54.0**	**-0.6**	**1.97 V**	**245**	**52.0**	**1.4**
7	#10500.00	57.1 PK	68.2	-11.1	1.08 V	23	44.4	12.7
8	15750.00	51.6 PK	74.0	-22.4	2.68 V	1	40.0	11.6
9	15750.00	37.6 AV	54.0	-16.4	2.68 V	1	26.0	11.6

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 114	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	59.4 PK	74.0	-14.6	1.42 H	11	57.6	1.8
2	5460.00	53.1 AV	54.0	-0.9	1.42 H	11	51.3	1.8
3	#5470.00	58.0 PK	68.2	-10.2	1.42 H	11	56.2	1.8
4	*5570.00	101.9 PK			1.42 H	11	99.9	2.0
5	*5570.00	94.3 AV			1.42 H	11	92.3	2.0
6	#5725.00	61.8 PK	68.2	-6.4	1.42 H	11	59.7	2.1
7	11140.00	57.0 PK	74.0	-17.0	1.34 H	24	44.5	12.5
8	11140.00	45.7 AV	54.0	-8.3	1.34 H	24	33.2	12.5
9	#16710.00	50.0 PK	68.2	-18.2	2.60 H	265	34.4	15.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	64.9 PK	74.0	-9.1	1.88 V	246	63.1	1.8
2	5460.00	52.5 AV	54.0	-1.5	1.88 V	246	50.7	1.8
3	#5470.00	67.4 PK	68.2	-0.8	1.88 V	246	65.6	1.8
4	*5570.00	105.5 PK			1.88 V	246	103.5	2.0
5	*5570.00	97.6 AV			1.88 V	246	95.6	2.0
6	#5725.00	64.9 PK	68.2	-3.3	1.88 V	246	62.8	2.1
7	11140.00	57.3 PK	74.0	-16.7	2.52 V	315	44.8	12.5
8	11140.00	44.5 AV	54.0	-9.5	2.52 V	315	32.0	12.5
9	#16710.00	50.4 PK	68.2	-17.8	2.59 V	53	34.8	15.6

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:

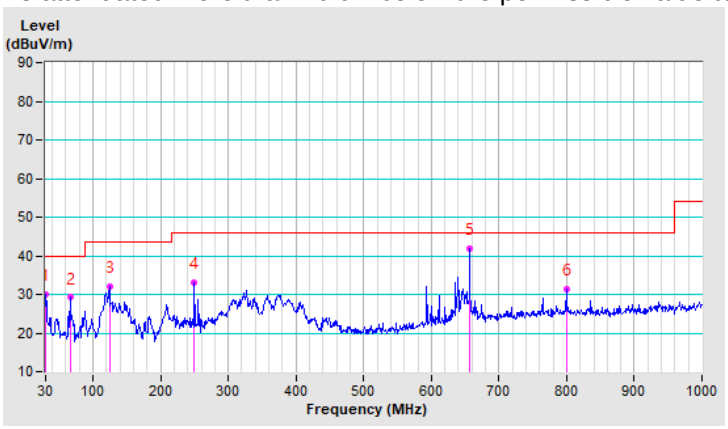
802.11ax (HE80)

CHANNEL	TX Channel 106	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	30.92	30.1 QP	40.0	-9.9	1.00 H	118	44.4	-14.3
2	66.57	29.2 QP	40.0	-10.8	1.00 H	66	43.4	-14.2
3	124.97	32.2 QP	43.5	-11.3	3.00 H	102	46.6	-14.4
4	250.01	33.2 QP	46.0	-12.8	1.00 H	107	47.1	-13.9
5	656.26	42.0 QP	46.0	-4.0	1.00 H	30	46.4	-4.4
6	799.98	31.5 QP	46.0	-14.5	2.00 H	329	33.9	-2.4

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 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.

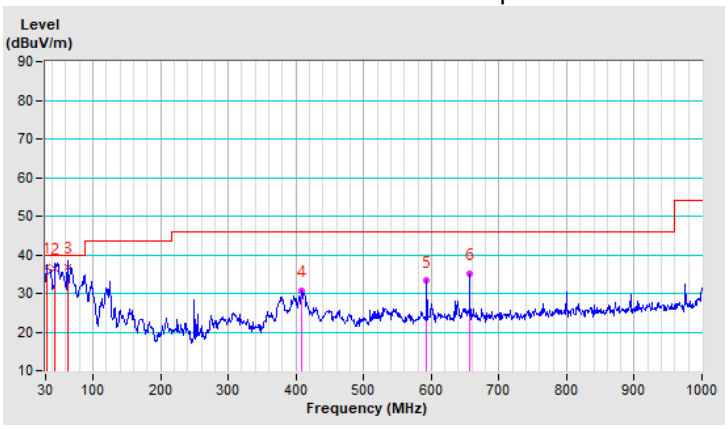


CHANNEL	TX Channel 106	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	31.02	36.9 QP	40.0	-3.1	1.00 V	181	51.3	-14.4
2	44.31	36.5 QP	40.0	-3.5	1.00 V	214	49.3	-12.8
3	62.46	36.7 QP	40.0	-3.3	1.00 V	331	50.4	-13.7
4	409.14	30.6 QP	46.0	-15.4	1.50 V	273	40.2	-9.6
5	593.26	33.3 QP	46.0	-12.7	2.00 V	360	38.6	-5.3
6	656.12	35.1 QP	46.0	-10.9	2.00 V	106	39.5	-4.4

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 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.



4.1.8 Test Results (Mode 2)

Below 1GHz Data:

Adapter: DSA-24PFS-12 FUS 120200

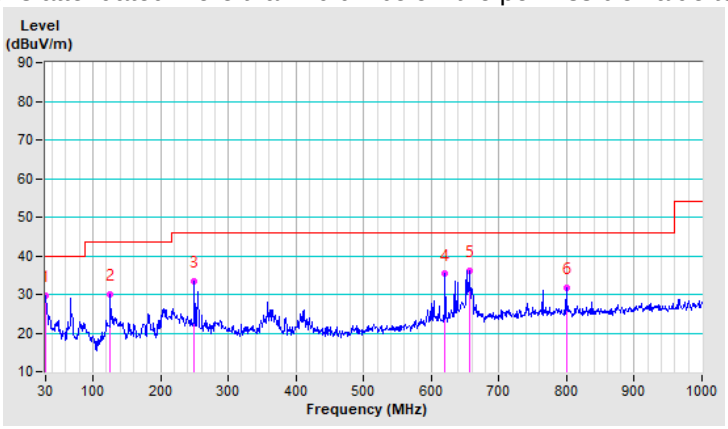
802.11ax (HE80)

CHANNEL	TX Channel 106	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	30.78	29.6 QP	40.0	-10.4	1.50 H	58	43.9	-14.3
2	124.97	30.0 QP	43.5	-13.5	3.00 H	97	44.4	-14.4
3	250.01	33.5 QP	46.0	-12.5	1.00 H	113	47.4	-13.9
4	620.37	35.3 QP	46.0	-10.7	1.00 H	0	40.1	-4.8
5	656.46	36.2 QP	46.0	-9.8	1.00 H	0	40.6	-4.4
6	800.02	31.8 QP	46.0	-14.2	2.00 H	38	34.2	-2.4

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 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.

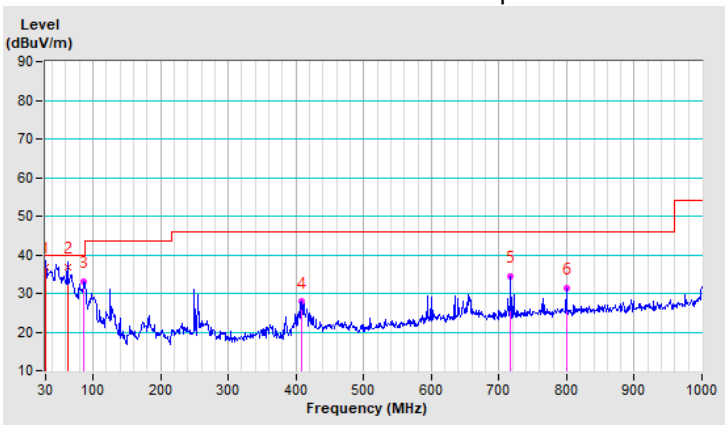


CHANNEL	TX Channel 106	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	30.00	36.8 QP	40.0	-3.2	1.00 V	260	50.8	-14.0
2	62.50	36.8 QP	40.0	-3.2	1.00 V	0	50.6	-13.8
3	87.04	33.1 QP	40.0	-6.9	1.00 V	264	51.6	-18.5
4	407.45	27.8 QP	46.0	-18.2	1.50 V	260	37.4	-9.6
5	717.09	34.4 QP	46.0	-11.6	2.00 V	217	37.9	-3.5
6	800.02	31.3 QP	46.0	-14.7	1.50 V	194	33.7	-2.4

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 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.



4.1.9 Test Results (Mode 3)

Below 1GHz Data:

Adapter: UP0251M-12PA

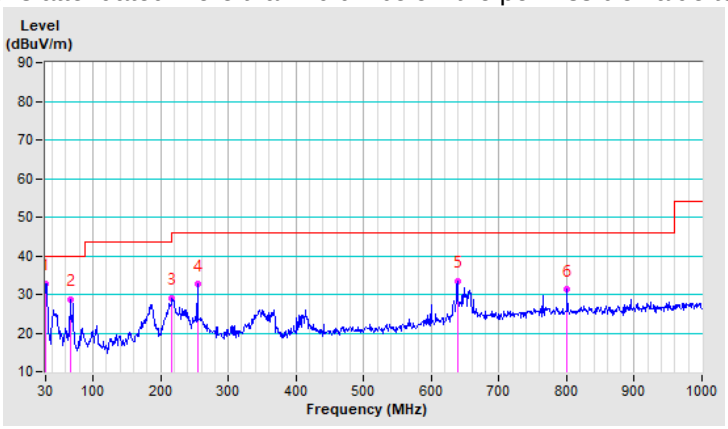
802.11ax (HE80)

CHANNEL	TX Channel 106	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	30.92	32.8 QP	40.0	-7.2	1.00 H	102	47.1	-14.3
2	66.62	28.7 QP	40.0	-11.3	1.50 H	4	42.8	-14.1
3	217.12	28.9 QP	46.0	-17.1	2.00 H	273	44.8	-15.9
4	255.00	32.6 QP	46.0	-13.4	3.00 H	115	46.5	-13.9
5	640.02	33.4 QP	46.0	-12.6	3.00 H	360	38.0	-4.6
6	800.02	31.2 QP	46.0	-14.8	1.00 H	0	33.6	-2.4

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 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.

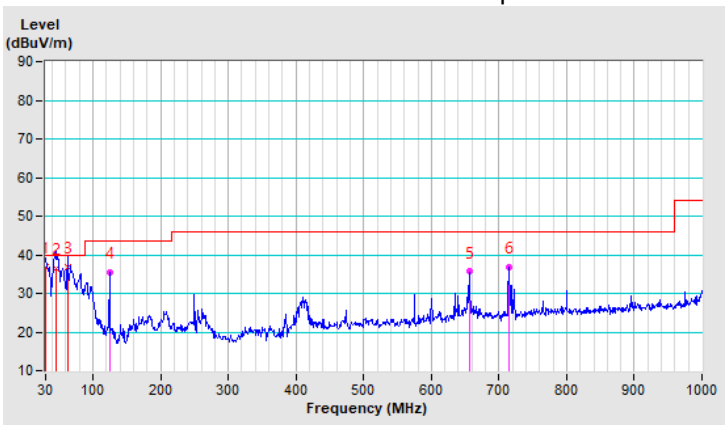


CHANNEL	TX Channel 106	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	30.23	36.9 QP	40.0	-3.1	1.00 V	266	51.0	-14.1
2	45.91	36.5 QP	40.0	-3.5	1.00 V	90	49.2	-12.7
3	62.43	36.7 QP	40.0	-3.3	1.00 V	322	50.4	-13.7
4	124.97	35.5 QP	43.5	-8.0	1.00 V	138	49.9	-14.4
5	656.12	35.6 QP	46.0	-10.4	2.00 V	360	40.0	-4.4
6	714.37	36.8 QP	46.0	-9.2	1.50 V	156	40.3	-3.5

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 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: Apr. 13, 2020

4.2.3 Test Procedure

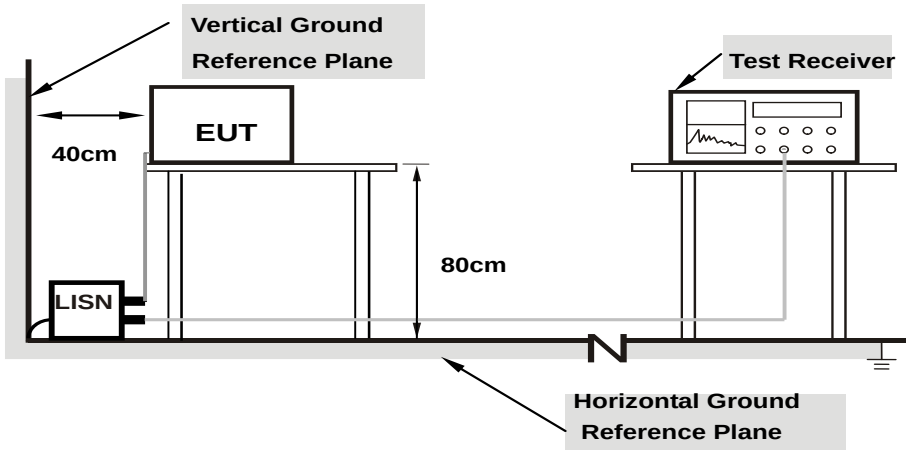
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

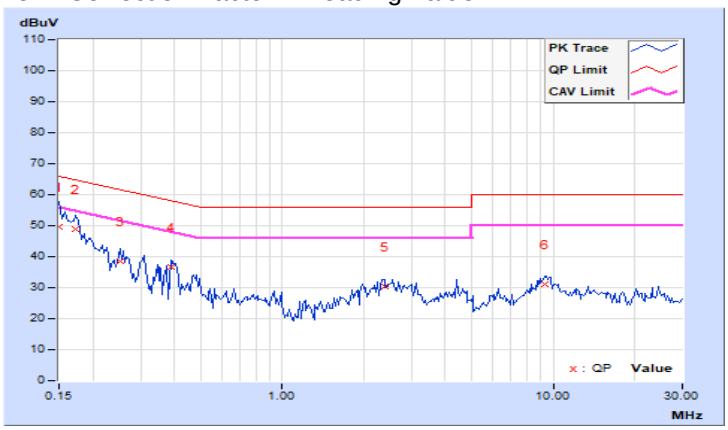
4.2.7 Test Results (Mode 1)

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	9.99	39.65	26.68	49.64	36.67	66.00	56.00	-16.36	-19.33
2	0.17344	9.99	38.78	28.80	48.77	38.79	64.79	54.79	-16.02	-16.00
3	0.25156	9.99	28.53	16.65	38.52	26.64	61.71	51.71	-23.19	-25.07
4	0.38828	10.00	26.55	19.35	36.55	29.35	58.10	48.10	-21.55	-18.75
5	2.37891	10.15	20.23	10.86	30.38	21.01	56.00	46.00	-25.62	-24.99
6	9.29688	10.60	20.35	13.25	30.95	23.85	60.00	50.00	-29.05	-26.15

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

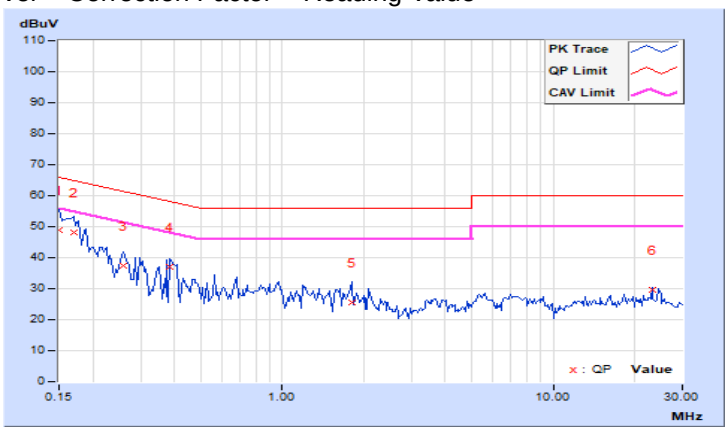


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	38.88	25.71	48.87	35.70	66.00	56.00	-17.13	-20.30
2	0.16953	9.99	38.04	28.40	48.03	38.39	64.98	54.98	-16.95	-16.59
3	0.25938	10.00	27.44	20.25	37.44	30.25	61.45	51.45	-24.01	-21.20
4	0.38438	10.01	27.05	18.97	37.06	28.98	58.18	48.18	-21.12	-19.20
5	1.80078	10.11	15.29	8.26	25.40	18.37	56.00	46.00	-30.60	-27.63
6	23.12891	11.19	18.44	15.32	29.63	26.51	60.00	50.00	-30.37	-23.49

Remarks:

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



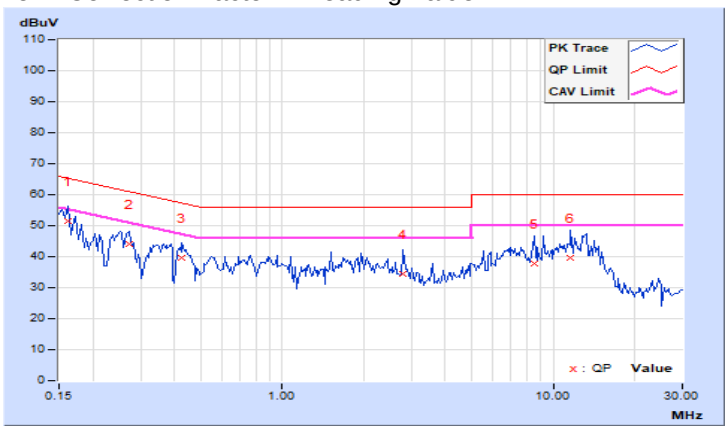
4.2.8 Test Results (Mode 2)

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	**0.16172**	**9.99**	**41.40**	**29.01**	**51.39**	**39.00**	**65.38**	**55.38**	**-13.99**	**-16.38**
2	0.27109	9.99	33.94	23.20	43.93	33.19	61.08	51.08	-17.15	-17.89
3	0.42734	10.00	29.80	20.25	39.80	30.25	57.30	47.30	-17.50	-17.05
4	2.80078	10.18	24.15	12.53	34.33	22.71	56.00	46.00	-21.67	-23.29
5	8.51953	10.55	27.33	17.75	37.88	28.30	60.00	50.00	-22.12	-21.70
6	11.63672	10.77	28.84	21.62	39.61	32.39	60.00	50.00	-20.39	-17.61

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

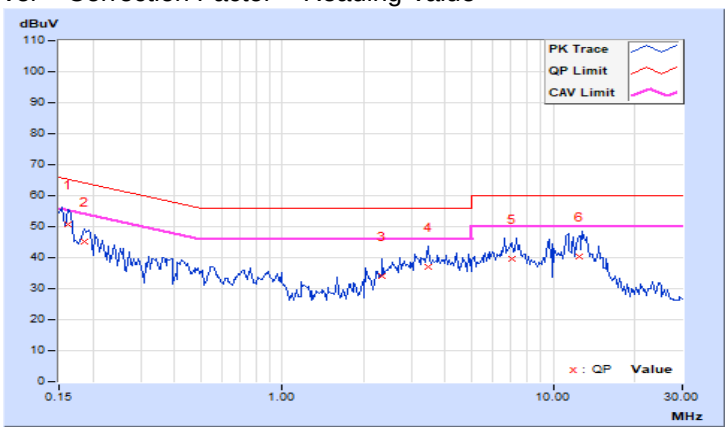


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.16172	9.99	40.78	27.60	50.77	37.59	65.38	55.38	-14.61	-17.79
2	0.18516	9.99	35.06	21.10	45.05	31.09	64.25	54.25	-19.20	-23.16
3	2.34766	10.14	24.09	13.04	34.23	23.18	56.00	46.00	-21.77	-22.82
4	3.44922	10.19	26.74	17.92	36.93	28.11	56.00	46.00	-19.07	-17.89
5	7.02734	10.40	29.17	20.95	39.57	31.35	60.00	50.00	-20.43	-18.65
6	12.41016	10.71	29.55	21.48	40.26	32.19	60.00	50.00	-19.74	-17.81

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



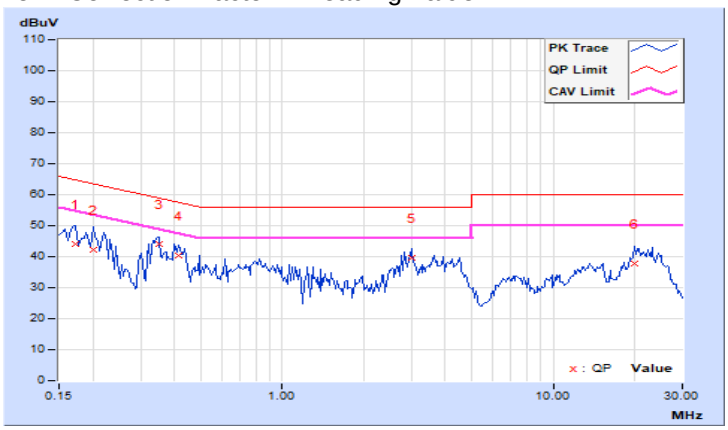
4.2.9 Test Results (Mode 3)

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	0.17344	9.99	34.00	23.42	43.99	33.41	64.79	54.79	-20.80	-21.38
2	0.20078	9.99	32.13	20.54	42.12	30.53	63.58	53.58	-21.46	-23.05
3	0.34922	10.00	34.03	24.15	44.03	34.15	58.98	48.98	-14.95	-14.83
4	0.41563	10.00	30.32	19.59	40.32	29.59	57.54	47.54	-17.22	-17.95
5	2.99219	10.19	29.43	15.87	39.62	26.06	56.00	46.00	-16.38	-19.94
6	20.08594	11.37	26.47	19.27	37.84	30.64	60.00	50.00	-22.16	-19.36

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

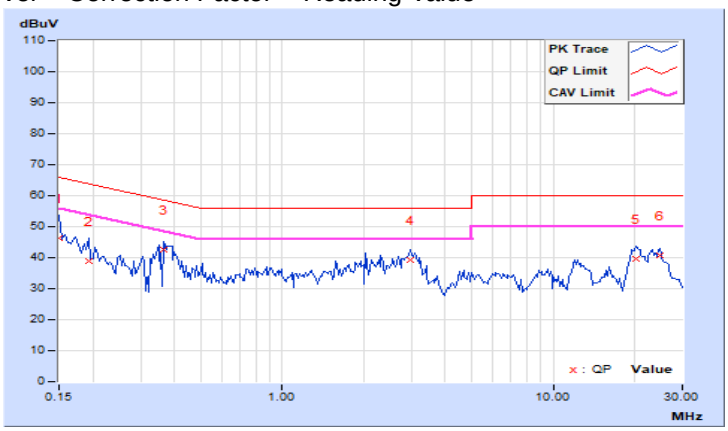


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	36.20	23.44	46.19	33.43	66.00	56.00	-19.81	-22.57
2	0.19297	9.99	29.05	18.80	39.04	28.79	63.91	53.91	-24.87	-25.12
3	0.36484	10.01	32.41	21.16	42.42	31.17	58.62	48.62	-16.20	-17.45
4	2.98047	10.17	29.24	19.12	39.41	29.29	56.00	46.00	-16.59	-16.71
5	20.19922	11.11	28.60	21.95	39.71	33.06	60.00	50.00	-20.29	-16.94
6	24.90234	11.23	29.65	23.50	40.88	34.73	60.00	50.00	-19.12	-15.27

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,

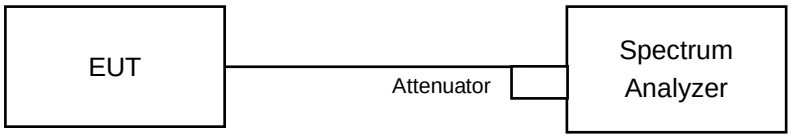
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

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

4.3.2 Test Setup

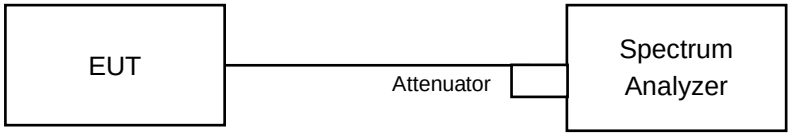
FOR POWER OUTPUT MEASUREMENT

For channel straddling 5250MHz and 5725MHz:



For other channels:

FOR 26dB OCCUPIED BANDWIDTH



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

FOR POWER OUTPUT MEASUREMENT

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

For channel straddling 5725MHz or 5250MHz:
Follow FCC KDB 789033 UNII test procedure:
Method SA-1

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW =1MHz.
3. Set the VBW ≥ 3 x RBW.
4. Number of points in sweep ≥ 2 Span / RBW.
5. Sweep time = auto.
6. Set trigger to free run (duty cycle ≥ 98 percent)
7. Detector = RMS.
8. Trace average at least 100 traces in power averaging mode
9. Compute power by integrating the spectrum across the 26 dB EBW of the signal.

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

Non-Beamforming Mode

POWER OUTPUT

802.11a

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
52	5260	19.77	20.18	199.074	22.99	24.00	PASS
60	5300	19.87	19.94	195.679	22.92	24.00	PASS
64	5320	19.91	19.77	192.791	22.85	24.00	PASS
100	5500	19.93	20.02	198.863	22.99	24.00	PASS
116	5580	19.85	20.15	200.119	23.01	24.00	PASS
140	5700	19.63	20.51	204.294	23.10	24.00	PASS
*144 (U-NII-2C Band)	5720	18.08	19.49	153.189	21.85	23.07	PASS
*144 (U-NII-3 Band)	5720	12.13	13.55	38.977	15.91	30.00	PASS

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

The Total Power for the straddle channel and power meter value for reference only:

Chan.	Chan. Freq. (MHz)	Total Power (mW)	Total Power (dBm)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
				Chain0	Chain1		
144	5720	192.166	22.84	19.56	20.44	201.027	23.03

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	24.64	24.91 > 24
60	5300	24.69	24.92 > 24
64	5320	22.86	24.59 > 24
100	5500	22.84	24.58 > 24
116	5580	24.71	24.92 > 24
140	5700	22.74	24.56 > 24
144 (U-NII-2C Band)	5720	16.13	23.07 < 24

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
52	5260	19.93	20.23	203.84	23.09	24.00	PASS
60	5300	19.86	20.23	202.266	23.06	24.00	PASS
64	5320	20.11	20.00	202.565	23.07	24.00	PASS
100	5500	20.36	20.16	212.395	23.27	24.00	PASS
116	5580	20.04	19.91	198.874	22.99	24.00	PASS
140	5700	19.66	20.41	202.37	23.06	24.00	PASS
*144 (U-NII-2C Band)	5720	17.45	18.15	120.903	20.82	23.13	PASS
*144 (U-NII-3 Band)	5720	12.44	13.14	38.145	15.81	30.00	PASS

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

The Total Power for the straddle channel and power meter value for reference only:

Chan.	Chan. Freq. (MHz)	Total Power (mW)	Total Power (dBm)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
				Chain0	Chain1		
144	5720	159.048	22.02	19.64	20.42	202.199	23.06

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	21.96	24.41 > 24
60	5300	23.49	24.7 > 24
64	5320	23.27	24.66 > 24
100	5500	23.59	24.72 > 24
116	5580	23.73	24.75 > 24
140	5700	21.49	24.32 > 24
144 (U-NII-2C Band)	5720	16.36	23.13 < 24

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
54	5270	20.15	20.47	214.944	23.32	24.00	PASS
62	5310	18.26	18.97	145.874	21.64	24.00	PASS
102	5510	20.66	19.84	212.796	23.28	24.00	PASS
110	5550	20.30	20.11	209.717	23.22	24.00	PASS
134	5670	19.83	20.30	203.313	23.08	24.00	PASS
*142 (U-NII-2C Band)	5710	18.49	18.94	148.975	21.73	24.00	PASS
*142 (U-NII-3 Band)	5710	9.39	9.28	17.162	12.35	30.00	PASS

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

The Total Power for the straddle channel and power meter value for reference only:

Chan.	Chan. Freq. (MHz)	Total Power (mW)	Total Power (dBm)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
				Chain0	Chain1		
142	5710	166.137	22.20	19.94	20.21	203.582	23.09

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
54	5260	42.97	27.33 > 24
62	5300	44.6	27.49 > 24
102	5320	45.33	27.56 > 24
110	5500	44.88	27.52 > 24
134	5580	46.44	27.66 > 24
142 (U-NII-2C Band)	5700	36.94	26.67 > 24

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
58	5290	17.80	18.78	135.765	21.33	24.00	PASS
106	5530	20.56	19.99	213.533	23.29	24.00	PASS
122	5610	20.07	20.22	206.821	23.16	24.00	PASS
*138 (U-NII-2C Band)	5690	18.55	18.73	146.259	21.65	24.00	PASS
*138 (U-NII-3 Band)	5690	5.65	5.74	7.423	8.71	30.00	PASS

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

The Total Power for the straddle channel and power meter value for reference only:

Chan.	Chan. Freq. (MHz)	Total Power (mW)	Total Power (dBm)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
				Chain0	Chain1		
138	5690	153.682	21.87	20.12	19.99	202.572	23.07

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
58	5290	83.48	30.21 > 24
106	5530	83.72	30.22 > 24
122	5610	85.52	30.32 > 24
138 (U-NII-2C Band)	5690	77.28	29.88 > 24

802.11ac (VHT160)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
*50 (U-NII-1 Band)	5250	14.26	15.06	58.731	17.69	30.00	PASS
*50 (U-NII-2A Band)	5250	14.55	15.04	60.426	17.81	24.00	PASS
114	5570	20.05	20.19	205.63	23.13	24.00	PASS

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

The Total Power for the straddle channel and power meter value for reference only:

Chan.	Chan. Freq. (MHz)	Total Power (mW)	Total Power (dBm)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
				Chain0	Chain1		
50	5250	119.157	20.76	18.20	19.08	146.979	21.67

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
50 (U-NII-2A Band)	5250	82.87	30.18 > 24
114	5570	162.49	33.1 > 24

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
52	5260	20.03	20.39	210.089	23.22	24.00	PASS
60	5300	19.99	20.41	209.671	23.22	24.00	PASS
64	5320	20.27	20.19	210.886	23.24	24.00	PASS
100	5500	20.46	20.29	218.079	23.39	24.00	PASS
116	5580	20.22	20.01	205.427	23.13	24.00	PASS
140	5700	19.82	20.53	208.92	23.20	24.00	PASS
*144 (U-NII-2C Band)	5720	17.66	18.48	128.814	21.10	23.13	PASS
*144 (U-NII-3 Band)	5720	12.84	13.36	40.908	16.12	30.00	PASS

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

The Total Power for the straddle channel and power meter value for reference only:

Chan.	Chan. Freq. (MHz)	Total Power (mW)	Total Power (dBm)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
				Chain0	Chain1		
144	5720	169.722	22.30	19.75	20.59	208.957	23.20

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	21.96	24.41 > 24
60	5300	23.49	24.7 > 24
64	5320	23.27	24.66 > 24
100	5500	23.59	24.72 > 24
116	5580	23.73	24.75 > 24
140	5700	21.49	24.32 > 24
144 (U-NII-2C Band)	5720	16.36	23.13 < 24

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
54	5270	20.26	20.61	221.25	23.45	24.00	PASS
62	5310	18.43	19.09	150.759	21.78	24.00	PASS
102	5510	20.84	19.98	220.879	23.44	24.00	PASS
110	5550	20.42	20.21	215.108	23.33	24.00	PASS
134	5670	19.97	20.41	209.212	23.21	24.00	PASS
*142 (U-NII-2C Band)	5710	18.65	19.18	156.077	21.93	24.00	PASS
*142 (U-NII-3 Band)	5710	9.52	9.46	17.784	12.50	30.00	PASS

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

The Total Power for the straddle channel and power meter value for reference only:

Chan.	Chan. Freq. (MHz)	Total Power (mW)	Total Power (dBm)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
				Chain0	Chain1		
142	5710	173.861	22.40	20.12	20.37	211.695	23.26

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
54	5260	42.97	27.33 > 24
62	5300	44.6	27.49 > 24
102	5320	45.33	27.56 > 24
110	5500	44.88	27.52 > 24
134	5580	46.44	27.66 > 24
142 (U-NII-2C Band)	5700	36.94	26.67 > 24

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
58	5290	17.93	18.88	139.355	21.44	24.00	PASS
106	5530	20.69	20.19	221.692	23.46	24.00	PASS
122	5610	20.21	20.41	214.855	23.32	24.00	PASS
*138 (U-NII-2C Band)	5690	18.69	18.99	153.211	21.85	24.00	PASS
*138 (U-NII-3 Band)	5690	5.82	6.02	7.819	8.93	30.00	PASS

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

The Total Power for the straddle channel and power meter value for reference only:

Chan.	Chan. Freq. (MHz)	Total Power (mW)	Total Power (dBm)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
				Chain0	Chain1		
138	5690	161.03	22.07	20.29	20.15	210.42	23.23

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
58	5290	83.48	30.21 > 24
106	5530	83.72	30.22 > 24
122	5610	85.52	30.32 > 24
138 (U-NII-2C Band)	5690	77.28	29.88 > 24

802.11ax (HE160)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
*50 (U-NII-1 Band)	5250	14.60	15.31	62.803	17.98	30.00	PASS
*50 (U-NII-2A Band)	5250	14.91	15.31	64.937	18.12	24.00	PASS
114	5570	20.24	20.19	210.154	23.23	24.00	PASS

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

The Total Power for the straddle channel and power meter value for reference only:

Chan.	Chan. Freq. (MHz)	Total Power (mW)	Total Power (dBm)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
				Chain0	Chain1		
50	5250	127.74	21.06	18.34	19.19	151.219	21.80

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
50 (U-NII-2A Band)	5250	82.87	30.18 > 24
114	5570	162.49	33.1 > 24

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				
52	5260	19.93	20.23	203.84	23.09	23.67	PASS
60	5300	19.86	20.23	202.266	23.06	23.67	PASS
64	5320	20.11	20.00	202.565	23.07	23.67	PASS
100	5500	20.36	20.16	212.395	23.27	23.53	PASS
116	5580	20.04	19.91	198.874	22.99	23.53	PASS
140	5700	19.66	20.41	202.37	23.06	23.53	PASS
*144 (U-NII-2C Band)	5720	17.45	18.15	120.903	20.82	22.66	PASS
*144 (U-NII-3 Band)	5720	12.44	13.14	38.145	15.81	29.57	PASS

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

1. For U-NII-2A: The directional gain =10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.33dBi > 6dBi, so the power limit shall be reduced to “Determined Conducted Limit- (6.33-6)”.
2. For U-NII-2C: The directional gain =10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] =6.47dBi > 6dBi, so the power limit shall be reduced to “Determined Conducted Limit- (6.47-6)”.
3. For U-NII-3: the directional gain =10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.43 dBi > 6 dBi, so the power limit shall be reduced to 30-(6.43-6)= 29.57 dBm

The Total Power for the straddle channel and power meter value for reference only:

Chan.	Chan. Freq. (MHz)	Total Power (mW)	Total Power (dBm)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
				Chain0	Chain1		
144	5720	159.048	22.02	19.64	20.42	202.199	23.06

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	21.96	24.41 > 24
60	5300	23.49	24.7 > 24
64	5320	23.27	24.66 > 24
100	5500	23.59	24.72 > 24
116	5580	23.73	24.75 > 24
140	5700	21.49	24.32 > 24
144 (U-NII-2C Band)	5720	16.36	23.13 < 24

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
54	5270	20.15	20.47	214.944	23.32	23.67	PASS
62	5310	18.26	18.97	145.874	21.64	23.67	PASS
102	5510	20.66	19.84	212.796	23.28	23.53	PASS
110	5550	20.30	20.11	209.717	23.22	23.53	PASS
134	5670	19.83	20.30	203.313	23.08	23.53	PASS
*142 (U-NII-2C Band)	5710	18.49	18.94	148.975	21.73	23.53	PASS
*142 (U-NII-3 Band)	5710	9.39	9.28	17.162	12.35	29.57	PASS

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

1. For U-NII-2A: The directional gain =10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.33dBi > 6dBi, so the power limit shall be reduced to “Determined Conducted Limit- (6.33-6)”.
2. For U-NII-2C: The directional gain =10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] =6.47dBi > 6dBi, so the power limit shall be reduced to “Determined Conducted Limit- (6.47-6)”.
3. For U-NII-3: the directional gain =10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.43 dBi > 6 dBi, so the power limit shall be reduced to 30-(6.43-6)= 29.57 dBm

The Total Power for the straddle channel and power meter value for reference only:

Chan.	Chan. Freq. (MHz)	Total Power (mW)	Total Power (dBm)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
				Chain0	Chain1		
142	5710	166.137	22.20	19.94	20.21	203.582	23.09

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
54	5260	42.97	27.33 > 24
62	5300	44.6	27.49 > 24
102	5320	45.33	27.56 > 24
110	5500	44.88	27.52 > 24
134	5580	46.44	27.66 > 24
142 (U-NII-2C Band)	5700	36.94	26.67 > 24

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
58	5290	17.80	18.78	135.765	21.33	23.67	PASS
106	5530	20.56	19.99	213.533	23.29	23.53	PASS
122	5610	20.07	20.22	206.821	23.16	23.53	PASS
*138 (U-NII-2C Band)	5690	18.55	18.73	146.259	21.65	23.53	PASS
*138 (U-NII-3 Band)	5690	5.65	5.74	7.423	8.71	29.57	PASS

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

1. For U-NII-2A: The directional gain =10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.33dBi > 6dBi, so the power limit shall be reduced to “Determined Conducted Limit- (6.33-6)”.
2. For U-NII-2C: The directional gain =10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] =6.47dBi > 6dBi, so the power limit shall be reduced to “Determined Conducted Limit- (6.47-6)”.
3. For U-NII-3: the directional gain =10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.43 dBi > 6 dBi, so the power limit shall be reduced to 30-(6.43-6)= 29.57 dBm

The Total Power for the straddle channel and power meter value for reference only:

Chan.	Chan. Freq. (MHz)	Total Power (mW)	Total Power (dBm)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
				Chain0	Chain1		
138	5690	153.682	21.87	20.12	19.99	202.572	23.07

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
58	5290	83.48	30.21 > 24
106	5530	83.72	30.22 > 24
122	5610	85.52	30.32 > 24
138 (U-NII-2C Band)	5690	77.28	29.88 > 24

802.11ac (VHT160)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
*50 (U-NII-1 Band)	5250	14.26	15.06	58.731	17.69	29.60	PASS
*50 (U-NII-2A Band)	5250	14.55	15.04	60.426	17.81	23.67	PASS
114	5570	20.05	20.19	205.63	23.13	23.53	PASS

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

1. For U-NII-1: The directional gain=10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] =6.40dBi > 6dBi, so the power limit shall be reduced to “Determined Conducted Limit- (6.40-6)”.
2. For U-NII-2A: The directional gain=10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.33dBi > 6dBi, so the power limit shall be reduced to “Determined Conducted Limit- (6.33-6)”.
3. For U-NII-2C: The directional gain =10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.47dBi > 6dBi, so the power limit shall be reduced to 30-(6.47-6) = 23.53dBm.

The Total Power for the straddle channel and power meter value for reference only:

Chan.	Chan. Freq. (MHz)	Total Power (mW)	Total Power (dBm)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
				Chain0	Chain1		
50	5250	119.157	20.76	18.20	19.08	146.979	21.67

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
50 (U-NII-2A Band)	5250	82.87	30.18 > 24
114	5570	162.49	33.1 > 24

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
52	5260	20.03	20.39	210.089	23.22	23.67	PASS
60	5300	19.99	20.41	209.671	23.22	23.67	PASS
64	5320	20.27	20.19	210.886	23.24	23.67	PASS
100	5500	20.46	20.29	218.079	23.39	23.53	PASS
116	5580	20.22	20.01	205.427	23.13	23.53	PASS
140	5700	19.82	20.53	208.92	23.20	23.53	PASS
*144 (U-NII-2C Band)	5720	17.66	18.48	128.814	21.10	22.66	PASS
*144 (U-NII-3 Band)	5720	12.84	13.36	40.908	16.12	29.57	PASS

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

1. For U-NII-2A: The directional gain =10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.33dBi > 6dBi, so the power limit shall be reduced to “Determined Conducted Limit- (6.33-6)”.
2. For U-NII-2C: The directional gain =10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] =6.47dBi > 6dBi, so the power limit shall be reduced to “Determined Conducted Limit- (6.47-6)”.
3. For U-NII-3: the directional gain =10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.43 dBi > 6 dBi, so the power limit shall be reduced to 30-(6.43-6)= 29.57 dBm

The Total Power for the straddle channel and power meter value for reference only:

Chan.	Chan. Freq. (MHz)	Total Power (mW)	Total Power (dBm)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
				Chain0	Chain1		
144	5720	169.722	22.30	19.75	20.59	208.957	23.20

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	21.96	24.41 > 24
60	5300	23.49	24.7 > 24
64	5320	23.27	24.66 > 24
100	5500	23.59	24.72 > 24
116	5580	23.73	24.75 > 24
140	5700	21.49	24.32 > 24
144 (U-NII-2C Band)	5720	16.36	23.13 < 24

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
54	5270	20.26	20.61	221.25	23.45	23.67	PASS
62	5310	18.43	19.09	150.759	21.78	23.67	PASS
102	5510	20.84	19.98	220.879	23.44	23.53	PASS
110	5550	20.42	20.21	215.108	23.33	23.53	PASS
134	5670	19.97	20.41	209.212	23.21	23.53	PASS
*142 (U-NII-2C Band)	5710	18.65	19.18	156.077	21.93	23.53	PASS
*142 (U-NII-3 Band)	5710	9.52	9.46	17.784	12.50	29.57	PASS

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

1. For U-NII-2A: The directional gain =10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] =6.33dBi > 6dBi, so the power limit shall be reduced to “Determined Conducted Limit- (6.33-6)”.
2. For U-NII-2C: The directional gain=10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] =6.47dBi > 6dBi, so the power limit shall be reduced to “Determined Conducted Limit- (6.47-6)”.
3. For U-NII-3: the directional gain =10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.43 dBi > 6 dBi, so the power limit shall be reduced to 30-(6.43-6)= 29.57 dBm

The Total Power for the straddle channel and power meter value for reference only:

Chan.	Chan. Freq. (MHz)	Total Power (mW)	Total Power (dBm)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
				Chain0	Chain1		
142	5710	173.861	22.40	20.12	20.37	211.695	23.26

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
54	5260	42.97	27.33 > 24
62	5300	44.6	27.49 > 24
102	5320	45.33	27.56 > 24
110	5500	44.88	27.52 > 24
134	5580	46.44	27.66 > 24
142 (U-NII-2C Band)	5700	36.94	26.67 > 24

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
58	5290	17.93	18.88	139.355	21.44	23.67	PASS
106	5530	20.69	20.19	221.692	23.46	23.53	PASS
122	5610	20.21	20.41	214.855	23.32	23.53	PASS
*138 (U-NII-2C Band)	5690	18.69	18.99	153.211	21.85	23.53	PASS
*138 (U-NII-3 Band)	5690	5.82	6.02	7.819	8.93	29.57	PASS

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

1. For U-NII-2A: The directional gain =10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.33dBi > 6dBi, so the power limit shall be reduced to “Determined Conducted Limit- (6.33-6)”.
2. For U-NII-2C: The directional gain =10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] =6.47dBi > 6dBi, so the power limit shall be reduced to “Determined Conducted Limit- (6.47-6)”.
3. For U-NII-3: the directional gain =10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.43 dBi > 6 dBi, so the power limit shall be reduced to 30-(6.43-6)= 29.57 dBm

The Total Power for the straddle channel and power meter value for reference only:

Chan.	Chan. Freq. (MHz)	Total Power (mW)	Total Power (dBm)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
				Chain0	Chain1		
138	5690	161.03	22.07	20.29	20.15	210.42	23.23

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
58	5290	83.48	30.21 > 24
106	5530	83.72	30.22 > 24
122	5610	85.52	30.32 > 24
138 (U-NII-2C Band)	5690	77.28	29.88 > 24

802.11ax (HE160)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
*50 (U-NII-1 Band)	5250	14.60	15.31	62.803	17.98	29.60	PASS
*50 (U-NII-2A Band)	5250	14.91	15.31	64.937	18.12	23.67	PASS
114	5570	20.24	20.19	210.154	23.23	23.53	PASS

Note: * Test was performed in accordance with Measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.

1. For U-NII-1: The directional gain =10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.40dBi > 6dBi, so the power limit shall be reduced to “Determined Conducted Limit- (6.40-6)”.
2. For U-NII-2A: The directional gain =10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.33dBi > 6dBi, so the power limit shall be reduced to “Determined Conducted Limit- (6.33-6)”.
3. For U-NII-2C: The directional gain =10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.47dBi > 6dBi, so the power limit shall be reduced to 30-(6.47-6) = 23.53dBm.

The Total Power for the straddle channel and power meter value for reference only:

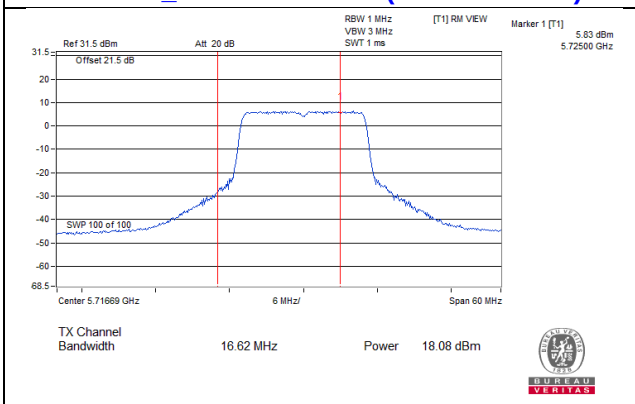
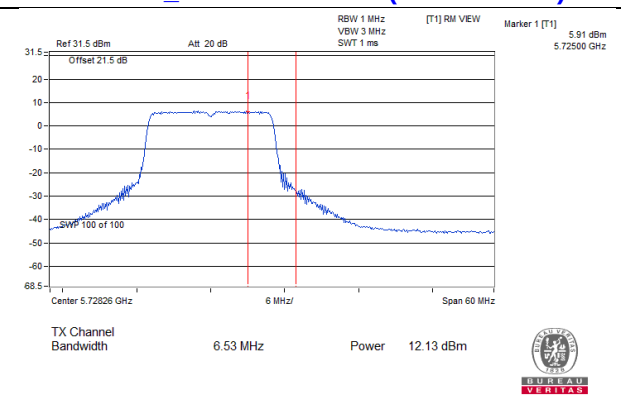
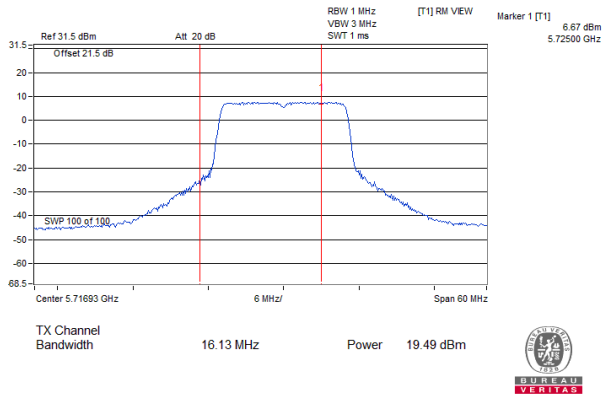
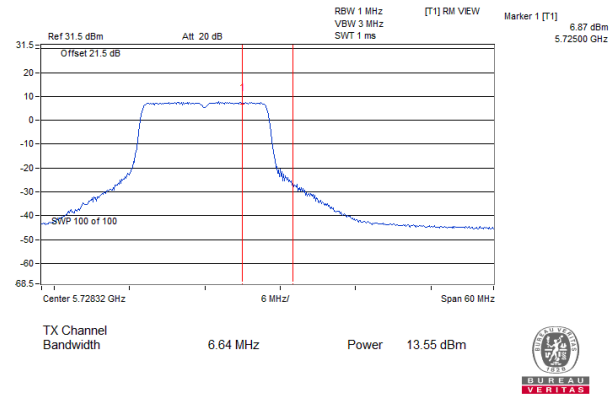
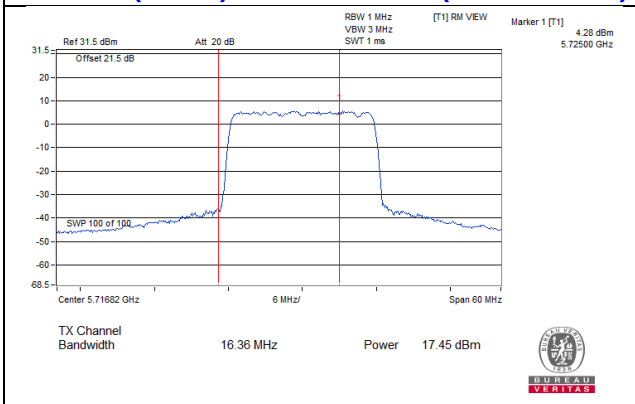
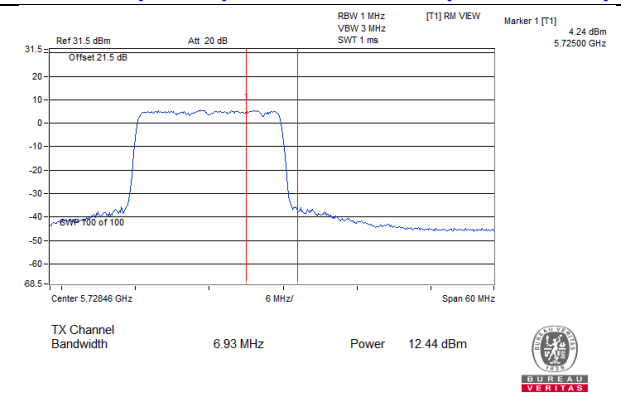
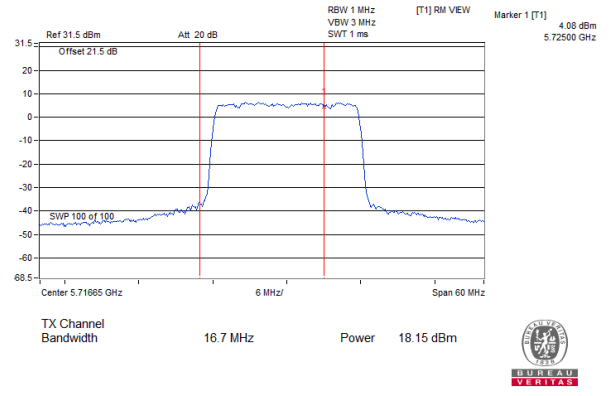
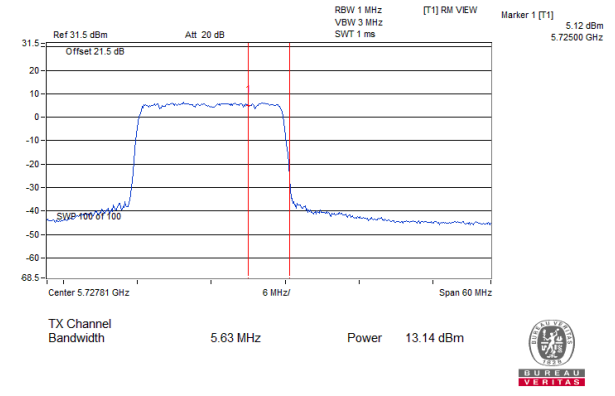
Chan.	Chan. Freq. (MHz)	Total Power (mW)	Total Power (dBm)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
				Chain0	Chain1		
50	5250	127.74	21.06	18.34	19.19	151.219	21.80

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

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
50 (U-NII-2A Band)	5250	82.87	30.18 > 24
114	5570	162.49	33.1 > 24

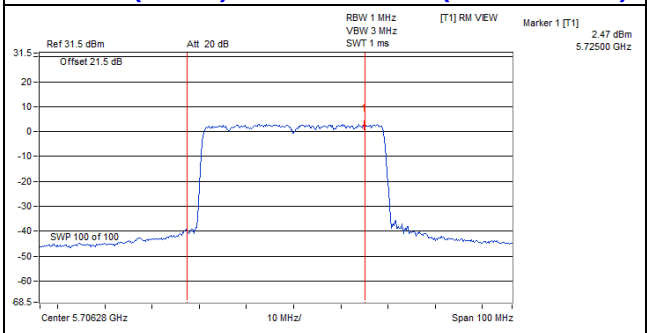
For channel straddling 5725MHz of Power

Non-Beamforming / Beamforming Mode

Spectrum Plot Value of Power	
802.11a_Chain 0 / CH144 (U-NII-2C Band)	**802.11a_Chain 0 / CH144 (U-NII-3 Band)**
 TX Channel Bandwidth 16.62 MHz Power 18.08 dBm	 TX Channel Bandwidth 6.53 MHz Power 12.13 dBm
802.11a_Chain 1 / CH144 (U-NII-2C Band)	**802.11a_Chain 1 / CH144 (U-NII-3 Band)**
 TX Channel Bandwidth 16.13 MHz Power 19.49 dBm	 TX Channel Bandwidth 6.64 MHz Power 13.55 dBm
802.11ac (VHT20)_Chain 0 / CH144 (U-NII-2C Band)	**802.11ac (VHT20)_Chain 0 / CH144 (U-NII-3 Band)**
 TX Channel Bandwidth 16.36 MHz Power 17.45 dBm	 TX Channel Bandwidth 6.93 MHz Power 12.44 dBm
802.11ac (VHT20)_Chain 1 / CH144 (U-NII-2C Band)	**802.11ac (VHT20)_Chain 1 / CH144 (U-NII-3 Band)**
 TX Channel Bandwidth 16.7 MHz Power 18.15 dBm	 TX Channel Bandwidth 5.63 MHz Power 13.14 dBm

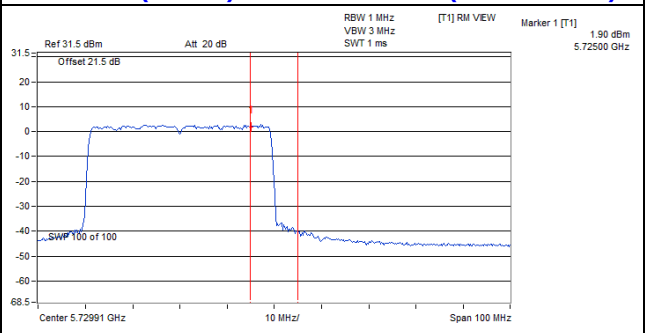
Spectrum Plot Value of Power

802.11ac (VHT40)_Chain 0 / CH142 (U-NII-2C Band)



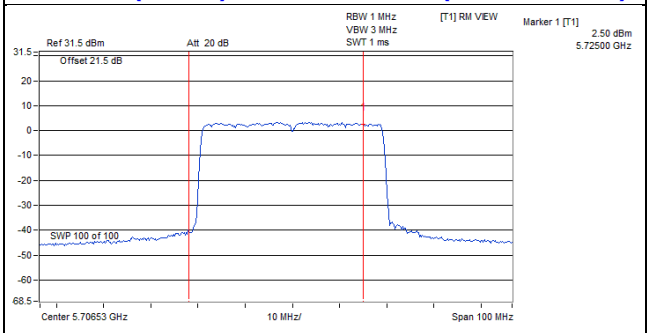
TX Channel Bandwidth 37.43 MHz Power 18.49 dBm

802.11ac (VHT40)_Chain 0 / CH142 (U-NII-3 Band)



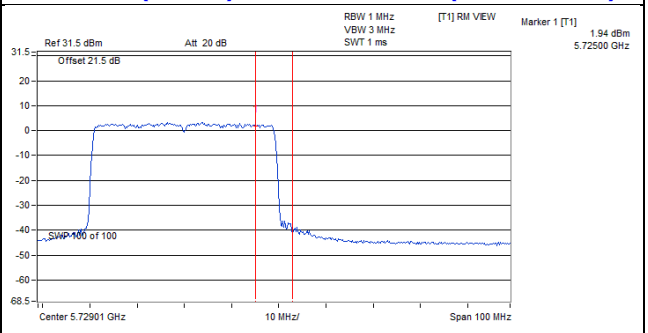
TX Channel Bandwidth 9.82 MHz Power 9.39 dBm

802.11ac (VHT40)_Chain 1 / CH142 (U-NII-2C Band)



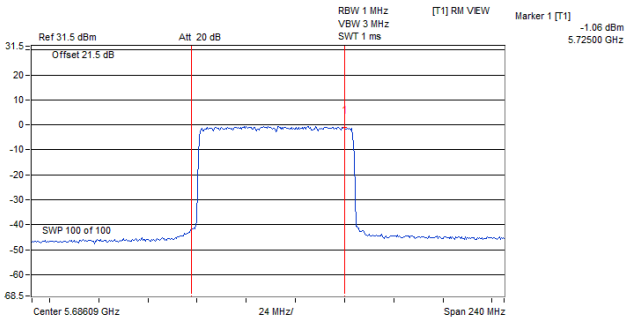
TX Channel Bandwidth 36.94 MHz Power 18.94 dBm

802.11ac (VHT40)_Chain 1 / CH142 (U-NII-3 Band)



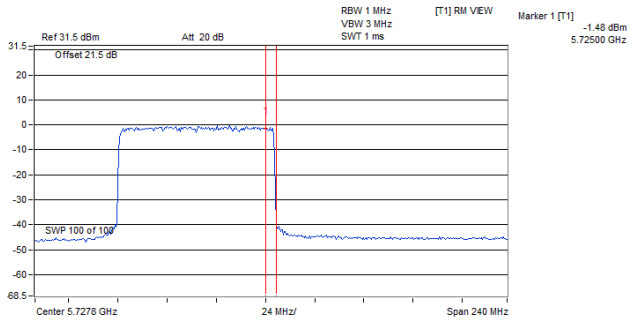
TX Channel Bandwidth 8.02 MHz Power 9.28 dBm

802.11ac (VHT80)_Chain 0 / CH138 (U-NII-2C Band)



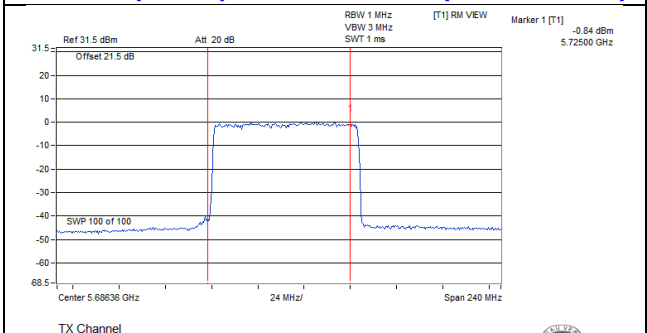
TX Channel Bandwidth 77.82 MHz Power 18.55 dBm

802.11ac (VHT80)_Chain 0 / CH138 (U-NII-3 Band)



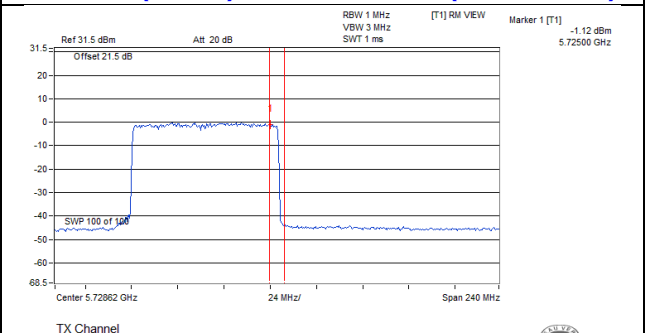
TX Channel Bandwidth 5.6 MHz Power 5.65 dBm

802.11ac (VHT80)_Chain 1 / CH138 (U-NII-2C Band)



TX Channel Bandwidth 77.28 MHz Power 18.73 dBm

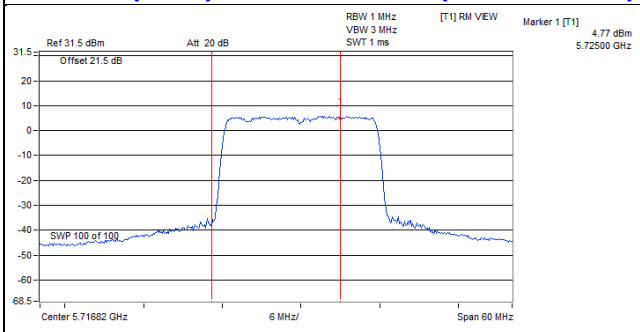
802.11ac (VHT80)_Chain 1 / CH138 (U-NII-3 Band)



TX Channel Bandwidth 7.24 MHz Power 5.74 dBm

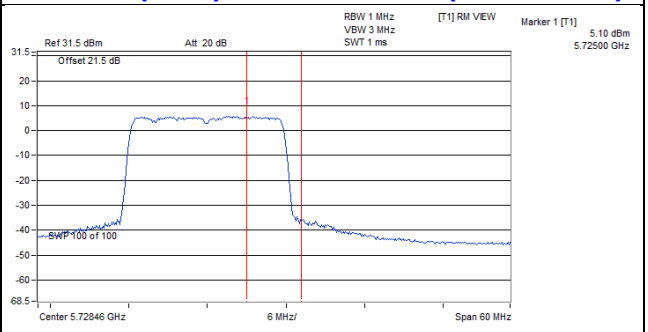
Spectrum Plot Value of Power

802.11ax (HE20)_Chain 0 / CH144 (U-NII-2C Band)



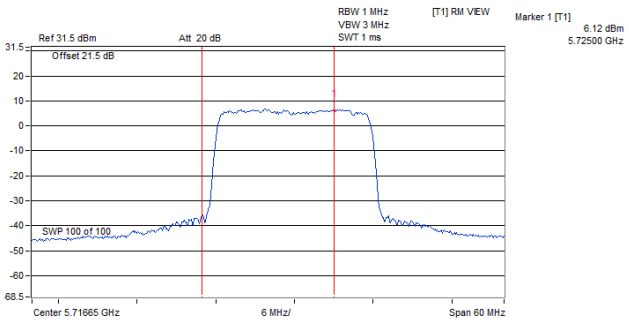
TX Channel Bandwidth 16.36 MHz Power 17.66 dBm

802.11ax (HE20)_Chain 0 / CH144 (U-NII-3 Band)



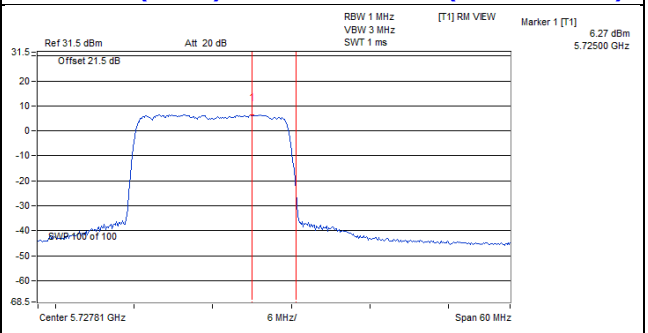
TX Channel Bandwidth 6.93 MHz Power 12.84 dBm

802.11ax (HE20)_Chain 1 / CH144 (U-NII-2C Band)



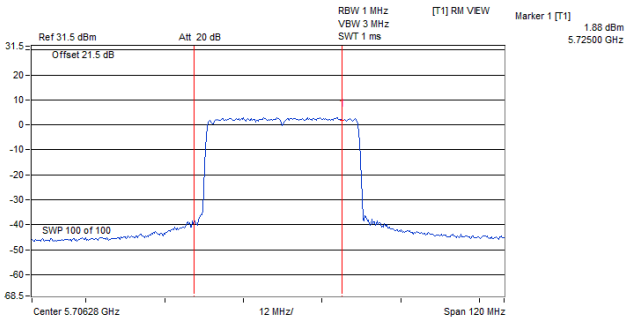
TX Channel Bandwidth 16.7 MHz Power 18.48 dBm

802.11ax (HE20)_Chain 1 / CH144 (U-NII-3 Band)



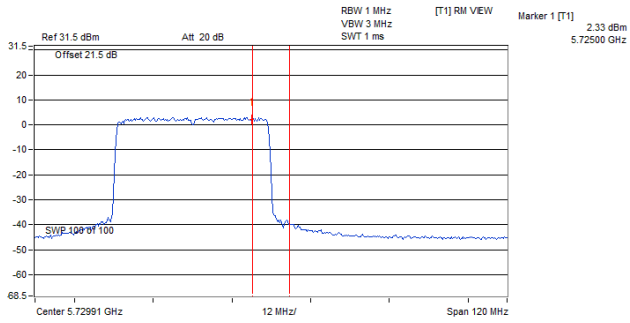
TX Channel Bandwidth 5.63 MHz Power 13.36 dBm

802.11ax (HE40)_Chain 0 / CH142 (U-NII-2C Band)



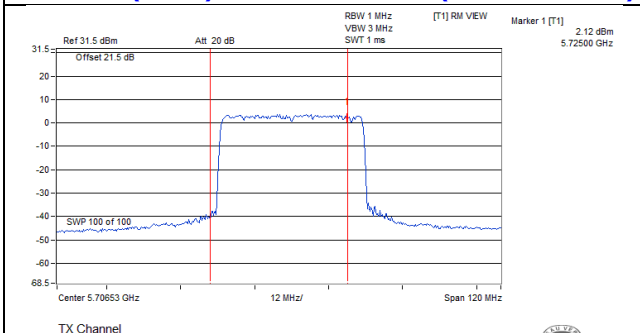
TX Channel Bandwidth 37.43 MHz Power 18.65 dBm

802.11ax (HE40)_Chain 0 / CH142 (U-NII-3 Band)



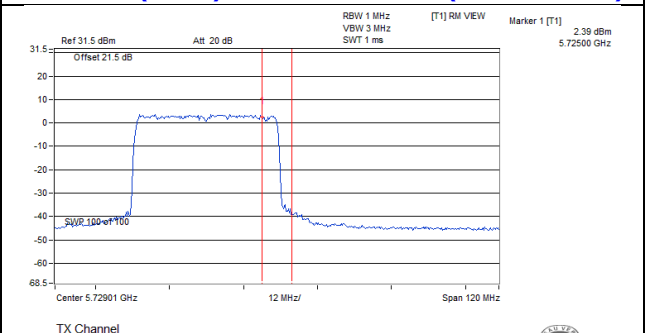
TX Channel Bandwidth 9.82 MHz Power 9.52 dBm

802.11ax (HE40)_Chain 1 / CH142 (U-NII-2C Band)

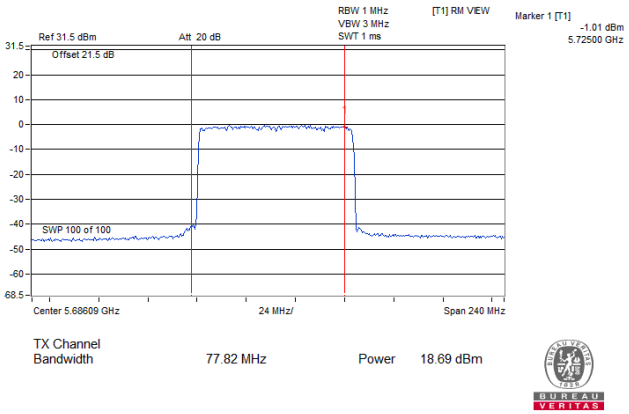
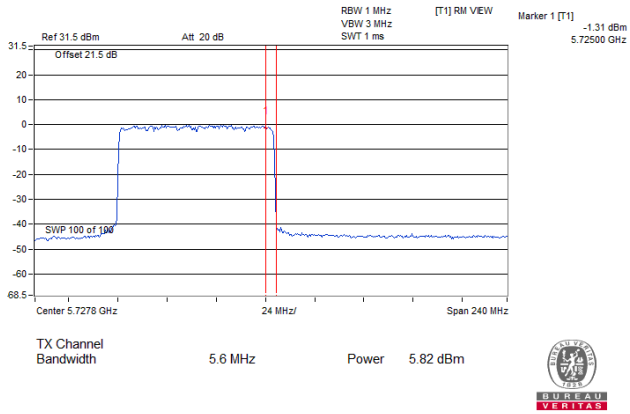
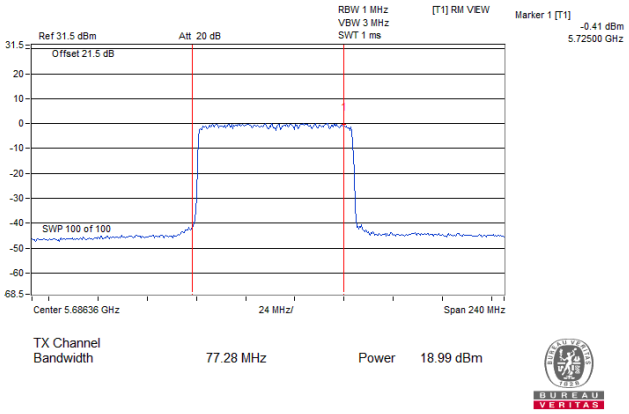
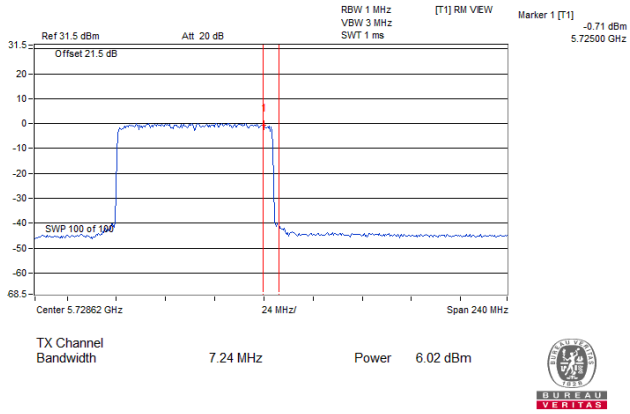


TX Channel Bandwidth 36.94 MHz Power 19.18 dBm

802.11ax (HE40)_Chain 1 / CH142 (U-NII-3 Band)

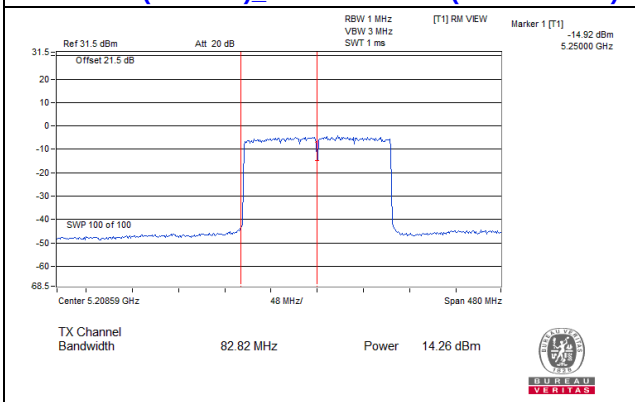
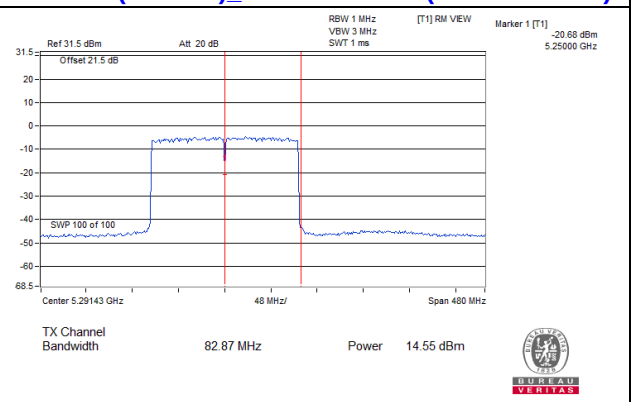
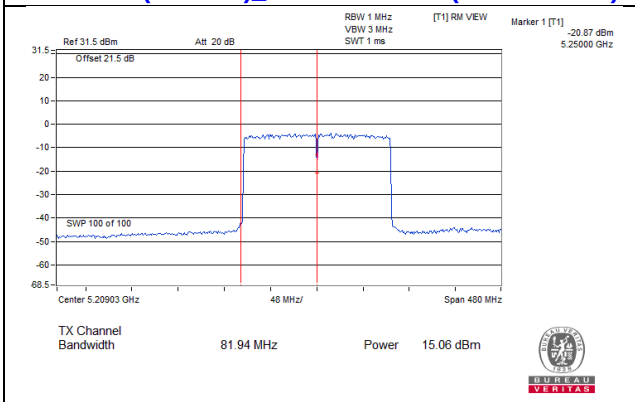
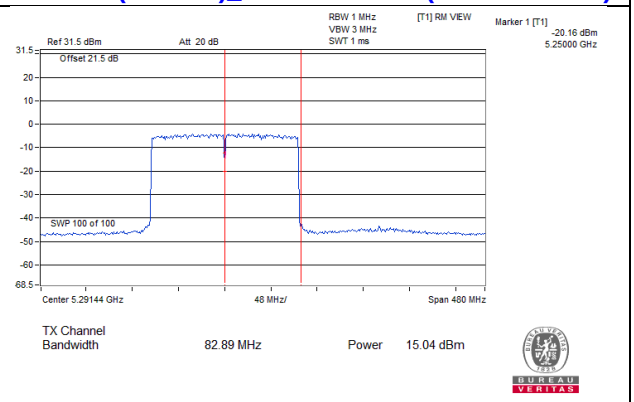
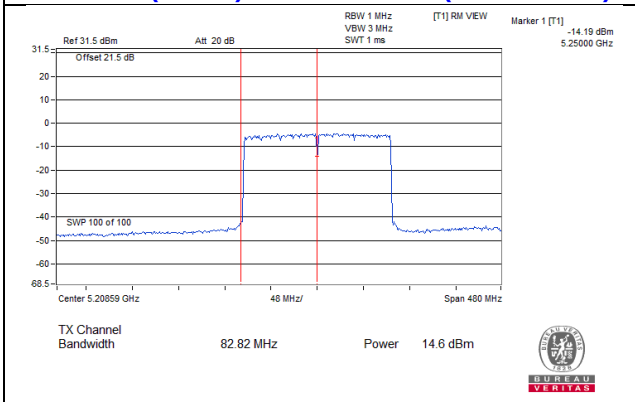
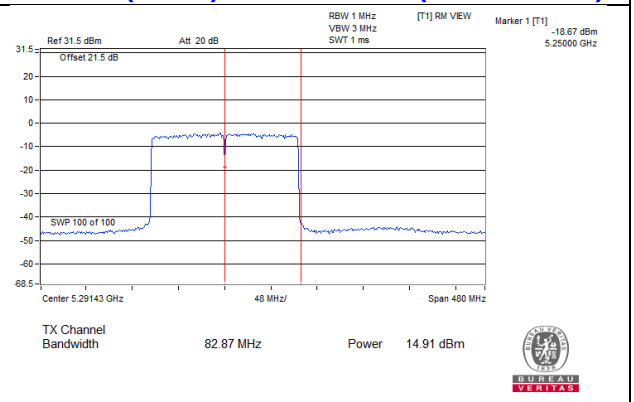
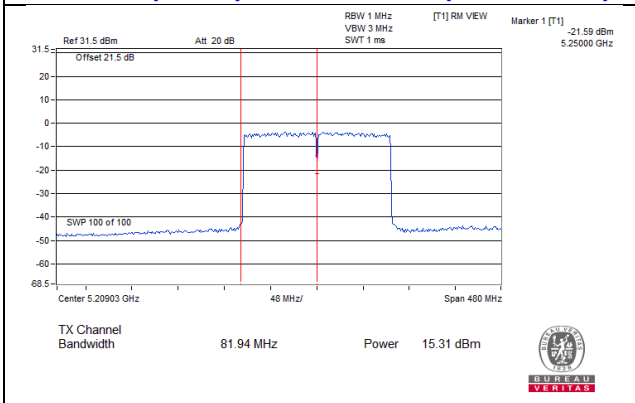
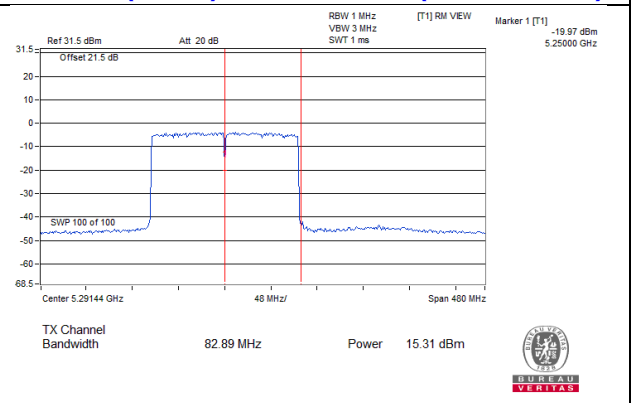


TX Channel Bandwidth 8.02 MHz Power 9.46 dBm

Spectrum Plot Value of Power	
802.11ax (HE80)_Chain 0 / CH138 (U-NII-2C Band)	**802.11ax (HE80)_Chain 0 / CH138 (U-NII-3 Band)**
 TX Channel Bandwidth 77.82 MHz Power 18.69 dBm	 TX Channel Bandwidth 5.6 MHz Power 5.82 dBm
802.11ax (HE80)_Chain 1 / CH138 (U-NII-2C Band)	**802.11ax (HE80)_Chain 1 / CH138 (U-NII-3 Band)**
 TX Channel Bandwidth 77.28 MHz Power 18.99 dBm	 TX Channel Bandwidth 7.24 MHz Power 6.02 dBm

For channel straddling 5250MHz of Power

Non-Beamforming Mode

Spectrum Plot Value of Power	
802.11ac (VHT160)_Chain 0 / CH50 (U-NII-1 Band)	**802.11ac (VHT160)_Chain 0 / CH50 (U-NII-2A Band)**
 TX Channel Bandwidth 82.82 MHz Power 14.26 dBm	 TX Channel Bandwidth 82.87 MHz Power 14.55 dBm
802.11ac (VHT160)_Chain 1 / CH50 (U-NII-1 Band)	**802.11ac (VHT160)_Chain 1 / CH50 (U-NII-2A Band)**
 TX Channel Bandwidth 81.94 MHz Power 15.06 dBm	 TX Channel Bandwidth 82.89 MHz Power 15.04 dBm
802.11ax (HE160)_Chain 0 / CH50 (U-NII-1 Band)	**802.11ax (HE160)_Chain 0 / CH50 (U-NII-2A Band)**
 TX Channel Bandwidth 82.82 MHz Power 14.6 dBm	 TX Channel Bandwidth 82.87 MHz Power 14.91 dBm
802.11ax (HE160)_Chain 1 / CH50 (U-NII-1 Band)	**802.11ax (HE160)_Chain 1 / CH50 (U-NII-2A Band)**
 TX Channel Bandwidth 81.94 MHz Power 15.31 dBm	 TX Channel Bandwidth 82.89 MHz Power 15.31 dBm

Non-Beamforming Mode

26dB OCCUPIED BANDWIDTH

802.11a

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		Chain0	Chain1
52	5260	24.64	25.61
60	5300	24.69	25.53
64	5320	23.24	22.86
100	5500	23.12	22.84
116	5580	24.71	25.89
140	5700	23.12	22.74
144 (U-NII-2C Band)	5720	16.62	16.13

802.11ax (HE20)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		Chain0	Chain1
52	5260	22.23	21.96
60	5300	25.94	23.49
64	5320	24.72	23.27
100	5500	23.59	23.64
116	5580	24.37	23.73
140	5700	24.7	21.49
144 (U-NII-2C Band)	5720	16.36	16.7

802.11ax (HE40)

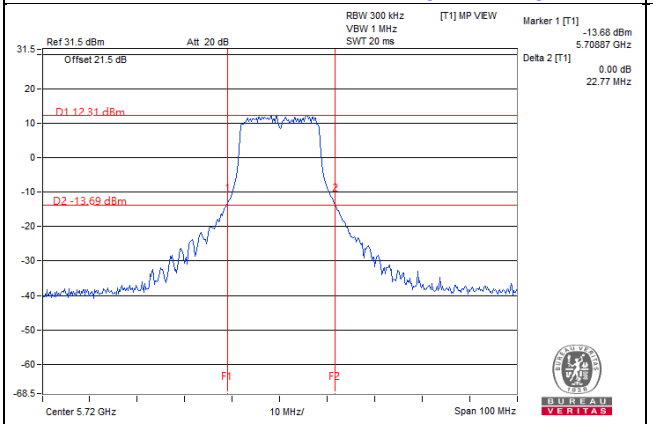
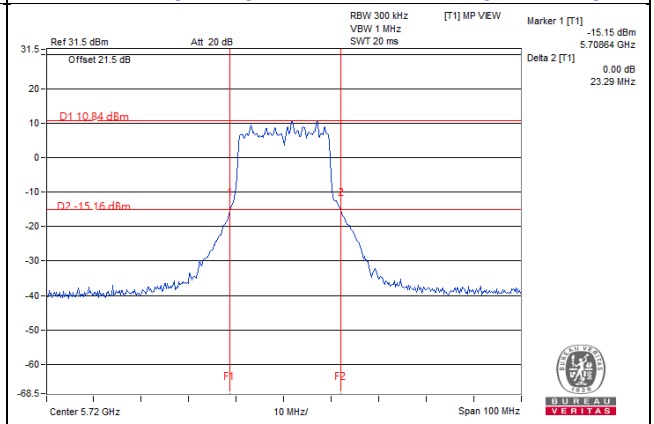
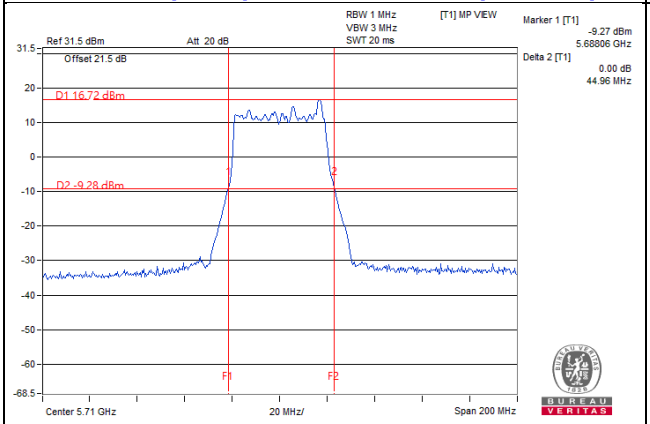
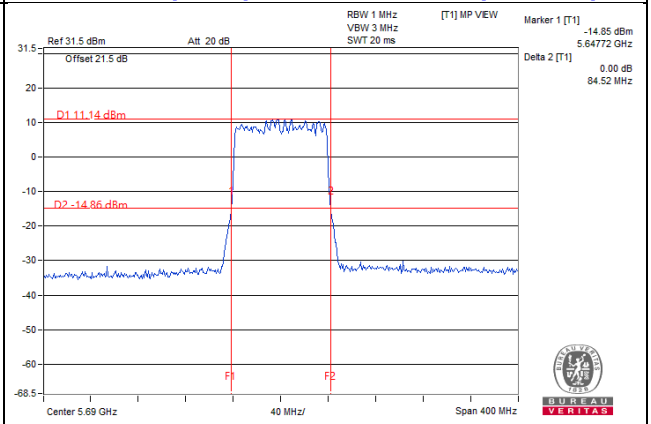
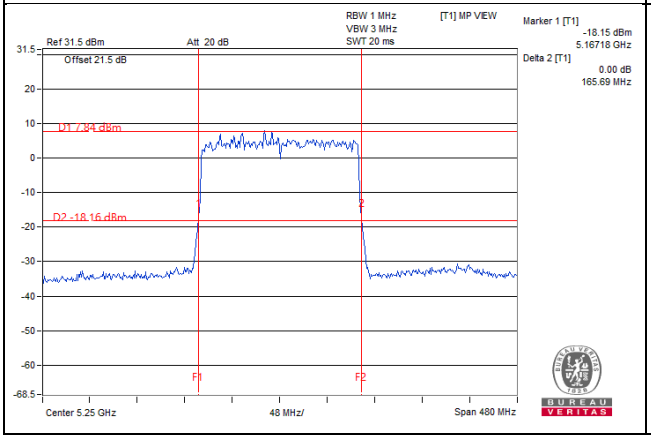
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		Chain0	Chain1
54	5270	42.97	44.64
62	5310	44.6	46.24
102	5510	46.29	45.33
110	5550	47.12	44.88
134	5670	47.18	46.44
142 (U-NII-2C Band)	5710	37.43	36.94

802.11ax (HE80)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		Chain0	Chain1
58	5290	83.48	83.71
106	5530	83.72	83.85
122	5610	85.52	86.36
138 (U-NII-2C Band)	5690	77.82	77.28

802.11ax (HE160)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		Chain0	Chain1
50 (U-NII-2A Band)	5250	82.87	82.89
114	5570	165.46	162.49

Spectrum Plot of Worst Value	
802.11a_Chain 1 / CH144 (U-NII-2C)	**802.11ax (HE20)_Chain 0 / CH144 (U-NII-2C)**
	
802.11ax (HE40)_Chain 1 / CH142 (U-NII-2C)	**802.11ax (HE80)_Chain 1 / CH138 (U-NII-2C)**
	
802.11ax (HE160)_Chain 0 / CH114 (U-NII-2A)	
	

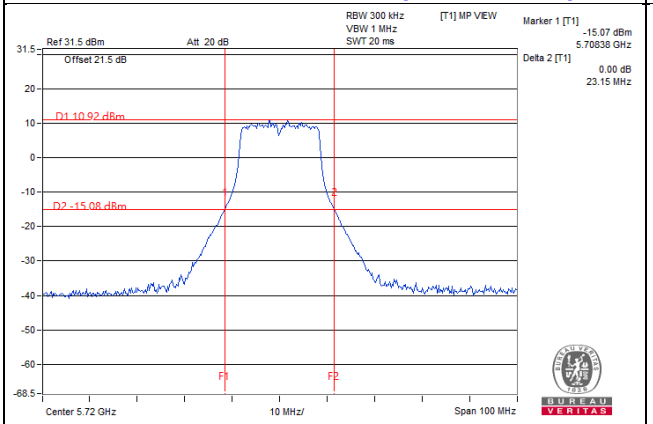
Note:

For CH144 (U-NII-2C) = 5725MHz - Marker 1
For CH142 (U-NII-2C) = 5725MHz - Marker 1
For CH138 (U-NII-2C) = 5725MHz - Marker 1
For CH50 (U-NII-2A) = Delta 2 – (5250MHz - Marker 1)

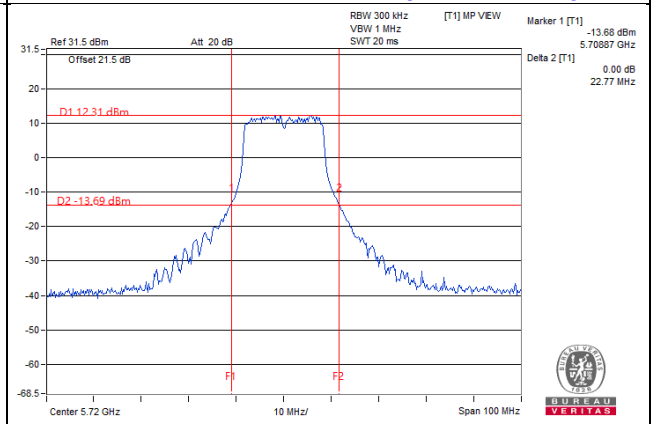
For channel straddling 5725MHz of 26dB BW

Spectrum Plot Value of 26dB BW

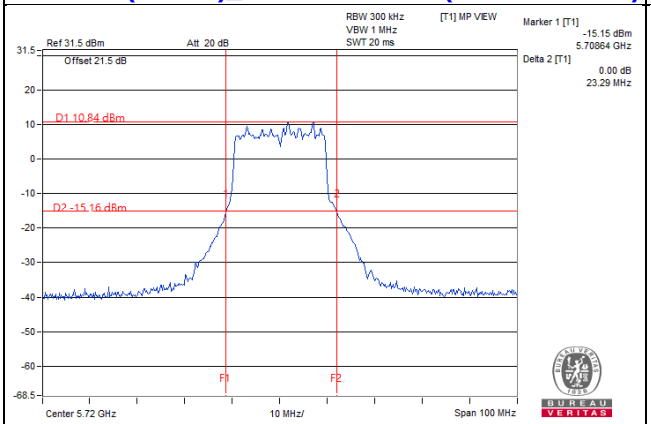
802.11a _Chain 0 / CH144 (U-NII-3 Band)



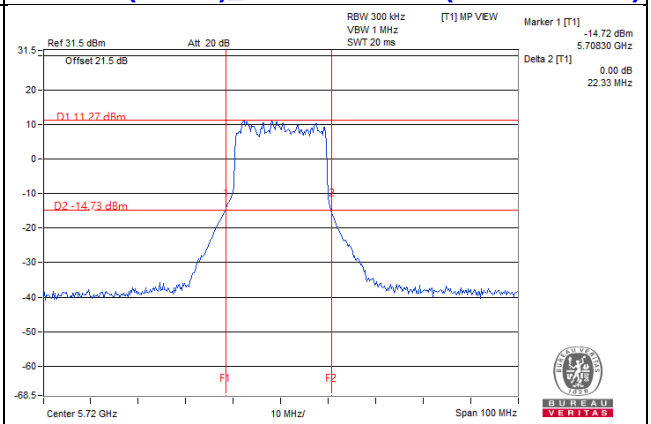
802.11a _Chain 1 / CH144 (U-NII-3 Band)



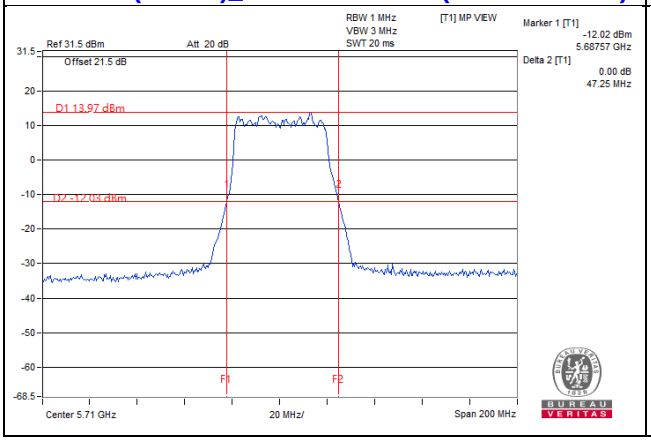
802.11ax (VHT20)_Chain 0/ CH144 (U-NII-2C Band)



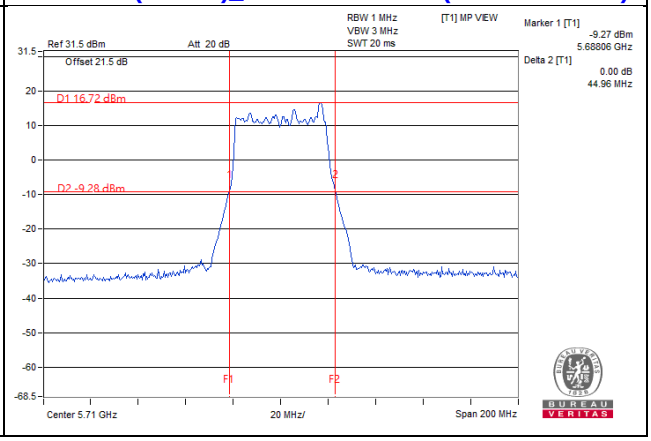
802.11ax (VHT20)_Chain 1/ CH144 (U-NII-2C Band)

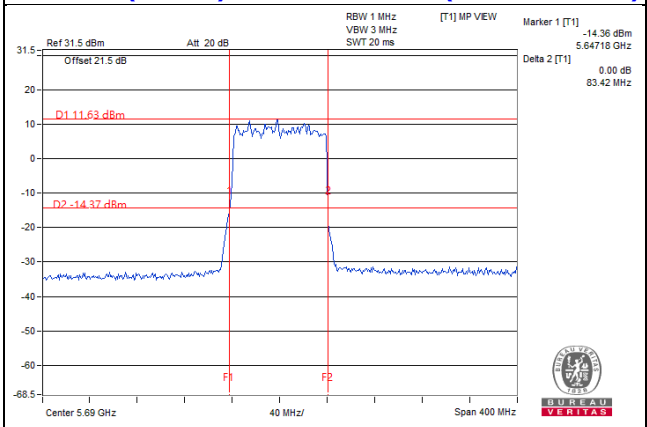
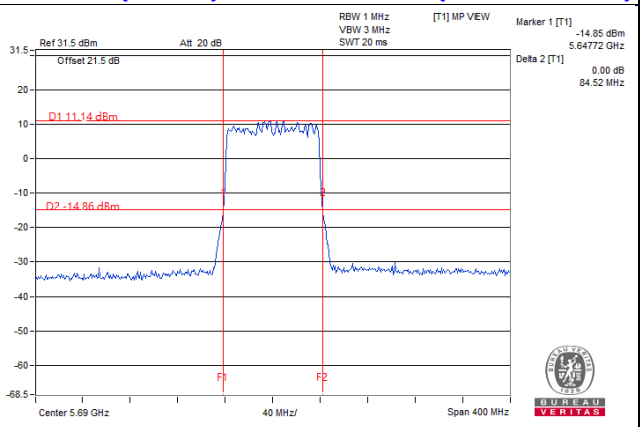


802.11ax (VHT40)_Chain 0 / CH142 (U-NII-2C Band)



802.11ax (VHT40)_Chain 1 / CH142 (U-NII-2C Band)

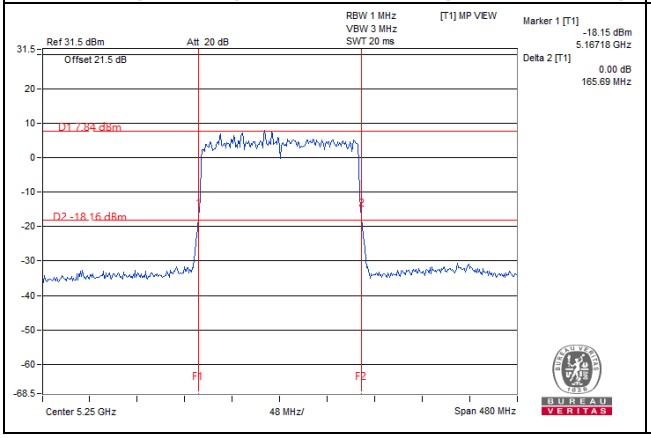
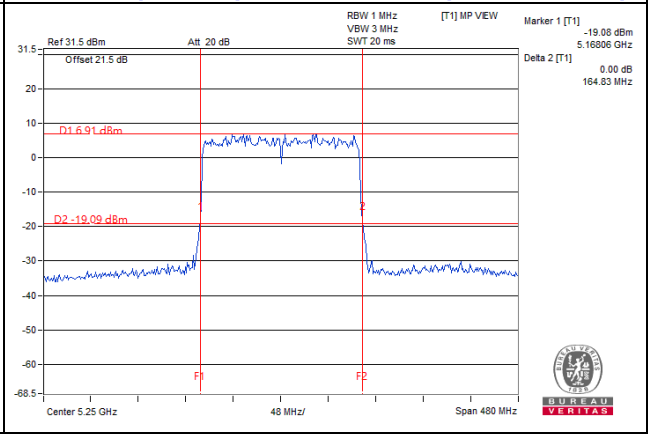


802.11ax (VHT80)_Chain 0/ CH138 (U-NII-2C Band)	802.11ax (VHT80)_Chain 1/ CH138 (U-NII-2C Band)
	

Note:

For CH144 (U-NII-2C Band) = 5725MHz - Marker 1
For CH142 (U-NII-2C Band) = 5725MHz - Marker 1
For CH138 (U-NII-2C Band) = 5725MHz - Marker 1

For channel straddling 5250MHz of 26dB BW

Spectrum Plot Value of 26dB BW	
802.11ax (VHT160)_Chain 0 / CH50 (U-NII-2A Band)	**802.11ax (VHT160)_Chain 1 / CH50 (U-NII-2A Band)**
	

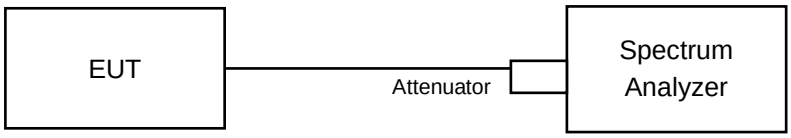
Note:

For CH50 (U-NII-1) = 5250MHz - Marker 1

For CH50 (U-NII-2A) = Marker 1 + Delta 2 - 5250MHz

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

Non-Beamforming Mode

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	17.28	16.92
60	5300	17.16	16.92
64	5320	16.92	16.8
100	5500	16.92	16.8
116	5580	17.16	16.92
140	5700	16.92	16.8
144 (U-NII-2C Band)	5720	13.52	13.4
144 (U-NII-3 Band)	5720	3.4	3.4

802.11ax (HE20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	19.2	19.08
60	5300	19.8	19.2
64	5320	19.32	19.08
100	5500	19.32	19.2
116	5580	19.44	19.08
140	5700	19.2	18.96
144 (U-NII-2C Band)	5720	14.6	14.6
144 (U-NII-3 Band)	5720	4.48	4.36

802.11ax (HE40)

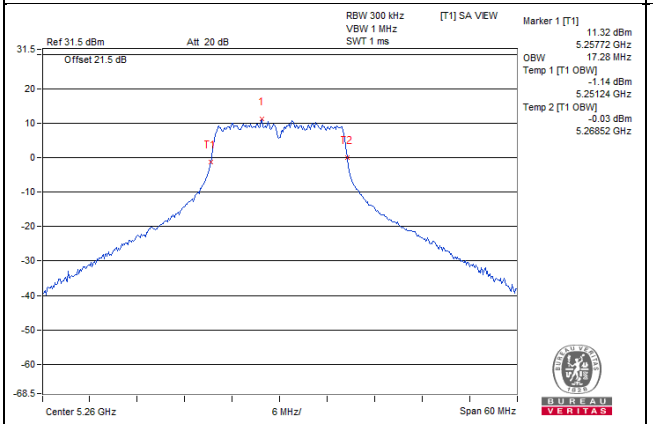
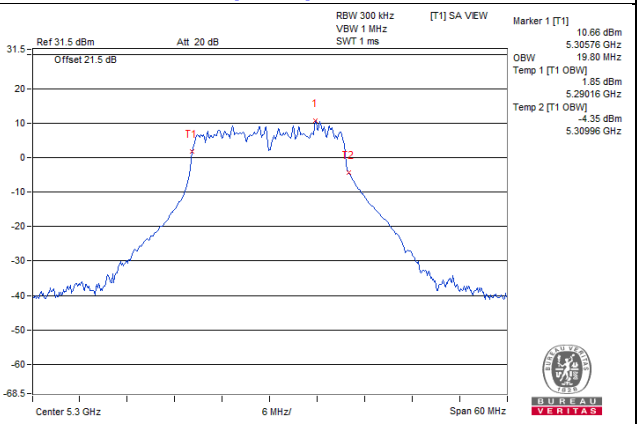
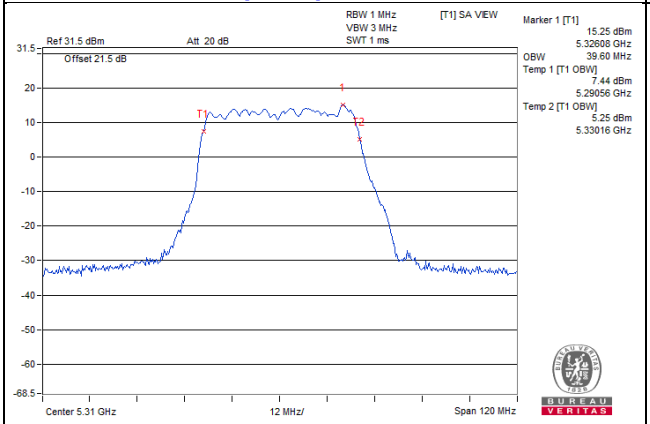
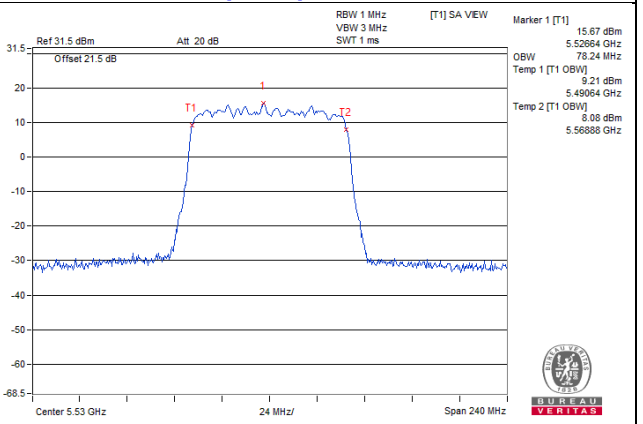
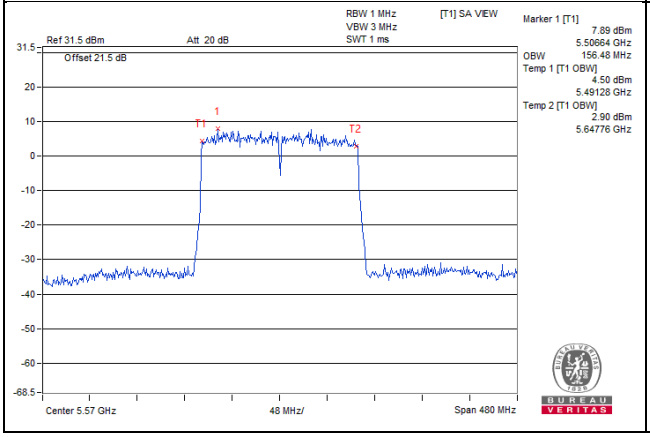
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	38.16	38.16
62	5310	39.6	39.12
102	5510	38.64	38.64
110	5550	38.64	38.4
134	5670	38.64	38.64
142 (U-NII-2C Band)	5710	34.2	34.44
142 (U-NII-3 Band)	5710	4.92	4.44

802.11ax (HE80)

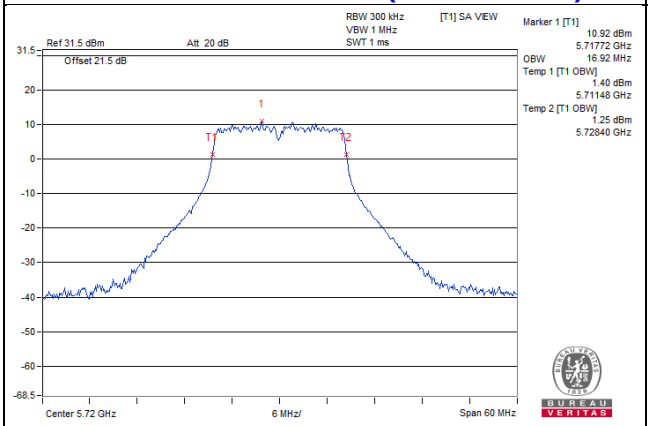
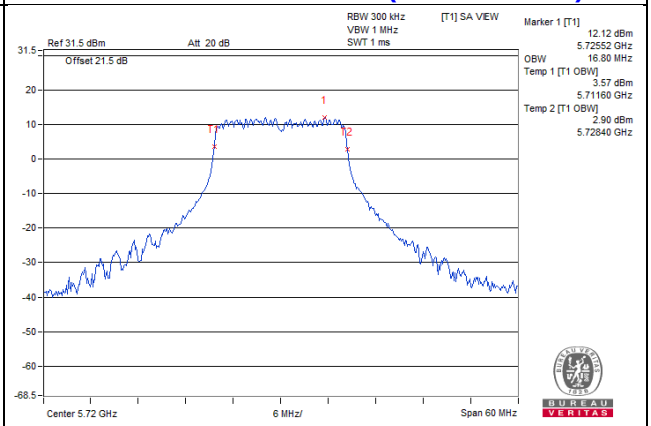
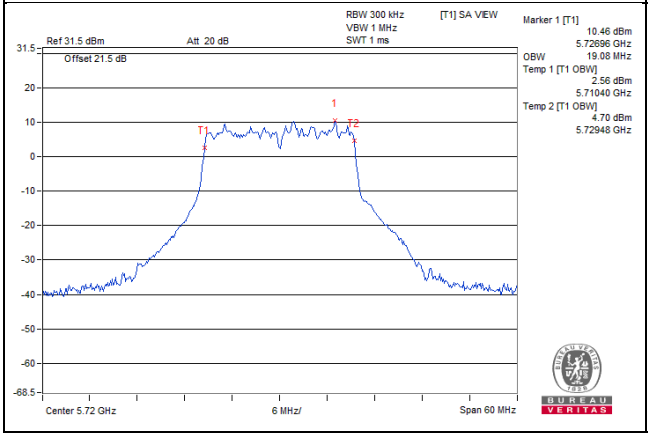
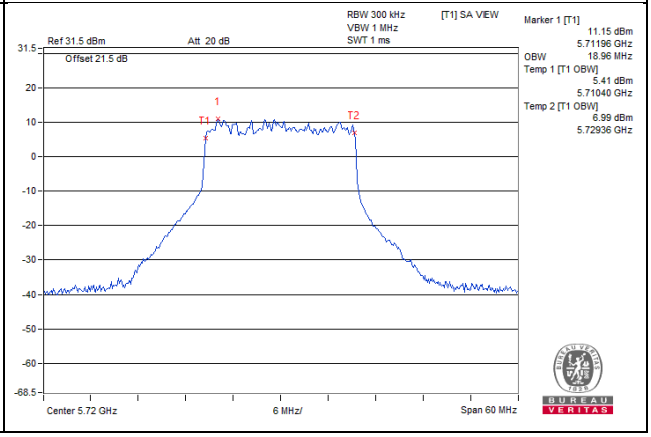
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	77.28	77.76
106	5530	78.24	77.28
122	5610	77.76	77.28
138 (U-NII-2C Band)	5690	73.88	73.88
138 (U-NII-3 Band)	5690	3.4	3.4

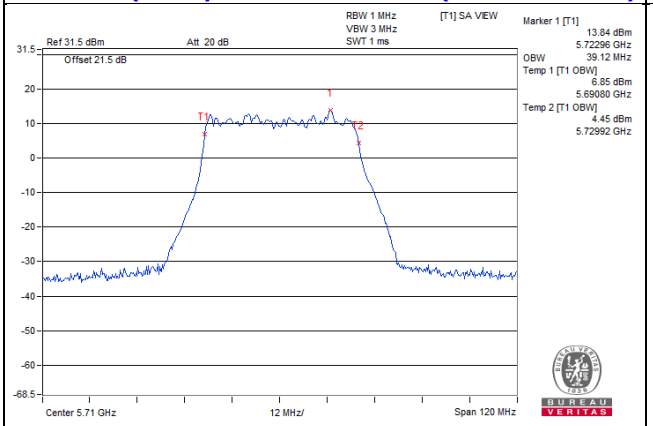
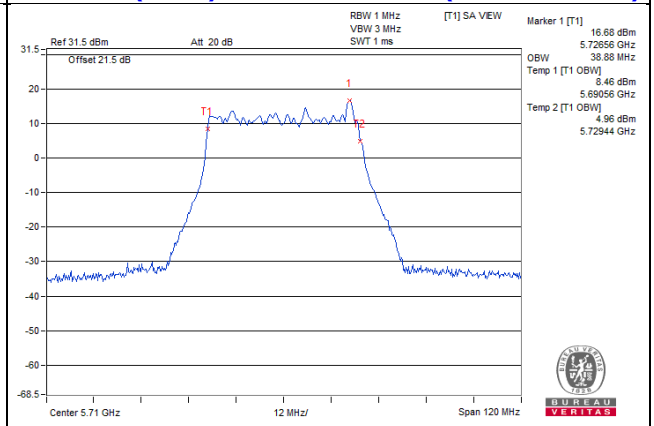
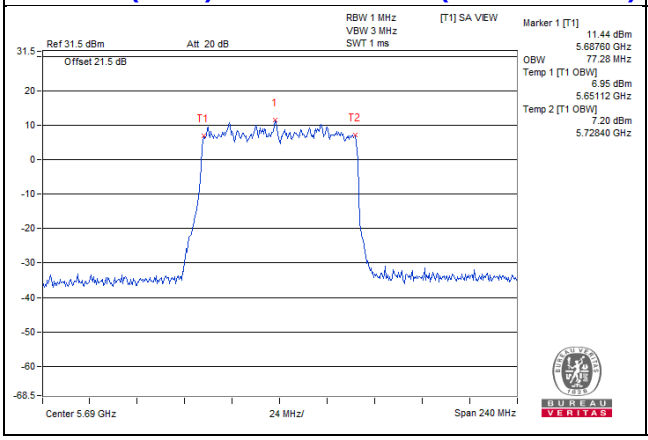
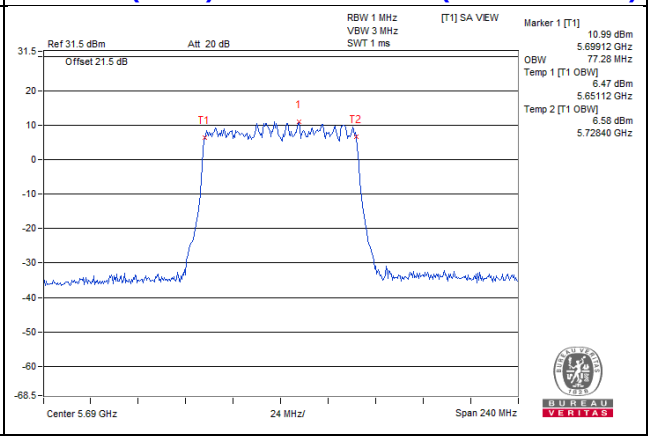
802.11ax (HE160)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
50 (U-NII-1 Band)	5250	78.72	78.72
50 (U-NII-2A Band)	5250	78.72	78.72
114	5570	156.48	156.48

Spectrum Plot of Max. Value	
802.11a_Chain 0 / CH52	**802.11ax (HE20)_Chain 0 / CH60**
	
802.11ax (HE40)_Chain 0 / CH62	**802.11ax (HE80)_Chain 0 / CH106**
	
802.11ax (HE160)_Chain 0 / CH114	
	

For channel straddling 5725MHz of OCP99 BW

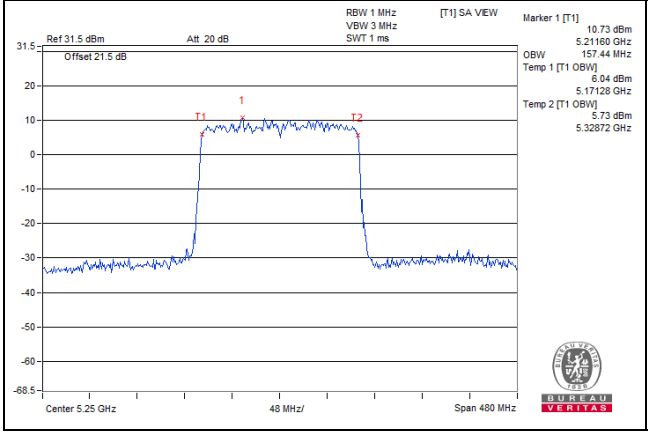
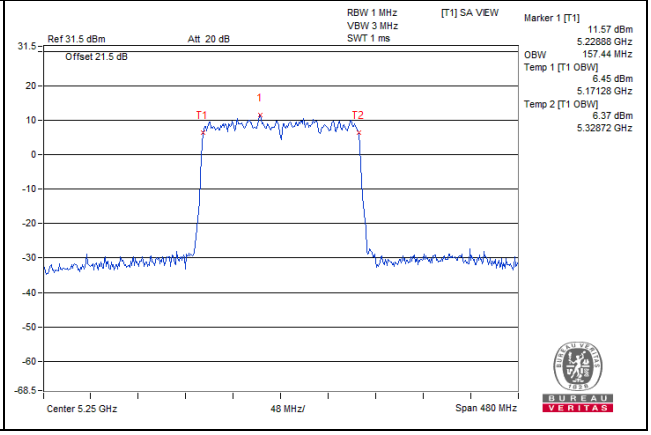
Spectrum Plot Value of OCP99 BW	
802.11a / Chain0 : CH144 (U-NII-2C Band)	**802.11a / Chain1 : CH144 (U-NII-2C Band)**
	
802.11ax (HE20) / Chain0 : CH144 (U-NII-2C Band)	**802.11ax (HE20) / Chain1 : CH144 (U-NII-2C Band)**
	

Spectrum Plot Value of OCP99 BW	
802.11ax (HE40) / Chain0 : CH142 (U-NII-2C Band)	**802.11ax (HE40) / Chain1 : CH142 (U-NII-2C Band)**
	
802.11ax (HE80) / Chain0 : CH138 (U-NII-2C Band)	**802.11ax (HE80) / Chain1 : CH138 (U-NII-2C Band)**
	

Note:

For CH144 (U-NII-2C) = 5725MHz - Temp 1
For CH142 (U-NII-2C) = 5725MHz - Temp 1
For CH138 (U-NII-2C) = 5725MHz - Temp 1
For CH144 (U-NII-3) = Temp 2 - 5725MHz
For CH142 (U-NII-3) = Temp 2 - 5725MHz
For CH138 (U-NII-3) = Temp 2 - 5725MHz

For channel straddling 5250MHz of OCP99 BW

Spectrum Plot Value of OCP99 BW	
802.11ax (HE160)_Chain 0 / CH50	**802.11ax (HE160)_Chain 1 / CH50**
	

Note:

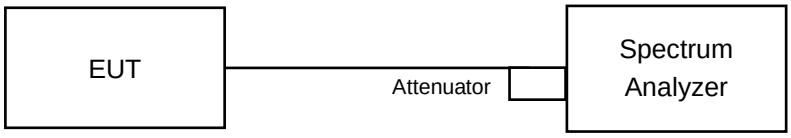
For CH50 (U-NII-1) = 5250MHz - Temp 1
For CH50 (U-NII-2A) = Temp 2 - 5250MHz

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

Using method SA-1

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

For U-NII-3:

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

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as Item 4.3.6.

4.5.7 Test Results

Non-Beamforming Mode

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

802.11a

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1			
52	5260	6.32	6.61	9.48	10.67	PASS
60	5300	6.62	6.55	9.60	10.67	PASS
64	5320	6.67	6.36	9.53	10.67	PASS
100	5500	6.86	6.92	9.90	10.53	PASS
116	5580	6.30	6.66	9.49	10.53	PASS
140	5700	6.17	7.05	9.64	10.53	PASS
144 (U-NII-2C Band)	5720	6.30	7.70	10.07	10.53	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. For U-NII-2A: The directional gain =10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.33 dBi > 6dBi, so the power density limit shall be reduced to 11-(6.33-6) = 10.67 dBm.
3. For U-NII-2C: The directional gain =10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.47 dBi > 6dBi, so the power density limit shall be reduced to 11-(6.47-6) =10.53 dBm.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1			
52	5260	5.87	6.46	9.19	10.67	PASS
60	5300	5.33	6.89	9.19	10.67	PASS
64	5320	6.23	6.74	9.50	10.67	PASS
100	5500	7.23	6.43	9.86	10.53	PASS
116	5580	6.15	7.43	9.85	10.53	PASS
140	5700	5.93	7.16	9.60	10.53	PASS
144 (U-NII-2C Band)	5720	5.64	7.04	9.41	10.53	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. For U-NII-2A: The directional gain =10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.33 dBi > 6dBi, so the power density limit shall be reduced to 11-(6.33-6) = 10.67 dBm.
3. For U-NII-2C: The directional gain =10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.47 dBi > 6dBi, so the power density limit shall be reduced to 11-(6.47-6) =10.53 dBm.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1			
54	5270	3.46	4.62	7.09	10.67	PASS
62	5310	1.46	3.16	5.40	10.67	PASS
102	5510	3.97	3.05	6.54	10.53	PASS
110	5550	4.16	3.98	7.08	10.53	PASS
134	5670	2.48	4.67	6.72	10.53	PASS
142 (U-NII-2C Band)	5710	2.95	3.93	6.48	10.53	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. For U-NII-2A: The directional gain =10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.33 dBi > 6dBi, so the power density limit shall be reduced to 11-(6.33-6) = 10.67 dBm.
3. For U-NII-2C: The directional gain =10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.47 dBi > 6dBi, so the power density limit shall be reduced to 11-(6.47-6) =10.53 dBm.

802.11ax (HE80)

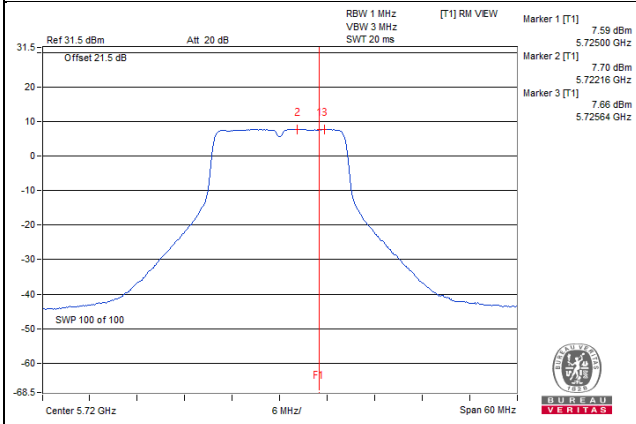
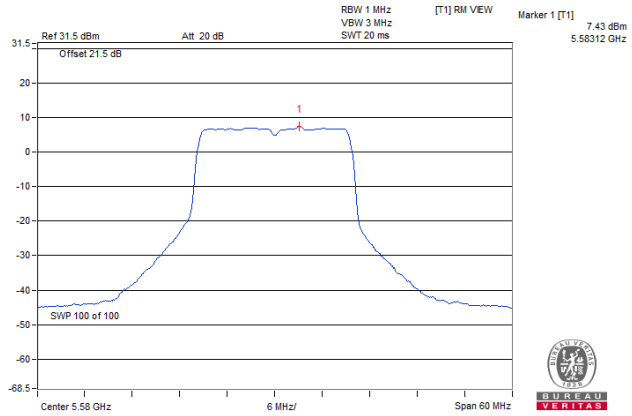
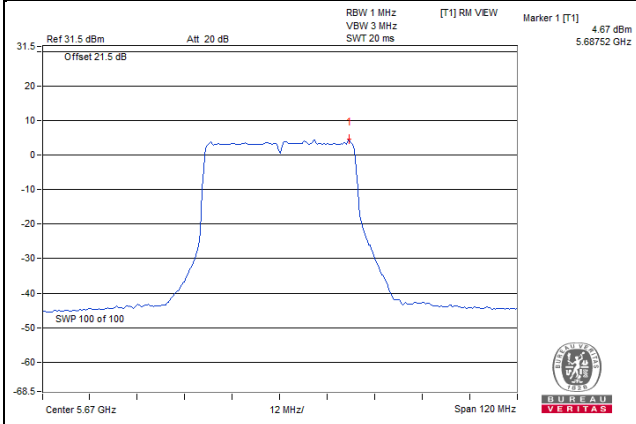
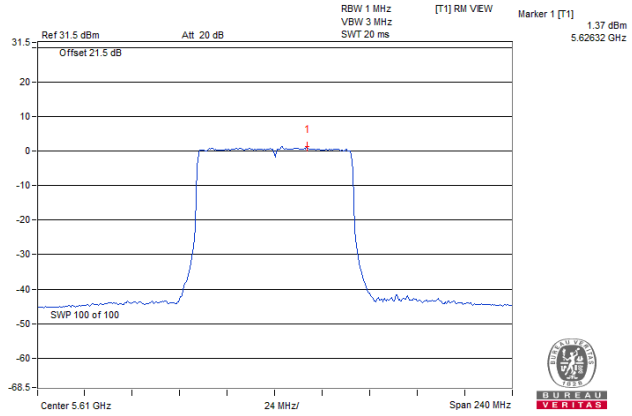
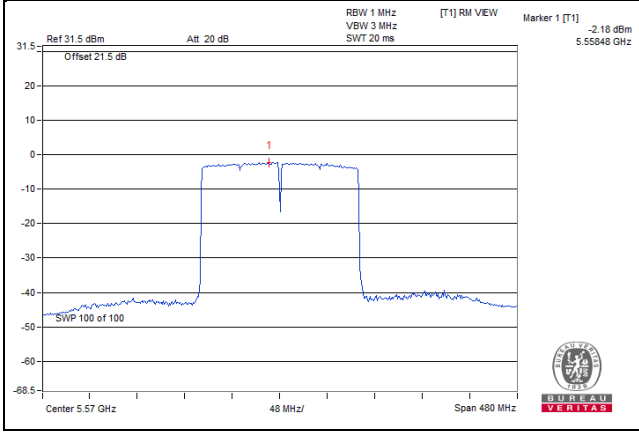
Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1			
58	5290	-2.07	-0.79	1.63	10.67	PASS
106	5530	0.02	1.06	3.58	10.53	PASS
122	5610	-0.24	1.37	3.65	10.53	PASS
138 (U-NII-2C Band)	5690	0.25	0.40	3.34	10.53	PASS

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. For U-NII-2A: The directional gain =10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.33 dBi > 6dBi, so the power density limit shall be reduced to 11-(6.33-6) = 10.67 dBm.
3. For U-NII-2C: The directional gain =10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.47 dBi > 6dBi, so the power density limit shall be reduced to 11-(6.47-6) =10.53 dBm.

802.11ax (HE160)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1			
50 (U-NII-1 Band)	5250	-4.01	-3.26	-0.61	16.60	PASS
50 (U-NII-2A Band)	5250	-3.79	-3.76	-0.76	10.67	PASS
114	5570	-2.34	-2.23	0.73	10.53	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. For U-NII-1: The directional gain =10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.40dBi > 6dBi, so the power density limit shall be reduced to 17-(6.40-6) = 16.60dBm.
2. For U-NII-2A: The directional gain =10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.33 dBi > 6dBi, so the power density limit shall be reduced to 11-(6.33-6) = 10.67 dBm.
3. For U-NII-2C: The directional gain =10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.47 dBi > 6dBi, so the power density limit shall be reduced to 11-(6.47-6) =10.53 dBm.

Spectrum Plot of Worst Value	
802.11a_Chain 1 / CH144 (U-NII-2C Band)	**802.11ax (HE20)_Chain 1 / CH116**
	
802.11ax (HE40)_Chain 1 / CH134	**802.11ax (HE80)_Chain 1 / CH122**
	
802.11ax (HE160)_Chain 1 / CH114	
	

For U-NII-3:

802.11a

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)		Total PSD (mW/300kHz)	Total PSD (dBm/300kHz)	Total PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Pass / Fail
		Chain 0	Chain 1					
144 (U-NII-3 Band)	5720	-2.43	-1.02	1.3614	1.34	3.56	29.57	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[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.43 dBi > 6dBi, so the power density limit shall be reduced to 30-(6.43-6) =29.57 dBm.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)		Total PSD (mW/300kHz)	Total PSD (dBm/300kHz)	Total PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Pass / Fail
		Chain 0	Chain 1					
144 (U-NII-3 Band)	5720	-1.78	-0.73	1.5101	1.79	4.01	29.57	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[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.43 dBi > 6dBi, so the power density limit shall be reduced to 30-(6.43-6) =29.57 dBm.

802.11ax (HE40)

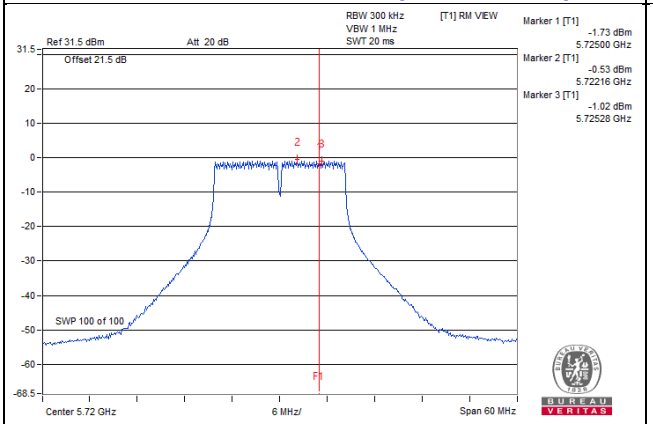
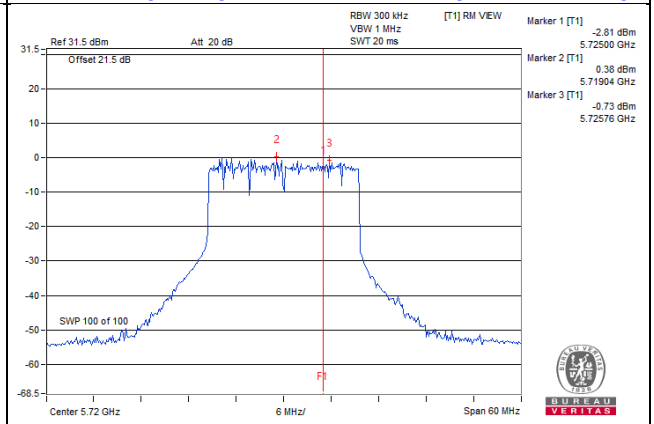
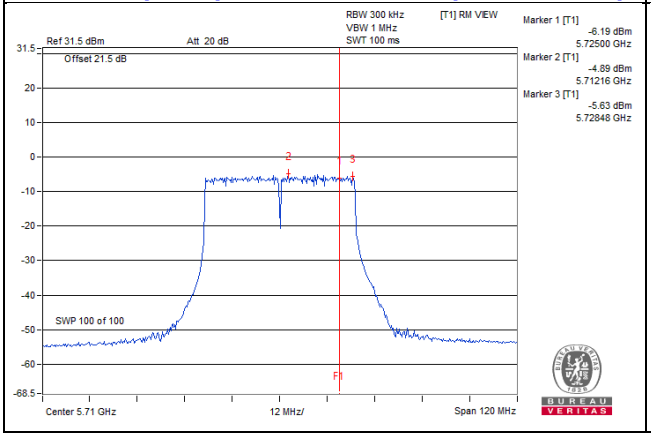
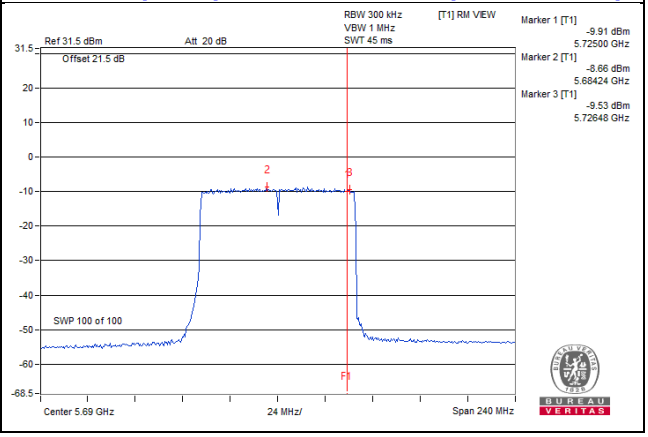
Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)		Total PSD (mW/300kHz)	Total PSD (dBm/300kHz)	Total PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Pass / Fail
		Chain 0	Chain 1					
142 (U-NII-3 Band)	5710	-5.63	-7.32	0.4592	-3.38	-1.16	29.57	PASS

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[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.43 dBi > 6dBi, so the power density limit shall be reduced to 30-(6.43-6) =29.57 dBm.

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)		Total PSD (mW/300kHz)	Total PSD (dBm/300kHz)	Total PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Pass / Fail
		Chain 0	Chain 1					
138 (U-NII-3 Band)	5690	-9.53	-9.63	0.2203	-6.57	-4.35	29.57	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[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.43 dBi > 6dBi, so the power density limit shall be reduced to 30-(6.43-6) =29.57 dBm.

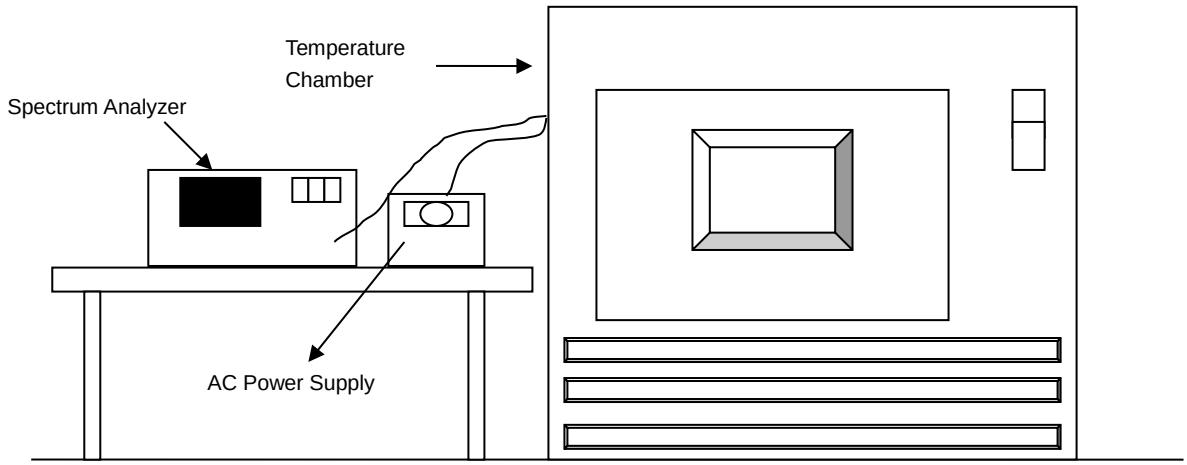
Spectrum Plot of Worst Value	
802.11a_Chain 1 / CH144 (U-NII-3 Band)	**802.11ax (HE20)_Chain 1 / CH144 (U-NII-3 Band)**
	
802.11ax (HE40)_Chain 0 / CH142 (U-NII-3 Band)	**802.11ax (HE80)_Chain 0 / CH138 (U-NII-3 Band)**
	

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

Frequency Stability Versus Temp.									
Operating Frequency: 5260 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	5260.0281	PASS	5260.0242	PASS	5260.0258	PASS	5260.0283	PASS
30	120	5259.984	PASS	5259.9853	PASS	5259.9841	PASS	5259.984	PASS
20	120	5259.9926	PASS	5259.9926	PASS	5259.9953	PASS	5259.9957	PASS
10	120	5260.0258	PASS	5260.0236	PASS	5260.0233	PASS	5260.0261	PASS
0	120	5260.0242	PASS	5260.0239	PASS	5260.0229	PASS	5260.0245	PASS

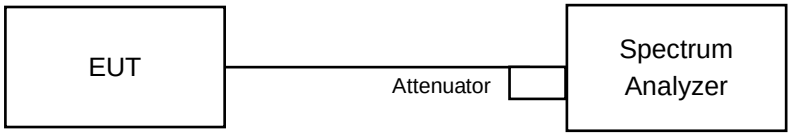
Frequency Stability Versus Voltage									
Operating Frequency: 5260 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	138	5259.9928	PASS	5259.9926	PASS	5259.995	PASS	5259.9947	PASS
	120	5259.9926	PASS	5259.9926	PASS	5259.9953	PASS	5259.9957	PASS
	102	5259.992	PASS	5259.9929	PASS	5259.9963	PASS	5259.9966	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

Non-Beamforming Mode

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain0	Chain1		
144 (U-NII-3 Band)	5720	3.28	3.26	0.5	Pass

802.11ax (HE20)

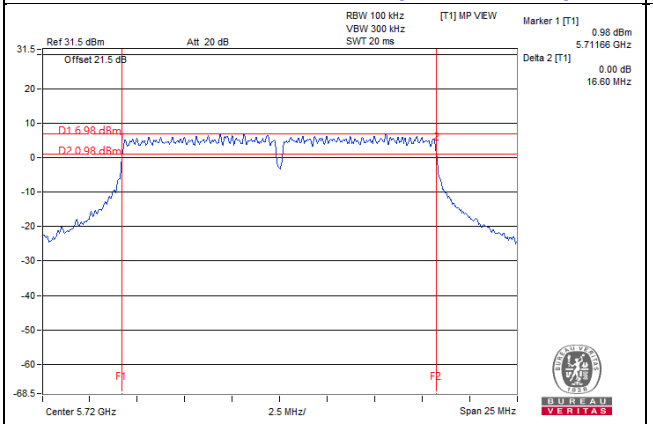
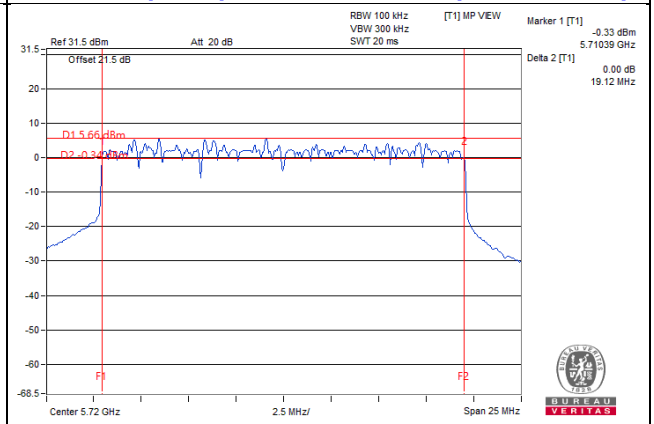
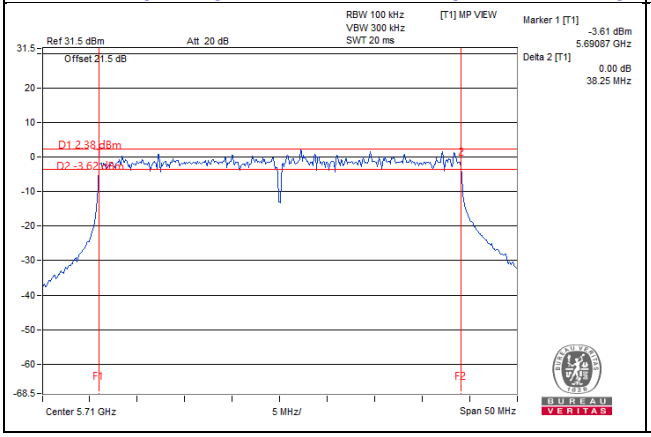
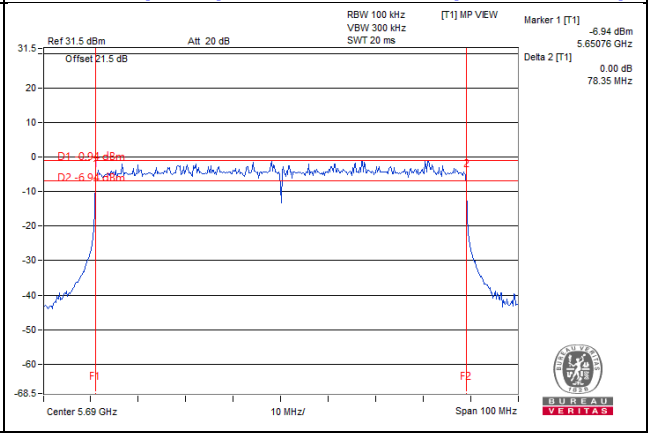
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain0	Chain1		
144 (U-NII-3 Band)	5720	4.53	4.51	0.5	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain0	Chain1		
142 (U-NII-3 Band)	5710	4.12	4.15	0.5	Pass

802.11ax (HE80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain0	Chain1		
138 (U-NII-3 Band)	5690	4.2	4.11	0.5	Pass

Spectrum Plot of Worst Value	
802.11a_Chain 1 / CH144 (U-NII-3 Band)	**802.11ax (HE20)_Chain 1 / CH144 (U-NII-3 Band)**
	
802.11ax (HE40)_Chain 0 / CH142 (U-NII-3 Band)	**802.11ax (HE80)_Chain 1 / CH138 (U-NII-3 Band)**
	

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

5 Pictures of Test Arrangements

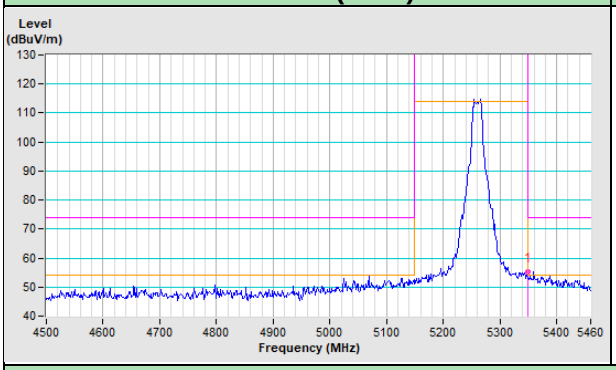
Please refer to the attached file (Test Setup Photo).

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

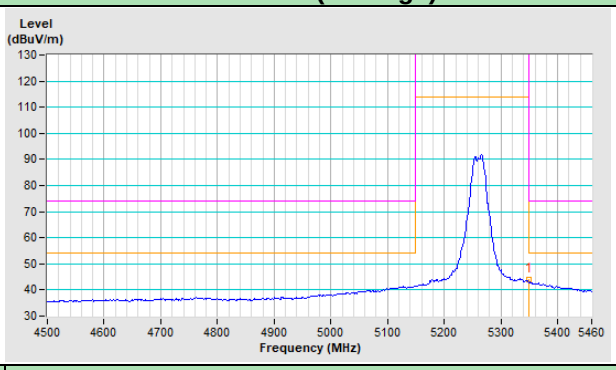
802.11a

Channel 52

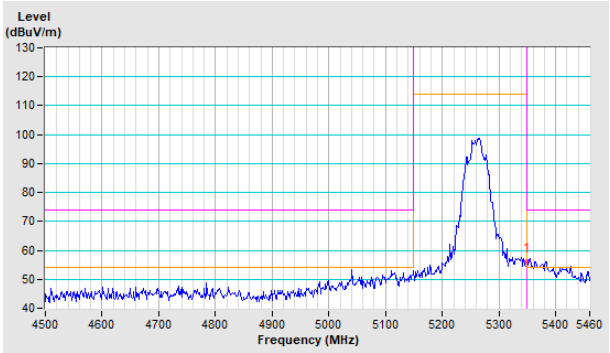
Horizontal (Peak)



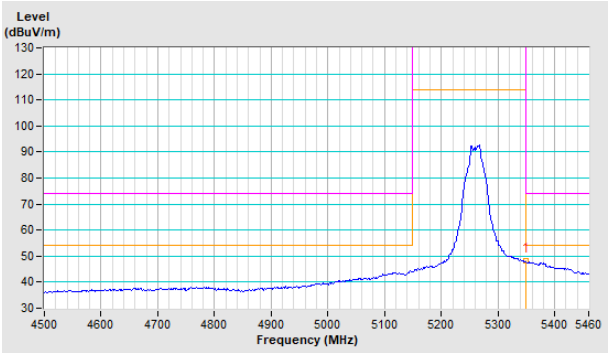
Horizontal (Average)



Vertical (Peak)

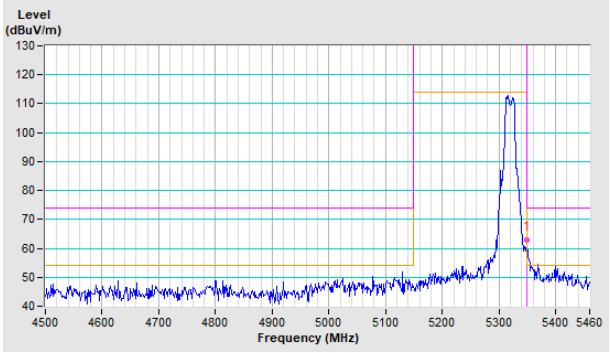


Vertical (Average)

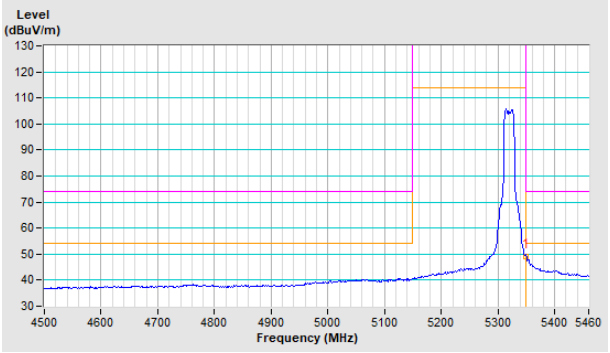


Channel 64

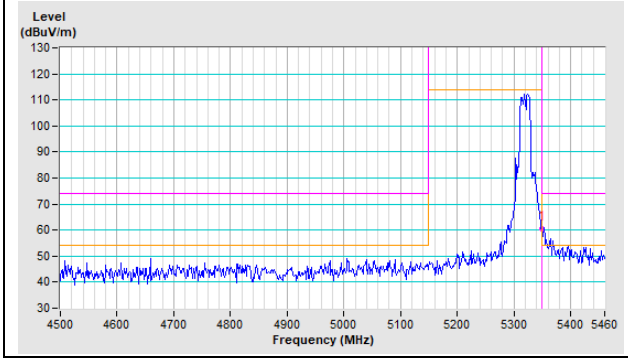
Horizontal (Peak)



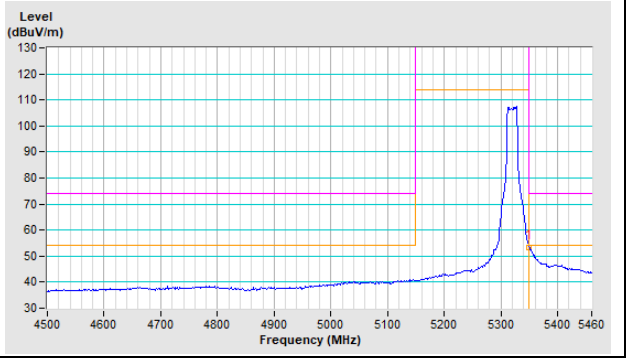
Horizontal (Average)

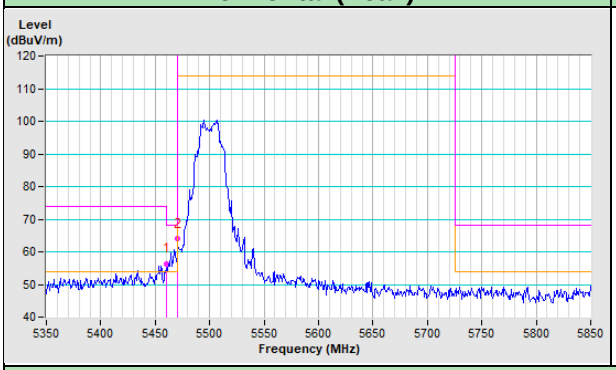
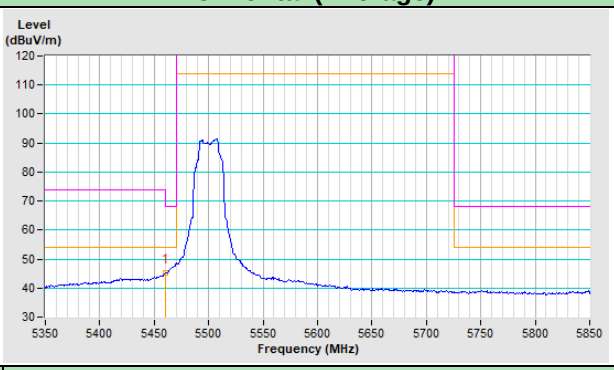
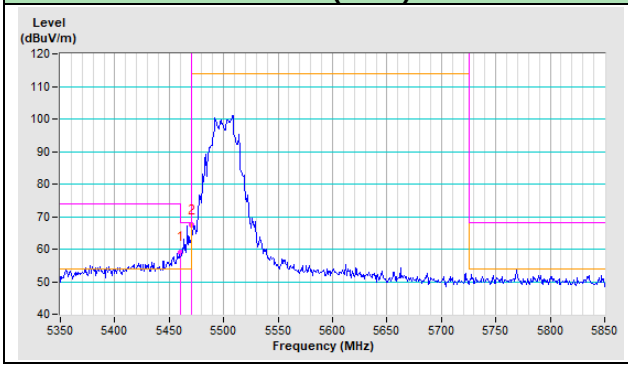
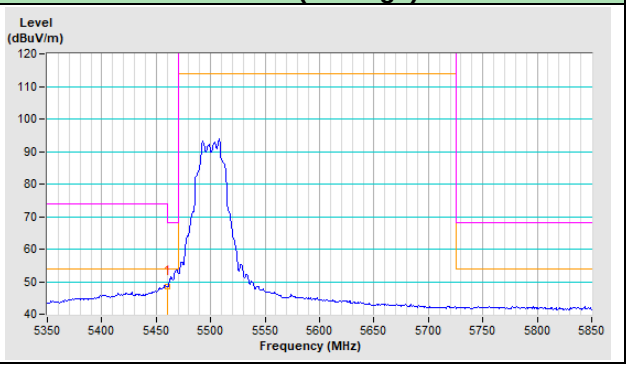


Vertical (Peak)



Vertical (Average)

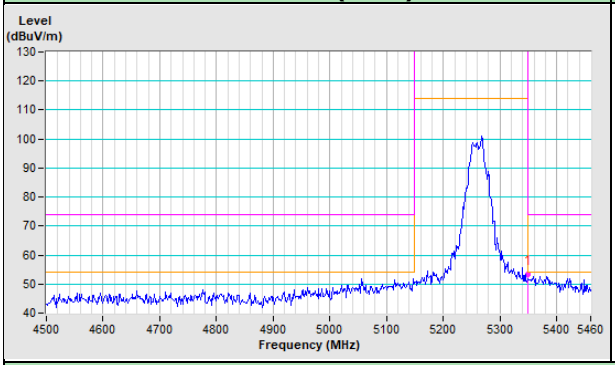


Channel 100	
Horizontal (Peak)	**Horizontal (Average)**
	
Vertical (Peak)	**Vertical (Average)**
	

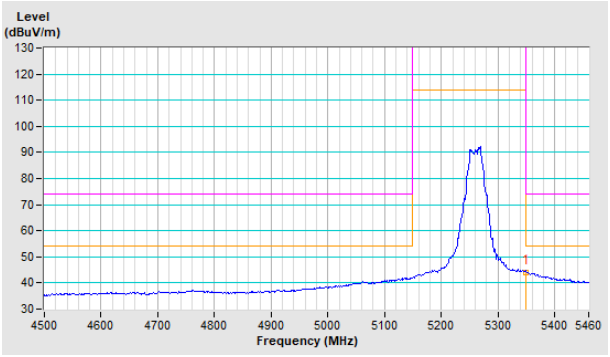
802.11ax (HE20)

Channel 52

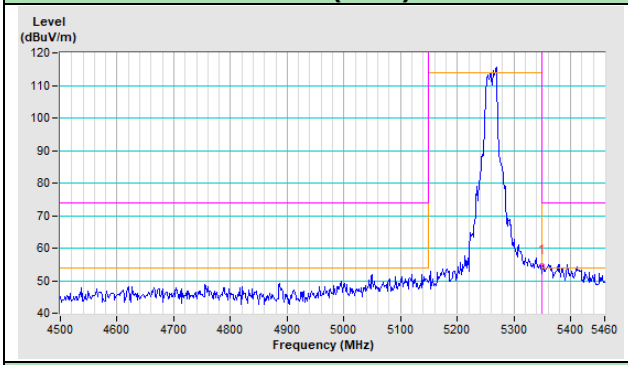
Horizontal (Peak)



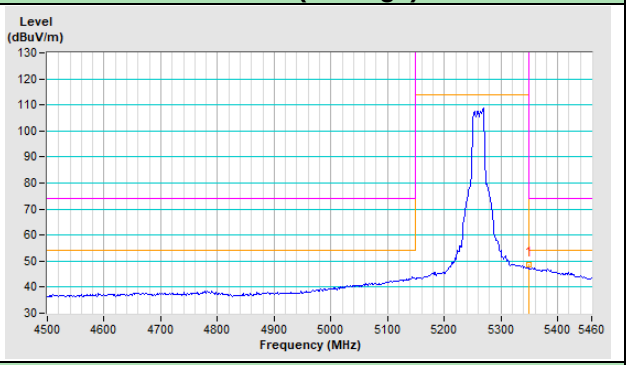
Horizontal (Average)



Vertical (Peak)

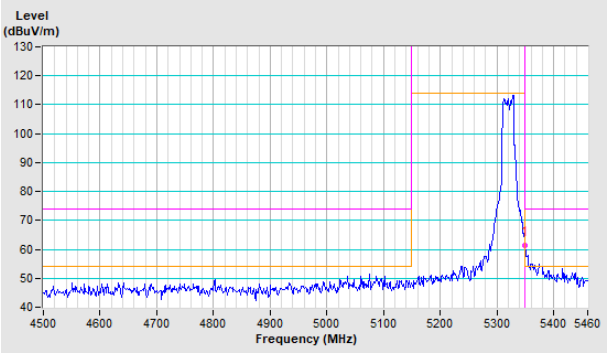


Vertical (Average)

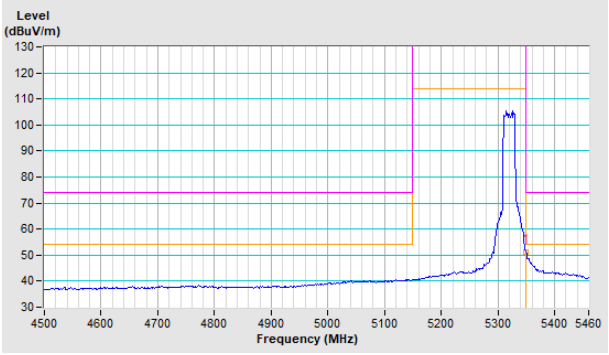


Channel 64

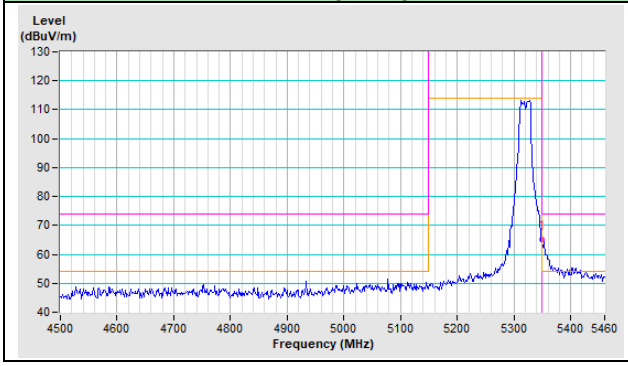
Horizontal (Peak)



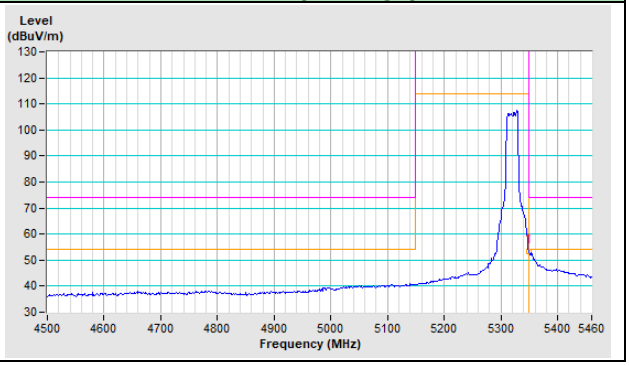
Horizontal (Average)

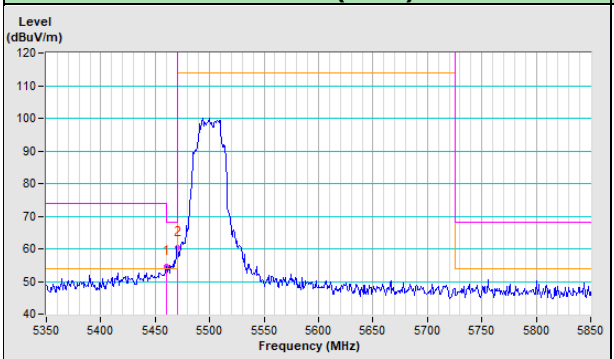
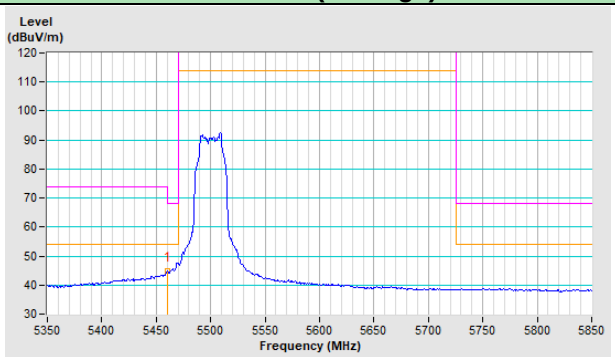
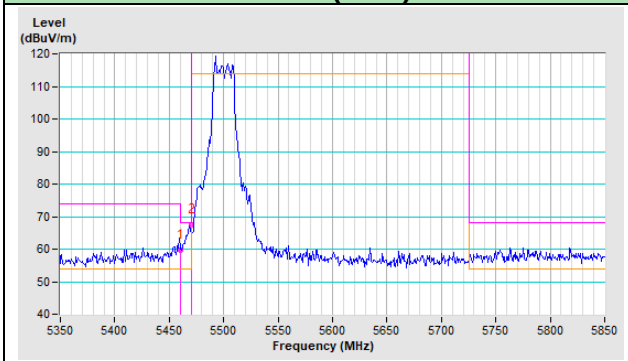
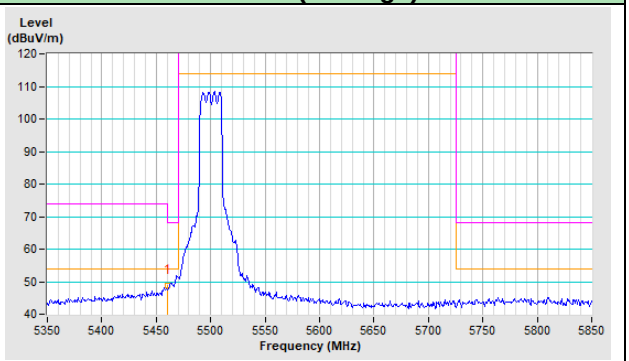


Vertical (Peak)



Vertical (Average)

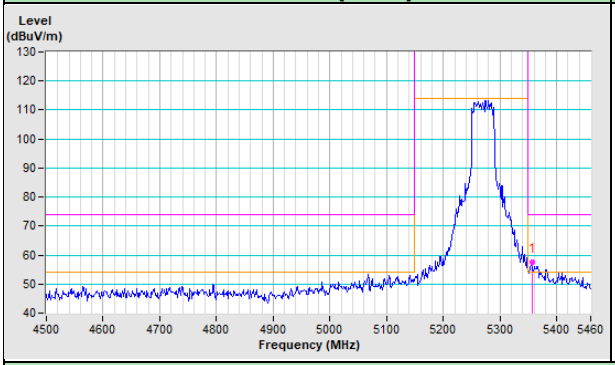


Channel 100	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

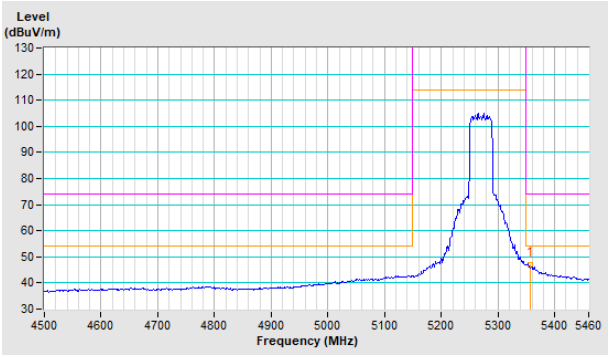
802.11ax (HE40)

Channel 54

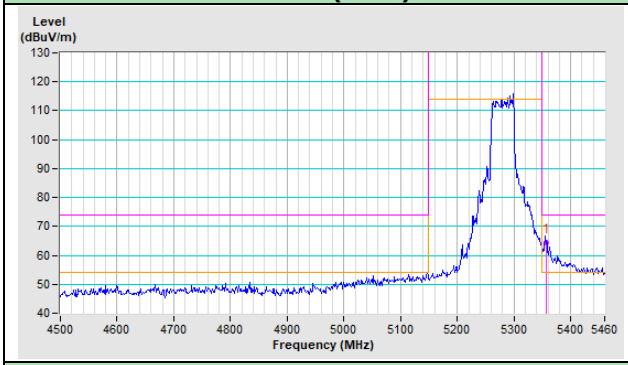
Horizontal (Peak)



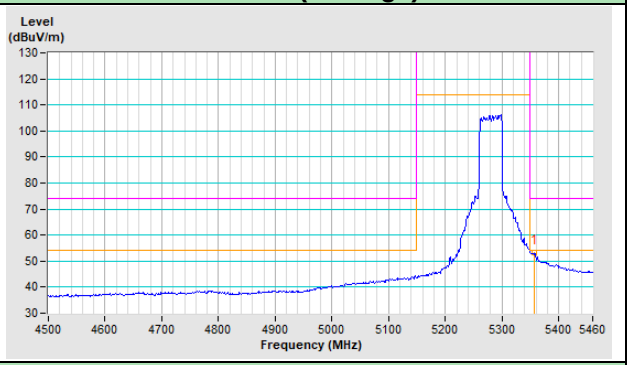
Horizontal (Average)



Vertical (Peak)

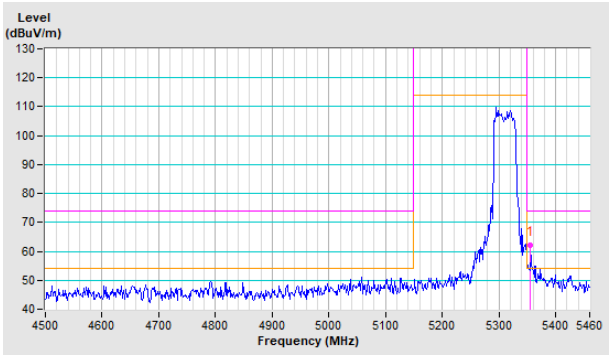


Vertical (Average)

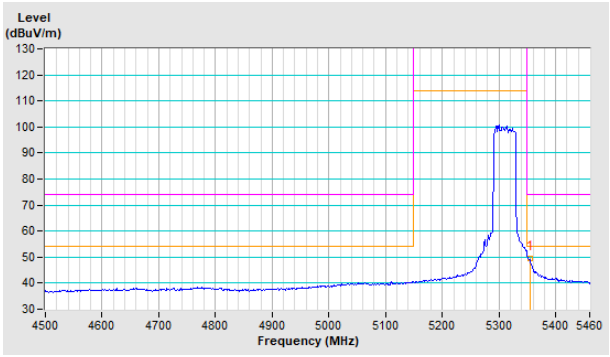


Channel 62

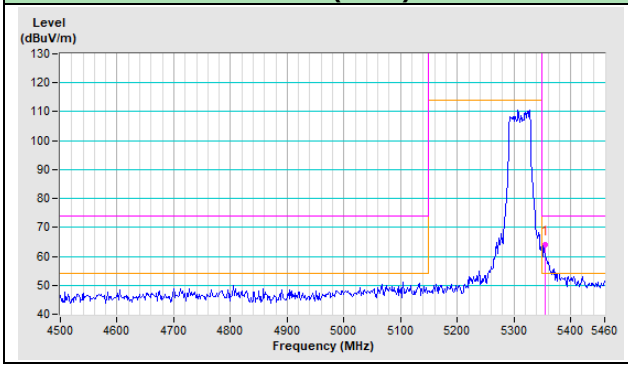
Horizontal (Peak)



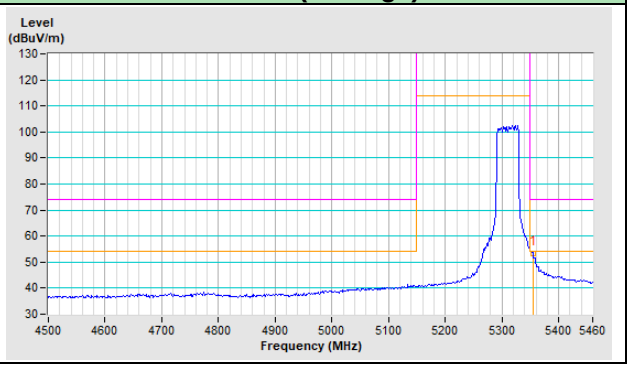
Horizontal (Average)

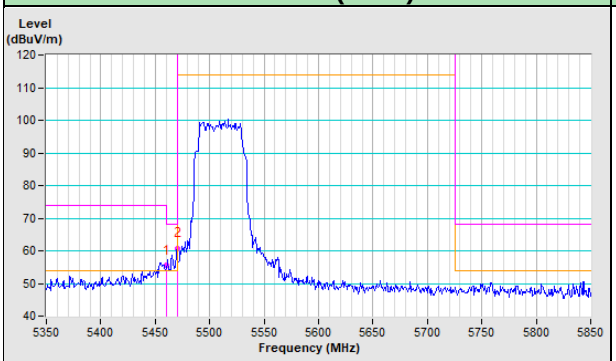
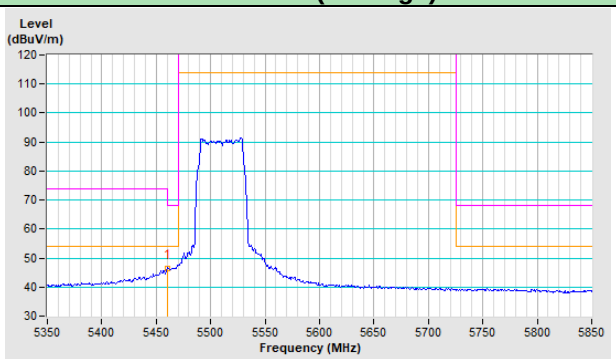
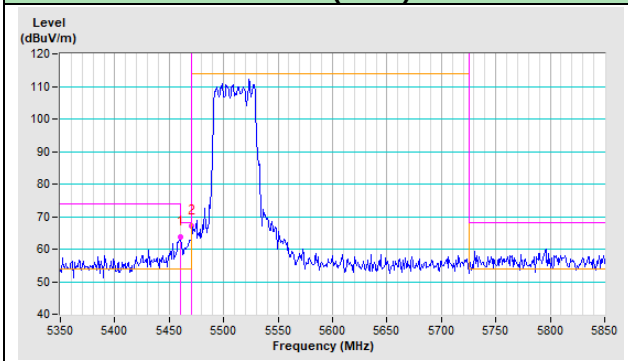
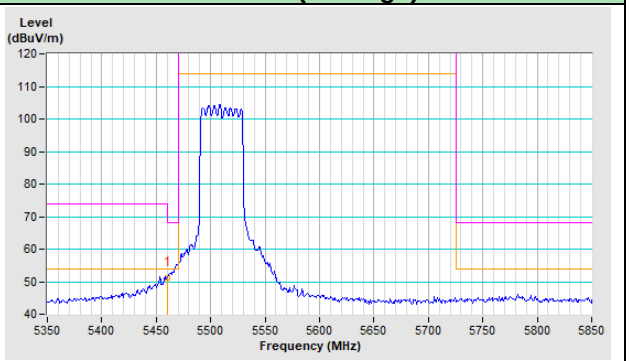


Vertical (Peak)



Vertical (Average)

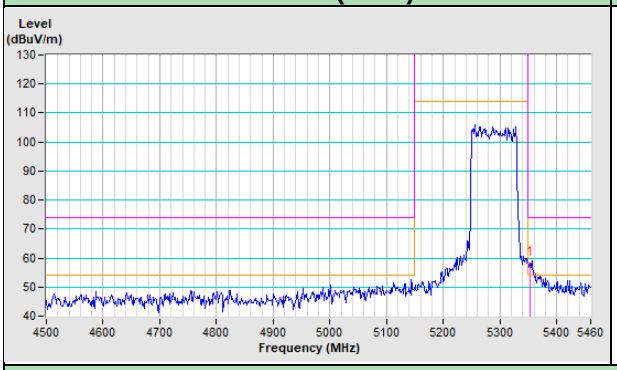


Channel 102	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

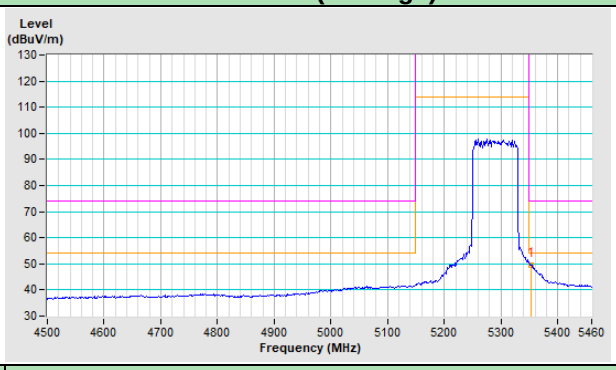
802.11ax (HE80)

Channel 58

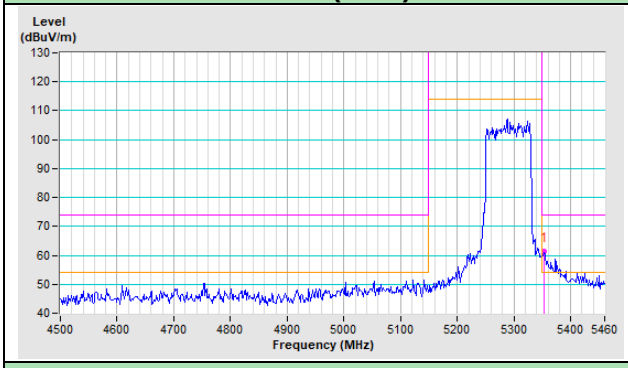
Horizontal (Peak)



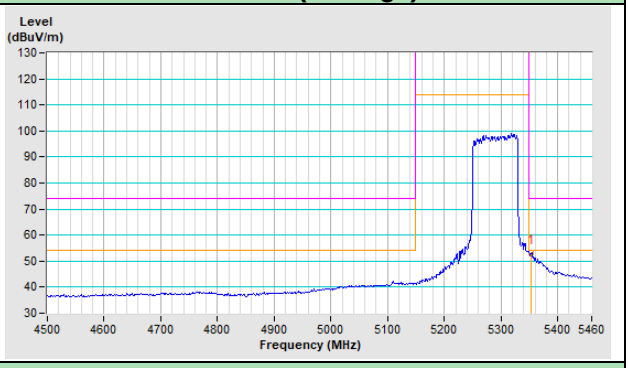
Horizontal (Average)



Vertical (Peak)

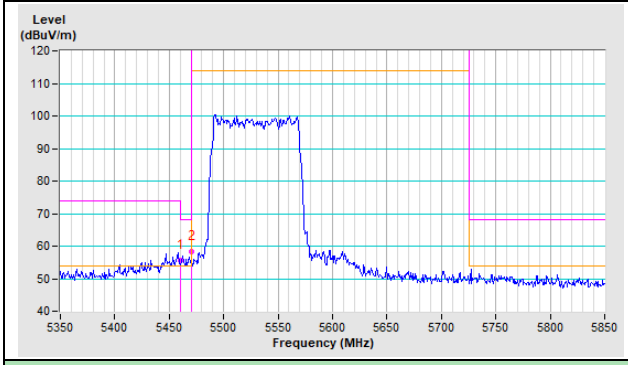


Vertical (Average)

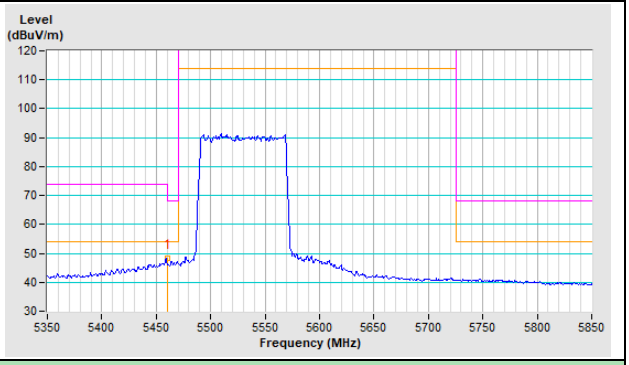


Channel 106

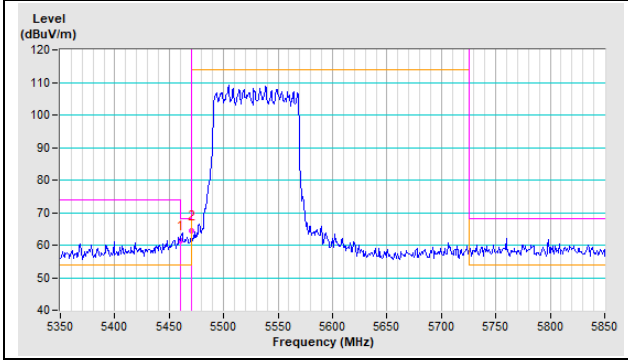
Horizontal (Peak)



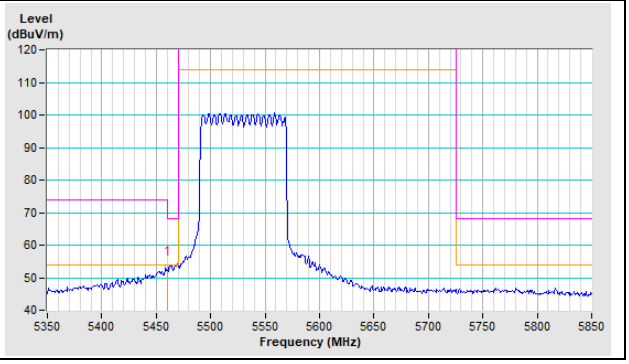
Horizontal (Average)



Vertical (Peak)



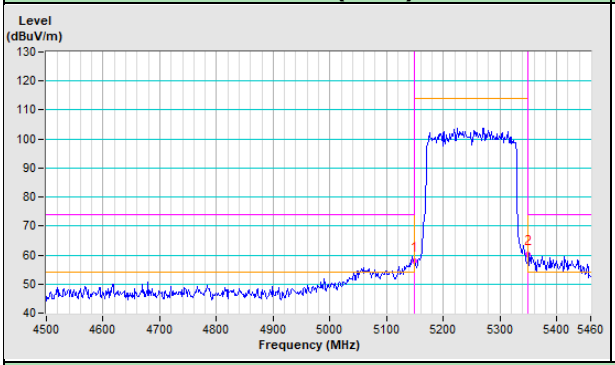
Vertical (Average)



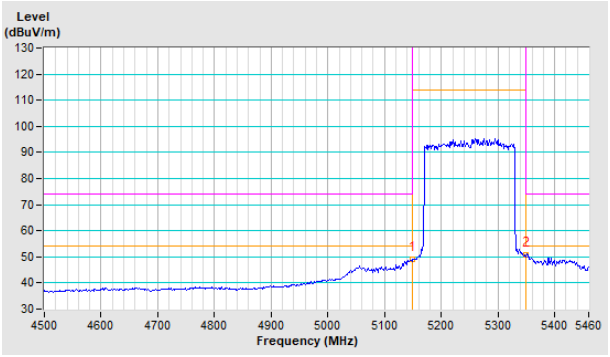
802.11ax (HE160)

Channel 50

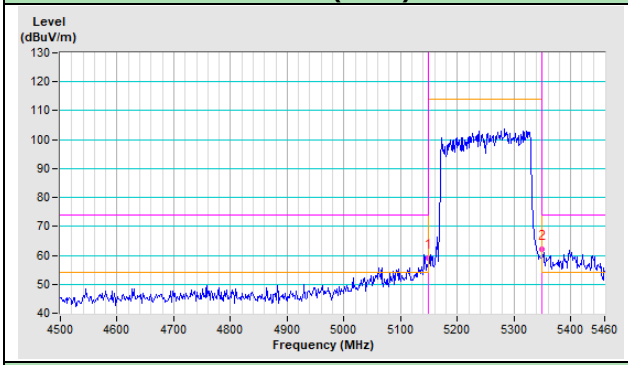
Horizontal (Peak)



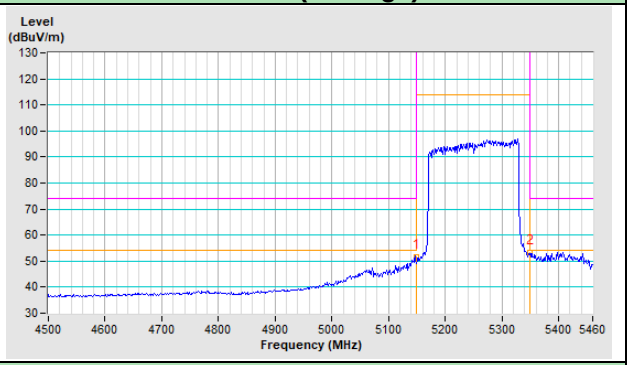
Horizontal (Average)



Vertical (Peak)

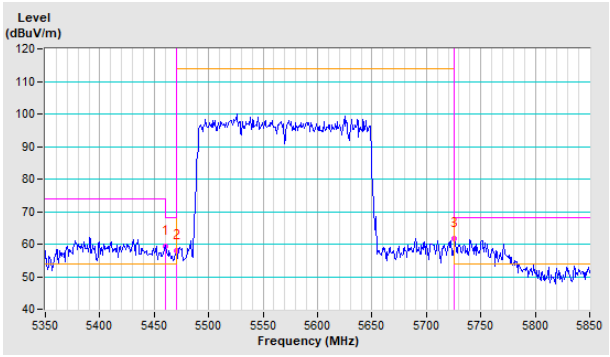


Vertical (Average)

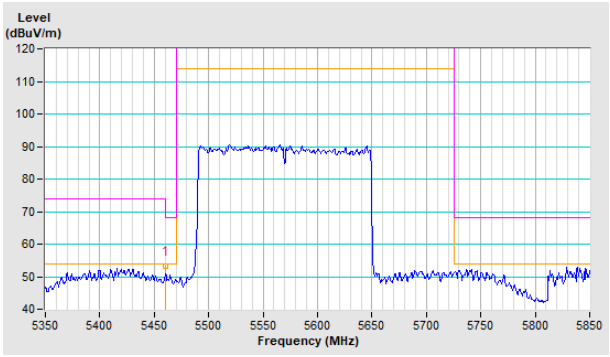


Channel 114

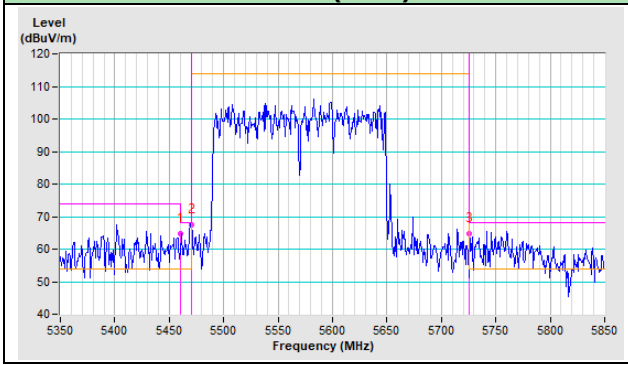
Horizontal (Peak)



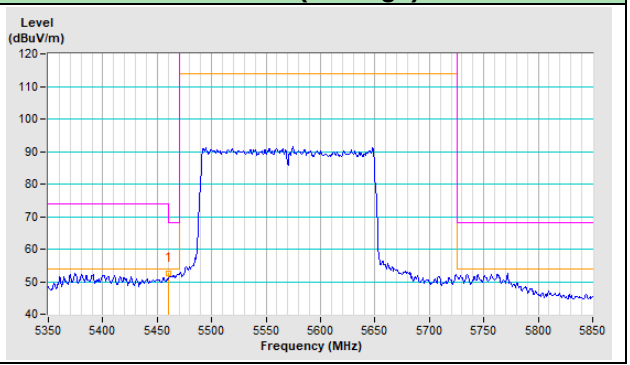
Horizontal (Average)



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:

Lin Kou EMC/RF Lab
Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab
Tel: 886-3-6668565
Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab
Tel: 886-3-3183232
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 ---